

# Wood News

Published by Highland Hardware, Inc.

Serving Woodworkers

Number 17, Spring 1986

## WELCOME to the Atlanta Woodworking Show, April 4-6

Atlanta area woodworkers are in for a treat this spring. While Atlanta has hosted large industrial woodworking shows in the past, 1986 is the first year in which an exhibition has appeared here aimed at individual woodworkers and small shops.

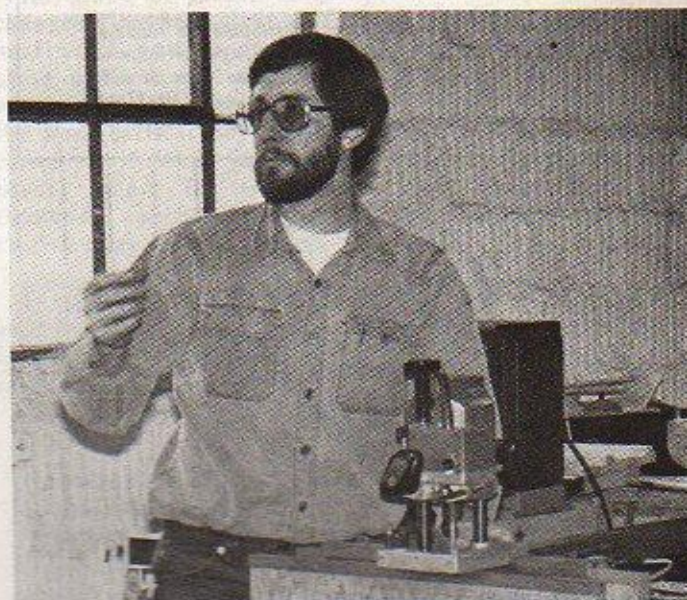
The Atlanta Woodworking Show will run Friday through Sunday, April 4-6 in the South Exhibit Hall of the Atlanta Civic Center, 395 Piedmont Ave. NE. Show hours are 12 noon to 7 pm on Friday; 10 am to 6 pm on Saturday; and 10 am to 6 pm on Sunday. Admission is \$5.00 per day.

Highland Hardware will be on hand featuring a large exhibit of fine woodworking tools and machinery at booths 501-505. In all, more than 100 exhibitors from around the country are expected, with heavy emphasis on demonstration of what's new in woodworking tools. The Woodworkers' Guild of Georgia and the Atlanta Woodcarvers Association will also sponsor exhibits.

An outstanding feature of the show will be the series of seminars and workshops available for those attending. Local craftsmen will present twelve workshops which are free and require no advance registration. In addition, noted authors Michael Dunbar, James Krenov, and Ian Kirby, and lecturer Jon Elvrum will each present seminars for which there is a \$25.00 admission charge at the door. You may pre-register for the paid seminars, in which case the admission charge is \$20.00 per seminar. To pre-register for the seminars using Mastercard or Visa, call the Woodworking Show office toll free at (800) 826-8257.

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Zach Etheridge demonstrated routers at a recent seminar at Highland Hardware. For the latest router news, turn to his column on page 6 of Wood News.

For your convenience, here is a complete schedule of the workshops and seminars at the woodworking show.

**Woodturning with Nick Cook.** Saturday, 1:30 pm. Repeated Sunday, 12 noon. Admission free.

**Lacquer Finishing Techniques with Mike Klewickis.** Friday, 3 pm. Repeated Saturday, 12 noon and Sunday, 1:30 pm. Admission free.

**Japanese Waterstones and Sharpening Techniques with Timothy Sutherland.** Friday, 5 pm. Repeated Saturday, 10:30 am and Sunday, 3 pm. Admission free.

**Routers with Mike Yarbrough.** Friday, 1 pm. Repeated Saturday, 3 pm and Sunday 10:30 am. Free.

Admission for each of the following seminars is \$20.00 in advance or \$25.00 at the door.

**Ian Kirby on Exposed Joinery.** Friday, 9:30 am to 12 noon. Repeated Sunday, 9:30 am to 12 noon.

**Ian Kirby on Hand Drawermaking.** Saturday, 9:30 am to 12 noon.

**Michael Dunbar on Windsor Chairmaking.** Friday, 1:30 pm to 4:00 pm. Repeated Saturday, 9:30 am to 12 noon.

**Michael Dunbar on Restoration.** Saturday, 1:30 pm to 4 pm.

**James Krenov on Cabinetmaking for the Fine Woodworker.** Saturday, 1:30 pm to 4 pm. Repeated Sunday 9:30 am to 12 noon.

**Jon Elvrum on the 32mm System.** Friday, 1:30 pm to 4:00 pm. Repeated Saturday, 9:30 am to 12 noon.





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## Aniline Dyes for Wood

During his first seminar here a couple of years ago, George Frank told us of a wonderful dye he had used during his career as the premier wood finisher of Paris. It was the finest way to change the color of a piece of wood, he said. It was strong, effective, easy to use and always predictable and consistent from lot to lot. There was a great range of colors available, and any conceivable shade could be created by judicious mixing of various colors. And what color! Deep, rich shades of such a clarity and depth as could hardly be believed, and could hardly be resisted by his customers.... Those fabulous dyes had been manufactured by a company named Arti, in Germany before the war, and it was to him a great loss that here in the U.S. decades later, there was no telling if the dyes were still being made or if Arti even existed any longer. But oh, those wonderful colors!

George is an awfully persuasive fellow when he gets carried away like that, and his story seemed to us an excellent motive for a junket to Germany to determine the fate and present whereabouts, if any, of the Arti dye company. Imagine our delight when we found not only the company but the self-same dyes George Frank had described, still in production and available to an unsuspecting world. Soon we were importing the dyes by the bushel, and they began selling like the traditional American hotcakes.

Though the dictionary does not particularly distinguish between dyeing and staining (at least as regards coloring wood), Mr. Frank has developed definitions for the two words which help to outline the main differences between conventional oil stains and aniline dyes. Stains, he says, are suspensions, not solutions. That is, the pigment that gives a stain its color is never actually combined with the vehicle that gets the pigment where it's going and binds it there. Though the pigment is ground very fine, it is nonetheless

a collection of solid particles which can't be expected to penetrate solid wood. To apply a stain is to lay on what amounts to a coat of very thin paint, and just as when painting, you are putting something solid between you and the wood.

Dyes, on the other hand, are true solutions, which is to say that the coloring agent is homogeneously dispersed into the vehicle right down to the molecular level. Thus the color in a dye will penetrate wood exactly as well as the vehicle in which it's carried. In the case of a water-soluble aniline dye, then, the color goes on and is just like water, changing the color of the wood but leaving no barrier between the surface of the wood and the world at large.

That's where the highly touted "clarity" of the anilines comes in, and it's really something you have to see before the word makes a lot of sense. Imagine if you will a nice piece of hard maple which you've planed, sanded or scraped to perfection. You decide to turn it brown so you can call the piece traditional and charge more. You've spent hours with your nose only inches from the surface of the wood, and you know its most intimate secrets. Look particularly closely at the little brown flecks that appear universally distributed through the wood (they're the medial rays seen edge on). Lay on a nice heavy coat of brown oil stain and you'll never see those little flecks again, and if someday someone asks you to identify the wood you might embarrass yourself and say it's birch. Sponge on a coat of rich brown dye, however, and you'll still see those teeny little flecks just as if they grew there. The maple will look like it came from a tree that grew up brown in the first place.

### Using Arti Water-Soluble Dyes

The Arti color chart is one of the finest you'll ever see. It illustrates 36 colors (including the primary colors red, yellow and blue, and orange, green, grey and black as well) on individual 2-5/8" by 1-3/8" swatches of beech or oak veneer. Along with each color name and number is listed the recommended or standard concentration represented on the veneer. The chart includes a full page of instructions which will get you started, and we will include with each chart the following additional information:

**Stock preparation:** since you'll be dousing the wood with water, and since you will not be sanding after the dye goes on, you must "raise the grain" with clear water and sand it before you dye. Sand, plane or scrape the wood as you usually do before applying a finish. Thoroughly wet a rag or sponge and liberally wipe down the wood - there's no need to flood the piece, but make sure the whole surface is wet, not just sort of damp. Let dry. Now take fine to extra-fine paper (about 220 grit) and re-sand the surface, moving the paper slightly askew from the grain direction. Don't sand terribly hard; all you're doing is cutting off any stray fibers stood up or swollen by the wet treatment. Now when you come back and sponge on the dye, there won't be any errant fibers left and the dye won't "raise the grain".

**Mixing the dye:** Arti dyes are sold in dry powder form, and are available in 100 gram and one kilogram containers. Most colors call for less than 50 grams of dye per liter (the darkest colors use the most dye), so a 100g can should suffice for most small to medium-sized jobs. If you're going to be using large quantities of dye



on a regular basis, it will be well worth your while to lay in a fairly good scale and a 1000 milliliter beaker in order to accurately measure and, more important, accurately reproduce any particular color. (You should be able to find a decent scale where ammunition makers' supplies are sold.) Whether you use a scale and beaker or a tablespoon and coke bottle for measuring, keep a record of what you've mixed in case you'd ever like to mix it again. The chart lists quantities in grams and liters, but if you don't have lab equipment to work with, never fear. You'll probably be buying the dye in 100-gram cans, so a 50 g/l solution will be about half the can in a quart of water. If you don't need a quart of dye, try a teaspoon per cup. For conversion to U.S. measure, 28 grams is one ounce, and one liter is close enough to one quart for our purposes.

The instructions tell you to mix the powdered dye with a little bit of cold water to get it all wet before you add boiling water to fill out the solution. Several users have reported good results using a small quantity of solvent alcohol for the initial solution instead of cold water. Don't jump the gun on the water you're heating to make up the bulk of the solution; make sure it actually comes to a boil before you add it in. Stir thoroughly, and if you can see or suspect any solids remaining after it's cooled enough to use, you might run the solution through a coffee filter to eliminate them. If you urgently need to shorten drying time, you may add alcohol up to 10% of total solution volume after it has cooled. Note the instructions' warning against using a brush with a metal holder - it seems the dyes could react with anything metallic (including containers) with negative results for the dye. Usually it will be easiest to use a sponge for applying the dye, as you want to be sure to saturate the surface before wiping off any excess. Also note the advice about wearing rubber (or neoprene) gloves: this dye is darned effective on skin, too.

Arti dyes are non-toxic. However, they are still not recommended for use on toys which will be used by very young children.

You'll note on the chart that there are two dozen "Articidol" colors and another dozen labeled "Artiporin - for open-pored woods". We asked Arti about the specific differences between the two kinds of dyes, but translation difficulties in both directions left us with answers which were less than definitive. It seems, however, that there might be some kind of extra binding agent in Artiporin which helps leave some color in open pores, where Articidol might just run on through. Also, if Artiporin is used on non-porous woods, something like blotchiness might occur due to accumulation of this agent on the surface of the wood. Several users have reported good success using the dyes indiscriminately, so the difference between the two kinds of dye remains a subject for experimentation.

**Finishing:** just about anything goes, but note the manufacturer's caution concerning the use of polyester resin varnishes on unsealed surfaces. Fortunately, polyester varnishes are rarely used by American woodworkers. Penetrating finishes such as tung oil or Watco will darken dyed wood just as they do un-dyed wood, so bear that in mind as you choose a final color for a piece that you plan to oil. Another caution is probably worth mentioning at risk of pointing out the obvious: any water-based substance applied to a dyed

surface will re-dissolve the dye and plunge you into an interesting, if not necessarily productive, situation.

The depth and clarity offered by Arti dyes are wonderful to behold in most situations, but occasionally your need might be for something a little less natural-looking. A dyed piece of wood will retain many of the visual characteristics of natural wood: color variations from place to place, variable refraction where grain changes direction, clear difference between sapwood and heartwood, and so on. If you want an object to look quite uniform but can see such variations in the raw wood, then it's quite possible that an oil stain would be the most satisfactory way to achieve the desired result. However, if what you have in mind is blue wood on a planet where the trees don't grow that way, or a rosewood reproduction on a birch budget, then Arti aniline dyes will do the job.

*If you'd like to take a look at the Arti color chart, we'll be happy to send you one. Just mail us one dollar to help cover postage and the cost of the chart and we'll send one out to you promptly.*

### Articidol Dyes

(for most woods)

- 100 Antique Walnut
- 101 Dark Walnut
- 102 Rosewood
- 103 Light Mahogany
- 104 Dark Mahogany
- 106 Light Oak
- 107 Dark Oak
- 115 Moor Oak
- 118 Grey
- 124 Green
- 128 Orange
- 129 Red
- 134 Deep Black
- 138 Dark Blue
- 486 Light Walnut
- 547 Medium Walnut
- 841 Teak
- 1150 Yellow
- 1832 Cherry
- 1834 Antique
- 1836 Dark Pear
- 1839 Dark Rosewood
- 1843 Light Pear
- 1845 Red Walnut

### Artiporin Dyes

(for open-pored woods)

- 1601 Teak
- 1602 Medium Oak
- 1603 Dark Oak
- 1604 Mahogany
- 1605 Light Oak
- 1607 Antique Oak
- 1609 Light Walnut
- 1610 Medium Walnut
- 1611 Walnut
- 1612 Dark Brown
- 1615 Olive Oak
- 1616 Smoked Oak

*Arti dyes come in 100 gram and 1000 gram containers. The price for 100 grams remains at \$7.95. Because of the softening of the U.S. dollar, price of 1000 gram containers has been adjusted to \$49.95.*



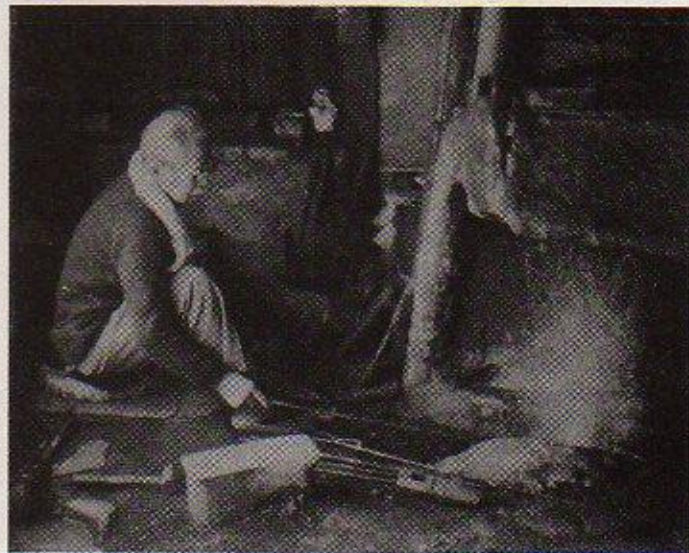


# Toolmakers of Miki

c1986 by Tom Frazer

In Miki City, premier sawmaker Miyano Tetsunosuke sits cross-legged on a *zabuton* mat, bending his 83-year-old frame over a saw blank wedged atop a plank. With vigorous strokes, Miyano scrapes the blade to proper thickness using a tool similar to a drawknife.

Attached to his home, Miyano's old-fashioned workshop has a dirt floor and is lit by sunlight streaming through a window. A forge he made of mud and sticks years ago is a prized possession in an adjacent room.



Also known as Shihosai Endo, master swordmaker, Miyano is one of the few toolmakers in Japan who can take a chunk of iron and patiently forge it into a treasured tool. Collectors reportedly pay \$12,000 for his highest quality saws.

Yet in a nearby industrial park in the toolmaking city of Miki, the scene could not be more different.

A ribbon of saw steel unwinds from a spool, feeding a machine that stamps out sawblade blanks. With inhuman regularity, the blanks "clink" one-by-one into a plastic box. Employees place these blanks into other machines that grind the edge of the blank into teeth.

An inspector checks the sawblade with an instrument that projects enormously magnified teeth onto a screen. Precision tolerances surprise a visitor who suddenly realizes that factory sawblades have far-higher-than-expected quality.

The contrast between an aging *shokunin* (master craftsman) who fashions his blades by hand and an automated sawmaking factory is a revealing one for Miki, so famous among American woodworkers for its traditional Japanese tools.

(Curiously, I have met virtually no Japanese who knew of Miki, which is located just northwest of Kobe.)

A visit to Miki best begins at Kobe, because there resides the new Takenaka Carpentry Tools Museum, a three-story building erected by the Takenaka Komuten Co. Ltd., a family-owned construction company whose projects span the globe. Takenaka created the museum for posterity as a symbol of appreciation for the work it had been given over the years.

*The author is a newspaper writer and amateur woodworker from Metairie, Louisiana.*

The museum displays tools and murals showing how they were used from the most ancient times up to the present. In the modern era, photographs show famous craftsmen making or using their favorite tools. And there's also a display of complicated wooden joints used in house and temple construction.

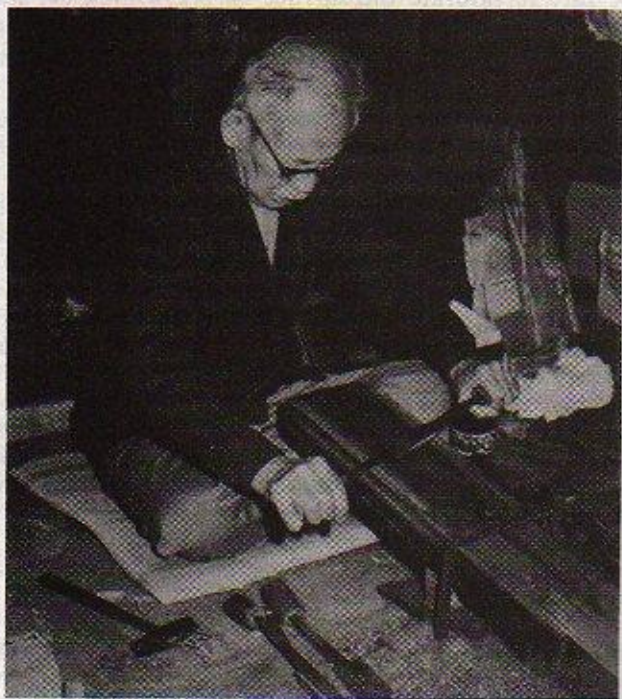
From Kobe to Miki, one passes beneath the Rokko Mountains via a 7-kilometer tunnel, second longest in Japan. On the other side, a valley eventually reveals Miki, a city of about 60,000 which has been a town of industry for some 2000 years. Just before arriving at Miki, which is divided by the picturesque Mino River, one passes on the right two houses which were built 800 years ago!

At Miki, there are approximately 500 companies that make tools, but most are small, averaging three employees each. Only one or two have more than 100 employees.

Himself a one-man company, Miyano said he's been forging blades for 70 years. One of his proudest possessions is a hammer he has used for 30 years, tapping repeatedly on sawblades to give them proper tension. Over three decades, the handle has worn away to form a perfect grip for Miyano's hand.

Miyano said he learned from Miki's many early blacksmiths. "I always watched, and listened to these people," Miyano said. "My philosophy is," he added, "If I think I can do something, I can do that."

Miyano said he works with focused concentration, his long experience making it possible for him to file teeth on a saw even though at this age his eyes cannot focus on the tooth being sharpened. (One dozuki saw had 32 teeth per three centimeters, meaning each tooth was less than a millimeter in size.)

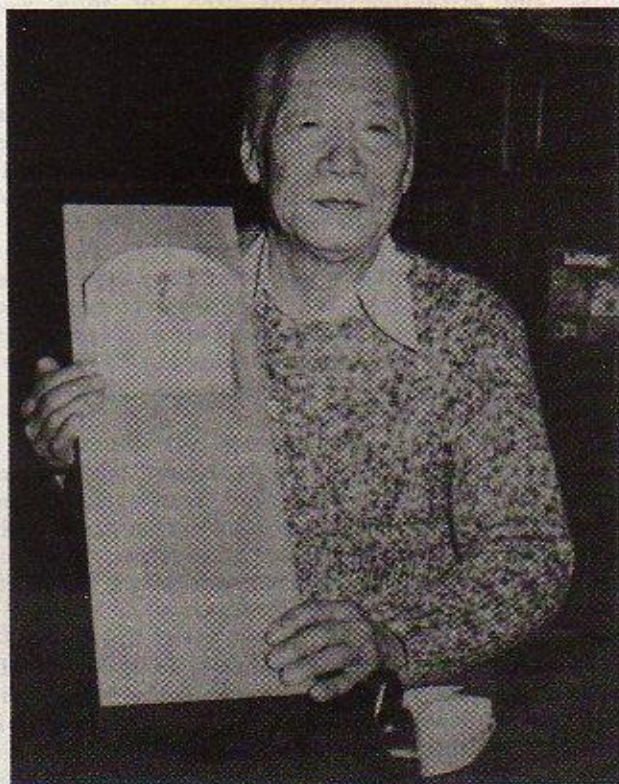


But can a carpenter or woodworker actually use one of Miyano's expensive saws?

Miyano replied that, naturally, there are different levels of skill, and carpenters like to say, "I use this very valuable saw by Miyano." But he adds that if a craftsman actually uses the saw, "The saw has a value equal to its price."



Moreover, Miyano's son said that before World War II, wages paid to a carpenter were determined by the quality and condition of his tools, and his father said that in Kobe, the custom remained even after the war, until 1950. Moreover, the son said, a person with the skills of a master craftsman wants only the highest quality tools.



Chiyozuru Sadahide, also of Miki, is one of Japan's most respected makers of plane blades.

He shows a visitor a collection of filmy cypress shavings and said three factors are required to produce such shavings: a good blade, a good *dai* (wooden body) and sophisticated skill of the carpenter.

Standard blades of finishing planes are 64mm or 70mm wide, Chiyozuru said, but he then displayed a special plane designed for smoothing the standard 135mm beams found in shrines. The wooden plane was about two feet long and "weighed a ton".

Usually, Chiyozuru explained, a carpenter uses an ordinary size plane and smooths the beam by making two strokes. But after a couple of years, he said, the difference in the wood's surface becomes noticeable. So truly meticulous carpenters use this special giant plane with its 150mm blade to smooth the beam with a single stroke.

Blades of other smoothing planes, he said, range in width from 58mm to 80mm.

Now 77, Chiyozuru said he has been forging plane blades for 60 years. At 20, he went to Tokyo to learn from the best blade maker in Japan. But, he added, "It was not easy to be accepted by that master." After many days, Chiyozuru said, he was finally accepted.

Referring to the difference between Western and Japanese planes, Chiyozuru said, "I think that pulling makes a better surface."

Another of Miki's well-known toolmakers is Ouchi Mitsuaki, a third-generation crafter of chisels. In his ground floor display room, Ouchi has laid out an exhibit showing the nine steps of forging a chisel. The principal feature of Japanese chisels, of course, is the lamination of a thin, extremely hard layer of high carbon steel to a thicker layer of softer steel. The hard steel makes possible a razor-sharp edge, while the softer steel protects the chisel by absorbing the shock of hammer blows.

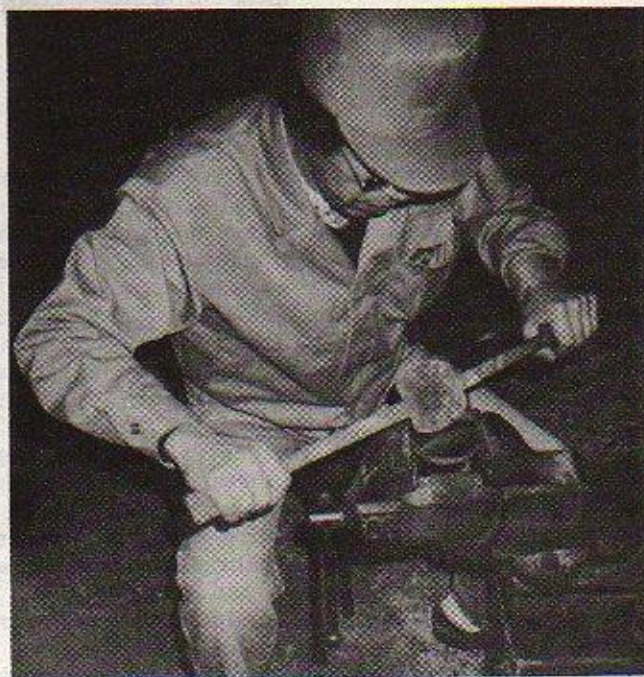
Ouchi said he can forge three chisel blades an hour, and then handles are fitted.

Because most traditional Japanese woodworking involves the use of soft woods such as cedar and cypress, Ouchi said he alters his manufacturing process to make chisels appropriate to the needs of American craftsmen. "I've been given samples of American wood used by American furniture makers. It is very hard," said Ouchi. So he makes tougher chisels, using tungsten and chrome.

A chisel maker for more than 40 years, Ouchi began by helping his blacksmith father when he was a 12-year-old sixth grader.

Ouchi said white oak is the toughest wood for chisel handles, adding that core wood is best. Red oak, Ouchi said, is softer than white oak and can break under high stress. "But it is very popular because of its appearance," he added.

Ebony handles are fitted to special tools, Ouchi said, and is popular in the American market. However he noted that ebony is a brittle wood.



Another highly respected chisel maker is Kohzo Irooi who forged a pair of exquisite large trimming chisels known as "slicks" for a famous Georgia woodworker named Jimmy Carter. The gift was arranged by Miki tool dealer Shiro Tanaka, and the chisels were presented to the former president by Highland Hardware's Chris Bagby.

On the wall of Tanaka's home is a framed thank-you note from Carter complimenting Miki toolmakers on their skills.



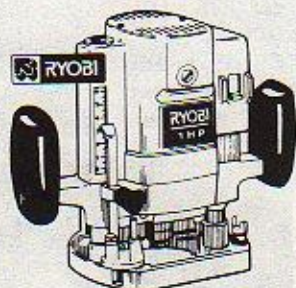
# Router Revolution in Full Swing

by Zach Etheridge

It seems a relatively short while ago we were predicting that new bits and new capabilities for routers would be coming thick and fast - and we're certainly not being disappointed. The big Makita 3612BR plunge router is being snapped up in record numbers, and as more users realize what the machine can do, manufacturers are responding as quickly as possible with new routers and new bits alike.

One of the 3612BR's outstanding features is the vertical travel of motor and collet on posts mounted in the router base. This capability not only enables the user to execute vertical entry into a workpiece, such as when cutting a mortise, but also and perhaps more significantly allows the operator to preset final and intermediate depths of cut and then hike the bit up and out of harm's way between operations. The efficiency and safety inherent in plunge-router design are so attractive that we're convinced this is the design of the future; we predict that within a few years there will be more plunging than conventional routers on the market.

## New 1 HP Plunge Router



To help make sure this fearless forecast comes true we're adding a new plunge router to our line. The Ryobi R-150 embodies an idea whose time has come: a light, compact and affordable 1-HP machine that marries plunging capability to utility performance. The R-150 features a 6.5-amp, 24,000 rpm motor with 2-1/2" vertical travel. Collet size is 1/4". The base measures 4-5/16" by 5-3/4", and though it's not exactly rectangular, it does have flat sides fore and aft which will greatly facilitate many jigged operations. The bit opening in the base is unusually large and allows excellent visibility, though the absence of a chip deflector means goggles or face shield for the operator. 6-lb. weight makes for easy hand-held or on-site use. A rotating turret on the base can be preset for three cutting depths, and the set screws can be used as micro-adjusters when great accuracy is required. A straight edge guide is included as standard equipment.

Though the Ryobi R-150 is not as luxuriously full-featured as the heavy Makita 3612BR, it looks as though it should meet very satisfactorily the need for a general-purpose router with the great advantage of plunging capability. Those of you who already own a plunge router can now look forward to the same kind of convenience and efficiency in a medium-duty utility machine, and for those of you who haven't yet found the need or the budget for a powerhouse like the Makita, here's a fine opportunity to take the plunge.

The Ryobi R-150 router is available from Highland Hardware for \$99.95 postpaid. The Makita 3612BR router is available for \$199.95 postpaid.

## New Router Bits

Just as predicted, big new bits are being produced as fast as manufacturers can get them out the door. We've recently received three new panel-raising bits which should be of considerable interest to anyone doing frame-and-panel construction without the luxury of a shaper. Together with the Ogce Fillet raised panel bit listed in our catalog, these bits offer a choice of the most popular and attractive designs used for solid wood panels.

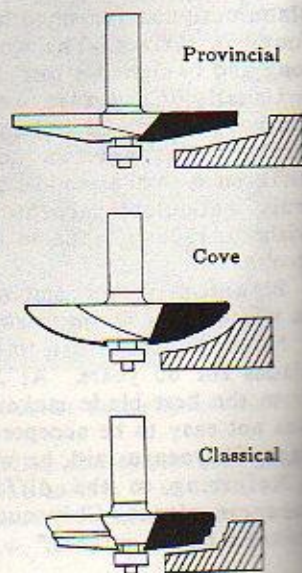
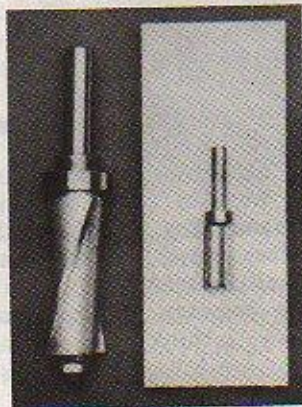
The Provincial and Cove raised panel bits (\$119.95 each) bring these two most popular patterns within the scope of router capability for the first time. They are tremendous bits, 3-1/2" in outside diameter, with very substantial body backing up the thick carbide flutes. The Classical raised panel bit (\$99.95), which at 2-1/2" outside diameter will be particularly well suited to smaller panels, offers an unusual and decorative alternative to the familiar patterns above. Each of these bits is designed for use in 5/8" thick material, which will enable the construction of panels whose surface is flush with the surface of 3/4" frame material. All three bits are fully compatible with the rail & stile bit shown on page 43 of our 1986 catalog.

We should emphasize that these bits are not to be taken lightly; they are for use only in very large routers, and care should be taken to avoid deep cuts or overly ambitious feed rates. The most effective safety warning comes from looking at the bits themselves; their size inspires immediate respect and an urge to use them with the most conservative good judgement.

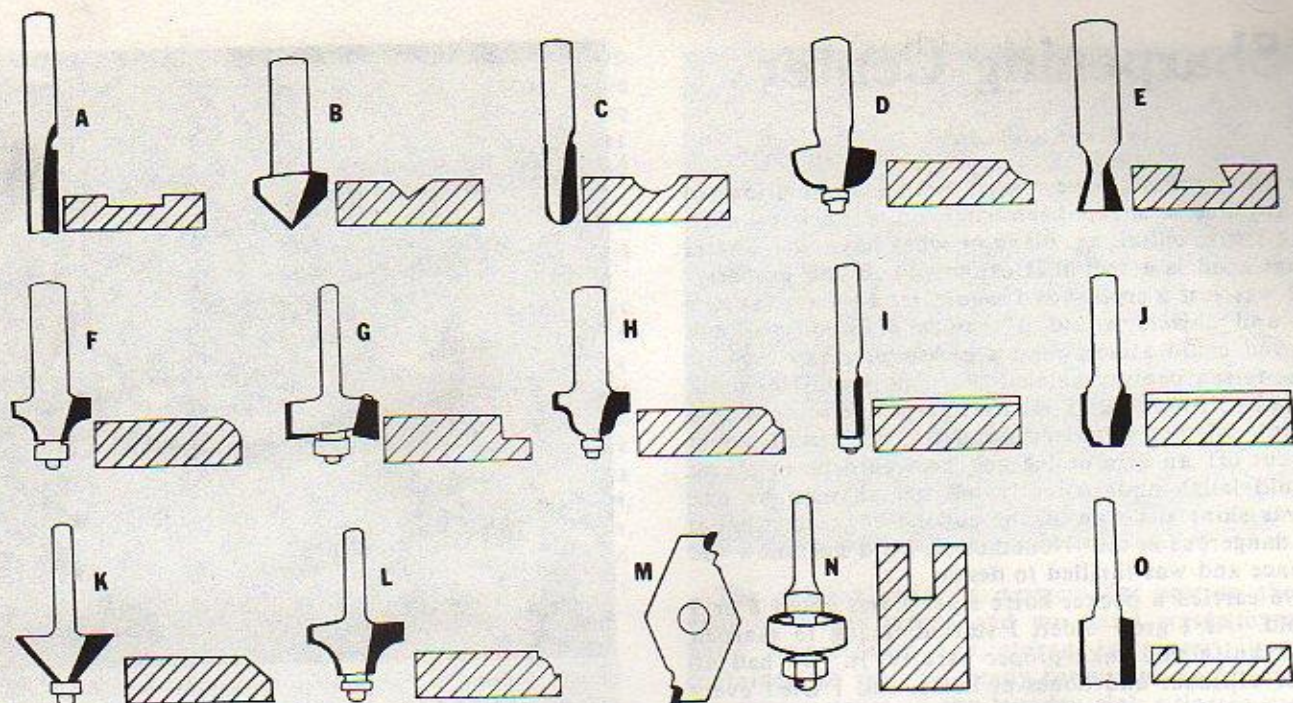
Two other bits which made their first appearance in our 1986 catalog deserve special notice in the "new bits" category: they are flush-trim bits with the ball bearing guide mounted above the cutter. These are excellent bits for trimming rough-cut shapes to exactly match a pattern, or to mass-produce puzzle parts or other high-volume products. The 1-1/8" bit is, like the panel raisers described above, an unusually large cutter designed for use in large routers only. It makes the shaping of thick stock very simple and precise; for instance, trimming the edge of a heavy door for final fit becomes as easy as clamping on a straightedge and making a pass with a router.

*Bits on this page are not included in the sale at right.*

The 1-1/8" trim bit (below left) has a cutting length of 2-9/16", 1/2" shank, and sells for \$135.00. The 1/2" trim bit to its right has a cutting length of 1", 1/4" shank, and sells for \$32.00 plus shipping.







## CARBIDE ROUTER BIT SALE

Between now and June 30, 1986,  
**SAVE BIG**  
on our industrial duty carbide-tipped  
router bits featured on this page.

After selecting your bits and totaling  
the list prices shown, deduct your  
discount as follows:

LIST PRICE	YOUR DISCOUNT
Up to \$100.00	10%
\$100.01 to \$300.00	20%
Over \$300.00	30%

Add shipping charges indicated on page 23.  
Router bit offer ends June 30, 1986.

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

### A STRAIGHT BITS

	Cutter Diameter	Shank Diameter	
10.20.01	1/8"	1/4"	12.20
10.20.02	3/16"	1/4"	12.20
10.20.03	1/4"	1/4"	12.20
10.20.04	5/16"	1/4"	13.50
10.20.05	3/8"	1/4"	13.50
10.20.06	1/2"	1/4"	13.80
10.20.07	5/8"	1/4"	14.90
10.20.08	3/4"	1/4"	15.60
10.20.52	3/8"	1/2"	14.20
10.20.81	1/2"	1/2"	14.20
10.20.53	5/8"	1/2"	16.80
10.20.54	3/4"	1/2"	18.50
10.20.55	7/8"	1/2"	21.60
10.20.56	1"	1/2"	22.80

### B V GROOVE BITS — 90° Angle

	Diameter	Shank	
10.20.10	1/4"	1/4"	14.80
10.20.11	1/2"	1/4"	20.90
10.20.57	5/8"	1/2"	34.80
10.20.58	3/4"	1/2"	43.20

### C ROUND NOSE BITS

	Radius	Shank	
10.20.59	1/16"	1/4"	16.80
10.20.60	1/8"	1/4"	17.60
10.20.12	3/16"	1/4"	23.50
10.20.13	1/4"	1/4"	23.90
10.20.14	5/16"	1/4"	24.50
10.20.15	3/8"	1/4"	24.90
10.20.61	1/4"	1/2"	28.80
10.20.62	3/8"	1/2"	35.90

### D COVE BITS

	Radius	Shank	
10.20.16	3/16"	1/4"	31.80
10.20.17	1/4"	1/4"	31.80
10.20.18	3/8"	1/4"	31.80
10.20.19	1/2"	1/4"	32.80
10.20.63	3/8"	1/2"	33.80
10.20.64	1/2"	1/2"	33.80

### E DOVETAIL BITS

	Diameter	Angle	Shank	
10.20.28	3/8"	9°	1/4"	15.90
10.20.29	1/2"	14°	1/4"	15.90
10.20.65	3/8"	9°	1/2"	17.90
10.20.66	1/2"	14°	1/2"	19.90
10.53.03	3/4"	14°	1/2"	49.50

### F ROUNDING OVER BITS

	Radius	Shank	
10.20.20	1/16"	1/4"	27.60
10.20.21	1/8"	1/4"	27.60
10.20.22	3/16"	1/4"	27.60
10.20.23	1/4"	1/4"	27.60
10.20.24	5/16"	1/4"	29.80
10.20.25	3/8"	1/4"	29.80
10.20.26	1/2"	1/4"	34.80
10.20.68	1/4"	1/2"	27.60
10.20.69	5/16"	1/2"	29.90
10.20.70	3/8"	1/2"	29.90
10.20.71	1/2"	1/2"	34.80
10.20.27	3/4"	1/2"	54.80
10.20.50	Replacement Bearing		3.80

### G RABBETTING BITS

	Depth	Shank	
10.20.30	3/8"	1/4"	27.60
10.20.72	3/8"	1/2"	27.60
10.20.50	Replacement Bearing		3.80

### H ROMAN OGEE BITS

	Radius	Shank	
10.20.31	5/32"	1/4"	32.90
10.20.32	1/4"	1/4"	33.90
10.20.73	5/32"	1/2"	32.90
10.20.74	1/4"	1/2"	33.90
10.20.51	Replacement Bearing		3.80

### I FLUSH TRIM BITS

	Cutting Length	Shank	
10.20.33	1"	1/4"	15.60
10.20.75	1"	1/2"	17.80
10.20.50	Replacement Bearing		3.80

### J LAMINATE TRIMMER BIT

10.20.34	Laminate Trimmer Bit	11.90
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### K CHAMFER BITS — 45° Angle

	Carbide Length	Shank	
10.20.76	5/8"	1/4"	32.40
10.20.35	5/8"	1/2"	32.40
10.20.50	Replacement Bearing		3.80

### L BEADING BITS

	Radius	Shank	
10.20.36	1/16"	1/4"	27.60
10.20.37	1/8"	1/4"	27.60
10.20.38	3/16"	1/4"	27.60
10.20.39	1/4"	1/4"	27.60
10.20.40	5/16"	1/4"	27.60
10.20.41	3/8"	1/4"	29.80
10.20.77	1/4"	1/2"	27.60
10.20.78	3/8"	1/2"	29.80
10.20.79	1/2"	1/2"	34.80

### M TWO WING SLOT CUTTER

	Thickness	
10.20.43	1/8"	13.20
10.20.44	1/4"	13.20
N 10.20.45	1/4" Arbor & Ball Bearing	7.60
10.20.49	Replacement Bearing	3.80

### O MORTISING BITS

	Cutting Diameter	Shank	
10.20.46	1/2"	1/4"	12.80
10.20.47	5/8"	1/4"	13.90
10.20.48	3/4"	1/4"	16.80
10.20.80	1 1/4"	1/2"	21.60



# Sharpening Center

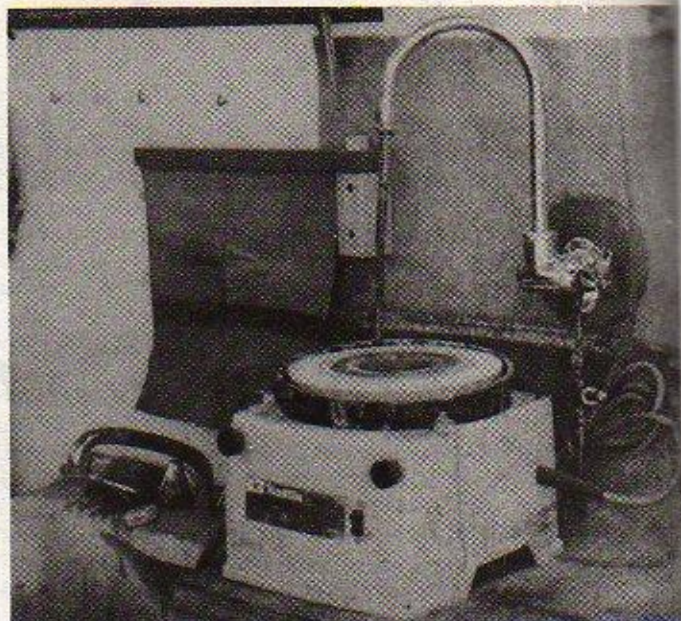
by Fred Kachelhofer

Fine cutting tools have always been a fascination for me. I admire a sharp keen edge on a pocket knife, hunting knife, chisel, ax, plane or what have you. After all, what good is a tool that cannot do its job properly? When I was just a small boy I would see how my father's planes and chisels would lift curls of wood through which you could almost read a newspaper, and I would beg him to sharpen my hatchet the same way. He would grind and polish and give me the sharpest looking tool in the world. Mother would fuss and tell him that I would surely cut off an arm or leg and he would be to blame. He would laugh and patiently tell her that all he had done was shine the side of the cutting edge and that it wasn't dangerous at all. Nonetheless, I did not know the difference and was thrilled to death.

I have carried a pocket knife since I was about 8 or 9 years old. As I grew older, I started trying to sharpen my own knife and take proper care of it. We had all kinds of oilstones and hones at home, and I tried every technique that I saw the "oldtimers" use as they sharpened their knives. Some cut into the stone, others back-drug their blades and others used a circular motion. I paid particularly close attention to what was taught at Boy Scout camp. Later as an adult when I could afford to buy stones and other sharpening apparatus, I tried just about everything I could find. I got good at sharpening just about everything except wide chisels and plane irons. I just could not develop the knack of keeping the edge at the proper angle and straight with the stone. I tried jigs and everything else, but those things somehow seemed to beat me everytime.

My problem was further complicated when I got a 6-inch jointer and a 12-inch planer. I had no choice except to send these out for someone else to do. And try as hard as I might, I could not find anyone that would do a job that really satisfied me. One person I took my planer knives to used a 1-inch belt sander with a jig to hold the knife at the correct angle as the knife was moved back and forth across the belt. This process sharpened the edge, but created a 1/8" bow in the length of the knife. (To check for straightness of jointer or planer knives, I put two knives flat on a surface with the edges touching and look for a gap.) Another person used a regular knife grinder, but he tried to feed the knives too fast and burned the edges. This grinder also left a bad burr that I had to remove when I got home.

While reading everything on sharpening I could get my hands on, I began to hear about Japanese waterstones. What I learned made sense, and I decided they were worth trying. While I was getting good results from both natural and man-made oilstones, I found them difficult to use and for the most part, slow cutting. Eventually I bought the set of 4 large waterstones offered by Highland Hardware (cat. no. 02.64.12). I picked this set because of the large surfaces and the wide range of grits: 700, 1200, 6000, and 8000. I was amazed at the way they cut and the edges they produced.



I was so impressed with the hand waterstones that I immediately began to consider the motor-powered waterstone made by Makita. From what I could see and read, the Makita 9820-2 sounded like the answer to my problem with sharpening plane irons and long knives. I particularly liked the fact that Highland Hardware had developed a modification for the machine which enabled it to sharpen narrow planer knives such as mine. (Makita has since incorporated this idea into their standard production models). When I ordered the machine, I also ordered the accessory jig for chisels and plane irons which Highland makes available, along with the optional 6000 grit wheel.

After the machine arrived, some practice was required before my results began to satisfy my expectations. Of particular help was Highland Hardware's little 2-page users' guide for the 9820-2. Makita's operators' manual leaves a little to be desired, but thanks to Zach Etheridge at Highland, some of the finer points of using the machine are made clear in their users' guide. I will not elaborate here on the use of the machine, except to say that when sharpening 12" planer knives with the standard 1000-grit stone which comes with the machine, I get a truly sharp knife that has an extremely straight edge. On my jointer knives, I use the 6000-grit stone to further polish the edge produced by the 1000-grit stone. I have found that the highly polished edge greatly reduces tear-out on highly-figured wood, and is a vast improvement over results from when other people sharpened my knives. I venture to say that the quality of my knife edge is superior to the edge which comes from the factory.

Also, the accessory jig used on the 9820-2 solved my old problem of keeping the bevel straight and at the right angle on chisels and plane irons.

While I was pleased with the overall performance of the Makita machine, there were some features which annoyed me, and describing how I reacted to these is the real purpose of writing this article. When I began using the 9820-2, my biggest problem was that I got so excited about how the progress of the sharpening was going that I would forget to check the can that the drain water was dripping into and it would overflow and make a mess.

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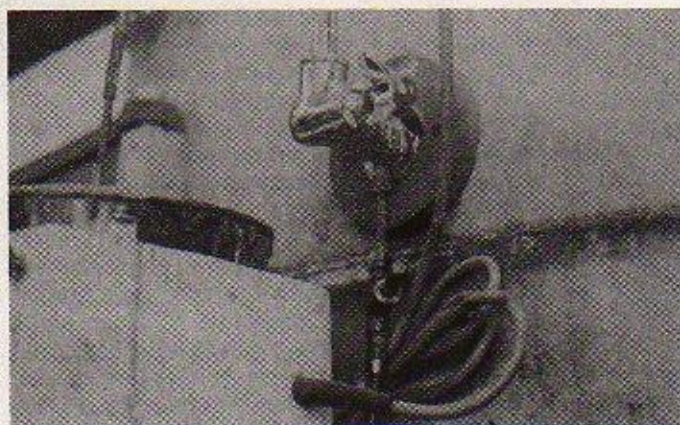
*Besides being a woodworker, Fred Kachelhofer is Power Superintendant for Owens-Illinois in Valdosta, Georgia.*



Also, as the water level in the reservoir got low, the drip flow would diminish and I would have to open the valve more to maintain the proper flow. Finally, I could see that I would be using the sharpener quite often and that it would be a chore to get the unit out, set it up and store it away again.

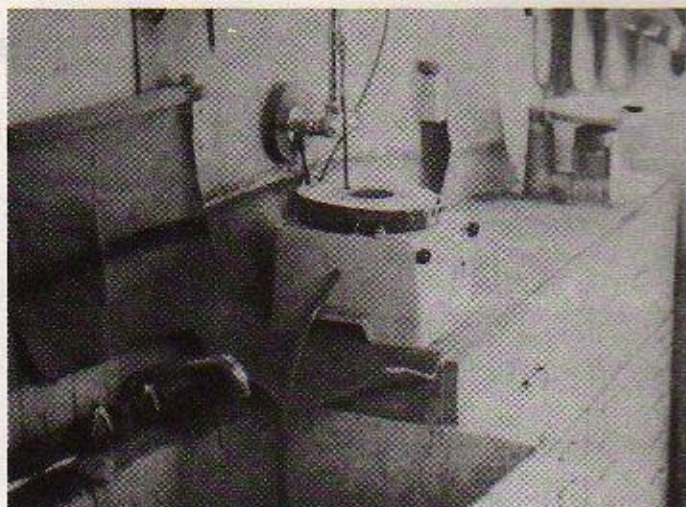
My solution to all these problems was to build myself a sharpening center, which I recommend to anyone who is serious about their woodworking.

Mine consists of a cabinet with drawers situated next to an old laundry sink. As a water supply for the 9820-2, I tapped the waterline from the sink with a saddle valve, and ran a line to an old laboratory faucet which I mounted on the wall above my 9820-2. Since this faucet was not capable of being turned down to a small enough drip, I inserted a small quarter-inch tubing valve that requires 10 turns to go from open to closed, giving me very fine control over the rate of flow. Another big advantage of this arrangement is that I can turn the water on or off using the lab faucet while leaving the proper flow rate set at the smaller valve.



To drain off the used water which accumulates in the bottom of the 9820-2, I extended the plastic drain tube so that the water exits directly into the laundry sink.

One problem when sharpening long knives is that the 9820-2 tends to sling some water to the sides since the shield which would prevent this has to be lowered to accommodate the long knives. To solve this problem I fashioned a pair of splash protectors on wooden hinges so that they can be moved out of the way when not in use. Also a piece of heavy felt covers the cabinet and back wall to absorb excess water.



The cabinet contains drawers for storing the other grits of rotary stones and my hand waterstones. The hand waterstones are stored in water in plastic containers so they are ready for use at anytime. I soak the rotary stones in the laundry sink prior to use. The cabinet and drawers also provide space for my other sharpening tools. Directly above the cabinet, I installed an incandescent light fixture, since good lighting is essential for sharpening.

Having all the sharpening tools in one place, set up and ready to go, has made the task much less frustrating for me. I recommend that you take the time and effort to install in your shop a sharpening center which suits your own needs.

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*The Makita 9820-2 sharpener is available from Highland Hardware for \$195.00 postpaid. Through June 30, 1986, buy a 9820-2 sharpener from us and we'll throw in for free a 120-grit coarse Green wheel, a \$35.00 value. The Green wheel will prove indispensable in re-shaping bevels and grinding out knicks on planer and jointer knives, and is good for sharpening carbide knives as well.*

*Ordered separately, the Green wheel is shipped postpaid for \$35.00. The 6000-grit fine wheel for polishing sells for \$45.00 plus \$3.30 shipping. The accessory jig for sharpening chisels and plane irons costs \$12.50 postpaid.*

*The set of 4 large waterstones referred to by Fred Kachelhofer is currently available for \$89.00 plus \$4.20 shipping. Alternatively, a set of 3 smaller waterstones (approximately 2-1/2" x 7-1/2") is available for \$39.50 plus \$3.30 shipping. Grits for the set of 3 include 1200, 6000, and 8000.*

*Available also is a 200-grit coarse Green sharpening stone. It's dimensions are 2-1/8" x 8-1/4" x 3-1/8". The Green stone lends itself to re-shaping bevels by hand on chisels and plane irons. It is available for \$19.50 plus \$2.50 shipping.*

  
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## RYOBI AP-10 Compact Planer Introduces a New Era of Affordability

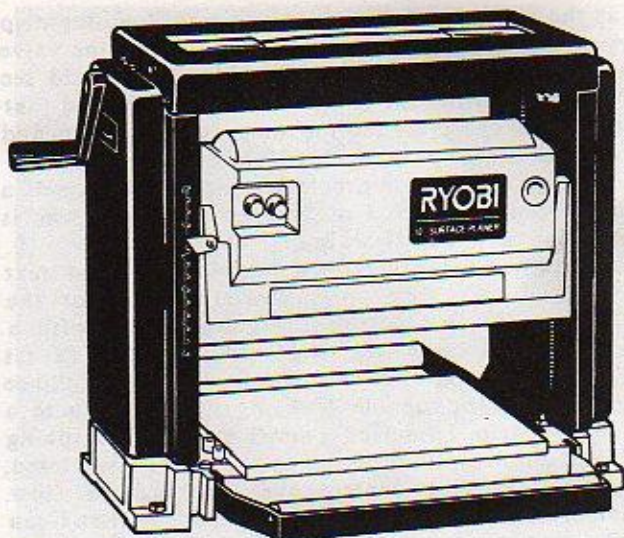
The AP-10 portable 10" thickness planer costs less than \$500 and it works.

If that isn't enough to get your attention, see your doctor today. The usual reaction to a first look at the AP-10 goes something like this: "No kidding - does it work? Say that price again? That's amazing! Why didn't they come out with something like this years ago?"

No kidding: the AP-10 will take a 1/16" depth of cut across a 10" width of hardwood. It will automatically feed work through itself at about 26 feet per minute, and will provide a clean, smooth surface on the finished piece. When you've finished a job you can fold up the support rollers, grab the carrying strap, and toss the 58-lb. machine into your glove compartment (well, almost).

A 13 amp (2 HP) motor drives the two-knife cutterhead at 8000 rpm, delivering about 51 strokes per inch on the work. (Strokes per inch can give you a good idea of the surface quality a planer can provide; the higher the figure the better. 51 strokes per inch is pretty good.) Maximum stock thickness is 5-1/8". The AP-10 measures 16-3/4" wide by 14-1/4" high. With the outrigger stock support rollers folded down for use, front to back length is 19-1/4". Two wooden skids are provided with the planer; bolted to its base they offer an easy means of clamping or bolting the machine to workbench, sawhorses or Workmate. Plan on providing extra support for any stock more than a few feet long. The power feed rollers do a remarkably good job of moving stock through the planer, but they aren't designed to fight gravity as well.

After all the exclamations about price, size and performance have faded into the routine of daily use, you'll begin exclaiming all over again when it's time to sharpen the knives. Removing them from the cutterhead is routine; loosening some bolts is all that's required. Re-installation is where the headache comes in on most machines, as limited access, fidgety adjustments, and primitive mounting systems combine to try the resolve of the most stalwart worker. The AP-10 is different. Most cutterhead designs include some sort of steel cap or bar which secures the knife to the cutterhead and stiffens it against shock. Ryobi has taken this blade binder, as they call it, and hung a little lip off the back edge. This little lip nests down into a slot in the cutterhead, thus locating the blade binder and the blade along with it. So when it's time to re-set the knives, you're not faced with setting the knife in the cutterhead; you set the knife in the blade binder, using an extremely simple jig provided for the purpose and doing the work out in the daylight where you can get at it. When you pop the blade and binder assembly back into the cutterhead, the cutting edge of the knife is automatically set precisely where it should be, and only gross negligence could leave one knife set differently from the other. Knife installation is a five-minute job for the first-time user, and that all by itself is a revolution.



Those of us blessed with ready access to a thickness planer so quickly take it for granted that we sometimes forget that woodworking can be done without one. However, a look of blank amazement isn't much help to someone who asks if a planer is really all that useful an investment. Some of a planer's uses are obvious: you have a piece of wood 3/4" thick and you need a piece of wood 1/2" thick; your planer turns one into the other. That's thickness planing. You aren't always planing for particular thickness, though. If your planer is good enough (like the AP-10), you'll probably find yourself using it more often as a substitute for your belt sander, taking just a very light skim pass just to clean up a surface and prepare it for finishing. Think about that for two seconds: while I'm putting a belt on my sander, you're watching 26 feet of wood go by. While I'm generating clouds of dust you're generating piles of shavings. While I'm switching to a finer grit you're giving the work two licks with a scraper or a finish sander. While I'm behind schedule and over budget as usual, you're lolling at the beach with your planer by your side.

The AP-10 planer embodies an idea whose time has been around for a while now, waiting to be noticed. The folks at Ryobi are to be congratulated for recognizing and seizing this opportunity to bring an automatic planer within reach of thousands of hobbyists, carpenters, and small-budget shops for whom a large \$1000+ machine was not the answer to their needs. We're pleased to add the AP-10 to our line, and we fully expect you'll be equally pleased to add one to your shop.

*As an introductory promotion, Highland Hardware is offering a package deal on the AP-10 planer and a Ryobi JSE60 industrial duty variable speed orbital jigsaw. The two units bought together cost only \$449.00 postpaid through June 30, 1986. List price on the jigsaw alone is \$209.00. This is an unbeatable deal! Should you choose to buy the planer without the jigsaw, your cost is only \$399.00 postpaid.*

*If you've been waiting for the right price on a good thickness planer, don't hesitate, as supplies are limited. Before ordering, contact us toll-free at (800) 241-6748 to confirm availability.*



# INCA 810

## Radial Arm Saw

The newest addition to Inca's line of stationary tools hardly needs to be described as new - one look at it and that much is obvious. We've never seen a radial arm saw exactly like it. In fact, if you choose to quibble over terminology you could reasonably insist that the 810 isn't really a radial arm saw at all, since the arm does not pivot radially about the main support post.

The design of this new saw is both intriguing and encouraging. Encouraging because the people who designed it somehow managed to avoid building in the same weaknesses found on almost every other moderately priced radial arm. And intriguing because the saw is clearly designed to be used in a way that almost none of us has ever thought of doing, though after a good look it makes all kinds of sense.

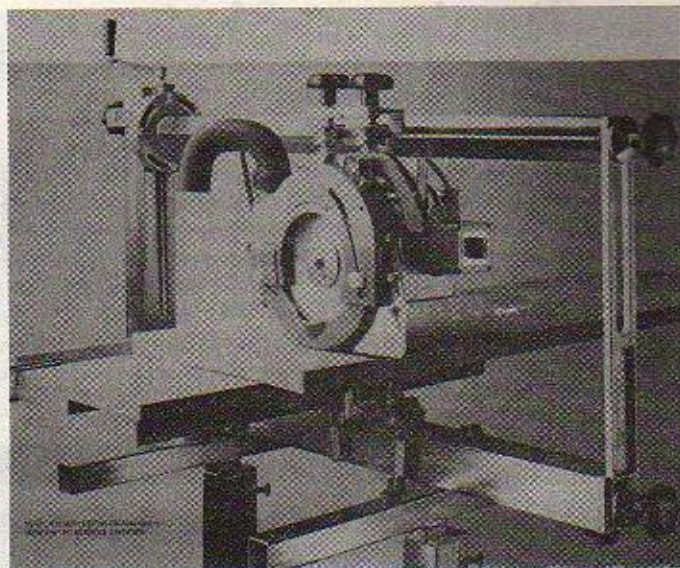
How can they call it a radial arm saw if the arm doesn't swing radially? Try rotating the table instead. The table assembly resembles what you find on an electric mitre saw: tightly machined castings rotate smoothly on each other and can be locked at any position up to 45 degrees left or right. The whole assembly is clamped to the main saw frame, and that is the main secret of the 810's remarkable success as an accurate crosscut saw.

The downfall of conventional radial arm saw design is the pivoting arm, specifically the point where it attaches itself to the vertical support post. The attachment system has to be flexible enough to let the arm travel vertically, swing from side to side, and rotate clockwise or counter. That means there are lots of pieces of hardware involved, so it shouldn't be too surprising that a tight and accurate radial arm is hard to find.

The Inca 810's main vertical post is square in section, offering an easy and very reliable means of mounting the arm so that it won't be subject to lateral wiggling. The arm joins the mounting bracket with four heavy bolts through a large flange; this eliminates any chance of sloppiness creeping in at that point (the trade-off is a little more work than usual setting up compound mitres). Thus the joint between arm and post is extraordinarily rigid.

The pivoting table assembly is attached to another arm mounted even more rigidly than the first, so that the two arms and post act as an integral unit. If you shake the upper arm while making a cut, the lower arm moves likewise with no resulting inaccuracy in the cut being made. With a good cut-off blade installed on the saw, the 810 will make glass-smooth cuts worthy of the finest tablesaw or mitre box.

There's another important operational feature of the Inca 810: the saw is very consciously designed to cut on the push stroke, and in fact cannot do otherwise without unsafe modification. This usually rates a raised eyebrow or two, and at first we too found this a bit odd. But the idea will grow on you, and might actually persuade you to change the way you work with any radial arm saw (depending on how the blade guard is built). Consider for a moment how every other circular saw is used.



*Inca 810 shown with optional extension arm.*

Would you ever pull your skilsaw through a board? Or feed a workpiece from the rear of your tablesaw toward the front? Of course not. And yet just about all of us have always used the radial arm saw in exactly that way, called a climb cut. Maybe that relates somehow to the fact that the worst injuries in the shop occur on the radial arm saw. If (and only if) the saw is equipped with a functional (meaning you don't throw it away immediately) and effective (meaning it really protects you) blade guard, then it makes a tremendous amount of sense to push the saw through the work just like you do with every other saw, opposing the thrust of the blade and virtually eliminating the chance of the saw suddenly making a run right at you. The 810's table can be positioned on the lower arm (unless the stock being cut is very wide) so the blade passes through the work and stops beyond the fence, out of harm's way while you deal with the cut pieces.

The Inca 810 uses a safety-switched 9 amp, 1 HP motor to drive a 9" blade (5/8" arbor), which provides 2-1/8" depth of cut at 90 degrees, or 1-1/2" at 45 degrees of tilt. The standard saw offers an excellent maximum crosscut capacity of 16" at 90 degrees or 11-1/2" at 45 degrees. An optional extension set (\$112.00) adds to the lower arm and replaces the upper arm entirely, linking the two with a vertical bar at the front and providing an astonishing 28" crosscut capacity. A steel stand is optionally available (\$146.00), offering adjustable height and easy disassembly for transport. As with all Inca tools, the 810 radial arm saw is covered by a five year warranty against defects in materials or workmanship.

A unique accessory is the optional router carriage, which allows the owner of an 810 to attach his router to the upper arm, creating in effect a radial arm router. Cost of the router carriage is \$105.00.

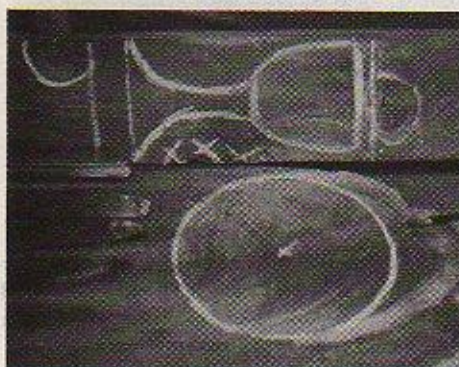
*The Inca 810 radial arm saw currently sells for \$568.00. If you're here in Atlanta or near us in the Southeast, come by any time for a look. We'll be happy to show where all these claims of excellence are coming from. And if you're elsewhere across the country, call Garrett Wade (212-807-1704) for referral to the Inca dealer nearest you.*



# Turning a Chalice and Paten

by Roger Foster

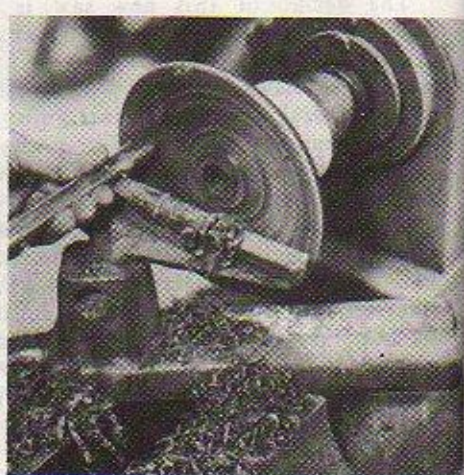
Recently I was commissioned to produce a chalice and paten for use as a Communion set for a church in Alabama. The pieces were turned from some very old pieces of air-dried walnut. The actual design of the shapes to be turned was determined by the size needs of the client in relation to the wood that had been chosen for the project. I first designed several shapes based on these factors, and from these the client chose the one most appealing.



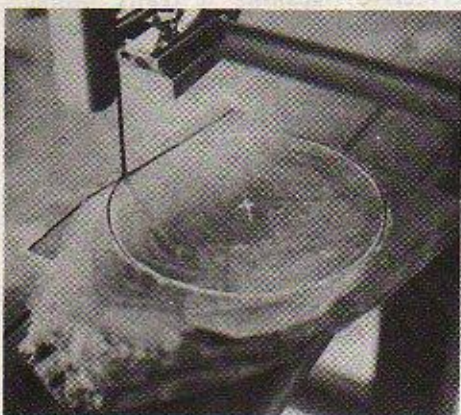
The designs are laid out on the wood using chalk in a way that captures the beauty of the highly figured grain surrounding the knots.



Here I am turning the bottom of the paten using a Superflute high speed steel gouge. Note the heavy shavings on the bed and the fine shavings on the tool rest, all from the same turning tool.



Turning the inside of the the paten with the Superflute cutting from the outside to the center. Beginners should practice this on pieces of wood they don't mind losing. Cutting action like this can only be produced with an extremely sharp edge and a specific grind to avoid digging in. Note the shavings.



Using a bandsaw, the blank for the paten is cut out. The figure in the wood resembles that found around the crotch of a tree.



I was fortunate to have no tear-out to deal with, so all that was necessary was wet sanding with Watco oil with 220 and 320 wet/dry sandpaper, followed by lots of buffing and burnishing with a heavy cotton cloth.



Wet sanding the inside of the paten. No heavy sanding was necessary.



The blank is then mounted on a faceplate. Unfortunately, my tool rest is broken, but still usable.

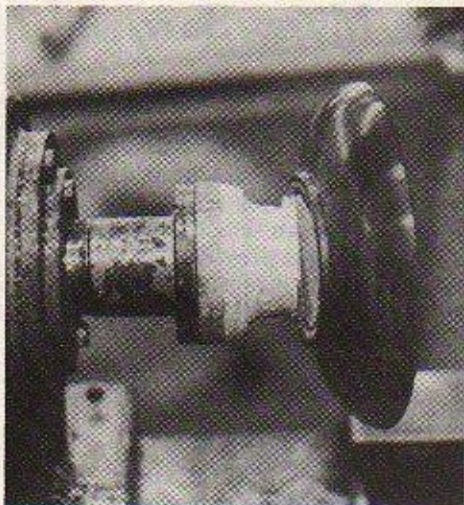


A block of ash is mounted to the bottom using a piece of matt board glued between the two woods using "Hot Stuff" glue (which by the way is incredible stuff). Clamping time: one cup of coffee. The face of the block is then turned flat and the center marked for mounting of the faceplate.



The paten is finished and the Watco oil allowed to dry before proceeding to apply Behlen's salad bowl finish.





Seven coats of salad bowl finish later, the paten is separated from the base by driving a chisel into the paper and prying it off. The paper is sanded away and the bottom is finished.

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After cutting the blank for the chalice, I used the jointer to bring it nearly round. In this shot, my hands are not positioned very safely. Actually, I had the machine turned off while posing for the photograph. Jointer safety requires keeping the fingers well away from the cutterhead and use of push blocks on pieces this short.



Begin the chalice by turning the outside shape of the cup. After using the Superflute gouge, I made the finishing cuts with a modified bullnose scraper.



I left a mass of wood at the base to cut down on vibration while I turned the inside of the cup, starting at the center and working out. I used three scrapers which had been re-ground to produce a shearing cut.



Finishing the cup of the goblet. I try to apply equal pressure to the outside of the cup while sanding the inside. This also aids in burnishing the oil into the wood.



Here the final cuts are being made on the base using the modified bullnose scraper. Shaping cuts were made with the Superflute gouge.



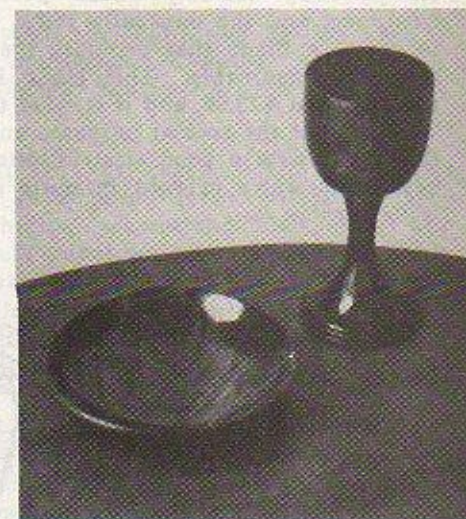
Wet sanding the base of the chalice with oil. The towel on the bed of the lathe is to keep the sludge from this process from building up on the bed.



The chalice is finished and the first coat of Behlen's salad bowl finish is wiped on in a thin, even coat with a cloth, the lathe not turning. Allow 6-8 hours drying time between coats.



After seven coats of finish are applied, with 4/0 steel wool huffing between coats, the waste on the base of the chalice is turned away and cut off, and the bottom sanded and finished.



The finished products, ready for delivery and use after a 72-hour curing time.

Roger Foster turns wood in his shop in Conyers, Georgia.

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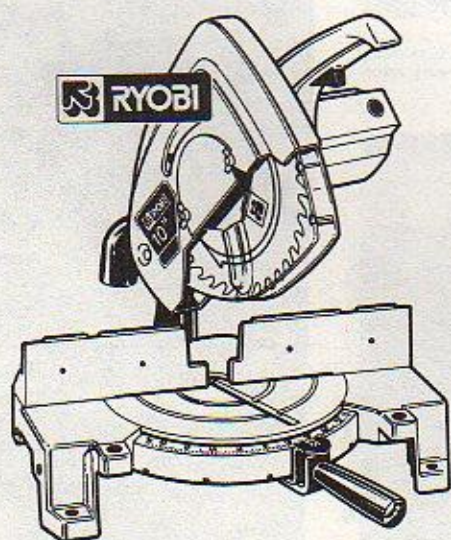
# Power Miter Saws

## Ryobi/Freud Special

A special purchase of the Ryobi TS-251U miter saw enables us to offer the saw equipped with Freud's top-of-the line LU85M 10" cut-off blade at an extraordinarily attractive price. While current supplies last, we are pleased to offer this saw and blade package for only \$229.00, and we'll ship postpaid anywhere in the 48 states.

The Ryobi TS-251U miter saw looks a lot like the Makita 10" miter saws we've sold for years. The major visible difference is the Ryobi's die-cast aluminum construction, which at 33.5 lbs., makes it nearly 20% lighter than the Makita LS1000. The Ryobi has five positive stops (90°, 22-1/2°, and 45° left or right). Maximum cutting depth and width are 4-1/4" by 4-1/4" at 90°, or 4-1/4" by 3-1/4" at 45°. A spindle lock simplifies blade removal and installation. The TS-251U is powered by a 12.5 amp, 5000 rpm, 120 volt motor equipped with an electric brake which stops the blade in seconds after the trigger switch is released. Extension rails, vise, and dust bag are optional accessories.

Freud's LU85M 80-tooth carbide cut-off blade has earned high praise from woodworkers everywhere who demand the best. The unique grind of the teeth, the teflon body coating which permits minimal kerf clearance, and the unusually thick, rigid blank combine to create a blade that provides the smoothest, cleanest crosscuts imaginable. This blade is currently on sale nationally at \$73.90, and it is more than worth the price. We feel that the special purchase enabling us to provide this blade with a good electric miter saw is one of the best deals we've offered in quite a while. Order now while supplies last.



TS-251U

## 14" Ryobi Miter Saw

Also available from Highland Hardware this spring is the Ryobi TS-380 14" power miter saw. The TS-380 will handle stock up to 4-13/16" thick, and will cut to a maximum width of 6-3/16" at 90°, or 4-3/8" at 45°. The 14-amp motor operates at 3400 rpm for fast, clean cutting, and is equipped with an electric brake for safety. A 14" combination blade is provided as standard equipment. The TS-380 weighs just 50.6 lbs., and is shipped postpaid within the lower 48. Its current price from Highland Hardware is \$399.00.



LS1000

## Makita LS-1000 10" Miter Saw

While we're on the subject of miter saws, we should say a few words about the new Makita LS1000 10" saw. This is a revised new edition of Makita's first two popular 10" saws, incorporating not only the good features of its predecessors but adding new advantages as well. Design streamlining has pared the weight down to 40 lbs. without sacrificing any of the strength and durability of proven cast-iron construction. Synthetic inserts have been fitted into the table slot and the fence gap for greatly reduced tearout and considerably improved safety when making very thin cuts or handling small stock. The blade guard has been thoughtfully redesigned to minimize inconvenience and allow the operator to easily hold it out of the way while positioning stock for accurate cutting. In a praiseworthy concession to reality, the option of too-short and not too stout extension rails has been dropped, and a quick-release, left or right side drop-in vise has been added as standard equipment. Seven positive stops are provided, at 90° and at 22-1/2°, 30°, and 45° left or right. The stops are substantial holes drilled in cast iron, and should remain reliably accurate for the life of the saw. The LS1000's 12-amp, 4100 rpm motor is geared to provide a 4-1/4" maximum depth of cut, with 4-3/4" max width at 90° or 3-1/2" at 45°. A safety button on the handle must be depressed before the trigger switch can be activated, preventing hazardous accidental starts. In all, the LS1000 is a heavy-duty, professional quality tool, and if your work demands the best, this is the one to buy.

The Makita LS1000 10" miter saw is available from Highland Hardware for \$239.00 postpaid in the 48 states.



# New Lathe Accessories

## Miniature Drive Centers

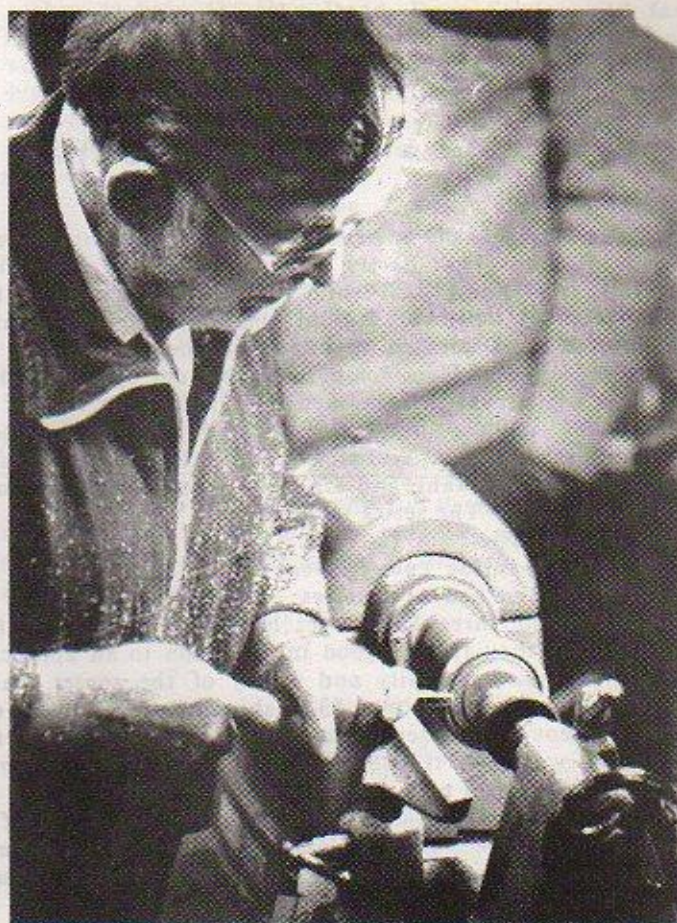
It was our privilege last fall to host a weekend seminar with Rude Osolnik (Rudy O-sol'-nik), a master woodturner from Berea, Kentucky. It was a fine visit, and as always happens when the chatauqua comes to town, we drew inspiration from making the acquaintance of an outstanding woodworker as well as from learning about the techniques and the tools of his craft.

Two items Rude used were new to us, but they seemed so useful that we have added them to our turning accessories department. Item number one is a **miniature drive center**, of which we now stock two sizes. These centers are particularly useful for turning very thin work, such as tenons on the ends of spindles. Rude used them on large stock as well, taking advantage of the unusually long center spur to help place and remove stock even while the lathe was running. Rude says that on production runs, this has been a real time-saver for him, though for obvious safety reasons, we don't recommend that you mount your workpieces on the lathe while it is running. For mounting thin workpieces between centers, however, they can't be beat, and we highly recommend them for that. We have the miniature centers which Rude used in 1/2" and 3/8" drive diameters, both with number 2 Morse taper. We also have the 1/2" size with a number 1 Morse taper. *Each is available from us for \$19.95 plus \$2.50 shipping.*



## Hot Stuff Adhesives

Rude also used a fair amount of a "super-glue"-like adhesive called **Hot Stuff**. Rude is one of the people who pioneered the techniques of turning bowls full of holes; using interesting chunks of wood with the bark on, with punky areas and areas completely missing. When he turns into an area so punky that it wants to fall apart, he stops momentarily to saturate the area with **Hot Stuff**, a cyanoacrylate liquid that sets up hard in less than a minute, or almost instantly if a special accelerator is sprayed on. He also used the **Hot Stuff** along the intersection of bark and sapwood to insure against de-lamination. Where there were small holes or pits to fill, he used a thicker gap-filling version of the **Hot Stuff**, which would remain on a surface long enough for sawdust to be added to make a wood filler. Once again, the accelerator could be sprayed on to allow immediate return to work. This adhesive looked like pretty hot stuff indeed, so we've added it to our stock. There are three kinds of adhesive: **Original Hot Stuff**, the regular adhesive which is about as runny as water; **Super T Hot Stuff**, which is a little thicker but will still penetrate readily into small crevices, and **Special T Hot Stuff**, which is fairly viscous stuff and makes a good medium



*Above, Rude Osolnik demonstrating at the lathe during his seminar at Highland Hardware. At left is a photo of the 3/8" diameter miniature drive center.*

for filling modest pits or cracks. The **Hot Shot Accelerator** comes in a pump spray bottle for easy application. We highly recommend that with any purchase of **Hot Stuff** adhesives you also order a bottle of **Hot Stuff Solvent**; the adhesive, like all the "super glues", can bond flesh almost instantly, and it is well worth having a little insurance on hand.

The two-ounce bottles we sell provide enough adhesive for quite a bit of work. They look expensive at first glance, but we felt a little better when we realized that an equivalent quantity of Super Glue or Krazy Glue would cost over fifty dollars.

*Hot Stuff products are available from us at the following prices, plus shipping:*

Original Hot Stuff	\$9.95
Super T Hot Stuff	\$9.95
Special T Hot Stuff	\$11.50
Hot Stuff Accelerator	\$3.95
Hot Stuff Solvent	\$3.95





# Woodworking Video News

The supply of instructional woodworking videos continues to grow, partly in response to the increasing numbers of home VCR's and partly because demand for good usable woodworking information is at an all-time high. We are pleased to announce the availability of four new VHS videos for purchase or rent by mail order, and a significant price reduction on five other videos.

Three of the new videos form a series called **Woodworking Tips, Techniques and Tricks of the Trade** with Bob Rosendahl, and are strictly concerned with use of the router. The series includes:

- Router Basics
- Table Mounting Your Router
- Router Jigs and Accessories

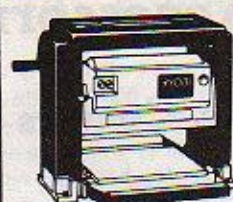
Each of the three VHS tapes lasts thirty minutes, and combined they form a good introduction to an appreciation for the versatility and utility of the router. Each tape sells for \$39.95 plus \$3.30 shipping. While most of our videos can be rented by mail for up to 30 days for \$19.95, we make the special offer of renting the three router tapes as a package for \$19.95 for 30 days.

Another new 30-minute tape features Roger Cliffe, author of the recently published book *Table Saw Techniques*. His video is entitled *Working with your Table Saw*, and contains 30 minutes of instruction on joining wood using the table saw, including info on new jigs and fixtures. Employing the table saw, Cliffe demonstrates making a false-back drawer for hiding valuables, a bevel-top jewelry box, and a useful knock-down work table. This VHS tape sells for \$29.95 plus \$2.50 shipping, or rents for 30 days for \$12.50 plus return shipping.

The good news continues as we are able to report that the four VHS tapes featuring Roy Underhill on *The Woodwright's Shop* have been reduced in price from \$59.95 each to \$39.95 each. Each tape lasts approximately 80 minutes. Contents of the 4 volumes are described on page 73 of our 1986 catalog. The price reduction has also been extended to the video on *Wooden Planes and Scrapers*, a 90-minute program which covers the method of making a wooden plane as taught by students of James Krenov at his College of the Redwoods in California. Its price is now \$39.95 plus \$3.30 shipping. These tapes can also be rented for a 30-day period for \$19.95 each. To rent tapes, we require a refundable deposit equal to the tape's retail cost. (This may be charged to your Visa or MasterCard). The rental fee includes delivery of the tape to you. You pay return postage. If you decide to keep the tape, you can simply waive return of your deposit, and no rental charge is due.

These terms also apply to our *Fine Woodworking* VHS videos, which include *Dovetail a Drawer* (\$49.95), *Wood Finishing* (\$59.95), *Bowl Turning* (\$59.95), *Carve a Ball and Claw Foot* (\$59.95), and *Radial-Arm-Saw Joinery* (\$59.95).

Tapes can be ordered toll free by calling (800) 241-6748.



## 10" THICKNESS PLANER

\$399.00 Postpaid

Ryobi's new 10" auto-feed thickness planer is a breakthrough in compact design and affordability. It weighs just 58 lbs., yet handles material up to 10" wide and 3" thick. Exceptionally smooth finish. Powered by rugged 13amp 120v motor. Knife setting gauge allows quick, accurate adjustment of knives. All ball bearing construction. One year warranty. Spare set of knives . . . \$30.00 Postpaid.

## MAKITA 9820-2 BLADE SHARPENER

\$195.00 Postpaid\*

Sharpens planer and jointer knives with great speed and accuracy. Medium grit Japanese waterstone rotates in gravity-fed bath for safe work on your edge tools.

New GREEN WHEEL for 9820-2. 120-grit coarse silicon-carbide wheel re-shapes bevels and grinds out nicks; also sharpens carbide knives . . . \$35.00 Postpaid.

\*SPECIAL thru June 30, 1986 FREE GREEN WHEEL with purchase of 9820-2

Optional Accessory Jig (shown in use in photo) for sharpening chisels and plane irons . . . \$12.50 Postpaid.



## LAMELLO PLATE JOINTER

\$550.00 Postpaid



Patented design and Swiss precision make the Lamello Top the fastest and most accurate plate jointing tool on the market. Positions instantly for rapid assembly and maximum joint strength. One year warranty.

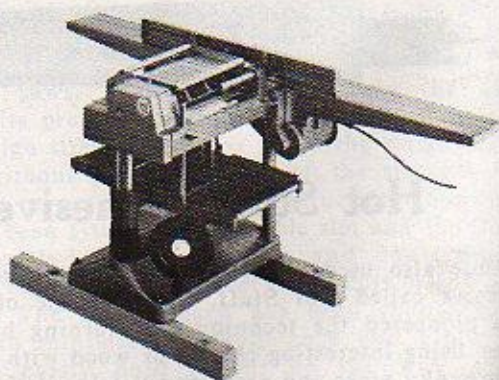
Lamello Jointing Plates (boxes of 1000) . . . \$27.50 postpaid. Specify size 0 (9/16" wide), 10 (3/4" wide) or 20 (1 1/16" wide).

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

Or send check, money order, or MC/Visa info to Highland Hardware. Prices are postpaid in 48 adjacent U.S. Offers effective through June 30, 1986. SEND \$1.00 for our tool catalog and newsletter subscription (free with order).



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



## Planer-Jointer Clearance

Long a favorite because of its capacious compactness, this machine is available in limited supply at a tremendous savings. Offered for \$1499 in our 85 catalog, the 2030 can be bought for only \$1295 POSTPAID while our supply lasts. Superseded by the new model 2030N, the 2030 has stood the test of time as a rugged and reliable workhorse. Its autofeed planer handles stock up to 12" wide by 7-1/4" thick. The 6-1/8" wide jointer has a total bed length of 59" for serious edging duty. Arrives fully assembled with high performance 2 hp 115 volt Makita motor. Weighs 276 lbs. Shipped free to the 48 adjacent states via truck freight.



# Woodworking Courses at Campbell Folk School

High in the Smokies, located in Brasstown, NC is a school whose founder's motto was "Enrich, enliven and enlighten." Begun in 1925 in an effort to help the region adjust to impending economic, social and cultural changes in a way that would reinforce community pride and stability, the institution has become the nation's oldest folk school. In addition to teaching crafts, music and dancing to students of all ages from the region as well as around the nation, the school also provides retail and wholesale marketing services for area craftspeople.

Today the school facilities include the historic Keith House which contains offices, dorm room, dining room, kitchen and meeting rooms; a craft shop; craft studios; a museum; a saw mill; the student campground; and 300 acres of farm and timber land.

Now celebrating its 61st year of program activities, the John C. Campbell Folk School has announced its diverse calendar of courses and events for 1986. Classes of interest to every member of the family are offered virtually every week from March through November, making the school unique place to take the family for an interesting and rewarding vacation. Meals and lodging are extremely affordable, as are tuition fees.

Classes are offered in metal, clay, wood, fiber, music, dance and graphics. Here is a partial description of the woodworking classes.

Woodcarving is offered Feb. 28-Mar. 2, March 7-9, March 14-16, April 13-19, April 27-May 3, July 6-11, Aug. 3-16 (advanced woodcarving with E. J. Tangerman), Aug. 17-23, Sept. 7-20, Oct. 10-12, Oct. 12-18, and Nov. 16-22. A variety of instructors and emphases are included.

Mar. 14-16, David Scott will teach furniture-making using the lathe, in which students will make a 3-legged stool while developing turning techniques.

April 13-19, Dana Hatheway will teach country woodcraft while leading students in making greenwood chairs or stools as well as bark baskets.

May 4-10 and May 11-17, Dana Hatheway will lead an Elderhostel weekend (for those aged 60 and over) in which students will design and construct a piece of traditional or contemporary furniture.

May 22-June 11, John Dodd, Doug Seigler, and Ian Kirby will lead a wood intensive course. The opening weekend, Kirby will discuss the context for working as a designer-craftsperson today. Dodd and Seigler will focus on making a participatory fantasy object of wood as a means of learning and practicing basic tool skills and techniques.

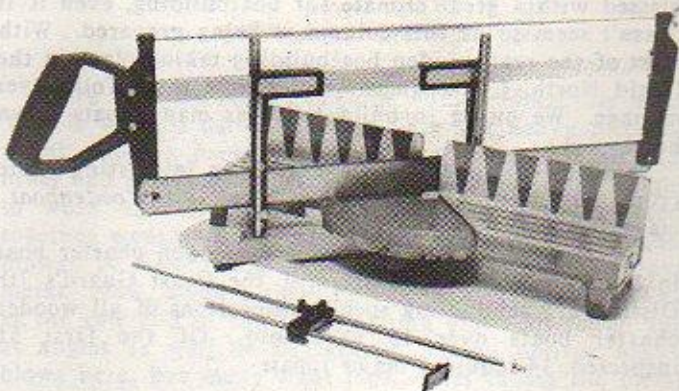
July 2-26 and July 27-Aug. 2, David Boyt will teach courses covering elements of cabinetmaking and working with green wood.

August 3-9, Homer Ledford will instruct a class in which each student will build a traditional dulcimer.

Sept. 7-20, Jim Kirkpatrick will lead a class which will focus on the building of fine furniture, with emphasis on machine and router joinery.

Oct. 12-18, Bill Smith will teach an Elderhostel course (for ages 60 and over) on building a plucked dulcimer.

For a 24-page brochure listing full details on all of the Campbell Folk School's 1986 program activities, call (704) 837-2775, or write John C. Campbell Folk School, Brasstown, NC 28902.



## NOBEX Miter Saw now \$99.50

Improved purchasing has enabled us to offer an excellent price on this fine Swedish mitre box. Mitering is almost inevitably a pain in the neck unless you've got expensive, professional quality equipment on hand to do the job, but the Nobex 202 gives you the opportunity to acquire that kind of equipment at a remarkably painless price - 33% off last year's retail price.

Light, tight, precise construction gives the Nobex performance specs that are hard to beat. Lightweight, high strength bowsaw-style cutting assembly provides maximum feel for the work with minimum fatigue, while the 11" stroke length allows fast and efficient sawing. Positive stops at 90, 22-1/2, 30, 36 and 45° left and right allow instantly accurate set-up of all the most common polygon angles. The 18tpi blade supplied with the saw cuts satin smooth in most work; 12 tpi blades are available for extra heavy work. The 202 will cut materials up to 4-1/2" thick at any angle. Max width is 6-1/2" at 90°, 4-1/2" at 45°. The saw table measures 3" wide by 17-1/2" long; an adjustable stop sets up repeat cuts up to 24" from either side of the blade.

The Nobex 202 mitre saw is available from Highland Hardware for \$99.50 plus \$5.00 shipping. Spare blades are \$7.50 each. Specify 12 or 18 tpi.





# BOATBUILDING

## with John Wermescher



c1986 by John Wermescher

We had a long hot summer and a very mild fall in Georgia. Hope you got some boatbuilding done. We're blessed with a great climate for boatbuilding, even if it doesn't seem so as this column is being prepared. With most of the real wooden boatbuilding taking place in the frigid North, I sometimes wonder how those folks ever manage. We ought to build twice as many boats down here!

Speaking of wooden boats, here is an interesting quote from "On the Waterfront" in the last *Woodenboat* magazine:

"In response to the sinking of a wooden charter boat in the Florida Keys, officers of the Coast Guard's 7th District are conducting special inspections of all wooden charter boats over 15 years old. Of the first 51 inspected, 14 required major repair..."

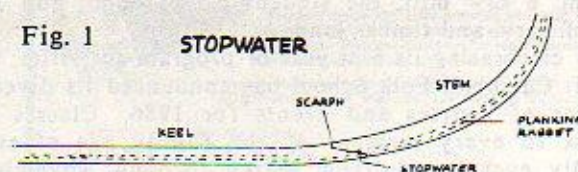
This issue we'll get into fastenings, adhesives and sealants, though maybe not in that order. Let's begin with an overview of the whole subject of Stickin' Stuff Together.

In a boat, you want some things stuck together so strongly and tightly that only nuclear fishin' could tear it apart. Other parts you don't want too tight, but maybe with a little flex. Firm, but flexible. Some things may need replacing from time to time and you don't want to have to chisel the old part off. Best to keep this sort of thing in mind when choosing a method of fastening.

Obviously, if you're building up a keel-deadwood assembly, a keel-knee-stem assembly, or some other basic backbone heavy support, you want it to *stay together*. Go nowhere. Ever. Use the best adhesive money can buy and the strongest, heftiest through bolts or pins allowable in the wood thickness. On the other hand, a rub rail is there to take abuse and wear away (rather than your sheer strake). You are going to replace it someday. Use a material that will stick it to the sheer strake (topmost plank) and keep out water seepage, but let you pull it off when replacement time comes. Of course, this rail is also nailed or screwed. The bedding compound, as it is called, is there less to hold the rub rail on than to keep out moisture which would accumulate in such a joint and cause problems.

This may be a good time to go back to something we said earlier about two approaches to boatbuilding: traditional and modern. The traditional boat was built of many pieces of wood, put together strongly and surely, but with the knowledge that the wood would move with moisture change. Swell and shrink. And the knowledge too, that no matter how strongly a boat could be put together (in those days) when she was out in rough weather, she would "work". That is, twist and give here and there. Rather than try to build something strong enough to completely eliminate this problem (impossible, too much weight) the builder allowed for it. Space was allowed in seams for swelling and shrinking. Fiber and goo was spread in those seams to take up the space and give with the changes. Joints between main structural members, where planking crossed the joint, were fitted with *stopwaters* (see Fig. 1) to prevent the inevitable seepage from getting into the boat.

Fig. 1



Modern boatbuilding takes advantage of new materials which can literally weld wood parts together into a one-piece "monocoque" hull. It will not work or give. No seams. No leaks. One piece, like "fiberglass". Modern adhesives make it possible. Stripper canoes, popular among amateur builders for a number of years, are a good example of this.

Adhesives are interesting materials and they seem to get curiousest and curiousest. To me, an adhesive is something you spread onto a joint before closing and it gets hard and holds the joint together. Always has been that way. Now we hear of *sealant/adhesives* that do both the job of holding things together and staying flexible as a sealant. More of that later when we talk about sealants. Don't confuse that word with *sealers*, which are film materials you brush or roll onto wood to seal the pores.

Let's first get specific about fastenings. Fastening metals have been improved over the years and good stuff is now widely available. Obviously, any ferrous metal exposed to moist marine conditions will rust. Remember, all metals corrode. This is terribly important in boatbuilding. Some corrode very little, hardly worth considering. Such metals are silicon bronze, manganese, monel and stainless steel, though stainless can have some peculiar problems of its own in a salt-water environment. Don't use stainless below the waterline in a salt-water environment, and that which is used above the waterline, in fittings, rigging and the like, needs periodic inspection to detect what is called *stress corrosion cracking*.

Materials which corrode somewhat are aluminum and brass. Aluminum is too soft to consider for a fastener. Brass, again, should be considered only for a fresh-water environment. In salt water the zinc dissolves out leaving only spongy copper, no fastening at all.

In days gone by, wrought iron and cast iron held up pretty well, but you are not likely to find these today.



## ELECTROLYSIS CHART

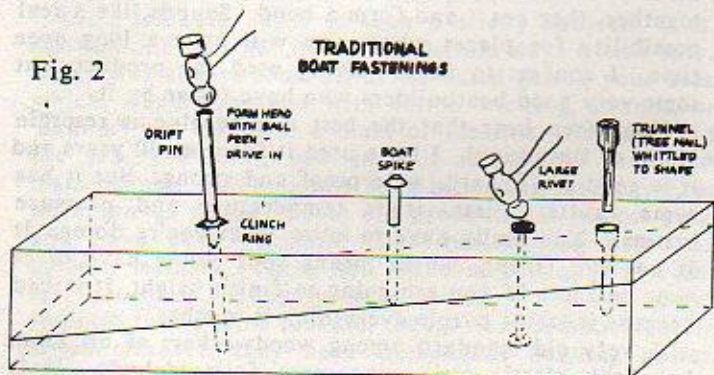
Common metals ranked in order of electrolytic activity, or corrosiveness. From least corrosive to most corrosive. If two of these are near each other in a wet or damp environment, the one below will corrode away.

Monel  
Nickel  
Silicon bronze  
Copper  
Yellow brass  
Phosphor bronze  
Manganese bronze  
Tin  
Lead  
Stainless steel  
Cast iron  
Wrought iron  
Mild steel  
Aluminum  
Cadmium  
Galvanized iron and steel  
Zinc  
Magnesium

Most iron materials are mild steel and other stuff that will go pretty fast. Again, the old hot-dipped galvanized iron was pretty good, but the galvanized fasteners you are likely to get today are plated and chancy. Never use these in a boat headed for salt water. Even in fresh water, use galvanized only where it will be buried and covered over. Look at the Electrolysis Chart shown here.

Top choices for fasteners, safe most anywhere, are copper for nails, tacks and rivets; silicon bronze for nails, screws, bolts, etc. Silicon bronze is hard, tough and very corrosion-resistant. It is not cheap, but it is well worth the cost for your fastenings. One trade name is Everdur. Monel is an alloy of copper and nickel. It is hard, tough and durable - almost as non-corrosive as a metal can get. It's cost is high and its use reserved mainly for shafts, struts and hull fittings. There are some monel nails, which would be top choice.

Fig. 2

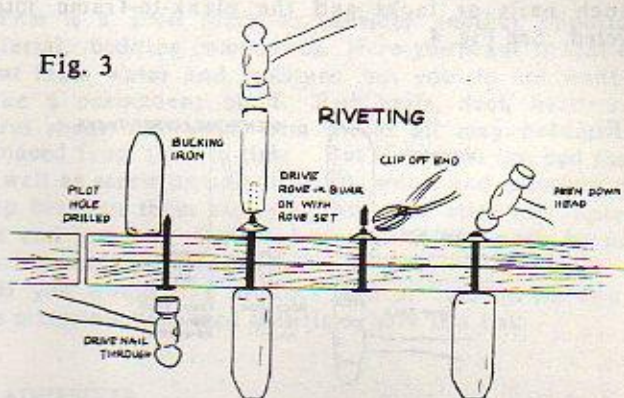


The oldest type of fastenings still in use today are trunnels (from tree-nails). See Fig. 2. Along with new interest in traditional boatbuilding, these are enjoying a revival today. Basically, they are wooden nails. Coat them with adhesive and pound them into pre-drilled holes. For the heaviest type of fastening, traditional boatbuilders used drift pins or drift bolts - long rods driven into tight holes to join heavy timbers, floors to keel, and deadwood makeup. They are still very applicable where it is not necessary or practical to through bolt. The friction of the drift in the hole, plus the angle, does the job.

Through bolts are used to draw together heavy pieces as well as light where a real positive clamping action is needed of the fastener. Such bolts are the same as those used in other woodworking: machine bolts, carriage bolts, round and flat head stove bolts, etc. They are used with washers, just as you would for a non-marine project, and be sure the washer is the same material as the bolt.

Rivets, as they are used on boatbuilding, are not the aluminum "pop" rivets so familiar. Instead, a copper rod, boat nail, or round slating nail is used. If plain rod is used, a head must be formed on one end with a ball peen hammer. The others have heads. A copper burr, or washer, is slipped under the head formed, the rivet driven through pre-drilled holes in the two pieces, and the rivet cut off as it exits the other side, leaving about 1/8" proud. Now another burr is slipped over this end and a head fashioned with the ball pin hammer. See Fig. 2.

Fig. 3



There is a definite technique for forming this head. This is what is called riveting. First, a heavy piece of metal called a *bucking iron*, is held firmly against the other end of the rivet. This is to give some solid weight to work against. Otherwise, the parts being riveted together would absorb most of the force of the hammer blows. A 5-lb. sledge will do, or any piece of heavy metal. Now, using a small ball peen, tap, tap, tap away at the raw end of the rivet, aiming blows all round and at angles as well as straight on. Don't deliver heavy blows here, but many light taps. This causes the metal in the end of the rivet to flow sideways and down, and spread out over the burr a bit, thus forming a head on this end. Done properly, riveting exerts a strong drawing action and will bring two pieces of wood together tightly.

The forgoing pertains to riveting in general, where you want to join two pieces of wood strongly, sizes and dimensions indefinite. In the building of lapstrake boats, where planks do not fit edge to edge, but lap over each other at each course, some specific riveting techniques were developed many years ago. When you are joining the lap edges of two planks which may be from 1/8 to 1/2 inch thick, you obviously cannot use screws which would not have enough wood to go into. Ditto for nails, and bolts would be silly.

The rivet is small, an inch or so long, and for best results, some say, it is square in section rather than round. There are a number of head types and they need no burr under them. The rivet is driven through a pre-drilled hole and a copper *rove* (like a dished burr) is driven over the protruding end. This is done with a *rove set*. When the rove is set down hard, the left-over end of the rivet is snipped off, leaving about an eighth of an inch. The rivet is then peened down over the rove. Of course the rivet is backed up with the bucking, or holding, iron. In the hands of a good lapstrake boatbuilder, this fastening method is very fast and completely foolproof. See Fig. 3.

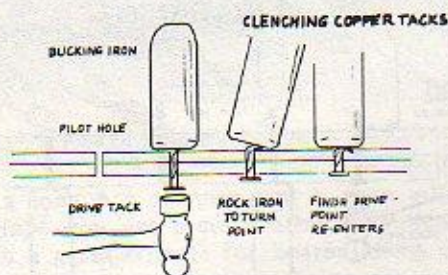
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## Boatbuilding (contd.)

A simplified variation of this is the use of copper clench nails or copper tacks. Here the sharply pointed nail or tack is driven through the hole while the holding iron is against the hole on the inside. As the point comes through, the holding iron is rocked to the side to turn the point, make it curl. Then, as it curls, the iron is pressed down flat and the point re-enters the wood. Very neat, very fast. Cheap, too. In light lapstrake skiffs and canoes, the plank laps are often fastened with clench nails or tacks and the plank-to-frame joints riveted. See Fig. 4.

Fig. 4



This brings us to screws and nails which, except for the lightest kind of construction mentioned above, are the main fastenings you'll use. For joinery, screws will be the standard flat-head wood screw driven into a carefully pre-drilled and countersunk hole. To facilitate driving the larger screws or very skinny screws, lubricate by drawing the threads over a cake of beeswax, not anything else. Soap and paraffin can cause you problems. If you are going to give the surface a bright (varnish) finish, in addition to countersinking for the screw head, counterbore for a plug. The plug should be cut from scraps of the same stock as the work using a plug cutter. Butter the edge of the plug with adhesive and drive it in gently, with the grain running same as the piece. It should stand proud a bit, then be trimmed off with a sharp chisel. Sand flush and varnish.

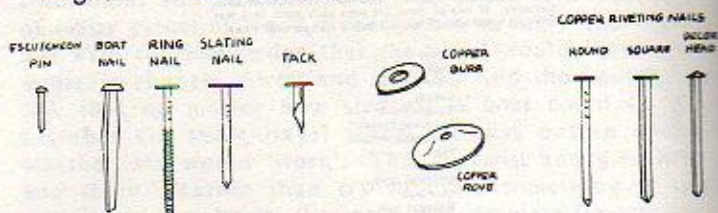
Nails are used where a not-so-fancy finish is planned and they will be painted over or covered with fabric. Still, set the heads a bit below the wood surface and putty over with something compatible with your finish. Sometimes tacks and brads are left flush, sanded smooth and finished bright, like rivets. Regular tacks, brads, common nails and slating nails (roofing nails) all have their place in boatbuilding but, of course, in copper, brass or bronze. Often, in tacking on a bede, or thin trim piece, brass escutcheon pins look nice, with the round heads left proud.

### BOATBUILDING WORKSHOPS/SEMINARS

In response to many requests for experience in wooden boatbuilding, John Wermescher is preparing a series of workshops/seminars to be held this spring and summer at his shop in Inman Park (midtown Atlanta). Such weekend sessions as Handling Epoxy, Oar Making, Spar Making, Cold Molding, Basic Skiff Building, etc. will be offered. For more information, and to get on the mailing list, call John at (404) 659-2468.

Fig. 5

BOAT FASTENERS



"Boat nails" are the old standby of traditional boatbuilders commercially, but have little application in modern amateur building. Best bet today is the *ring nail*, called Anchorfast and Holdfast. And they do. As one apprentice put it the other day, "They are a one-way nail." Because of the annular rings, they go in and stay in. Don't plan to pull one out. Sizes range from 3d to 20d and come in stainless, bronze, and I believe, monel.

## Adhesives

Adhesives (remember, that's a strong rigid joint) have become easy. Don't try to make it otherwise. The majority of joining you will do in amateur boatbuilding will be with this type of joint. There are about four choices. A rather old material used for decades in the light aircraft industry is Acrolite. It is a two-part material where you apply one part to one surface and the other part to the other surface. When you bring the two together, they react and form a bond. Sounds like a real possibility for places where you will have a long open time. I confess to never having used the product, but some very good boatbuilders who have swear by it.

You often hear that the best marine glue is resorcin resin, or Resorcinol. I have used it for over 30 years and it is good stuff, hard, waterproof and strong. But it has some faults. First, it is temperature and pressure critical. You really have to know what you're doing. It is not gap filling, which means your joints have to be near perfect. If you are going to finish bright, it is bad because it stains purple everything it touches.

A very old standard among woodworkers of all kinds has been plastic resin glue, urea formaldehyde. It is wonderful stuff, a powder you mix with water to whatever consistency seems right to you. As it sets up, it gets thicker. It is gap filling, and mixed with sawdust, makes a perfect putty for those big gaps and holes. It gets very hard, has good working time, and is strong and "water resistant". This brings up another bit of controversy.

During World War II, the Navy conducted tests of glues used for wooden boats. They stuck pieces of wood together with both plastic resin and resorcin resin glues. Then they boiled the samples. The plastic resin glued samples came apart, the resorcin ones did not. So, as the late Capt. Pete Culler said, "If you plan to boil your boat, don't use plastic resin glue." Otherwise, it is fine. I know top boatbuilders who use nothing else, above or below the waterline.

All this is academic if you can use epoxy. I say "if" because there may be a few problems for you with this material. First, it is not cheap. I'm talking about marine epoxy, not the stuff you buy in the hardware



store. It requires a little learning to work with it. It is toxic; certain precautions must be taken. These problems come nowhere near outweighing the advantages of modern epoxies as adhesives in boatbuilding.

It is non-staining; it is stronger than anything else; it is completely gap filling; it is completely waterproof; and the same resin system you use for gluing also works for putties, fillets, sheathing, coating as an armor alone, etc. If you use it as a coating material on a boat, you can make the boat as "maintenance free" as FRP. But here is one more disadvantage - epoxy breaks down under ultraviolet light. Paint over it or use varnish with a UV filter. Simple enough.

This boatbuilder will never use anything else as long as he can. Which brings up the problem of toxicity. There are some few people who are sensitive to epoxies and they cannot use it at all. The rest of us *can become* sensitized to it through exposure. Thus it is quite foolish to work with epoxy without taking the precautions of skin barrier cream and disposable gloves. If you are working large areas with the resin, provide adequate ventilation and/or wear a mask with toxic vapor cartridges. The fumes, though not near as miserable as polyester to smell, will definitely get you if you breathe enough of them.

Learn epoxy's peculiarities, learn how to use it properly, take sensible precautions, and you'll love it. There are several producers around. I like the WEST System (tm) made by Gougeon Brothers of Bay City, MI. They pioneered in this stuff and have written copious amounts of technical material on it. I like the way their technical staff is always ready to help, answer questions or try to find the solution to your problem.

Last, sealants. This is such a sticky subject! (I'm allowed one pun per issue). In the old days it was easy. There was always some oil or tar-based goo in your area which, when combined with cotton wicking, strands, or "oakum" was put into a seam or flexible joint and did the job, providing you gave it reasonable care and maintenance. Heavy joints were bedded in lead paint, as were canvas decks. These old products are almost gone and have been replaced by a bewildering array of modern sealants. These new wonders do not need fiber reinforcement. They never dry out. They add great strength to the joint because, though they remain flexible almost forever, they have tremendous bonding power. Some are called "adhesive/sealants".

The first of these to appear, about 30 years ago, were the polysulfides and then silicones. The most modern are polyurethanes. There are quite a variety of formulations and you must experiment a bit, or aim for one product specific to the job you have at hand. The most respected names in this line are Rule, 3M, Boatlife, and Sika. Look at the product literature and make up your mind.

Most of them come in either tubes or gun cartridges. Things to consider are: skinning-over time, complete cure time, setting time to sand and paint over, rigidity of final joint, preparation needed, compatibility with finishes (this is a tricky one and even the manufacturers will not state anything definite), cost, waterproofing ability (can you use it below the waterline?) and the effect of moisture on curing.

Most all of them are very messy. Mask off areas you don't want touched, or get it off pronto when you have squeezed out the last bit. If you let it harden (and some only take minutes to start skinning and turning into

jelly) you will have some tedious knife or razor blade work in store. People like the Sika Corporation - Sikaflex - give pretty explicit application directions, so follow them. If you are planning a penetrating/polymerizing oil finish, such as Watco Marine or Dek's Olje, be wary of what sealant you use. Some don't get along well at all.

These materials are to be used where a flexible joint is wanted, but one that will stay together and seal out water. Plank seams, lapstrake plank laps (in some cases), cabin house to sill joints, through hull connections, deck seams, etc.

This is a good place to consider another important material: bedding compounds. Here you want to seal the joint from water and moisture, but you do not want to make a permanent bond. Rub rails, deck hardware, worm shoes and wood trim pieces all may need to be replaced from time to time. But if you do not bed them, as well as screw or nail them on, water and moisture can seep between them and your hull and start rot. Spread goo and bed 'em. Bedding compounds are made by most marine paint manufacturers.

If you would like product info or catalogs on any of the materials discussed this time, here is a list:

#### ADHESIVES

Resorcin resin and plastic resin glues: Highland Hardware.

Aerolite glue: Aircraft Spruce and Specialty Co., Box 424, Fullerton, CA 92632.

Epoxy resin systems: Gougeon Brothers, PO Box X-908, Bay City, MI 48707.

#### FASTENERS

Jamestown Distributors, 28 Narragansett Ave., Jamestown, RI 02835.

Troy Marine Fasteners, 315 Fairfield Rd, Fairfield, NJ 07006.

Tremont Nail Co., PO Box 111, Dept CBR, Warcham, MA 02571.

The Copper Nail, Box 936, Sacramento, CA 95804.

Duck Trap Woodworking, RFD 2, Cannan Rd, Lincolnville Beach, ME 04849. (If you plan to build small traditional boats or canoes, get acquainted with Duck Trap).

#### SEALANTS

Sika Corporation, 960 Rand Rd, Suite 112, Des Plaines, IL 60016.

Rule Industries (Inquire about products at your marine supply dealer).

Boatlife, 205 Sweet Hollow Rd, Old Bethpage, NY 11804.

#### BEDDING COMPOUNDS

Inquire about products at your marine supply dealer. Pettit, the marine paint people, make a good bedding compound and it is available locally.





# The Pleasure of a Plane Iron

by Jack Warner

It was Christmastime a year ago that my elder daughter got me one of those rare gifts that turn out to be far finer things than either the giver or the receiver expected.

The giver in this case was not at all pleased with the thing, but it was all that was left on my list within her price range.

Young women tend to abhor presenting men with tools, especially tools that appear to be mere hunks of metal without so much as a single moving part to lend them a little glamour.

Clearly this is a reflection of how disgusted they would be to receive such a thing, and I understand that. I don't feel very upbeat about giving a young lady a fancy box bearing what appears to be a couple of used finishing rags sewn together, no matter how much it may cost. It is not within my power to imagine how good it is going to look when the recipient puts it on.

At any rate, my daughter obviously felt badly when I unwrapped her gift, examined it and told her quite honestly that a plane iron was among the things I truly wanted for Christmas.

A year has gone by, a year in which I have used that iron regularly, and I am here to tell you - and her - that no gift remotely within her grasp could have given me such pleasure as this plane iron.

It is a Japanese plane iron; the Japanese are now making irons to fit the smooth, jack and jointer planes made by Record Tools of Sheffield, England, the leading manufacturer of quality steel planes on the market today.

This iron would have fit either my smooth or my jointer; it seemed more fitting to try it in the smooth plane. It appeared quite sharp, so I simply passed the back over a fine waterstone a few times before loading it up.

Oh, my, how it cut. Walnut shavings the thickness of facial tissue rose from that plane like foam; it was wonderful. It felt so good, sounded so lovely.

Well, I won't go on in that orgiastic vein; it's a little embarrassing when I realize that there may be readers who don't understand the pleasure of a well-tuned, razor-sharp plane; who might be surprised to find there are woodworkers who know no greater pleasure than to mindlessly plane those long, billowing shavings from a board just for the joy of it.

If they don't understand it, perhaps it is because they didn't pay their dues with all those backbreaking hours trying to plane a board with a tool ill-tuned from inexperience, using an iron that was dulled rather than sharpened on the stone.

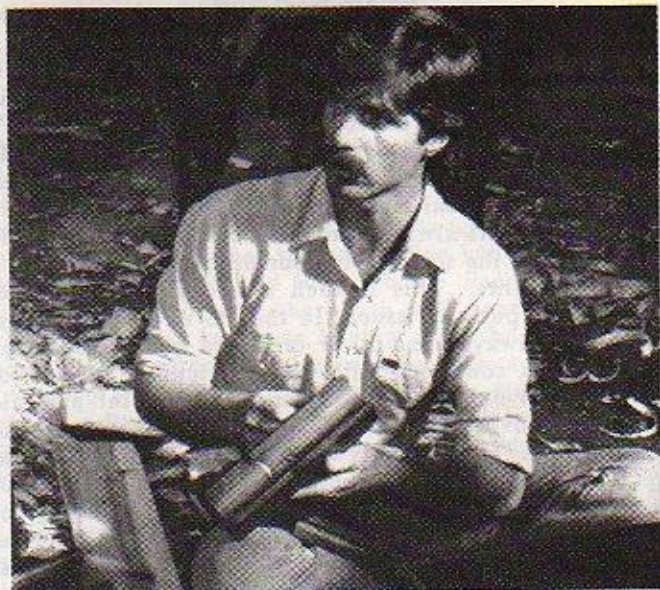
I rather imagine skiing to be like that; the hours of floundering and falling in frustration must make it all the sweeter when it finally comes together and you go flying down the mountainside under control at last. It seems to me, come to think of it, that a well-tuned plane makes much the same sound on a board as a waxed ski on the hard snow.

These Japanese irons made for the European planes are not grand things to behold; they look of necessity just like the irons they will replace. But they are constructed in the traditional laminated manner, combining very hard steel with a layer of softer steel to back it up.

It is hard to believe how superior these irons are; there seems to me no question that they take a sharper edge and hold it far longer than the European irons. I was fully prepared to find the alleged superiority of laminated steel to be just another cultural myth. What a wonderful surprise.

Japanese irons are now available at virtually all the major supply houses; they cost about \$20, and I can't think of a better deal in a woodworking tool - or a better gift for a woodworker.

*The Japanese plane irons described are available from Highland Hardware. Our no. 03.64.13 is 2" wide and fits the 04 smooth plane and the 05 jack plane. No. 03.64.14 is 2-3/8" wide and fits the 04-1/2 smooth plane, 05-1/2 jack plane, and the 07 jointer plane. The irons are \$19.95 each, plus \$2.50 shipping.*



## Highland Hardware Seminars

Pictured above is Roy Underhill of *Woodwrights Shop* fame, shown here discussing antique woodworking planes at his seminar at Highland Hardware last fall. Other recent Highland Hardware seminars featured George Frank on finishing, Rude Osolnik on turning, Sam Maloof on chairmaking, Toshio Odate on Japanese woodworking and shoji-making, and Zach Etheridge on several topics including sharpening, basic joinery, routers and jigs, planes and scrapers, and using stationary tools.

In April, Tage Frid returns for a seminar weekend, and Michael Dunbar will lead a 5-day hands-on Windsor chairmaking workshop. As *Wood News* goes to press, both of these events are already sold out. Space is available, however, in Tage Frid's slide lecture on woodworking and design which will be held Friday evening, April 18 at 7:30 pm in the Habersham room at the Colony Square Hotel, located on 14th St. at Peachtree. Admission is \$5.00. Register by calling Highland Hardware at (404) 872-4466.



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Optional Accessory Jig (shown in use in photo) for sharpening chisels and plane irons. \$12.50 postpaid.



### FORSTNER BITS

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Premium Schlagring Forstner bits are carefully engineered & precisely machined to cleanly drill flat-bottomed holes even in difficult grain, delicate veneer, or densest hardwood. Inside beveled circular rim guides the bit for consistent

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521-D	Yes	Yes	9"	13"	38 lbs.	\$95.00
53E	Yes	No	10 1/2"	15"	38 lbs.	\$95.00



### MAKITA 3612BR PLUNGE ROUTER

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Powerful 1 1/4 amp motor plunges up to 2 1/4", controlled by 3 adjustable depth stops. Handles 1/4", 3/8", and 1/2" router bits.

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This 1 1/2" carbide bit re-configures as shown at right to cut both a rail & matching stile in 1/2" stock. Ideal for use with Ogee Fillet bit above.

Set of both bits (Ogee Fillet & Rail & Stile) \$185.00 postpaid.



### LAMELLO PLATE JOINER

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### HSS TURNING TOOLS

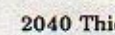
Set of 6 \$79.95 Postpaid

Top quality Henry Taylor High Speed Steel tools take a sharp edge and stay sharp much longer than carbon steel tools. Set includes 1 1/4", 3/8" & 1/2" spindle gouges, 3/4" roughing out gouge, 1/2" skew, and 1/8" parting tool.

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New 2030N combination 12 1/4" 2-speed auto-feed planer and 6"x19" longbed jointer features sturdy 4-post construction, 2hp 115v motor and side sawdust discharge. Call for Price



#### 2040 Thickness Planer

Model 2040 15-5/8" auto feed thickness planer has 7 5/8" maximum thickness capacity. 2hp 115v motor. Weighs 254 lbs. Call for Price



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MAIL \$1.00 FOR OUR CATALOG (free with order) and receive FREE a year's subscription to Wood News, our lively and informative customer newsletter.

## Lamello Literature & Video

We now have available a new brochure produced by Lamello's American importer, detailing the method of table assembly made possible by the Lamello joinery machine. The 29-step process is clearly illustrated in black and white photos with explanatory captions. Send us a self-addressed stamped envelope, and we'll be glad to send you the brochure by return mail.

Another new method for learning the incredible benefits of the Lamello wood joining system is also available. A 30-minute color VHS video has been produced here in the U.S. which shows exactly what a Lamello does and how it can be used to dramatically accelerate production in cabinetmaking and furniture building. The video can be purchased from us for \$19.95 plus \$2.50 shipping. Anyone purchasing a Lamello Top or Junior from us within 90 days after ordering the tape can have the price of the tape deducted from the cost of the Lamello tool.

Except where otherwise noted, prices in Wood News 17 are valid through June 30, 1986.

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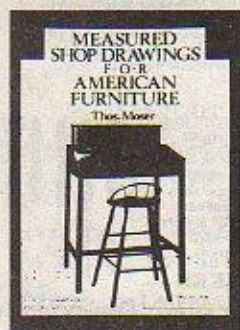
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# NEW BOOKS



## Measured Shop Drawings for American Furniture

by Thomas Moser. This large volume is a treasure trove of ideas for furniture makers. There are over 400 photos and shop drawings of various forms of seating, tables, desks, cases and chests and beds, as well as miscellaneous clocks, stereo cabinets, file cabinets and a bowfront credenza. The drawings are clear and spare, providing the information you need without overloading you with self-evident details. There's not much text. Moser isn't trying to teach woodworking and tool selection and wood technology and design while showing you some furniture plans; if you've completed your stint as a novice, this book will be a refreshingly direct route to building almost any furnishing you might have in mind.

For the professional custom furniture maker, this book will serve as a ready-made design portfolio for your customers' convenience; for woodworkers looking for ideas for a particular piece, it will be an indispensable handbook. Most of the pieces are of straightforward, genuinely American design, showing the influence of Shaker, Chippendale, Hepplewhite and Sheraton styles and motifs.

The only complaint we have about this book is that it wasn't published years ago. We congratulate Mr. Moser on a fine job, and recommend it to you wholeheartedly. 320 pages. Hardcover. \$24.95 plus \$2.50 shipping.



## Tage Frid Teaches Woodworking - Furnituremaking.

At last, Tage Frid has completed his 3-volume series on woodworking. While books 1 and 2 cover virtually all the techniques needed to make fine furniture, book 3 shows you how to use these techniques to make some marvelous furniture of his own design. Furnituremaking offers photos, instructions, and working drawings for 18 individual pieces, including 8 different tables, Frid's well-known workbench, his distinctive 3-legged stool, a rocking chair and more. Complete instructions are included, with frequent references to parts of his other two books. The new book is the perfect conclusion to his 3-book series, and a fitting culmination to the 35 years he has spent teaching his craft to others. 240 pages. Hardcover.

Book 3 is available from Highland Hardware for \$18.95 plus \$2.50 shipping. The entire set of 3 books by Tage Frid, including book 1 (Joinery: Tools and Techniques) and book 2 (Shaping, Veneering, and Finishing) as well as book 3 is available from Highland Hardware for the special price of \$44.95 plus \$3.30 shipping.

## Fine Woodworking On... Series

Fine Woodworking announces four new books available in its "On..." series. The best articles from the magazine's first ten years have been compiled according to subject, and the latest categories include:

- Finishing and Refinishing
- Chairs and Beds
- Tables and Desks
- Making and Modifying Machines

Each is a 112-page paperback containing approximately 30 relevant articles, providing ready access to a wealth of useful information. Response to the first eight "On..." books published last year has been tremendous, testimony to the lasting value of the information contained in the magazine. The first eight books include:

- Joinery
- Boxes, Carcases, and Drawers
- The Small Workshop
- Proven Shop Tips
- Bending Wood
- Planes and Chisels
- Woodworking Machines
- Making Period Furniture

All are available from Highland Hardware for \$6.95 each plus shipping. Charge card users order by phone by calling (800) 241-6748.