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Fine WoodWorking

Spring 1976, Volume 1, Number 2

CONTENTS

Cover: "In marquetry the trees are the real artists and they have to die before their art can be appreciated," says C. Weed whose 12- by 22-inch picture, "A Man and a Boy," was made from Kelobra crotch veneer in an attempt to express the "Spirit of '76."

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Wood Collectors To Meet in Oregon

The annual meeting of the International Wood Collectors Society will be held in Portland, Oregon August 13 to 15. Some 200 members are expected to attend, according to the group's president, James P. Langdon.

The wood collectors organized themselves back in 1947, and most members then were mainly interested in the collecting of wood. Since then, the membership has gradually evolved beyond collecting into the using of wood. Thus, the majority of the close to 900 members are carvers, turners, marquetarians and cabinetmakers, according to Langdon.

The society has made no great effort to recruit members; membership is open to anyone. First-year dues are $10, and thereafter $8 a year.

The society puts out a monthly bulletin dealing with membership news, articles, and wood exchange lists.

The society's membership is worldwide, but concentrated in the United States. There are regional groupings, but only on an informal basis. Meetings are financed by wood auctions, with wood donated by the members. In fact, according to Langdon, these auctions seem to be one of the most popular activities of the society.

Anyone wishing to join or looking for more information should write Langdon at 7200 NW Mountain Lake Way, Vancouver, Wash. 98665.

National Carvers Museum To Celebrate Second Anniversary

The National Carvers Museum will have a second anniversary celebration July 9 to 11 at its new building outside of Colorado Springs. The museum moved there from Chicago where it had been since its founding in 1969.

Membership in the museum is now at the 10,000 level, according to Lawrence F. Martin, a co-founder and its executive director. Membership dues are $5 to $15 a year, depending on the type. All members receive the museum's quarterly 36-page National Carvers Review.

The museum itself has some 4000 American carvings on display, as well as exhibits in turning and marquetry. Some of the exhibits are permanent, some are continually changing. Members are encouraged to exhibit their own work.

Anyone wishing more information on the museum should write to it at 14960 Woodcarver Road, Monument, Colo. 80132, enclosing a self-addressed stamped envelope.

News Notes: Flowering Winterthur; The Shakers and the Danes

Winterthur in Spring will be a special showing of 30 rooms and the gardens of the famed du Pont mansion and museum near Wilmington that houses the most extensive collection of American-made furniture in the world. The exhibition will last from April 13 to May 23 and will be open every day except Mondays from 10 to 4. For more information write the Public Relations Office at Winterthur, Del. 19735.

An American Inspiration: Danish Modern and Shaker Style will be the theme of a 30-piece furniture exhibition being brought to this country from Denmark later this year by the Smithsonian Institution Traveling Exhibition Service. The show will tour the U.S. for a year or more, and anyone wishing it to be booked at their local museum should have museum officials contact Ann Gosset at the Smithsonian, Washington, D.C. 20560.

Tool and Wood Exchange Begins With Next Issue

Beginning with the Summer 1976 issue, *Fine Woodworking* will include a tool and wood exchange as a regular feature. The exchange will be open only to individuals (commercial establishments should use classified or display ads). Insertion costs will be $1 a line, with a minimum of three lines.

Those wishing to use the exchange should allow 45 letters or spaces per line, include name and address as part of line count, and specify whether it's "For Sale," "Wanted to Buy," or "Will Swap" so we know where to put it. Print your copy clearly and send it along with remittance to *Fine Woodworking,* Box 355, Newtown, CT 06470. The closing date for the Summer issue is April 15; for the Fall issue it's July 15.

LETTERS

I want to congratulate you on the Volume I, Number 1 issue of *Fine Woodworking*. Although it is long overdue, it certainly is worth waiting for.

I have a couple of technical comments. The first relates to Mr. Ellsworth's article on hand planes. In conditioning a new metal plane, Mr. Ellsworth does not mention a trick which I find seems to be very little known. It is not original with me as I came across it in one of Constantine's publications, "Better Woodworking — what the textbooks didn't teach," which seems to have disappeared from their catalog. The back edge of the bottom of any metal plane I have ever seen is curved, never straight across. (Compare with a wooden plane.) As a consequence, the back edge of the plane can easily rock from side to side as it tends to rest on a single point. The cure is simple. Using a square, scribe a line straight across the bottom where the edge begins to curve. Then grind off, at a small bevel angle, the plane bottom beyond the scribed line. You will find that now the plane bottom at the back edge rests on a straight line the full width of the bottom. There is no longer a tendency to rock. As the advertising slogan says, "Try it — you'll like it."

The second relates to the article on bench stones. No way can I agree that the choice between silicon carbide and aluminum oxide is like "tweedledum and tweedledee." Although a silicon carbide stone cuts very fast, it also wears, if possible, even faster. My experience has been that after a very few sharpenings a very definite hollow begins to develop. Once this happens it is impossible to properly sharpen straight-edge tools like plane blades and chisels. On the other hand, my India (aluminum oxide) stone is as flat today, when checked with a steel straight-edge, as it was more than twenty years ago when I first purchased it.

S.W. Hathaway, Sudbury, Mass.

Editor's Note: "Bench Stones" author Jack Heath sticks by his statement. He attributes the difference in wear between the two stones not to the difference in grit materials, but to a difference in the materials that hold the grit together—the bonding strength. Ideally, there should be just enough bonding strength to allow the grit to erode as it loses its sharpness, thereby exposing the sharp new grit underneath.

. . . . Mr. Fischman's article was interesting and well written, however I find that I disagree with some of the particulars in his technique. Therefore I am writing to suggest alternatives to persons who wish to try this form of turning for the first time.

Mr. Fischman's bowls have a beautiful form, but I question the method of lamination. The top and bottom layers, which are solid, the grain running in one direction, will adapt to varying humidities by movement across the grain whereas the center, "checkered" layer forms a continuous circle and movement will occur evenly in all directions. In theory, these layers may, in time, cause distortion in the shape or delamination due to this uneven movement. I have had success with three checkered layers having 12 or 16 pieces in each layer. A veneered plywood base is rebated into the bottom after the

bowl is glued and mounted on the lathe for outside turning. I also use aliphatic glue and since it is not a good gap-filling adhesive, the wedges must be accurately cut and tested before gluing. Safety glasses and a face-shield should be worn in the event of disintegration while the bowl is being turned.

Since the strength of these bowls is dependent upon the glue line, the thinner the bowl is carved, the less glued surface remains. Therefore I find that 1/4-inch is too thin, and prefer to turn the sides to 3/8-inch or more.

Many craftsmen will see the desirability of using exotic woods for contrast and color. The natural dyes in woods such as padauk, cocobolo and rosewood may be soluble in certain finishes, especially lacquers, and will discolor other woods placed next to them. When "over-the-wood" finishes are used, tests should be made to prevent such problems.

I intend to try Mr. Fischman's method for comparison and I hope that others will realize the endless variations possible with checkered turnery.

John R. Harwood, Cazenovia, N.Y.

Delighted with your first issue of *Fine Woodworking.* Being in the business of making antique reproductions this will be a great source of information and pleasure.

. . . . Could you help with this problem? In using inlay on mahogany I have used a solution made from potassium dichromate in water to color the mahogany. Mahogany reacts to this chemical whereas other woods do not. The darkness of the color is controlled by the strength of the solution. The problem is that potassium dichromate often colors the mahogany too red.

The English use a chemical for this application that colors the mahogany a beautiful brown. Do you know what this is and is it available here?

Charles T. Bargeron, Tifton, Ga.

. . . . I will be looking forward with interest to the future issues, and as a starter, would like to know the best kind of chemical or paint and varnish-remover to remove the synthetic finishes such as Varathane and Polyurethane.

J. Robert Southard, Baltimore, Md.

Editor's Note: Finishing expert John Ebels of Behlen Bros. recommends a non-flammable methylene-chloride type preparation to remove reader Southard's synthetic varnishes. Just make sure there's enough wax in the type you get to give a "wet" or working time of four to six hours, he advises. As for reader Bargeron's query, Ebels would use a brown stain made from aniline dyes. French polisher Arlotta says he uses a yellow dye to soften the sharp red of some mahoganies.

. . . . I was particularly interested in the article on French polishing, as I have been looking for complete instructions on this for some time. However, as a chemist I would like to warn your readers about the dangers of using wood alcohol. Prolonged use or large quantities of wood alcohol can cause permanent blindness (or death, if very large quantities are taken into the body). This danger can be avoided simply by using adequate ventilation and rubber gloves when using the shellac mixture.

John F. Timberlake, Gainesville, Fla.

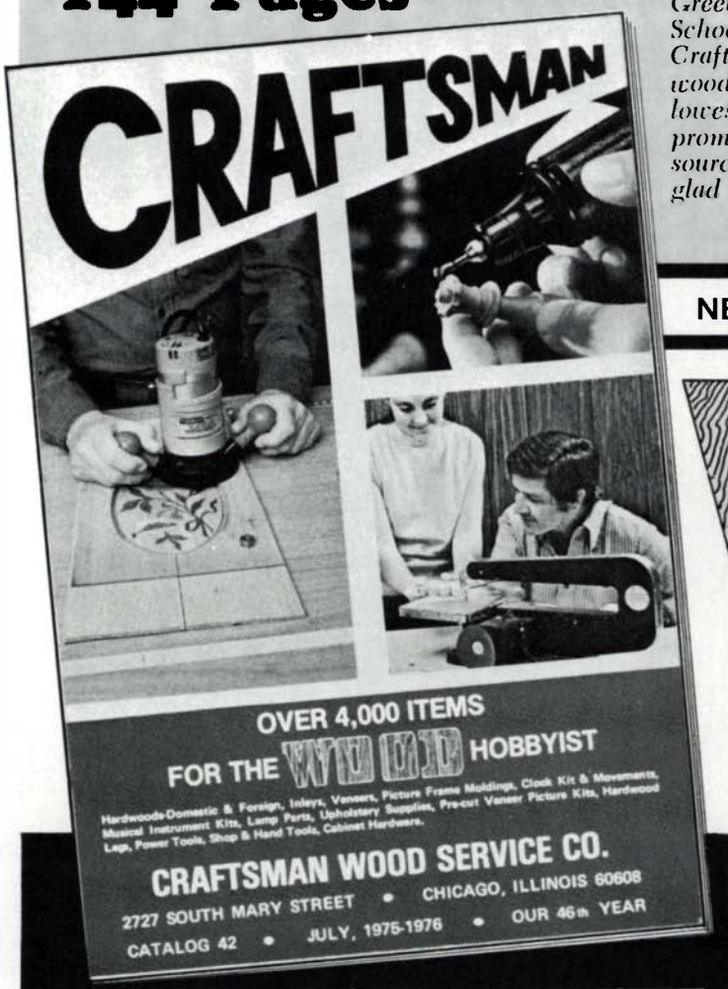
Editor's Note: Chemist Timberlake is of course right. And in answer to another reader's query on how to French polish in tight corners, our expert, Anthony Arlotta, says he uses a modified pad made of clean but well-worn cotton waste (to get rid of the lint) without a covering of cloth. This gives him a pad that gets into hard-to-get-at places. For places impossible to reach, such as deep recesses in carvings, Arlotta uses French *varnish* (a misnomer as it's actually a shellac product) applied with a camel's hair brush. The varnish is available from H. Behlen and Bros., Box 698, Amsterdam, N.Y. 12010.

I began making checkered bowls in my hobby shop several years ago. However, I didn't get my feet off the ground until I combined the information I found in two books. One is the Rockwell Company's *Getting the Most out of Your Radial Arm Saw.* The other: F. Pain's *The Practical Woodworker.* This book is sold by the Woodcraft Company of Woburn, MA. Mr. Pain's book is full of practical advice and has helped me turn out some good work.

William E. Quinn, North Fond du Lac, Wisc.

. . . . I have a question on a problem that has been troubling me for some time — it concerns wood fillers. Often it is necessary to use wood fillers to cover nail holes and/or poor joints, especially in old pieces, that are to be stained. I have not been successful in locating a filler that will allow the covered filled holes and joints to blend in well with the rest of the stained wood surface. In most cases a very dark or light

144 Pages



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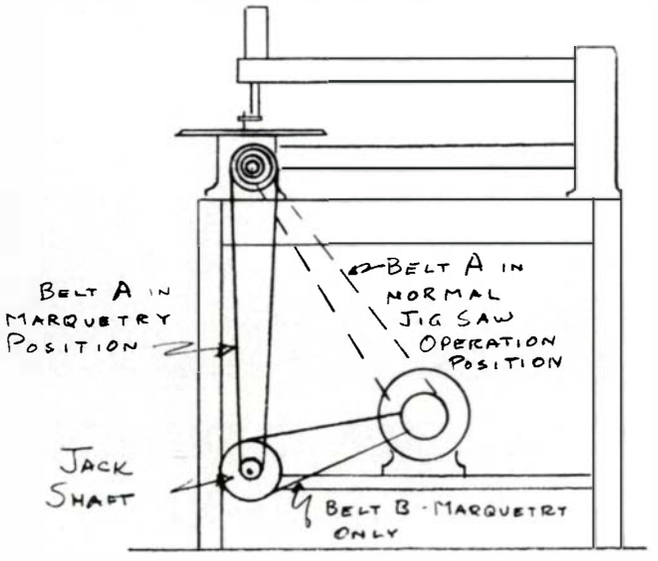
spot will result. Some fillers will leave a stain wherever they came in contact with the wood, even after sanding. The typical wall paneling installations are good examples.

I'm not interested in matching the color of the filler with the intended stain color to be used. Often the intended is not what "she" wanted and a change must be made. What I ask for is a filler that can take stain treatment with the same result as the rest of the wood — woods such as pine, fir, cypress, etc. are of immediate interest.

Alfred L. Babula, Pound Ridge, N.Y.

Editor's Note: As far as we know, there is no filler that takes stain the same as wood. Try staining the filler, either by mixing stain with it before filling, or by putting stain on just the filled surface before staining the whole piece. If that doesn't do it, then you must go the touch-up route.

On marquetry work I use my "old," circa 1936, Delta power jigsaw. To give better control and conserve on both jeweler's blades and nerves I installed a jack shaft that can be "cut in" for this type of work. It reduces the strokes to



approximately 290 per minute which seems to be slow enough for good control using the double bevel-cut method. It is simple to make, uses the normal belt plus one more for marquetry, is out of the way and inexpensive.

George H. Rathnell, Los Osos, Calif.

. . . . The article on planes is very good and very interesting. I would like to see an article on making threading tools for wood. I have searched for a long time for information on how to make the threading tools. One can find the tools at several historical places, but they will not let one see how the tools are made, and the people at these places can not answer the questions one needs in order to draft a plan for these tools.

If you can supply any one place or places I could write to or could get plans for threading tools I'd like to know.

Paul W. Glotfelter, Bellbrook, Ohio

"Hand Planes" by Timothy Ellsworth was a nice article and that can be redone any number of times with different emphasis. There is much to be said about the technique of use and a great deal about the many different planes of the past and present. I felt that Mr. Ellsworth failed to make an important point about the requirements of a plane. That point is that the iron must be supported snugly against the frog at a point very close to the heel of the bevel. Not to do so in any respect may cause the plane to chatter or to lack crispness in cutting. This was brought out very clearly to me one day by a Stanley concave-convex flexible base plane that had been damaged.

"Which Three" by Robert Sutter was interesting because the question is always interesting. I agree wholeheartedly with his first choice for a saw. The jointer and the sander cannot be really faulted either. My first choice for a machine tool under a different set of rules, however, would be a bench grinder. While one is turning that over in his mind, I think it may be well to state a point neglected by Mr. Sutter. A machine tool cannot be used unless it can be maintained. The popularity of the circular saw relative to the bandsaw is that the circular saw is a much more forgiving tool and can be much more easily maintained. An experienced mechanic can afford to choose the bandsaw first, but the beginner will have trouble without end.

The article by Mr. Tage Frid was interesting to me since I have watched the high school wood shops deteriorate over the years from hand woodworking shops to hobby variety shops for otherwise dropouts. His comment that some successful projects could be called accidents struck a responsive chord and I am no artist. I do think that one of the most serious obstacles for the would-be craftsman if he wants to produce any quantity is the matter of suitable wood at a reasonable price. I have come to believe that the wood business is a big sucker market. I judge this by seeing furniture and other items whose price is very little more than I would have to pay for the wood involved. The "designer craftsman" is going to have to buck this problem before he can get out his plane and sander. Part of the advantage of the factory is its leverage on materials brought on by scale of operation.

Virgil Matheson, Breckenridge, Minn.

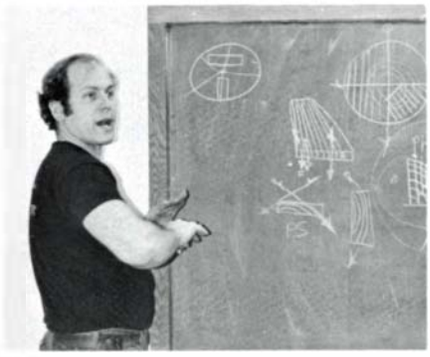
Please send me any information you may have concerning the construction of wizard boxes.

Jerry Irby, LaMadera, N.M.

Teaching Woodworking

Craftsman's shop becomes school after hours

by Thomas Dewey



"Building things out of wood is like learning long division . . . once you know the principles you can apply them anywhere," states John Hara as he describes the rationale behind the John Hara Woodworking Studio at 39 West 19th Street in New York City. By day, the studio is much like any other prosperous cabinetmaking shop, catering to the decorator/architect/designer trade. Six to nine full-time employees turn out furniture and cabinetry on a custom or limited-run basis.

But after the sun goes down, all that changes. Then the studio becomes a full-fledged school. "I like doing things for and with people," explains Hara, "and teaching woodworking is a rewarding way to live."

How well he has succeeded is shown by the quiet, purposeful enthusiasm that pervades the 10,000 square feet of loft that serves as office, lecture room and workshop of the studio. Students and teachers—Hara employs 27 men and women instructors—cross and recross the spacious shop floor moving from machine to machine, selecting wood from ceiling-high stacks of hardwoods, engaging in friendly kibitzing, helping each other set clamps or turn a piece, checking out a $150 router from the tool crib, and now and then taking a coffee break in the front office before a blazing fire in a Franklin stove fed by chips and scrap wood.

Hara's success is the result of 15 years of experience with wood. He has always been interested in woodworking; so much so that after pre-medical studies and graduate work he became a cabinetmaker and building contractor. When he opened his shop/school in 1971, he affiliated with a local college, but found that association too demanding economically. Now he operates as an independent corporation.

Hara readily admits that operating a studio is not completely original, and he is frank to point out some of the problems one may encounter in such a venture. One is money. Hara has a well-equipped shop — nine table saws (because he doesn't like to change set-ups during production runs), three radial arm saws, a 36-inch bandsaw, jointers, shapers and so on.

Although Hara's school is profitable, he doesn't believe it would be economically viable without the daytime production to justify this $100,000 outlay in equipment and supplies (he stocks about 40,000 board feet of hardwoods) and the $30,000 a year he pays just for rent, utilities, insurance and the like. And he doesn't believe it would be possible if it weren't located in a well-populated area where there is an abundance of people who want to learn to work with their hands.

What kind of person enrolls in Hara's studio? All kinds, but most are well-educated and usually possess an inner urge to do more with their lives than sell municipal bonds, perform oral surgery or review budgets. 35 to 40 percent are women. This type of student considers the $150 tuition and $20 shop fee for ten weeks (ten four-hour sessions of instruction) a worthwhile investment. Furthermore, since Hara doesn't penalize for missed time as long as it's made up within the ten weeks, the pressure is off harried commuters and busy housewives. A discount of 10 to 20 percent is allowed for tools and materials. Class size ranges from ten to twenty. There are five classes per "term" and six to seven terms per year.

The school is run in a straightforward manner. At the beginning of the course Hara lectures for two evenings. In these hours he covers wood and its selection — how it's cut, how to buy it, etc. The next phase deals with designing a project. After individual consultation each student is guided in drawing a blueprint of his project. From it an estimate is made of the cost of materials and time it will take to complete. This important step helps the student avoid unrealistic projects. Then the staff conducts demonstrations in the use of the basic shop tools, and the student is checked out on each tool. No student is permitted to operate any power tool unless he has been instructed in its proper use by Hara or one of his staff. (It should be pointed out that Hara emphasizes power tools; he has found that it takes too long for a novice to acquire the skills necessary to complete a project within ten weeks with hand tools.) At this point the student is launched on his project.

The quality of the finished product? From good to superb. And since Hara does not impose his preferences of style on the students' work (only his knowledge of what constitutes good woodworking), the projects run the gamut from colonial reproductions to good contemporary works. All work is done in hardwoods: cherry, walnut, mahogany, oak, ash, teak, cocobolo, Brazilian rosewood, padouk and others from the 27 species that Hara stocks in four thicknesses.

Of the close to 2,000 men and women who have completed the course (and many who have enrolled for additional sessions), quite a few have elected to leave their primary occupations to become cabinetmakers and teachers of woodworking. Hara's policy is to help those who want to start out on their own, including generous cooperative arrangements on the use of the studio's equipment. Thus, for some, the studio has become a turning point in their lives. John Hara can be justifiably proud of "doing things for and with people."

BOOKS

Creating Modern Furniture by Dona Z. Meilach. *Illustrated, 310 pages, Crown Publishers, Inc., 419 Park Avenue South, New York, NY 10016, 1975, $12.95 Hardcover, $6.95 Paperback.*

As a woodworker, I'm always looking for helpful books on woodworking and furniture design. Not just "how to" books — I've got a lot of the basic skills — but books that stimulate creativity. When I came across Dona Z. Meilach's new book, *Creating Modern Furniture,* I was ecstatic. This is one of the few books that deals with the modern movement in custom furniture design. (Ms. Meilach has written an excellent series of books surveying many craft areas. An earlier volume, *Contemporary Art with Wood,* was very interesting for the sculptor, but had only a small chapter devoted to wooden furniture.)

This book is packed full of photographs of modern furniture, mostly of wood. The big names — Esherick, Castle, Maloof, Espenet, Nakashima — are mentioned in a capsule history of the development of furniture. But this book is subtitled "Trends, Techniques, Appreciation" and concentrates on the derivatives and extensions of earlier work, and on the woodworkers it influenced and inspired. The variations are endless. There are people who sculpt whole trees and stumps into chairs and tables with chain saws and chisels, others who laminate structures from one- and two-inch lumber and then carve them, still others who steam bend wood, as well as those who use more traditional methods.

What I think is most important here is twofold. First, various trends in modern woodworking are discussed. We see how different craftsmen have approached and solved the problem of artistic functional design. We can compare the free-form work of Jack Rogers Hopkins with the more controlled pieces of Al Lockwood and the funky work of John Bauer. All laminate and carve tables and chairs, with startlingly different results. We can make similar comparisons in chapters devoted to cabinets, desks, doors and fantasy furniture.

Secondly, unusual and specialized techniques are illustrated with photographs. Robert Whitley, a more traditional craftsman, is well represented by his walnut armchair, rocking chair and trestle table. Steam-bending techniques for large pieces are also illustrated, as is the work of Stephen Hogbin, who does massive turnings with diameters up to seven feet on his homebuilt lathe. The turnings are then the starting point for chairs and other objects. Jocko Johnson's homemade hydraulic press for gluing stacked laminations is also shown.

I must warn the reader that this is not a scientific, step-by-step exposition. There are chapters that deal with tools, materials, joinery, gluing and finishing; but these merely skim the surface. These subjects are better covered elsewhere. This book is much more freewheeling. We can learn appreciation from it the way we learn from a museum, by seeing many examples and their variations. Perhaps the only flaw is that while we see the results of the craftspeople's creativity and some of the techniques, we never really get at the sources of that creativity. The craftspeople don't speak for themselves, except through their work. Perhaps that's eloquent enough.

—Irving Fischman

Marine Carving Handbook by Jay S. Hanna. *Illustrated, 92 pp., International Marine Publishing Company, 21 Elm Street, Camden, ME 04843, 1975, $6.95 hardcover.*

Feeling very uneasy, I picked my way around the dimly lit shed, scraping boards with a pocketknife and tried to determine color, figure, hardness, etc. The wood was cheap enough, about eight cents per pound, but I had little money and wanted some assurance that what I took home would be worthwhile carving stock. The uneasy feeling persisted until a few weeks later when this dusty, dirty, unsavory wood was milled. Then I saw the wisdom of my purchases, as the rare wood was dressed to expose beautiful colors, figures and aromas that I had never experienced before.

This incident of buying wood at an International Wood Collectors Society meeting nearly ten years ago came to mind when I finished reading Mr. Hanna's book. His *Marine Carving Handbook* is like that rough-sawn lumber: unpolished, but of unmistakable

good quality.

This book is not for everyone who wants to do woodcarving. It is, as the author says, for those who want to try carving decorations in a traditional marine design. Written as a shop class text, Mr. Hanna begins by talking about carving a traditional bow or quarter nameboard. He guides the reader through sternboards, banner/ribbon ends, figures in relief, roped edges, billetheads, trailboards, eagles and dolphins. New information on design, tools and technique is added with each project.

Although written as a series of projects, the *Marine Carving Handbook* is not a handbook that you can pick up, read one project discussion and carve the subject. The book must be read from beginning to end; then the reader can use it as a guide to executing one of the projects. This really is no problem, because the book is small and uncomplicated in structure. (Slow reader that I am, I read the book in one day — at several sittings.)

Mr. Hanna is a woodcarver, not a writer, and he need not apologize for that. His book is written as if he were talking to a visitor to his shop — not as a teacher giving a lecture. This is both the strength and the weakness of the book: the strength because the book is in familiar, down-to-earth language and easy to read; the weakness because it never delves deeply into any subject.

The illustrations in the book are excellent. Sketches have a crosshatched background to facilitate reproduction in your choice of scale. The photographs show step-by-step progress of the projects described in the text.

Mr. Hanna has produced a small, readable book that will instruct and inspire the novice in traditional marine woodcarving.

—Robert L. Buyer

The Complete Book of Making Miniatures for Room Settings and Dollhouses by Thelma R. Newman and Virginia Merrill. *Illustrated, 288 pp., Crown Publishers, Inc., 419 Park Avenue South, New York, NY 10016, 1975, $12.95 Hardcover, $6.95 Paperback.*

The basic American philosophy for the past century has probably been "big is better." Big industry has been organized, big buildings have been constructed, sports have become big-league and the big car was, until recently, an object of veneration. There are many craftsmen who will disagree with this.

"Smallness has charm." This is the opening sentence of this new book which could be easily overlooked by serious woodworkers because of its title. The mention of dollhouse furniture may bring to mind cheap little playthings. But "miniature furniture" is the password into a fantastic world of the very finest craftsmanship.

While *The Complete Book . . .* deals with many types of miniatures, this section "How to Make Miniature Furniture" fills a major portion of text and pictures. Numerous photographs show many furniture styles with work of incredible detail and superb workmanship. My only criticism is that they were not taken with ordinary objects alongside to show the scale. Without such comparisons they seem like full-sized furniture.

The authors discuss the selection of tools and materials with the knowledge of experience. The use of jigs and power tools is advocated. Veneering, turning and carving on this miniature scale are described in good detail and are well illustrated.

Several projects are followed through in step-by-step detail with photographs. One is an exquisite eight-inch high French Provincial armoire with bas-relief carvings. Another is a Queen Anne tilt-top table with dovetailed cabriole legs that stands 2-1/16 inches high.

This book should not be considered a book of plans, but a book of ideas. Some woodworkers will be inspired to follow this path. It has been trod in the past by such masters as Robert Adam, Chippendale and Sheraton. Not everyone will go this route, but those that do will agree that "smallness has charm."

—Lionel Kay

CLASSIFIED

AUTHORS

Thomas Dewey ("Teaching Woodworking") is a former editor now doing custom cabinetry full time . . . **Reivan Zeleznik** ("Marquetry Today") runs a physical therapy program by day and practices marquetry by night . . . **John Kelsey** ("Split Turnings") is a former newspaperman now studying at the Rochester Institute of Technology . . . **Allan Woodle** ("Eagle Carvings") is a near-compulsive carver when he's not running a manufacturing business . . . **Alphonse Mattia** ("Hand Dovetails") is a designer-craftsman teaching furniture design and woodworking at Virginia Commonwealth University . . . **Alastair Stair** ("Mechanical Desks") is a leading New York and London antique dealer who's always on the lookout for clever devices . . . **Tage Frid** ("Textbook Mistakes") is a designer-craftsman taught in the Old World tradition and is Professor of Industrial Design at the Rhode Island School of Design . . . **Robert Sutter** ("Antique Tools") is a rational cabinetmaker until he hears of some unique antique tools up for grabs. Then watch out . . . **Edward Livingston** ("Spiral Steps") is an Oregon architect who likes to give himself new challenges with unusual woodworking projects . . . **Carol Bohdan** and **Todd Volpe** ("Gustav Stickley") are a young New York couple hoping to specialize in turn-of-the-century antiques . . . **Jere Osgood** ("Oil/Varnish Mix") is a designer-craftsman teaching at Boston University's new Program in Artisanry . . . **Brian Considine** ("Shaker Lap Desk") is a Vermont cabinetmaker specializing in Shaker and early American country furniture . . . **Robert Whitley** ("Chair Woods") is a Pennsylvania designer-craftsman who also does restorations and reproductions of earlier furniture . . . **Christopher Murray** ("Back to School") is currently studying at Virginia Commonwealth University . . . **Bruce Hoadley** ("Micro-Bevels") is a wood carver who teaches wood science and technology at the University of Massachusetts.

Art Credits: 20-23, John Kelsey; 27, Allan Woodle; 28-31, 37-41, 43, William Zalkind; 35, Stanley Tkaczuk; 49, Debbie Kiernan; 53, Bruce Hoadley.

Picture Credits: 10, Thomas Dewey; 20-23, John Kelsey; 24, 26, 27, Allan Woodle; 25, Mystic Seaport; 27, Essex Institute; 34, 36, Helga Photo Studio; 34, J. J. Wolff, Antiques; 48, Hathorn/Olson; 50, Robert Whitley; 53, Bruce Hoadley.

TO DIG DEEPER

Those wishing more information on Gustav Stickley and mechanical desks may find the following books helpful.

There are two good sources on Gustav Stickley: One is a book, *The Forgotten Rebel,* by J.C. Freeman which is published by Century House, Watkins Glen, NY 14891, and is available only by direct mail from the publisher at $15.00.

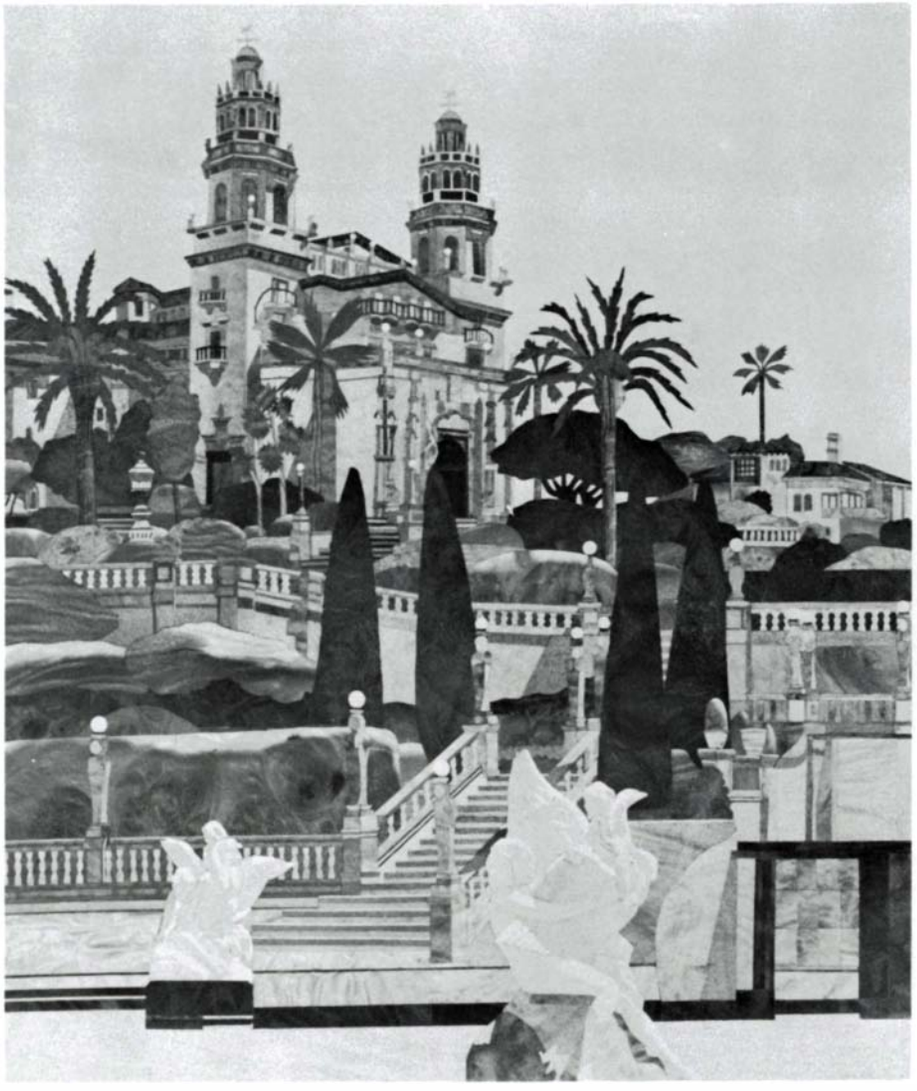
The Arts and Crafts Movement in America edited by Robert Judson Clark is a 190-page catalog of a 1972 show at the Princeton Art Museum. It is available for $8.95 from the Princeton University Press, Princeton, NJ 08540.

The reprinting of a 1909 publication, *Mission Furniture: How to Make It,* by H.H. Windsor will be available in April from Peregrine Smith, Inc., PO Box 667, Layton, Utah 84041, 100 pages, $4.95. It includes pictures and plans of 40 of the best pieces originally presented in the *Popular Mechanics Handbook* series.

English Furniture from Gothic to Sheraton by Herbert Cescinsky is a general guide to English furniture of the 17th and 18th century. It has been reprinted in paperback by Dover Publications, Inc., 180 Varick Street, New York, NY, $7.95, 406 pages.

The Shorter Dictionary of English Furniture by Ralph Edwards is the best available guide to English furniture of the 17th, 18th and early 19th centuries. The 684-page book is carried by only a few English bookstores but is available from the Hamlyn Publishing Group Company, Astronaut House, Hounslow Road, Feltham, Middlesex, TW14 9AR, England.

Facsimile reproductions from the design books of several cabinetmakers of the 18th and 19th century, including Sheraton's *Drawing Book,* are contained in an old Scribner publication, *English Furniture, Decoration, Woodwork and Allied Arts,* by Thomas A. Strange. Although long out of print, it can usually be found in larger libraries.



The intricate art of marquetry is as diverse as the craftsmen who practice it. Charles E. McElrea worked with only an X-acto knife, cutting and inlaying one piece at a time, to create "San Simeon" (left). He used myrtle burl, holly, hare wood and poplar to achieve the different colors and textures for this depiction of the architecture and landscape of one of California's major tourist attractions. The picture is 20 x 24 inches. The Moliere clock (opposite) by Charles Darg is a functional timepiece. Mahogany inlay gives this work a fascinating lustre when viewed from different angles. Howard W. Fox, who crafted "The Mushrooms" (10 x 13 inches, opposite) often executes themes from nature. In this and his other marquetry, Fox says, "I always use a piece of poison ivy — sort of a trademark." (These and the following works were among many exhibited by the Marquetry Society of America at the Metropolitan Museum of Art in New York late last year.)

Marquetry Today

Some thoughts on the state of the art

by Reivan Zeleznik

A quiet but vigorously intensive rediscovery of the medieval art form of marquetry has been taking place with increasing momentum. Helped by the availability of veneers of consistent quality and variety, leisure time, the challenge of working in a "new" art form, a small monetary outlay, the encouragement of professional woodcraftsmen and the cross-fertilization from other fields and occupations, marquetry now has hundreds of practitioners who have formally identified themselves with this resurgence.

Unlike Renaissance artisans who laboriously prepared their own woods, the modern marquetarian has at his disposal hundreds of combinations of species and specialties. A uniformity of thickness made possible by modern lumbering technology and the availability of supplies from worldwide sources have provided the artisan with a diversity of color, grain and figure with which he can express the subtleties of his craft. Veneers are presently available in common and exotic species. Some woods are more easily adapted to the production of veneer crotches, burls, and other distinct figures than to the lumbering of solid stock because of tree size and scarcity of particular sections.

There is comparatively little information available to describe the methods used by artisans and craftsmen of the Middle Ages. The modern marquetarian, therefore, has

attempted to approach the art from the perspective of his own knowledge and experience, building upon and sharing these experiences with others. The availability of cutting tools (saws and knives), core material (plywood, chip core and solid stock), bonding agents (glues and cements) and finishing materials (varnishes, shellac, dyes, resins and waxes) has also increased our modern range of resources for distinctive and diverse expression.

In addition, many vocations have lent an added dimension to the art. From photography comes an awareness of composition and broad ranges of subject matter. Medicine has made available the disposable scalpel for those using the knife technique. Tool and die-makers consistently fascinate me with jigs and tools they have custom fabricated to solve particular problems encountered in their marquetry. Many dental instruments have been adapted to marquetry. The list goes on.

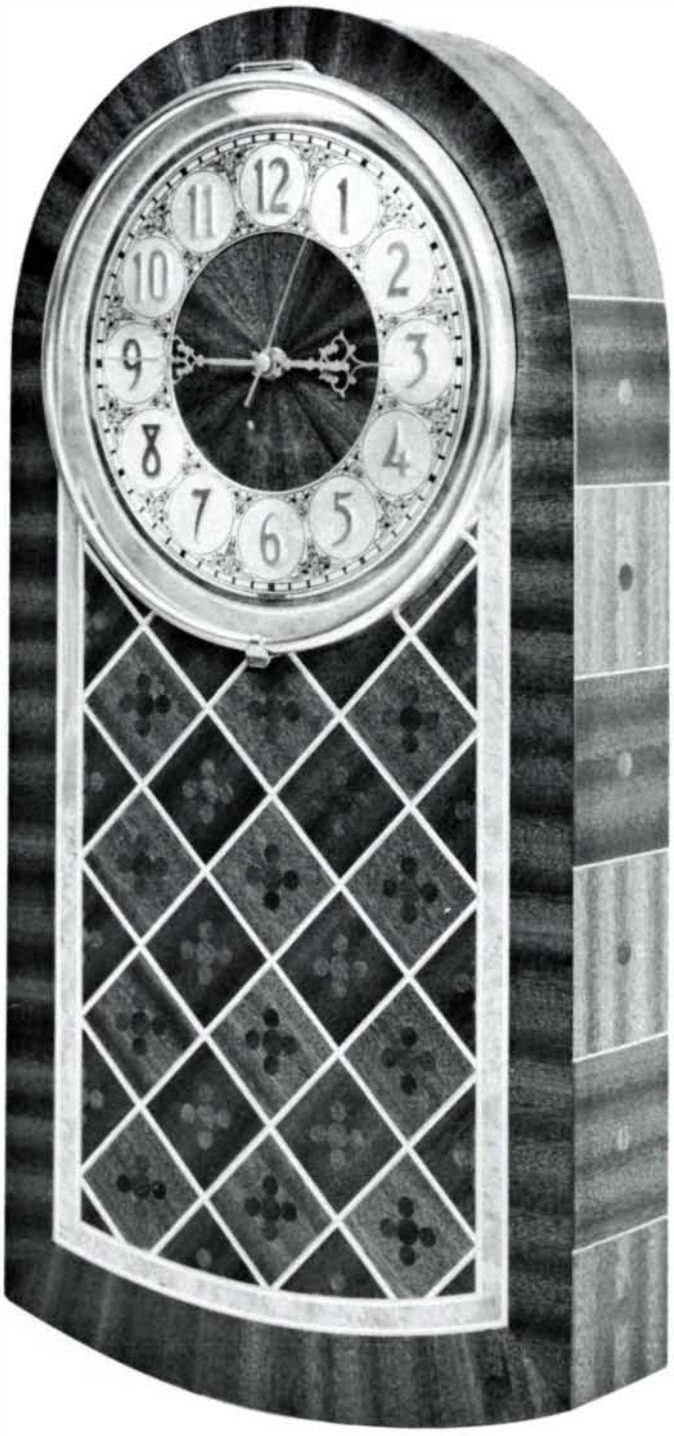
A retired artist who specialized in creating delicate floral stitchery patterns for fine linen and damask has adapted her talents to wood. The chemical industry has developed dyes which are now used for woods. One professional forester, Howard Fox, even injects dyes into living trees and after a number of years, lumbers them and slices his own veneers. He relies upon the trees' own transport system to spread and diffuse the dye. The result is an extremely attractive stained wood characterized by a lack of uniformity of color density.

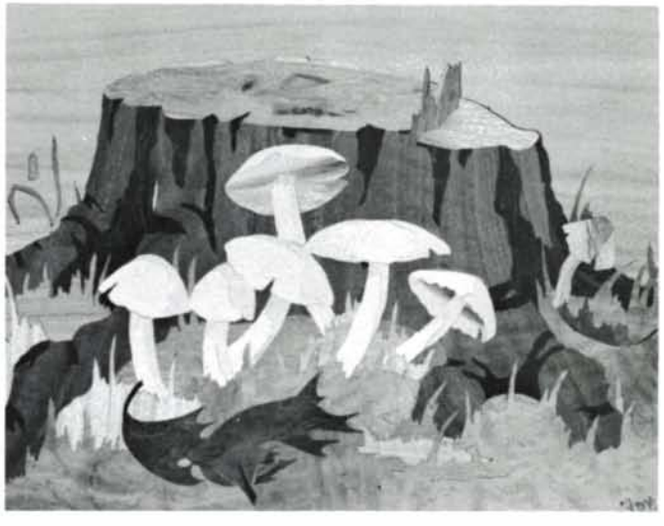
The finished piece — a table, picture or jewelry box — represents the culmination of many laborious hours. From the conception of the idea through the design phases which adapt the strengths and beauty of the woods, to the execution which tests the technical skill of the artist, the finished product represents the love of the marquetarian for his chosen medium.

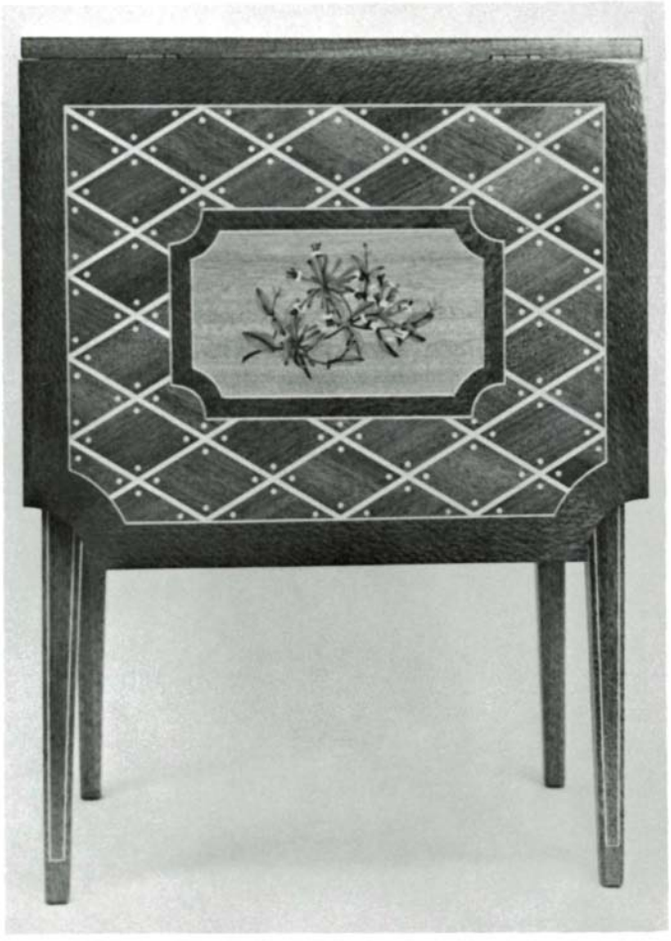
The recent exhibition at the Metropolitan Museum of Art in New York gathered a diverse and distinctive group of pieces which deserve mention, if only to describe the ranges of style, technique, subject and application.

The realism of McElrea's "San Simeon" was captured by the discriminating use of woods for the statuary, sky and architecture. Realism was balanced by Kay's "Abstract" which won the "Best in Show" award and by Parker's impressionistic "Shadows" for which he won the award "Marquetarian of the Year." Here the use of color and figure allowed few pieces to tell the story. Grain and woods were carefully chosen and were presented so effectively that to alter the choice of a single piece would have changed the mood and meaning of the work.

Highly complex pieces were equally diverse in their range

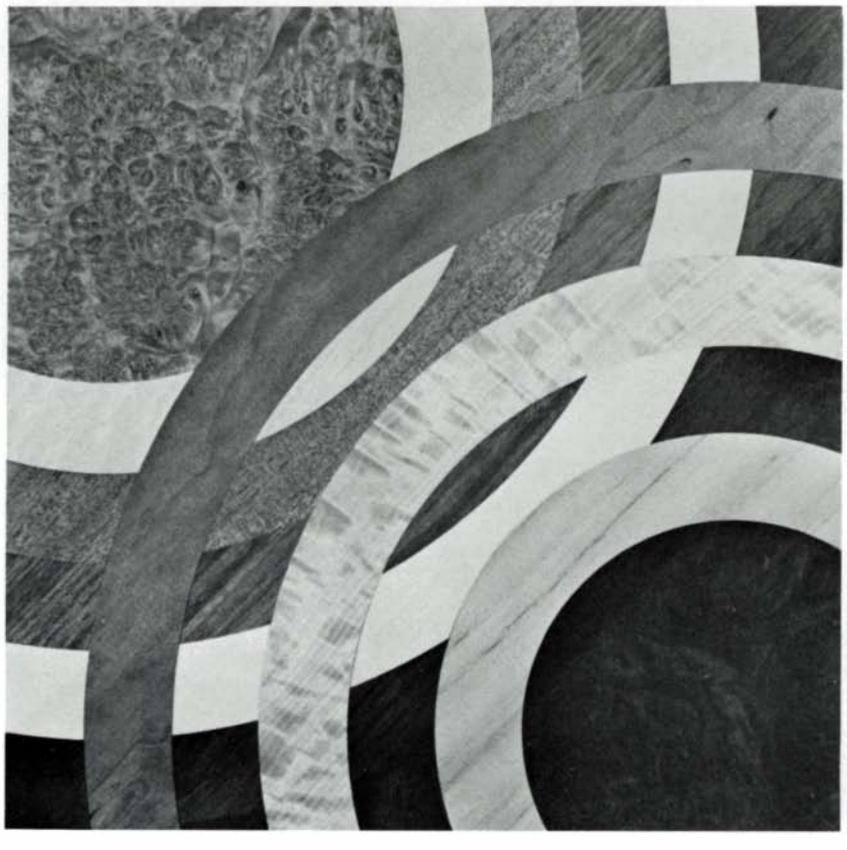




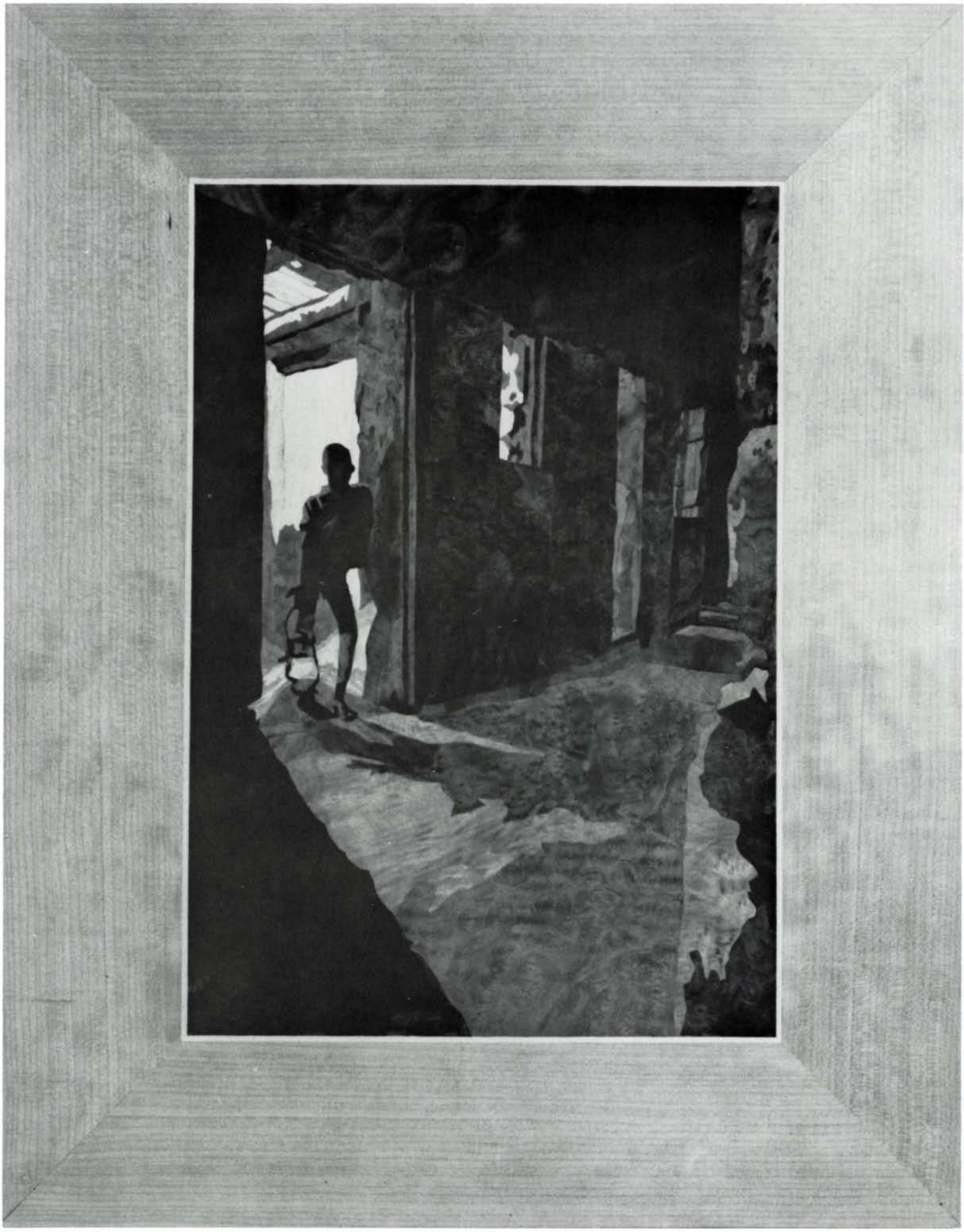


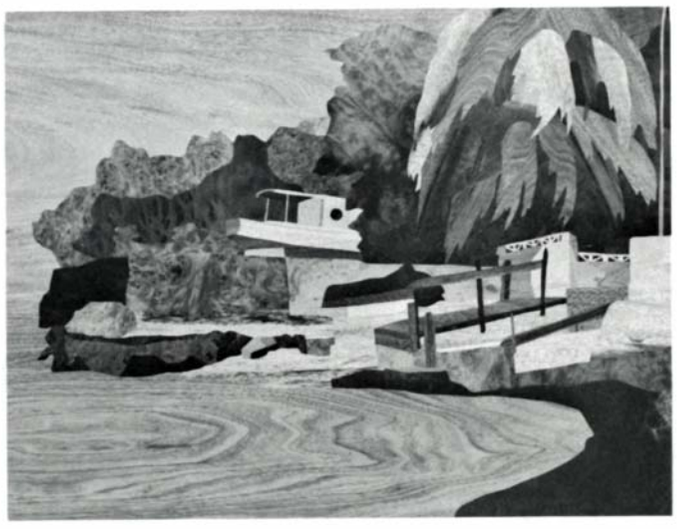
of subject treatment. For example, Morton's "The Three Months" was a skillful execution of applied marquetry that relied heavily on contrast and vibrancy of geometric design to create an exciting piece.

Op-art, dyed veneers, secular and religious paintings, whimsical adaptions of Norman Rockwell-style paintings, fragmentation and varied cutting and finishing techniques all characterized this display, demonstrating that marquetry is now in a period of dynamic rediscovery.

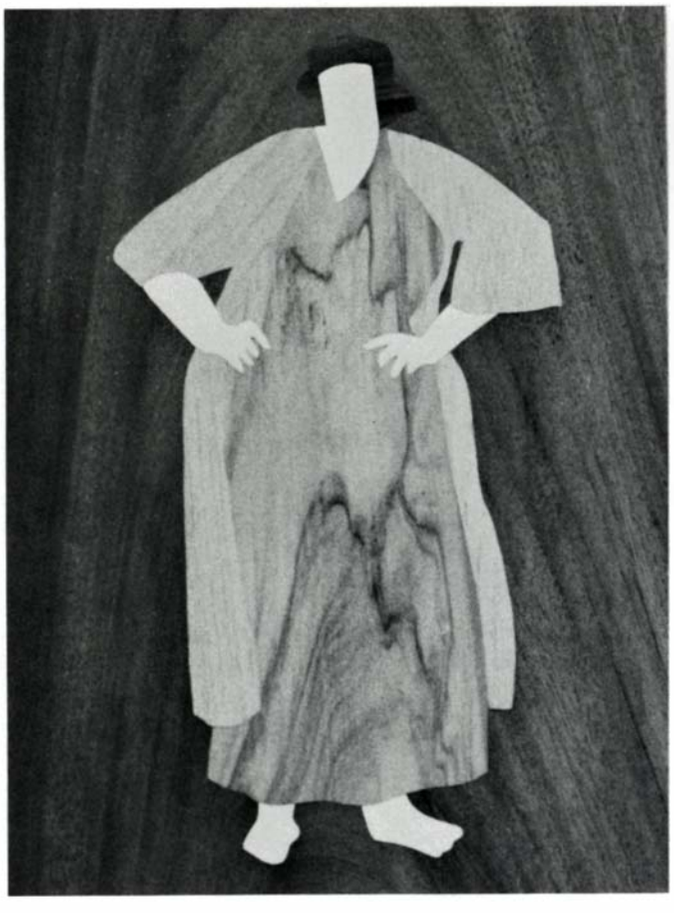


"Khufu" (above left) by Jim Martin is a large (2 by 3-foot) impressionistic piece which will, in the craftsman's own words, "let people's imagination roam where it will instead of being locked in by any explanation that tells them what they should see." Malcolm Morton designed his 21-inch high table "The Three Months" to compliment his Louis XV furniture. The floral pattern is symbolic. Straight cutting (parquetry) was done with a taper-ground veneer blade on the table saw, marquetry cutting with a 4/0 blade on the power jig saw. The jewelry box (left) by William E. Brewerton incorporates Victorian designs and unusual woods such as koa, Brazilian rosewood, padauk and satinwood. The box stands about ten inches high. "Saint Agnes" by James Belmonte (7 x 10, left) has veneer cut into tiny bits to create a mosaic effect. Fred Hecht's "At the Easel" (20 x 25, right) attempts to reproduce the texture of cloth with walnut and maple. "Day's End" (9 x 5, middle right) by Harry E. Britton is a "wild west" adaptation of an English scene. Using only four woods, Britton evokes the intimacy and fatigue of man and horse as they trudge home after a long day on the range. Lionel Kay's 15-inch-square "Abstract" (right) was inspired by the work of the artist Frank Stella.



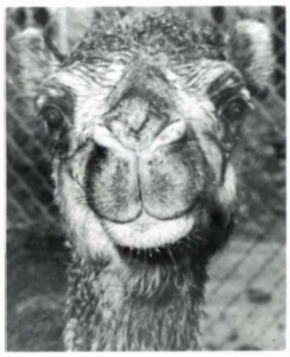


Opposite: "Shadows" by Albert C. Parker. The craftsman tried to express shadows and the way they distort forms using as few woods as possible. 90 percent of this 13 x 18-inch piece is done in madrona burl and walnut burl. The simple, bold design of "Milton Avery's Woman" (11 x 17, below) by Sara Sunshine imitates the texture of cloth. Philip Fine's "Japanese Actor" (13 x 28, right) is based on an 18th-century Japanese print. Fine tried to capture the man's expression as well as the bulky appearance of his robe which is done in New Guinea wood because of its tonal quality. Lincoln B. Osborne's "Peace" (11 x 16, above) uses holly for the dove and avondire for the earth's oceans. Karl B. Zimmer's waterfront scene is above right.



Split Turnings

Using green logs to turn a camel



by John Kelsey

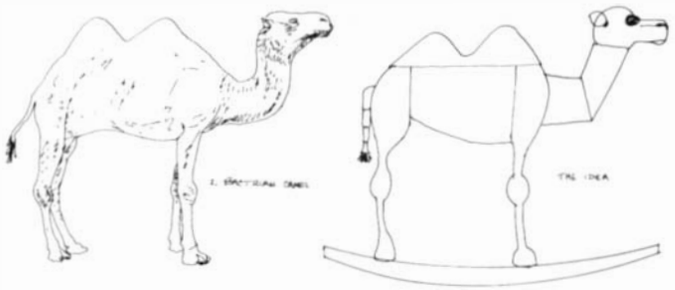
Although it is one of the oldest machines used by man, the lathe is fixed in our minds as a device for making bowls and cylinders. But it is also a multi-purpose machine for making parts of infinite variety — a general-purpose tool whose product is a means to an end rather than an end in itself. If one can visualize a cross-section, one can generate that form in three dimensions by turning. And then one can cut the turning anywhere at all to get an entirely new shape.

Here I will describe the turning of a rocking camel large enough for several children or adults to ride. This project requires a good-sized lathe, a bandsaw or a chainsaw, and hand tools. The materials were a station-wagon load of walnut branches scavenged from an abandoned farm where veneer cutters had removed the boles, one four-foot by five-foot sheet of ¾-inch solid birch plywood and some ¾-inch dowels. The beast was turned from the walnut; the plywood and dowels hold it together.

These methods could be used to make herds of camels or a menagerie of cows, horses, ostriches and giraffes. Indeed, any animal seems possible. But the point is to illustrate an approach to the lathe, using it to turn sculptural parts between spindles. The byproduct is a large toy to delight little children that doesn't cost much money.

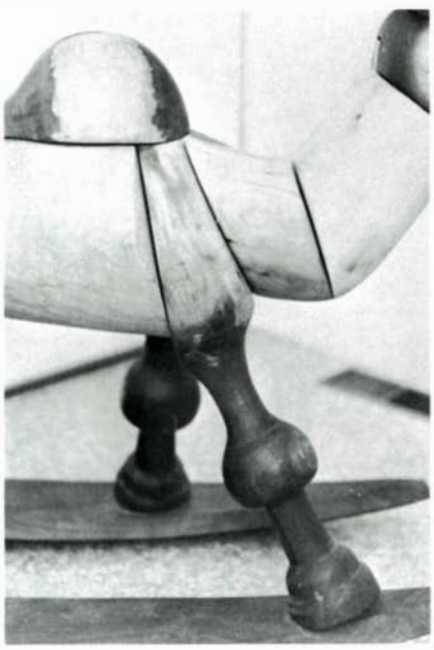
I think camels are my favorite animal but I chose one here because my daughter had asked for a two-seater rocking horse. I had access to a large file of photographs of camels in various poses at the local newspaper library. A superb source of animal anatomy is the book *How to Draw Animals* by Jack Hamm (Grosset and Dunlap, New York, 1969, paper, $3.95).

From the photos I blocked out the forms that would be



needed. Including the rockers and such details as eyes, ears, tail, the entire camel consists of just ten turned forms; eight or nine could have done it. So much anatomy from so few turnings meant most of them would be cut into two or more parts. This also provides the key to preventing green logs from checking and a way of holding the parts together: fox-wedged dowels pass through a plywood keel or centerboard running from head to tail and dividing the animal in half.

When a log dries it shrinks. Most of the shrinkage is at right angles to the annual rings, or radial, and around the rings, or



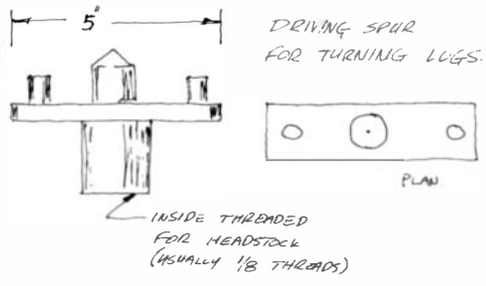
tangential. It checks because the circumference is three times as large as the radius — as the rings of wood shrink, they try to squeeze the log smaller and can't. The stresses are relieved by wedge-shaped cracks radiating from the irreducible kernel that is the center of the annual rings. Splitting a log in half before it shrinks allows the stress to be distributed — the cut diameter merely cups as the circumference contracts, and the pieces generally remain intact.

When a tree is felled the exposed end grain dries very quickly and the logs check at the ends. But it takes years for drying to proceed far into a log, and slicing off the end exposes wet, intact material. When such a log is brought into a heated shop and turned, however, the protection of the bark is lost and a large proportion of end grain is exposed. It will check seriously overnight. To avoid trouble, a log should be completely worked in a single day. If it must be left overnight, wrap it in plastic with its own moist shavings, or bury it under a heap of shavings to keep it wet.

Before mangling any camel walnut, I turned a sketchy model at ¼ scale to be sure my conception was reasonable. I worked with photographs near the lathe in an attempt to capture the flavor of flesh in the solid wood. It seems neither reasonable nor desirable to try for realism, and few dimensions will be given here—it is cut-and-try to the scale of the maker's own body.

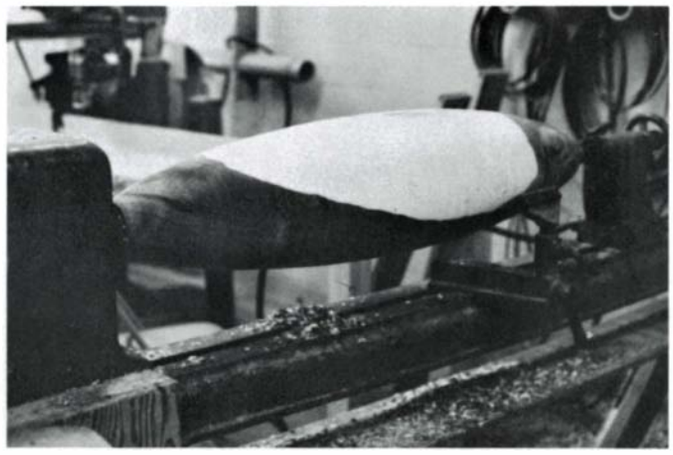
My largest walnut branch, for the camel's belly and rockers, was 14 inches in diameter including bark, and five feet long. It had a dog-leg crook. I wanted rockers between three and four feet long, so I cut off a chunk to use later for humps and grunted the rest up onto sawhorses. Green walnut weighs about 60 pounds per cubic foot. I use a large, logger's crosscut saw to buck the logs; a chainsaw would have done better and could also replace the bandsaw throughout the job.

I removed the bark with a hatchet and gauged the center by eye, taking into account the crook and aiming to get the largest possible cylinder at the midpoint. Fearing that such a great, uneven mass would not clear the ways of the lathe—a Crescent with a 7½-inch swing radius—and also afraid the log would break free and crush me, I began working it toward round with a power plane and an axe. A conventional center spur quickly tears itself a flat-bottomed hole in soft green stuff, so I use a three-pronged gadget with the usual cup or



free-spinning tail center. One could also use a faceplate with large screws, but only if the end of the log is cut truly square to the axis of rotation.

I had never turned such a large log before, so I stood well clear when I switched on the machine. The entire lathe bucked and vibrated, but in a steady, rhythmic manner. The log showed no sign of breaking loose. The machine was bolted to the concrete floor, but it was loose on the bolts and this was just as well. If the bolts had been tight, the vibration surely would have cracked its castings. It is futile to try to



Turned log before it's cut to make belly and rockers

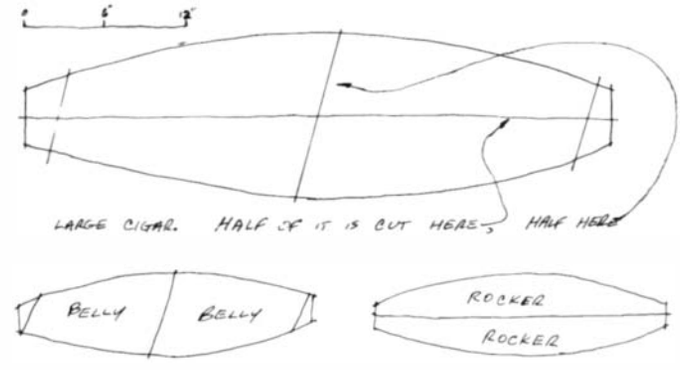
damp this kind of vibration unless one has an enormous lathe such as metal spinners use. Instead, I use a handrest mounted on the lathe ways, not a floor stand, so the hand and tool vibrate in phase with the lathe and log. Obviously, if the tool post fouls the log, one must resort to the floor stand. As soon as the log is cylindrical the vibration mostly ceases, unless the heart and sapwood vary greatly in density and are unevenly distributed through the mass.

Green wood is lovely to turn. I use a one-inch gouge and a large skew, at low speed. The walnut cuts cleanly and quickly —great curly shavings. Fresh surfaces are greenish-brown and turn dark after a few hours' exposure to light and air.

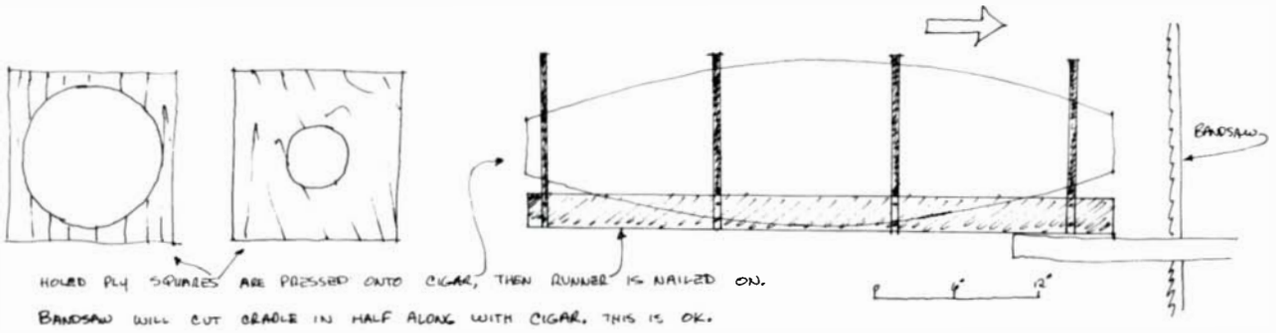
This log was turned to a cigar shape, finishing about twelve inches in diameter at the center and three inches at the ends, and 42 inches long plus an allowance for cutting away the holes left by the lathe centers. The silhouette of this cigar determines the rock of the animal — long and smooth or tight and quick. Any flats left from sloppy turning will be felt as bumps in the ride.

A thin, springy slat can be used as an approximate guide to curvature. I usually sand green turnings to 50-grit, pause for coffee to allow the outer layer of wood to dry a little, and sand to 120 or 150.

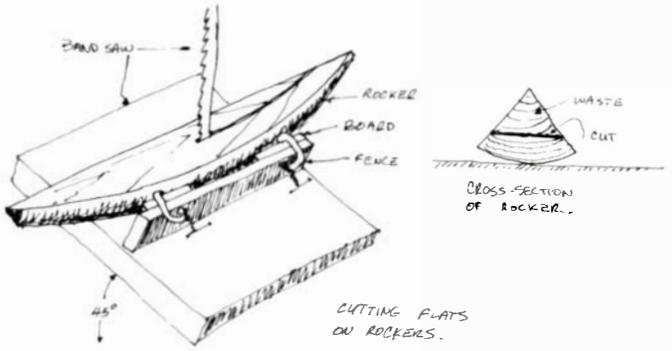
The diagram shows how this cigar was cut into four pieces:



two long quarters for the rockers and two crosswise quarters for the belly. The handrest can be used as a pencil guide to lay out the lengthwise cuts before the log comes off the lathe, bearing in mind where the irregular swirl of the yellow sap and brown heartwood will appear in the end. Then I used four plywood squares with circular holes to make a cradle to guide the torpedo slowly through the bandsaw.



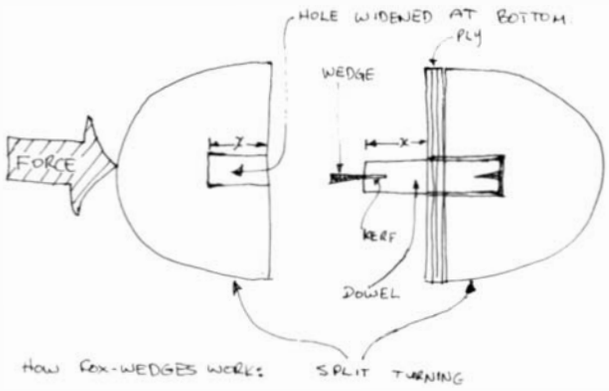
The long quarters that form the rockers could be left V-shaped at the top, and the animal's legs mortised to fit. I chose to cut them flat by tilting the bandsaw table to 45 degrees and clamping two small boards to the fence ahead of and behind the blade. This formed a guide trough against



which the curve could run, passing the blade at uniform thickness. (One could make curved staves from turnings for large barrel shapes this way.)

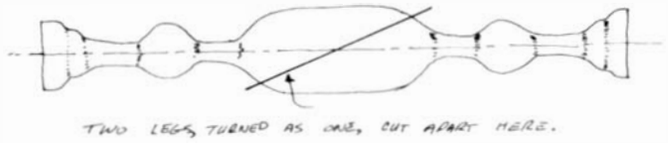
The short quarters that form the belly were bandsawed crosswise, about 15 degrees from square. This angle determines the stride of the camel. The tail ends of these pieces were sawed at a similar angle, so the two sawed faces were approximately parallel, and a flat was planed on top where the humps would go. Most of these faces won't show on the finished beast and needn't be planed smooth. Or else the surfaces can be run over a jointer.

Before making the legs, I bandsawed the plywood to the rough shape of the camel, making sure it was oversize in every dimension, and traced the outline of the belly onto it. Then I drilled three holes for dowels and used the plywood as a template to drill matching holes two inches deep into each half of the belly. The easiest way is to clamp the walnut to the ply and drill through. Later the bottom of each hole would be widened in the direction of the grain for the fox wedges that

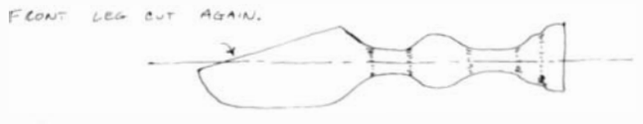


lock the construction together. But for now I used two of the holes to loosely pin the camel's body to the board.

A walnut branch seven inches in diameter and four feet long made a pair of camel legs, joined together at the shoulder. After roughing to a cylinder, I marked a section about a foot long at the center and worked down to a knee and foot at each end, as in the drawing. Then the legs were



cut apart on the diagonal. This flat face butts against the centerboard. To make a clean joint with the belly, and also to loosen up the camel's canter, the front shoulders were cut again on the diagonal to make a second flat face at right



angles to the first. The belly is narrow enough at the back to require no second cut on the rear shoulder.

The legs were pinned to each other through the centerboard, just like the body. But because they walk, one dowel

Camel is assembled as split turnings are attached to "back bone" of solid birch plywood using dowels and fox wedges.

from each must go into the opposite belly piece and this strengthens the construction. Although they weren't split in half, the legs haven't checked. I believe this is partly because they aren't very thick and partly because the center of the rings isn't the center of the turnings. Branches grow that way, with more wood on the bottom of a curve than on the top. Thus the center of the annual rings passes through the bulbous foot, knee and shoulder, but is cut away elsewhere. Constructions like this could also be turned with large tenons to fit holes ("circular mortises") like kitchen chairs.

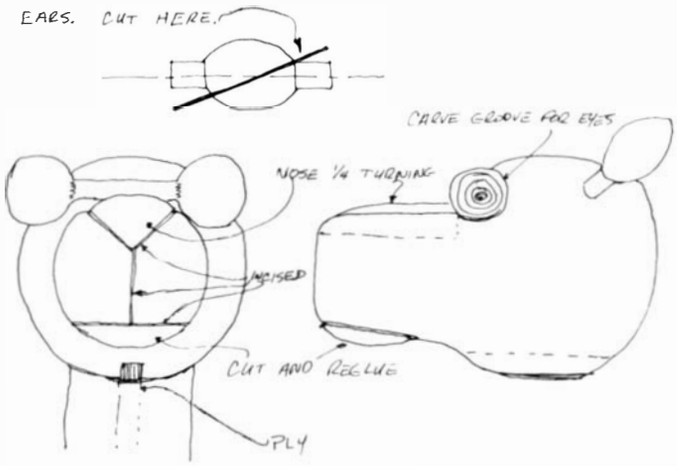
I blocked the camel upright on two sawhorses until the rockers, held level in pieces of the cradle that had guided the large cigar through the bandsaw, could be slipped under the feet. Then, using a small block in the same way that one levels table legs, I marked a base line on each foot and cut them.

A single tapered cylinder made the neck, split in half lengthwise and pieced together to match on each side and form a bend. Dowels hold it together, as usual.

With this much made and loosely assembled, I traced around the walnut and bandsawed the plywood to size — leaving two inches sticking up from the neck to tenon the head on. A little chopping with an in-cannel gouge widened the holes for the wedged dowels. Large clamps forced the beast together. Then I turned the camel over, clamped the rockers into position, drilled through into the feet, countersunk for the heads, and drove six-inch lag screws home.

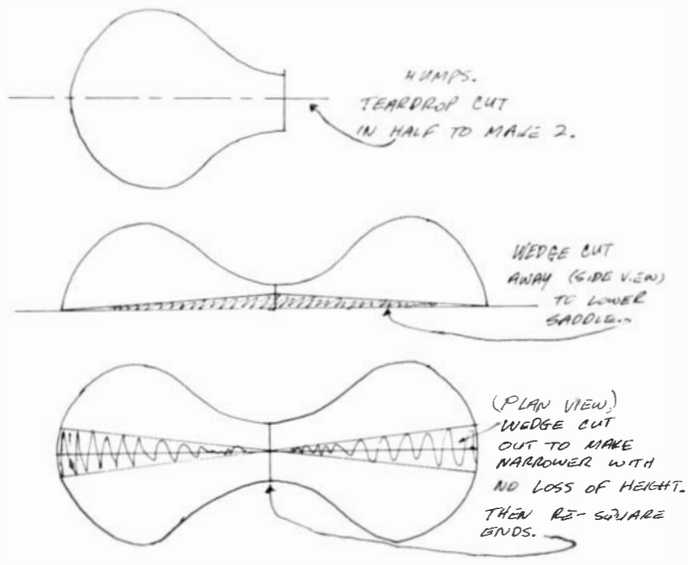
Saw, Surform and rasp cleaned up the discrepancies between the two sides. When the humps and tail were added, the plywood only showed along the back of the neck. It could have been hidden here too by cutting it undersize and filling the gap with a strip of solid wood.

There must be a million ways to cartoon an animal's head in solid wood. Found, green wood is cheap enough and soft enough to try several variations — on the lathe, you can almost model it like clay. I finally turned a ball with snout, cut a slice off the chin and pinned it back on again to form lips, added a few veiner cuts, and chiseled a deep V-groove for the nose which was one-quarter of a scrap turning. I used a dumbbell-shape for eyes, turned with the center of the rings on center for that spaced-out look, and pinned it into a gouged channel atop the nose. The ears were a small barrel turning with a tenon on each end, cut on the diagonal to make two and driven into holes. I planed the bottom of the



head flat to meet the neck, cut a slot for the ply and fastened it on with two vertical, wedged dowels.

The humps were the most difficult turning to work out. The problem was keeping enough height while pating the width so they would fit atop the body, and retaining a saddle between them. I made a large ball with a thick stem, split it into quarters and removed wedge-shaped pieces as in the



diagrams, and pinned the four parts together. The tail was easy — a cylinder cut in segments and drilled for a length of rope, knotted behind a dowel driven into the plywood. Then sandpaper and several quarts of Watco, and a happy child.

Author Kelsey astride his beast

Eagle Carvings

A carver's view of our heritage

by Allan S. Woodle

Walnut eagle by the great carver John Bellamy has wing span of 48 inches. It's on display at the Mystic Seaport in Connecticut.

This is the year to carve eagles. If you are a professional carver you can expect a much greater demand for your creations than you would in a "normal" year, as the eagle is a bicentennial symbol second only to the flag (discounting the ad-agency bicentennial trademark, the one with the interwoven lines like a doormat). On the other hand, if you are a beginner in the field of eagle carving, you are certain to find eagles illustrated everywhere, material for a rich harvest of design ideas to swell your eagle swipe file.

In any carving project that involves symbols it is interesting as well as helpful to know something of the history of those symbols and their meaning. This is particularly true of the eagle which has so rich a heritage. At the time of the American Revolution, the eagle was the symbol of royalty in many parts of Europe. Immigrants from France, Austria, Russia and Prussia must surely have brought with them the concept of the eagle as the power of government. It is perhaps for this reason that the eagle was adopted as the central figure in the great seal, and perhaps, too, because the new republic was aligning itself symbolically with the European continent against the British lion.

The adoption of the eagle did not happen automatically with the signing of the Declaration of Independence. Ten days after this act, the Congress appointed a committee consisting of Benjamin Franklin, John Adams, and Thomas Jefferson to select a seal for the new United States. How such big guns of the revolution found time to give any thought at all to this project is hard to understand, but they apparently did, and it must be stated that the country would have been better served had they devoted themselves to affairs of State. These were their suggestions:

Franklin: Moses lifting his wand and dividing the water of the Red Sea to swallow Pharaoh and his chariot.

Jefferson: The children of Israel in the wilderness with Hengist and Horsa, Saxon chiefs, on the reverse side.

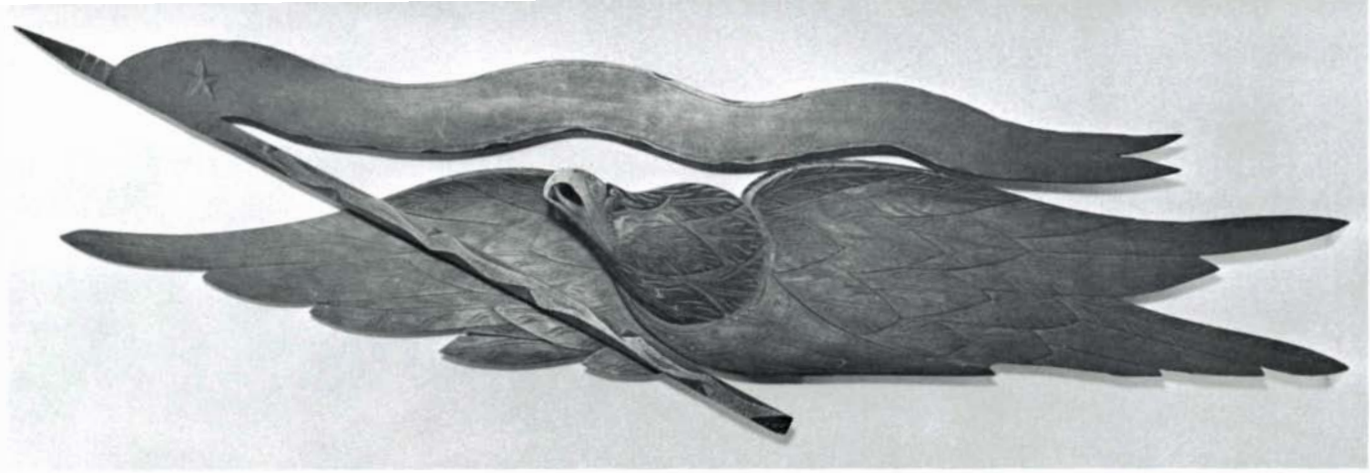
Adams: Hercules being urged by Virtue (a maiden) to ascend the mountains while the figure of Sloth reclines on the ground.

Lucky for us none of these was adopted. Imagine carving one of them! A safe conclusion is that being a good statesman does not qualify one as a designer, and, of course, vice versa.

William Barton, a prominent Philadelphia citizen, is credited as the first to submit a design featuring an eagle (an imperial one—that is, a stylized, fierce one with the primary feathers widely separated) holding a flag of the United States in its left talon and a sword in its right with a laurel wreath suspended from the point. Below is a maiden representing Virtue holding a dove in her right hand and resting her left hand on a shield adorned with stars and stripes. A soldier stands beside the shield.

The Congress turned this design over to Charles Thompson of Philadelphia, a classical scholar, patriot and public servant, for its refinement, and it is to him we are indebted for the creation of the final design. He eliminated the maiden and the soldier; specified that the eagle be the American bald one; put thirteen arrows in the left talon for the thirteen colonies that won the war together, and an olive branch, the universal symbol of peace, in the other; hung a streamer from the eagle's beak with the words *E Pluribus Unum*

Eagle by or after Rush is in Mariners Museum, Newport News. At right, The Great Seal.



thereon; and placed a crest above the eagle with thirteen stars.

His design was adopted by Congress in 1783 and except for minor changes is the same today. It is a static, formal design as befits an official seal, but it had a tremendous influence on the proliferation of eagle designs that followed, many of them anything but formal. Important symbolic features—the olive branch, the arrows, the widespread wings—appear again and again.

A significant thing about this design is that the people of the revolution liked it. They copied it (with modifications, of course) in every conceivable way. They drew it, quilted it, cast it in metal and carved it in wood. When Washington made a triumphant tour of the states in 1789, people everywhere pasted sketches of eagles on their windows and lit them from behind with candles. A charming picture: Washington riding through darkened streets touched by the flickering yellow pictures of eagles in homes along the way. Can you conceive Pharaoh being swallowed by the Red Sea enjoying such popularity?

The bald-headed eagle was just right for the times. This suggests that perhaps it took our country's founders six years to get around to adopting what the people wanted in the first place. In fact, there is some evidence that the eagle was thought of as representing the United States some years before it was adopted; there is a wall painting in Connecticut of an eagle with the motto "Federal Union" holding arrows and an olive branch, done during the 1770's.

Thus the great seal was more than a seal used to illuminate official documents. It became a popular inspiration for designers that grew mightily during the days of sailing ships in the 19th century, faded during the early part of the 20th century and now shows signs of a modest revival as part of the burgeoning interest in crafts.

If you are interested in continuing this tradition it is strongly recommended that you study the work of master carvers of the past. Their work is tremendously varied, some of it realistic, some stylized with a more contemporary appearance than many modern carvings.

Most museums have eagle carvings, and some have a great number of them. It is most helpful to take photographs of those that you like, or you can buy official museum photographs quite inexpensively—not through a museum gift shop, but from the curator's office. I have found the professionals and specialists employed by museums invariably eager to help anyone who is seriously interested in their exhibits. These photographs will be useful to refer to when you are working on a design. They are not a substitute for actually seeing a carving, but they help in remembering details and relationships that are easily forgotten, at least by this carver.

Master carvers of the past

There follows a brief description of a few carvers and their work that I have liked. They happen to be the outstanding carvers of their time, but that is because others liked their work too. In reading about these well-known carvers it is well to keep in mind that for every carving that is identified there are ten whose origins are unknown. And many of these unidentified creations are well worth studying. The names given here are only the tip of the iceberg.

An outstanding carver of the early years of the republic was Samuel McIntire (1757-1811). An architectural designer and woodcarver, he produced numerous eagles and inspired others to do likewise, including Joseph True who in 1828 carved the striking eagle on the Custom House in Salem, Mass. A number of McIntire eagles, in my opinion, show the influence of the imperial style of eagle and in consequence do not deserve the criticism that they "look more like scrawny roosters caught out in a downpour than our national bird," as one writer put it. They do look rather scrawny, but so do imperial eagles. Certainly there is nothing scrawny about the striking design which used to hang over the doorway of the old Salem Custom House. I like the stance of this eagle, but the beak makes the bird look a trifle anguished rather than fierce. McIntire did not cut the inside of the beaks of his eagles to a sharp line. This may have made them stronger, but the poor birds look as if they have a mouth full of something or other.

William Rush (1756-1833) of Philadelphia was another fine carver of the Revolutionary period who did many eagle carvings, among them sternboards for sailing ships. At the time of the revolution ships were heavily decorated with carvings, but to my knowledge the eagle was not featured until the beginning of the 19th century.

Variations in eagle carvings derive mainly from the uses for which they were designed. Individual carvers varied the method of execution of their work, but they still had to fit their conceptions to the job at hand. The contrast between sternboards (aplustras if you want to be fancy) and wall decorations is an example of this. A wall decoration could be delicate because it would be viewed more closely than one mounted on the stern of a ship. To be effective, such a carving had to be bold

in both detail and decorative outline. A carving by or after Rush shows this. This carving is 94 inches wide so it is bold indeed. Rush had a way of carving feathers so that they looked soft and real without making them look fussy or overcarved.

Eagles were often used to adorn the flat-topped pilot houses of tugboats and sometimes of coastal passenger steamers and trawlers. Pilot house eagles are quite distinctive in appearance. They stand with beaks stretched forward, with bodies almost horizontal and with wings outstretched as if they were about to launch themselves into the wind. I know that if I had a tugboat I would want such an eagle on the roof.

Flagpole eagles are obviously smaller than pilot house eagles, but they often carry much the same pose with talons grasping the round ball at the top of the pole. Sometimes they are presented in a more vertical position but still with wings outspread. When you stop to think about it, an eagle way up on a flagpole with wings folded might be a crow or just about anything.

Eagles used as decorations in the interior of buildings and on furniture took many forms to suit the physical circumstances. The only similarity between them is that they were always small as compared to outdoor eagles.

As the 19th century progressed there was a greatly increased demand for eagle carvings. Ship captains liked them to adorn the sterns of their vessels and they also liked to hang them over the doorways of their houses.

No one carved more eagles or more beautiful ones during that time (or any other for that matter) than John Hale Bellamy (1836-1914). He lived most of his life in Kittery Point, Maine, in the house in which he was born, but for a time he had a shop in Portsmouth, New Hampshire. This gave rise to the phrase "Portsmouth eagle" in referring to his work. He is reported to have been a tremendously skilled and facile carver who turned out eagles by the dozens and gave many of them away to friends and neighbors.

Bellamy had style. He developed his own way of depicting details. He used squared-off beaks and deep eye sockets to make carvings "read" on the sterns of ships. When he turned to decorative eagles, he often made them almost abstract, playing with the form from one carving to another. Every carver of eagles can benefit from a study of the work of Bellamy and envy his life style too. He was facile with a pen as well as with his tools. He wrote poetry and articles of current interest and was a public figure of importance.

At the other end of the social spectrum from Bellamy was a carver from central Pennsylvania named Wilhelm Schimmel (1817-1890). His work is primitive but forceful and intriguing. He appeared in Cumberland County, Pennsylvania, shortly after the Civil War and remained there until his death. He seemed to have been driven to carve. This is not particularly unusual because many of us are driven to some degree, but not in the circumstances of Schimmel.

He was without a home, worked sometimes as a farm laborer, was often in jail, but he was always carving. He carried a bag of wood and his simple tools with him; these probably consisted of a jackknife and a box of paints. He never got much for his work: food and lodging perhaps, and that given in charity. (And we complain because our cellar is damp and our carving bench a bit wobbly!) Schimmel's work has vigor, and it could easily give direction to a contemporary carver who is seeking a bold style of presentation. The Shelburne Museum outside of Burlington, Vermont, has a room devoted to Schimmel carvings, and examples of his work are on display in museums all over the country.

Incidentally, the Shelburne Museum has a huge collection of eagles of all kinds. I would guess that there are over a hundred of them—the biggest collection I know. But a word of warning: if you want to take photographs you must go to the office for a permit. On my first visit I was not aware that picture-taking was not allowed, and peering into my viewfinder I was surprised to see what appeared to be an elderly symbol of Virtue with arms spread wide protecting the eagle I was aiming at. She was only slightly mollified when I came back with a permit. Such are the hazards of eagle-hunting.

Trying to carve an eagle

If you decide to turn your hand to eagle carving the easiest way to start is with a low relief suitable as a wall decoration. Work up a drawing, or if you are not handy at this, start with an outline drawing such as that in the Marine Carving Handbook by Jay S. Hanna. Such a drawing will give you basic proportions which you can modify as you wish, changing the shape of the ribbon, the sweep of the wings and so forth. When this sketch is to your satisfaction, square it off and enlarge it on paper to suit the wood you are going to use. I suggest an overall width of about two feet, which is the width of the carving illustrated. Any smaller and the details get fussy. This carving was done on 1-1/8-inch basswood; a denser wood, pine or honduras mahogany would have been better. More easily available one-inch material could be used but the thicker wood gives better modeling.

McIntire eagle (above) originally surmounted doorway of old Custom House in Salem, Mass. True eagle (far left) is over present Custom House. Schimmel eagle (near left) is at Metropolitan Museum in New York. It's approximately one foot wide.

You may find this hard to credit, but you should start two carvings at the same time. Therefore, you should enlarge your drawing on paper rather than directly on the wood. With a paper "cartoon" it is easy to transfer the drawing to the wood with carbon paper. Both carvings should then be cut in outline on the band saw. After this is done, put one aside and make your mistakes on the other. When this first carving is complete, prop it up on the back of your bench and do a better job on the second one. When it is finished you will have learned more about carving eagles than if you had tried to carve six different birds.

Even after you have gained experience you will find that carving several pieces at a time is a good practice. If you have a good drawing there is no sense in using it only once, and if the drawing isn't any good you shouldn't start at all.

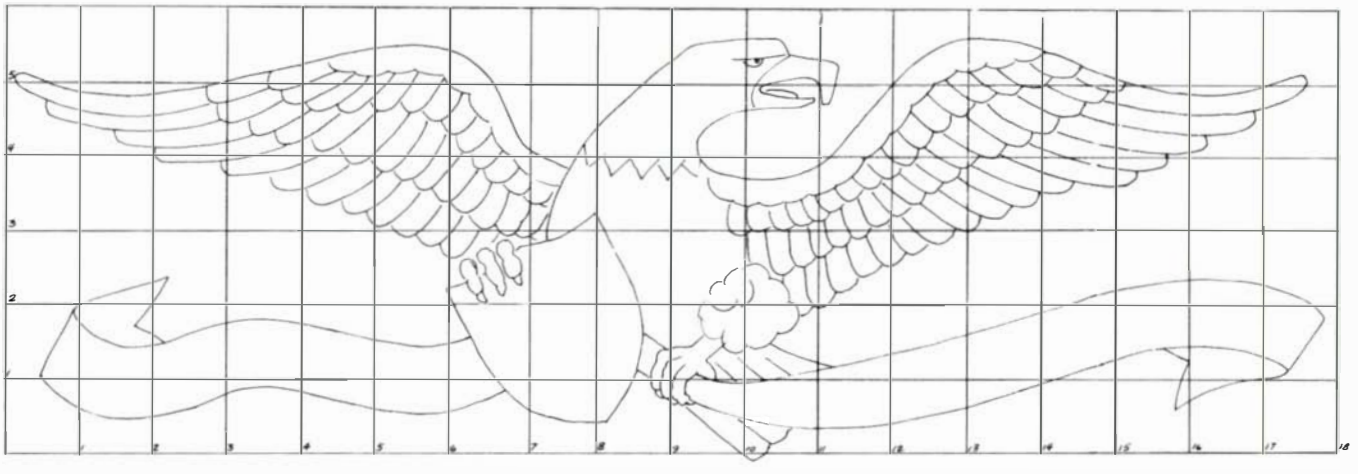
Many carvers simply clamp their birds to the bench and hack away. I think it is worth the trouble to mount the bird on a board—a piece of 3/8-inch or 1/2-inch plywood is best—about three inches longer on each end than the carving. This is done by gluing them both together using white glue with a sheet of newspaper in between. This holds well enough while you are working, but when the front is finished and the carving is ready to be back cut it is an easy matter to free the bird with a flat chisel.

This backing board makes it easy to clamp the carving without either crushing or splitting it. After you have finished roughing out you will have some thin sections that can easily break when the bird is unmounted if you get the least bit enthusiastic (and enthusiasm is hard to control when the old bird begins to take shape).

The carving shown has been painted with acrylic paints in an acrylic gel medium. The latter slows the drying a bit and creates an attractive surface. These paints are easy to use. They can even serve as a gesso for filling in little errors if mixed with modeling paste. All these materials are available in art supply stores.

A carved eagle looks most dramatic if it is gilded. Applying gold leaf is not difficult and is worth trying sometime, but for the first time around paint will do and will make it look mighty handsome when you have it hung over your fireplace.

If you want to carve an eagle, here's a pattern the author worked up for this article. Squares for the original were about 1-3/8 inches to give a 24-inch eagle, but you can make them any size you want. But start two eagles—one for practice, one to finish.



Hand Dovetails

They're really not that hard to do

by Alphonse Mattia

Dovetailing is one of the strongest and most attractive methods of joining the ends of boards together. Traditionally, handcut dovetails consist of a series of alternating pins and tails beginning and ending with a half-pin, with the tails usually about twice as large as the pins.

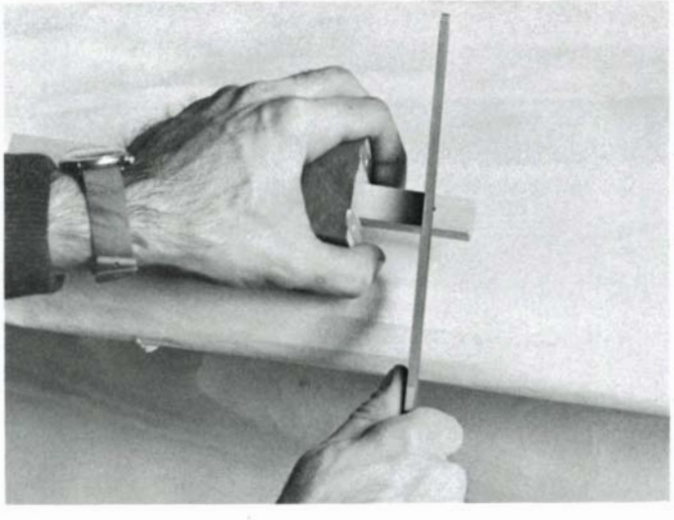
Nowadays, dovetails can be cut much faster by machine, but there are certain disadvantages to doing them this way. The pins and tails are the same size because they are cut together in one step. This makes the joint look very confusing and without character, as it is hard to tell the difference between the pins and tails. Machine dovetails also have a size limitation because there are only two sizes of dovetail router bits generally available. And, when machine cutting half-blind dovetails, there is no guarantee that the series will end with a pin. Taken together, these may not seem like serious points to consider when time is critical, but they do affect the quality of a fine piece of furniture.

With hand-cut dovetails the craftsman has no limitations. He can tailor the shape, size and pattern of his dovetails to suit the piece he is building. There are many types: through, half-blind (only visible from one side), hidden, and mitered dovetails. Simple and compound-angled are also possible.

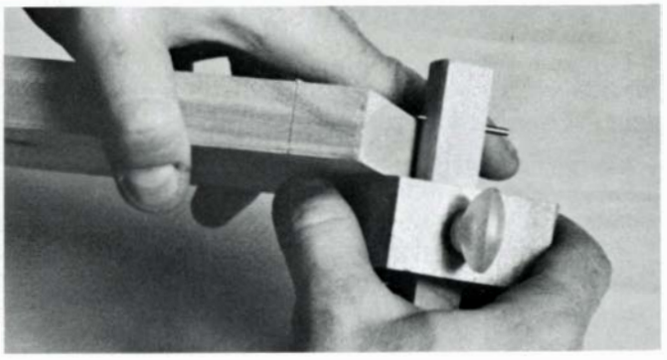
In this article, I will go through the steps for cutting the through and half-blind dovetails. The most important thing about cutting dovetails is patience. You must be as precise as possible with each step, especially sawing. It takes practice, but in time you will find that they are not at all difficult.

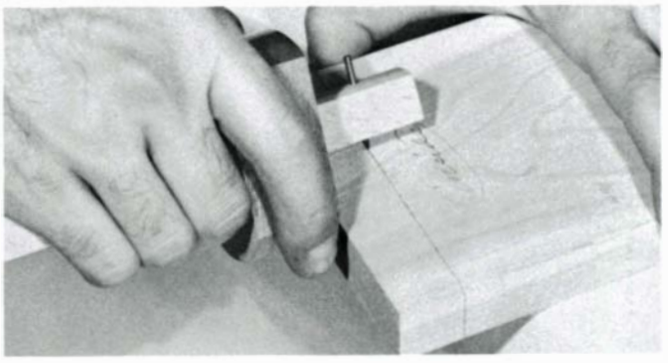
The pieces to be joined should be dressed to the same width and thickness and the ends cut square. The surfaces that will be inside should be sanded and so marked.

It helps if you have a marking gauge. Sharpen it with a file not quite parallel to the movable block. If angled in the right direction, this slight bevel will tend to draw the gauge tightly against the board being worked. (If the angle is reversed, it will tend to push the gauge away from the board.)



With the marking gauge set to the thickness of your boards, scribe a line all the way around the ends of your boards (front, back and edges). It helps if you set your marking gauge at a little more than the thickness of the wood (maximum 1/32). This will cause the pins and tails to extend above the surface of your boards when finished, so that after gluing, a little sanding will give a perfect corner.



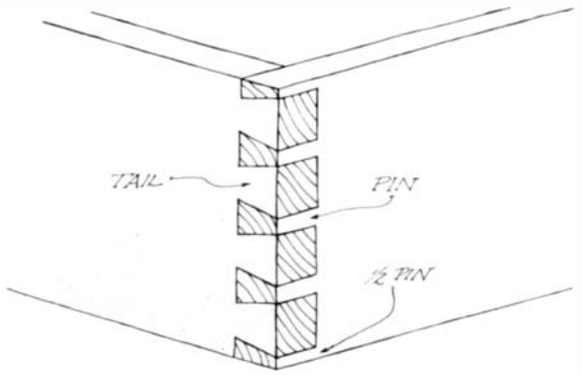


(It is possible to join boards of two different thicknesses. If you do, you will have to use two marking gauge settings at this point, one for each thickness of board you are joining.)

Now the pins should be laid out on the end grain of one of the boards to be joined. In making through dovetails, I find it better to start with the pins, because later it will be easier to scribe the tails from the pins. But it is possible to cut the tails first and then the pins. When deciding which piece to lay out the pins on, remember that the dovetailed corner can be pulled apart from one side and not the other because of the wedging effect. For example, on a drawer, the tails would be on the sides and the pins on the front, so you are not depending on glue alone when pulling on the front. A hanging wall

cabinet would have tails cut on the sides and pins on the top and bottom.

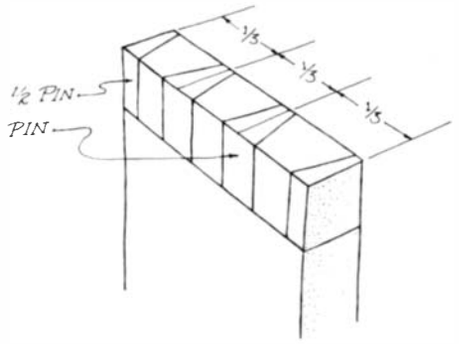
In any event, determine the size of the pins you will use. With handcut dovetails, the pins are usually about half the size of the tails. This ratio is optional, but if the tails are made too large, the strength of the joint is weakened as the holding power of the glue joint is in the long-grain areas between the pins and tails, not in the end-grain areas behind them. The



fewer the tails, the less the glue area. But if the tails are made too small, their strength is considerably reduced because there isn't enough wood across their narrowest point. With pins, however, strength is not significantly affected if they are made smaller (in some antique pieces the pins actually come to a point) because there is always enough cross-sectional area for what they have to do.

The first and last pins are called half-pins because they are angled on only one side, not because they are necessarily half the size of the whole pins. This is important when you are using very narrow pins because if you did make the outside pins half the size of the whole pin there would be danger of chipping or sanding through them. But in any case, begin and end a dovetail series with a half-pin rather than a half-tail, because a tail gets its strength only from being glued to a pin, not to the end grain it butts against.

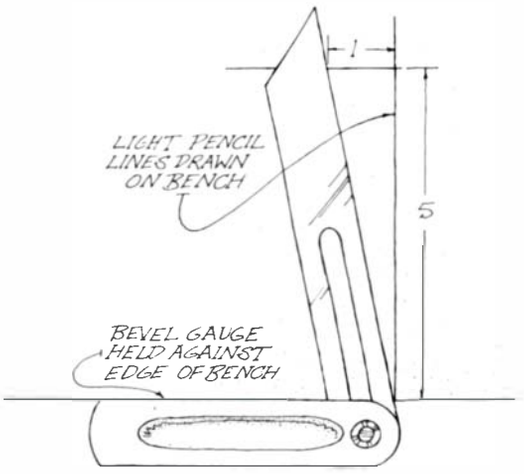
Divide the width of the board that will have the pins into equal divisions, depending on the number of tails you have

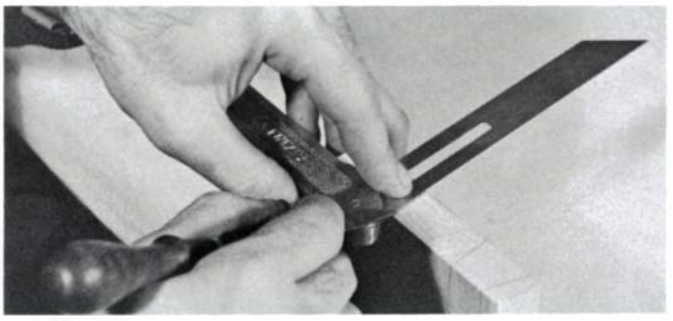


room for, e.g. divide in thirds for three tails, fourths for four tails. These division marks are the center points of your pins. If your pins are going to be 1/2-inch in width at their narrowest, measure in 1/4-inch from each end and 1/4-inch on either side of your division marks. This will give you the placement of your pins.

Check your divisions for accuracy. Then with a bevel gauge set to a 1-to-5 ratio, scribe in the lines with a sharp tool such as an awl or a scriber. Don't use a pencil (except for rough layout) because a pencil line is too thick.

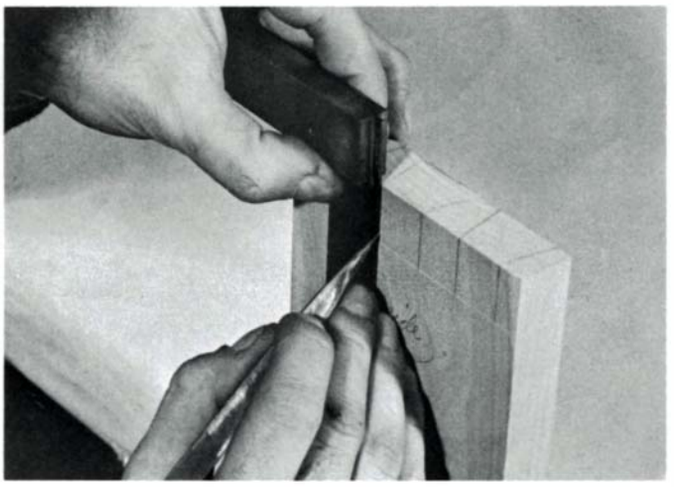
The 1-to-5 ratio can be varied, but anything less will cause fragile corners on tails, and anything above 1 to 6 reduces the

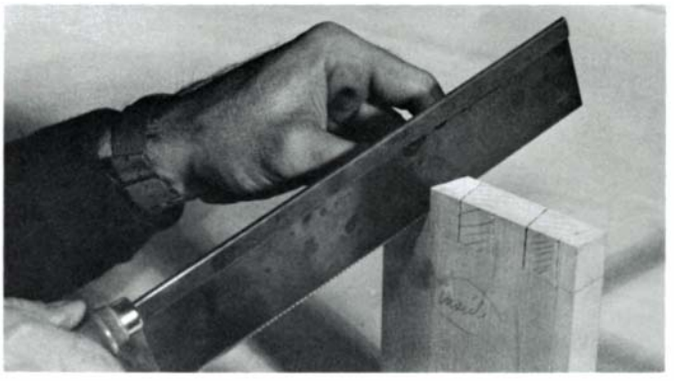




strength of the joint because of a flatter wedge.

At this point you should have the pins drawn out on the end grain of your board. The wider end of the pins should be toward the inside surface of the board. With a square you can carry your lines from the edges down to the marking gauge lines on both sides of the board. To avoid confusion, shade in the areas between pins. A common mistake is to saw on the



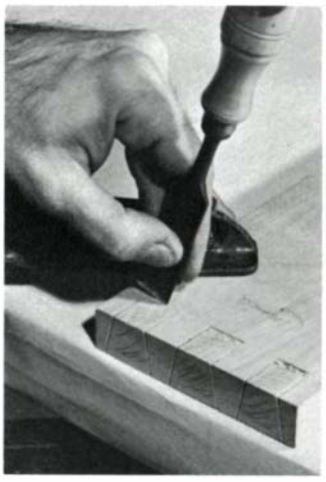


wrong side of the line, or worse yet, to chisel out the wrong areas.

Now, with the piece held securely in a vise, you must make saw cuts down to the marking gauge line. You should use a fine dovetail saw. The thinner the blade, the easier it will be. Remember to split the line on the waste side. You'll find this easier if you imagine the line as having thickness to it, as a pencil line does. It is difficult to saw precisely at first, but you will get better with a little practice.

The piece should now be clamped over a rigid area of the workbench to support it while chiseling. Do not clamp over a vise or allow the piece to extend over the edge of the bench.

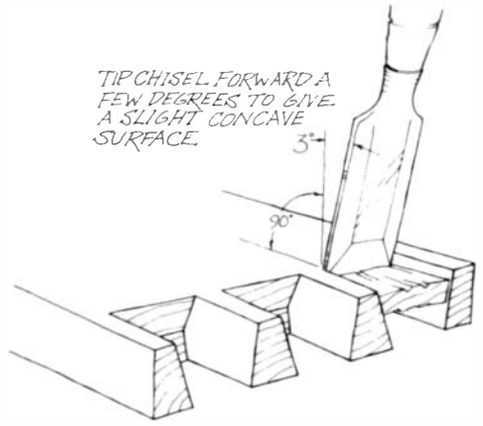
Before starting to chisel, it helps to deepen the marking gauge line between the pins with a chisel and then to remove a fine chip out to about 1/8-inch in front of the marking



gauge line. This will establish a positive edge to line the chisel against. It will also lessen the chance of the chisel drifting back beyond the marking gauge line during chiseling. Now you are ready to take a heavier cut.

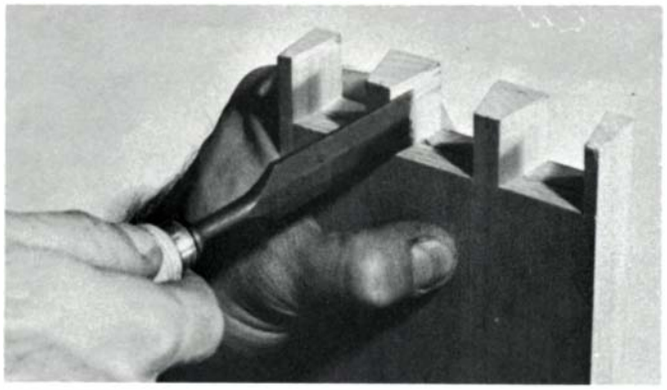
With the chisel held vertically at the marking gauge line, a blow with a mallet will cut across the grain. Then a light cut in from the end grain will remove the chip. A few alternating cuts will get you about halfway through. Now turn the board over and repeat the process from the other side until you have chiseled out the material between the pins.

When you are making the vertical cuts across the grain at the marking gauge line, it helps to tip the chisel forward a few degrees. This is called undercutting and if done when chiseling from both sides it will result in a shallow, concave surface in the end grain between the pins. Remember that



this undercut is not visible and does not affect the strength of the joint, but it does result in a tighter looking joint.

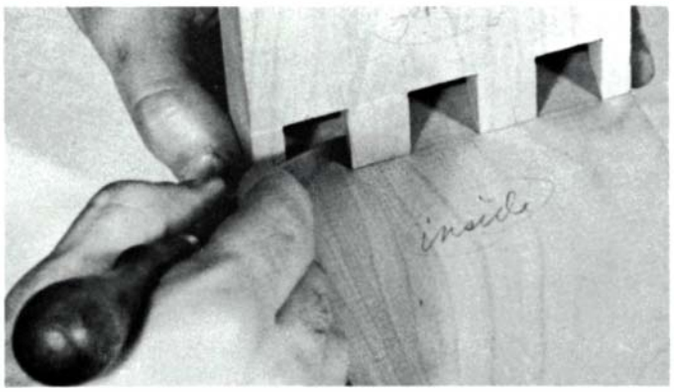
Even with undercutting you will still have a little cleanup to do in the corners between the pins. If any of your saw cuts



are out of square, you can clean them up a little also, but always use a sharp chisel, never sandpaper or a file, when cleaning up the pins.

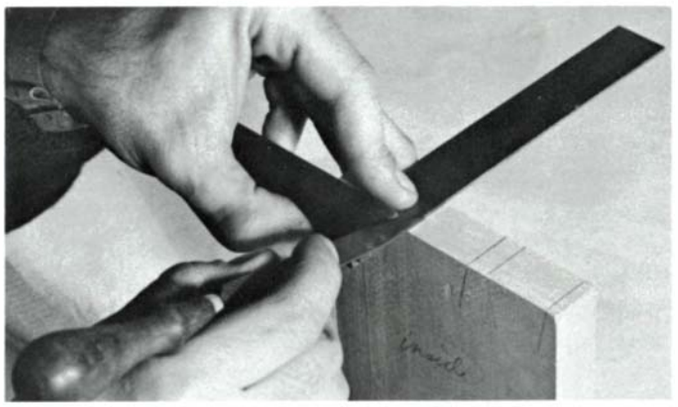
You should now be ready to scribe the tails. Position the pins directly over the side to be joined. Make sure that the ends are flush, that the pins are positioned precisely at the previously drawn marking gauge line, that the inside surfaces are facing in, and that the widest end of the pins is toward the inside of the joint. Now scribe around the pins with a scriber or awl. It is important not to move the piece until all the scribing is completed. Clamp the piece in position if possible.

It is easier to scribe from inside the joint rather than outside. The grain will work to your advantage in keeping the

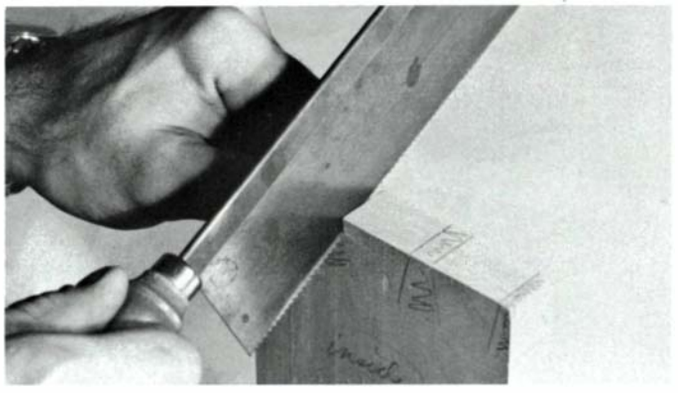


scriber tight against the sides of the pins. From the outside the tool tends to follow the grain away from the side of the pin.

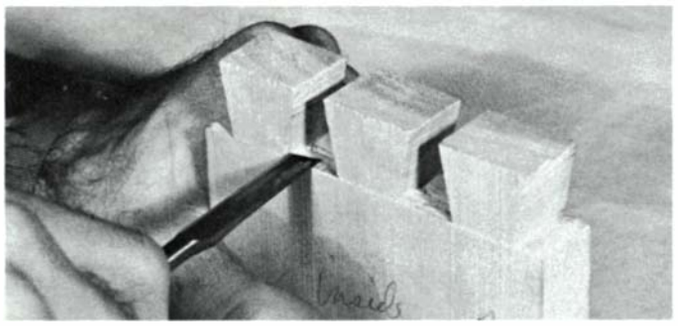
After the pins have been scribed, use a square to scribe the lines across the end grain. Shade in the areas to be removed



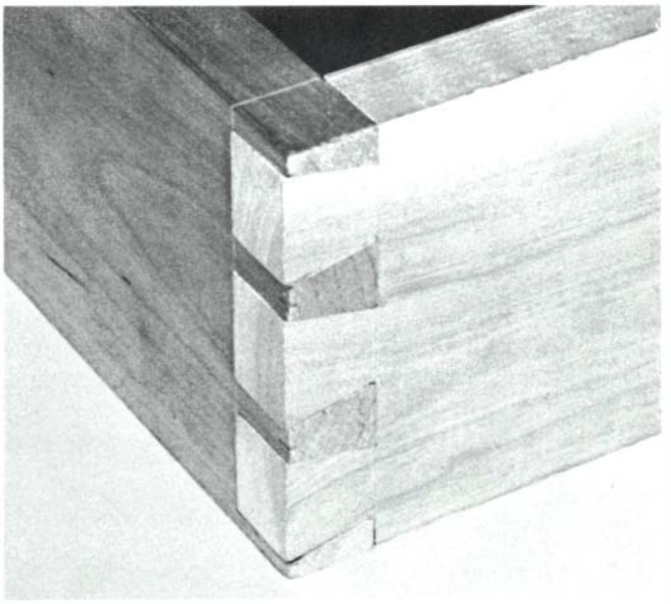
and proceed as you did when cutting out the pins. Be as precise as possible with your saw cuts, remembering to split the line on the waste side. Deepen the marking gauge line with a chisel and remove a 1/8-inch chip. Undercut when chiseling.



It is probably neater and easier to saw rather than to chisel the ends out. Clean up the corners between tails with a chisel before trying the joint.



Do not force the joint together. If it is your first set, you will probably have more cleaning up to do. With practice you should be able to tap the two pieces together without any cleanup or splits or gaps.



The dovetails should be tight enough to require some tapping when putting them together; however, be careful of splitting. If your dovetails are very tight and require a lot of effort to drive them together, they are probably too tight and may split when the glue is applied (glue swells the joint slightly). Always dry clamp before gluing and use glue blocks —small pieces of a softer wood that are notched so they direct the clamp pressure over the tails. A little sanding to bring the ends down flush with the sides and your through dovetails are complete.

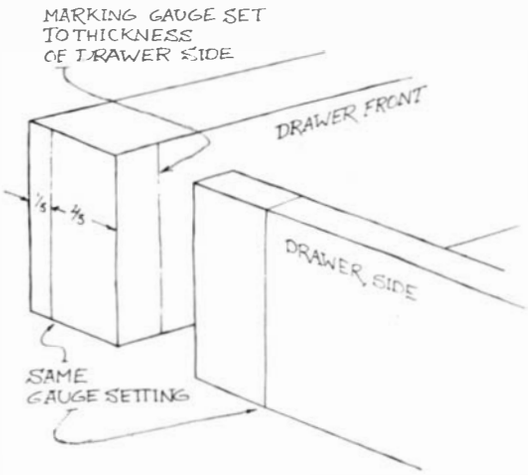
Half-blind Dovetails

Half-blind dovetails are those that show from only one side. They are most commonly used for drawer fronts but they can be used elsewhere quite effectively. The procedure for making them is basically the same as for through dovetails. I will list only the steps that differ.

Half-blind dovetails can be used for joining pieces of the same thickness, but because they are most commonly used for drawers, I will describe cutting them with pieces of different thicknesses—a thicker piece for the drawer front, a thinner piece for the side.

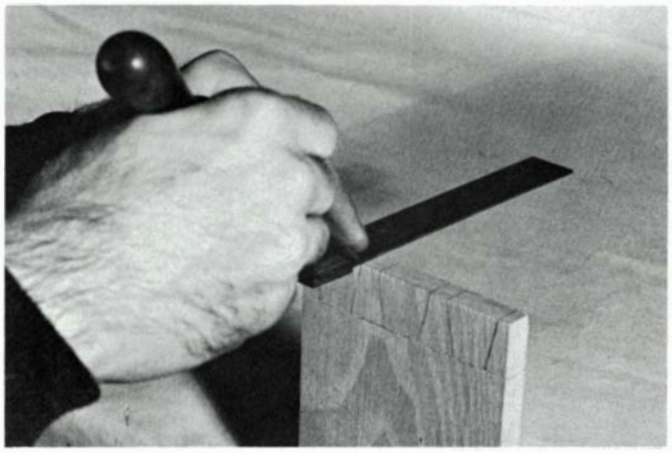
Dress the pieces to be joined to the desired thicknesses and sand and mark the inside surfaces. You will need two marking-gauge settings for half-blind dovetails. First the marking gauge is set to the thickness of the drawer side. With this setting scribe a line along the end of the drawer front on the inside surface only. Now reset the marking gauge to about 2/3 the thickness of the drawer front and scribe a line into the endgrain of the drawer front. The scribed line should be in 1/3 of the way from the outside (or 2/3 from the inside) surface of the drawer front. At this same setting scribe a line around both sides and edges of the drawer side.

The 2/3 proportion can be varied. It determines how long the tails will be. They can be longer, providing they don't interfere with any shaping or face carving on the drawer front. But as tails are shortened, the strength of the joint is reduced.



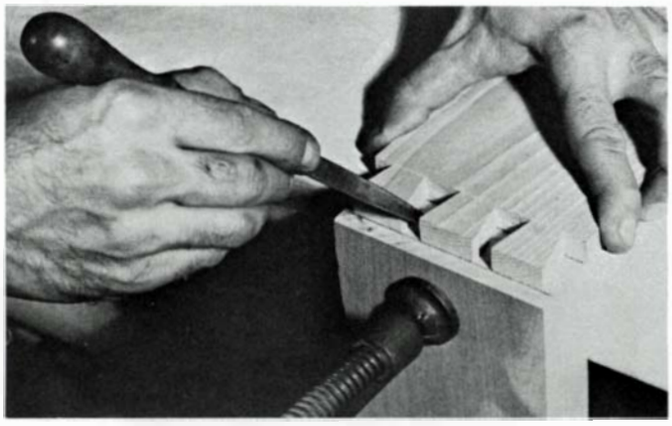
When cutting half-blind dovetails I find it easier to cut the tails first because it is difficult to scribe inside the pins. But others say the pins should be cut first.

On the drawer side lay out the tails. This is done in the

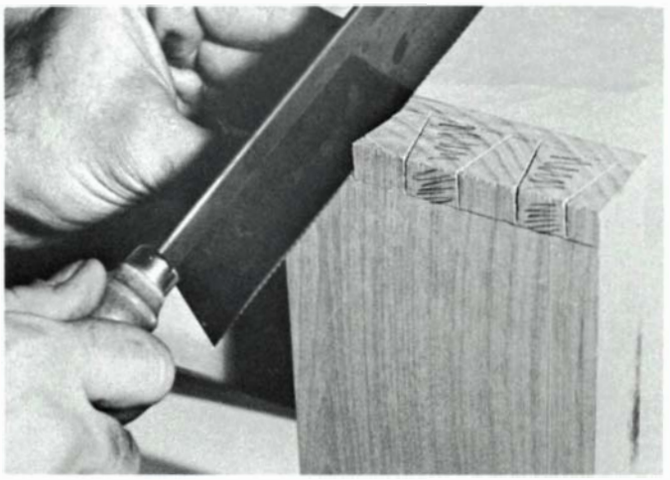


same way as when laying out pins for through dovetails except you will be working on the outside of the drawer side rather than on the end grain of the drawer front.

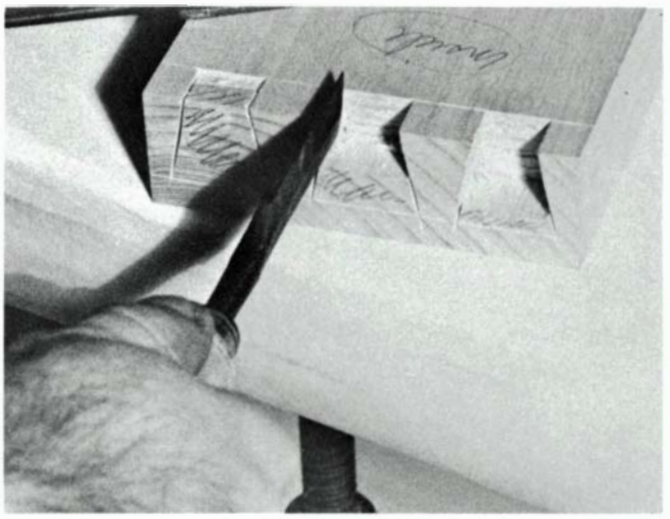
Saw and chisel out the areas between the tails you have just laid out using the same techniques as in through dovetails. Once the tails are cut out and cleaned up, you must scribe the pins onto the end grain of the drawer front. Clamp the drawer front in a vise flush to the workbench top and lay the



side over it. Be sure inside surfaces are towards the inside of the corner. Line the edges of the boards up, and position the ends of the tails exactly at the marking gauge line. This positioning is critical. If it is not done accurately, it will result in gaps. Clamp or hold the piece securely and scribe the pins from the sides of the tails. The lines should then be extended with a square down the inside of the drawer front to the other marking gauge line. Novices usually expect the sawing and chiseling out of the pins to be difficult, but you will find that it is not much different than with through dovetails. Start sawing at the inside edge of the drawer front. Remember to split the line on the waste side, but do not saw past either of the two marking gauge lines.



The chiseling is done with the same alternating cuts as for through dovetails. Remember to undercut slightly. The only difference here is that the inside corners will splinter as each chip is removed because the saw cuts do not extend back all the way. It helps to clean out these splintered internal corners after removing each chip. When you reach the marking gauge line do whatever cleanup is necessary and try the joint.



For purposes of clarity I have described procedures for cutting each of the types of dovetails on two pieces of wood. This is the best way to practice these joints. However, when actually making a box or a drawer, it is much more efficient and easier to be accurate if you work on all four corners at once. In other words, lay out and saw the pins on both ends of the front and back at once. Scribe the tails on both ends of the sides at the same time. Make all the saw cuts in one operation and then chisel out all the tails at once. But remember to letter each corner so you know which set of tails was scribed from which set of pins.

There are nearly as many methods for cutting dovetails as there are craftsmen. The methods I have described work best for me, and I hope with a little practice they will produce satisfactory results for the reader.

Mechanical Desks

There's more than meets the eye

by Alastair A. Stair

The eighteenth century was the most vigorous period of letter writing in human history, not only as literary invention for use by published authors, but as a fine art and general pastime for personal pleasure. As such, it took on the aspect of an elaborate ritual, inspiring its own accessories and methods of dispatch. It provided a theme of interest for painters, and most importantly, it stimulated the contemporary cabinetmaker to create all manner of intricately designed writing chairs, desks and writing tables. The English cabinetmaker, in particular, proved himself worthy of the challenge posed by a large clientele of literary ladies and gentlemen throughout the century by supplying bureaux, "scritoires", and different sorts of chests, bookcases, cabinets, wardrobes and tables of all descriptions fitted with writing slides and secretaire drawers. It is toward the middle of the eighteenth century, however, when the demand arose for specialized forms to meet the needs of artists, architects and draftsmen, that the ingenuity of the English cabinetmaker becomes truly admirable. Fully developed desks and tables were introduced which relied upon inventive me-

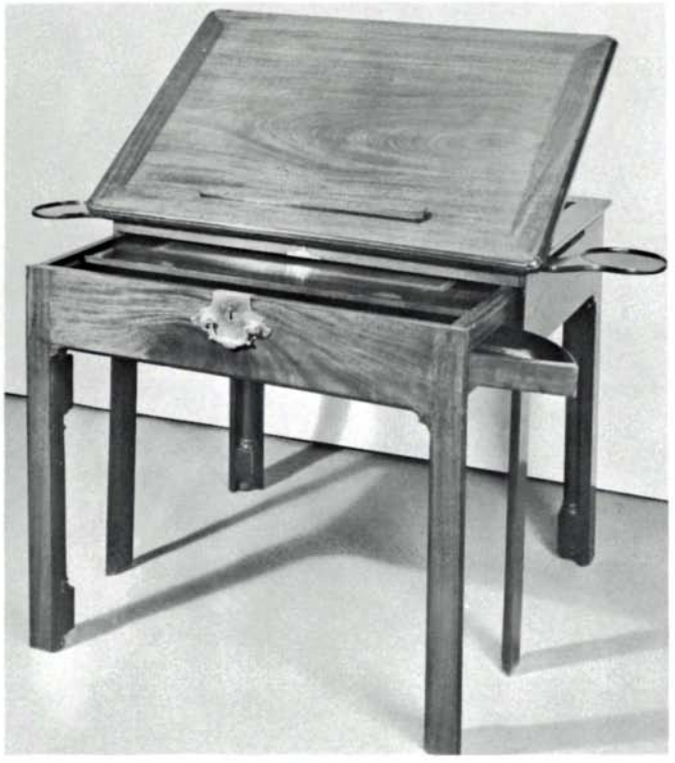
Estate desk top and till can be raised by crank inserted in holes in upper drawer fronts. Closed desk is shown above.

chanisms to delight the contemporary client, and which continue to astonish today.

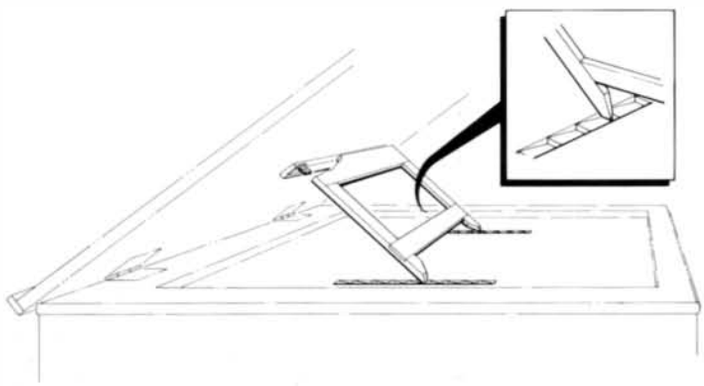
There is ample evidence in the pieces themselves and in the copious notes in such design books as Chippendale's *Director* and Sheraton's *Drawing Book* that considerable attention and care were given to the equipment and refinements of library writing tables and desks. Designed for prominent locations, these pieces were rectangular or kidney-shaped, usually of open pedestal form, or were designed with recessed central cupboards; they were also made with drawers or cupboards at both front and back, and these are termed "partners" desks. Ingenuity was shown in the disposition of numerous drawers, partitioned cupboards for folio volumes and rising tops which, when adjusted by a ratchet and removable bar, were able to receive large prints, estate maps and folios.

Sheraton also offered a design for an oval library table with rising reading stands fitted in the end drawers, explaining it was "intended for a gentleman to write on, or to stand or sit

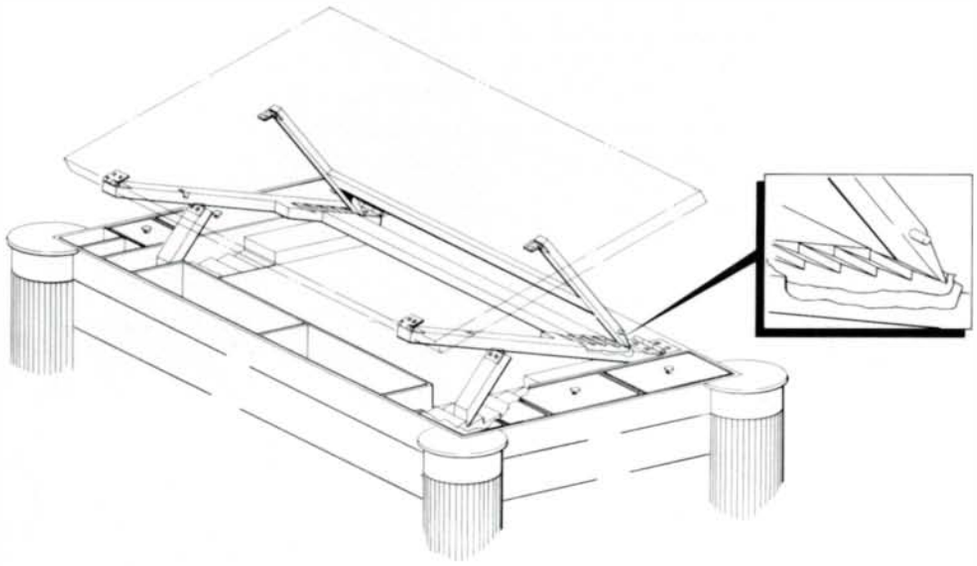
Architect's tables were made in various shapes and styles. Some had a double ratchet arrangement to give greater height and permit work standing up (below), while others had only a single ratchet. Slide-out front revealed another writing surface (sometimes also ratcheted) plus storage. Book rest sometimes retracted or reversed to give a flush appearance.

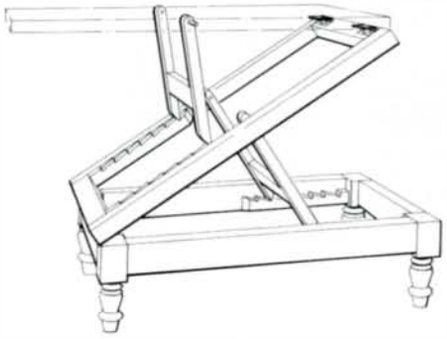


Ratchets



Single ratchet arrangement used in architect's tables folds out of the way when table top is down. Double ratchet below gives greater height. Raising the top also reveals a series of compartments in the table illustrated.





Double ratchet "gout stool" uses a reverse arrangement with the hinges and ratchets which means that if applied to architect's table, top would tend to come forward as it's raised.

Sheraton's *Drawing Book* proposed double ratchets hidden in drawers in his design for a library table.

to read at." In 1766 John Bradburn supplied the Queen with "an extraordinary neat mahogany Library Table." It had 12 drawers, four cupboards, four rising desks for reading and writing, with invisible spring locks in the top.

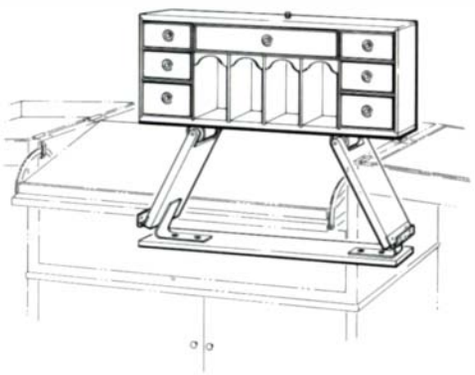
One of the most remarkable of the pedestal desks is the great estate desk in which the complete top rises to any height by means of a mechanical crank, along with a hidden till with a series of drawers and compartments that when let down is level with the rest of the top. In this way the desk can be used in a seated or a standing position and can meet any demand the user makes of it, with much space for storage of papers and other materials.

Another form with a mechanically rising top is the "Harlequin Pembroke Table" that appears in Sheraton's *Drawing Book.* Many variations on this theme were made in the London workshops of the eighteenth and early nineteenth centuries, as seen for example in one compact piece, probably by Shearer, in which the flaps fold out on hinges, containing various compartments hidden by lids. The back draws up when a spring is released to reveal a series of drawers and pigeonholes. The bottom holds a cupboard enclosed by a tambour. The entire piece is an exercise in space-saving technique and provides the maximum convenience for the writer in a small space.

Another mechanical form, lighter and more readily portable and convenient than the ponderous mechanical pedestal desks is the so-called "architect's table," well represented in contemporary trade catalogues and ideally suited to the needs of architects, painters and draftsmen. The painter Nathaniel Dance considered the table so desirable that he persuaded John Cobb, the cabinetmaker who purportedly brought such tables into fashion, to allow him to paint his portrait in exchange for one.

In this specialized form the area of the top is considerably increased by a pull-out front supported on the front sections of two straight legs. The front contains a well with numerous small compartments and a writing slide that lifts or pushes back. Often small drawers swing out from the sides for drawing materials. Some were solid with drawers to the floor. These tables had rising tops which could be fixed at different heights by means of racks, stays, ratchets and struts, "so healthy for those who stand to write, read or draw," and were often fitted with candle brackets and a lock. A number of these tables were mounted on a pillar with tripod feet. William France supplied one of this type for Lord Mansfield's library in 1770 (now in the Victoria and Albert Museum) and described it as "a large Mahogany Reading Stand on a Stout Pillar and Claw, with a screw nutt, work'd very true, capable of screwing to rise 10 ins if required."

It is desks and writing tables such as these that reflect the mechanical genius of the eighteenth-century English cabinetmaker.



Harlequin Pembroke table pulls out all stops with tambour doors, drawers, drop front with ratcheted writing surface, fold-out top also used for storage, and a disappearing till made in the form of a box that rises when latch is released. Spring and roller arrangement raises the till.

Textbook Mistakes

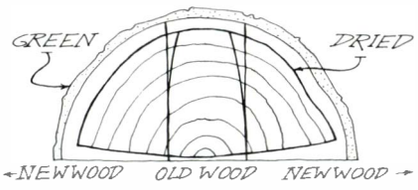
Somebody forgot that wood always moves

by Tage Frid

Looking through several textbooks about wood and woodworking, I have found that, especially for the beginning craftsman, there is quite a bit of misguidance or, in my opinion, mistakes that are very common. It seems as though someone wrote a book once who forgot that wood always moves, and all those who followed continued with the same errors.

Before going any further, I think we should set down a few facts about the material we work with: how it reacts after it is cut, dried and made into wood products, and what happens to it after many years of use. I expect anything I design and make to be used for many years after I am gone, so I feel it is very important that whoever designs and makes furniture doesn't make the mistakes that books advise. What they advise in some cases is more difficult, more work and sometimes creates a time bomb that guarantees the wood will eventually split.

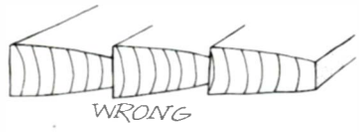
I don't think I have to explain about the birds and the bees. We all know that the seed gets into the ground and the sapling gets started and each year puts a new year ring on. A tree grows from the inside out, which means that the closer you get to the center, the older the wood. I don't want to go into a big thesis about wood, just enough to show where the books are wrong. We know that the center of the tree is the oldest and the outside the youngest,

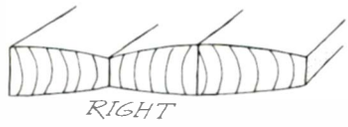


which means the pores or cells on the outside are more open than the center ones, so the outside will shrink more than the inside. This tells how the wood moves after is is cut and dried.

The reason that this is important is that after the wood is dried and made into a piece of furniture, the wood will continue to expand and shrink every year with the seasons. How much it moves depends on how dry our houses get in winter, and how damp in summer.

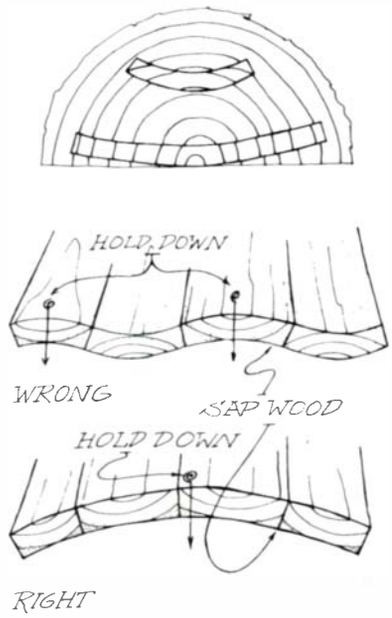
Just as the new, outside wood shrinks more when it dries, so it expands more when the humidity rises. This means that when joining boards together — say, for a tabletop, or whatever — the boards should be chosen and placed such that new wood should be joined to new wood, old wood to old wood.





Otherwise, no matter how well you plane and sand the boards after joining them, the different rates of expansion and contraction will guarantee an uneven joint as soon as the humidity changes.

Another thing most books tell you is to alternate the wood to compensate for the cupping caused by shrinkage. This would be fine if you wanted to design a washboard. But if you want to use your wood, for example, for a tabletop, it will take a lot of screws to hold it down, plus every second board will usually have a lot of sapwood, especially today with the shortage and high cost of wood, where every piece must be used. But, if we don't alternate the wood, it will work together and form an arch that will be very easy to hold down with a few screws. Also, we will have the center of the wood facing up, meaning

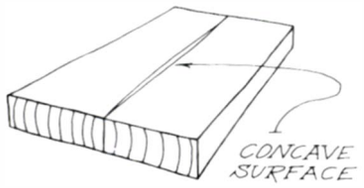


less sapwood, better color, harder and usually fewer knots.

Maybe the greatest mistake found in books concerns gluing boards together long grain to long grain. It is suggested you strengthen the joint by putting in dowels. It is also suggested that you leave a space of 1/8-inch at both ends of the dowel. I don't know how they expect to stop a dowel exactly 1/8-inch out on both ends. Even if this were pos-

sible, the joint would be filled with glue so we would have a piece of wood going across the grain. The dowel is, say, four inches long and will stay like that, but the board it's in will not continue to be four inches. As time goes on it will shrink, and even if there is no glue in the dowel joint (an impossibility), the result will be a split board. Whenever I see old tables with a split near a joint, I would bet there are dowel joints hidden in there.

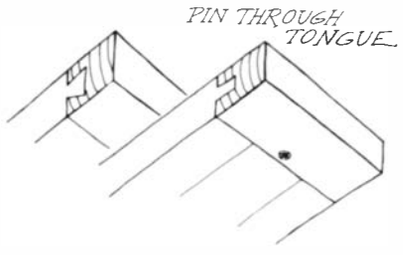
The right way to join boards long grain to long grain is without dowels. Run the edges over the jointer slowly, or even better, just use a hand jointer plane, and get a slight concave surface.



Then glue the boards together. This puts a slight pressure on the ends. When the wood dries and gives off moisture at the ends first, the pressure is released and the ends will not split. At the same time, we can use fewer clamps.

If wood is glued together using this method and we try to break it apart, generally it will break somewhere other than in the joints. If it did break in the joints, it would take wood from both pieces, which proves we have a joint that is as strong as the material itself. This means there is no reason for what the books suggest — putting a spline or tongue and groove in the joint to get more glue surface. Furniture factories like to use tongue and groove because it allows machines to line up boards. But for individual craftsmen it's a waste of time.

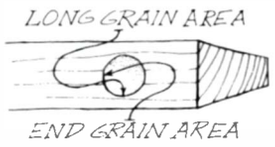
Another piece of bad information in the books is the suggestion to put a tongue on the ends of tabletops and to glue a piece on each end with the grain running in the opposite direction to keep the tabletop straight. It's correct to use the end piece, but don't glue it as they suggest. That will not give the wood the freedom to move, which it will. The end boards will stay constant in length, the center boards will contract and expand in width. There is no glue that is capable of holding them, so the result is that they are going to split. The tongue and groove should be glued (or better yet, pinned)



only in the center inch or so, which gives the wood the freedom to move. When cutting these end boards, joint or plane a slight concavity on the inside edge so that the ends will continue to exert pressure after the center is forced in. The best (and most difficult) way is to use a sliding dovetail joint to hold the end boards in.

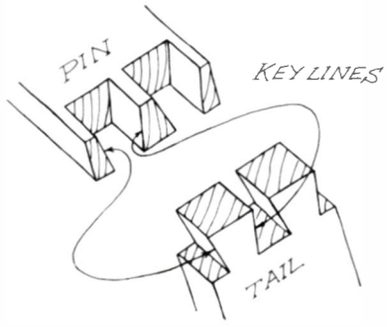
Most books highly recommend doweled joints, which are not very strong. I would never use a doweled joint myself, for example, in a chair. In mass production it is considerably easier to use dowels, especially because all the joints can be put together in a split second. So naturally the factories recommend doweled joints highly. But for individual craftsmen this is wrong.

As we all know, you cannot glue end grain to end grain or end grain to long grain, because there is no strength in end grain. We can depend only on gluing long grain to long grain. That is the reason the mortise and tenon are much stronger than dowel joints. With dowel joints there is only 1/8-inch or so where we have long grain to long grain. The rest of the joint is end grain.



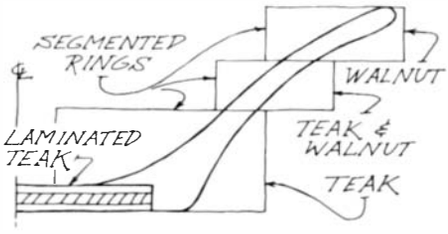
A dowel joint is good only if joining two boards end grain to end grain, because then the whole dowel will be surrounded by long grain. (In another article I will write about a dovetail dowel when I have perfected the tool which will make the joint.)

Another mistake mentioned in the books is that when making hand dovetails, it doesn't make any difference if you make the pin or the tail first. There is a difference. The easiest and most correct way is always to make the pin first, the tail last. How well the joint fits is determined by how



accurately we follow the "key line" that transfers the pin's shape to the tail (or the tail's shape to the pin). If the tail is made first, when we cut on the "key line" drawn from the tail, we destroy that important line with the very first saw cut. But if the tail is made last, we have several strokes with the saw before we completely destroy the line we are "splitting."

In the last issue of *Fine Woodworking,* the article about checkered bowls shows a good example of not allowing wood to move. If the technique shown is used, it is sure that the bowl is going to split sooner or later. First the walnut will split, and later the teak, which moves much more slowly because of its natural oils. With long grain running in a complete circle in the checkered ring, that ring will keep the same diameter forever, but the walnut and teak are going to move and shrink, splitting the bowl. The same bowl could be made by segmenting the walnut and teak on the sides, and offsetting where the joints meet, as in a brick wall. For the bottom, I would resaw and cross-laminate the teak in a three-ply construction and inset it into the side.



Another thing I never do if I am going to glue pieces together is to use a sander. Sandpaper always removes the wood from the edges faster than the center, with the result that the joints will be tight in the center and open along the edges. I would use a sharp circular saw blade or, if I have to do any correcting, I would use a hand plane, which would make the surface perfectly flat and give a much better glued surface.

These are just a few things I have found by looking through some of the textbooks available. There are a lot of books about woodworking but very few are worth buying. So far I have not found any I can recommend. I think the best one available today is *The Encyclopedia of Furniture Making* by Ernest Joyce.

[Editor's note: *The Encyclopedia of Furniture Making* can be purchased for $14.95 at local bookstores, or directly from Drake Publishers, Ltd., 801 Second Avenue, New York, NY 10017.]

Antique Tools

A buyer's guide to many you can use

by Robert Sutter

The latest tool catalog has come in the mail, so you settle down with the "wishing book" in eager anticipation. But my oh my, those prices: sixteen dollars for a saw, twenty-two for a brace, sixty for a plough plane. It sure puts a damper on your ardor to fill your shop with all those wonderful-looking objects in the pages of that catalog open across your knees.

Well, how do you go about getting your heart's desire while preserving as much of your bank account as possible? One way is to budget a realistic sum of money for your basic tools and then make additions only as the need arises. Buy the best you can get in the way of edge tools and saws. If you must, you can acquire inexpensive yet less soul-satisfying hammers, pliers, screwdrivers, files, etc. at the local hardware store. Beware of special house brands and bargains, though; you only get what you pay for. Shop carefully and compare with your wishing book; you may find that a small price difference will procure a more trustworthy item than the bargain bucket at the local hardware emporium.

Another way to build your journeyman's kit is the antique tool route. There is certainly a big kick to be gotten out of finding a half dozen peachy chisels at the back of the antique shop for just two dollars apiece. That sort of bargain may be easy on the budget, but old isn't necessarily good, and if they turn out to be made of Swiss cheese, you can't exchange them. Realize that when searching for old tools you compete with the tool collector and that chances are he knows a lot more about the tricky business of buying antique tools than you do.

Recognize, too, that sellers of antiques keep informed about trends in their field. They know that competition between collectors for new acquisitions raises prices, and they are aware that old tools have recently been touted as preeminently collectible. Dealers also know the worth of old tools on the current market, so don't expect to find an antique dealer who doesn't know what he has in that box of rusty old tools lying half out of sight under the dropleaf table in the back of the store. He knows, and he put that box where it is on purpose.

Okay, let's assume that in spite of my admonitions you decide you're going to look around for some old tools. What can you expect to find and what will the results of your search cost? I'll try to answer those questions from experience garnered in fifteen years of collecting and over thirty of buying tools for my workshop.

Braces

The first braces were naturally formed tree limbs of the proper shape. Next came factory-shaped wooden braces with brass reinforcement plates. Such items are in the seventy to one-hundred-fifty-dollar class—more if unique. Metal braces with rudimentary screw chucks were in use side by side with wooden ones. Later on in the 19th century, and early in the 20th, braces with universal shell chucks and ratchet sweeps began to be manufactured. Stanley braces from 1900 on can often be found with ten to fifteen-dollar price tags, which, if sound, will function perfectly today. Check the chuck to be sure it closes all the way and is concentric. See that the wooden parts are not split and that the metal is bright under the dirt. If so, you've got a usable tool for a reasonable price.

A word about rusty tools here. A little rust easily scraped away to expose bright metal is okay and can be cleaned up. Discoloration due to use and handling likewise. But eschew the item encrusted with rust. It won't clean satisfactorily no matter the effort, and the metal will bear pit marks and deep-seated rust pockets for evermore. While

ADZE

SPOKE SHAVE

merely unsightly in some cases, such pits and pockets on edge tools affect the edge-holding ability of the tool.

Saws

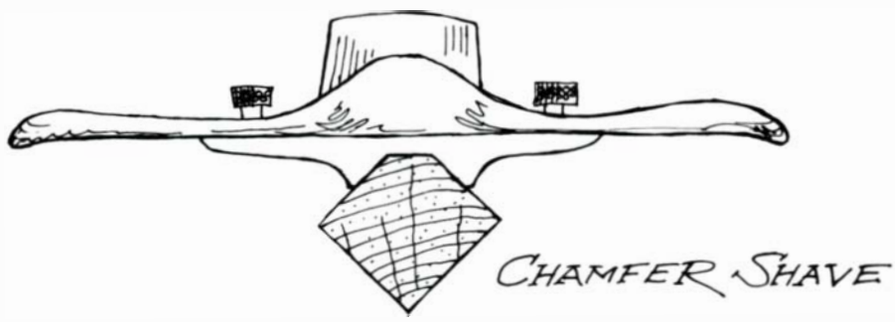
You may find some good, usable old saws, but I doubt it. Old, all-steel saws are often temptingly priced since they are not very popular with collectors, who prefer frame and turning saws. In years gone by, a craftsman bought a saw and used it until it was worn out from repeated sharpening and setting. He replaced broken handles and rivets as they were needed for the steel saw handles. When the saw was past using, it was discarded—for you to pick up. Therefore resist the temptation to buy an old saw even though it costs but three or four dollars. Purchase the highest grade new one you can and take care of it. It will serve you well just as the four-dollar relic served its owner when it was shiny and fresh from the store.

Adzes

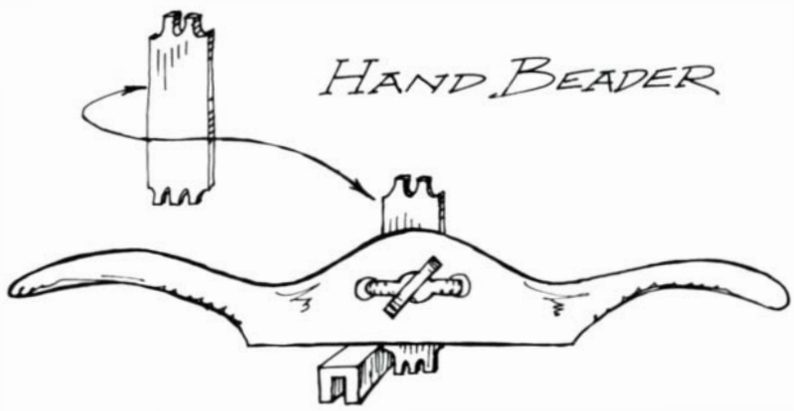
The adze is one of the oldest tools in the woodworker's kit. Paleolithic specimens are to be seen in museums, but today the adze turns up more often in crossword puzzles than in real life. For the unfamiliar it is a sort of mashie-niblick axe with an oddly curved handle. An adze is a smoothing and shaping tool used for finishing large areas of wood such as floors and beams as well as for all sorts of chores in shipyards. The adze is no longer a common item on the shelf of hardware stores in this country, even though still available in most of Europe. Should you decide you can't live without one, you will have to purchase it as an antique. The Collins Axe Company made adzes out of good steel with proper balance until a few years ago. They were japanned black and sold without handles, as were all adzes, since the handle is a matter of individual design. You can often find a good, quite new Collins adze head lying about for perhaps eight to fifteen dollars. Those that have handles and are older will be more expensive. By the way, adze heads are never permanently fixed to their handles, for the only way to sharpen them is to remove the handle. To use an adze requires a very sharp edge on the adze and a very sharp skill on your part. Have someone who knows show you how to use it, and then practice on scrap timber before working on anything important. Watch out for your toes as the tool is swung towards them.

Drawknives, etc.

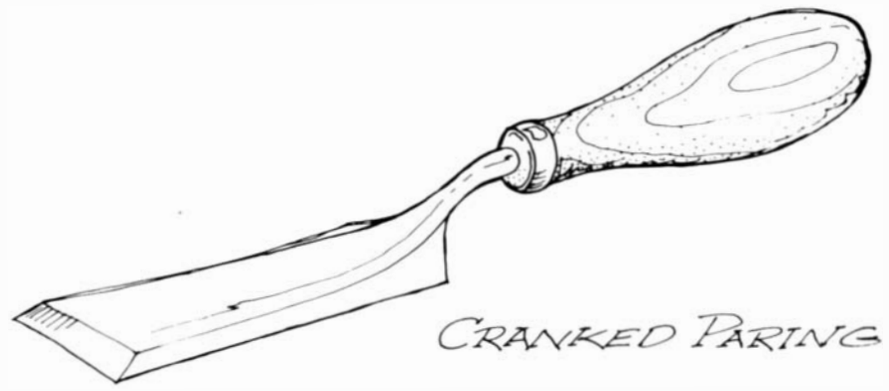
Another archaic but useful tool is the drawknife. Anyone who has visited one of the restoration villages has undoubtedly seen a drawknife in use or at rest on a shaving bench. For quick shaping of round and curved work, this tool is hard to beat. Since the depth of cut is dependent on how the tool is held relative to the work, some practice is required to cut a long, uniform shaving. There is also an element of risk in pulling a large, sharp knife towards your stomach. Safer and more easily controlled is the spokeshave which operates on the same general principle as the drawknife but has the mechanics of a plane to control the cut. Spokeshaves come in brass, iron or wood bodies with straight, convex, concave, or rounded soles. Sometimes two differently shaped soles, each with its own blade, were mounted side by side in a single handle. New spokeshaves are easily obtained from purveyors of fine tools through their catalogs or as antiques.

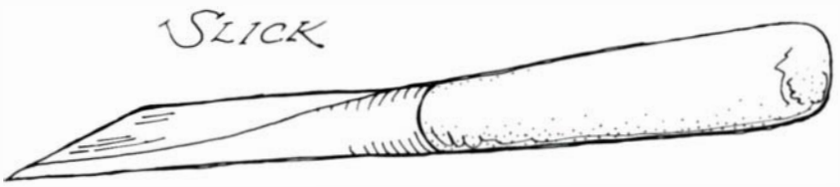


CHAMFER SHAVE



Prices run from six or seven dollars for a modern spokeshave to twenty dollars for 19th century iron ones. Wooden shaves were commonly made out of beech or box woods, but occasionally you will see ebony or cherry or other fine cabinet woods used. Beware of wooden spokeshaves as the throat wears easily and makes them difficult to set. Because of this deficiency, many wooden specimens have brass or even ivory set into the throat to provide a hard, less easily worn surface. Towards the end of the 19th century, Stanley and others produced a chamfering spokeshave which is most useful and worth some hunting about for.



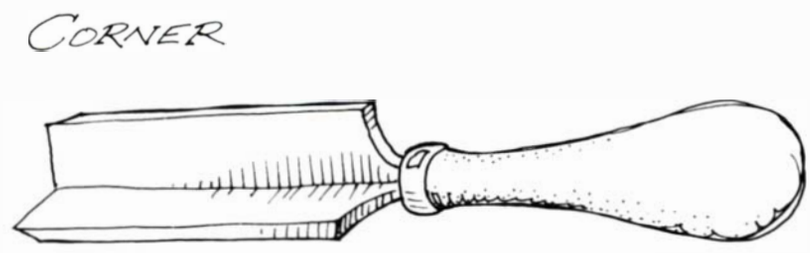


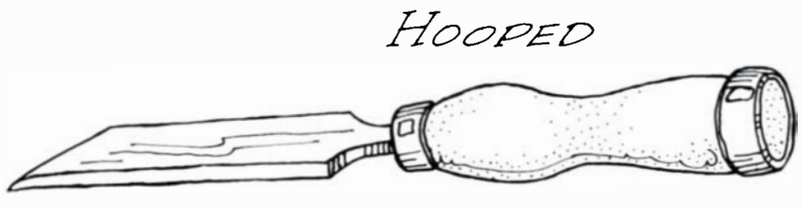
Another branch of this large and useful family of tools is the scratch stock or universal hand beader. It is really a scraper of sorts with handles like a spokeshave. The hand beader has a thin steel blade with a shaped edge held almost vertically to the plane of the work piece. When pulled, the blade scrapes a bead or other shape out of the wood. A scratch stock will cut moulded edges on curves, and works well regardless of grain direction or complexity. Since it scrapes, there is practically no tendency to tear the wood. Unfortunately, this tool can now be found only as an antique.

Chisels

There are more varieties of chisels than there are herring dishes in Finland. In one catalog I counted twenty flat carving chisels and one hundred and thirty gouge shapes, fishtails, allonge fishtails, spoon, and backbent chisels. In addition there were bevel-edge paring chisels in several grades, long and strong hooped chisels, in-cannel gouges and mortise chisels. Prices ranged from under four dollars to over ten. Antique chisels are available in all the variety of the newer ones plus others long out of production such as slicks, framing, and corner chisels. Except for slicks and corner chisels, not many collectors are interested, so prices vary from under a dollar to ten or twelve dollars, with exceptions running up in the twenty-five to fifty-dollar range.

Framing, corner, and hooped chisels are for pounding on as are mortise chisels. Paring chisels, in-cannel gouges, and slicks are for pushing. The latter will take a razor edge while the former (somewhat softer to withstand the stresses of being pounded) take a little coarser edge. Chisel making is an art. Good steel, well forged and properly heat-treated to be hard at the edge and tough in the body and tang is what you will be seeking, often in vain, in modern tools.





Chisels are really the only case in tool acquiring where I would suggest antique over new because the older handmade tools are more likely to have the qualities required. Of course, shapes and sizes must be found one by one, and often just what you need is unavailable, but seek out the old steel and you'll likely have a winner. Many older chisels have inlaid edges, a piece of very hard, brittle steel for the edge welded onto a softer, tougher steel shank. Buy old chisels with as much intact blade and inlay as possible. Picturesque, well-worn, short-bladed tools are useless because they are probably ground back past the hardened portion at the business end of the blade. Tools by Buck Brothers, Barton, Isaac Greaves, Wm. Butcher, Underhill Edge Tool Co., and many Sheffield, England, companies are pretty sure to be of high quality. Don't let the words "cast steel" confuse you. The blades weren't cast, for cast steel in the 19th-century context refers only to a type of tool steel of high quality.

For those woodworkers who are always looking for the best tool to do the best job, there is an aesthetic quality to tools used by generations of craftsmen before our time which is as satisfying as the keen edge or comfortable fit of a new tool. Perhaps it is justification enough for the search. I often think so.

Spiral Steps

The trick is to make them strong and graceful

by Edward G. Livingston

Trying to describe the innermost workings of the concept and construction of a design, be it a building or a door knob, is risky business. Risky, primarily because such analysis quite often falls short of explaining thoroughly just what transpired. Risky too, because even though the artist may be doing the explaining, there is a loss in translation between his creative processes and his verbal ones. With that in mind, we would like to take a calculated risk and show the innards of our library ladder.

First, in explaining "why" the ladder: it was created as an experiment. It was the joy of experimenting with the creative process rather than any urgent necessity that triggered the concept. The ladder was a challenge in the functional sense because it was and is a basic instrument used to defy gravity. It is easy enough to get above the ground all right, but how do you get above the ground with a certain amount of grace and aplomb? That is indeed a challenge! A spiral stair, whether it is a full-story size or a partial stair such as a library ladder, provides by its very spiral nature, the intrigue of potential grace and aplomb in climbing. It does in fact beckon to be climbed, so why not enhance this by eliminating as much possible—the extraneous structural supports, for instance—and allow the essence to stand out?

Another large obstacle was solving the actual technical problems relating to fabricating the unit. In other words, "Okay, you have cooked up an idea. Now, how in the world do you build it?"

This part of the conceptual process is extremely important because sometimes it is impossible to translate an idea properly.

A man once said, "Well building hath three conditions — commodity, firmness, and delight." The man, Sir Henry Wotton, was talking about the basics of architectural design, but I like to think that those basics are more universal. I feel that: "commodity" — the function of the design; "firmness"—the structure; "delight"—the aesthetics; are the guts, feathers and all of any of our creative endeavors. Combining Wotton's basics and the intrinsic challenges of the ladder, plus the creative impulse in me, into a physical whole is the sum of the experiment.

The physical aspects of putting together a unit like the ladder are patience, glue, and wood—in that order. The first part of the structure is basically a laminated column with alternate armature laminations left void—thus creating a mortise type of receptacle to receive the tenon type end of the individual riser assemblies. The spiral of the stair is provided by the second set of column wedge laminations, which flank either side of the armature laminations and differ in that their cross section is in the shape of a wedge or pie. The armature laminations are interrupted by the risers. The wedge laminations are continuous for their individual full length. The riser laminations provide a nest for the riser itself, and the wedge laminations lock the riser in the nest.

The second part of the structure is the foot. Its importance and complexity are deceiving. It was also the most difficult of the design features to resolve simply because the total unit required a large stable underpinning which was hard to build without making it look too large and too heavy.

The design was resolved by providing floor support continuously along the same axis as any anticipated applied weight from above. The foot follows exactly the same curve as the treads above. The flow of the curve allows the foot a little respite from weight and size and at the same time provides continuity with the flow of design above. The complexity of the foot exists because of its curve. In order for the foot to have any strength in bending, it has to be cross-laminated so by the time the foot reaches from toe to the heel at the column, there is a stack of six laminations each juxtaposed grain-wise so as to reinforce each other.

The last part of the structure are the tread riser assemblies—simple laminated cantilevers. The risers at the column end are in effect tenons that actually project completely through the column. The only atypical tread riser assembly is the first one at the floor and this because it actually embraces the foot as the foot approaches the base of the column.

Assembly of the total unit can be tricky because the twisting motion the wedges provide makes it difficult to obtain straight line pressure points in applying clamps. Also the wedges themselves have a tendency to pop out of their intended plane as pressure is applied. There is also a problem of keeping track of a needed reference point. Everything about the unit is either twisting or curving, and unless care is exercised the fabricator will be wondering about up from down.

Normally we first glue up the armature pieces, risers included, with a wedge piece added on one side as reinforcing. When these have cured, we then juxtapose the armature-wedge assemblies and glue. This allows for more control of the otherwise slippery wedges. We keep all of the column edges rough at this point to allow for the maximum availability for clamping area. Also in order to keep everything true, i.e., the column vertical and the risers horizontal, we use as a reference point the vertical line made by the take-off point common to all the riser assemblies.

After the column is completed in the rough, the foot

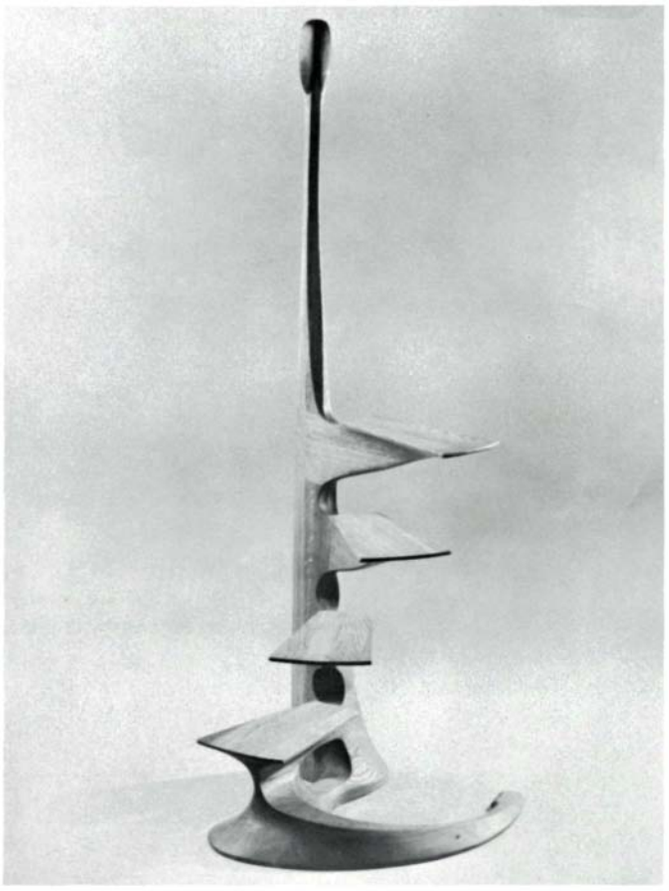
assembly is inserted in the slot provided by the lowest riser armature. This armature is then beefed up by two full dimension laminations on both sides to provide adequate glue line support for the incoming foot assembly. This juncture is an important one because it is the point where all the accumulated vertical stresses in the column assembly are transferred to the foot.

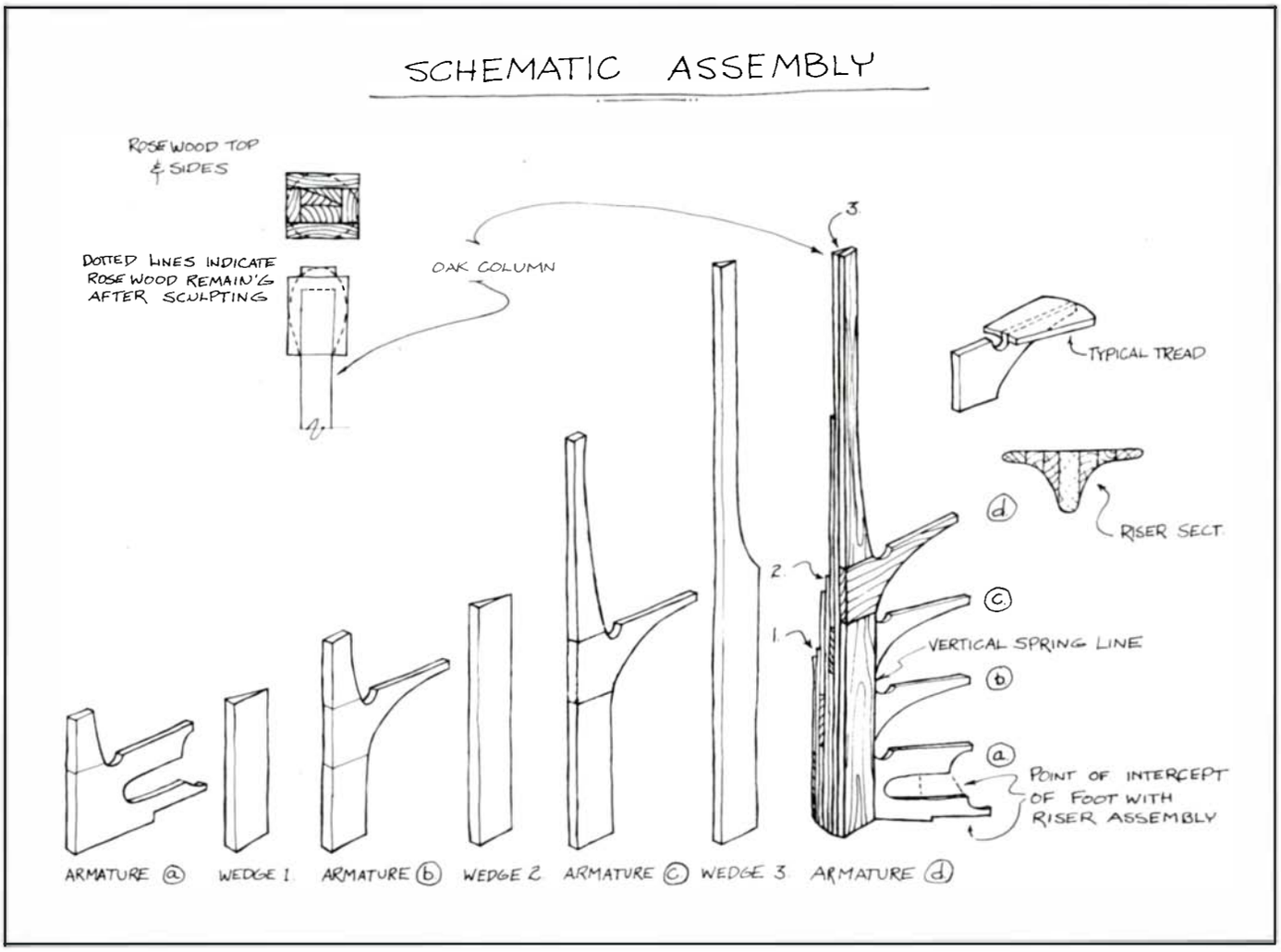
With the foot on, the column straight up and down, and the riser armatures poking out in place, the tread side wings can be added. It is best that the side wings be preassembled and sanded because it is a difficult maneuver to get sanding equipment in the tight space between treads after the pieces are assembled.

The one redundant feature of the ladder is the finale or handhold at the top of the column, which is a series of built up laminations of a different wood applied over the column end—a blob of a different wood made integral with the column end.

After the unit is together the column is sculpted with a seven-inch automotive disk sander with 16-grit abrasive, thus providing the continuous flow of the twisted column. From then on it is finish sanding, an oil finish, and a wipe of the brow!

Finally, the time involved in fabricating the unit is approximately 40 hours, with over half of that time devoted to the necessary sanding. The glue used is alphatic resin and there is no hardware or metal involved in the structure. The wood is Japanese oak throughout except for the handhold.





Gustav Stickley

The rebel craftsman of his time

by Carol L. Bohdan and Todd M. Volpe

One of the last great designer-craftsmen to come out of the 19th century was Gustav Stickley. Today, this cabinetmaker and entrepreneur is almost forgotten. But for 15 brief years before World War I, Stickley's "Craftsman" furniture and furnishings enjoyed great popularity. A change in popular taste and the onslaught of mass-produced goods spelled the end of his success. Now, however, Stickley's work is being rediscovered in attics, barns and secondhand thrift shops and appearing on the more prestigious (and expensive) antiques circuit.

Born in 1857 in Wisconsin, Stickley was trained by his father as a stonemason, but soon left to learn cabinetmaking from an uncle in Pennsylvania. After working in furniture factories and stores, he formed a distaste for the gaudy pieces generally popular at the time and developed instead an admiration for the simple and sturdy forms of the Shaker furniture he had seen.

Stickley was also influenced by the decorative arts coming out of Chicago in the 1870's, one of the pulse centers of the arts and crafts movement in this country. A trip abroad to see "art nouveau" and English arts and crafts designs convinced him further to purify furniture forms. He became determined to create a personal, streamlined construction that would eliminate most needless decoration, with each article free from pretense, and in his own words, "fitted for the place it was to occupy and the work it had to do." He thus, for the most part, avoided the "tortured and fantastic lines" based on the organic plant forms of which the art nouveau enthusiasts were so fond, preferring to omit "intrusive" inlay, artificial "affectation," and those forms that evoked the past in a "quaint" or historical way.

In his quest to develop a distinctive style, he took the medieval joiner's compass as his symbol and borrowed the motto "Als ik Kan" ("As I can," or, more broadly, "All I

Perhaps best known of Stickley's furniture is the Morris chair named after the British philosopher and spokesman for the arts and crafts movement, William Morris. Plant stand is 26 inches high.

can'') from Jan van Eyck because it was ''brief, modest and not always easy to fulfill.''

In turning to earlier craft traditions, he created a mystique around his furniture that would prove most appealing to a public jaded by ornate forms. There was, however, nothing mystical about Stickley's esthetic goals. Furniture, according to him, was to be made ''first of all for daily use and wear . . . comfortable, durable and easy to take care of.'' It was Stickley's desire to escape the growing influence of the machine over the manufacture of domestic goods, and to address the needs of his time by directing the public toward ''an art that shall strike its roots deep into the life of the people,'' emphasizing the ideals of simple hand-craftsmanship, functionalism, easy care and, above all, comfort.

Stickley preferred to work with oak (although he also used chestnut, ash and elm), explaining: ''When I first began to use the severely plain, structural forms, I chose oak as the

Oak lamp (22 inches high) has pale yellow and green stained-glass shade. Bookcase (56 inches high) bears Stickley's label and signature (above). Stickley-designed writing desk (30 inches high, below) has copper hardware and was made in Grand Rapids. Pieces are from author Volpe's collection.

wood that, above all others, was adapted to massive simplicity of construction. The strong, straight lines and plain surfaces of the furniture follow and emphasize the grain and growth of the wood, drawing attention to, instead of destroying, the natural character that belonged to the growing tree."

In keeping with his emphasis on natural materials, Stickley lined the drawers of desks and library tables with split calf, and covered his chairs and settles with rush, thick canvas, cow or calf-hide in soft earth tones of brown and tan. These were often fastened in place by iron or copper studs, one of the maker's few concessions to ornament. Pulls and hinges on cabinets, sideboards and tables were of wrought iron or hammered copper, with a warm glow obtained by means of an old process of firing which gives a surface that mellows with age and exposure.

Eventually Stickley branched out into the limited production of copper lamps, candlesticks, desk pieces, fireplace equipment and other accessories which lent "delightful gleams of color" to a room.

He formed the Gustav Stickley Company in 1898 near Syracuse, New York. Two years later he showed a small number of his pieces at the furniture exhibition in Grand Rapids, causing *The House Beautiful* of that year to cheer: "The day of cheap veneer, of jig-saw ornament, of poor imitations of French periods, is happily over."

Capitalizing on the sudden commercial success of Craftsman furniture, two of Stickley's brothers, Leopold and J. George, left the workshop in 1900 to form the L. & J. G. Stickley Company in nearby Fayetteville, New York. Other professional imitators vied for success, most notably the Roycroft Workshop of Elbert Hubbard in East Aurora, New York. Although these workshops turned out fine products, they were not always loyal to the purist philosophy espoused by Stickley. Most distressing were the hundreds of crude copies made in Grand Rapids.

Nevertheless, Stickley prospered. In 1901, he brought out the first issue of the *Craftsman* magazine, a monthly vehicle for the arts and crafts movement in general, and the ideas of Stickley in particular. It contained his views on furniture, with practical home-training instruction for copying Stickley designs, architecture, needlecraft, gardening and all details of general home improvement, with the "Craftsman Home" as the resultant ideal. The publication also offered articles on historic preservation, major artists and woman's work.

By 1905, his enterprises had grown so that he moved his executive and editorial headquarters to the large Craftsman Building in New York City. This center for Craftsman teaching contained a lecture hall, library, restaurant and show rooms with exhibits of furniture, textiles and gardens. In addition, he set up the Craftsman Farms, a small family community in Morris Plains, New Jersey.

All this was short-lived, however. Competition from more cheaply produced Grand Rapids furniture, as well as the growing influence of the Colonial Revival movement, which glorified forms from the American past, eroded the appeal of Craftsman esthetics. By World War I, even L. & J. G. Stickley was producing furniture in the Colonial Revival mode, adapting to current public taste to remain commercially successful. But Gustav Stickley would not change. He stopped manufacturing oak furniture and declared bankruptcy in 1915. He died in total obscurity in 1942.

Oil/Varnish Mix

Making oil more durable

by Jere Osgood

There is a basic decision to be made when choosing a finish for a piece of furniture. Would you prefer a matte oil finish or a glossy varnish or lacquer?

For many years now, a matte oil finish has been very popular because it penetrates the wood and becomes part of the surface, and because it is easy to put on. But it is not really durable, especially for often-used table tops. On the other hand, a good water and alcohol-resistant finish would mean a varnish or lacquer which is more of a surface finish, frequently glossy, and much more difficult to put on. The various varnishes or lacquers also require a fussy environment—warm, ventilated and dust-free—for application.

If you do prefer an oil finish, you have several choices—including an oil/varnish mix that I have found to be particularly effective.

Linseed oil is of course in wide use as a finish. But it has a long application time (a matter of weeks), requires continual upkeep, and is not water-resistant. Its advantage lies in the fact that it is easy to apply, though time-consuming. A ruined spot is easy to repair with a little wet rubbing, using a rag dipped in oil and thinner. It is also pleasant to use, is easy to clean up and can be put on in a dusty, slightly cool shop if absolutely necessary.

Various synthetic penetrating oils, and Watco oils in particular, are a tremendous improvement over linseed. Watco is more water-resistant and can be used on tables if they are treated with care. The other advantage is that you can deliver your work in three days, instead of the three weeks it takes for linseed. But Watco is a little hard to locate in some areas, although many of the mail-order woodworking supply houses now carry it.

Oil and Varnish Mix

The best general finish I have had experience with is the oil and varnish mix. I can't claim to have originated it but I have pushed its use. It seems to have a long history, and variations of it are used by many furniture craftsmen because of its durability where an oil finish is needed. Its advantages over Watco are that I find it slightly more water-resistant, easier to obtain, and it has more of a body to it (but still penetrates like an oil). It doesn't need any special shop environment or equipment. A little dust or another piece being worked on nearby will cause no difficulties, though a clean, dry shop would probably be best. And the ingredients should be available at most local paint-supply stores.

The piece to be finished should have all planing, scraping or sanding completed so that a later wet-rubbing step deals

only with raised grain or unevenness in the finish.

Materials needed are a pure, boiled linseed oil with no driers or additives. Parks brand is pure and is generally available, at least in the northeast. Behlen's oil is of course pure but may be harder to obtain. Pure turpentine is required; do not use mineral spirits or other substitutes. Also needed is a good-quality synthetic varnish. Try for a minimum of 50% alkyd resins (the resins are the solids) in the varnish. Use a gloss varnish so it won't contain flattening agents. The two brands I have found to be good are Valspar Gloss (50% alkyd resins) and McClosky's Ultra Spar Marine Varnish (52% alkyd resins). Clean, absorbent, lint-free rags are required—an old diaper is perfect. Also needed are 400-grit silicon carbide wet-or-dry paper for wet rubbing and a small cork or heavy felt rubbing block about three or four inches square. Mixture proportions are one part pure, boiled linseed oil, two parts synthetic varnish, and three parts turpentine. Mix a minimum of one quart the day before if possible, so it can "make" overnight.

Application steps

First day: Flood the surface of the piece using a brush or rag. If you see dry spots, apply more. Keep the surface saturated. After two hours, check for tackiness and wipe off with a rag if the mix has started to thicken. Thickening may take two hours or all day, depending on wood specie, humidity and temperature. In any case, the surface should be wiped off before being left overnight. If you let it get too tacky, it will be difficult to wipe off and will leave crusty spots.

Second day: Generally a repeat of the first application but don't apply quite so liberally and watch carefully for thickening, because there is not as much absorption by the wood. The time it takes to become tacky will be much shorter than with the first coat—even as short as an hour or less. When it does, wipe it off with a rag.

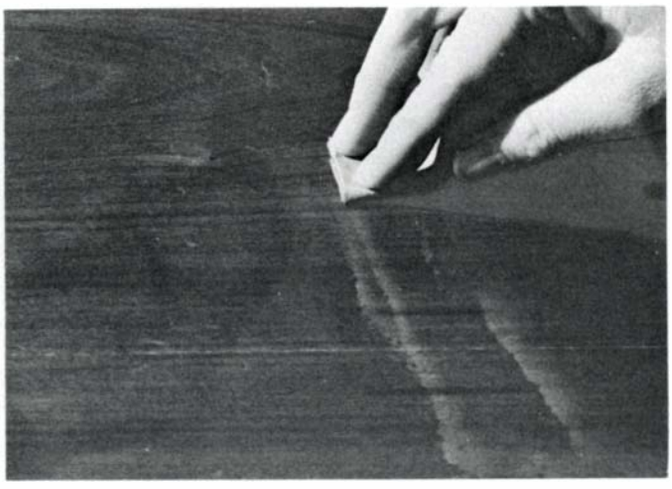
Third day: Flood the piece (or a section if it is very large) with mix and do the wet rubbing. Pour some of the mix into a pie plate or other flat dish. If there are some slightly crusty spots from the previous day, it might be better to thin the rubbing mix half-and-half with turpentine. Put a few pieces of 400-grit wet-or-dry paper in the plate to soak. Wrap one of these on the block and rub evenly back and forth, with the grain only, until the whole surface is covered and is smooth everywhere. This will flatten the raised grain, eliminate crusty spots and smooth out to an even thickness the finish that has been put on. Curved surfaces can be rubbed using a folded leather pad behind the paper. After this wet sanding or rubbing is complete, the piece should be vigorously buffed clean and dry. Do this by hand with clean rags, not with an electric buffer, because this finish does remain soft for a period of time. An electric buffer might possibly take too much of the finish off.

The piece is finished now, but with some woods I have found a slight sweating occurs, i.e., "mix" comes out of the pores. If this happens, it can be taken care of by a treatment on the fourth day—a light moistening application of mix, and then buffing it dry immediately.

You can use the wet sanding technique as a rescue for a dried or gummy oil finish at any stage. Add a lot of thinner to the mix if it is a big disaster. For wet sanding you can substitute very worn 220-grit garnet paper for the 400-grit wet-or-dry paper, but it disintegrates quickly. 4/0000 steel wool can also be used, though it tends to shed particles that can lodge in pores or corners. Damaged spots in this finish can be repaired easily by scraping the bad spot and/or wet sanding with some of the mix, depending on how bad the spot is. Then reapply more finish.

While this oil and varnish finish can't compete with the durability of a varnish or lacquer, it does meet some of the demands for a more durable oil finish.

Hickory wine locker by the author was finished with an oil/varnish mix over a three-day period.



Third-day application of oil/varnish mix involves wet rubbing with sandpaper to flatten raised grain and smooth out finish.

Shaker Lap Desk

A challenging exercise in hand dovetailing

by Brian Considine

The Shaker lap desk may be considered the predecessor of today's briefcase. Like modern briefcases, lap desks were convenient for carrying papers. In addition, one can write on either the slanted top or on a special surface inside the desk.

These desks are fine examples of the thought, care and skill the Shaker woodcrafters put into even the smallest piece. The variety and detail of the joints in this piece make it a challenging project for the modern craftsman.

The general procedure for making these is to make and assemble the four sides and shelf, then the bottom and top, and finally the drawer.

First make patterns of the large and small ends on pieces of manila cardboard and lay out and cut the dovetails' outline on these patterns. (In making dovetail joints, I like to make the tails first.) Next, size and plane the stock from the cutting list. Cut the pieces for the front, back and ends 1/8-inch over in width so that you can plane down the top edges when it's together. Cut the angle on the top of both the ends and leave a little over.

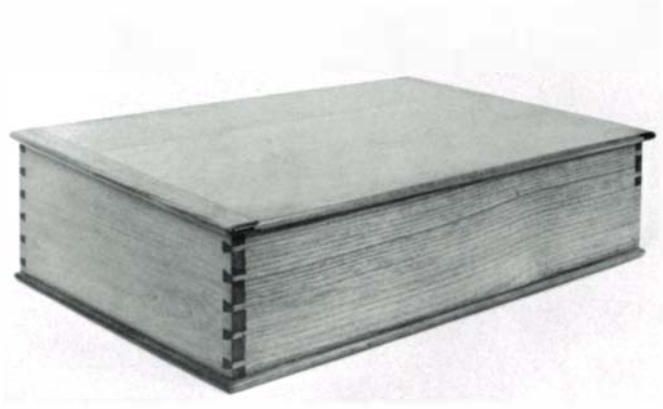
With a marking gauge, scribe the depth lines of the dovetails on the end pieces. Now align the patterns along the bottom of the end pieces and transfer the dovetails with a scribe or awl. Then cut and clean them. Now position the four sides as they are to be and code the corners that are to be dovetailed together. Then one by one mark the lines for the pins from the tails and proceed to cut them out. To help in the chiseling process, I like to make relief cuts with a bandsaw into the waste sections of the pins. But take care to place the piece on the saw table with the wide part of the pins up so that you don't cut into them by accident. Then fit the dovetails together, carefully paring down the pins where necessary.

Size the shelf and lay out the grooves to hold it on the inside of the four sides. The bottom of the shelf should line up with the bottom edge of the small end. Cut the groove for the shelf with a router or with knife and chisels, but be careful not to go to the outside edge and cut through the dovetails. Then glue the sides together, placing glue blocks just beyond the dovetails so that they can close all the way. Clean any dried glue off with a chisel and smooth the corners with a block plane. Plane the bottom edges so that box sits flat. Plane the top edges so that they all lie on a plane.

Size the bottom piece, round the edges and glue it on. Size the top. Glue on bread board ends (tongue should be 3/16-inch wide). Cut 1/8-inch molding to go around the mouth of the drawer. It should be rounded on the edge and protrude slightly. (The drawer will slide straight if you put extra molding behind the two sides of the opening. This should be done before gluing on the bottom of the desk.)

Now size and fit the drawer front and proceed to dovetail

This lap desk was made of 200-year-old pine (on commission), although the author prefers to use cherry for the desks. Shakers often made dovetails as shown here, but to be more correct, dovetails should have been laid out to begin and end with half-pins, not half-tails.



Desk Parts

Large End	3/8 x 4-3/8 x 12
Small End	3/8 x 2-1/8 x 12
Back	3/8 x 4-3/8 x 18
Front	3/8 x 3-3/4 x 18
Bottom	1/4 x 12-1/2 x 18-1/2
Shelf	1/4 x 11-1/2 x 17-1/2
Top	3/8 x 12-3/8 x 18-3/4

Drawer Parts

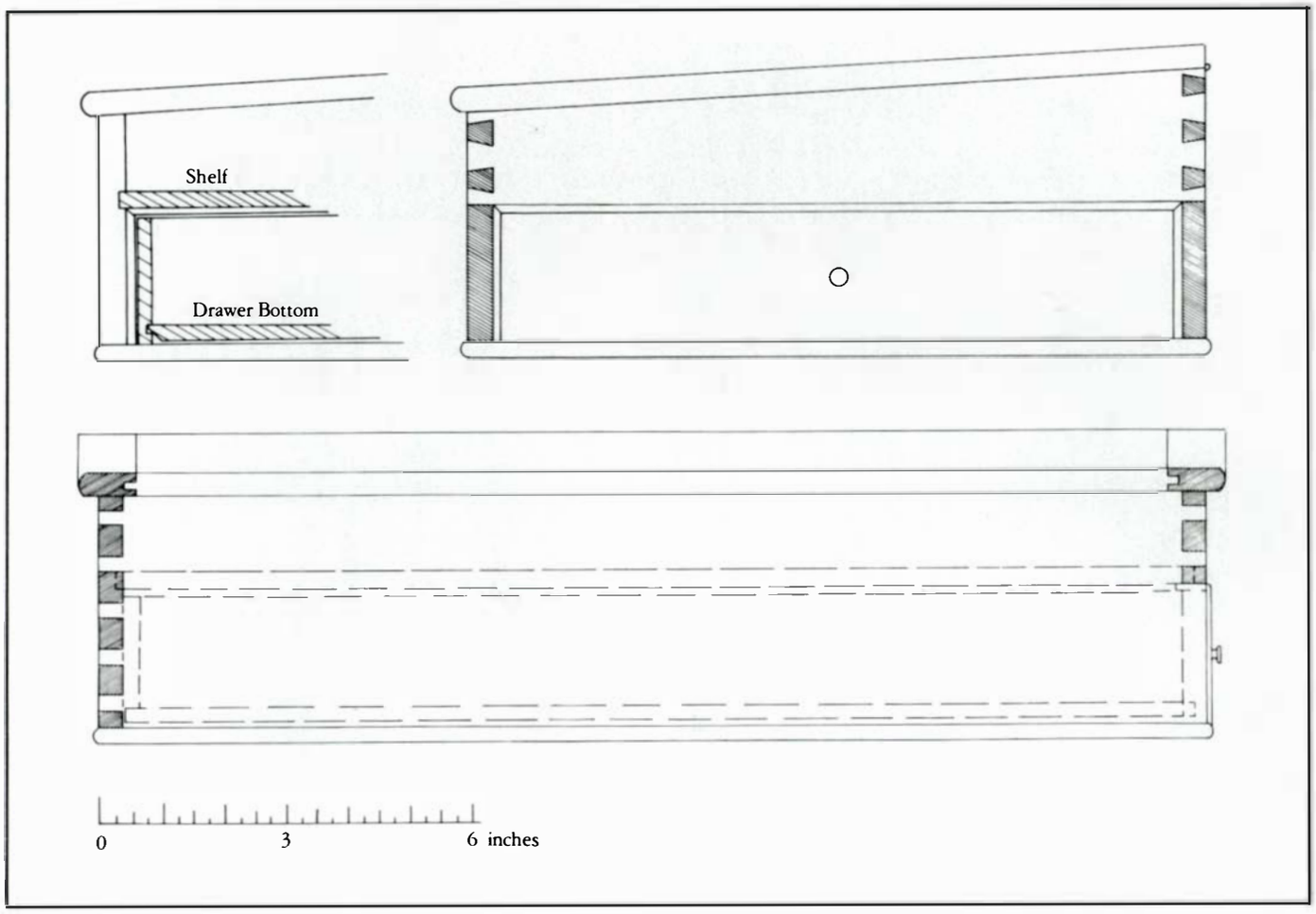
Front	3/8 x 2-1/8 x 11
Molding	1/8 x 1/2
Sides	1/4 x 2-1/8 x 17-1/2
Back	1/4 x 1-3/4 x 10-5/8
Bottom	1/4 x 10-5/8 x 17-1/2

the drawer together. The front dovetails are of course half-blind.

Dovetail the sides to the front first, put them together and slide them in the drawer opening. Cut the sides a little long so the drawer front will protrude at first. Then measure and cut off enough from the back end of the sides so the drawer front sits flush with the side of the case.

You still have to size the drawer back and bottom and dovetail the back to the sides. First cut a groove on the inside of the sides and front to hold the drawer bottom. Note that it is essential that the bottom edge of the groove be above the bottom half-pin. Otherwise when you pass the pieces through the table saw you will cut the dovetail. After you make these grooves, size the drawer bottom to go in the grooves and bevel the edges. Then measure for the back piece. It will be as wide as the drawer front but its height will be the distance from the top edge of the groove to the top of the sides. Dovetail this back to the sides by repeating the procedure for dovetailing the case. Finally, the drawer bottom should be slid in and nailed to the back piece from its underside.

Once the drawer is completed, bevel the back edge of the lid so it is flush with the back edge of the box and hinge it.



Chair Woods

Lessons from the past on choosing the right woods

by Robert C. Whitley

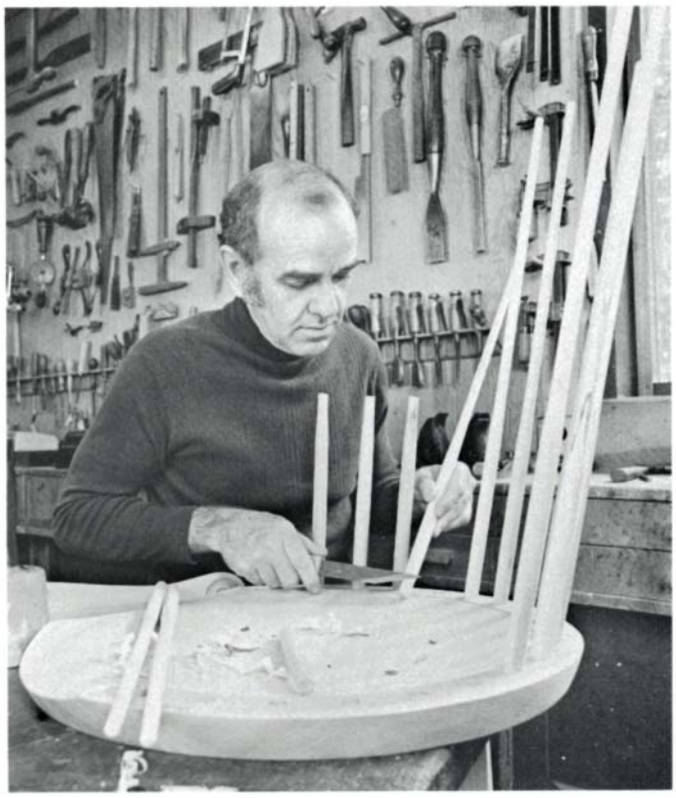
I stared at one hundred and fifty chairs, every one of them so loose as to be dangerous to sit in. "I have tried everything to no avail," the owner said. "Do you know the glue they advertise on TV where one drop between two blocks of wood holds a car suspended in the air?" he asked me in exasperation. "Well I must have used half a pint on each chair, and they still came apart." I nodded. "I'll admit you cabinetmakers have some secrets. Will you fix the chairs for me?" I said no, explaining that the chairs were made out of the wrong kind of wood and that they would never hold together for any length of time. He stalked off, obviously convinced I was out of my mind.

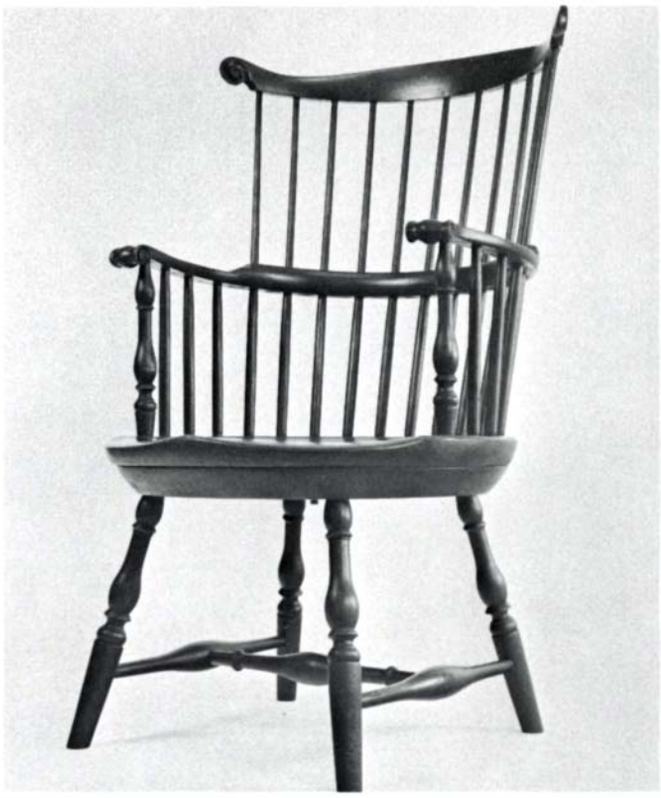
The preceding is a true account of a conversation between myself and the owner of a large, beautiful restaurant located on the banks of the Delaware River. The chairs in question are normally referred to as "captain's chairs." The original chair from which these were copied has proved to be a sturdy and practical design, made since the early 1800's. Why then were the chairs I was asked to repair not only falling apart, but incapable of restoration? Because the complete chair—legs, seat, spindles and back—was all of soft white pine!

It seems impossible that a large manufacturer would devote great sums of money and many man hours of work producing chairs with such an obvious fault. And yet, hardly a week goes by that I don't come in contact with chairs made with the wrong choice of wood.

A chair, especially the plank-seated chair, takes greater stresses, strains and shocks than any other piece of furniture used in the home because of its everyday use in kitchens, dining rooms and general living areas.

Imagine the stress placed on the legs and back of a chair that a 200-pound person sits in three times a day while eating. First, the chair is dragged across the floor, then the body lowers into the seat, shoving forward a few inches with





The author making a reproduction (right) of the chair Thomas Jefferson sat in when writing the Declaration of Independence. All woods are the same as the original: maple legs and arm posts, poplar seat and mid-arm back, hickory spindles, white oak arms and crest rail.

the full 200 pounds of weight on the base. Finally, the squirm and the wiggle to settle in! During serving and passing food to others, the weight is constantly shifting back and forth on the different legs of the chair. Now comes the balancing act! 200 pounds are thrown entirely onto the two back legs. Next is the coming down with accumulated speed to an abrupt stop, then the shoving of the chair to the rear with all the weight intact, and the final dragging to a place of rest.

Isn't it a wonder that these chairs have held up as long as they have? Here are the reasons why.

The Legs. Early chairmakers invariably used hard maple. It was easy to come by, but more importantly it is very hard, will resist impression, and does not splinter. Its fine, dense grain makes it easy to turn on the lathe. It also has tremendous resistance to abrasion, a quality especially needed where the legs of a chair meet the floor.

Stretchers. Base stretchers, too, were generally made of maple, only occasionally with white oak or hickory. In those cases I believe the chairmaker took into consideration a possible bending stress on the middle of a stretcher caused by the weight of feet that might be placed there. Whether the amount of stress was enough to put up with the more difficult turning qualities of the woods is debatable. In any event, although the stretchers are not to be considered as important as the legs in terms of abrasion, they too must be of a very hard wood.

The Seat. Here the craftsman's choice was influenced a great deal by the way the seat had to be contoured and shaped. Structurally he could have used a hardwood, but he knew that scooping out a comfortable seat would require at least a two-inch-thick plank to allow for ample depth to receive the legs, back and arm posts. The scooping-out process was done with an adze, a large chisel and shaped scrapers. It was laborious and time-consuming, so in the interest of ease and economy he chose softwoods to make the seat. The craftsman knew that the greater thickness of softwood would allow the legs and spindles to be deeply seated and, at the same time, weigh less, so he chose either pine or poplar, and only quite rarely a hardwood.

The Back. There were many types of chair backs, but for this discussion let me make two categories: the low back and the tall back. The low-back chair is called a "captain's chair," the type I referred to in the incident with the restaurant owner. This chair is very comfortable because of the large rolled and contoured shape which forms the back and the substantial arms. I have seen no exception to the use of either pine or poplar for this purpose. However, the short-turned spindles were always of either hard maple, oak or ash. The great dimension of the softwood back and arms allowed the hardwood spindles deep penetration.

The earliest type of low back was a Windsor chair which used pine or poplar for the back rail only, and here again it was thick enough to allow deep penetration of the spindles. The arms, which were thinner and therefore did not allow the spindles to be deeply seated, were either of white oak or maple.

The tall-back plank-seated chairs which have spindles that run from the seat to the top or crest are almost always of split-out hickory (wood split rather than ripped to rough size to ensure straight grain). A wood is needed that allows for movement—a wood that will give and spring back. Because of the small diameter of the spindles, the wood must have resiliency and an ability to resist fracture. Hickory is the only wood I know of which combines all these qualities.

When there is a thin, bent piece of wood incorporated into the back structure, it is almost always of split-out white oak, a wood which can be steamed and bent to rather small radii without fracturing. It also has great resiliency and hardness. Bent mid-arm rails, cresting rails and backs are invariable made of split-out steam-bent white oak.

The decision regarding what woods to use for a specific chair part was to some degree made easier for the earlier craftsman because most of his chairs were painted. Or perhaps they were painted because the craftsman used various woods. In any event, craftsmen today may want to use other woods than those used by the earlier craftsmen for esthetic considerations. There's no reason why not as long as one follows these guidelines:

- Use hardwoods where there will be shocks and abrasions.
- Use softwoods only in great thicknesses.
- Never join softwood to softwood.

In other words, do not use a wood for a purpose for which it is unsuited. Following is a list of some available woods and the purposes to which they are suited, in my opinion. Others may disagree on specific points. For instance, hickory could be used to make a chair seat and structurally it would stand up. However, its density and hardness make it extremely difficult to sculpt to shape, and its weight would be a disadvantage.

Walnut, Cherry: Good for all parts but has limited steam bendability.

Birch: Good for most parts, but very hard to sculpt.

Beech: Same as for birch, but fractures too easily when making thin spindles.

Sycamore: Great grain for seats, but has a tendency to warp. All right for legs and stretchers, but not for spindles.

Red Oak: Has a very coarse, unattractive grain, but may be used for most parts.

White Oak: Perfect for steam-bent parts, good for spindles and other parts. Too hard and heavy for seat.

Maple: Perfect for legs, stretchers and posts, but too hard and heavy for seats. Can be used if desired.

Poplar, Pine: For seats in two-inch thicknesses or better and for heavy back and arm sections. Do not use for any other parts!

Ash, Hickory: All parts except seats.

Mahogany: Great for most cabinet furniture, but really not suited for plank-seated chairs except as pine and poplar are used.

Spruce, Fir: No use.

Back to School

'Village Woodworker' is not enough

by Christopher Murray

There are a lot of woodworkers making a living from a specialty of some sort, such as cutting boards, jewelry boxes, or toys which they sell on the craft fair circuit.

Other woodworkers make furniture, some make kitchen cabinets and still others specialize in clocks or instruments. There is also the Village Woodworker, the man who has a shop and a local reputation. His work is everything from knife handles and picture frames to dining-room tables and cattle racks for someone's pick-up. In most cases the moderately successful ones have gained their reputation for a few specific items, be it Windsor chairs or wooden toys. Their operation consists of the tools, knowledge and space to do one thing fast and efficiently.

But many have reached this point and found themselves in a rut. The creative part of the work is all too often sacrificed for the money being raked in on production items. There is an abiding contentment in carving the leg of a table, for instance, or inlaying a particularly fine piece of walnut, but I don't think it holds the same spark for any of us when done for the 37th time on the same kind of table. It is, indeed, the joy of doing something creative that holds many of us to our work with wood.

I was facing the same dilemma with a business in Lexington, Virginia. I had opened a small shop in 1972, and my ambition was to make furniture of my own design. I started with little in the way of tools and less in the way of know-how, but over three years through copious reading and sub-poverty level living, I managed to build up a fair trade and a decent collection of machine tools. The bulk of my work consisted of kitchen cabinets and built-in library shelving and similar cabinet work. It was satisfying since I could buy tools and books with sporadic abandon, but there never seemed to be time to work on a piece that would really stretch my creative and technical abilities.

Contributing to this rut was my slow realization of how much I didn't know about woodworking and designing furniture. I had gotten by on a moderate amount of common sense and a bit of design work. When faced with free time before the next cabinet job, I would somehow find something else to do, like tool maintenance or work on my truck. It was a good while before I realized that it wasn't lack of time, but my own doubts that kept me from doing the furniture work I wanted.

I could see a number of solutions. The first, of course, was to chuck the whole mess. But I *liked* the mess. So the next could be to work for someone else. But then I would no longer be a Free Man. There was little hope of being hired beyond the stage of apprentice by one of the better-known woodworkers. The famous woodworker has made his reputation by using techniques and designs that he has done well. Obviously, his experiences alone could be instructive, but his work is limited to a great extent by his own style and approach to it. If there are to be limitations on my knowledge, they should arise from my own limitations of vision and preferences and not the scope and quality of my instruction.

The only solution left seemed to be some sort of school. Since my weakness appeared mainly to be in design, I looked first at art schools having programs in furniture design—and in my case, chose Virginia Commonwealth University, and was accepted.

One of the most obvious advantages has been the instruction available. There are people here who are doing things I have only read about. A demonstration simplifies immeasurably even the most complicated techniques. Also, instruction is available for the less defined aspects of the total process. Principles of design, for example, and visualizing designs on paper are much more easily grasped when explained by a competent instructor. And the feedback one gets from fellow students is almost as valuable as the more formal (and expensive) kind.

On the academic side, history books re-opened in the light of commitment take on a more vital, timeless dimension. It is essential for every designer or builder of furniture to have a solid sense of historical perspective. You need to know where your stuff is in relation to what has come before. This knowledge is a designer's tool and as important as any other.

Also, a much larger resource pool is available to a school. Most schools will have visiting artists programs, and most tool and wood merchants have schools on their mailing lists. In addition, galleries and furniture people maintain a much closer contact with a school than would be possible with an individual craftsman.

Most of all, a school provides the time to work and experiment with designs and techniques and to make showpieces—furniture that you shouldn't *have* to sell. In essence, you pay now for the economic freedom to work unhindered for the next two years, rather than spending six years to cover the same techniques by paying as you go.

To some it's essential, to others a formality, but after it's all over, you do have a degree which can be credentials for a teaching career. It could also mean a higher salary for those who want to work for the larger furniture companies.

I have found my expectations to be fairly realistic. There are some things I would caution a prospective student against, and one is to look on the years in school as a solution for professional problems. It isn't. In the words of Arthur Espenet Carpenter, "You've still got to sell, got to do the books, got to produce and design—and not only that, you've got to repair the damned machinery, and you have to know what's the difference between 110 volts and 220 volts." If these things bugged you before school, three MFA degrees won't keep them off your back afterwards.

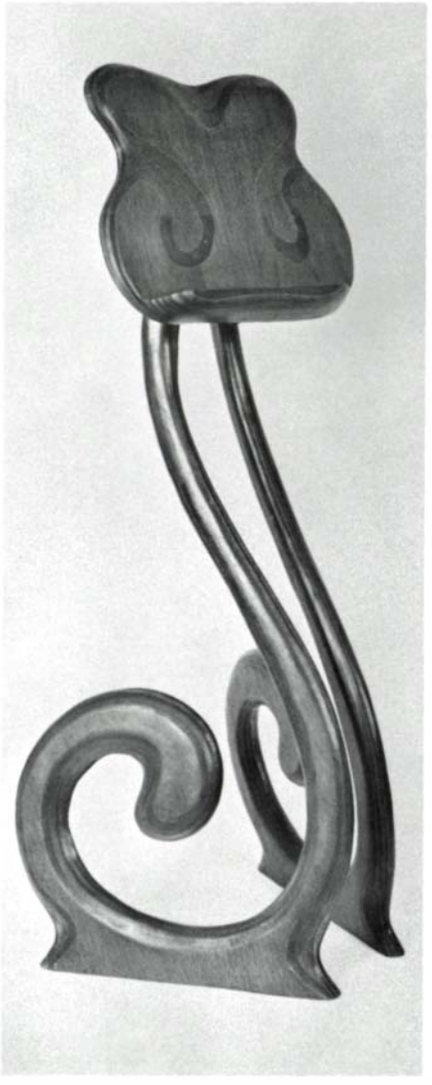
Often the department takes on the habits and energy of its instructors. Consequently, if one were thinking of a school, I think it important to look closely at its faculty and their work to decide whether this school would best suit your needs.

Up to this point, school has been the right decision for me. I'm sure there are many other self-taught village woodworkers around for whom the same course could be an answer to their dilemma. I certainly hope so.

Capital Contemporaries

DC designers show work.

Barbara Terpstra, a woodworker from Arlington, Virginia, sensed that the nation's capital was ripe to see some contemporary work by young craftsmen from the area. So she organized a show, talked the Washington Project for the Arts into sponsoring it, and the result was a big success. Among the pieces shown was Terpstra's sculptured music stand ($350), made with mahogany plywood, a saber saw, white glue, and an auto body grinder. Christopher Murray's stool ($425) is of walnut, with the legs laminated and bent. Paul Tankel's ash bench ($250) gets its strength from the wedged mortise and tenon joints. Bill Parson's sculptured walnut jewelry box ($100) was made by stacking walnut boards, with the drawers cut out before the stack was glued. Alan Shapiro's rectilinear walnut and rosewood jewelry box ($100) is put together with simple butt joints at the corner posts. He put on a preparatory layer of yellow glue (diluted with 25 percent water) to give more strength to the walnut end grain. (The box is four years old and still holding.)



Micro Bevels

'Dulling' the edge to make it better

by R. Bruce Hoadley

Sometimes the most basic and obvious principles escape our attention. A good example is microsharpening, a concept that can be used to advantage by every woodworker on a wide array of woodworking tools. The basic idea is simply to add a very narrow microbevel in the final sharpening, thereby producing a more durable edge.

When tools are sharpened, they are ground down to form a usually specified sharpness angle. The smaller the angle, the sharper the tool will be, but also the more fragile the edge and the quicker it will dull. Increasing this angle increases the durability of the edge but also increases the cutting force required to push the edge through the wood. The force may also be compounded by the clearance angle — the angle the bottom of the tool makes with the wood. With hand tools, the clearance angle can be virtually zero, but with power tools frictional heating requires a positive clearance angle. (With dull tools, the clearance angle actually becomes negative.)

So there is a trade-off involved — to decrease the cutting force required without decreasing the tool's sharpness angle to the point of making the edge too fragile. Adding a microbevel gives us a compromise. It increases the effective sharpness angle of the tool, but doesn't affect chip formation because the bevel is so narrow.

In carving chisels, as typified by the common gouge, a microbevel of about 0.005-inch on the concave face increases the effective sharpness angle to about 25-35 degrees (from 15 degrees) and will make a world of difference in longer edge wear. After the conventional sharpening is completed, the microbevel can be applied by light strokes of a round hard Arkansas pencil or round-edge slip on the concave face. This leaves the flatness of the clearance face undisturbed to ensure the edge will "bite" but modifies the sharpness angle. Determining the correct width of the microbevel may be aided at first by using a magnifying glass and hair for comparison. Eventually, the bright reflection of the microbevel can be gauged by eye, or the necessary number of strokes of the stone may become standardized.

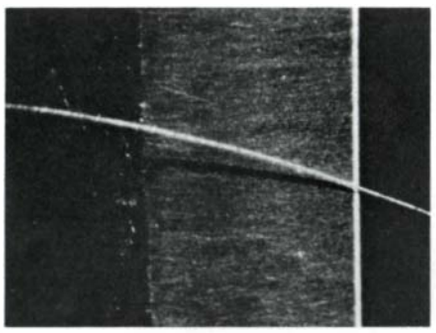
The common bench-type hand plane can also be microsharpened to advantage. But to avoid interfering with chip formation, the microbevel should be added to the already ground bevel forming the under face. Keeping the microbevel to only about a 40-degree sharpness angle will ensure that a slight positive clearance angle still remains. This is the "honing angle" often recommended in plane sharpening.

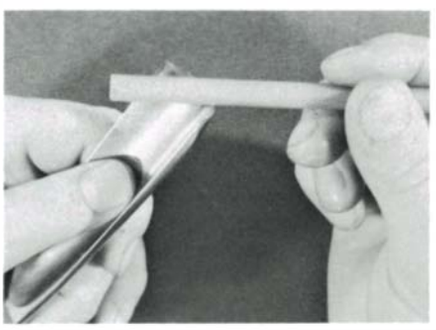
With boring bits, microbevels can be added to the lips and to the inner edge of the spurs.

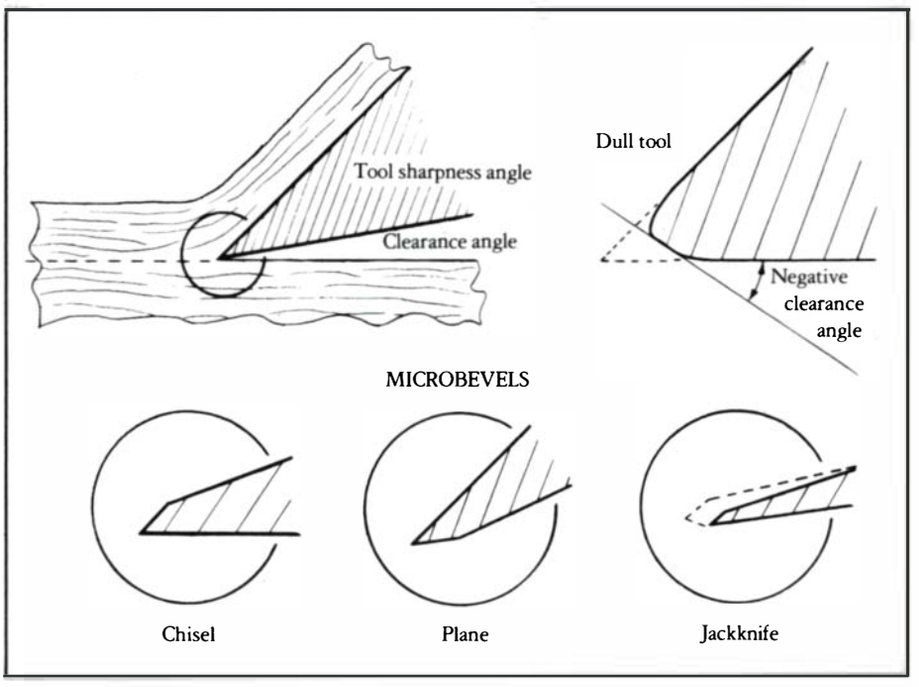
Instructions for sharpening planers, jointers and other machines having multiple-knife cutterheads usually recommend leaving a hairline of jointed surface on each knife. This jointed edge is in reality a microbevel.

Finally, a new jackknife, as it comes from the factory, usually has a "sharp" edge formed by double-bevel grinding which creates a negative clearance angle when held in the customary draw-grip position used in whittling. The knife merely rides along the wood surface without cutting. The blade must be reground to locate the edge along the lower face to give edge contact with the wood. Adding a microbevel on the face away from the work will improve edge life.

Microbevel is bright vertical edge along greyish sharpened chisel face. Hair gives sense of scale. Arkansas pencil is used to put a microbevel on a gouge. Putting it on wrong side merely dulls the tool. Drawings show right way.







SOURCES OF SUPPLY

Editor's Note: As an editorial service to our readers, *Fine Woodworking* will periodically publish some sources of supply. This first chart lists tool dealers; future charts may be more specialized. Please let us know if we've missed any dealers that should be included in an update.

	Telephone	Catalog?	Mail Order	Retail Store Sales	WOODS					HAND TOOLS				POWER TOOLS							
					Veneers	Hardwood Lumber	Hardwood Plywood	Carving Blocks	Turning Blocks	Cabinetmaking	Carving	Turning	Marquetry	Portable	Stationary	Cabinetmaking Hardware	Marquetry Supplies	Finishing Materials	Books	Plans
Robert M. Albrecht 8635 Yolanda Avenue Northridge, CA 91324	(213) 349-6500	Free	Yes	Yes	●	●		●	●		●	●		●				●	●	
Barap Specialties 835 Bellows Avenue Frankfort, MI 49635	(616) 352-9863	50c	Yes	Yes						●	●			●		●		●		●
Boat Craft Tool Company 1325 Burbank Street Alameda, CA 94501	(415) 523-1823	No	No	Yes						●	●	●								
Brookstone Company Vose Farm Road Peterborough, NH 03458	(603) 924-7181	Free	Yes	Yes						●	●	●		●	●			●	●	
A. Constantine & Son, Inc. 2050 Eastchester Road Bronx, NY 10461	(212) SY2-1600	50c	Yes	Yes		●	●	●	●	●	●	●	●			●	●	●	●	●
Frog Tool Company, Ltd. 548 North Wells Street Chicago, IL 60610	(312) 644-5999	50c	Yes	Yes		●				●	●	●	●				●		●	
Garrett Wade 302 Fifth Avenue New York, NY 10001	(212) 695-3358	Free	Yes	Yes						●	●				●				●	
Homecraft Veneer Box 3 Latrobe, PA 15650	(412) 537-3938	25c	Yes	Yes	●					●			●				●	●		
Leichtung, Inc. 701 Beta Drive #17 Cleveland, OH 44143	(216) 461-4677	Free	Yes	Yes						●	●	●			●					
M & M Hardwood 5344 Vineland Avenue North Hollywood, CA 91601	(213) 766-8325	$1	Yes	Yes	●	●	●	●	●		●						●			
Minnesota Woodworkers Supply Co. Industrial Boulevard Rogers, MN 55374	(612) 428-4101	50c	Yes	Yes	●											●		●	●	●
Bob Morgan Woodworking Supplies 915 East Kentucky Street Louisville, KY 40204	(502) 636-5000	Free	Yes	No	●								●				●			
Real Wood Veneers 107 Trumbull Street Elizabeth, NJ 07206	(201) 351-1991	25c	Yes	Yes	●	●		●	●		●					●	●	●	●	
Sawdust & Shavings, Inc. 3518 Chicago Avenue Riverside, CA 92507	(714) 781-0564	No	Yes	Yes	●	●	●	●	●		●							●	●	
Schlesinger's for Tools, Ltd. 1261 Utica Avenue Brooklyn, NY 11203	(212) 451-2556	$1	Yes	Yes				●	●	●		●			●					
Silvo Hardware Company 107-109 Walnut Street Philadelphia, PA 19106	—	$1	Yes	Yes						●	●	●		●	●					
Three Crowns 3850 Monroe Avenue Pittsford, NY 14534	(716) 586-5160	No	Yes	Yes						●	●					●				
U.S. General Supply Corp. 100 General Place Jericho, NY 11753	(516) 997-5533	$1	Yes	Yes						●	●	●		●	●	●			●	
Ventron Corporation 152 Andover Street Danvers, MA 01923	(617) 777-1970	$1	Yes	No						●	●			●	●			●		
Wood Carvers Supply Company 3112 West 28th Street Minneapolis, MN 55416	(612) 927-7491	Free	Yes	Yes				●	●	●	●	●	●	●	●			●	●	●
The Woodcarvers Tool Chest 14 West 21st Street Deer Park, NY 11729	(516) 242-2365	Free	Yes	Yes							●								●	
Woodcraft Supply Corporation 313 Montvale Avenue Woburn, MA 01801	(617) 935-5860	50c	Yes	Yes		●				●	●	●	●	●	●		●	●	●	●

Telephone Chest

A new art form?

When cabinetmaker and author A. W. Marlow noticed that the local telephone company was offering all sorts of decorator-type phones, including a chest phone, he thought he would go them one better and build his own chest. But it didn't turn out to be that simple.

First of all, the phone company would only rent such a phone but wouldn't let him take it apart to put it in his own case. But the company did name a source where he could buy a case and phone (minus the electronic innards which the phone company would still supply). After a wrong address or two, it turned out a local home furnishings shop could supply the phone.

Marlow bought it, stripped off the plastic case, built his own, and then took it all down to the phone company where they added the electronics (rented) to make it a workable instrument.

Marlow used a Florentine design he adapted from an Italian tooled leather jewel case he had seen years ago. The wood is 7/16-inch walnut; construction is with mitered and splined joints so no end grain shows.

As Marlow says, "It turned out all right and we treasure this piece out of all proportion to its worth."

If you're still interested, we suggest you start with your local phone company . . . .