

Winter 2009

Premier Issue

# The Journal

of the Guild of New Hampshire Woodworkers



Dave Anderson  
Joe Barry  
Harvey Best  
Caleb Dietrich  
Mike Dunbar  
Garrett Hack  
Peter James  
Bob LaCivita  
David Lamb  
Terry Moore  
Jon Siegel  
John Whiteside  
Gary Wood  
Frank Woolley

"Lambovich One"  
An extraordinary collaboration

David Lamb

## Designing Specialty Hardware

John Whiteside

Right Brain Woodworking

photo by John Hession



## The Journal

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"Bringing together the diverse interests of the New Hampshire woodworking community."



## First Edition

### Welcome to The Journal

The past four years have seen *The Old Saw* transform from what then was a black and white newsletter into a full color, 180 page per year "newsletter/magazine." The quality and quantity of our content has exploded as the general membership has become involved in writing and photography to an extent that I never imagined.

The Guild is a wonderful source of woodworking knowledge. Sharing this information and experience is the fundamental purpose of The Guild. Our general meetings, small meetings and summer trip feature 10-15 lectures or demos per year. Subgroups add another 25-30 and a spring symposia is another 15-25. Wow!

Plus, by keeping costs for meetings and symposia low, over time, our second major source of information sharing has developed — member written feature articles. We have been running about 50 of these per year in *The Old Saw* in recent years. In my view, the ability to do a quality color print in a magazine format has played a significant role in encouraging members and others to contribute.

Printing on this scale was really made possible by the below-market pricing we've had in each of the last four years. However, it became apparent by the end of 2008 that risks to schedule and budget in continuing with this approach were too great. A new model was needed.

To learn more about this, you can go to the GNHW web site at [www.gnhw.org](http://www.gnhw.org) and click on the link "Newsletter Changes" on the "Touch-Ups" page.

I am very excited about the new format for *The Old Saw* and our new endeavor, *The Journal*. Most of the presidential messages will be in *The Old Saw* newsletter and I would encourage you to read both. — Dave Frechette, President

### Long Standing Tradition

I admit to having grown very comfortable with the comprehensive "newsletter/magazine" format. It was hard to see another way at first. *The Old Saw* as we have known it over the years is a tradition which I do not let go lightly.

However, by splitting content into two publications, we are taking *The Old Saw* back to its roots as a newsletter while allowing us to keep the quality and quantity of our feature articles at a cost we can afford. The new *Journal* becomes a repository for our archival educational content plus other significant events, thoughts and images. This means *The Old Saw* reverts to a means of communicating our time sensitive material. It also goes on-line as the primary distribution method which helps get the news out on time and for very little cost. *The Journal* is then freed to be the best that it can be without compromise, written by a talented, diverse and largely local group of woodworkers — you.

### Printing the Journal

Technology has advanced a lot in the 20 years of the Guild's existence — powerful computers, broadband internet

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May 23<sup>rd</sup>, 2009

8:00 am – 5:00 pm

Pinkerton Academy, Derry, NH

## NEW ENGLAND WOODTURNING SYMPOSIUM

On Saturday, May 23 the Guild will host the *Sixth New England Woodturning Symposium* at Pinkerton Academy in Derry, NH. This promises to be an outstanding event with 28 presenters providing a full day of demonstrations not to be missed. In all previous turning symposiums the Guild has held, the event has sold out well in advance.

If you are interested, register now! The \$60 registration fee includes lunch and supports the Guild's scholarship program. There will be a great trade show including One Way Lathes as well. An instant gallery will allow you to bring your work and see the works of both the presenters and other attendees — always fascinating!

The format will be four rotations during the day with most presentations taped so that you will later be able to see any that you might have missed.

On Friday the 22<sup>nd</sup> there will be a *Youth Day* allowing any students to come for the day for a free program. This was a distinct success three years ago. Please spread the word about the Youth Day to any students or teachers you know.

As usual this symposium relies upon volunteers from the Guild to make it a success. A core group has been working since last summer to make this happen, but we need and welcome volunteers to help with setup and cleanup. Please contact Marcel Durette at [marceldurette@aol.com](mailto:marceldurette@aol.com) if you can help the afternoon before or the day of the symposium.

The outstanding turners coming on this day will inspire anyone. The list reads

like a "Who's Who" in the turning world! For more information and to register go to our website [www.gnhw.org](http://www.gnhw.org) and go to the *Special Events* page. ■



JoHannes Michelson



David Lancaster

### Instant Gallery:

Please bring one or two of your creations.

Woodturners at every skill level are encouraged to participate.

Jerry and Beth Burt at 603-675-6141 or [jerryaburt@yahoo.com](mailto:jerryaburt@yahoo.com)

### Trade Show:

Local and national suppliers

of equipment, supplies, wood and tools will be present

Donna Banfield at 603-537-1649 or [donnaturns@comcast.net](mailto:donnaturns@comcast.net)

### Symposium Coordinator:

Peter Breu at 603-533-5529 or [peterbreu@comcast.net](mailto:peterbreu@comcast.net)

### Registration:

Bob DeAngelis at 603-456-6242 or [rdeangelis@tds.net](mailto:rdeangelis@tds.net)



David Besler

### Demonstrators

Al Stirt (VT)

Allan Lacer (WI)

David Lancaster (ME)

Jon Siegel (NH)

Keith Tompkins (NY)

Jim Kephart (CT)

Richard Angus (CT)

George Saradakis (MA)

Mark Irving (ME)

Mark St. Leger (VA)

Mary Lacer (WI)

Peter Bloch (NH)

Andre Martel (QC)

Ed Kelle (NY)

Brad Vietje (VT)

David Besler (NH)

Ralph Tursini (VT)

Ron Pouliot (MA)

JoHannes Michelson (VT)

Beth Ireland (MA)

Linda VanGethuchten (PA)

Angelo Iafrate (RI)

Keith Holt (MD)

Charlie Sheaff (NH)

Donna Banfield (NH)

Graham Oakes (NH)

### Special Youth Program

Friday, May 22, 2008

One Day Program for Young Turners

Interested people should contact Peter Breu at [peterbreu@comcast.net](mailto:peterbreu@comcast.net)



Al Stirt



**REMOVING RUST** — I have a few chisels that developed small spots of rust after sitting unused for a year. I removed the surface rust with fine sandpaper but tiny pits remain. Are these a problem? What is the best way to remove rust? — MONICA RAYMOND

**GARRETT HACK REPLIES:** Pits in the beveled side of your chisels pose no problem — they can be ground out. Pits in the flat back will be a defect in the cutting edge much like a number of nicks. Very small pits you might well lap out before they meet the edge through the course of your usual sharpening and honing the backs of your chisels. If not, then lap the backs with 220 or finer sandpaper on plate glass, and work up through your stones to repolish the back. If you use waterstones, be meticulous to dry your tools, watch for spatters of water that land unnoticed (until you see a rust spot), and wipe your tools with some light oil if you are going to pack them away for any length of time.

**CHRIS KOVACS REPLIES:** The pitting will result in a less than sharp edge. Ideally, the back side of a chisel would be perfectly flat with no imperfections. When the bevel is honed on a stone the two surfaces (bevel and back) meet in a perfectly straight line and produce an extremely sharp edge. If there is pitting on the back side, the edge will appear serrated where the back meets the bevel. The serrations are caused by the pits and may only be visible using a microscope or jeweler's loop.

The edge may feel sharp and will likely cut well at first, but the serrated nature of the edge will cause it to fail sooner and become dull quickly, it will also not cut as cleanly. Since this problem is on a chisel, I would not be concerned. In most cases, a chisel is not used to produce a finished surface.

If this were a plane iron, I would start with a coarse stone and then move to

finer grits until the back side is perfectly flat and polished like a mirror. A plane is designed to produce a smooth surface and a serrated edge produced by pitting on the plane iron will leave you with disappointing results. You will know if the edge of your plane iron is serrated if the shaving come off in strips instead of a smooth, full width shaving.

**JON SIEGEL REPLIES:** If you regrind the chisel you will remove the pits from the bevel surface. But that is not good enough. You must also remove the pits from the back of the chisel. Remember that a sharp edge is the result of two perfectly smooth surfaces coming together. If one of those surfaces (the back of the chisel) is pitted or corroded, then you cannot get a perfect edge. You must lap the back of the chisel until the pits are completely gone.

**STACKING PLYWOOD** — I stack 1/2" baltic plywood vertically in a rack. The top of the plywood is "sloped" leaning against a wall. This "slope" or angle can vary from approximately 60° to almost vertical depending on the amount of wood stored in the rack. After about two weeks the plywood has a tendency to have a curvature towards the wall. I store at 62°F - 65°F and 80% - 89% RH but it always warps in the same direction. Is this due to movement of the glue due to shear from wood expansion of the outer layers? — RICHARD COWMEADOW

**BOB LACIVITA REPLIES:** The effect is caused by gravity. Plywood should be stored horizontal flat. Most of us do not have the space to do this. I store plywood up either standing on end or edge at as close to 90 degrees as possible. Veneer core plywood will warp to some degree because the core veneers are not the same thickness due to cutting, pressing and in some cases, sanding. The face veneers are also sanded and are not equal. the slightest difference will cause the sheet to warp.

**MAHOGANY SUBSTITUTE** — Since mahogany has doubled in price in the last few years, what is a good substitute for use in outdoor millwork such as porch work? — JON SIEGEL

**CHRIS KOVAC REPLIES:** Spanish Cedar is an excellent substitute for mahogany in outdoor millwork. Spanish cedar is quite soft however and does have a fairly noxious odor when milling. A much heavier and harder substitute would be utile (*Entandrophragma utile*) which is imported from Africa. I have used it for several exterior doors and millwork and it paints well and holds up well. Utile's main drawback is its weight and hardness which can cause saw blades, jointer and planer knives to dull quickly.

**RECLAIMING FILES & RASPS** — Please explain the method of reclaiming files & rasps via acid bath. Is it possible to do this electrically by electrolysis? — ED ALLEN

**DAVE ANDERSON REPLIES:** I personally wouldn't bother using an acid bath to resharpen a file or rasp. First, it is a process which requires a chemical (the acid) which is dangerous and more importantly, difficult to dispose of safely and legally. The second difficulty is that of choosing the proper strength of acid and picking the correct length of time to submerge the file in the bath. You may not get the results you desire without a few trial runs and are quite likely to get either no results or alternately ruin the file by etching away too much material. A file which is not rusty will not benefit from using electrolysis, so this is a non-starter.

My recommendation is to go to the premier file sharpener in the country, Boggs Tool Processing & File Sharpening Company. The contact information is below. Boggs uses a process called liquid honing and can turn a dull file into one which is sharper than most of those purchased new.



I have friends in the woodworking tool making business who will send a rasp like a Nicholson #49 or #50 to Boggs before they use it for the first time. Their prices are reasonable and are based per inch of length. Most files can be sharpened for under \$2 - \$3 each. In over 10 years of knowing about this company, I have never heard of an unsatisfied customer. They have done several files for me including a couple of 100+ year old antiques and the results have been spectacular. As a new customer, they will often do two files for free.

Boggs Tool Processing  
and Tool Sharpening Co.  
14100 Orange Ave.  
Paramount, CA 90723  
800-547-5244 • [www.boggstool.com](http://www.boggstool.com)

**CRYOGENIC HEAT TREATMENT — Does the cryogenic heat treatment process result in a better, longer lasting edge? — LOU YELGIN**

**JON SIEGEL REPLIES:** A recent article in *More Woodturning* magazine contained an article on the scientific testing of various types of steel used in woodturning chisels.

The results showed that cryogenically treated steel, while better than M2 high speed steel was not better than the other high alloy or PM types.

**GARRETT HACK REPLIES:** Cryogenic treatment makes clarinets sound better, women's nylon stockings last longer, and as part of the tempering process for certain high quality steels, makes edges that stay sharp longer. Noticeably longer, which is why Lie-Nielsen and Lee Valley are doing it on their A2 blades. Steel metallurgy is so complicated the guys that do this stuff can't even give a reasonable explanation. The simple version: By cooling the steel to minus -300° (or thereabouts) the steel crystals condense and pack in more tightly. Denser steel makes for a tougher edge.

**DAVE ANDERSON REPLIES:** The short answer to your question is, "It depends on who you ask."

Generally for woodworking edge tools like plane irons and chisels, cryogenic treatment is used only on A-2 tool steel.

This is not to say it can't be used on O-1 or any other steel, but it is rarely done in woodworking tools.

The most critical things about heat treating are getting the material to the right critical temperature for the correct dwell time (thermal soak) and then quenching the material quickly and correctly to "set" the hardness. Where cryo treating really shines is in completing the transition of the carbon (carbides) to the form necessary for the tool to take and hold an edge. It is the carbon in the tool steel which has the primary responsibility for providing the ability of the steel to harden. Stated another way, cryo treatment can correct or complete the process when there has been a problem in the standard treatment process.

Another answer to your question is that some studies by metallurgists claim cryo treatment is beneficial and other studies claim it makes no difference provided the tool has been properly treated. This is a complex field and about the only definitive correct statement is that it *might* make a difference. The jury is still out and we might not see an answer for years.

**COLORING WOOD — Please discuss coloring wood—aniline dyes etc. What finish will not cut the color? — GARY BASHIAN**

**BRUCE HAMILTON REPLIES:** Wood can be colored with pigments and dyes. The most vibrant colors are achieved with dyes. They are transparent and reflect more light. Their small molecular size permits deep saturation into the wood fibers. Aniline dyes were used for many years. These are a derivative of coal tar and are toxic. Now all dyes for wood coloring are synthetically created.

Dyes come in powder and liquid form. Dye powders can be dissolved in water, alcohol and solvent but each powder is solvent specific and you must use the right solvent with the right powder. Of the powder based dyes water dyes are the most like fast and easiest to apply. Water based dyes can be sprayed on and the excess wiped off to achieve a fairly uniform application. When alcohol based dyes are used they tend to show lap marks because they dry so quickly. The drying



Founded 1990

**The Guild of NH Woodworkers**

**President** Dave Frechette  
**Vice President** Bob LaCivita  
**Secretary** Caleb Dietrich  
**Treasurer** Peter James  
**Journal Editor** Jim Seroskie  
[jseroskie@gmail.com](mailto:jseroskie@gmail.com)

Membership includes "The Journal" published four times per year, "The Old Saw" internet newsletter published five times per year and weekly "Touch-Ups" email.

**WHAT WE DO**  
 General Meetings, Small Meetings, Symposia, Scholarships, Video Library, Discounts, Sunapee Fair, Summer Trip

**PLUS**  
**Special Interest Subgroups**  
 Beginner & Intermediate Group  
 Granite State Woodturners  
 Period Furniture  
 Luthiers  
 Hand Tools  
 Right Brain Woodworking

**[www.GNHW.org](http://www.GNHW.org)**

rate of solvent based dyes can be adjusted depending on the solvent used. Mineral spirits is slow drying, Naphtha or acetone are faster.

Pre-mixed liquid dyes can come diluted like Behlen's Solar-Lux or concentrated like Jeff Jewitt's Trans Tints. Solar-Lux dyes and the Trans Tint dyes are metallized solvent dyes. According to Jeff Jewitt, these dyes are the most light-fast available and more bleed resistant than the powder dyes.

When it comes to finishing over colorants like dyes, the one finish that I believe will enhance the colors the most is shellac. Shellac has the smallest molecules of all the common finishing materials and can penetrate deep in to the wood

fibers. Shellac gives the surface a crystal like appearance when light hits it. It is important to use de-waxed shellac that is light in color such as Super-blond. Other formulations of shellac can be very amber and the wax they contain may cloud the appearance of the color and diminish the sheen.

**HVLP RECOMMENDATIONS** — I would like to start spraying finish. Any recommendations for a startup HVLP setup? Should it be a compressor and HVLP gun or a turbine system? I do not have a compressor now? — STEVE COLELLO

**BJ TANNER REPLIES:** From my viewpoint an expansion gun used on a standard compressor is the best alternative for many reasons. First, it is the method used by commercial automotive refinishers and almost all commercial wood finishers. This puts a wide variety of suppliers for both guns and parts at your fingertips. All of my spraying supplies come from automotive shops, not woodworking suppliers. Second, Due to the wide availability, inexpensive guns that work well are readily available. Third, if you acquire a reasonable compressor you may also use pneumatic tools. After using a pneumatic sander you

will never want to return to electric power again. But it all comes down to pluses and minuses and how it fits your application.

#### **Turbine gun pluses**

- 1 Startup cost is lower due to compressor cost.
- 2 Portability, turbine guns may be easily used in almost any location with power and ventilation.
- 3 Turbines have a similar noise level to a vacuum — gee what a surprise — while compressors in the same room are loud.
- 4 A turbines take less space than a

A newsletter has been an integral part of The Guild since its founding in 1990. Fourteen woodworkers were present at the first meeting including Paul Tuller, John McAlevey, Terry Moore, David Lamb, Roy Noyes, Steve Cunliffe, Jon Siegel, Jere Osgood, John Skewes and David Emerson. The group felt that although the League of NH Craftsmen was doing great things, it was time for a new organization dedicated solely to woodworkers.

At that meeting, a mission statment was drafted which even today has changed little, and established some of the goals of the Guild which later became the cornerstones of the organization — woodworkers helping to educate each other by working as a community, tying it together with periodic meetings and a "Communication Letter."

That first newsletter was a single double-sided sheet with the entire news content on one side. Jon Siegel was the editor.

Later, Roy Noyes stepped in as an editor for approximately ten years — a truly remarkable feat. Roy did the photography, layout, color printing, collating, maintained the membership database, printed the labels and organized the mailing.

Thanks to Jon, Roy and all the others who have carried on the tradition. ■

The Newsletter

Vol. 1, No. 1

August, 1990

## **The Guild of New Hampshire Woodworkers**

**In the Beginning** there were eighteen woodworkers who gathered in John McAlevey's shop in Warner. Paul Tuller and John had come up with as many names as they could think of and mailed about forty invitations. The date was Saturday, April 28, 1990.

**The first meeting** was a great success and in a short time the following was established: a statement of goals, the naming of temporary officers, and the setting of dates for future meetings.

#### **The temporary officers are:**

**President:** John Skewes (Kensington); **Treasurer:** Paul Tuller (Dublin); **Secretary:** Steve Cunliffe (Henniker); **Newsletter:** Jon Siegel (Andover). **The Second Meeting** was at John Skewes' on June 16. At that meeting the Statement of Goals was revised:

**"The Guild of New Hampshire Woodworkers is an association of professionals and amateurs bound by a common interest in seeking and practicing excellence in woodworking. Through regular meetings, lectures, demonstrations, juried exhibits, and a newsletter, the Guild strives to bring together the diverse interests of the New Hampshire woodworking community."**

After the regular business meeting, John gave us an excellent description of how he makes chairs.

The mailing list now stands at eighty four. The names are from many sources: attendance at one of the meetings; the original list from the League; people who called in response to one of the articles in Woodshop News; or friends of members. Most of the people who receive this newsletter have not yet come to any meetings, but we know many are interested. The newsletter is one way people who cannot attend meetings will feel that they belong to the Guild. But only fourteen people have paid dues (\$15.00) as of July. To become an official member of the Guild and insure that you will continue to receive this newsletter, **dues** should be made payable to "The Guild of N.H. Woodworkers" and mailed to Paul Tuller, Box 64, Dublin, NH 03444.



compressor, and is easily stored when not in use.

#### Expansion gun pluses

- 1 Expansion guns are readily available and come in a variety of sizes. Turbine systems have very few available guns.
- 2 Parts are readily available for the expansion gun, in particular, air caps. Regardless of what gun you select, check air cap availability and price before purchase. Most of the time a medium tip and cap is supplied, however, when spraying light or vicious materials a tip and cap change may be required. Prices for tip and cap can vary from \$15 to \$200 per set.
- 3 Expanding air causes a temperature drop within the gun while turbine air is warmer than ambient. Warmer air flashes solvent at the tip which may cause application issues. Please note that this is a minor point.
- 4 An expansion gun is fed air by a common air hose available at Home Depot. Turbine hose is hard to come by.
- 5 Size and weight of the turbine hose is fatiguing. This is very significant on large items or while spraying large panels.
- 6 Again due to the large turbine hose size, spraying flexibility is reduced and the chance of hitting the hose in a freshly sprayed surface is increased.
- 7 Parts and repair of most compressors are available at many shops even Grainger. Turbine, good luck, go to the manufacturer.

If you do decide on a compressor type gun, start with a good compressor. Compressor should exceed 10 CFM (cubic feet per minute) at 120 PSI. Spend a couple of extra bucks and opt for a 100% duty cycle compressor — most big box stores sell 50% duty cycle compressors. Good used compressors are available at a reasonable price. My commercial seven horse compressor cost \$350 and will most likely out last me. I made the decision to use a compressor while still woodworking as a hobby. I placed the compressor in the garage and plumbed the basement with pipe. This kept the noise in the garage and also gave me the added benefit of using air tools to fix the cars.

**CHRIS KOVAC REPLIES:** I have no experience with turbine systems and have only used HVLP guns connected to a compressor. For someone starting out, I would recommend a relatively inexpensive gravity cup HVLP gun. They can be purchased for about \$120.

These guns spray very nicely and can be adjusted for a range of different finishes. I use the gravity guns for spraying shellac, conversion varnish, waterborne clear finishes and primers. The gun is easy to clean and maintain. The cups typically hold a quart or less of fluid. I usually fill my gun with only about 3 cups of finish as they can become heavy and tiresome to use after a while though. These guns are ideal if you only need to spray a small amount of finish. You will however need a sizable compressor for these guns. I operate the HVLP guns using a 60 gallon 5 hp compressor. You will need to check the CFM requirement of the gun and make sure you have a compressor that can meet the air flow requirements.

If you are planning to do a lot of spray finishing, the next step up is a pressure pot system. These systems can cost \$1,000 or more but produce a better quality finish than gravity cups, have a capacity for 2.5 gallons or more of finish and since the liquid sits in a pressure pot on the floor, the gun weighs much less and there is significantly less strain on your arm while finishing. The pressure pot systems are best suited for the professional cabinet and finishing shops.

**ERIC JOHNSON REPLIES:** I use an HVLP gun with my compressor and I am very happy with the outcome. The added benefit of this arrangement is I have a compressor for other jobs around the shop. The turbine system is not only very expensive but that is all it is good for. So for me it makes more sense going with an HVLP gun with a compressor.

**SHARPENING BACK SAWS — Where does one get three sided files with grooves to the edge for sharpening back saws? — DAVE FRECHETTE**

**BOB LACIVITA REPLIES:** When sharpening a back saw you must first determine the number of teeth per inch or points per

inch (PPI). When sharpening my dovetail saws which range from 15-21 PPI, I use a 4" double extra slim triangular file. When sharpening a 9-10 point saw I use a 6" extra slim file.

A simple way to determine this is to set the file in the gullet and visually see if the file fits. If it fits it should work.

I am talking very fine mill files here. The question asked about grooved files and I do not know what that means. Remember finding the file is the easy part. When filing the saw use a saw vice or saw chops. File every tooth pointing toward you with the same number of strokes keeping the pressure even. Turn the saw around and repeat. The teeth should look even and the gullets should be the same size. Try the saw.

If it pulls left or right you could have a few problems. 1 — The set is uneven. You can get a setting tool and reset the teeth. If the saw is fine (16-20+ PPI) you have to hand set the teeth with a milled gauge (you have this made) and a punch. 2 — The filing is uneven. Back to the saw vice. The saw needs to be jointed. By laying a fine mill file on top of the teeth and gently cutting them down until they are even along the length of the saw. 3 — Re-file the teeth. Remember this is very painstaking and patient work. Be careful and use light strokes. I have seen many bulls in the china shop ruin very nice saws.

I have never heard of grooved files. You can sharpen a saw with a regular old mill file. There is a Swiss company called Vallorbe that make a groove file — [www.vallorbe.com](http://www.vallorbe.com). These files are for cutting grooves into a piece of work. You can check this out on their web site by going to the applications menu Sample 1 & 2. They look like very precise mill files.

**AIR VS KILN DRYING — What are the advantages of air drying hardwoods vs kiln drying? — PETER BREU**

**DAVE EMERSON REPLIES:** It must be possible to kiln dry with good results with state of the art equipment in the hands of a fully qualified and patient person. Traditionally, all lumber had to have a season per inch — 1" must be 1¼"

*continued on Page 23*



A personal Journey

Part I

# Building a New Bench

**B**ack about two and a half years ago, I decided that I needed a new workbench which would offer me a style, size and a set of features that more closely aligned itself with my routine of woodworking. For over 20 years I had worked on a bench half purchased and half home made. It had a purchased 1½" thick laminated maple top 28" by 72" set on metal legs which was actually designed for use as an industrial work table. I had modified it by installing a Record face vise, adding a lipped storage shelf underneath, and by mortising in by hand a double row of rectangular bench dog holes.

The bench was used heavily, but there were a number of serious shortcomings which showed up over the years and required me to find "work arounds" and methods of adapting my technique. This approach often impaired my efficiency.

The first and foremost defect was that I am left handed and the bench was set up for right hand use. When originally built, I was primarily a power tool woodworker and the bench was set for a 36" height. This height is too much for all but the tallest hand tool woodworkers and causes poor body position and unnecessary fatigue. Because of the metal legs, I was able to steadily lower its height as my work methods evolved and I shifted to primarily hand tool use. When the bench was finally retired a few months ago, it

was down to 31½" in height. It was often difficult for me to secure long work pieces with a small vise since the inner jaw stood ¾" proud of the benchtop.

I could go on considerably longer about the short comings of the old bench, but you get the general idea. The real core problem was that I had never owned a bench before, I had a limited budget at the time I got it, and I didn't know what I really needed when I made my original choice. This is not a good situation when you consider that the workbench is the single most important and most heavily used tool in the shop.

**The first step** toward a new bench for me was to peruse the various books on benches by Scott Landis, Sam Allen, and Lon Scheining. Lots of great eye candy in those books, but there wasn't a lot of guidance to help me make choices. Basically, the books offered a variety of styles and options, but little in the way of explanations or pictures showing benches in use and performing the various woodworking functions. It's great to look at the pictures, but what is needed is help analyzing the most common operations a woodworker does at their bench.

My next step was to search the various internet web sites offering bench plans, surveys of various people's benches, and discussions of bench design. This was far more helpful, but often confusing

and contradictory. Opinions were diverse and discussions were often heated, but here were woodworkers writing about their personal experiences and what worked or didn't work for them. These forum threads weren't some author working against a deadline, taking a few pretty pictures and moving on to the next guy's shop.

The next set of evolutions in my thought process began to occur after I began to read Chris Schwarz's blog on the *Popular Woodworking* website. Over a period of several years, he has built eight or nine benches heavily oriented toward the needs of the hand tool woodworker while retaining features needed for those who use power tools too. Here was real analysis, discussions of what worked and didn't work, comments, questions and disagreements from other woodworkers. Of particular interest were the reappraisals of benches after they had been used for a few months or years.

Finally in the Summer of 2007, I attended a full day workshop given by Chris at Lie-Nielsen Toolworks in Warren, ME and partook of a wonderfully thorough presentation and also a give-and-take session devoted entirely to benches.

**My needs analysis** told me several things that influenced my choices for construction and design. First and most importantly, a bench serves two main functions. It acts as both a clamping center. Its hardware and accessories clamp wood securely so cutting, planing and other joinery and assembly tasks can be accomplished effectively. Secondly, it acts as work table and staging area for tools, lumber, and supplies.

For clamping, the vises must be chosen and arranged so that a board can be worked on all three of its main surfaces — end grain, edges and faces. The same is true for assemblies such as cabinet doors. You must be able to clamp, square, and hold the door edges of both stile and rails, and have access to the faces to clamp the door down to the bench top.

While all of these functions don't have to be completed at once, the ability to do







Patternmaker's vise on right end of bench



Vise screws from Bigwoodvise.com

them easily without makeshift or cobbled together expedients make your work faster, easier and more efficient. You need to be able to do your clamping on all sides in addition to the top of the bench.

**So what were the criteria** to be for building my bench.

At 5'9", I wanted the bench to be even shorter than my old one and chose 30½" so that it came right to my wrist joint when standing beside it.

Being tired of working the hard way, it would be built left handed so that the face vise would be on the right hand end.

This time I would go with round dog holes so that I could use holdfasts, regular bench dogs, and some of the fine accessories made by Lee Valley such as the Wonder Dogs and Wonder Pups. With my style of work and my planned top layout, this would eliminate the need for a tail vise, always the sagging unusable weak spot on the top.

I wanted a longer and slightly narrow

top so settled on 24" wide, 90" long and 3" thick. The side of the bench with the face vise would have the vise's inner jaw flush with the edge of the top so that I could use either a board jack or a holdfast in the

legs to support long stock.

Chris had tried to convince me to put my Emmert patternmaker's vise on one end to function as an end vise, but I didn't feel it was either necessary or desirable from a stability standpoint. An Emmert K-1 weighs 85 pounds and it would have to be cantilevered out over thin air. I chose instead to put the Emmert on the right hand end of the side of the bench opposite the face vise.

I've worked over the years with the bench against a wall and felt constrained. For the last ten years my bench has been out away from any obstructions and easily accessible from all sides. It's comfortable, versatile and I would never work any other way by choice.

At this point things began to coalesce and it was time to begin thinking about hardware choices, materials and the actual superstructure design.

**As my final plans** began to change from concept sketches to dimensioned ones, I

followed the advice that all of the books offer, I purchased my hardware before fixing the final dimensions or cutting wood. From *Bigwoodvise.com* I ordered a pair of 2" diameter wooden vise screws and their nuts. Lee Valley provided the bolt and nut sets which would allow the bench legs and stretchers to be disassembled should I ever need to move. A pair of forged steel holdfasts came from Galena Village Blacksmiths in Alaska. Of course I already had the 18" Emmert K-1 patternmaker's vise.

At this point I sketched the final bench complete with dimensions and the locations of everything except the dog holes.

I had gone to Highland Hardwoods in 2007 and purchased the stock for the leg and support assemblies for the bench. They had a great deal on 4"x4"x10 foot deck posts made of some strange variety of South American mahogany which was about half the price of the ash or maple and was twice as dense and hard as what we normally think of as mahogany. I had brought it home, cut it to lengths about 2" longer than my finished dimensions. Since it was only dried to about 15%, I sealed the ends with Anchorseal.

When I began the bench base, it was

dry and ready. I mortised and tenoned the two leg assemblies, glued them up and let them dry after drilling holes in the faces of the legs to allow the use of holdfasts. The two lower stretchers were tenoned with stub tenons and holes bored in both the stretchers and the leg assemblies to receive the Lee Valley bolt sets. The units went together well and the bolt sets snugged everything up nice and tight.

At this point I laid out and cut half lap through dovetails for a top stretcher in the center. This stiffened things further and would allow all of both long edges of the top to be unobstructed for clamping. Unlike many pre-industrial benches, the legs would not be tenoned into the top, but rather positioned by four  $\frac{3}{4}$ " diameter oak dowel pins. These would fit into holes on the underside of the top.

**It was now time to get the lumber** and begin to laminate up the top. A trip to Highland convinced me to use ash for the top when I looked at the price of hard maple. It was half the price, would still give me a light colored work surface, and was plenty hard and stiff enough for a 3" thick top.

I began the task of lamination after ripping, planing and jointing the 8/4 stock to 3½" widths. A hint here — cover your work surface with either poly film or Saranwrap to prevent the glue from bonding your laminations to the work surface. I ensured maximum accuracy by only gluing boards into groups of three. This also leaves the sub assemblies light enough for one person to deal with at the planer and jointer.

After gluing up the groups of threes, I began the task of bonding groups into sixes. Again, this makes the handling

barely manageable and ensures everything is as flat as possible. The final glue up was to join the two sections which were each slightly over 12" wide.

I now measured and routed the slotted holes to accept the oak positioning dowels into the top. After installation of the top on the base, I began the flattening of the top with a #7 jointer plane and winding sticks. My goal here was only to get close since my plan was to allow a few months for the top to stabilize before going for an absolutely flat and planar surface.

**It was now time to install the vises.** I built up the wooden screw face vise chop (outer jaw) to 3" thickness, 34½" length and bored the two holes with a 2" Forstner bit on the drill press for maximum accuracy. The two vise nuts were attached to the underside of the benchtop with bolts and adjusted so that the vise worked smoothly.

The hard part began immediately — cutting, chopping, and gouging for the Emmert vise. I decided to install the Emmert in the manner recommended by the manufacturer almost 90 years ago with the inner jaw flush with the outer edge of the benchtop. This requires some major surgery on the top and was almost a full day's work requiring a trial and error approach.

After all of the work was done, I flipped the top right side up and did the actual vise installation. A couple of coats of boiled linseed oil for protection, a coat of paste wax, and the bench was ready for the simple installation of the half lapped boards for the bottom shelf. The bench was now mostly completed and partially usable.

**The last construction step** was to locate and drill the dog holes. I chose round holes because they are easier, more versatile, and can have more added at new locations at any time in the future. I started by drilling with a  $\frac{3}{4}$ " brad point drill in an electric drill. It worked, but it was slow, placed a great strain on the drill and it was difficult to keep the drill perpendicular to the top.

After just three holes I abandoned this approach, pulled out my Russell Jennings bits and the largest swing brace I own. After the first hole, it was obvious that using a brace and bit is the only way to go.



Cutout for Emmert vise

It's faster, actually less effort, and you can drill more accurately. If you build a bench with round dog holes, take the extra time to use a trim router to chamfer the edges, it's good insurance against chipping out the benchtop.

**My bench is now complete** and completely usable. It does everything I have ever desired a bench to do and my only regret is that I waited as long as I did before building it. The hardest part was overcoming *analysis paralysis* and actually getting started. By breaking the construction up into small manageable components, anyone with a 12" lunchbox planer, a 6" jointer and a couple of sawhorses can do it themselves. Of course the job can also be done entirely with hand tools, but the time and effort involved is significantly greater. Build it yourself and you get a custom design set up for you and you alone. This is definitely a place where one size does not fit all. Go for it.

In the next issue of *The Journal*, I'll discuss outfitting my bench with stops, holdfast, shooting boards, bench hooks and other appliances and fixtures. Stay tuned! ■



Gluing up the top



Bench base



## *Restoring a Pedestal Table*



**Inspection** — On first inspection, I did not detect any major structural damage and the veneer inlay in the center of the table top was in good condition. Typical inlay shows some mechanical abrasion and, or missing veneer. The finish was worn, dull and masked the hidden mahogany grain. Once I brought the piece back to my shop and examined the table under bright light I found numerous mechanical defects. The three-legged pedestal tilted from horizontal and wobbled due to cracked leg joints — Photo 1.

The ball and claw foot legs are joined to the pedestal using two dowels in each of three leg joints. The combination of dowels, glue and close tolerance fits were designed to provide structural strength to the table. The table had been stored in a barn after generations of use and now the joints were no longer rigid. As confirmed by a carpenter's level, the table top could not tilt into horizontal due to instability of the legs. With the table turned upside down, there was evidence of previous repairs, glue deposits and hardened polyurethane film. I used alcohol dampened cotton swabs to test the old finish without dissolving any film. The original shellac surface had long since been covered over by a modern finish.

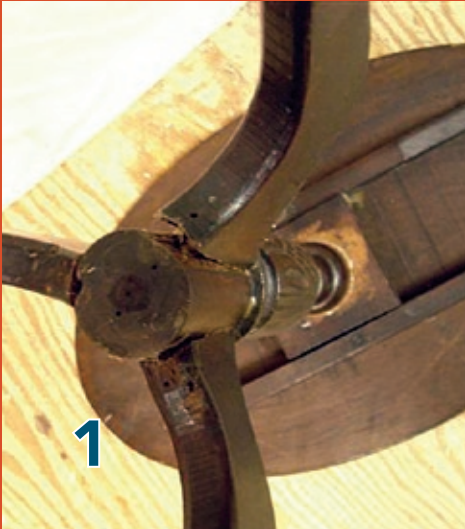
The oval top had been re-attached to the pedestal without regard for the orientation of the top to the three legs — Photo 2. In traditional parlor settings the table was often placed in a corner of the room with the top tilted at 90°. The third leg of the table pointed into the corner and the inlay was prominently displayed.

The solid mahogany top was worn and showed burn marks, water stains, sun-fading, scratches and a dime-sized charred area — Photo 3. The overall surface was fixable with cleaning and mild abrasives, but the charred wood spot would require "surgery".

**F**urniture restoration, preservation and refinishing are terms often used interchangeably when a customer asks for my services. In most cases the desired end result is all the customer wants and not the methods used to get there. From my perspective, the furniture in question is either of historic value and will be treated as an investment or the piece will be used as a practical, usable item around the house.

The furniture subject of this article is a mahogany, tilt-top pedestal table. This was not of historic or rare antique value, but a well worn example of Queen Ann parlor furniture of the late 1800s. The customer's goal was to have the finish restored and make needed repairs to make the table usable.

**Mechanical Repair** — When starting any furniture restoration process I make sure that all mechanical "fixes" are completed before surface finish work is attempted. The first step in the process was to disassemble the top from the pedestal. The table top pivots on two dowels attached to a sturdy block at the top end of the pedestal. The three legs at the base of the pedestal are joined with two dowels in each joint. They had been re-glued with a PVA type of woodworker's glue and not clamped securely. The joints were "coaxed" apart using wedges, a mallet, a restorer's bar and careful prying. A couple of the dowels were fractured in the process but were drilled out and replaced with new dowels



1 Cracked leg joints.



2 The oval top had been re-attached to the pedestal without regard for the orientation of the top to the three legs.



3 The solid mahogany top was worn and showed burn marks.

— Photo 4. Each joint revealed old glue deposits and built up layers of filler and finish. All of the deposit had to be filed and sanded to restore solid wood bearing surfaces and insure a tight glue bond.

Once the leg joints were adequately cleaned, I prepared to glue and clamp each separately. The intent was to clamp each leg using wood blocking to provide a clamp bearing surface that did not mar the finish. I glued and clamped each leg into alignment with the pedestal using Titebond 3, letting the glue set overnight. The clamping arrangement was cumbersome involving four clamps per leg, but the result was a stable three point pedestal — Photo 5.

The pivot block at the top of the pedestal also had to be removed and re-glued into proper alignment. The glue joint composed a 1" diameter dowel in the top of the pedestal holding the pivot block in place. Using wedges and the restorers bar the block was removed, joint cleaned and the block re-glued into alignment with the legs — Photo 6.

The last repair surface was the table top. I started with a pad of 4/0 steel wool dipped in a shallow dish of mineral spirits. Light strokes of the dampened pad removed surface dirt, oils, silicone and wax, followed by 220 grit sandpaper to scuff the surface. The most prominent defect was a burn mark that exposed charred wood just below the surface. The dime-sized defect

was exposed after cleaning and required a veneer patch to remedy. The challenge was to find matching mahogany veneer of grain and color. For this repair I cut a diamond shaped patch slightly larger than the defect and traced the outline carefully into the table surface with an Xacto knife. The veneer thickness was  $\frac{1}{64}$ ". With a sharp  $\frac{1}{4}$ " chisel, I excavated the outlined area to a depth equal to the patch. After trial and error fitting the patch I glued

and clamped the repair with blocks and plastic film. Overnight drying and some block sanding with 220 grit paper leveled the repair.

**Finish** — Now that the mechanical repairs had been completed I was ready to attack the surface finish. At no time in this restoration have I mentioned *stripping* the finish. My approach to restoration of furniture is to use as much of the existing



4 The joints were "coaxed" apart. A couple of the dowels were fractured in the process but were drilled out and replaced.



*“I make my own tack rags using old cotton T-shirt material dampened with mineral spirits and a few drops of polyurethane worked into the cotton to create a sticky, not wet fabric.”*

finish “patina” as possible. As a test, I wiped a hidden surface with alcohol to watch for any finish removal. The surface was not effected and the film thickness was adequate to build on for a final finish.

Starting with the mineral spirits and 4/0 steel wool, I cleaned the entire table top to bottom and set aside to dry. Next step was to lightly sand using 220 grit paper to level all surfaces and expose any obvious color variation or areas requiring repair such as nail holes and chips. Minwax wood filler applied with a pallet knife will fill small defects and can be stained once dried and sanded smooth. I use NGR (non-grain raising) alcohol-based stain to match existing grain color and tint color of filler repairs. Using a fine tip artist brush, I carefully touched up the repairs with the matching stain being frugal and quick to wipe any drips and runs. The stain dries in about one hour and is ready for the next step.

The entire table is then brush coated with a film of wax-free sealer made by Zinsser (SealCoat). A china bristle brush

applies the sealer easily as you have to work quickly to minimize streaks. Working in a 55° shop, I allow two hours drying time. This is followed by a light sanding using 220 grit paper then wiped down with a tack rag.

At this time I inspect the entire piece for color variance and apply dilute NGR stain sparingly. This is done in as much natural lighting as possible to simulate the home owner living room. Uniformity of color is the goal and not to create a contrast between the legs, pedestal and top. Once I was satisfied with the color and shade of the pieces, I proceeded to apply the final finish.

The customer indicated a desire to use the table on a daily basis and wanted more surface protection than shellac or lacquer would provide. The choice was to use a Minwax interior polyurethane varnish mixed 50/50 satin and gloss finishes. This mixture proved to be a “warm” surface finish without glossy highlights. I added 20% mineral spirits to the mix and applied a thin coating to the table using a

soft, natural bristle brush, being careful to use long brush strokes in direction of the grain and minimizing overlapping strokes. I had taken care to work in a comfortable, non-dusty space with little traffic . The following day I inspected for any faults, drips or runs in the finish. I felt confident and went ahead and assembled the top to the pedestal. At this time the table was fully assembled, the tilt top worked perfectly. The final step of *wool and wax* had arrived!

Before delivery I applied a light film of Liberon paste wax using 4/0 steel wool. The object was to apply a light wax with the wool as a final step in removing any residual dust nibs in the finish while adding an additional protective film. The wax was buffed off and the table made ready for delivery. ■

#### Supplies

Denatured Alcohol  
Restorer's Bar  
Titebond 3 Glue  
Mineral Spirits  
Liberon Wax  
Veneer  
4/0 Steel Wool  
Zinsser SealCoat  
Minwax  
Polyurethane  
Minwax Wood Filler



I glued and clamped each leg into alignment.



The pivot block was removed using wedges and the restorers bar.



# MILK PAINT



From time to time I visit chairmaker web sites. At shows I pick up and read their marketing materials. Both frequently contain the proud statement “I finish my chairs with the authentic milk paint used by 18<sup>th</sup> century Windsor chairmakers.” *I’m sorry, but it’s not.* The simple answer is that 18<sup>th</sup> century Windsor chairmakers did not use milk paint. They used paints made with lead and oil.

There is an important word in that last line — LEAD. As everyone knows, lead is a poison, and we can’t use it in paint anymore. That is too bad, because lead paints have a distinctive look that I find very appealing. Everyone who watches *Antique Road Show* knows that original paint on a chair adds a whole lot to its value. So, I’m not alone in my appreciation for the look of the original finish.

Fortunately, we have milk paint, because it is a very good simulation of lead and oil. When I started selling Windsors in the early 1970s, I painted my chairs with commercial oil paints, but I was

very dissatisfied with the results. Modern paints are solid and uniform. The original lead paints were much more complex. They had subtle variations in shade and thickness. They had luminosity and depth. Modern paints just do not have the same look as did the early lead paints that I wanted so very much to imitate. Back then, nearly all my customers were antique collectors, and they too were discerning enough to want the look of early paint.

About the same time, a fellow in Groton, MA named Charlie Thibau developed a new product — a commercial milk paint in powdered form. I had known Charlie for a number of years and so, he sent me a sample. I tried his milk paint on a chair and I immediately fell in love with it. The results looked remarkably like the old lead and oil paints that I found on original Windsors. Charlie started the Old Fashioned Milk Paint Co. and the business is still in operation today under his daughter Anne’s guidance.

**Gearing Up to Paint** — To make milk paint, just add water to the powder. The manufacturer recommends a one-to-one mix. I mix it in a clean, wide mouthed jar. The wide mouth makes it easier to dip the brush. You can mix the paint with a stirring paddle driven by an electric drill, but I just shake it up like a bartender making a whiskey sour. The action of shaking will result in a paint that is frothy and full of air, like whipped cream. Let it sit for about an hour to allow the air to escape. The solids will settle slowly, so stir it before you start painting and regularly throughout the process.

If you want a smooth surface, strain the paint through an old pair of panty hose or a strainer purchased at a paint supply store. Unstrained milk paint leaves

a slightly grainy finish and it is more matte, like an exceedingly fine sand paint.

Once a packet has been opened, the powder will slowly absorb moisture from the air and lose its ability to bond with wood. Therefore, never buy large quantities, only what you need. The unused product will last a lot longer if you seal the bag carefully and store it in a dry environment.

Mixed milk paint also goes bad. It is a good idea to use it only on the day it is mixed. If you are not able to complete the finish in one day, you can stretch the mixed paint’s working life by keeping it in the refrigerator. After two days, throw it away.

I generally prepare my project while the froth is settling out of the paint. Milk paint has almost no body and will not fill small holes the way oil or latex will. If your project has any blemishes, fill them with a latex filler, which will accept the paint.

Because milk paint is water based, it will raise the grain of the wood, making it necessary to sand between coats. To save time, raise the grain well before the first coat, using a spray water bottle, available at any hardware store. The trick is to wet the surface thoroughly but not as if you were washing a car. If the water puddles or runs, you are being too liberal.

During the wetting, any glue spills or smears that would prevent the milk paint from bonding will become visible and can be removed with a scraper or pocketknife. Allow the surface to dry completely. Then before applying the first coat of milk paint, finish sand the wood and dust it with a clean, soft cloth.

**First Coat Seals, Second Coat Covers** — The manufacturer recommends applying the paint to a wet surface, but I skip



this step because of the pre-wetting and sanding procedure I just outlined. In my experience, the water used to moisten the wood thins the paint so much that a third coat is usually required for complete coverage. So you end up doing more work in the long run.

When it comes time to paint, wear an apron to protect your clothes and put down a layer of newspaper or builder's paper to protect your workbench. Milk paint dries quickly and is difficult to remove once it dries.

Milk paint can be applied with a natural bristle brush — the cheap ones with unfinished wood handles and blond bristles. During the first coat, numerous bristles will pull loose and stick in the paint. Flick them out with your fingernail. If you miss any, don't worry; they brush away without leaving a blemish when the paint is dry.

Milk paint draws into the wood almost as quickly as it makes contact. This means that you cannot successfully draw it as you can an oil or latex based paint. The action is more like daubing. Do not let milk paint puddle on the wood. Brush it vigorously and work it to a thin film so that it spreads and absorbs uniformly.

Fortunately, even if the paint puddles or runs, you still won't have a blemish in most cases. When the paint dries, the thick areas become crusty. Generally, excess dried paint will brush away as a powder. At worst, you may have to break up the crust with your fingernail.

The tendency of milk paint to soak into the wood makes it difficult to cut in — the process of drawing a fine line of paint with a brush. It is not impossible to pick out areas or parts in a different color, but you do have to be careful. If possible, paint different colored parts separately before assembly.

Milk paint dries through evaporation. This means that on large pieces, some sections will dry before you even get started on others. It's important that you allow the entire piece to dry completely. Drying time is a function of the shop's environment and will take longer on a muggy summer day than in a heated shop in the winter.

The first coat will look like something the cat dragged in. It will be splotchy and

uneven. This is no time for a faint heart. If you are trying to achieve a very smooth surface, rub down the first coat with a maroon Scotch-Brite nylon pad. You can use 000 steel wool, but it leaves a lot of steel dust.

Rinse out your brush with running water and store it in a jar of water, so any paint left on the brush doesn't dry. Before applying the second coat, remove excess water from the brush by wiping it over the paper on your workbench.

Because the paint is no longer being absorbed so quickly, the second coat usually covers in less time than the first. This time the paint flows more like an oil or latex based product. You still need to spread the paint in a thin, even coat.

As with the first coat, the second coat of milk paint can send the first time user into fits of panic. The paint dries dead flat, flatter than anything you have ever seen and you can still see brush overlaps and areas that you touched up. Again, have courage. If you want a very smooth surface, rub the second coat with a gray Scotch-Brite nylon pad. Or rub hard and vigorously with a soft cloth.

**Oil Overcoat Holds Everything Down** — An oil overcoat has two purposes. First, it pulls the whole finish together and gives it a darker but deeper rich color and luster. Second, it protects the finish from spills that can cause spots on raw milk paint.

*I mix roughly five parts boiled linseed oil to one part paint thinner.* Apply the mixture with a cheap natural bristle brush. Wet all of the painted surfaces on the piece. Overlaps and thin areas in the paint will stand out for several minutes, but they slowly blend to a uniform color. Let the oil stand for about 10 minutes. Then wipe off as much as you can with a soft, lint free rag. Allow the oil to dry for two days before using the piece.

Some people apply a coat of wax after the oil dries, but I prefer to leave it as it is. The young finish is beautiful but has no character. Character develops with time. Use the piece as you would normally, and enjoy the increasingly subtle and complex finish.

**Milk Paint Looks Good When Freshly Applied** — But time is even better to it. As the top

coat gets older, it emphasizes the subtle differences in shading. Milk paint also wears in the same manner as the original lead and oil paints. In other words, like wine and cheese, a chair finished in milk paint actually gets better as it ages.

After my first experience, I did all my finishing with milk paint. When I started teaching Windsor chairmaking, I extolled the virtues of this finish to my students. I always explained to them that because the two finishes looked so much alike, milk paint is a good substitute for the original lead and oil. When I published *Make a Windsor Chair*, I again promoted my favorite finish to my readers. I wrote, "During the 18<sup>th</sup> century, when Windsors were being developed, they were finished with paint made with white lead, turpentine, linseed oil, and earthen pigments." I also included Old Fashioned Milk Paint Co.'s address.

That is how milk paint became so closely associated with modern Windsor chairmaking. Everyone who read that book decided to try this new type of paint on their chairs. The link between milk paint and modern Windsors became permanent, but somewhere along the line what I had written about lead and oil was forgotten. In chairmakers' minds, milk paint became the authentic finish used by their 18<sup>th</sup> century antecedents. At last the record is straight.

I have never lost my appreciation for milk paint's look. Every chair in our show room is finished with this product, as are all the stools on the classroom floor, all the benches and my dining room chairs. I have used milk paint for most of the project articles I have written for woodworking magazines. I still recommend this finish to our students. In fact, each of the information packets that students find on their stools at the beginning of each class contains an instruction sheet that I wrote for mixing and applying milk paint. This is my way, the way I have used for more than 30 years. If you would like to receive a copy of this sheet, email me at [mike@thewindsorinstitute.com](mailto:mike@thewindsorinstitute.com) and I will attach it to the return email.

**One Last Story** — When we were in the permitting process for building The  
*continued on Page 17*



## Raw Materials

photo by Judith Wood

Left to right – Dark and light flake shellac, beeswax, turpentine, tung oil, citrus solvent and carnauba wax flakes — some of the basic, raw ingredients in common finishes.

Pondering the selection of finishes in a well stocked retail store is often confusing. You may be drawn to brands that are familiar or ones that promise a quick finish in two or three easy steps. If you have ever hoped that there was a way to easily compare the benefits of the many finishes available, getting to know the most common raw materials and solvents will help you make more educated choices. The back label of most finish containers has some information about the resins and solvents and you can always request a Material Safety Data Sheet (MSDS) on any product. Detailed information may be limited because manufacturers are allowed some privacy for their proprietary formulas. Typical labeling will list the volatile solvents and usually the resins and oils.

**FILM FORMING SOLIDS & RESINS** — Among the many raw materials, the most commonly

used resins, or film-forming ingredients, are:

**ACRYLIC AND URETHANE RESINS** — These are the modern synthetic varnish solids. Urethanes are generally harder and more durable than acrylics, but the two resins are often used in combination and the finishes are quite spill resistant.

**ALKYD RESIN** — Traditional varnish resins manufactured in many variations. It has a less plastic appearance than urethane or acrylic resins but also provides excellent spill and scratch resistance. Alkyd varnishes are often more expensive than urethane-based varnish but the appearance and excellent re-coating properties make it desirable.

**LACQUER RESINS** — Traditional nitro cellulose (cotton by-product) lacquer is still available, but many other resins have been added to lacquer formulations, including resins that react with a catalyst for hardening. Modern lacquer resins

are not to be confused with the ancient Chinese lacquers — now obscure and not in common use today.

**SHELLAC** — The historical *lac* and a totally natural resin derived from a beetle in the Far East. The durability never compares to the harder varnishes and lacquers, but the natural appearance is often preferred for an eye catching, decorative surface coating.

**OILS** — Many oils will dry to a moderate hardness and can be considered film forming. Oil alone will never dry to a hardness comparable to the varnish resins, and when used alone, oils are often chosen for the *in the wood* look. Driers and resins can be added to oil in various proportions to make just the right mix for penetration and durability. The most common finishing oils are:

**LINSEED** — A traditional oil used by woodworkers, extracted from flax seed. It



is very slow drying in its raw state, and it is often sold as *boiled*, which means that driers have been added.

**TUNG** — One of the most durable oils from the Tung tree. Like linseed oil, it is often modified with driers and is a favored oil in some varnish formulas because of its durability.

**OTHER VEGETABLE OILS** — These include poppy seed, sunflower, and walnut. Walnut oil has been popular for food contact items. In general, most vegetable oils will be found in blended varnish formulas, rather than in their raw state. Drying time of these raw oils is very slow.

**WAX** — Wax is sometimes used as a finish but usually only in a thin layer on top of the other oils, varnishes, lacquers or shellacs. The most common waxes for woodworking are:

**BEESWAX** — A soft, lustrous wax with a low melting point. In commercial formulas or in homemade formulas, it is very easy to apply.

**CARNAUBA** — A very hard wax that is seldom used alone, but is often added in small proportion to other waxes for durability.

**PARAFFIN** — This is a petroleum wax that comes in many grades, but a highly refined paraffin, microcrystalline, is found in high end commercial waxes.

**SOLVENTS** — Solvents make the solids flow. The film forming resins, oils and waxes represent the part of the finish basically known as solids. Solvent is the vehicle that suspends and carries these solids. When the vehicle or solvent evaporates, the solid is evenly dispersed over a surface. If you have ever experienced slow drying time, rapid drying time, uneven drying or any number of variables, you understand

that solvents can be a tricky part of the finish. To help de-mystify the role of solvents, it is good to know the basic types and the finish resins with which they are compatible.

**WATER** — Water based finish has pervaded the finish industry. Although manufacturers use a variety of chemicals to suspend resins in water, when it comes to the user wanting to thin a water based finish, the recommended *solvent* would be water.

**MINERAL SPIRITS** — Also known as paint thinner, this a common solvent for urethane and alkyd type varnishes as well as oils. Generally speaking, a more costly mineral spirits being of higher quality, is best used for thinning varnish and oil, and cheaper mineral spirits is suitable for brush cleaning. The English make a high grade mineral spirit called White Spirit. Naphtha is in the mineral spirits family and it is sometimes used when faster evaporation and a stronger solvent is desired.

**TURPENTINE** — A less used but effective solvent for varnishes and oils. Older formulas relied on turpentine and some wax formulas call for the somewhat oily quality of this rich solvent. Citrus solvent is a related *terpene* and can be a pleasant smelling substitute for mineral spirits and turpentine.

**ALCOHOL** — There are many types of alcohol available, but the most familiar is ethanol, sold in a denatured form. Alcohol is the solvent for shellac.

**LACQUER THINNER** — As its name implies, lacquer thinner is suitable for thinning lacquer. Comprised of a variety of strong solvents, it is a good idea to use the manufacturers specific lacquer thinner when available.

**G**ary Wood teaches a series of finishing workshops at Woodcraft stores in NH, MA and CT. See [www.garywood.com](http://www.garywood.com) for details.

When resins, oils, and solvents are combined, the result is a finish that is designed for any number of qualities from appearance to durability. Except for shellac which can be mixed from dry flakes with alcohol, homemade finishes are difficult to attempt and are generally best avoided. The basic knowledge of solids and solvents is still valuable because we all need to know the strength and weaknesses of these raw materials, as well as their compatibility with solvents when we are trying to do something as straight forward as thinning a finish or cleaning a brush.

In summary, the common finishes and their compatible solvents are:

- Water based finishes are thinned with water.
- Urethane or acrylic varnishes are thinned with mineral spirits.
- Alkyd varnishes are thinned with mineral spirits.
- Shellac is thinned with denatured alcohol.
- Lacquer is thinned with the manufacturer's recommended lacquer thinner.
- Linseed and tung oils can be thinned with mineral spirits, turpentine or citrus solvent.
- Wax from the many proprietary brands is best left un-thinned but clean up or removal of wax can be done with mineral spirits or turpentine. ■

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## **MILK PAINT** – continued

Windsor Institute, the woman who chaired Hampton's Conservation Commission attended the Zoning Board meeting. She was very concerned about a furniture business coming to town, because she was

afraid of environmental damage from our finishing procedures. I explained that we only used milk paint which is made of all natural, non-toxic products. I told the board that one could actually drink milk

paint and the only result would probably be a big burp. That clinched it for the woman. She became a proponent of our project and even showed up to speak in our favor before the Planning Board. ■



# Shellac

Use shellac's natural colors, from ultra blonde to barely refined amber seedlac to enhance your work. Use the clearest finish that floats above the waxes and other impurities.

**F**inishing is tough. You get to the end of a long furniture project and think you're nearly done — then there's the finishing. Some makers complain it takes as long to finish a piece as build it, but I would put it at more like 15% – 20% of a project. Shellac can speed up your finishing, it's very forgiving, and the results can be stunningly beautiful.

No other finish has as much dazzle or brilliance as shellac, a natural “resin” produced by insects. Figured woods especially pop with depth and sparkle. Shellac is easy to apply, under or over any other finish, and very friendly to repair. It can be tinted, or you can take advantage of shellac's natural colors, from pale blonde to rich amber. Shellac dries rapidly and builds quickly, so a perfect dust-free place to finish isn't necessary. Shellac must be a safe finish or it wouldn't be so commonly used on fruits and vegetables to keep them from drying out (it's highly waterproof) and to give them the same appealing shine we want for our furniture.

Shellac does have one drawback and it's not a small one — it's not as durable as hard modern lacquers and varnishes. Shellac will show rings from a sweating glass, and even worse dissolve under spilled alcohol. You can still build a finish

with it on a hard-use piece such as a dining or coffee table, and then topcoat with varnish. And there are dozens of other types of furniture such as a chest of drawers not subjected to spills where shellac is plenty durable.

The best shellac is a mix you do yourself fresh as you need it, from flakes. The stuff in a can has a shelf life — too old and it takes longer to dry. It doesn't seem to be the best quality either, and it's also too thick, about twice what I would mix. A “cut” I like is 1 lb to 1½ lb of flakes per gallon of denatured alcohol, but the mix is very flexible. A good viscosity is similar to that of whole milk or well-thinned varnish. Thin coats dry faster, cure faster, and are far easier to control than a few thick coats.

Pad, brush, or spray shellac. Often I brush on the first coats to build the finish, then pad after that to the gloss that I want. It took me a long time to get confident with padding shellac, simply because I was too worried about the proper cut, making the pad just so, or using the right stroke. It's not that hard, in fact it's fun, and shellac will make your shop smell wonderful.

My mixture is a small palm full of shellac flakes to about a cup and a half

of denatured alcohol, which takes a few hours at most to dissolve. Shellac comes in many grades of refinement, some with bits of bug and bug secreted waxes. These sink to the bottom of my jar, so with a large syringe I pull off just the clearest shellac on top. Garnet, amber, and seedlac have natural tints that give maple (and other light woods) and cherry a deep aged look. Or add alcohol based dyes, for glazing on thin layers of other colors.

Build a pad from a core of cheesecloth or cotton wadded up in the shape of an egg, cover it with fine cotton cloth tied in place. It should be barely firm, not taut, and very smooth. Any wrinkles (even in the core) show up as streaks in the finish. I dip the pad into the shellac; others squirt shellac onto the pad or core. Either way you want to charge the pad but not have it anywhere near dripping wet.

Padding on with figure eights or circular swirls is less important than moving consistently and evenly across the surface. Shellac is unusual in that each layer burns into the one below, by slightly softening it and bonding with it. Tarry too long or go over an area too soon before it's “dried”, and the pad will pick up some of the softened previous layers and ruin the finish there. Some friction is good, as it has a burnishing effect. Often descriptions of using shellac talk about lubricating the pad with a small amount of oil, such as linseed. It's not necessary. After the first few coats, and after another five or so, I let the shellac layers fully cure overnight, and then lightly steel wool the surface with 0000 wool before proceeding.

It might take eight or more coats to build a noticeable finish. The thicker the cut the faster it goes. I am sure starting with a smoothly planed almost polished surface also speeds the build. If I'm glazing on layer after layer of tinted or any of the naturally darker shellacs, at some point I'll have the color I want and shift to ultra blonde to continue building the gloss. I also shift to longer and longer strokes, working with the grain.

One of the coolest tricks with shellac is to ghost out the final surface. I take a fine cotton rag and pour a small amount of alcohol into it, and seal it in a jar overnight. The rag should have just a hint



of coolness or dampness — but just a hint. Pad with this rag in long strokes over the surface and every little swirl or line in the finish disappears, leaving a brilliant shine behind.

Another finishing trick is to use a card scraper to smooth the surface. When I got up the courage to try it, the results were amazing. The edge should be filed and honed but no burr turned — just a sharp square edge. For flat surfaces such as a tabletop use light overlapping passes, using the whole length of the scraper's edge. You'll see the areas where the scraper cut the finish, and with veneer especially, possibly small pits or tear outs still to be filled. Keep padding, scrape again, ghost it, and you're done.

Lately I have been experimenting with building the finish and color with shellac, then top coating with two thin coats (½ varnish, ½ turps) of wiping varnish. The varnish adds durability and a high gloss. I pad it on as I would shellac, only being careful to not go over any areas. Give your shop a day for the dust to settle before you varnish.

I am still experimenting with rubbing out the varnish — or the shellac — with rottenstone and oil. My results so far are not worth the considerable effort. For a warm silky surface, rub out



A pad should be barely firm and the outer cotton cloth covering wrinkle free.

the finish with a 0000 steel wool pad dampened with turps and paste wax. ■

## EDITOR'S NOTE — continued

connections, digital cameras and sophisticated page layout programs have all come into being. Short run printing has advanced to desktop printers, commercial laser printers and now plateless offset quality digital presses. Each of these advances have played a part in the evolution of our Guild publications.

After reviewing quotes from three vendors and surveying several others, we have chosen a commercial printer in Hollis, NH. Their clientele includes the major Boston area universities (i.e. Harvard, MIT, Tufts, BU), corporations, and non-profits and so hope runs high. The print copy you hold in your hand represents our first run on a digital press (an Indigo 5000) printed with ink rather than laser toner. Sample copies run last fall show images with better color depth than I've seen with toner, no banding, and no red shift with true skin tones and wood colors — subtle differences to be sure but ones I hope contribute to an evolving first class publication. I can't wait to see how it turns out!

## Quarterly Publication

The original plan announced a couple of months ago was to limit *The Journal* to a tri-annual publication. This was necessitated by budget and the difficulty of obtaining content in the spring and summer months. However, after taking another look at standard mail (i.e. the new bulk mail) we found we could actually print a *quarterly at more pages per year* mailed at standard mail rates for the same money as a tri-annual publication mailed at first class rates.

For content, fall and winter are easier going than spring and summer. My hope is that by publishing smaller issues in the spring and summer, and larger ones in the fall and winter, we can still have something meaningful throughout the year.

So, the plan approved by the Steering Committee in early February is to publish quarterly with larger issues in November

and February, smaller in May and August, limited to 120 pages per year with delivery via standard mail. We expect to begin standard mail delivery beginning with the May issue.

## What to Expect — What We Need

I am always on the lookout for *new material*. Most any woodworking related topic is of interest — beginner's articles and experiences are especially wanted. The content in this issue covers a wide range of topics from the inspirational to the philosophical to the practical. You will also see a number of named columns. If you have a passion for a topic or just like to write, let me know and we may be able to set you up with a column.

There is a *Members Gallery* now in which you are invited to submit a good quality photo of an item you wish to share. This could be a finished project, a special tool, or perhaps a jig or fixture — basically a show-and-tell but in print. Just email the photo to me along with a brief description.

We also want to maintain a strong sense of guild in these pages and so will be highlighting significant guild events such as organizational changes, the Sunapee fair, symposia, new group formations and selected meeting write-ups.

The popular questions and answers feature (now *Q&A*) continues. The questions largely come from the annual meeting submissions but feel free to send them to me at any time of year.

In the end, this split between *Old Saw* and *Journal* will be an evolving process as we feel our way through this new arrangement. Our guild has an amazing range of talent and experience within its membership that far exceeds what you might expect to find in a small state the size of New Hampshire. My hope is that *The Journal* can be a vehicle to facilitate the sharing of this accumulated knowledge for the benefit of all. Enjoy! — Jim Seroskie ■



Used for architectural accents.



This “ball-on-ball” finial is 28 inches high.



## In Search of the Perfect Sphere

Most of us have memories of 10<sup>th</sup> grade geometry class. I have noticed that people either loved it or hated it. As you probably guessed, I reveled in it, and even went to summer school for advanced classes in solid geometry. I have often stated that these were the most useful courses I had in school. When I learned more about the history of mathematics and science, I

became aware that geometry is the only subject in the modern curriculum that has remained unchanged for millennia. It is today essentially the same as it was as when taught in 300 BC by Euclid, who was the first to systematically state the relationship of solid shapes to planar figures such as lines and circles.

In the last article in *The Old Saw* on duplication, I mentioned that one of the

The ball is a classic finial for a bed post and is known as “cannon-ball” style.

most frequently asked questions is, “Do you use templates?” I wrote that I only use templates for straight lines and circles. The reason is that these elementary shapes are pure forms that must be made with care because the eye can easily detect any errors.

A sphere holds a special place in design. It is the only shape that appears the same from any point of view. Because it is the shape of the earth, spheres have been studied by geometers for millennia.

A massive amount of information is available on how to take measurements on the surface of a sphere. For the purpose of this article however, it is only necessary to understand that a sphere is generated by a circle rotating on a diametral axis, and when a circle is drawn on a sphere, it falls into one of two categories — a great circle or a small circle. A great circle is the same diameter as the sphere and its center coincides with the center of the sphere. All longitude lines are examples of great



The ball is an elegant feature in the sequence of shapes on these furniture parts.



circles. The only latitude line which is a great circle is the equator.

The shortest distance between two points on the surface of a sphere follows the path of a great circle. This is important when plotting the course of travel over long distances. A small circle has a diameter that is less than the diameter of the sphere and this includes all latitude lines other than the equator.

There are many mechanical devices that will generate a perfect spherical shape on the lathe. They all consist of some type of pivoting arm which holds a cutting tool as it swings on a circular path across the turning. These have been used by ornamental turners for centuries as well as ivory turners who made billiard balls by the millions until this practice caused the near extinction of elephants and stimulated the invention of the first plastics — then celluloid and now phenolic — as a substitute for ivory. *I bet you knew I would bring pool into this somehow.*

Machinists still use these sphere generating devices on lathes to make ball-and-socket joints. But here I will assume that you do not have any of these gadgets, and you want to make a perfect ball with just the turning chisel held in your hand. There are three common applications of ball shapes in woodturning — ball finials, balls incorporated in the middle of a turning, and separate spheres.

### Making Ball Templates

The way to make a perfect ball is to have a perfect ball template. This device serves two purposes. First it is used as a comparator while the ball is being turned. Then it is used to press the sandpaper against the turning to further refine the ball.

The trick to making a perfect ball template is to generate the arc with a spur bit or a circle cutter. Spur bits are the easy way to make a hole up to about two inches, but for larger sizes you will need a circle cutter. These devices are available from most woodworking tool suppliers (*Woodworker Supply #119-002 — \$34*).

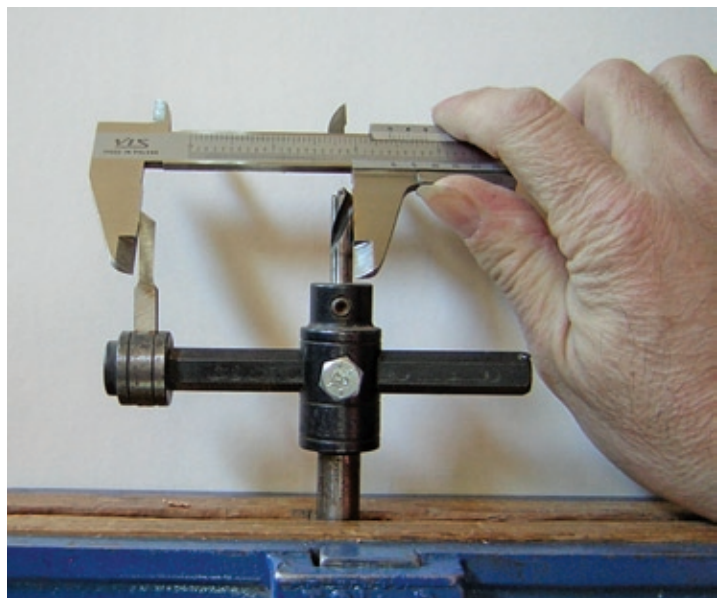
Set the hole cutter carefully with a caliper. Do not forget to add  $\frac{1}{8}$ " (the radius of the pilot) to the measurement. A circle cutter **MUST** be used in a drill press, not a hand held drill. Use the slowest speed and be sure to clamp the plywood to the table. Do not attempt to hold the work down with your hand!

The technical name for this process is trepanning. I use  $\frac{1}{2}$ " baltic birch plywood for most of my ball templates, although any good grade of plywood without voids will be fine.

I use a circle cutter, because it is convenient, but if you don't have one, or the size exceeds the capacity of the tool, it is possible to make a hole of any diameter on the lathe. Simply attach the plywood to a backer on a faceplate and cut out the center, first with a parting



An assortment of ball templates.



Add  $\frac{1}{8}$  inch to the radius to obtain a caliper reading.



Use a slow speed, and clamp the work.

tool which removes a disc, and refine the hole with light scraping cuts.

After the hole is made in the plywood, use a band saw or scroll saw to cut the outline of the template. Break all the sharp edges except on the circular part. The template will subtend an arc somewhere between 90° and 140°, and this depends on how the ball fits into the turning. Check the template against the drawing to decide what size of arc is best.

### Testing & Correcting

The template is brought against the turning to indicate where the ball must be reduced. When ball shapes are incorporated into spindle turnings, either as finials or in the middle of a turning, it is important that the diameter at the widest point be exact. It should be checked with a caliper, and also, of course it must fit the template when put to the diameter.

Apply some wax to the contact surface of the template. The two photos (above to the right) viewed in alternating sequence show how it is used without having to put down either the template or the chisel. When the turning fits the template, you are ready for the sanding stage.

Cut strips of sandpaper the approximate width of the ball template. Set the tool rest low enough so the template will be on the center line when it is held horizontally. Use a little wax on the template and/or on the back of the sandpaper. Press the paper against the turning with the template while moving the strip up and down.

### Relying on Randomness

A different method may be used to make a sphere that is separate. It is possible to employ a self correcting process in random sequence to achieve great accuracy in the turning of spheres. Stone balls are ground between rotating cups on automated machines by this means. This is similar to how lenses are ground. Although wood cannot be worked this way, we can rely on randomness by altering the axis of the sphere a multitude of times. This is based on the principle that we began with — a sphere is the same (a circular profile) from any point of view, or any axis of rotation.

Spheres are made in two stages. The first stage is done between centers. Cut the blank slightly longer than the diameter to



Frequent checking with the template will give good results.



Lower the tool rest, and press the sandpaper against the ball with the template.



First step in making a sphere.

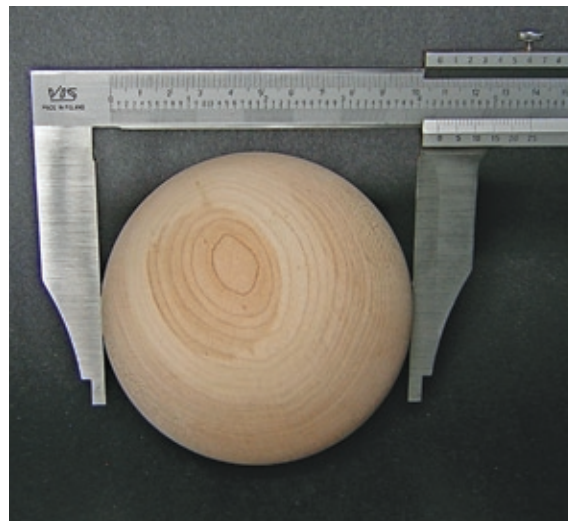


Cross section shows how the sphere seats in the cup chuck.





Final step in refining  
the sphere in a cup chuck.



This 4 1/4" sphere measures  
within 0.003 inches total variation.

allow for cutting off at each end. The second step involves changing the axis of rotation multiple times to refine the sphere and correct any errors.

Many books describe the cup chuck method for refining balls (see especially Mike Darlow, *Woodturning Methods*), but invariably these authors advise jamming the ball into the chuck up to the diameter, leaving less than half of the ball available for turning. My method is different because the type of cup chuck that I use is simply a centering device, and it will not hold the ball without the aid of the tailstock. The ball seats on a circle of contact (small circle) which subtends about 120° of the ball. This type of cup chuck is very easy to make and will accommodate a reasonable variation in the size of the ball.

The leather tipped dowel holds the ball in the cup and provides flexibility to the set up, allowing the ball to seat centrally. This method gives you

access to much more of the ball than does the typical jam fit chuck. The first time you place the ball in the cup chuck, put it 90° from its original axis. Remove just enough material to “true up” the surface. The second time, rotate 180° to get at the opposite end. After that, simply use random placement. Each time you true up the ball, it becomes more perfect, until finally every part of the surface runs true in every orientation. I measured the diameter of this 4 1/4" ball about 20 times in random locations, and the difference between the largest and smallest measurement was 0.003", about the size of a human hair. ■

## Q&A — continued

to dry properly — before kilning. Kilning, of course, speeds the process. The problem is that it's too easy to rush it creating tensions in the wood from the outside drying faster than the inside.

Air drying needs to start in spring when it's cool enough so it won't dry too fast initially. And it mustn't be subject to highly varying conditions — wind, strong sun, rain.

My cherry is stuck on two foot centers in a well ventilated barn in early spring, fresh off the saw. After three years, it can come in the heated area before heating season starts, and a winter should get it to furniture level dryness for one inch.

**RUST PREVENTION** — Any suggestions as to how to prevent rust from starting on bench and stationary

**tools kept in an unheated cellar shop? —**  
NOAH COTE

**ROY NOYES REPLIES:** To prevent rust on tools, it is necessary to understand how it is caused. Contrary to general opinion, rust is not caused by moisture in the air — there is moisture in the air all the time. Rather it is caused when the moisture in the air condenses on the surface of the tool. This occurs when a cold tool is exposed to warm air. If the tool is below the dew point of the air, condensation occurs.

I worked for many years in an unheated shop in my barn with no rusting problems. I used three methods of rust prevention:

- 1 I covered the surfaces of my

machine tools with a protective coating, Top Cote, which penetrates the pores in the metal and protects the surface much the way a coat of polyurethane protects the surface of wood and also provides a slick surface for wood to slide on. There are several other products on market, such as BoeShield, which do the same thing. They are easy to apply, last longer, and are much better than wax which can rub off on the surface of the wood and prevent finishes from properly penetrating. They also work well in a heated shop and I recommend them to all.

- 2 In addition to using Top Cote, I also kept my hand tools in cabinets or tool rolls where they were not directly exposed to the air in the shop.
- 3 Finally, I was careful not to let a lot of warmer, moist outside air into the shop unnecessarily.

I suspect that one of the major causes of rust in your shop may be leaving the cellar door and/or windows open in the summer time. However, you can prevent rust by following the steps above. ■



photo by John Hession



by David Lamb

"I had to invent hardware to make it work. I had this idea. I was **sure** it would work. But until I actually did it, I didn't **know** it was going to work."

## Designing Specialty Hardware

A true collaboration is an open exchange of ideas, in this case between an artist, our client, and myself. The collaboration of my work with artist James Aponovich has produced pieces we humorously refer to as *Lambovich*. The collaboration is more than just putting two disciplines together. There is a constant discussion of form, proportion, color and the integration of elements.

"Lambovich One" was probably the most involved piece of furniture I have ever designed. The project required all my skills and put them all to the test. The desk had all the stops pulled with rich materials, an elegant and formal stature with intricate details of inlays and carvings. One of the important aspects of this design is what I call *the layered effect*. In other words, there is more than meets the eye. When the desk is all closed up, the first impression is vastly different from when its fully opened up. It goes from a relatively simple and monochromatic form to colorful and complex.

When closed, the painted illusion (*trompe l'œil* — *trick of the eye*) vases within a pair of niches makes way for an explosion of color with a full-width triptych (*three painted panels that are hinged together*). Specialty hardware is what made this transformation possible.

### Hardware for the Temple

The hardware needs and solution were much more than just needing hinges to swing open panels. The importance of the initial impression needed to be one of a complete theme. The structure that surrounds the

niches with vases became what I dubbed *The Temple*. This temple with lintel and columns, fully carved with vines of morning glories represents a complete thought. And this thought needed to show few, if any, hints of the next layer. So, any hinges, pulls, etc. needed to be minimal.

The search for the proper hinge

brought me from butt hinges to knife hinges to offset hinges right back to butt hinges. I poured through all my catalogues to find the solution to my thoughts. This entire visualization process required many sketches and scale drawings to mock-ups and models to find what would work. There were many requirements including minimalism



photo by John Hession

Lambovich One — early process assembly.





photo by Bruce Buck

photo by John Hession

forward those three inches. The only way to do this was to mount the panels on a structure that could slide in a very controlled way. It needed to be simple to operate, be solid feeling and act in a very smooth and stable motion. I went back to the sketchbook again, thinking. Scouring catalogues was not very helpful because there was nothing that either worked correctly or was visually appealing. Thoughts drifted to a rack and pinion system, ball bearings drawer slides — that type of thing. They could have worked if small enough but this mechanism needed to fit the four inch deep box structure that the paintings are mounted within.

The “Lambovich Brothers” Yosh (Aponovich) & Sven (Lamb)

and strength. The butt hinge is simple and straight forward and the best for this. So, that decision was “simple”.

The next obstacle was unfolding the panels so they could clear the flanking columns that project beyond the panels. This required a forward motion of three inches. So, the entire collection of paintings (three panels) needed to move

Another big factor that adds to this complexity is the geometry of all this. If we think of a drawer and its most efficient shape for proper operation, there is a proportion of width to depth that tells us how well it will work. So, an 18” wide drawer would work best if it is nearly or greater in length than its width. If



Left to right — Gov. John Sununu, James Aponovich, Gov. Walter Peterson, First Lady Dr. Susan Lynch, David Lamb, Gov. John Lynch — June 25, 2008

photos by John Hession





photo by Bruce Buck

it is much shorter front to back, then it has a greater tendency to rack and not operate smoothly. The box that I have in this design is 18" wide, 20" high and only 4" deep! That is like standing a drawer on its back and sliding it forward. Rack City! I had a real physical challenge here.

So, here I have this box that the paintings are mounted to. This box must slide within another box that the columns and lintel are mounted to. First off, there is  $\frac{1}{16}$ " clearing between the boxes all around. Second, there are four micro tracks of end grain mahogany shaped in a "V" that interact with the inner box and helps control movement side to side. Another huge hurdle is controlling this needed forward motion while avoiding a tendency to tip forward.

The control — side to side, tipping, etc. — was controlled by the hardware and especially where the hardware was located. I settled on a design that I created that was a utilization of two common items, a large butt hinge with removable pin and a casement window mechanism. I needed something that would be a lever/handle, but also would slide within a pivot. I had to change a pivoting motion to a sliding motion.

Once I knew the possibilities I pulled out my hacksaw and chopped up the various parts. I put the lever arm on my horizontal mortising machine and milled the brass bar as if I had a milling machine. The process was perfect and fun. I kept half the hinge with the pin as the pivot and installed the arm where the hinge pin was inserted through the just milled slot. This pivoted at the outer box and the other end of the brass arm had a pivot end that attached to the inner box. Thus the action of pushing back the arms slid the inner box forward allowing the viewer to then open the painting fully.

Why not just put in handles that would slide through slots on the side you say? Well I certainly considered that, but because of the highly restricted depth to work with, cutting the 3" slot required for the full motion would have severely weakened the structure and compromised its stability.

The vertical location of this mechanism was very important. Too high up on the side and it would tend to tilt forward. Too low and the bottom tended to kick out. After considering the weight of this sliding box and testing, the perfect location was chosen, mostly through a trial and error process.

#### Hardware for the Writing Surface

There was another hardware issue. I wanted a writing surface and lid that worked in an unexpected way, something different. My solution was to instead of having a "fall front" to the desk interior as is so common, but have it swing from the bottom and slide in over the interior arrangements of cubbies and drawers. My thoughts then brought me to think that when this lid slides in, it would activate a mechanism that would initiate the writing slide forward so it could then be pulled from the underside and extended to the open writing position.

This again demanded a lot of thinking and planning. I again wanted minimally exposed hardware for this operation. The key used to unlock the lid acted as a pull to open the lid. The sliding writing surface has no knobs, but when nudged open there are carved recesses on the underside that can easily be pulled to open the slide. Here the clearance allowances were

critical for all these parts to move properly and cleanly. Just enough, but not too much, keeping in mind woods' naturally moving nature. The sliding activators, arms, and pivoting motion transfers were all hidden above the lid and behind the narrow pilasters on either side of the lid. Jon Siegel was invaluable in helping make these parts in his machine shop using heavy brass. The beauty is that it all worked as well as I imagined!

#### The Unveiling

The real test of all this effort was at its first unveiling. And I mean first...public and private. I had been working on this huge project for most of the past year and an unveiling was set to be held in the Governor's Office at the State House for the Governor and Council and later a more public unveiling again with the Governor. There was no option to postpone. The truth is my wife Janet and I worked right to the bitter end. At this point we had yet to see the completed piece fully assembled or fully tested the hardware in this finished state. The desk was delivered with the help of Tom McLaughlin and set up and veiled by 5:00 pm the day before. We were asked to leave because the office was closing.

The Council met early the next morning, so I crossed my fingers when we were up. Later in the day, the Governor, First Lady, and our patron, Diane Griffith unveiled the desk to several hundred onlookers, public television, Channel 9, Arts Council, etc. Everything worked as it was intended. What a relief!



Detail showing lid/writing slide mechanism.





Lid/writing slide mechanism showing transfer of motion from lid at top to slide in lower case — it protrudes through the bottom of the upper case into the lower case.



"Temple" hardware — temple is my term for box unit holding painted panels within the carved elements



Micro slide rails for painting unit.



Detail of control bar. Activating finger for writing slide mechanism.



Temple hardware as connected to the inner painting mounting box.



Showing lid/slide mechanism as located behind the front stile.



### Lambovich II & Lambovich III

Our second collaborative, Lambovich II, was a much simpler desk. Dubbed *Secrétaire `a Abattant*, this is actually a French term meaning a Butler's Desk. It is used while standing. What links these two secretaries together are the artistic concept of *conceal/reveal*, a technique often used in gardening. The idea is to show a hint of what will later become fully apparent. This second desk uses the teaser of the emerging iris on the inlaid crown and then the full imagery is seen once opened. The coordination of elements between wood and paint continues with the carved iris on the columns, in the same way the morning glories are used in the larger secretary. I also matched the grain's figure in the lid to reflect the Crawford Notch scene in the painting. The use of the formal and elegant mahogany is perfect for this design accompanied, of course, by our own native-exotic, crotch birch.

Lambovich III has just been commissioned and promises to continue with several of these techniques. There are also new design challenges to solve. It will be exciting and significant. Stay tuned! ■

"Lambovich Two" patroned by Dan and Denise Roberts.



photo by Bruce Buck



photo by Bruce Buck

"Lambovich Two" painting by James Aponovich. Crawford Notch is featured in the painting's background.





*“Instead of galloping about, walk slowly like a cow or an elephant. If you walk slowly without any idea of arriving, you are already a good Zen student”*

by John Whiteside

## Right Brain Woodworking

**I**s it not true that most of the time when we do something (A) it is for the purpose of achieving some future result (B)? Thus, for example, we go to school to prepare for a career. We undertake a career to get ahead, to become financially secure. We pursue financial security in order to retire. And then we retire in order to do what...to die?

This very brief summary of the purpose of life, under a scenario of always striving for something else, poses, for me at least, two perplexing questions. The first is, how do we know we are striving for the right thing? The second is, when do we get to relax and enjoy life?

What on earth does any of this have to do with woodworking? Simply this; for many years I approached woodworking as a means to an end, a series of preparations and tasks that had to be performed in order to achieve the final result, which was some sort of finished piece. In the process of doing this, while there were moments of excitement and pleasure in the various steps of buying the tools and materials, preparing the stock, drawing the plans (or finding them in a book or magazine), doing the joinery, the glue-ups, thinking I was finished except for the finishing which always seemed to take forever — while there were moments of pleasure in all of this, there were far more moments of impatience, frustration, boredom (with sanding for example), annoyance (at the mess to be cleaned up), anger (when things went wrong), panic (during glue-ups), and self-doubt and in the end the results, to be honest, were those of a typical do-it-yourselfer, that is to say, mediocre.

I have found since then a way to work with wood that does away almost totally

with the unpleasant and frustrating parts, replacing them with a continuous flow of serenity. And the quality of my work surpasses what I ever thought was possible, especially for someone over 60, of average skills, less than perfect eyesight, and arthritis.

**Recently I had the good fortune** to be commissioned by an old friend to make a guitar for his son. The project, which took almost a year, was intended as a surprise and when delivery time came, my friend and his son flew in from the Midwest to take delivery. We employed a ruse — the son thought he was coming with his father, who is an executive at General Mills, to inspect one of my pie safes for possible use in a (made up) General Mills pie-making promotional campaign. Instead the son, who is an aspiring folk performer, found himself presented with a hand-made guitar. To say that he was deeply moved is an understatement. Later that evening, when we all went out to dinner, I was trying to explain the woodworking philosophy that I am also trying to explain in this article. The young man said, Oh its like playing a song. *The point of playing a song isn't to get to the end of it.*

That's it! If you understand the young man's comment you don't have to read the rest of this article. There are certain things, such as playing a song, that are worthwhile in and of themselves, where the activity is its own reward. If you can approach your woodworking so that every step of it is its own reward, your spirit and your level of craftsmanship will soar. The two troubling questions at the beginning of this article are resolved. It's not a question of striving for some future goal — the singing of each note is its own

purpose and reward and brings peace and enjoyment.

My photo on the next page shows the most ambitious piece of woodworking I have ever done. It is a hand-made guitar rosette. Most rosettes use an ancient Persian technique involving bundles of tiny slivers of differently colored woods oriented so that the end grain points out toward the viewer. My rosette uses the rarer and more difficult technique of side grain inlay. The ebony and cherry pieces of the pattern are oriented so that the side grain, not the end grain, shows. Notice the rich grain patterns in the tiny cherry pieces, selected from a board with unusual figuring. To make this rosette required intricate geometrical constructions and calculations and required the making of 20 jigs such that the average error in sliver thickness did not exceed  $\frac{1}{1000}$  of an inch. The time required to design and make these jigs was about 200 hours. Even with the jigs completed, it takes 20 to 40 hours to make a rosette. I have written previously about this work in *The Old Saw* and presented it in a Guild Small Meeting.

**People's reaction** has always been the same, *How on earth did you have the patience to do this?* I want to knock them over the head! Patience has absolutely nothing to do with it.

The question now seems to me quite odd, as it would seem odd to ask of someone on their birthday, “How on earth did you have the patience to get to the age you are?” Patience had nothing to do with it. Time passes of its own accord. The question is, how are we going to spend it? I cannot conceive a way better to spend 240 hours than making guitar rosettes.

The work is fascinating and absorbing. Worldly preoccupations vanish. One's mind is not on the missed opportunities of youth, nor the stock market, nor on any of the hundreds of troublesome matters that ordinarily preoccupy one's mind. Nor, for that matter, is one's mind much concerned about the future, such as whether one will be laid off or not, how the medical test results will come out, and such as, most critically, how the rosette itself will come out! This last point is crucial. You do the best you can with the task of the moment, allowing it to command your full attention. For that particular moment, getting that particular sliver (the 17<sup>th</sup> vertically oriented tapered cherry piece, counting clockwise from the top) to fit just right is the most important thing in the world. You are not, at that moment worrying about the 23<sup>rd</sup> piece. Of course, you might learn something on the 17<sup>th</sup> piece which you can then use to do the 23<sup>rd</sup> one better but the mental attitude in that case is not, "Oh I didn't do number 17 as best as possible," it is rather, "Oh good, I have learned something, I am growing."

**This attitude has fancy names** in various systems of philosophy and in certain Eastern religions. One of them is *mindfulness*. It has also been called being present, being in the moment, or being in the "now." Hopefully, though, the

description in the previous paragraph is concrete enough, especially for woodworkers, that the reader can relate to it without calling it anything at all and it may even call to mind experiences that he or she has had themselves.

In working in this way for a number of years now, I have noticed remarkable things. For example when you make a mistake, it doesn't matter, that is, it is not something to get upset about. This is because, since the work was its own reward, you had the pleasure (gift) of doing the work already. That doesn't get taken away even if the piece is ruined by the error. You simply start over.

Another remarkable result is that the quality of the work improves dramatically and by the only standards that matter, namely one's own. The rosette, to take an example, is the very best work with wood that I have done to date. Can you find flaws, minor misalignments? Sure. Would it get me into the League? Who knows? Will my rosettes get better in the coming years? They might. But my goal is not perfection but rather considerations other than craftsmanship and about which I understand yet little, such as the aesthetics of design and how the rosette relates visually to the guitar as a whole. These are the areas I am eager to explore next.

I do not intend any of the above to sound conceited or self satisfied. Please, make your own decisions about the quality of the work. The point is, I am well pleased with it, which is a very rare experience for someone used to second guessing himself. I very much hope that you have

had or can find such an experience for yourself.

A third remarkable result that I have noticed by working with wood in this mindful manner is that the serenity it generates spreads out into the rest of life. Nagging problems become less acute, regrets and failures lose some of their sting, worries about financial security and mortality give way to an acceptance of the human condition. Naturally, these matters go far beyond the scope of a woodworking article, but they seemed too important and valuable to leave out entirely. For what it's worth, the key seems to be reminding oneself to focus with gratitude and mindfulness on what one has in the here and now.

What you have read so far relates to my own experience. Some readers will relate to it and be able to put some variation of the ideas into practice for themselves. Others may find it too subjective and need something more tangible and concrete before they are comfortable in experimenting with the ideas in their own woodworking. As it turns out, the study of the functioning of the hemispheres of the human brain may provide that tangible link.

**When forgers duplicate something**, such as a \$100 bill, they do the art work upside down — that is, the art work is upside down, not the forgers. Why? Because doing the artwork upside down disengages that part of the brain that takes the shortcuts of abstracting, simplifying, giving things names, and substituting coded representations for reality. You can prove to yourself that this results in a better drawing. Try drawing a copy of a human face using a photograph as your model. You could draw from a photograph of your spouse, or from a picture of a famous person in a magazine. Unless you are a trained artist, your drawing will probably look quite childish.

Now try the same thing, only turning the photograph upside down. Pay attention to the lines and contours and duplicate them as best you can on your paper. Don't be concerned about naming the various features, simply draw them. You are apt to be quite astonished at the improvement in the quality of your

**Cherry and Ebony  
Side-Grain Inlay Rosette**





*“When forgers duplicate something, such as a \$100 bill, they do the art work upside down ... Why? Because doing the artwork upside down disengages that part of the brain that takes the shortcuts of abstracting, simplifying, giving things names, and substituting coded representations for reality.”*

drawing. It may even look something like your model. (If this exercise interests you, check out the book *Drawing on the Right Side of the Brain*, by Betty Edwards). I'll leave it as an exercise to the woodcarvers to figure out how an adaptation of this method might improve the quality of representational woodcarving.

If your interest is turning, check out the brief article *Right Brain, Left Brain* by Cindy Drozda and David Nittmann in the Winter, 2008 issue of *American Woodturner*. They give exercises that force you to turn in one way or the other. For the left brain exercise they have you produce an exact copy of a turning, using measurements, a full-scale drawing, and calipers. For the right brain exercise they have you do the same turning from memory or to a different scale. If you do this exercise, please let me know. What I am particularly interested in is the quality of your experience under the two scenarios.

### **So, what is this right-brain, left-brain stuff?**

Dredging up memories from my graduate school psychology and neuroanatomy studies, I recall that the two hemispheres of the brain are separate except where they are interconnected by a thick bundle of neurons called the corpus callosum. At the time I was a student, it sometimes happened that patients who suffered otherwise untreatable brain seizures were subjected to an operation in which this connection between the two hemispheres was severed. Amazingly the patients survived and the operation did indeed control the seizures. But something strange happened. It was as though two people with different abilities and opinions now inhabited the same body. And these two people were capable of disagreeing with each other and having different experiences in response to the same situation! To state the matter in a

hopelessly oversimplified manner, the left person thinks in words and numbers, is calculating and technical whereas the right person thinks without words or numbers, is less aware of time, and uses emotions and intuitions.

More recently, Jill Bolte Taylor, a neuroanatomist, suffered a stroke that shut down her left brain entirely. After many years of retraining and rehabilitation she recovered left brain function to the extent that she was able to write a book (*My Stroke of Insight*) about her experiences. This riveting book gives a vivid picture of what it would be like to live entirely in a right brain world — no ability to speak, read, or even think in words or numbers, but at the same time an astonishing awareness of form and beauty and an overwhelming sense of serenity and timelessness! Indeed, her state of awareness sounds exactly like what yogis and mystics spend decades trying to achieve.

Check the references for yourself and draw your own conclusions. Mine, for what its worth, is this. Our left brain skills and consciousness allow us to function in a complex and technical world. However, through an accident of history and culture, we have allowed the left brain to become dominant, so that instead of being used as a valuable tool, it has, for many of us become the master, overpowering and out-shouting the right brain and in the process making our lives a lot less serene, artistic, and joyful than they might otherwise be. When you get pissed off at the carving you have just ruined because it didn't live up to the standard you were hoping to achieve, and you hurl the piece across the shop, your left brain has taken over.

Alternately, when next you are “in the groove” or “in the zone” and your carving, your turning, your joinery, or whatever, is really going well, when its flowing, take a moment to notice what is happening. Are

you even thinking in words? Or have you entered some state where, as the mystics would put it, you are “one with the wood?” That's what I mean by right-brain woodworking. The left brain is working as it should, as a tool. But it is not calling the shots of your experience with its constant criticisms, analyses, apprehensions, and regrets.

The left brain seems impatient, always worrying about what might happen next. It has a short attention span, in the sense of always wanting to focus on the next problem. The right brain seems not to particularly be aware of the passage of time and is quite happy to spend time in leisurely contemplation, without words. However, it seems to do extremely important work that you, the conscious person, are not aware of whilst it is processing. Have you ever had the experience in which a full blown solution or insight has simply appeared to you in an instant? Something that appears to come from nowhere and then might take you (your left brain) hours to actually put into words, yet all the while the insight is there, clear as crystal?

### **So, how can this be applied to woodworking?**

How can you use more of your right brain skills and gifts? The left brain is probably for most of us overdeveloped, the trick there may be to get it to tone down a little. Who knows what will work for you? Here are some things that have worked for me. The first is, tell yourself that everything that you do in the shop is equally valuable and equally important. A good place to start is sweeping the floor. Do it mindfully and well. Take pleasure in it, in seeing the dust swept into neat piles. Sharpen your tools. Do it mindfully and well, to the best of your ability. A day spent in the shop doing nothing but sharpening is a day well spent. Be content with it. A sharp chisel is its own reward,

a thing of beauty in its own right. It is an accomplishment. Take all the time you want to admire it. Take a photo, show it with pride to a friend. Reflect on how your father, his father, and his father before him sharpened their chisels.

A second thing that has worked for me is to catch myself when I substitute the word for the thing itself. The word is not the thing. Only the left brain thinks that and the left brain is wrong in this regard. Take a crafted object that you like, such as a Queen Anne leg. The term “Queen Anne leg” is a shorthand, a fast-food-type convenience substituting for the real thing. Look at your leg. Look at several. Follow the contours with your eyes and fingers. Get inside the thing. Look at it from different perspectives. See if you can get to a place where your mind is not spewing out a string of descriptive words about it but instead is simply aware of and appreciating the thing as a whole, in its totality. Or try the same with a simple board. Just look at it, the grain structure, the variation of color, in minute detail. Imagine yourself as communing with

whatever force, process, entity or God that created that board.

A third trick that has worked for me is to try something that goes way beyond what you think you can do, an impossible dream, if you will. For me, it was building guitars. No way I could possibly ever do that, much too complicated, will take forever and only result in frustration. None of the books lay out the procedures in orderly steps, and so on and so forth. Fortunately I ignored all this mental twaddle and got to work. Here is what one experienced and gifted player wrote after playing my first guitar. I am now working on number 5.

“It was delicate, responsive, and you could feel it breathe next to your body. It projected sound wonderfully without being harsh or brash and had very even tone throughout all six strings. The action was sweet, smooth but with clear articulation. It compares very favorably with a Martin guitar, which is the closest thing on the market that it resembles.

Visually, it is very pleasing. The decoration is unique and clearly the result of thoughtful and painstaking design. The overall impression is that of playing a vintage instrument, one that has a full, broken-in sound, and has been lovingly handled and played for decades.” — *Tom Guttmacher*

**New Special Interest Group** — The phrase, right-brain woodworking, has generated considerable interest in our Guild, so much so that we are starting a new special-interest group to pursue the topic. What you have read in this article is my particular perspective on what directions exploring the topic might take. It is by no means complete and may well be wrong in places. But it is a starting point. Please consider joining our new group as we undertake to form a community in which members are committed to helping one another enhance and reveal the beauty that is already in the wood itself, and in so doing find some measure of deliverance. ■

## Period Furniture

## SubGroup Spotlight

### Creative new vision and a new beginning — group to build a period furniture project together

January 2009 marked a new beginning for the Period Furniture Group, a special-interest subgroup of our Guild commonly referred to as the PFG. I have been a member of the guild for several years and am a passionate period furniture enthusiast and have taken over leadership of the PFG. After speaking with many members, I came to believe the PFG had become too broad in its scope, and as a result, grew to be a group of people interested in furniture of all types. This wide range of interests and large group meant that it had become increasingly difficult to identify topics that appealed to everyone, and nearly impossible to find meeting space large enough to accommodate everyone.

Therefore, we decided to return the group to be more true to its name—Period Furniture. On January 10 at the first meeting of the “new” PFG, I led

a discussion to redefine the mission. Consensus was quickly achieved and our group vision emerged as — *We are passionate about all aspects of Period Furniture and seek to enhance and share our knowledge with each other through the study of history, design, and hands-on techniques of all aspects of Period Furniture.*

Further, period furniture was more narrowly defined to be specifically American period furniture from the early colonial (Jacobean) furniture of the 17<sup>th</sup> century, furniture from the William and Mary period in the early 18<sup>th</sup> century, through the important periods of Queen Anne and Chippendale periods of the mid and latter 18<sup>th</sup> century, up to and including the Federal period from the late 18<sup>th</sup> century ending around 1820. All of this furniture can be described as pre-industrial revolution.

With its new vision established, I

proposed a new idea to the first meeting group that was widely accepted with enthusiasm. *The group will carry out its vision by focusing the remainder of our meetings for the 2009 spring season and the 2009-2010 season by building a period furniture project together.* By together, it is meant that each member will study, design and build a piece of period furniture along with all group members. Each meeting will focus on a key aspect in next step of the design and build process. For each aspect covered at a meeting, the agenda will cover a historic review of the technique, study of resources available, a hands-on demonstration of the technique, and the chance to share experiences, lessons learned, critiques and offer advice and knowledge amongst the group.

The pace of our every other month meetings during the normal GNHW

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By Frank Woolley

# Sharpening with Diamonds

Everyone has their own sharpening system, usually optimized over their woodworking career to provide just the edges they expect with as little time and money spent on it as possible. And every system I have heard about is different. I conclude that there are many ways to skin that cat, and many different approaches work well enough. But I would like to tell you about the abrupt change (for the better) that I have made in my own sharpening of plane irons and chisels, with the hope that it might be useful to you as well. Sharpening carving and turning tools is another subject.

Like many of you, I was taught to sharpen my chisels, plane irons, card scrapers and carving tools on oilstones. I had progressed from the two-sided silicon carbide stones suitable for garden tools to fine Arkansas bench stones, and thought

I had found the perfect sharpening oils. I had prepared a variety of wood wedges and jigs to hold various tools at the best angle while grinding and honing. I was pretty proud of my razor-edged tools with their highly polished edges. But the oilstones did take an awfully long time to produce the edges I thought I needed.

Chris Kovacs' started me thinking back in 2004 about how much faster it might be to sharpen with the new Japanese waterstones, but the frequent need to flatten the stones and the inconvenience of having to soak the stones before use put me off. Then two events changed my whole approach to sharpening.

In early April, 2005, I had the opportunity to visit Bill Thomas in his shop in Rindge, NH. Bill graduated from the North Bennet Street School furniture program in 1979, became a professional

furnituremaker, and is now a member of the NH Furniture Masters Association. He was sharpening with waterstones, but had found that he needed to go no finer than 800 grit to produce a satisfactory edge.

He pointed out that the condition of the edge just after sharpening is not as important as its condition just before you sharpen it again. After all, Murphy's Law says that the work you do with your blade at its duller is likely to become the most noticeable part of the piece. Bill had decided that the time he saved by not polishing the edge on finer stones could be better used to resharpen more often. He thought that the ease of re-sharpening was at least as important as the actual sharpness of the edge produced. The easier it is to re-sharpen, the sooner he

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## PERIOD FURNITURE — *continued*

meeting period from September until May means that all members, of all skill levels will be able to keep up with the project by using the next meeting dates as project milestones.

The first project will be a single drawer table/lamp stand in the Federal period style. The specific design and decorative elements used will be up to each participating member allowing everyone to explore areas of new learning that suits their interests and at the same time, provide an exciting challenge for learning.

It is envisioned that upcoming meeting topics to be announced will include such

topics as, the study of the Federal period of furniture making, table design techniques, drafting a scaled set of drawings from photographs, construction of the tapered federal table leg (there are several styles), drawer construction and fitting including dovetailing and optional veneering, banding and/or cockbeading, decorative Federal style inlays including stringing, bellflower and shaded oval fan inlays, and traditional finishing techniques.

The "new" PFG keeps in touch via a moderated Yahoo Group called *GNHW\_Period\_Furniture\_Group*. Meeting agenda, notes and photos are kept here

as well as resources, member photos, calendars, and the group email list is maintained here by subscription. Please visit the group at: [http://groups.yahoo.com/group/GNHW\\_Period\\_Furniture\\_Group](http://groups.yahoo.com/group/GNHW_Period_Furniture_Group). This group is co-moderated by myself and fellow PFG member Stephen Gaal. The moderators of the group can be reached by sending an email to [GNHW\\_Period\\_Furniture\\_Group-owner@yahoogroups.com](mailto:GNHW_Period_Furniture_Group-owner@yahoogroups.com). You may join this group either through the website or email addresses mentioned above. — Mike Cyrus ■

an essay on

by Robert J LaCivita



# A Woodworking Life



often tell people who ask about my decision to become a professional woodworker that I have been blessed. When you think of the amount of people who don't like their jobs, it is astounding. I've been blessed because the doors to my career opened very early. I was leaning toward woodworking by the time I was sixteen. Over the early years four people touched my life and either directly or indirectly taught me valuable lessons that I use on an ongoing basis. Most of them have probably never been mentioned in magazines or even a local newspaper article. I offer them a great deal of thanks.

I began working as a carpenter/carpenter's helper for my father when I was thirteen years old during summers. This was not of my choosing. I would have much rather been riding my bike and generally goofing off. My father, now 94, being the son of immigrants spent his childhood working on the family farm. Why should things be different for me? With the angst of youth I would curse him, and now I hold him in the highest regard.

**Ralph Williams** — I worked with my father's site supervisor Ralph Williams — a.k.a. Archie Bunker. Ralph was a little rough around the edges to say the least. He always had a little cigar glued to his lip, drank about eight cups of coffee a day and ate one Big Mac for lunch everyday. Part of my job was to walk over and get that Big Mac.

Ralph was also a very skilled craftsman. He had worked as a silo builder and then for 20 years as a pattern maker and used to tell me stories about the pattern shop. The shop stories intrigued me. I remember a story about a four foot diameter turning for a cast part. I could sort of relate

because I had just turned my first crude bowl in industrial arts class. It was four inches in diameter.

He was also a great carpenter and could build just about anything with a radial arm saw, two sawhorses and a few dozen rusting hand tools. I worked with him building frames, stairs and kitchen cabinets all on site. I learned very basic lessons by route. He would give me sides of buildings to shingle alone. I think he did this to get me away from him for long periods of time. He would check my work every hour or so against the story pole he made me and go back to his side. He was the first person I saw use a hand plane with skill even though I did not know it

**Mentors — Over the early years four people touched my life and either directly or indirectly taught me valuable lessons that I use on an ongoing basis.**

at the time.

My job was not to think, but to do. And that is what I normally did. I usually got reprimanded for thinking or heaven forbid making a suggestion that maybe it could be done this way or that. I hated going to work. It happened way too early, but I loved being at work and doing the work.

Working with Ralph was a humbling and rewarding experience. He seemed to enjoy putting me in my place, which I gave him many opportunities to do. I would hit my thumb with a full blow and he liked to laugh at me. I learned to admire the man and respected his skill

even though I did not know what skill was. It has been forty years since that first of eight summers working with Ralph. I didn't know it at the time but I learned a great deal from Ralph. The biggest lesson was to get the big picture of the project and to do the job right.

**Frank Scatturo** — I was not a good student in school. I wanted to be building or doing something with my hands rather than read what Dick and Jane's latest escapade were. I was a kid who always had a project going be it a tree house, turning my bicycle into a chopper (not well thought out) or building a go-cart. Most of these projects had at least a rudimentary plan that I would spend most of my school time working on. In my sorted years in school I do have one teacher who stood out in my life. In high school, I took three years of mechanical drafting and one year architectural drawing from Frank Scatturo.

Mr. Scatturo put value in the work I had been doing for all those years when all my other teachers thought I was goofing off. He was a very sophisticated guy who dressed well, talked with an upper class Boston accent and had a great ability to relate his subject to all students. Over the years, he had built up his drafting department with state of the art drafting machines and blue printing equipment. I learned about pencils, drafting tape, T-squares, and dry cleaning bags that I enjoyed throwing at my friends when the cat was away.

Lettering was the teacher's pet peeve. The letters had to be just so. You lost a grade point per letter. I thought I would come out with a negative grade. I learned to letter.

The architectural drawing course was a senior only class requiring three years of mechanical drawing. Most students were



serious about the course and the teacher would give us real design problems to solve. One assignment was to design a bus stop with design criteria that kept people dry, blocked the wind and was safe for waiting passengers. Another project was to design our dream house. My dream was much different then.

Mr. Scatturo used to tell me I should apply to Rhode Island School of Design. This was a significant thought. Being an under achiever academically, I never considered college seriously. That thought stuck. He opened up my eyes and validated my work. He made me believe I could be more. Frank Scatturo died of Lou Gehrig's disease in his middle to late forties. He did come to my student furniture show at RISD and he was proud of me. That is the last time we saw each other.

**David Powell** — I spent time in a local community college trying to learn everything I missed in the last twelve years of school. I learned of an upstart program at Boston University called the Program in Artisanry and applied to the furniture department. I was told I needed to learn the basics. They gave me a few people to contact, which I did and got an interview with David Powell. David and his partner John Tierney were starting an intern program to teach people woodworking. Unlike today, crafts programs were far and few between. I had to put together a portfolio of woodwork and drawings and meet DP. After weeks of anticipation, I received my acceptance letter.

I walked into Leeds Design Workshops in September of 1976. The shop was in a large 19<sup>th</sup> century mill building in East Hampton, MA in the Connecticut River Valley. It was big with a bench room, drafting room, fully equipped machine room and seven studios for resident artisans — very few came.

David, a quiet English man, had worked at Edward Barnsley's shop in Petersfield, England and then graduated from the Royal Academy of Art in London. I believe David Powell is one of the best Designer/Makers I have ever known. He introduced me to a world of furniture I never knew existed and put my skills on

that high learning curve most interested students experience. He was not very prolific over the course of his career. He did touch a number of people in his ten years as the owner of Leeds. A handful have gone on to be distinguished studio furnituremakers.

I think there were fourteen students. We all had to buy a set of tools for about \$600 — a purchase that would cost six times that now. We began by tuning up and sharpening all our tools. We then had to hand plane a perfect octagon with a large bevel on the edge. The first half of the year, all work was done with hand tools meaning hand planing and ripping boards from rough to finish. We cut all joinery and details with hand tools. I learned more in this time than any other time in my life.

Then we were introduced to the machines. Each student was responsible for a machine on a rotating basis. We would have to sharpen, adjust, replace knives and maintain the machine. This was a valuable lesson.

David was an odd man. He did not relate well to most students, or to anybody, and some students hated him because he was introverted. David and I hit it off and I learned a great deal by just watching him and having one-on-one talks. He also gave us the freedom to design and build all of our projects and would go through the steps and procedures required to build the project. This appealed to me, but for others, they would have preferred to be given an assignment.

In the end, this was the richest learning experience of my life. It enabled me to get into Rhode Island School of Design and develop my design skills. I taught and worked at building furniture for DP for a few years after I graduated from college.

**Walter Price** — After trying to be a furnituremaker for a number of years, I decided a job would be a better way to support my young family. I entered the architectural woodworking business as a cabinetmaker. I then became a draftsman, estimator and project manager. This was never a good fit for me. I worked at a few shops trying to do better. I landed a job at Wright Architectural Woodwork back

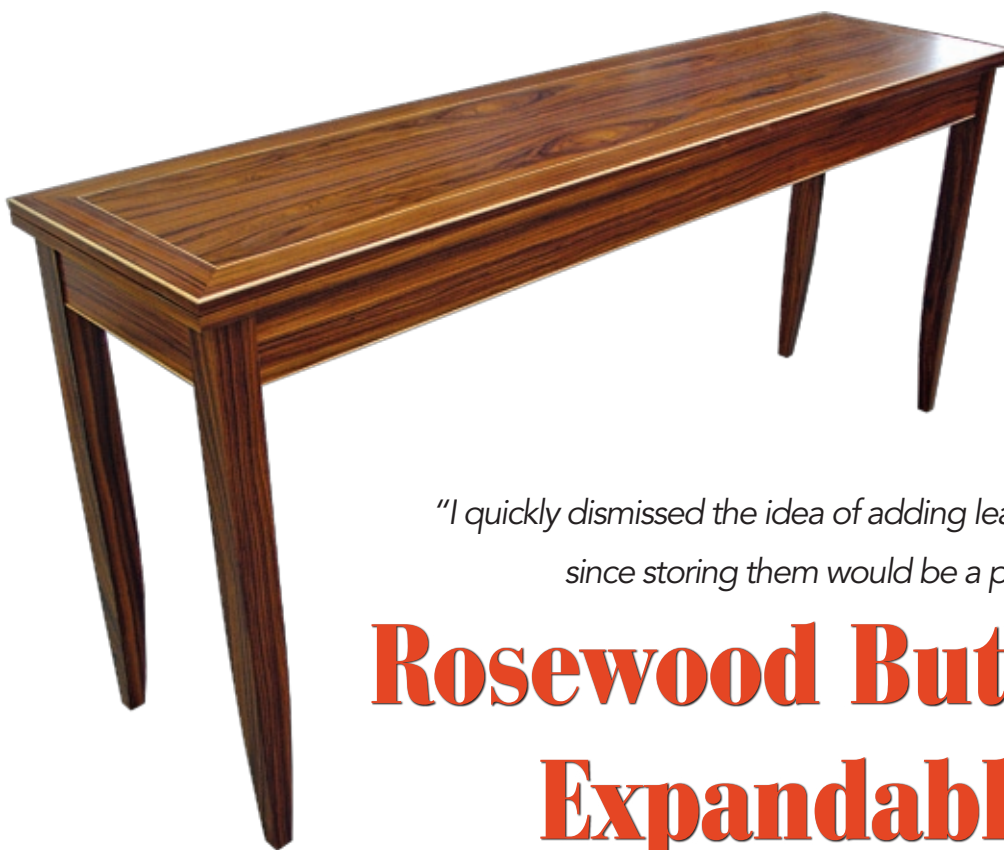
in the Connecticut River valley where I started. Here I began working for Walter Price who hired me as an estimator. Walter was just a nice guy, eternal optimist and very smart. I don't know much about his background except he was pre-med. I do know he taught me a great deal about the business of woodworking. He spent hours teaching me his estimating system. He would take me to meet clients. We would review large projects together deciding if it was worth the effort to bid the project. He taught me how to break large projects in the millions into small workable projects. This was a corporate environment where business was the order of the day and your personal life took a back seat. This was unlike the arts community, which sometimes seems reversed.

It took some getting used to. Walter and I were never close. We both showed up every day and worked. We never spent time together outside of work. We did spend a lot of time in the office bidding work to feed a forty person woodworking business.

It is these four people who have given me the tools to run my business today. I have been blessed to be the student of some of the best people I could learn from. At a point in my career I was able to put all the pieces together to own and operate a sometimes successful and sometimes struggling business. ■



Louis J. LaCivita at age 94  
with his dog Sparky



by Terry Moore

*"I quickly dismissed the idea of adding leaves  
since storing them would be a problem."*

## Rosewood Butterfly Expandable Table

**M**y most recent commission was an interesting one. It was a design challenge, technically difficult and time consuming, but the end product was well worth the trouble. I have clients that live in Miami, but they also spend a lot of time in New York City. They bought a beautiful old apartment on 5<sup>th</sup> Avenue overlooking Central Park which was subsequently gutted and rebuilt top to bottom. The apartment is now beautifully remodeled, but still relatively small.

Their main problem was that since everything was so compact, each room had to have a double use capability. The room next to the living room that used to be a dining room was now an office with one of my desks in it. The desk has wheels on the base of the legs so it can be easily moved to access a pull down Murphy bed. Since the former dining room was now an office/bedroom, they needed the living room to double as a dining room, but did not have the room to house a standard dining table and chairs.

**My challenge** was to design and build a narrow set of nesting console tables that would be placed at the rear of the couch. The largest table was 16" deep x 80" long x 38" high. Under this high console table,

another 16" deep x 68" long x 30" high table is nested, and under that table nests a wide bench for seating. I actually built two benches, one will be part of the nesting set, and one will be stored in the entrance hall until needed.

My main challenge was to design the smaller table which was only 16" wide as an expandable console/dining table. Since the 68" length of the table was long enough to be used as a dining table, I had

to figure out a way to double its width from 16" to 32".

I quickly dismissed the idea of adding leaves since storing them would be a problem. With antique card tables as my inspiration, I finally settled on the butterfly top. Two identical  $\frac{5}{8}$ " thick tops were made and joined like book pages using high quality brass butler table hinges on the inside of the folded pair. When closed, the combined thickness matched the larger console table top which is  $1\frac{1}{4}$ "







thick. When open, the beautiful book matching of both tops creates a striking mirror image pattern.

**There are a number of different ways to support the tops of expanding tables.** One method is a gate leg, which is an extra leg that rests against one of the back legs when closed. The gate leg is usually hinged at the center of its adjoining apron, and swings out to support the butterfly leaf when it is in the open position. I felt that an extra leg would detract from the symmetry and flow of the nesting design, so I had to come up with something that would not interfere with the simple lines of the set.

I also discounted supports that would pull out from the apron, but would leave the top cantilevered and make the table very unstable.

I finally experimented with the full depth of the table's leg and apron assembly expanding. This would be a very stable solution, and though there would be a somewhat uneven overhang of the table top, I felt that this was the best solution to the design problem.

**To expand a table's apron** to double its width, one has to have two aprons of the same size placed back to back with some mechanism that allows them to slide open, yet maintain its strength and stability. I tried mating the two apron pieces using waxed sliding dovetails, but was not satisfied with the stability of them in the open position. I also worried that, to allow for seasonal expansion and contraction of the wood dovetails, they would have to be made loose enough that

when they expand in the summer, they would not bind up.

The best results I found were using full extension European drawer slides. I don't like the thought of using too much "hardware" in my work, but this was the superior solution to the problem, and the slides would only be slightly visible when in the open position. Since these slides are engineered to withstand quite a good load for the packed contents of a large drawer, I was confident it would be strong enough and stable enough to support the split apron of my table in the open position. I used brass window locks to hold the leg and apron assembly secure in the closed position.

**I had a flitch of some beautiful Santos rosewood veneer** with lots of straight grain, but it also had some swirling pattern to it. I determined to use the grain with the most movement in it for the center panels, and frame these with the more straight grain.

From a purely aesthetic standpoint, I dislike the sometimes troubling color contrast you get when you use veneer for the table top, and then some mismatched solid stock for the legs. So I had decided to veneer the rosewood veneer to solid cherry for the legs and apron stock.

It's easy if you say it fast! This set has a total of sixteen legs and — counting the

two extra aprons for the expansion table — eighteen aprons. Each side of each leg had to have veneer glued to it and then be hand trimmed before another side could be glued on. The same was true of the cherry apron pieces. They were veneered to both sides before a curly maple cockbead was applied. This was a long and tedious veneering job, but the finished product has the same matching color and grain pattern throughout the whole project. Visually, the symmetry and balanced result of veneering every surface was well worth the extra effort.

All in all, this commission was a challenge for my design skills, and also very demanding of my technical skills. Nevertheless, it is very satisfying to solve the design problems and rise to the demand of the skill needed to construct this set of nesting console tables. Since I delivered the large console table to New York in early December, I don't yet have a picture of the finished set. I will submit a photo of the complete set in the room for the next issue. ■





by Joe Barry

# Scribing

Once upon a time when the world was young and there was no such thing as a woodworking press, the primary means of learning was oral transmission. The *Art and Mystery* of the trade was not written down and was taught by example and demonstration. In some cases the tricks of the trade had to be “stolen” by the apprentice because the master would not teach it explicitly. It was incumbent upon the apprentice to watch the master and figure out what he was doing. By learning in this way the apprentice made the knowledge theirs. As the Zen proverb states: *When the student is ready the teacher will appear.*

Once the apprentice could cut to a line or a mark, the matter of fits came into play. Many of our machines have the accuracy built into them. Once set up, a table saw will cut straight, square and perpendicular. The challenge comes in dealing with the materials that are not any of those three things!

Doing renovation work means that most surfaces are irregular. My 150-year old Vermont farmhouse is a collection of surfaces that are anything but predictable. In fact, I can confidently state that my table saw is likely the only truly level surface in the house or connected barn!

One of the cheats built into our trade is the use of moldings to hide gaps. Cabinets are made with stiles that extend beyond the box to allow for scribing to fit to the adjacent walls. The common saying is that carpenters work to a sixteenth and

cabinetmakers to a sixty-fourth of an inch. The gap allows quick cutting and fitting without a lot of time consuming fussing with it. Truly sloppy work is ridiculed by other tradesmen with expressions such as *putty and paint make it what it ain't* and other more crude expressions of contempt. However, not all jobs lend themselves to the fast and dirty approach. Some jobs have to fit perfectly. Frank Lloyd Wright did not believe in moldings so walls had to meet ceilings and floors without gaps. This was one of the many reasons for cost over-runs on his jobs. Boat builders have to have tight fits or the boat sinks.

It was as an intern boat builder at The Apprenticeshop that I began to pick up these techniques 30 years ago. This is by no means a complete list of all the ways to scribe — just my list of useful tricks of the trade. I look forward to other contributions in a letters to the editor feature in future issues.

**TRACING** — In the following photos, I'm using a curving white stairway in my house and ¼" birch plywood for the pattern boards. Any scrap that will take a mark can be used — cardboard and rosin paper in some situations.

In talking about scribing the image that comes to mind is scribing with a compass or dividers (photo 1). A compass has the advantage of following intricate contours well because you are dealing with a point source as the tracer. The disadvantage is that the dividers can wobble. Failing



Photo #1 — Scribing with a compass



Photo #2 — Veritas Log Scribe



Photo #3 — Tracing Device



Photo #4 — Use of a straight edge



to keep the dividers perpendicular to the scribed surface will result in irregularities — gaps. Care must be taken when scribing to move slowly and deliberately to maintain the perpendicular attitude. This can be especially important when surfaces are long and irregular in tasks such as scribing logs for a log home. I helped a friend build a log house using 16' logs that were all scribed to fit tightly on the log below. That was a real chore. Veritas has produced a log scribe (photo 2) with leveling bubbles that allow you to keep the compass level and in the same attitude throughout the scribe. Wish I'd had one 20 years ago!

One of the ways to avoid the parallax problem with a compass is to use one of the devices that has a number of fingers (photo 3). I prefer the type shown because the fingers interlock and stay parallel. The cheap ones with small metal rods tend to twist and not stay perpendicular to the traced surface.

There are a variety of other approaches if the surface being scribed to is not intricate. You can use the rule out of your combination square to make marks (photo 4). A piece of scrap can be used as a gauge block (photo 5). Mark the block with a "G" for gauge block and place arrows to show which surfaces are the reference surfaces. Note that marks are made at intervals. Trying to mark full length creates problems when transferring marks from the scrap stock to the finished stock. It is difficult to keep the block on the line as you slide it along.

A method that works well that way is one I learned from Tom Silva by watching *This Old House*. Floor mechanics make a pattern for a linoleum sheet by taping down paper and cardboard and scribing along the leg of a framing square (photo 6). For all of these the pattern board is laid on top of the material being fitted and the marks are transferred by placing the blade of the square or the gauge block back on the drawn line and tracing a line on the opposite edge to replicate the original scribed surface.

Another approach is a scribing device that has two legs. This removes the wobble of the compass by providing more stability (photo 7).

Another trick for maintaining a consistent distance to the scribed surface is the use of a washer. Veritas makes a set of different diameters that is just a spiffier version of this old trick (photo 8).

The pencil itself can be used as a scribing tool. The flat carpenter's pencil rides along better. The regular pencil wants to roll off the small flats and does produce some inaccuracy (photo 9).

**JOGGLE STICK** — A method for scribing very irregular surfaces uses a tool called a *Joggle Stick*. The Joggle Stick allows you to plot the critical points onto scrap stock and then transfer it to the finished stock (photo 10). I know of two forms of this tool. One is tapered and the other is notched. As you can see, you can move it around to position



Photo #5 — Use of a gauge block



Photo #6 — Use of a framing square



Photo #7 — Accuscribe



Photo #8 — Washers. Junk drawer and Veritas versions



Photo #9 — Pencil scribing

it for your convenience. With a very complicated surface you can also use multiple pencil or marker colors. To transfer the marks from the pattern board to the finished piece, you only need to line up the joggle stick with the marks to recreate the position of the point of interest. The tapered version requires lines drawn on both the straight and notched sides.

The straight joggle stick only requires the notch to be traced (photo 11). In the picture you can see that the inside corner and a couple of intermediate points along the curve have been marked. The stick is then angled to find an open spot to plot the outside corner of the step.

**SPILING** — Boat builders use a technique called *Spiling* to create water tight fits of planks. Set your compass or dividers to a dimension that will span the largest space required between your point of interest and the pattern board. Secure the pattern board so it will not move. Boat builders prefer the scratch mark made by dividers because you can more accurately drop the point of the dividers into the mark. I will use pencil for clarity

here. Swing an arc centered on one of the corners required (photo 12).

Swing arcs from all the other points that need to be plotted. (photo 13).

Normally in a case like this curved stair tread I would plot at least 2-3 more points along the curve to get an accurate transfer. For clarity, I will omit them here. After plotting all the points required, mark the pattern board with the setting of your dividers (photo 14). To be even more accurate you should do this first and check regularly as you go to make sure your setting hasn't changed. In using dividers you will have two holes which is much more accurate than a single hole and a pencil line such as I have here.

To transfer the marks to the finished piece, lay the pattern board onto the stock and secure it so it won't move. Check the setting of the dividers. Swing an arc from both ends of the arc on the pattern board (photo #15 & 16). Since the dividers are set to the radius of the original arc the point of intersection will be the original center. Duplicate this to produce all the necessary plotted points for an accurate fit (photo 17).

Remove the pattern board and connect the dots to produce an

Joe Barry is a woodworker in Vermont who prefers writing about woodworking to working in his unheated barn workshop during the winter.

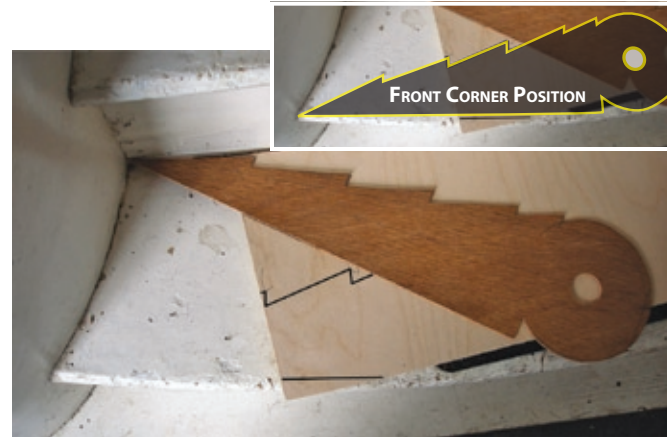


Photo #10 — Tapered Joggle Stick



Photo #11 — Straight Joggle Stick



Photo #12 — Spiling Step #1



Photo #13 — Spiling Step #2





Photo #14 — Marking the setting ("S") of the dividers



Photo # 15 — Swing an arc from one end of the arc



Photo #16 — Swing an arc from the other end of the arc

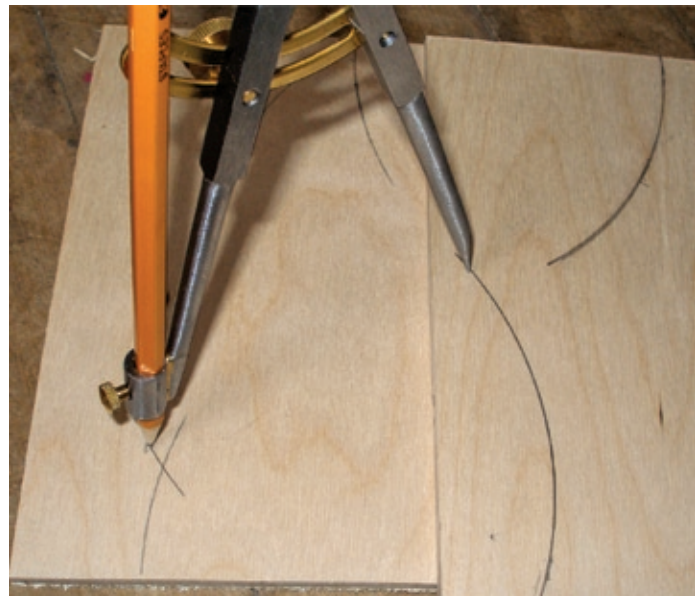


Photo #17 — Plot all necessary points for an accurate fit

accurate fit to the space. For boat builders, the space a plank goes also will twist. With the pattern board secured to the ribs of the boat, this

method will produce a snug fit when laid on the flat planking stock.

For final fitting you can rub a pencil on the end of the material

or insert carbon paper and rub the pieces together to identify the high spots that need paring. Your Dentist does the same thing when you get a filling. Good luck and good scribing! ■

## How do you remove water stains from wood furniture?

**T**here are a few suggestions on how to go about taking care of those nasty rings left on your coffee table. They appear because moisture penetrates the wax on a wooden surface and breaks its bond with the wood.

Try the following: 1) Apply a small amount of non-gel toothpaste to a

damp, clean lint free cloth, 2) Rub toothpaste over the water spot, 3) Remove film with a clean, damp cloth, 4) Dry with a clean, dry cloth, 5) Polish.

A similar solution involves baking soda and toothpaste but caution needs to be taken to use this method only on wood with a good finish.

Another fix for dark wood plagued by water stains: apply brown shoe polish to cover the stain. For antiques, use gentle buffing with a very fine steel wool and a soft wax polish. Follow with another buffing using kitchen paper.

Whatever you try, the trick seems to be gentle and prolonged rubbing. It can take quite a while to remove the stain without harming the wood. – [Gallery M in Half Moon Bay, CA](http://Gallery M in Half Moon Bay, CA) – [www.gallerym.net](http://www.gallerym.net) ■



by Caleb Dietrich

# Planning Your Kitchen Project

Many woodworkers take pride in creating something aesthetically pleasing that is also useful. Our work can be enjoyed and appreciated in the natural flow of everyday life. Whether you are pulling out a chair or grabbing an envelope from a desk, the work of a craftsman can add a joy to a mundane task.

A kitchen project can be one of the most pragmatic uses of your woodworking skills. When finished, it will be the center of your home, and a pleasing area to meet one of your most basic needs. It is among the most rewarding renovations you can do to your home.

Woodworkers accustomed to making freestanding pieces will be familiar with the techniques used to make the doors, drawers, face frames and other parts of kitchen cabinets. In the years

I have been building custom kitchens professionally, and as I completed my own kitchen remodel, I have come up with some kitchen specific pointers for the woodworker who plans to take on the challenge.

Like most projects the groundwork for success is in the design. The process can be broken into two parts. You must design the kitchen as a room in your house and you must figure the construction of the individual boxes.

**Designing the cabinet layout** begins with taking accurate measurements of the space. All features of the room should be mapped out including plumbing, outlets, lights, windows, doors, etc.

With the room diagramed, there is one more important part of the kitchen that the cabinets must work around — appliances. You must choose your appliances and know

their exact dimensions before you begin the design. Be sure to also think about how they interact with the space. Large swinging refrigerator doors and open dishwashers can impede on traffic areas. If not thought out and dealt with early in the design process, appliances can cause big problems in the final stages.

Now that the dimensions of the room and its parts are

in place, you have a clean slate on which you can arrange your cabinetry. Creating a custom kitchen allows you to make it just the way you want, as long as you know what you want. If you don't, the good news is that everyone has a kitchen in their house. Your research could begin in a friend or family member's home. Keep your eyes open and borrow ideas that will work in your situation.

In fact, observing other kitchens can help you make a number of decisions. You might find help deciding on







the layout, the preferred wood species or paint color, and the door and molding/architectural style. It is good to confirm your choices this way as much as possible, because unlike furniture it is not possible to do full size drawings and mock-ups. It can be tough to get an accurate vision of the finished product from a scaled down elevation drawing.

Depending on your experience you may or may not know how to construct the individual boxes. Either way you must have a design that is repeatable for upper and lower cabinets of different sizes. At this point it is smart to use some of the money you are saving by doing it yourself to buy quality materials that will make your life easier. Three quarter prefinished maple plywood is easily joined together and makes sturdy boxes. Face frames can be glued and biscuited or pocket screwed to the box. The doors can be inset or overlay the face frame.

Before the dimensions of the box parts can be finalized, you must choose the drawer slides, hinges and other hardware to be used. Many semi-custom store bought cabinets with inset doors

use butt hinges with awkward magnetic catches to hold the door in alignment. Depending on the look you are after, European cup hinges offer the durability and six way adjustability required for a well used kitchen door. Blum offers them for just about any door situation imaginable. The key is to choose them early and build the cabinets knowing the specs.

In furniture, the measure of a craftsman might be judged on the piston-fit of his handmade drawer, but in a kitchen cabinet it makes sense to use a high quality drawer slide. I used KV 8450 ball bearing, side mounted, full extension, soft close slides in my kitchen. I prefer the side-mounts to the under-mounts especially for inset drawer fronts. While they are not as attractive to some people, I have seen 27" wide drawers loaded with soup cans and still working well — not recommended. The side mounted slides are easy to install and sturdy.

Lazy Susans and trash pullouts are other common add-ons that need to be considered in the design. In addition to them there are countless other options like pullout spice racks, and rotating shelves that can be adapted to a custom kitchen. Do the research and find what works for you.



**The kitchen pictured is the remodel I did in our home** this past summer. The cabinet boxes are made of  $\frac{3}{4}$ " prefinished maple plywood with  $\frac{1}{4}$ " plywood backs. The painted L is made of soft maple, then primed and painted with Benjamin Moore color *White Dove* and M.L. Campbell Conversion Varnish. The upper cabinets are 42" tall, reaching to the ceiling with a custom shop-made crown. The corner base cabinet is fit with "lazy susan" rotary shelves, and the base cabinet to the right has a trash pullout. The island is cherry, finished with M.L. Campbell Duravar.

Any kitchen project will temporarily interrupt life as you know it. When setting out to do ours, I was warned that kitchen projects have "ended many good marriages." With this in mind, I planned to make it as painless as possible. As I would strongly



recommend, I had all the cabinets completed before any work in the house began.

During one of the most intense phases of the project, walls that enclosed the existing kitchen were taken down and a beam was put in the ceiling. My wife used the palm nailer to fasten the joist hangers. With the sense of accomplishment her attitude about the project began to change. I realized that with her involvement she started to take some ownership of the project. This ownership bought me a few weeks of drywall dust and no dishwasher

that I desperately needed to get over the hump. So, take a tip from me and involve your spouse in whatever capacity possible. It is a key to a successful kitchen project.

Now that it is completed we are less likely to go out for dinner. We cook for friends, and tend to circle around the island rather than in front of the television. Each time we do, all the hard work is validated, and I have decided that a lot of happiness can come from being surrounded by things you have made.

*Watch for upcoming articles for the construction of simple cabinet boxes. ■*

## SHARPENING — continued

would decide to interrupt his work to get a better edge.

The second event occurred just two days later, when my guild (Eastern Massachusetts Guild of Woodworkers) toured the Diamond Machining Technology (DMT) factory in Marlborough. There I learned from DMT's founder and its technical director that the life of monocrystalline diamond stones treated with some care should be very long, and the stones stay flat. With a thin plastic sheet on the stone to protect the roller, they can be used with a roller-type honing guide to hold a consistent angle. Their finest stone uses 9 micrometer diamonds, about twice as fine as the grit in an 800 mesh Japanese water stone. I came away convinced that this was a technology worth trying.

*"I have the dubious privilege of having moved my shop four times in the past ten years and I have developed some ideas about how to do that more gracefully." — Frank Woolley moved to Pittsburgh recently but will be sharing his shop experiences with us in future issues [ed.].*

So I bought some DMT diamond stones from Lee Valley, along with the Veritas honing guide that holds the blade at a precise and repeatable angle. They have an eccentric roller adjustment that also allows precise micro bevel angles. I started using them in May, 2005 and have never gone back to my oilstones. Their original honing guide was a little tricky to set to the correct angle, but their more recent Mk. II guide has solved that problem nicely.

My current system for plane irons and chisels has three steps:

- First I use a dry grinder to remove excess metal behind the edge at a slightly lower angle than the angle I have chosen for the primary bevel. A grinding jig holds the blade at a resettable angle.
- Next I grind a primary bevel at the edge with a coarse (60 micrometer) diamond stone lubricated with a little water.
- Finally I go directly to the extra-fine (9 micrometer) diamond stone to add a micro bevel at a 1 degree steeper angle. There is no advantage in going through the intermediate grits (45 and



# Wood Shop Fires

*This will be an occasional column intended to pass on what the title, "Tips, Tricks, & Tools" implies. Some are my original ideas and some are great ideas that I have seen in other shops. Because I spent 34 years as a volunteer firefighter, this first article will deal with shop fire safety.*



**W**oodworking shops have the potential to be fire hazards. Almost all of the materials used in woodworking are flammable and some will self ignite under the right conditions. In addition to the materials used, many of our shops have numerous electrical motors and electrical heating devices. Also because here in New Hampshire we have to heat our shops if we want to work in them in the winter, heating systems are another area of possible fires.

**Good housekeeping goes a long way** in preventing fires in sawdust and dust filled motors, heaters, and machines. A good dust out once or twice a year on a day when you can open the doors and windows helps keep the dust level under control. I like to use my shop vac with the hose on the outlet and after several passes around the shop, most of the dust has settled on the floor where it can be swept up or picked up using the dust

collector. Be sure to wear a high quality dust mask when doing this. I then turn on the powered air filter and leave the doors open and in an hour or so, the air and the shop is clean. Frequent shop inspections by visiting woodworkers is the best incentive that I know to keep a clean working environment!

Rags used in applying finishes, especially those that are oil based, is an extreme hazard. They can and will self ignite. This is not an old wives tale. I know personally two people whose shops burned to the ground because of linseed oil soaked cloths that were not properly disposed of at the end of the day. I place mine in a sealed container that is kept a good distance from any of my buildings. The sealed container deprives the rags of any additional air and should suffocate a fire should ignition occur. Also, being away for the buildings, it will just burn itself out without spreading fire to anything else.

**Flammable liquids and vapors** are a major part of wood finishing. With the exception of the new water based finishes, all the finishing products that are used are flammable and reach potentially explosive state when sprayed. Keeping containers covered when not in use and having proper ventilation when actually in use greatly reduces the fire hazard of these products.

Spraying flammables requires extreme caution and great care must be taken to create a safe work area with good power ventilation and air filtering. Ideally, spraying would be done in a separate building. Or to quote Andy Charron, a spray finishing expert from Windsor, VT — *Why not switch to water based products? They are nonflammable, non-toxic and odorless. I have been using them almost exclusively for more than six years.*

I find that the use of disposable paper towels reduces the number of rags that are in the shop and I always have a clean towel

25 micrometers), since an entirely new surface is created by the micro bevel.

I only need to regrind the primary bevel when the micro bevel becomes so wide that it takes too long to hone. Similarly, dry grinding is only needed when the primary bevel takes too long to hone. The dry grinder is really not necessary except for initial gross reshaping of the tool – the primary bevel is ground quickly on the coarse diamond stone for all blades except the thickest mortise chisels.

My primary objectives in making this



DMT Monocrystalline Diamond Stone

change were to reduce the time spent sharpening and to reduce my tendency to keep working when the blade was obviously in bad need of re-sharpening. This system has met those goals. The time saved is partly from the inherent low maintenance of diamond stones, partly from elimination of time wasted trying to relocate the correct honing angle, and partly from accepting the fact that an unpolished edge can cut as well as a mirror-like edge.

After honing on the extra-fine diamond, the micro bevel can be polished on an Arkansas oil stone or a hard ceramic stone, but I have not seen enough difference in performance to justify the extra time for chisels and plane irons. I suspect that a polished edge would stay sharp longer, but I believe the time saved in less frequent



Veritas Mk. II Honing Guide

sharpening would be less than the time required to polish.

For carving tools I still use a variety of wood wedges as angle guides while honing on diamond stones, and I polish on wet-dry papers up to 2000 mesh. I am still looking for better ways to be able to reset the honing angle for carving tools, and would appreciate your suggestions. ■

to work with. An additional safety feature of paper towels used in spin finishing when turning is that if the towel is caught by the turning, it will just tear and not drag your hand into the spinning piece.

**Electrical fire safety** is primarily a matter of using the proper circuit breakers, wire, and outlets sized to the requirements of the machine to prevent overheating. One error that is commonly made is to use the wrong plug and outlet combination for the type of circuit being fed.

There is a NEMA (National Electrical Manufacturers Association) plug and outlet for each voltage and amperage that is used in the shop. A 120V plug is different than a 240V plug, even though both are rated for 20 amps. And a 20-amp plug is different from a 30-amp plug even though both are rated for 240 volts. By using the properly configured plugs, outlets, wire, and circuit breakers sized to the load of the machine or tool, overheating should become a non-issue. It will also prevent plugging a tool designed for 120V into a 220V outlet.

I once loaned a really nice Milwaukee Hole Shooter to a fellow tradesman to finish a job in a new restaurant. The electrician had wired a 220V line to a 110V outlet. Bye, bye Hole Shooter!

When a shop fire does occur, we need to be prepared. Every shop should have telephone. If you don't have a phone wire going to the shop, there are now cordless phones designed especially for the harsh shop environment. The GE model that I have has a charger/holder for the shop and



separate transmitter for the house. It even comes with an extra battery that is kept in the charger. In the event of a fire, the first thing to do is call 911 and then think about what you can do to try to put out the fire yourself without putting yourself in danger. Don't take unnecessary risks!

**All three common classes of flammables** are found in wood shops. Class A is ordinary combustibles such as wood and sawdust. Class B includes flammable liquids and gasses such as varnish, shellac, and vapors from thinners. Class C is electrical fires in fixtures, motors and wiring. Each requires a certain type of extinguisher. I want to say at this point that those small disposable fire extinguishers are not worth the space they occupy. They may give you peace of mind, but they won't do much fire fighting. If you are going to spend money on a fire extinguisher, get one that is big enough to do some good.

**For Class A fires**, I prefer a two and a half-gallon pressurized water/foam extinguisher filled with water and dish detergent and pressurized with compressed air. Simple and very effective. Plain water will not penetrate a pile of sawdust as the surface tension of the water prevents it from soaking in.

You can use commercial foam products, but dish detergent works nearly as well and is easily refilled. This can be either a standard APW (air pressurized water) or a model with a special foam tip that injects air into the stream to create a fire smothering foam.

Either will work, but the foam model will do a better job. APWs can be picked up at yard sales and flea markets for \$10 and up. They are made of stainless steel and if the valve will hold pressure, they should be fine. You can test them at home by filling them with water and pressurizing with air and practicing. Remember,



because they are filled with water, they should not be left in an unheated shop during the winter.

**For Class B and Class C fires**, I like a so called *Tri Class* dry chemical extinguisher of the ten pound size.

This will do a lot of fire fighting before it is empty. I get the units that are rated 4A-60B:C. While this does have a rating for class A fires, it is not nearly as effective as the APW on them. However, it is the only safe extinguisher to use on Class B and C fires.



These extinguishers come in various shapes and physical sizes. I like the short fat ones, as they will sit on the floor without tipping over. Be sure to get one with metal valves and be sure it is refillable. Once you use any part of a dry chemical extinguisher, it must be refilled by an authorized service center as the dry chemical will get into the valve and prevent it from sealing closed. Refilling is relatively inexpensive and there are service locations in almost any city.

Fire extinguishers should be placed where they can be easily reached and near the doors is usually a good location as you can grab one on the way out. They need to be checked from time to time to make sure that they are still holding pressure and good ones have a pressure gauge which is easily read. Dry chemical extinguishers should be picked up and shaken gently back and forth to prevent the powder from settling and caking in the bottom. The APWs only need to be picked up to verify that they have water in them and that the pressure is within the proper range.

If you need any more information on the things mentioned in this article, feel free to contact me at [cpjukj@metrocast.net](mailto:cpjukj@metrocast.net).

And lastly, remember that it is a lot easier to prevent a fire than to try to extinguish one after it has started. ■



# Members Gallery

## Bob LaCivita Northwood, NH

GIANT RED CEDAR LOG in a flat car approximately 10 ft. diameter X 25 ft. long. The photo was taken about 60 miles east of Seattle, WA at the Northwest Railroad Museum in Northbend, WA.



## John Whiteside Freemont, NH

FLAMED CHERRY GUITAR — Pictured is my most recently completed guitar, No. 3. It is a steel-string, 12-fret 000 guitar, meaning it is designed to sound loud, clear, and fast — in other words, a finger picker's guitar. I am happy

to report, both from my own experience and

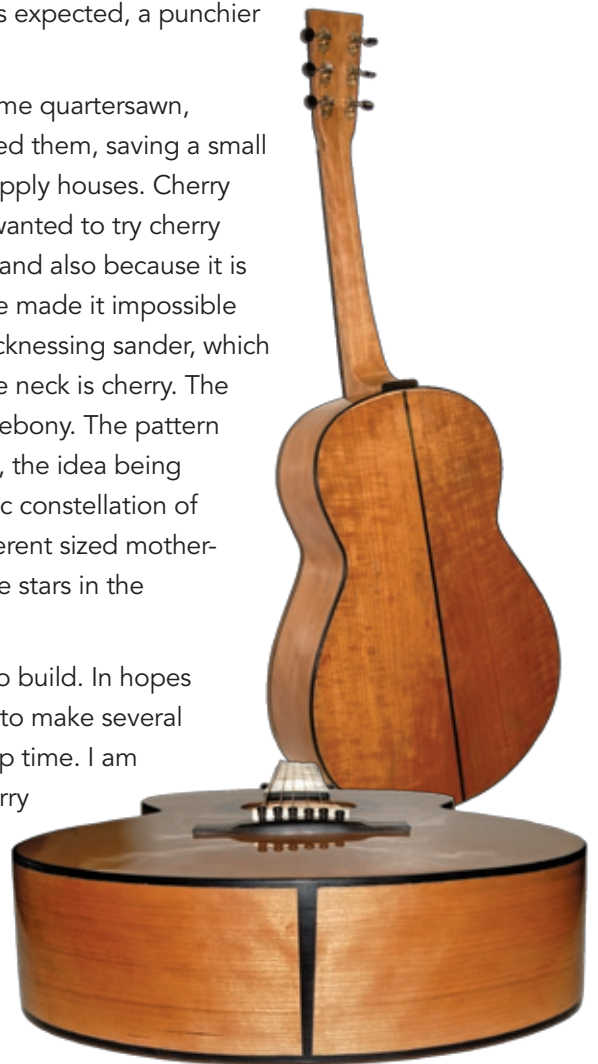
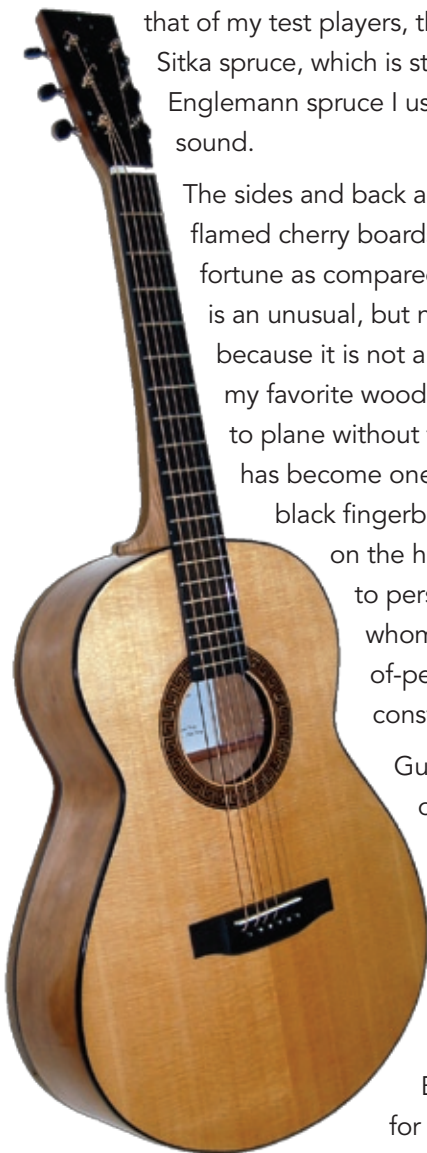
that of my test players, that it is. The top is

Sitka spruce, which is stiffer than the soft

Englemann spruce I used on No. 1 and No. 2, and gives, as expected, a punchier sound.

The sides and back are flamed (figured) cherry. I found some quartersawn, flamed cherry boards at Highland Hardwoods and resawed them, saving a small fortune as compared to ordering through the lutherie supply houses. Cherry is an unusual, but not unheard of, choice for a guitar. I wanted to try cherry because it is not a rare, endangered or exotic species, and also because it is my favorite wood for furnituremaking. The flame figure made it impossible to plane without tearout, so I resorted to buying a thicknessing sander, which has become one of the favorite tools in my shop. The neck is cherry. The black fingerboard, binding, and headplate are all ebony. The pattern on the headplate is the constellation Scorpio, the idea being to personalize all my guitars with the Zodiac constellation of whomever the guitar is made for. The different sized mother-of-pearl dots reflect the magnitudes of the stars in the constellation.

Guitars now take me about 200 hours to build. In hopes of speeding things up, I have started to make several simultaneously, which saves on setup time. I am currently working on two more cherry guitars, one like this with a stiff Sitka spruce top, the other with a soft Alpine spruce top. In theory the first will sound best playing Bluegrass, the other more mellow for soft, mournful love ballads.



# Members Gallery

## Caleb Dietrich Portsmouth, NH

SHAKER SIDE TABLES — Curly maple with black walnut pins and knobs. Hand cut joinery. The knobs were turned by Jon Siegel. Colored with Transtint "Dark Vintage Maple" dye.



## Roger Myers

Stratham, NH

PORTSMOUTH STYLE TABLE — Mahogany with maple banding and ebony and holly inlay. The table was made with all hand tools during a workshop with Alan Breed.



## Chris Kovacs Groton, MA

CURVED BENCH — This bench was commissioned by the Isabella Stewart Gardner Museum in Boston in 2000. This is one of two benches that were made for visitors to use while enjoying the paintings and artwork in the museum. The bench has a slight curve intended to subtly direct the visitors attention to a particular painting in the gallery.

This particular bench is made of cherry and the inlaid leaves are tiger maple. The bench was finished with numerous coats of Waterlox. The curved aprons are made of bent laminations and mortised into the corner legs. The middle legs are joined to the apron with a bridle joint. The individual leaves and banding around the legs are approximately 1/16" thick. I received this commission after completing several furniture and cabinet pieces for the museum curators own residence.

