

Wood News

Published by Highland Hardware, Inc.

Serving Woodworkers

Number 13, Spring 1984

Tage Frid in Atlanta

About 100 people gathered in the Habersham Room at Colony Square Hotel in Atlanta Friday, February 24 to hear Tage Frid give introductory remarks which began a weekend seminar sponsored by Highland Hardware. His slide presentation illustrated pieces of furniture designed and built by individual students, as well as some of Frid's pieces. His talk was humorous and revealing of many of the facets of design encountered by one who has taught the subject for the past 36 years.

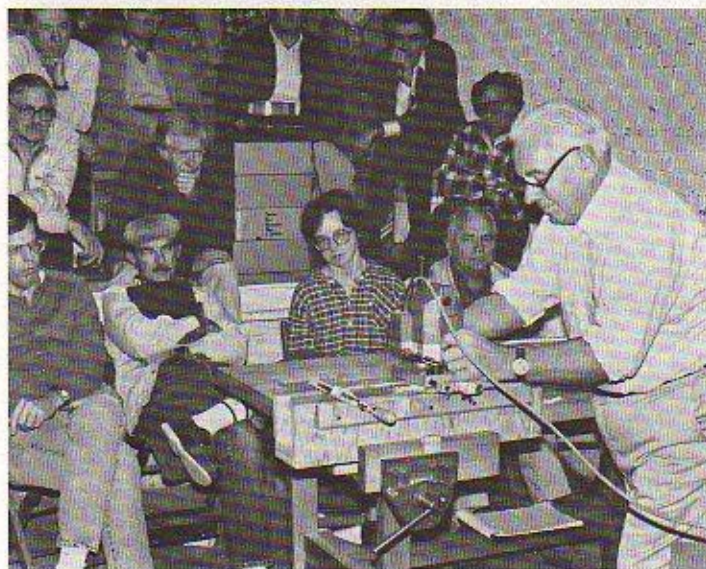
The seminar continued Saturday and Sunday for about 40 people who gathered in the basement of Highland Hardware. This delightful group had the pleasure of sharing the entire weekend with Tage Frid, the author from whom most of us learned our joinery. Also making the weekend extra special was the presence in the group of former President Jimmy Carter, another woodworker known to us all.

Tage Frid had spent Thursday afternoon and Friday morning working with Zach Etheridge preparing tools and stock for the seminar, and the guests were in store for a series of joinery demonstrations interspersed with discussions on tools, glues, finishes, bending, and veneering. After lunch each day came another slide presentation, dealing in detail with application of some of the techniques. Use of hot glue, mortising for splines with the plunge router, hammer veneering, brushing and scraping lacquer, sharpening scrapers and planes, and repairing mistakes of all kinds were among the many topics demonstrated during the course of the weekend.

While in Atlanta, Tage Frid said he is approaching the end of his third book, which will complete a series of three books which he began soon after going to work as Consulting Editor of *Fine Woodworking* magazine in 1975. His first book *Joinery: Tools and Techniques* was followed in 1981 by *Shaping, Veneering, and Finishing*. (Both are available from Highland Hardware for \$17.95 each plus shipping). The purpose of the third book will be to put together all the techniques for design and construction of fine wooden furniture, to help woodworkers go from start to finish on projects.

INSIDE

Inside this issue are features on *Finishing* on page 6, the *Plunge Router* on page 8, *Predicting Wood Shrinkage* on page 10, and *Boatbuilding* on page 12. New tools are featured on pages 4, 5 and 10. And photos of our recent shoji making seminar begin on page 2.



New Store

We are pleased to announce that construction is in progress on our new store, which is across the street from our existing location. If work progresses on schedule, we expect to move in near the end of April.

The new store will feature a larger retail space, with much room for additional display of our woodworking tools. The retail space is supplemented by a large warehouse in the rear. Convenient off-street parking is available next to the new store.

Because of the transition, we are announcing no seminar schedule in this issue of *Wood News*. Seminars for the summer will be announced only in the store as plans develop pending our settling in after the move. We regret the inconvenience bound to be caused during our move, and look forward to serving you from our new location.

Articles Needed

For *Wood News* to survive and flourish, we need to have quality articles contributed from our readership. We have been fortunate the last few issues to have had a number of such contributions made. Perhaps next issue can be your chance to have something published! We solicit project plans, informative articles, humorous anecdotes, photographs, drawings, cartoons, news of woodworking events, and generally anything else which relates to woodworking. Payment for contributions is in the form of gift certificates which can be redeemed for tools from Highland Hardware. Deadline for next issue is June 1, 1984. Submit your material to Editor, c/o Highland Hardware, 1045 N. Highland Ave., NE, Atlanta, GA 30306.



Shoji Seminar with Toshio Odate

Toshio Odate's seminar last November at Highland Hardware on making shoji began the first evening with a philosophical look at the environment inside a Japanese home, and how it affects the people living there. According to him, the meditation practiced by a contemporary Japanese person can be witnessed in the change of pace which occurs at home after a "hard day at the office" — arrive home, remove shoes, change into comfortable kimono, tread lightly on soft tatami mats, relax with cup of warm sake.

This atmosphere is complemented by the shoji — delicately formed sliding doors — consisting of a frame and lattice of pine covered with translucent rice paper. When closed, they afford a degree of privacy, while still permitting the entrance of soft light.

For the eleven people in the seminar, it was the first attempt at making shoji. The work began in earnest on Saturday morning as a struggle began to properly lay out notches for the lattice and mortises in the frame. Starting and stopping and backtracking seemed to be the rule as everyone sought to "measure twice before cutting once." Nonetheless, it was occasionally necessary to cut more than once.

The pace of the event was neither hurried nor slow — but certainly defined by the exclusive use of hand tools. Stock had been prepared by machine in advance, but crosscutting, paring, mortising, and finish planing were all done by hand by each person.

The final test came as each person wove the six pieces of lattice together and hammered home the members of the frame. Those who had used care to create the squarest of mortises were rewarded with screens free of winding or twist. For all who participated, the exercise opened the door to a new style of construction with many possible applications for the Western environment.

Toshio Odate's new book, *Japanese Woodworking Tools: Their Tradition, Spirit and Use*, is due to be available from Highland Hardware in April. \$22.95 plus \$2.50 shipping.



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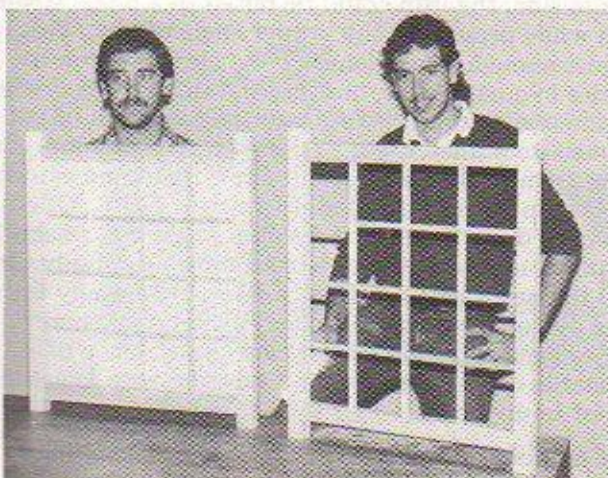
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02.64.10	Large 6000 grit Stone	\$18.50
02.64.11	Large 8000 grit Stone	\$29.50
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NEW TOOLS

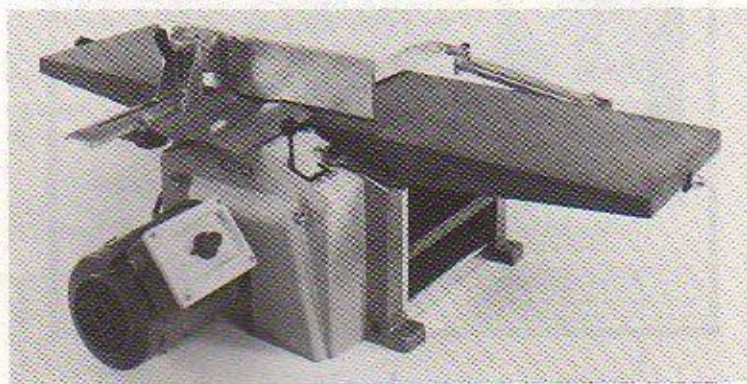
The distribution of woodworking tools is very fortunately not one of those jaded fields of commerce that requires constant recycling of "new and improved" products to keep the industry alive and the customers amused. Nonetheless it's a pleasant event when a good new tool appears, or when an old favorite is modified to become significantly better. This winter we have four new stationary machines to offer, each of which sets new standards for excellence in its class. Another recent arrival boasts the first technical improvement in wooden planes in a very long time: the adjustable block plane from E. C. Emmerich.

Inca 550 Planer-Jointer

The familiar model 510 jointer-planer has been transformed into a cabinetmaker's dream machine thanks to several fundamental changes in Inca's basic design. The 550 features a total jointer length of 42", making it easy to handle long and heavy stock for edge or surface truing. The fence has been lengthened commensurately, and the blade guard is now stronger and heavier for improved operating safety. The jointer outfeed table has been made adjustable to accommodate honing the knives in place between grindings, a worthwhile convenience even given the ease of knife installation which has always been one of Inca's strong points. The 550 also includes a built-in motor (your choice of 1½ hp 110 volts or 2 hp 220 volts at the same price) which provides quieter and smoother operation than the old platform-mount design. And the planer's feed roller drive system has been completely re-designed for easier maintenance and the extraordinary ability to shift from fast to slow feed or to stop feed completely without having to shut down the machine.

Inca has very sensibly avoided unnecessary tinkering with other features already proven in use on the model 510. Main castings and adjustment mechanisms, 10¼" jointer and planer width capacity, hard anodized surfaces, compact design and full five year warranty (one year on the motor) are all exactly as they have been for years: solid, reliable, and virtually maintenance-free. After using and respecting the 510 for a good five years now, it's delightful to find the 550 so successful an improvement.

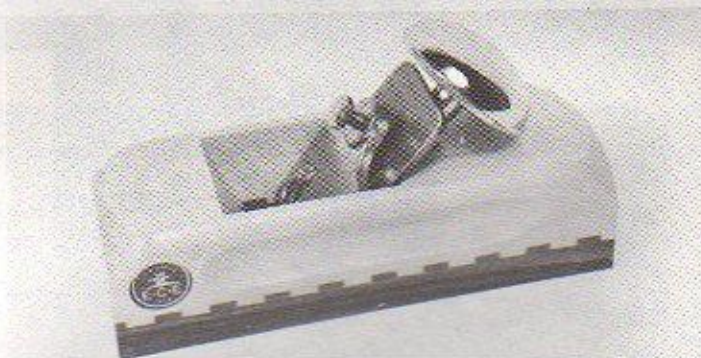
The 550 with motor is available from Highland Hardware for \$1495. Optional stand, \$99.50. Freight collect.



Inca 330 Bandsaw

Another addition to the Inca line is the model 330 bandsaw, a new edition of the well-established model 310. The 330 comes with a built-in motor rated at 6/10 hp, which provides unusually quiet and vibration-free performance. It also makes the saw extremely portable; the unit with no stand weighs only 55 pounds. Since it can easily be clamped on top of any sturdy worktable, it is ideal for use either in the shop or on the jobsite. Though only 85% as powerful as the ¾ hp model provided for the 310, this new motor supplies adequate power for all conventional bandsaw work, including resawing up to 6" in hardwoods. Demand for the 330 has thus far exceeded supply since being introduced in late 1983, but we are told that spring 84 shipments will make it once more available for immediate delivery.

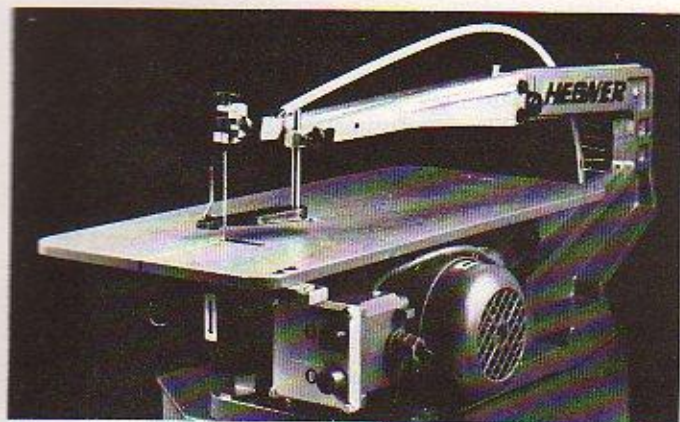
Model 330 Bandsaw \$535.00, Freight Collect



ECE Adjustable Block Plane

Wooden planes haven't changed too much since the Egyptians first left them lying around thousands of years ago, and a few have resisted even the relatively few improvements that have occurred in the intervening years. The block plane was one of the most durably primitive planes left; it was considered too small to lend itself to mechanical implants and too simple to need any. Now, however, Hans Emmerich in West Germany has succeeded in bringing the humble block plane into the 20th century. The ECE "Pocket" plane's elegantly simple and compact adjustment mechanism was not all that had to be invented — first the designer had to shake free of traditional design ideas and imagine the radical step of turning the iron upside down. For hundreds of years the block plane's iron had been set into the body at a very low angle with the bevel up, but Emmerich realized that if the bevel were on the bottom side, the iron could be raised to a much steeper pitch while preserving the proper angle of cut. This move left just enough space behind and below the iron to mortise in a barrel nut, bushing and threaded rod which provide easy and precise adjustment for depth of cut. An oversize domed knob was designed to fit comfortably in the palm of the hand, and a screw-tightened cap was added atop the iron to hold it firmly in place. Of course ECE have done their usual fine job of joining a beautiful lignum vitae sole to the one-piece hornbeam body, and in all the new plane is a great success. Especially for all those die-hard wooden-plane enthusiasts out there who've been secretly coveting the convenience of adjustable steel planes, here's a graceful way to get the best of both worlds.

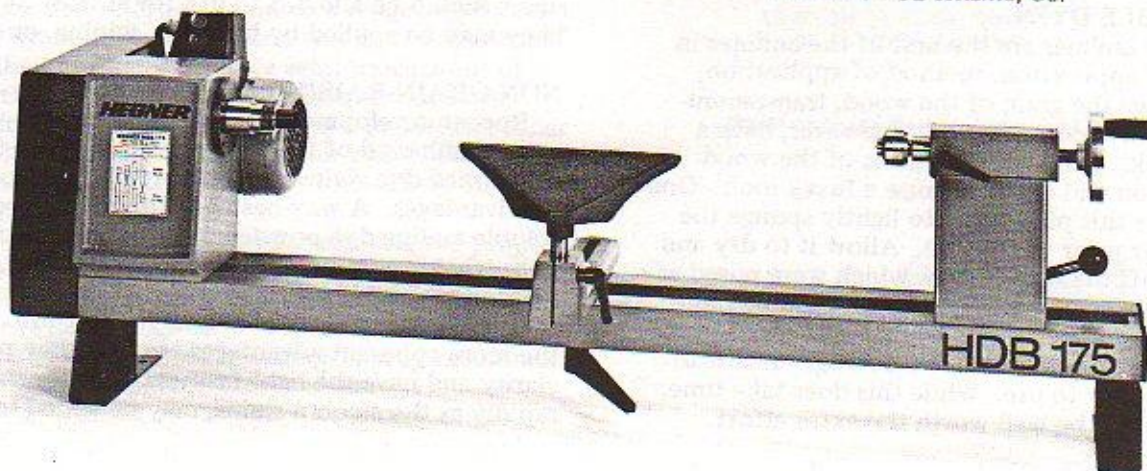
ECE Pocket Plane is \$31.50 plus \$3.30 shipping.



Hegner Multimax 3 Jigsaw

Last fall Hegner introduced a third model to their line of jigsaws, and predictably enough this one is another superb machine. The Multimax 3 is designed to fill the niche between the Multimax 2 and the industrial Polymax 3, offering features to be found on no other jigsaw on the market. The saw's most eye-catching feature is its incredible 25" throat depth, which makes it the most capacious cutting tool we offer and an incomparable treat for large-scale scrolling. Operation is very quiet and smooth; the combination of the saw's size, weight and cutting speed make highly precise sawing seem like the natural thing to do. As on the other Hegner saws, the patented blade suspension and drive systems allow very high blade tension while virtually eliminating blade breakage. Even sawing at the machine's maximum thickness of 2-3/8", you can expect hours of use from a single blade.

Borrowing technical features from both the Multimax 2 and Polymax 3, the Multimax 3's frame and table are die-cast aluminum for high strength to weight ratio and no-rust durability. Rocker arms ride on high-load journal sleeve bearings rather than ball bearings, which would be subject to uneven wear and eventual vibration problems. Two stroke settings allow selection of 11/16" or 3/8" stroke length, and the rpm (standard 1200) can be made variable from 150 to 1200 rpm with an optional electronic control. A built-in sawdust blower keeps the work free of obscuring dust. The Multimax 3 is supplied with a welded steel stand which can be free-standing or bolted to the floor. The machine is warranted against defects for one year — and speaking of service, we're pleased to report that in the one service call we've had in the last two years on Hegner saws, parts were supplied in three days from the importer's stock.



Hegner HDB175 Lathe

Another new machine from Hegner is the bench-mounted model 175 36" woodturning lathe, due to make its appearance later this year. We're looking forward to seeing this machine — the description provided by the importer makes it sound like exactly the top-of-the-line small shop lathe we've been looking for. The 175 will feature the same kind of twin box-beam construction that makes its big brother, the HDB 200, exceptionally solid and precise. Likewise, the new lathe will have a heavy cast tailstock (live center standard) and tool rest with the convenience of smooth adjustment and one-hand position lockdown. Extraordinary 14" swing over the ways and outboard turning capacity up to 24" in diameter will give the 175 an almost unfair advantage over competing lathes such as the Myford and Arundel machines. Standard four-speed drive system allows safe and efficient roughing out as well as high-speed finish sanding. The price for the motorized HDB175 will be \$995. Optional accessories include chip deflector shields (\$95) and steel legs similar to those provided with the HDB200 (\$155). Initially, this lathe will be available from Highland Hardware on a special order basis.

Another note on the subject of lathes: Hegner has recently decided to make their industrial HDB 200 duplicating lathe available in custom lengths on demand. The Standard 39" ways can be expanded to any length desired, at an approximate cost of \$250 per foot of additional length. So if you've been looking for a way to duplicate eight-foot bedposts or any other kind of long spindles up to 7" in diameter, there is at last an economical and very efficient way to go about it. Our experience with the HDB 200 here at the store has been most encouraging, not only because it's the best-selling lathe we've ever carried. The design of our new building calls for several hundred railing spindles, and in the process of finding and pricing commercially available turnings we've discovered that even at a \$25 per hour shop rate the HDB 200 could be used to produce our spindles at extremely competitive prices. Considering the relatively high initial cost of the machine, this is reassuring news indeed, and another strong recommendation for this uniquely capable machine.

Our Hegner prices, effective April 1, 1984

Multimax 2	\$849.00
Multimax 3	\$1499.00
Polymax 3	\$1899.00
HDB175 Lathe	\$995.00
HDB200 Lathe with duplicator	\$2695.00

Prices are FOB Atlanta, Ga.

FINISHING

In this issue, we begin a series of articles on the use of wood finishes. We are indebted to H. Behlen and Bro. company for providing the material from which these articles were derived. In the South, Behlen products are more commonly recognized under the tradename Mohawk. We are pleased to offer Behlen products to our customers, and through this column will seek to increase understanding of this complex subject. In future issues, we will cover the use of fillers, bleaches, sealers, lacquer, varnish, shellac, oils, removers, and abrasives.

Use of Stains

Stains are used to enhance the appearance of a wood's grain pattern, to impart color to a wood having little natural grain, to allow different woods to be matched, or to touch up areas where a wood's color has been removed for one reason or another. It is important that the finisher have an understanding of the various types of stains, a fairly good color eye, and an appreciation of the piece on which the stain will be used.

There are basically three ways to stain wood:

With dye,

By chemical means, or

With pigments

Since staining or coloring the wood by chemical means is not commonly done, discussion here will be limited to the use of dyes and pigments.

DYE STAINS

The most common form of dye stain involves the use of a coal tar derivative called *anilines*. Anilines are usually purchased from the stain manufacturer in dry powder form. They are converted to liquid stains by dissolving the dye powders into an appropriate solvent. The solvents most commonly used are: water, alcohol, and petroleum distillate (oils) or turpentine. Some aniline dyes are listed as being both water and alcohol soluble. However, they will not be 100% soluble in both mediums. For example, an aniline that may be 100% soluble in water, may be only 25% soluble in alcohol, and yet be listed as both water and alcohol soluble. For this reason, our Behlen Anilines are only listed by their best % solubility in a given solvent. Since an aniline dye may not have dissolved 100%, it is always good to strain the solution through several layers of cheesecloth before applying. Aniline dyes of the same solubility, (whether in powder or liquid form) may be intermixed to produce a variety of colors.

WATER SOLUBLE DYES

Water soluble anilines are the best of the anilines in terms of ease of application, method of application, ability to enhance the grain of the wood, transparent quality, and relative cost. They do, however, have a serious drawback. They raise the grain of the wood during application and this can cause a fuzzy look. One way to eliminate this problem is to lightly sponge the wood with water prior to staining. Allow it to dry and then fine sand off the wood fibres which were raised as a result of the water sponging. Then proceed to stain. Water anilines are made by dissolving 4 ounces of powder in one gallon of hot water (not boiling). Allow to cool and strain prior to use. While this does take time, the final results will be well worth the extra effort.

Water soluble anilines may be applied by brush, rag, or by spraying. When spraying, use only non-corroding equipment, and do not let the stain mixture stay in the spray container any longer than necessary. In their dry state, Anilines should be stored in the container in which the stain was purchased, with the lid tightly closed to prevent moisture absorption. In the liquid state, they should be stored only in plastic, glass or earthenware containers — never in metal.

ALCOHOL SOLUBLE DYES

Alcohol soluble anilines are sometimes referred to as spirit soluble stains. These are not very color fast and for that reason are not recommended for complete staining of a piece of furniture. They are much more valuable in the touchup of existing stains when color matching. Alcohol soluble anilines often employ 1 ounce of shellac (white for the lighter woods and orange for the darker woods) per quart to give the stain body and prevent too deep a penetration. They dry very rapidly giving rise to lap marks when brushed or wiped on. A spray gun is the proper tool for applying if large areas are to be covered. Alcohol soluble anilines do not raise the grain.

They are best dissolved in denatured or solvent alcohol the same proportion as the water stains. For example, add 4 ounces of powder to one gallon of solvent. Liquid or dry, they should be stored in the same type of containers as the water soluble anilines. They should also be stored in a dark place to prevent fading during storage.

OIL SOLUBLE DYES

Oil soluble anilines are sometimes broken into lacquer type or oil type. The same dry powder is used in both cases and only differ in the solvent system used. If the powder is dissolved in one of the petroleum distillates such as toluol or lacquer thinner, it is considered a lacquer type. It can be used in this manner or added to the lacquer to produce a transparent toner. If it is dissolved in turpentine, it cannot be added to lacquer and is considered an oil type to be used by itself. These stains produce no grain raising, bring out the natural grain of the wood in excellent fashion, and have a slow drying time especially when dissolved in a medium other than lacquer thinner. They do, however, have a tendency to bleed through top finishing coats. For this reason, only a small amount may be added to lacquer and when used by themselves, should be isolated from the upper finishes by a wash coat (one part 5 lb. cut shellac to 6-8 parts denatured alcohol) of shellac. When dissolved in turpentine, benzine or other such mediums, oil soluble aniline stains should be allowed to dry for at least 24 hours. They may be applied by brushing, wiping, or spraying.

NON-GRAIN RAISING (NGR) STAINS

Recent developments in aniline dyes have produced a stain that has all of the desired properties of the aforementioned dye stains without any of their apparent disadvantages. A way has been found to dissolve water soluble aniline dye powders in a special solution to produce what is commonly called an NGR stain. Since this method is normally a trade secret of the manufacturer, these stains are only available in liquid form. Some of the more apparent advantages are that they produce the clarity and have the light fastness of water stains, dry as rapidly as the alcohol stains, may be added to lacquer to

produce transparent toners, or can be used by themselves without danger of bleedthrough in succeeding finishes. As manufactured, the recommended method of application is by spraying because of the fast drying properties. A retarder, however, can be added to slow down the drying time to allow for brushing or wiping application without danger of lap marks. Behlen's Solar-Lux stains are of the NGR type.

There are many other dye stains available which were used to an appreciable extent many years ago. These stains obtained their colors predominantly by the use of juices from trees, nuts, shells or plants. Since they are seldom used today, we will not attempt to cover them here.

PIGMENTED STAINS

These stains are basically different from dye stains due to the fact that while dye stains dissolve and actually dye the woods to which they are applied, pigmented stains do not dissolve. They are actually small particles of color which are suspended in their respective application mediums. The difference is readily apparent by checking the bottom of the container. If the stain is a dye and has been dissolved properly, no residue should appear. If the stain is a pigment, a residue will appear which must be stirred prior to using and often during use in order to maintain color strength.

If only dry pigments were added to a solvent of any kind and applied directly to the wood, when the solvent dries, the pigments could be brushed off with very little effort. It would also produce a blotchy or muddy look because of the comparatively large size of the particle. In order to overcome this, pigments are ground with binders and suitable solvents to produce a color dispersion or concentrated base color. The dispersion has the advantage of a smaller particle size, better adherence to the wood, and superior color strength. This concentrated color or dispersion is then diluted with suitable solvents to produce pigmented wood stains. When applied to wood at this stage, they are fast drying and easy to apply by spray or brush. Because of the small amount of binder content, they are easily manipulated to produce varying effects or uniform color by applying a small amount of suitable solvent on a rag and wiping with the wood grain. Since the stain can be wiped, it is recommended that wood fillers be applied before staining and topcoats be applied by the spray method only. These pigmented stains are normally the ones used in industry today. Most consumer type stains will have additional additives in the binder to allow brushing application of the topcoats, and retarders to allow a longer workable dry time. When the concentrated colors or dispersions are used, they normally produce semi-transparent or opaque surfaces when mixed with lacquer topcoats. The semi-transparent variety is called a pigmented toner stain and the opaque a tinting lacquer stain. They differ only in the amount of color concentrate added to the lacquer topcoats.

One thing to bear in mind when selecting the proper stain is that dye stains are transparent and enhance the grain, and are the best stain to use on beautifully grained hardwoods. Pigmented stains normally produce some degree of opaqueness and are primarily recommended for use on softwoods.

BEHLEN STAINS

Each 8 ounce can of dry aniline dye powder mixes about 2 gallons of stain.

Dry Aniline Dye Stains Water Soluble

19.59.11	Nigrosine Jet Black	14.95
19.59.12	English Sheraton Brown	14.95
19.59.13	Seal Brown	14.95
19.59.14	Medium Brown Mahogany	14.95
19.59.15	Red Mahogany	14.95
19.59.16	Antique Maple	14.95
19.59.17	Medium Golden Oak	14.95
19.59.18	Cherry Rosewood	14.95
19.59.19	Dark Walnut	14.95
19.59.20	American Medium Walnut	14.95
19.59.21	Light Walnut	14.95

Dry Aniline Dye Stains Alcohol Soluble

19.59.31	Nigrosine Jet Black	14.95
19.59.32	Perfect Brown	14.95
19.59.33	Seal Brown	14.95
19.59.34	Wood Brown	14.95
19.59.35	Antique Brown Mahogany	14.95
19.59.36	Medium Brown Mahogany	14.95
19.59.37	Red Mahogany	14.95
19.59.38	Medium Yellow Maple	14.95
19.59.39	Dark Golden Oak	14.95
19.59.40	Light Golden Oak	14.95
19.59.41	Cherry Rosewood	14.95
19.59.42	Dark Walnut	14.95
19.59.43	Light Walnut	14.95

Solar-Lux NGR Stains

Pint Containers

19.59.51	Jet Black	6.95
19.59.52	Fruitwood Amber	6.95
19.59.53	Mahogany Medium Red	6.95
19.59.54	Mahogany Medium Brown	6.95
19.59.55	Yellow Maple	6.95
19.59.56	Medium Walnut	6.95
19.59.57	American Walnut	6.95
19.59.58	Reducer, Quart	4.95
19.59.59	Retarder, Pint	6.95

When ordering Behlen stains, add \$2.50 shipping.



Plunge Router Revisited

by Zach Etheridge

Several years ago I was seized by an obsession to make wine racks, and came up with an elegant-looking (no comment on function) design involving lots of wooden cubes and dowels arranged in a grid. A sixty-bottle prototype was knocked together with standard commercial stock, and that it worked at all was sufficient incentive to lay plans for more, to be done in various fine hardwoods. Everything looked pretty straightforward except for the dowels; they couldn't be plain old garden-variety birch faked up with a little stain, but must of course be authentic walnut or cherry or whatever. At that time I didn't know that dowels in several different woods were available (there's an outfit in Texas, I believe, that advertises in *Fine Woodworking*), but since ignorance is the brother of invention I decided to make the dowels myself.

I was still working out the details some months later when I stumbled across a reader's tip in the January 82 issue of *Woodsmith* magazine, describing a method of using a router and drill to make dowels. Briefly, the system involves rotating a square-section blank in a drill and guiding it past a router bit which cuts the blank into a cylinder of desired radius; all you have to do is secure the router upside-down and make a guide rig for the spinning blank. Simple, right? Well, it probably would be for anyone except the kind of dedicated gadgeteer who would much rather invent clever ways to make things than actually make the things themselves. Chuck a piece of wood in a drill? No problem. Build a rudimentary guide rig? No sweat. Secure a router upside-down? Aha! Clearly it would be far too simple to just drop the thing in a vise or clamp it to the bench or prop it between a couple of concrete blocks. There must be a more creative (read time-consuming and labor-intensive) way.

So I sat and stared at my Makita plunge router until inspiration came. The 3600B has two enormous holes in its base which accept the 12mm steel rods of Makita's edge-guide system. If I could find some long steel rods to fit those holes, I could run them clear through the base to create a set of handles on which the router could be hung upside-down. Not content with the amount of labor required so far, I decided that the rods should run through a piece of plywood wrapped around the base, thus providing a top for a box into which the router could then be dropped. The 12mm rod looked like a real stumbling block, but my favorite local neighborhood hardware store had plenty of 7/16" round steel rod which worked just fine when secured with a couple of wingscrews in the router base. And so the wide-base router was born, and I was soon cranking out custom dowels by the carload.

As is frequently the case with truly great inventions, the full potential of this one was not realized for quite some time. The business of using long and stout steel rods through the router base suggests numerous obvious applications, and I latched on to a few of them almost right away. Drill two holes in a block of wood and fake up a couple of set screws, and you've got a fence for a straight guide of whatever tremendous reach you need for beading wide panels. Run a sheetrock screw or a nail through that block of wood and you've got a trammel system for cutting perfect circles with finished edges at any diameter



you choose. Affix the block to one edge of an open frame with the rods supported by the other edge, and you've got a jig for leveling slabs or the ends of logs. With the router sliding back and forth on its long rods (hose clamps for end stops) and the rods sliding left and right along angle-iron ways, you have a jig for cutting rectilinear holes of any size you need. I've even envisioned a horrible-looking contraption with large wooden shoes attached to the protruding rods on both sides of the router, which could then be run squarely along the edge of a board on those occasions when the profile of a moulding is only right if it's rotated 90°. I'm sure there are lots more interesting and time-consuming ways to put this idea to use, and I look forward to hearing about them.

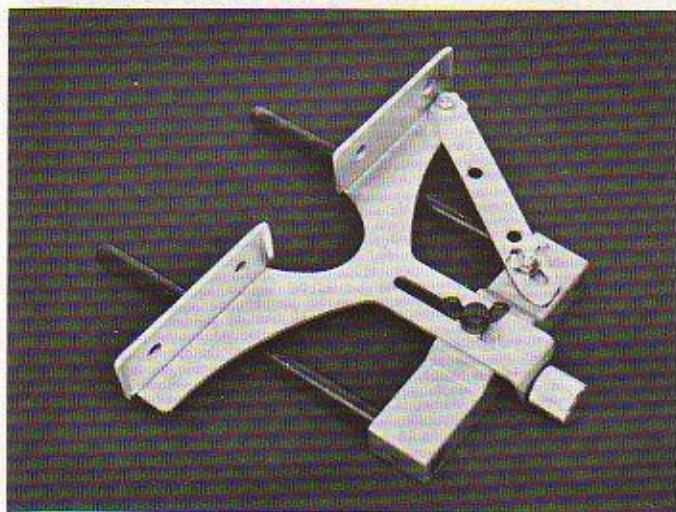
I had been making dowels and dreaming up jig systems for a good while before it dawned on me that the most obvious and probably the most useful device of all had been staring me in the face the whole time. In those days I was still using a store-bought router table, putting up with the hassle of removing the sub-base from my little Sears router, bolting the machine to the underside of a tiny table with a nasty corrugated top, wrestling with the minute fences, and finally having the table right under my nose once I'd set it atop my workbench for use. Nearly broke an armpit using that rig. Anyhow, another moment of felicitous epiphany occurred, and I realized that all I had to do was cut a hole in the benchtop (good old plywood), put a lip around the lower rim of the hole, and drop the wide-base router in there. Behold! Instant router table, surface as big as the bench, ten-second assembly and disassembly, and no lost depth of cut whatsoever. The best router table ever, and all it cost was one plunge router and a hole in the benchtop — easily filled if the cut-out hadn't been used for clamping blocks. The shop-built fence could be as long and stout and adjustable as could possibly be desired, and depth of cut could be reset in five seconds by popping the router out and adjusting from the normal right-side-up position.

Now this is all a pretty good start, but there's surely a lot more to be done. How about a foot pedal for lever-actuated plunge control, or a compound-angle sliding miter table, or a horizontal mortising jig for large stock? And I'm not even going to get into the radial-arm attachment system for making an overarm router — that one's too easy. I think I'll leave you to it at this point — I've got a bunch of wine rack components lying around somewhere that need attention. Good luck.

Router Base Extension

To make the base-extension device, you'll need a couple of pieces of 7/16" round steel rod and a piece of 3/4" or 1" plywood. Cut the plywood into a rectangle at least 3 inches or so larger than the outside dimensions of the router body, so the rig can later be dropped into a hole without snagging on anything. Center the router on the plywood and mark around the base where you'll cut a hole that the router will fit into snugly.

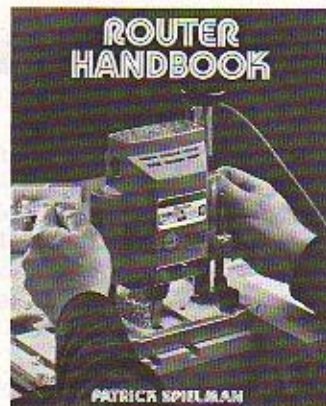
Drilling the 7/16" holes where the steel rods will pass through the plywood requires some concentration, because there's little room for error. Here's a method that worked once, anyway: set the router part way into the hole you've cut in the plywood and mark the wood exactly at the center of the guide holes in the base. Assuming the wood has been cut squarely to begin with, transfer these marks to the outside edges with a try square. You want the router base to wind up flush with the wood's surface, so the hole must be centered precisely a hair more than 13/32" from the good side of the plywood. Measure carefully and mark accordingly. Using a drill press or a dowelling jig and a long 7/16" bit, drill in from the edges to the center hole. This accomplished, you should now be able to slide your steel rods into the plywood, through the router base, and out the other side, and if your drilling hasn't been too accurate you should end up with a good tight press fit that secures the plywood in exactly the same plane as the router base. Cut the steel rods off flush with the edges of the plywood, and keep them from sliding around with two wingscrews through the router base.



Router Guide Modification

In some of our work with the 3600B plunge router we've noticed that its guide system, stout and convenient though it is, can be forced to rack slightly under heavy use. This occurs when a great deal of pressure and torque is being applied to the straight guide, which can pivot slightly on its single locking wingscrew and allow inaccuracies of as much as 1/64" to creep into the work. (Admittedly, the only time this occurred noticeably was while cutting a 3/4" mortise through 3" beech.)

A little fake-to-fit engineering with a 6" steel mending plate solves the problem easily. Start by attaching one end of the mending plate to the underside of the guide's horizontal flange, out near the corner. You could drill and tap a hole in the flange, or run a machine screw through from the upper side, in which case you should drill a countersink to seat the screw head before drilling through. Next, you'll need to mark the other end of the plate over the guide holder where you'll cut a slot to allow for micro-adjustments. Cut the slot wide enough to accommodate a 3/16" screw and long enough to allow at least 3/4" of travel. Now mark the guide holder just inside the guide rod housing where you'll drill a hole under that slot. The head is cast aluminum, so plan to bolt through rather than tapping the hole you drill. Slip a 3/4" long machine screw with lock washer under the head up through the guide holder and slotted plate, securing with a wingnut and lockwasher. Your guide system should now be just about bomb-proof.



Router Handbook

In his introduction to this long-awaited Handbook, Spielman tells us that "The development of the router has probably done more to revolutionize home craft and professional woodworking than any other device since the invention of the wheel." If you ever feel the need to start a loud and endless argument among woodworkers, you might try dropping that statement into their midst. Superlatives aside, however, we can all surely agree on the tremendous importance of this tool in the contemporary shop, and on the significance of this first book devoted entirely to the subject. Fortunately for us, the book is no overnight word-processor special; Spielman has put together a thoughtful, thorough and very useful study which will be a great help to those thousands of router owners who grow tired of re-inventing the wheel for every new job.

The *Handbook* will be particularly helpful to new and prospective router owners. The introduction alone contains an eye-opening look at a range of common and not-so-common router operations, along with a history of the tool's development and description of some of the models available from ten contemporary manufacturers. Each of the following four chapters (over a quarter of the book) focuses on a specific fundamental topic: basic router design and construction, the great array of bits and their various applications, safety precautions and standard maintenance procedures, and basic routing operations. These chapters will save the novice months, if not years, of trial-and-error discovery, and will incidentally encourage more creative use of the tool based on thorough familiarity with its capabilities.

From this solid foundation Spielman launches into discussion of a host of specific operations and techniques, covering template and freehand work, joinery and surface routing, laminate cutting and trimming, and several ways of making dovetails. Commercially available accessories are described and evaluated, and router tables in particular get a long look. Further potential and new tricks are revealed in chapters on overarm and pin-routing machines, router carving tools, shop-built jigs and panel routing devices.

The *Router Handbook* is very thoroughly illustrated with hundreds of photographs, each concisely captioned and supplemented where necessary with line drawings for clarity. Spielman's accompanying text is easy and absorbing reading, and so packed with ideas that even the very experienced router user will doubtless find new ways to get the most out of this favorite tool. In sum, the *Handbook* does a very creditable job of earning its title, and we recommend it highly to one and all.

The Router Handbook is available from Highland Hardware for \$9.95 plus \$2.50 shipping.

Predicting Wood Shrinkage

by Tom Lathrop

Imagine that you are making a pair of panel doors in flat-sawn cherry. The panels are 16" wide with 1 1/4" rails and it's February in your heated shop where the wood has been stored for six months. The finished piece will be used in an unairconditioned home in Atlanta, Georgia. How much gap do you need to leave around the panel to avoid warpage or stress on the joints next August?

Or imagine you are placing a band on each end of a large 34"-wide red oak trestle table for the same Atlanta customer. It's August and the kiln dried oak has been in storage for about a year. If you finish the bands even with the table edge, how much gap due to cross grain drying can your customer expect next winter?

These and other similar questions on wood movement due to normal humidity cycling are often asked by one woodworker of another without receiving very definitive answers. I have also asked these questions and, while there were some "guesstimates", no one could tell me how to figure out a reasonable allowance for a particular project — which is really what we all want to know.

As I started to research this problem, it got a lot more complicated before some simple solutions began to emerge. Terms like radial, tangential and longitudinal shrinkage, fiber saturation point and equilibrium moisture content had to be dealt with before I discovered why the books can't give a simple answer to these two seemingly simple questions.

The books referred to are "Wood Handbook: Wood as an Engineering Material" by the U.S. Forest Products Laboratory and "Understanding Wood" by Bruce Hoadley. The book by Hoadley was written for the interested layman and many portions have appeared in *Fine Woodworking*. This book is not only very readable on the physical characteristics and identification of wood but offers much useful information on the interaction between wood and common woodworking tools.

The reason these books can't give a direct answer to these two questions is that wood shrinkage and swelling is dictated by the local environment. Obviously, they can't furnish a table of cyclical dimensional change for every locale and condition to be found in the country.

Tom Lathrop is an Atlanta electrical engineer with AT&T Technologies who builds boats, and designs and builds furniture.

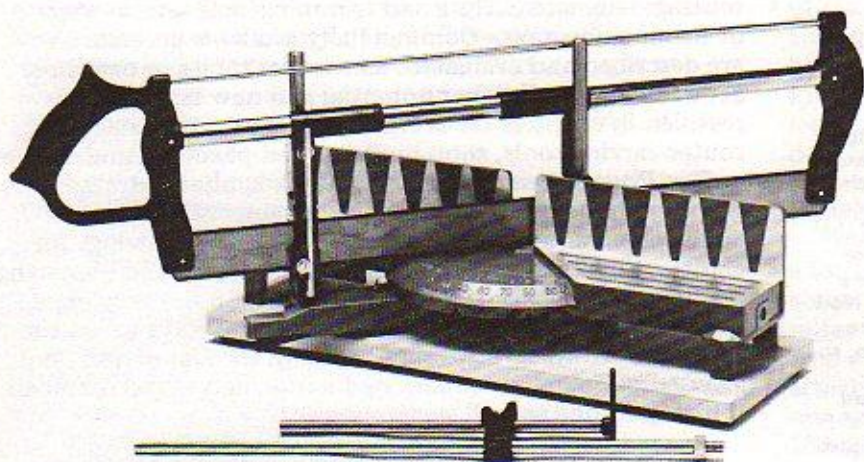
What they do provide is a table of approximate shrinkage, as a percentage, from green to oven-dry moisture content. Then Hoadley gives maps of the U.S. showing summer and winter averages for moisture content for interior woodwork in a normally heated space. Now we can locate north Georgia on the map, pick off the variation in moisture content from summer to winter and then plug it (along with appropriate data for our wood species and grain direction) into a formula supplied by Hoadley.

Eureka! The answer comes out in percent annual variation for my house in Atlanta, Georgia. From there, any woodworker can calculate 32nds or 8ths or whatever is needed. Now that's the simple answer we were looking for.

For the cherry panel, the total annual variation, as calculated by the above process, is 0.144 inch. Since these panels will be fastened in the center of the top and bottom stiles, the movement expected at each side will be one-half the total, or 0.072 inch. To be a little conservative, I will allow one-tenth inch gap between the panel and each rail. While this gap can be left all around the panel, the panel and rails will have nearly identical movement in the longitudinal (with the grain) direction and the gap in the stiles groove can be made quite small. For a single panel door with very narrow stiles and rails, leaving the top and bottom gap very small will improve the overall structural stability of the door.

For the oak table, the total winter-summer variation is 0.476 inch or almost one-half inch. Now I understand why some of my projects from more innocent days have persisted in self-destruction in spite of (or in some cases, because of) screws, bolts, dowels and globs of glue. So, if I finish the main table plank flush with the end of the crossband, there will be an ugly gap of almost one-quarter inch next February. Since we cannot fool Mother Nature, either we accept the inevitability of such gaps or we change the design of the piece. In the case of the panel door, this design was evolved precisely for the purpose of providing a large thin panel (or door) with stable exterior dimensions. In this case, it becomes clear that the floating panel designs were evolved by earlier woodworkers primarily to circumvent wood's natural instability — rather than for aesthetic reasons.

For the table, we can use a piece of veneered plywood surrounded by a perimeter of solid red oak to achieve the desired visual effect . . . or leave off the end bands . . . or use the end bands and accept the inevitable gaps . . . or design some kind of restraining system such as long



Nobex Miter Box

We have had many requests for a fine hand miter box. We are pleased to introduce the Nobex 202 which is made in Sweden. Results from using this fine assembly of saw and miter box are predictably accurate.

The 18 tpi blade is held in a sturdy adjustable blade guide which is mounted to a table that's 17 3/4" long. The saw can be set in any one of five fixed positions, or else set to any angle using the graduated scale. An adjustable length stop handles pieces up to 35" long, and fits on either right or left side of the sawing table. The wooden baseplate is fitted with rubber feet. Unit weighs 14 lbs. Spare blades are available with 12 and 18 tpi.

The Nobex 202 is available from Highland Hardware for \$149.00 plus \$5.00 shipping. Spare blades are \$7.50 each plus \$2.50 shipping.

threaded rods to prevent cross-grain expansion (though this has its own risks). In this last case, the table will have to be constructed of lumber at a minimum (winter) moisture content for the location.

A trip to the local furniture store will show that manufacturers usually opt for the plywood (or chipboard) solution. Since shrinkage and swelling for both plywood and long grain solid wood is very small, a joint can be constructed which will be stable in various humidity conditions around the country where the piece may be shipped.

Local woodworkers often take risks by creating a large cross-grained joint in solid wood and depending on a controlled airconditioned environment to keep them out of trouble. Most woodworkers should avoid this kind of joint unless the humidity cycle variation in dimension between long grain and cross grain is adequately handled. As a general rule of thumb, half lap, bridle, mortise or similar joints having a crossed grain dimension greater than about three inches should be treated with suspicion.

What I have done is to apply the data and formulas from the books to generate a table of annual dimensional variation for the north Georgia area. It is very easy to take the data from the table for tangential (flatsawn) or radial (quartersawn) lumber and determine how much shrinkage or swelling you can anticipate in a particular situation. As a quick rule of thumb, all this data can be reduced to the following:

1. In Atlanta, flatsawn hardwood will have an annual variation of 1 to 1.5 percent.
2. Quartersawn hardwood will have an annual variation of .5 to 1 percent.
3. Softwoods shrink about 2/3 as much as hardwoods.
4. Imported tropical hardwoods also shrink about 2/3 as much as domestic hardwoods

According to Hoadley, the moisture content (MC) of interior wood in the Atlanta area will vary from about 12 percent in summer to about 8.5 percent in winter due to change in relative humidity. Also, all dimensional change in wood takes place between zero MC (oven dry) and about 28 percent MC. Therefore, 28 percent is called the Fiber Saturation Point (FSP). The formula for dimension change is:

$$\Delta D = D \times S \times \frac{(\Delta MC)}{FSP}$$

Where: D = dimension of piece
S = total shrinkage - green to oven dry (%)
 ΔMC = annual local variation in MC (%)
FSP = Fiber Saturation Point (%)

For the red oak in our example:

$$\begin{aligned} S &= .113 \text{ (tangential)} \\ \Delta MC &= .12 - .085 = .035 \\ FSP &= .28 \\ D &= 34 \text{ in.} \end{aligned}$$

$$\Delta D = D \times .113 \times \frac{.035}{.28} = 34 \text{ in.} \times 0.014 = .48''$$

In the table this is listed as 1.4% tangential shrinkage. All other data in the table was calculated in the same manner. So if you want to know the dimensional allowance required for shrinkage for any of the listed woods, just multiply the dimension of the piece by the percent variation (flatsawn or quartersawn) and you get the answer - simple.

PERCENT SHRINKAGE OR SWELLING

Wood Species	Green to Oven-Dry		Atlanta Annual Variation	
	Radial	Tangential	Radial	Tangential
Domestic Hardwoods				
Ash	4.9	7.8	0.6	1.0
Basswood	6.6	9.3	0.8	1.2
Beech	5.5	11.9	0.7	1.5
Birch	4.7	9.2	0.6	1.2
Catalpa	2.5	4.9	0.3	0.6
Cherry	3.7	7.1	0.5	0.9
Elm	4.2	7.2	0.5	0.9
Hickory	7.7	11.0	1.0	1.4
Holly	4.8	9.9	0.6	1.2
Locust	4.2	6.6	0.5	0.8
Magnolia	5.4	6.6	0.7	0.8
Maple	4.0	8.2	0.5	1.0
Oak, Red	4.7	11.3	0.6	1.4
Oak, White	5.6	10.5	0.7	1.3
Pecan	4.9	8.9	0.6	1.1
Persimmon	7.9	11.2	1.0	1.4
Poplar	4.6	8.2	0.6	1.0
Sweetgum	5.3	10.2	0.7	1.3
Sycamore	5.0	8.4	0.6	1.0
Walnut	5.5	7.8	0.7	1.0

Imported Hardwoods

Andiroba	4.0	7.8	0.5	1.0
Angelique	5.2	8.8	0.7	1.1
Apitong	5.2	10.9	0.7	1.4
Catipo	2.3	5.3	0.3	0.7
Khaya	4.1	5.8	0.5	0.7
Lauan	3.8	8.0	0.5	1.0
Mahogany	3.7	5.1	0.5	0.6
Primavera	3.1	5.2	0.4	0.7
Teak	2.2	4.0	0.3	0.5

Softwoods

Cedar, Eastern	3.1	4.7	0.4	0.6
Cedar, Western	2.4	5.0	0.3	0.6
Cypress	3.8	6.2	0.5	0.8
Fir	4.8	7.6	0.6	1.0
Hemlock	3.0	6.8	0.4	0.9
Pine, Ponderosa	3.9	6.2	0.5	0.8
Pine, Sugar	2.9	5.6	0.4	0.7
Redwood	2.5	4.7	0.3	0.6
Spruce	4.3	7.5	0.5	0.9

There are a few omissions from this table for which total shrinkage data could not be found. Apple, pear and dogwood are often used locally, but I could not find shrinkage information on these species. However, if the total shrinkage (S) for these or any other species omitted from the table is known, then the local annual variation can be calculated by using the formula given above. Anyone interested in following this subject further would do well to obtain the book by Hoadley, which should satisfy most questions.

Understanding Wood is available from Highland Hardware for \$19.95 plus \$2.50 shipping.



BOATBUILDING

by John Wermescher

To build a boat, to fashion from pieces of oak, mahogany, pine, and cedar, a wonderfully curvaceous form that floats on the water, that moves and dances and bobs and scuds across a choppy bay in the wind.... this is indeed a wonderful thing.

A growing number of individuals in Atlanta, and all around, are finding this out. There is a burgeoning interest in boatbuilding, most especially wooden boatbuilding of the traditional sort. But still, for the average person, boatbuilding remains something of an arcane art. "Oh, I could never do that" is a statement I often hear. Someone, I don't remember who, recently said, "If you think you can build a boat — given a reasonable understanding of how things go together and some facility with tools — you probably can."

This column will attempt to take a lot of the mystery out of the subject. We'll begin at the very beginning (in just a few paragraphs now, be patient) and continue on step by step from there from issue to issue. I'd like to have feedback from you. As I see more what you want to know about, I can address those subjects in future columns. If you have any questions, please send them to me c/o Highland Hardware. I will try to answer them personally, if time permits, or to answer the question in the column if it has general appeal. Also, if you'll give me your address, I'll put you on the mailing list for any future seminars or classes on boatbuilding.

So let's begin already. You must begin with the question, "What kind of boat shall I build?" You can hardly start without answering that question first. But the way in which you answer that question, interestingly enough, has a real bearing on your success with the boat. You might say, "I saw a picture of the most fantastic boat in a magazine. That's the one I want to build." Or you might reason, "I want something I can party on, take a bunch of people out sailing and have a ball." Or you might aspire to the fastest boat on the lake. Or you might yearn for the Caribbean, perhaps get into some chartering once you find your way around.

Actually, each of the above has been used as an answer to the question, with varying degrees of disaster. There are some real pitfalls in answering the question in such ways. I'll try to illustrate why such answers are poor by showing the ways to come up with the right sort of answer.

You must first ask questions involving cost, what you want of a boat, and where she will be used. Other important considerations involve your level of skill with wood and tools, time available, space, and maintenance, including where you will keep the boat. These are all common sense things, but we do get illusions, you know, so I'll cover them briefly and hope I can frighten you into using a more conservative approach than the writer has on occasion.

No matter how carefully you figure, the final cost of the boat, in both time and dollars, will far exceed what you plan. There are too many variables, hidden expenses, and surprises. Only a professional boatbuilder, with lots of experience, can anticipate the majority of expenses and plan his time accurately.

The larger the boat, the more this is so. Also, many people have the notion that once they've built the hull they're almost home in terms of dollars and time. This may be true on a simple rowing or flat-bottom fishing boat. But as the boat gets bigger and more complex, that completed hull becomes a smaller and smaller percentage of the total. On a large, sophisticated racing yacht, with lots of gear and gew gaws, it can be as small as 10%. That's a shock.

Also, if a boatbuilding project stretches out to much more than a couple of years, one tends to weary and the boat tends not to get finished. Even a very small boat you feel might be whipped out in several weekends can run to months and be discouraging. There is nothing sadder than seeing a fine piece of workmanship into which someone has put lots of hours and dollars be offered up for sale at almost any price to whoever will take it away.

Don't be pessimistic. I'm just saying, know what you're getting into. Be realistic, and you'll get out on the water sooner and feel a lot better about it all.

What do you want a boat for, really? That is the important matter. Do you like to sail? Do you like to race, or just cruise along? Are you a rower? Do you like to fish more than anything? Build that boat best suited for what you yourself want to do now. If it is your first boat, build modestly. You may someday want to cruise the Caribbean in a thirty foot ketch. Fine. Build an eleven foot dinghy now and learn what it's about. Then use the dinghy as a tender for that ketch someday.

This relates to where the boat will be used. If you are to sail the very shallow waters of the Florida keys, you'll need to build a boat designed to negotiate such shoals. Will you be boating on the relatively sheltered waters of Lake Lanier, or will you go off the coast? Are you going to sail in fair weather or foul and give her some really rough use, or just use her as a nice weather day sailer? Will you always come to a dock, or will you drag the boat up a rocky beach often?

Study these matters. Relate them to your perceived skills and tools available. Gauge the size of your project to your available time. And have plenty of space to build in. The old story about building a boat in the basement and not being able to get it out does not need to be told again. But consider, too, that you cannot realistically build a twenty foot boat in a carport or garage that is twenty feet long. You need room around the boat, the more the better.

Think about maintenance. It can be a devil. Again, the bigger the boat the worse the problem. Oh, you're going to build in "maintenance-free fiberglass". I see. Please get in touch with me. I have some marvelous waterfront property in Florida I'd like to talk to you about.

Thou shalt have maintenance. More than thou thinkest. Including dockage if the boat is not a car-topper or trailer boat. Such boats have been described as a hole in the water into which you pour money. Ask anyone who owns one. Of course, the first question is "Can I find a slip to rent on the lake?" or wherever you plan to keep her. Dockage is getting dearer everyday.

Now, if, after all this, you're still crazy enough to want to build a boat, welcome to the club. It's a pretty nice one. Has some grand people in it, and most of them love to share. As boatbuilding increases in Atlanta, a natural outcome will be a sharing of knowledge and ideas among the boatbuilders. It's always been so.

John Wermescher is an Atlanta commercial artist and woodworker who builds boats and teaches seminars on boatbuilding.

In subsequent issues, we hope to address, in rough order, the subjects of:

Boat types — their design and use.

Small boat design — briefly why boats are made the way they are

Construction methods — materials and techniques

Boat plans — what to look for and how to understand them

Lofting — getting it down full size

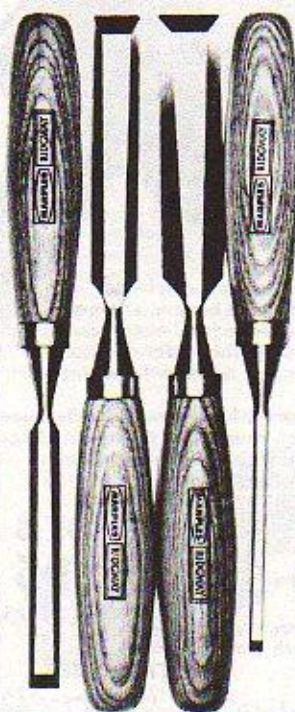
Construction of the framework or molds on which to build

Building several ways

Boat joinery and finishing

Oars, spars, sails, etc.

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04 1/2

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IWF 84 in Atlanta

August 25-28, 1984 Atlanta will host the International Woodworking Machinery and Furniture Supply Fair — IWF 84. Formerly split into competing events held in Atlanta and Louisville, this year's show marks the first time in six years that America's domestic and foreign marketing factions have mended their fences and combined efforts to produce one major show.

Over 600 companies from 14 countries are slated to exhibit, and around 25,000 people are expected to attend. With over 400,000 net square feet of exhibitions, IWF 84 will rank as one of the year's ten largest trade shows of any kind in the U.S.

While the primary aim of the show is to cater to the needs of the world's furniture making industry, the show will be a melting pot in which woodworking tools of all description will be on display for demonstration. Sure to be on exhibit this year will be many of the ever increasing variety of stationary power tools intended for the serious amateur or individual professional woodworker. Recent improvements in tools such as our Inca thickness planer and bandsaws will also be in evidence.

We invite everyone to visit us at booth 2738, where we will be demonstrating both our hand and power tools. If you know you will be attending the show, write, visit or call us before July 20 and we will provide a pre-registration form for you for free, saving you \$10.00 at the door for registering in advance.



Trade Shows

Several new woodworking shows are scheduled in 1984, filling the gap left when the "Excellence in Woodworking" shows that took place in New York and Chicago since 1980 were discontinued.

The National Working in Wood Show will be held in San Francisco April 6-8 at the Trade Show Center at 7th and Brannan. The show is open 10 am to 8 pm on Friday and Saturday, and 10 am to 6 pm on Sunday. Free seminars are scheduled each day, featuring Sam Maloof, James Krenov, Ian Kirby, and others. A custom furniture and craft show featuring work by area craftsmen is also part of the activities. Advance tickets are available for \$4.00 (\$1.00 saving) by writing National Working in Wood Show, PO Box 2518, Redwood City, CA 94064, before March 20.

The National Working in Wood Show will then appear in New York May 11-13 at the Penta Hotel at 7th Avenue and 33rd St. Hours are the same as San Francisco, and the seminar leaders include Roy Underhill, Michael Dunbar, and Ian Kirby. Advance tickets are available for \$4.00 at the same Redwood City address above, if you write before April 27.

Woodworking World, a show that premiered in Philadelphia last November, will exhibit in Boxborough, Massachusetts April 13-15. For information, contact Convention Designs, 35 Main St., Plymouth, NH 03264.

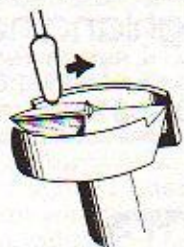
Sharpening Forstner Bits

Our Schlagring brand Forstner bits are made of very tough high carbon steel, but like any other cutting tools they will need occasional resharpening to keep on giving good results. The eight surfaces and compound angles to be dealt with present an unusual challenge, but with the right tools and a little practice you'll be able to sharpen these bits quickly and easily. Small grinding points such as those made for Dremel or Foremost tools are the best stones for the job. Chucked in a drill or one of the tools mentioned and run at moderate rpm, they work quickly and with little danger of overheating the edge. The tool should be stationary; it's a lot easier to move the bit precisely than to control even a lightweight machine.

The inside bevel on the rim of the bit should be ground with a straight cylindrical point. Rotate the bit to give a light, smooth stroke along the entire length of each bevel, maintaining the angle established at the factory. Don't bear down too hard, and avoid a back-and-forth scrubbing motion — uniform results will depend on uniform motion. Once both sides of the rim are sharp, the outside edges may be touched up very lightly with a fine stone held flat on the rim's surface.

The straight cutting edges can be ground with a conical point to reproduce the hollow grind done at the factory. Once again, a smooth stroke along the length of the cutting edge will give the best results. It's easiest to grind from the center spur toward the outside edge, letting the first part of the stroke lightly touch the face of the spur. Don't get too carried away with your grinding; the cutting edges should be only about 1/64" of an inch below the rim. Give the two exposed faces of the center spur a light lick to square up its edges, and the bit is ready to go back to work.

Silicon grinding points can be ordered from Highland Hardware. Cost is \$3.50 per pair, plus \$2.50 shipping and handling.



Installing Threaded Inserts

Saw a clever tip in the Nov.-Dec. *Woodsmith* about using a drill press to install these handy little fasteners — seemed like a good idea, because it can be a problem getting the things started straight, and it's too easy to tear the built-in screwdriver slots. The drill press can assure accurately vertical installation and offer good torque — if you have a drill press. If you don't have one, don't despair. A socket wrench will do the job just as well, and what you lose in jigged accuracy will be made up for in reduced set-up time.

The most important step in using threaded inserts is to drill the holes into which they'll be inserted with great accuracy: clean entry, vertical drilling, and no slop or wander in the bit to cut the top of the hole oversize. The inserts have a bit of unthreaded shank below the wood threads which helps guide the insert into the hole, but this will only help if the hole is right on. A doweling jig, drill stand, or good eye and firm hand will be useful accessories.

To install the insert, use a 1" hex-head bolt of appropriate diameter with a nut threaded on right up close under the head, but not tight. Screw the bolt into the insert until the nut makes contact, and make sure the flat faces of nut and bolt are parallel. Slip your wrench socket down over both bolt head and nut, and (keeping a close eye on verticality) crank the insert down into the drilled hole. When it's all the way in, hold the bolt head with one wrench and break the nut loose with another; the bolt can then be removed from the insert by hand. One note: when using large inserts in hard wood, a little wax or silicone spray on the insert will make life a lot easier.



Threaded Steel Inserts			Price
Internal Thread Size	Hole Size		Each
17.53.06	8-32	1/4"	.30
17.53.07	10-24	3/8"	.40
17.53.03	1/4-20	3/8"	.40
17.53.04	5/16-18	1/2"	.50
17.53.05	3/8-16	1/2"	.60

FORSTNER BITS FOR PROFESSIONAL RESULTS



For clean joinery, choose our Schlagring brand Forstner pattern bits, West Germany's highest quality, featuring superior workmanship and finest performance.

These carefully engineered and precisely machined Forstner bits cleanly drill flat-bottomed holes in all woods, whether in difficult grain, delicate veneer, or densest heartwood. The inside beveled circular rim guides the bit for consistent cutting action, permitting overlapping holes for mortising or grooving.

Forstner bits perform best with drill press or drill guide, but can be used in hand drills with chuck 3/8" or larger. Bits are 3 1/2" long. Diameters are exact inch sizes. Set of 5 includes 3/8", 1/2", 5/8", 3/4" and 1". Larger sizes available below.

MC/Visa users outside Georgia
ORDER TOLL FREE
(800) 241-6748
(Orders Only)

Or send check, money order, or MC/Visa
info. Tool catalog, \$1.00 (free with order).

SET OF 5
\$39.95

POSTPAID IN U.S.

OTHER SIZES:

1-1/4"	\$14.50
1-3/8"	16.50
1-1/2"	19.50
1-3/4"	24.50
2"	26.50

Set of 5 Large Bits

\$89.95 POSTPAID



1045 N. Highland Ave., NE Dept. WN13
Atlanta, GA 30306 (404) 872-4466

Woodworker's Guild

Guild members will have a chance for hands-on practice at timber frame joinery at the meeting Saturday March 10 beginning at 10 am at Mike Sutherland's home on Fedder's Bridge Road in Suwanee, Georgia.

The Guild will be displaying members' work at the Atlanta Home Show being held March 14-18 at the Georgia World Congress Center.

The April meeting will be downstairs at Highland Hardware at 7:30 pm on Wednesday, April 11. Bob Coleman of Decatur, one of Georgia's most knowledgeable collectors of old tools will be on hand to discuss his hobby. The meeting on May 9 will feature a show and tell for members who wish to exhibit chairs, benches, and stools. Location is to be announced.

Summer Classes

Kirby Studios is now situated in its new home at 811 Old Atlanta Road in Cumming, Georgia (30130), after moving from its Vermont location in August, 1983. The studio has announced its schedule of 1984 intensive summer courses, which include:

April 30 - May 4	Woodworking Skills
May 7 - May 11	Drawing and Design
May 14 - May 18	Furniture Making Techniques
May 21 - May 25	Carcase and Drawermaking
	Woodworking Skills
	Drawing and Design
May 28 - June 1	Frame and Panel
June 4 - June 8	Upholstery and Seating
June 9 - June 17	Master Class

Write, or call (404) 889-9823 for details.



MAKITA Blade Sharpener

Sharpens jointer & planer knives up to 16" long with great speed and accuracy.

Using optional accessory jig, quickly and easily sharpens chisels & plane irons. Medium grit Japanese waterstone rotates in gravity-fed water bath for safe work on your edge tools. Now in stock.

02.10.01 9820-2 Sharpener \$195.00*
02.26.01 Accessory Jig 12.50*



MAKITA BO4510 Sander

Compact, heavy-duty sander is both comfortable and efficient to use. High speed, low vibration, convenient one-hand grip. 12,000 opm. Uses quarter sheet of sandpaper.

15.10.25 BO4510 Sander \$49.95*



MAKITA Plunge Routers

Makita's powerful 2 HP plunge router is designed for maximum ease of operation. It can be plunged to pre-set depths up to 2-3/8". Has 2 adjustable depth stops. Holds 1/4", 3/8", & 1/2" router bits. Base is 5 1/4" x 6 1/4".

10.10.01 3600 B Router \$199.95

Model 3600BR. Same as 3600B except has 6 1/4" diameter round base.

10.10.12 3600BR Router \$199.95



MAKITA Belt Sanders

Heavy-duty shop machines for rapid smoothing and shaping. 3 larger models include dust bag.

15.10.14 9900B 3" x 21" \$129.00*
15.10.15 9924DB 3" x 24" \$149.00*
15.10.16 9401 4" x 24" \$199.00*
15.10.17 9030 1-1/8" x 21" \$135.00*



MAKITA Hand Planers

Fast stock removal is available with any of these 3 Makita planers. 1900B and 1100 cut 3 1/4" wide. 1805B cuts 6-1/8" wide.

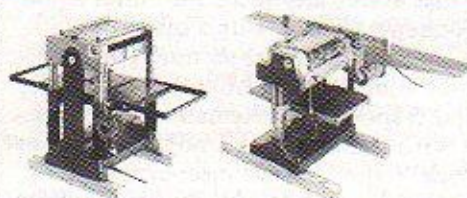
03.10.01 1900B Planer \$119.00*
03.10.03 1100 Planer \$219.00*
03.10.05 1805B Planer \$349.00*



LAMELLO

The leader in biscuit joinery machines because of its quality workmanship and patented design. Positions quickly and precisely for ease of assembly and maximum joint strength. Swissmade. 4.6 amps. 8000 rpm.

17.90.01 Lamello \$580.00



MAKITA Planers

High quality machines for truing and dimensioning stock and smoothing surfaces. Each unit comes complete with a highly efficient self-contained 2 hp motor.

SPECIAL PRICES until June 1, 1984

08.10.14 2040 Planer \$1299.00*
08.10.08 2030 Planer-Jointer \$1499.00*

Prices include freight.



FREUD SAW BLADE SALE

10" Blades

05.20.02 LM72M 24 t Rip \$41.90
List price \$65
05.20.35 LU85M 80t Cut-off \$73.90
List price \$110
05.20.26 LU84M 50t Comb. \$44.90
List price \$75

SALE THRU JUNE 1, 1984



HIGH SPEED STEEL TURNING TOOLS

New turning tools that stay sharp longer.

14.23.37 Set of 3 gouges 1/4", 3/8", 1/2" \$39.95

14.23.39 Set of 6 Basic tools
(3 gouges above, 1/4" roughing gouge, 1/2" skew, parting tool) \$99.95

14.23.35 Superflute bowl gouge \$49.95

Bowl Scrapers
14.23.54 Straight scraper \$34.95
14.23.55 Full Round Scraper \$34.95
14.23.56 Domed scraper \$34.95
14.23.57 Half Round Scraper \$34.95
14.23.59 Righthand Skew \$34.95
14.23.60 Lefthand Skew \$34.95

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Visa _____	_____	Up to \$30.00 \$2.50	_____
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MONEY SAVING COUPON

\$5.00 OFF

ON ANY PURCHASE OF \$50.00 or more. Order from Wood News or the Highland Hardware catalog.

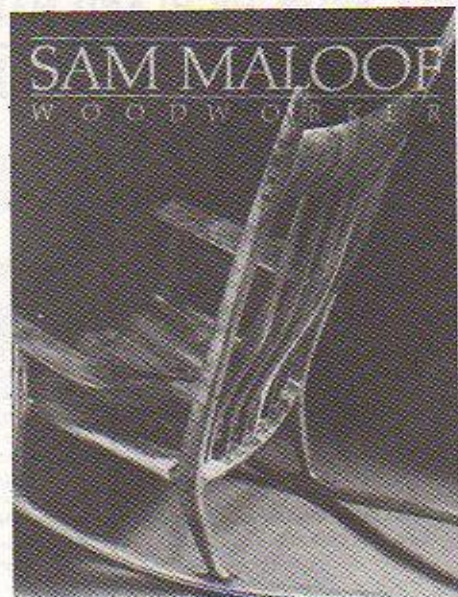
COUPON EXPIRES JUNE 1, 1984



Catalog \$1.00 (free with purchase).

Sam Maloof - Woodworker

Every now and then a book appears which presents a great challenge for the reviewer: How to reasonably, dispassionately and informatively discuss a book that seems to call only for unrestrained superlatives and unqualified praise? Sam Maloof's long-awaited book about himself and his work is such a volume. Let us stipulate at the beginning, then, that the book is filled with irresistibly sumptuous photographs, fascinating sketches, renderings and shop drawings, and a text of captivating personal warmth and philosophical appeal. Although the work has the look and price of a typical coffee-table book whose prime appeal is a gorgeous cover and expensive photography within, there is far more in *Maloof* than delight for the eye alone. Sam is not at all secretive about any part of his work, from the ideas that contribute to his designs to his methods of shaping and joining a piece of furniture to specific finishing techniques. A woodworker reading through this book will pick up a wealth of information on Sam's self-taught techniques, but that is perhaps not the most important subject. Through every chapter, every anecdote, every hand-drawn sketch and surely every finished piece runs that constant current of Sam's love and respect for the entire process in which he is involved, the joy of working with beautiful wood, the satisfaction of seeing a thing of beauty in the mind's eye begin to emerge in that wood, and the reward of enriching the lives of those



for whom these pieces are destined. It must be said at once that Sam is no starry-eyed California hippy, out there grooving on the wonderfulness of it all. He is above all a practical, hardworking woodworker who fully understands that a living is one of the most challenging and important things that a craftsman must make, and he has some sensible and encouraging words on the subject: "I wish that pricing was not part of my work. It is a particular embarrassment to me; yet I have to make a living." "I think morals and integrity must enter into pricing. . . . I feel I should get a fair price for my time, my materials, and the shop overhead. Still, it is not right to overcharge. A painter or sculptor, once he becomes well known, can put just about any price he wants to on his work. Some craftsmen can too. But a piece of furniture, it seems to me, is worth just so much and no more." Let that also be indicative of how throughout the book a famous and respected craftsman can talk about himself and his work with neither hubris nor false modesty.

Himself and his work — the two are inseparable. The powerful sense of this reaches out to the deepest feelings of any woodworker, giving graphic proof that one's work can be one's life, and an immensely rewarding one at that. As Sam says of the process of design, "There are three things that I emphasize: eye, hand, and heart." His book fully engages all three. ZJE

Sam Maloof - Woodworker is available from Highland Hardware for \$49.95 plus \$3.30 shipping.



Sam Maloof pictured at Highland Hardware in March of 1983.

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