

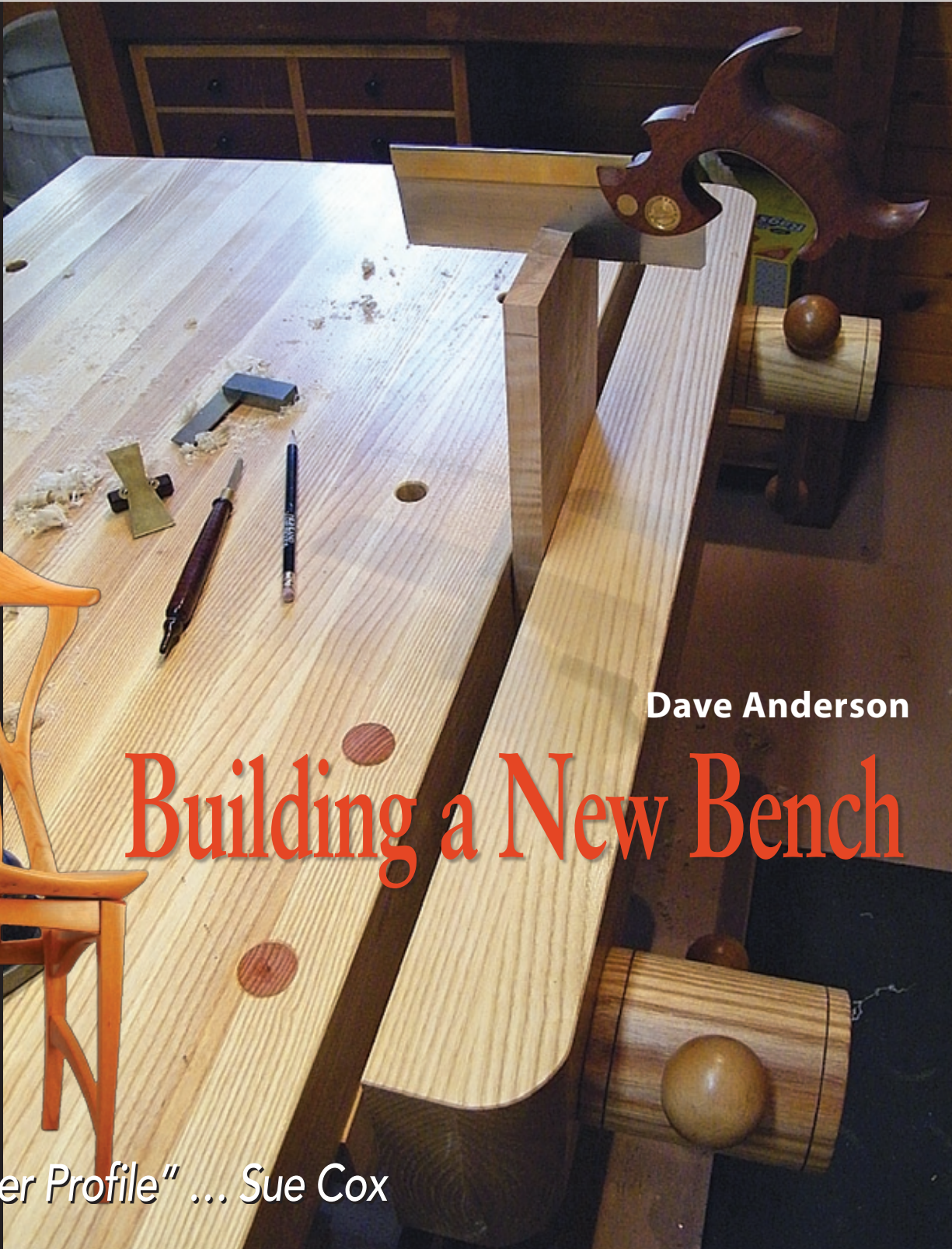
Vol 1 No 2
Spring 2009



The Journal

of the Guild of New Hampshire Woodworkers

Dave Anderson
Peter Breu
Sue Cox
Mike Cyros
Regis DeAndrade
Tom Fama
Peter James
Marty Milkovits



Dave Anderson

Building a New Bench

"Member Profile" ... Sue Cox



My Journey



The Journal

features

- 7** Cutting with Carbide!
BY PETER BREU
- 8** Building a New Bench – Part II
BY DAVE ANDERSON
- 10** Mortise and Tenon Joinery
BY MARTY MILKOVITS
- 13** Double Your Jointer Capacity
BY TOM FAMA
- 14** Reclaimed Lumber
BY REGIS DEANDRADE
- 16** Altus Ornamentus
BY MIKE CYROS
- 18** Belts, Pulleys & Vibration
BY C PETER JAMES

potpourri

- 2** Member Profile
- 4** Q&A
- 6** Sunapee
- 20** Members Gallery

I started making furniture in nursery school. My mother claims I folded and taped paper to make an entire house full. Despite such an early predilection, my path to professional furnituremaking was not a direct one. Insatiably curious, my desire to know how everything worked lead me first to physics, which I studied at the University of New Hampshire. Though a scientist at heart to this day, I also found my reveling in the unlimited inquires of philosophy.

While working towards degrees in both, I kept finding myself filling up any empty holes in my schedule with art classes. Though I was determined to study philosophy at the graduate level, my first

woodworking class left a humming in my hands that couldn't be ignored. Hand planing the edge of padauk shelves, I decided I needed to listen to the call to make things and go to art school after graduation.

At MassArt I studied sculpture and formed my design aesthetic. After one crit, during which one of my tables was reviewed and the suggestion was that, if I had made 50 of them, cut them in half and glued them to the ceiling I might have said something, I entirely rejected the tradition of content driven art. Instead, I decided my goal was to put some beauty back in our everyday lives. I wanted to make furniture that was both crafted so



Stool based on the curves of the pelvis. Materials are ash, wenge and leather. Each side is a pair of layers of three laminated 1/16" veneer separated by an additional layer of increasingly thick ash strips to created the tapered lamination.



Member Profile introduces a member of the Guild — professional woodworker or otherwise — which I hope you find inspiring — **editor.**

well you could still feel the maker's hand and whose design captured a moment of beauty in the world.

But building furniture still felt like too much fun to take seriously and philosophy still intrigued me. So, after giving birth to my first daughter, I ventured on to philosophy graduate school where I spent five years working towards my Ph.D. in the philosophy of perception, much of my work interdisciplinary with the department of cognitive science.

But with two small children and a dissertation looming, the realities of parenthood and the isolation of academic life only reinforced the itching in my hands to make things. While building a detached office to study free from my children's pleas, I realized that I enjoyed the building more than the studying I was doing the building for and didn't want a life locked away from all other people. I had taken abstraction as far as I could, and instead of reveling in the truths found in its rarefied purity — I missed what had been left out. I missed the specific beauty of the here and now. Of this curve on this branch, of that blue, of just the way this shadow fell along this shoulder.

When an opportunity came to move a few states away in NH, I took the chance to ditch academic life and try to make it as a furniture maker. I built a house in Mason, NH in 2006 with an attached shop, in which I've been making furniture since.

Business — My business is slow at the moment. So far I've only worked through commissions. So someone will come to me with a request for a specific piece. We'll talk about what they want. I'll go away and sketch

up a few options — we'll meet and decide which if any option they like — maybe make some changes, etc. The laminated stool isn't a commission but executed on speculation. I just feel in love with the curves. I had been working with Jere Osgood and he had suggested I try a stool. This was my attempt. In reality I'm just getting started as a professional. I do what I can while raising two girls.

Design Philosophy — I aim to design furniture that captures the essence of something in the world that caught my eye. So I'm constantly on the lookout for beautiful curves—joints—structures. I tend to be most attracted to lines from the body. There's just so many amazing things there. We often slide through our days without stopping to notice all the beauty that surrounds us. I hope my furniture can capture a moment of beauty and hold it up for more people to notice — like a photographer that frames things always around us to make us stop and take look for a second.

So, for me the form is the fundamental element in design. The surface needs to complement it — the grain accentuating the curves, etc. But most often the surface and form are left bare. No extra frills.

I do also spend a great deal of time working with the anatomy of the user to make sure that the piece foremost functions. The stool, for instance, was designed with the seat at a 10° angle and low to the ground to enable to user to sit with their pelvis tilted slightly forward allowing their backbone to maintain a shape much more like it does while standing. Most chairs force the spine to curve slouching the user forward.

Goals — For any given piece my goal is to put a little beauty back in the world. We tend to surround ourselves with mass produced items most of which are designed with only ergonomics and function in



A chair (actually a pair) based on the muscles of the neck. It's made of cherry and took me too long to admit. Learning experience. The back legs and outer crest rail supports are one piece that is a compound bent, tapered, twisted lamination. Ohh what fun!

mind. Many of us are attracted to antiques, I believe partly because they were built in a time when there was still a preciousness to each object you lived with. When each item was made by hand, they were made with quality. Not only were they built to last but they were built to be lived with. To be used. So how they felt in the hand was as important as how they worked.

I hope to build furniture that feels good to live with — chairs that not only hold you up and do it comfortably but also feel good to the hand and eye. I hope to bring a little preciousness back to the everyday.

Professionally, my goal is to be able to spend my days bringing things from my mind into this world. Building one of a kind or small run production work selling directly to clients and through galleries. Being able to do what I love and still feed myself would be about all I could ask for. — **Sue Cox** www.suecoxdesigns.com ■



SANDING FOR WOODTURNING — Please discuss sanding for woodturning, that is, ways to avoid circular scratches under power which are hard to remove. — GARY BASHIAN

DAVE EMERSON REPLIES: Turning well involves lots of practice, and so does sanding on the lathe. I use 80, 120, 180, 220, 280, cloth paper, an investment. I use the almost worn out pieces in between for each grit. Too much pressure results in scratches that are hard to remove. Maple is forgiving. Cherry is not. My results vary depending on how much I've been turning and have the feel of it.

JON SIEGEL REPLIES: There are two possible causes to your problem: 1. You are skipping grades. Try to take small steps as you work down to finer grades. For example do not try to work from 80 to 150 in one step, use 100 or 120 in between. However it is usually not necessary to take every step from 120, 150, 180, 220. Sometimes I go from 120 to 220 in one step, but it varies with different types of wood. 2. You are not inspecting well enough after each step. It is absolutely necessary to remove all the scratches from the preceding grade before moving on to the next one.

MIKE CYROS REPLIES: I use different methods depending on whether or not I am sanding spindle turnings or bowls. What they share in common is that I try to get a surface as smooth as possible off of the lathe tools before sanding. I never try to use sandpaper to "fine tune" the turning, but rather to take the tooled surfaces to a fine glass smooth finished surface. Also, I pay close attention to leave the sharp transitions of the turning such as cove and bead edges on a spindle, or a turned foot on a bowl.

Again, in both cases, I start with either 80 grit or 120 grit paper as the first sanding grit depending on how well I have completed the turning from the tools. I

then progress through the grits from 80, 120, 180, 220, 320, 400 and sometimes even 600 grit depending on the finish I desire. What is most important is to be sure that you remove every scratch that you can see from the previous grit, and if you haven't been able to, take a step backwards and go back a grit until that scratch is removed. Sounds tedious, but it is much quicker to do it this way, rather than to progress all the way through your sanding to your finest grit, only to see that you've enhanced and polished deeper scratches that you left from previous grits!

For spindle sanding, I prefer to reverse the direction of the lathe when possible for two primary reasons. The first is safety. When having the turning spin away from you (relative to the top surface of the turning), if you run into trouble with sand paper slipping, it will be pulled away from you out of your hand rather than the skinned knuckle (or worse) alternative if having the sandpaper wrap around the turning and pulling your finger in giving it a good sanding rather than your spindle.

The second is dust (another important safety topic). Note that with the lathe direction reversed, you are sanding on the top of the turning, and the dust is therefore projected mostly away from you rather than up and at your face. I always use a dust collector behind my lathe and this method of sanding actually directs the majority of the sanding dust directly into the dust collector.

Moving the sandpaper back and forth along the axis of the lathe also minimizes grooving.

In the case of bowl sanding, I use a right angle variable speed drill with a

Velcro sanding pad attachment that takes either 2" or 3" sanding discs. I prefer the discs with the scalloped edges to avoid accidental ridging from the edge of the sand paper. As with spindles, I work my way through the grits as mentioned before, being sure not to progress to the next grit until I am sure that I have equalized all of the scratches. I run the lathe at a relatively low speed (well below 500 rpm), and keep my right angle drill/sander also running at a slower speed.

With bowl sanding, higher speeds quickly lead to heat which dramatically shortens the life of your sandpaper. I can speak from experience, sanding with faster RPMs does NOT make the sanding go any quicker, in fact, I'm convinced it slows you down! As with spindle sanding, I am moving the sanding point of contact back and forth to create an even and random scratch pattern that can be removed by the next grit.

Finally, a word about choice of sandpaper. To me, I think this is a simple case of "you get what you pay for". Buy cheap paper, and you'll go through a lot of it and frustrate yourself and your results. Buy quality paper, it will last much longer and you won't be frustrated with the results. My absolute favorite paper for spindle sanding is the adhesive backed rolls by *Carborundum Abrasives*. They are available in 3" x 1 yd rolls in 80, 120, 180, 220 and 400 grit. I cut off a 4" length and fold it back on itself (it self sticks) to wind up with a two sided piece of sandpaper 2"x3" which is perfect for smaller spindles. The resultant two sided paper can be flipped back and forth, and the double-sided grit means it doesn't slip out of your fingers, and this paper lasts and lasts! It

Q&A has run continuously in *The Old Saw* and now *The Journal* since November, 2004. More than 100 questions have been answered by many experienced guild members and supporters. **Q&A has now been archived in a searchable form on the Guild web site.** Give it a try by going to www.gnhw.org, click on *Publications* and then the *Search Archive* link. It is a terrific resource! — editor

is available from Woodcraft among other retailers and online suppliers.

For bowl sanding, I prefer the green heavy cloth backed sandpaper with the scalloped edges. These are typically sold as “Green J-Flex Discs” or “Hi-Per Green Wave Discs” by the various turning supply catalogs. They are available in 80, 120, 180, 220, 320, 400 and 600 grits, and I use all of them.

Happy scratch-free sanding!

TOOL STEEL — What are the differences between O1 and A2 tool steel? — LOU YELGIN

JON SIEGEL REPLIES: I assume that by asking this question, you want to know what kind of steel to purchase to make your own cutting tools. It is important that you choose a steel that you can heat treat yourself with the equipment you have, (hardening and tempering). That’s why I use W1 or O1 for the chisels I make. These can be heat treated with a torch (to 1440°F), do not require a furnace, do not require prolonged heating time, and can be quenched directly to room temperature. The entire heat treating process takes only a few minutes. For more information see my article in the April 2007 issue of *The Old Saw* — Woodturning Chisels You Can Make.

GARRETT HACK REPLIES: O1 is a common high carbon tool steel, similar to what you might find in an old chisel or plane iron. A2 is a steel alloy increasingly used in high-end planes and chisels such as by Lie-Nielsen and Lee Valley. A2 is tougher than O1, so an edge lasts longer with the trade off of some chipping. A2 is typically cryogenically treated, and yes, it makes a difference. Supercooling contracts the steel into a more dense structure, creating a more durable edge. No one steel can do it all. I like a high carbon steel for my smoothing planes because it takes a keener edge and resharpenes so easily. A2 holds its sharpness longer, especially against abrasive woods and other materials, but it takes more time to sharpen.

ABRASIVE PAPER FOR SHARPENING — When using abrasive paper on a substrate for sharpening, does it matter if the paper extends

to the edge of the substrate or leave a border of ½” to 1” — AVRUM SILVERMAN

GARRETT HACK REPLIES: What matters most is keeping the back of your plane irons and chisels flat on the sandpaper. The amount of border is a secondary issue. I find it easier to keep the pressure on the blade “flat” with no border, merely because I can better see what the overhanging part of my tool is doing.

SANDING SEALER — What is the best sanding sealer? And how often should it be applied during the finishing process? — BOB DEANGELIS

BJ TANNER REPLIES: Sanding sealer is the first coat of finish and is the base for your top coats. Its purpose is to seal the pores of the wood while promoting adhesion and base for the finish coats. Sealer can be a purpose mixed solution or simply a diluted application of the same material as the top coat. Sealer coats are sometimes referred to as a spit coat due to its thinned application.

Shellac is also an excellent sealer that may be used under any finish. When using shellac I typically use between a half to one pound cut.

Sanding sealer is only applied as a base coat and should be lightly sanded after drying to remove any fuzz and minor finish imperfections. Use fine sandpaper, at least 200 grit, and do not sand through the sealer. If you do sand through the sealer, reapply sealer and lightly sand again. If the wood grain is coarse a second coat of sealer may be prudent. It should also be noted that sealer is applied after stain or dye. Sealer would prevent penetration of the stain or dye into the wood.

ERIC JOHNSON REPLIES: The best lacquer and sanding sealer that I have ever used is from C.E. Bradley. They are located in Brattleboro VT — 802-257-7971. I have found that you don’t need anymore than one coat of sanding sealer. Start out with one coat and when it’s dry you can sand it flat with 400 grit wet and dry sandpaper. Sand it dry and it will make a very fine powder. It is extremely easy to sand. Most time I don’t use a sanding sealer at all. I



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

Membership is \$30/yr
Sept 1–Aug 31. Applications are available at www.gnhw.org and should be mailed to DJ Delorie, 334 North Rd, Deerfield, NH 03037.

“The Journal” is published quarterly.
Membership also includes “The Old Saw” 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, Going Pro, Hand Tools, Right Brain Woodworking

www.GNHW.org

spay two thin coats of lacquer and then after a couple of hours I can sand it back and then next few coats goes on very nice. Hope this helps.

GARY WOODS REPLIES: As a general rule, the best sanding sealer would be the one that comes specifically with the brand of finish that you purchase. For instance, lacquers come in many different formulations and many brands will have a separate sanding sealer that is meant to complement their finish.

Dewaxed shellac is often considered to be a universal sanding sealer. If your favorite finish does not have a
continued on Page 6

76TH ANNUAL CRAFTSMEN'S FAIR



League of N.H. Craftsmen

wide eyed as the woodcarver carved an owl's head in less than two minutes. Wood chips were flying off the lathes as fairgoers gathered round. Then the luthiers picked up their instruments and began a song. People were looking at the raffle items and reaching for their money.

I looked at the mountain and the many booths filled with such talented people displaying their work. I didn't want to be anywhere else. — **Al Hansen.** ■

Contact: Al Hansen: 603-927-4417
or a_hansen@mcttelecom.com



The League of NH Craftsmen's Fair is one of the finest, most prestigious craft events in the country today. This annual nine day event features both traditional and contemporary fine craftwork by juried members of The League.

The Fair is held at the beautiful Mount Sunapee Ski Resort in Newbury, NH. The League provides the Guild with a large tent at a choice location near the main entrance. The Guild provides woodworking demonstrations for the fairgoers. Furnituremaking, woodcarving, woodturning, instrument making, finishing, inlay and other skills are on display.

Guild volunteers also sell raffle tickets for woodworking items donated by members. The raffle is the main source for Guild scholarships each year. Volunteers

also promote the Guild, answer questions and sell memberships and clothing.

Planning for this year has begun and some of you have already signed up. We still need members to donate items for the raffle, demonstrate their woodworking skills and help run the booth. We need help Friday, July 31 setting up the booth. We need ticket sellers. Best is if you want to help and can do so as needed. If you can only volunteer certain days please state when and we will do our best to accommodate you. We may need help picking up donated items and getting them to the fair.

The Guild is a volunteer organization and the Sunapee fair is one of the best opportunities to support it. I sold tickets last year for the first time, having just joined the Guild. I looked around as two little children with Mom and Dad were

Q&A — continued

complementary sealer, dewaxed shellac is a good choice.

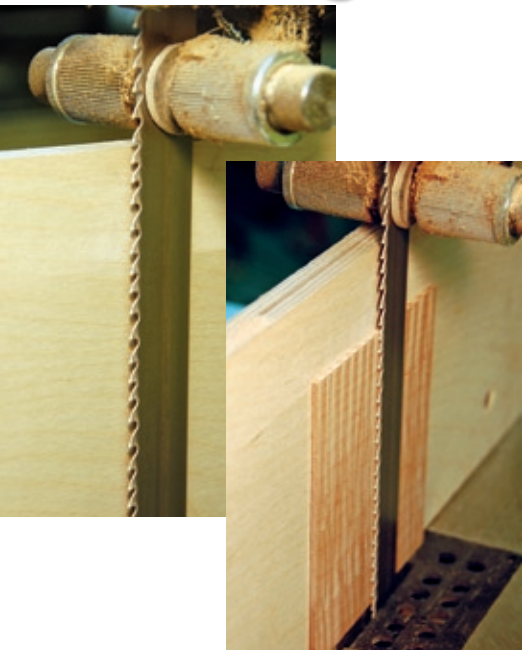
Another option that many finishers employ with good result is to use their selected finish and thin the first coat with the recommended solvent by about 25%. This provides good soaking into the grain before full bodied finish coats are applied. Soft film finishes like oils

are generally meant for the "in the wood" look. Sanding a first coat of oil into the wood and wiping off the excess will seal the wood pores.

Sealers are manufactured for varying purposes, such as grain filling, flexibility for the topcoats and, of course, ease of sanding. Used alone, they might provide a quick build and an attractive finish

in several coats, but this is seldom a good idea because they do not have the durability that topcoats provide. Because sealers are meant to be a foundation for the topcoats, it is best to use only one or two coats before top coating, and it is not a good plan to try to sandwich them between layers of topcoats. ■

Cutting With Carbide!



While working on a recent project, I was reminded of the delight of using sharp carbide tooling to do the job well. Three different carbide or carbide tipped cutters stand out as new and wonderful in my shop. Starting with the big item, my **Lenox Promaster III carbide tipped resawing bandsaw blade** is a wonder. If you run a Delta (or equivalent) 14" bandsaw, this article may serve as an incentive to get a bigger saw that can handle the tension necessary to run such a blade. My old Delta did good service for 20 years, but I was never able to do wide resawing with much accuracy.

Hours of tuning, new blades, new jigs, and new guide bearings — nothing seemed to make much of a difference. On my Minimax MM16, this blade cuts like a dream. For the first time I have been able to resaw boards that require only minimal resurfacing before making the next cut.

How much of this is the blade versus the machine? While waiting for this blade to be made up, I used the *Woodslizer* from Highland Hardware to do some resawing — the same blade I had on my Delta. The results with the new saw, while certainly better than on the Delta (due mostly to the increased tension I'd guess) were

not nearly as good as with the Lenox blade.

As an example, I just resawed some 6" maple to make a curved apron on a desk — see photos. Cut after cut at 1/10" came out so well that I did not need to resurface them before gluing them together.

OK — the downsides. This blade has a wide kerf (0.035") so that each of those cuts in my maple ate up a lot of stock. The other downside is the cost. For my saw the \$230 is quite an investment. All indications are that the blade lasts long enough to make it well worth while, but I certainly thought twice before making the order. After a year of use though I am certain it is worth it.



ON TO SMALLER THINGS. A **single flute solid carbide counter sink** has been making me smile every time I use it. I have a collection of steel countersinks of every different configuration, but I might as well now donate them all to the next Guild auction. This countersink is so sharp that it cuts even the hardest woods like butter leaving a perfect opening for the screw head. Do yourself a favor and try one!

Lastly, a **set of carbide tipped router bits**. I'll have to swallow my pride a bit here to admit that I got talked into buying a set of 50 bits for \$50. Made in China of course. A buck a bit. Why did I do it? In part because I simply got excited by the price, but part of me was simply curious after paying more than \$30 each for some of the same profiles made by the big names (Freud, Bosch, CMT, etc.).

How would these cheapies work? The short answer is they are amazingly good. I have used ten or so of the set and have

Sources of Supply

- Bandsaw blade — Iturra Design
888-883-8064
- Carbide router bits — R&R
Wholesalers in Hooksett, NH — Rt.
3A — Quite an amazing store!
- Acid dip — Moon's
Saw Shop Supplies
www.moonssawandtool.com — 800-857-8727
Don't bother getting the kit. All you need is
some PVC pipe and an end cap!



not been disappointed. They are sharp and work well. They are obviously not the same as the best quality bits — short shanks and thin carbide are the obvious differences. But at \$1.00 each I didn't hesitate a second to customize two of them when I needed a slightly different profile. Of the 50 bits I am sure that there are some I will never use, but I am equally sure that I will use many of them and get my money's worth out of the set.

SPEAKING OF SHARP, I wanted to remind folks of the **acid-dip sharpening** that I talked about a few years ago. Dave Anderson wrote in the last issue that he sends out his files. I was just reminded of how easy and good (and cheap!) it is to do them yourself in your shop. I just sharpened several old files of my father-in-law's as well as my "disposable" planer knives.

I'll tell you more about the process in the next issue, but you can contact me directly if you want to get started now! — Peter Breu 603-647-2327
peterbreu@comcast.net. ■



A personal Journey

Part II

Building a New Bench

Photo 1 — Face vise & board jack

In the last issue of *The Journal*, I detailed my design process and the criteria that were important to me in building a new bench. Most of you are aware that I'm primarily a hand tools woodworker and my design choices reflect that orientation. I will reiterate the thesis that whether you work with hand tools, power tools, or a combination of both, the bench is the single most important tool in your shop. No matter how you produce the parts for a furniture project, at a minimum you will need the bench for use as a clamping center and assembly table. It is to your everlasting benefit that your bench design ensures that you can accomplish these tasks as efficiently and easily as possible. Your success depends on your bench design choices and the hardware and fixtures with which you outfit that bench.

I chose a **wooden twin screw face vise** with $2\frac{1}{2}$ " between the screws as one of my two main vises — see cover photo. With $34\frac{1}{2}$ " long jaws, I use this vise for supporting shorter boards when edge planing, and in conjunction with either my **board jack** or a **holdfast** inserted in the far leg of the bench. It can solidly support boards over 8 feet long — see photo 1. Notice the groove in the lower stretcher of the bench which allows the board jack to slide back and forth to adjust for various board lengths. When placed

between the screws, you can dovetail boards over 24" wide, a boon when hand cutting the dovetails for a casework carcass. With the screws having a pitch of only three threads per inch, the jaws open and close as rapidly as any quick release metal vise. Only the shoulder vise on a European style bench allows you the same unobstructed ability to dovetail long and wide pieces. The guide bars on all of the metal face vises interfere with clamping long boards or wide boards. Wide twin screw vises whether wood or metal don't have this limitation.

On the diagonal far side of the bench I installed my **Emmert K-1 patternmaker's vise** — photo 2. As shown in the photo, it allows the jaws to be tilted out of square and the vise to be rotated 90° to get the work pieces at a higher working level thus decreasing the strain on my back. This vise can also be oriented with the small jaws facing up, and if needed, the whole of the vise jaws can be tilted to an orientation parallel with the top of the bench. There is very little that can't be clamped quickly and easily with this type of vise. You will also notice that there

is a cutout in the top of the bench allowing the inner jaw of the vise to be flush with the long edge of the bench. This gives another long face for edge jointing or planing a board.

Now on to all of those silly round holes in the bench top. I am obviously kidding. **Holes for bench dogs and holdfasts** increase the versatility of your vises and greatly expand your options for holding and clamping your work pieces.

In photo 3, you can see a planing stop used in conjunction with a holdfast and batten to steady a board as it is being face planed. The planing stop at $\frac{1}{2}$ " thick is thinner than the $\frac{3}{4}$ " stock being planed and the batten has a chamfer along one edge and at one end to also make it thinner than the stock being planed.

Versatility is key here. the holdfast will go into any dog hole and the stop will fit into any pair of holes along the length of the bench. You can also make a shortstop (excuse the pun) which will fit in any single hole and accomplish much the same thing, though only effectively on narrow boards.

In photo 4, you can see a **bench hook** being used to cut a piece of stock. This approach allows you to saw on the bench without the danger of cutting into the top. This fixture can either be held in place by a hand, a hip, or it can be set with the lower lip clamped in a vise allowing both hands to be free.

Another use of the bench hook requires

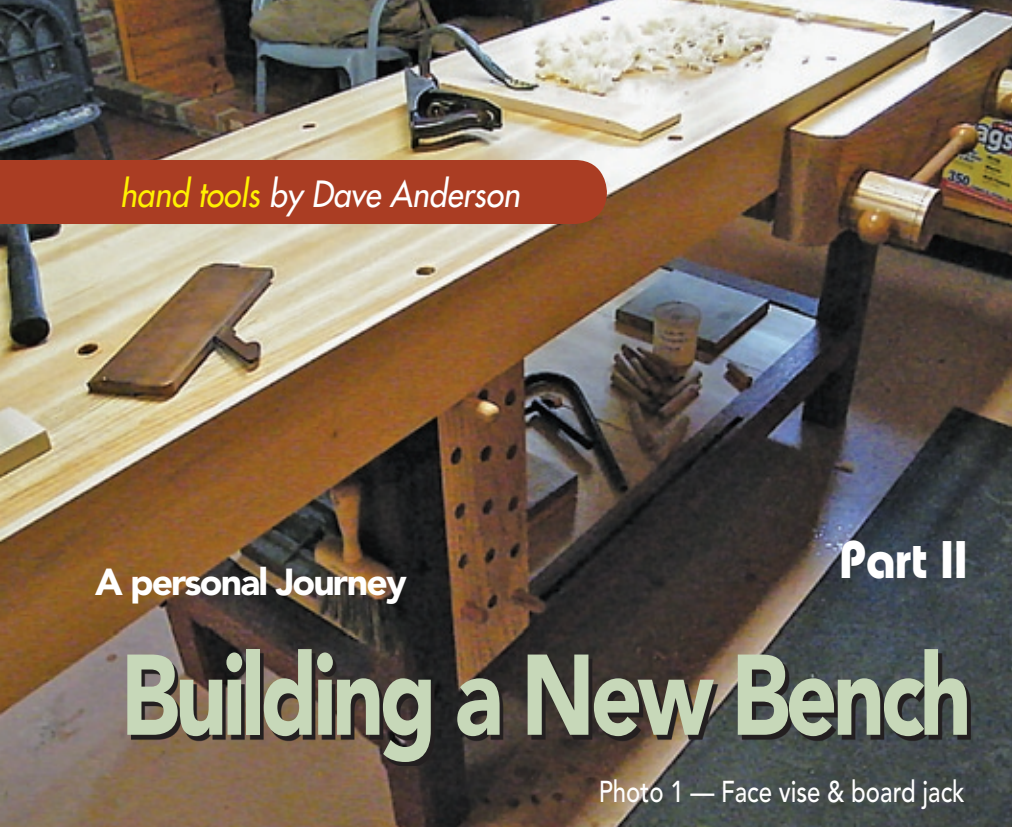


Photo 2 — Emmert K-1 vise

As Dave mentioned in Part I, his bench and accessories are designed for left handed use — **editor**.

a little more care in use. With a plane laid on its side on the bench top and a piece of stock carefully and slightly extended over the edge of the hook, you have a right angle **shooting board** usable to trim and smooth the end grain of a piece of stock. Care must be taken however to choose a plane with both cheeks exactly perpendicular to the sole. Any deviation at all, and your board end will not be square.

If imitation is the sincerest form of flattery, I would like to flatter Frank Klausz. In the *photo 5 sequence* below you will see a little device he has used on his bench for years as a **sawing stop**. I had one on my old bench and used it so much that I made another for the new bench. It's that useful. It is a simple stop block screwed into place on the end grain of the top. Outboard and above it on each end is a flip up stop allowing you to use either a western style push saw or a Japanese pull saw. When not in use, the stops flip down and out of the way. It is truly a simple and elegant solution requiring three scraps of wood and five screws.

So far I've given you a small taste of the possibilities available in bench accessories. There are many more choices, including those available from retailers and catalog houses all ready to go after you plunk down your money. Almost all are useful, but many are little more than commercialized versions of shop made devices and can be fabricated out of scraps, screws and a bit of glue for a whole lot less money. Spend some time looking at the catalogs, woodworking magazines, and books on benches and ask yourself, "Can I make this in my own shop and save a few bucks?"

Along this same line of thought, look at the devices made of metal and ask yourself, "If I hit this with a chisel edge or plane blade will it damage my cutting edge?" Brass or steel dogs are classic examples of this potential problem. They can be useful, but you must beware.

Now that I've criticized commercial accessories, I'd like to mention two that I consider really worthwhile. First are **holdfasts**. Either the hand forged ones from *Galena Village Blacksmiths*, or the bent steel ones from *Tools For Working Wood* are the way to go. They are durable and are actually designed to work. The cast iron ones sold by most of the major retailers are a waste of money since most will snap within just a few uses. Cast iron is brittle and has no place as the material for a holdfast which is set with a hammer. The second really useful item is the **Wonder Dog** from *Lee Valley/Veritas*. It is basically a metal dog with an adjustable screw stop which lies flat on the bench top. It allows you 5" of adjustment room when used in conjunction with a dog or a bench stop. It's ideal for clamping narrow stock and its brass end piece is only $\frac{5}{8}$ " high allowing the planing of stock $\frac{3}{4}$ " or thicker — see *photo 6*.

That pretty much covers the accessories I use on a regular basis and it should give you an idea of the accessories used in performing the most common bench operations. In the future I will do a pictorial or two showing some ideas for clamping unusual shaped parts and how clamps and other regular shop items can be adapted to widen your clamping options in the shop and on the bench. ■



Photo 3
Planing stop (right) with batten & holdfast (left)



Photo 4 — Bench hook



Photo 6 — Wonder dog & stop



Photo 5 sequence — Flip up saw stops





by Marty Milkovits

Selecting stock

For this piece find the straightest grained wood you've got in the shop. Many times when ripping strips they have a tendency to immediately develop a bow as they come off the saw, so give yourself plenty of extra material when rough cutting the longer pieces. Let the parts sit for two or three weeks and then straighten them again. Plane down to slightly over finish size — $\frac{1}{16}$ ".

Layout and cut the mortises first. A rule of thumb for sizing a mortise is that the width of the mortise should never be less than one third the thickness of its tenon or greater than one half the width of the piece that has the mortise. Tear out is always a problem when cutting through mortises so back up your work piece with a piece of scrap and start from the face side. A small amount of tear out is practically inevitable on the back side, but will be hidden by the shoulder of the tenon. The $\frac{1}{16}$ " you left on the stock goes a long way on eliminating any tear out you may have when trimmed away.

If you are chopping the mortises by hand, set up your drill press with a Forster bit, slightly smaller than the width of the mortise and a fence to register the work against. Drill the first hole at one end of the mortise then a series of holes the length of the mortise. Leave about two thirds the hole diameter between each hole. Come back with a second pass and drill out the remaining spaces.

Clean up the mortise with a sharp chisel by clamping a 1" piece of stock along the edge of the mortise. Use this 1" piece as a guide for your chisel to ensure a straight 90° cut along the depth of the mortise. If you have a hollow chisel mortiser the same still applies, but the clean up is a lot faster.

an exercise in

Mortise and Tenon Joinery

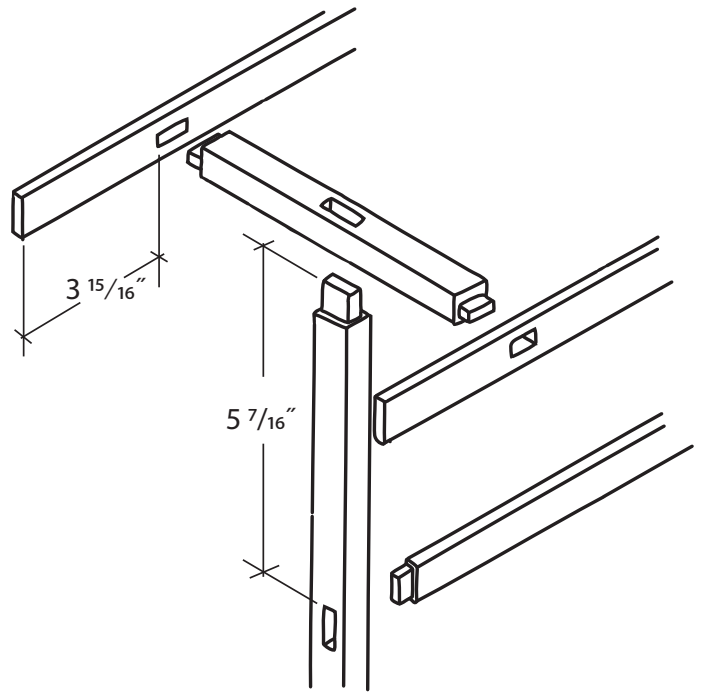
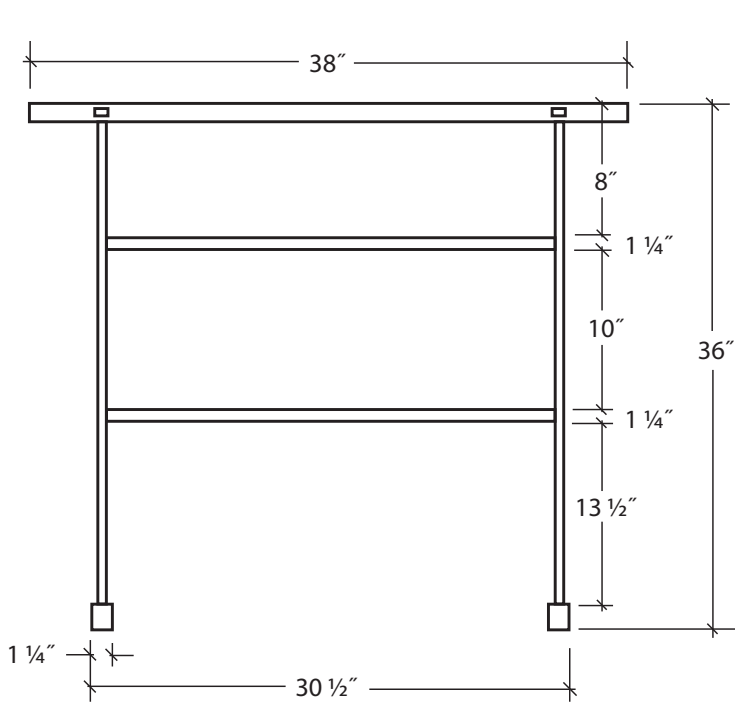
Not many pieces of furniture can be built using only one type of joinery. This blanket stand that I recently completed for a customer is one such piece. I can't take credit for the design as it was taken directly from *The Book of Shaker Furniture* by John Kassay. The piece was going to be used as a quilt rack, however I felt that piece pictured in the book was a bit too light for anything other than wash cloths and hand towels. I increased all of the dimension somewhat to add strength to the piece but just enough so that it still retained its original look.

I think one of the best things about this piece is that it's pretty simple and straight forward and can easily be completed in one weekend. Yet not so simple that it is not a challenge for the more experienced woodworker, but still basic enough to be a good project for the beginner.

All of the mortise and tenon joints except the one for the leg/foot are through mortise and tenon joints. A through

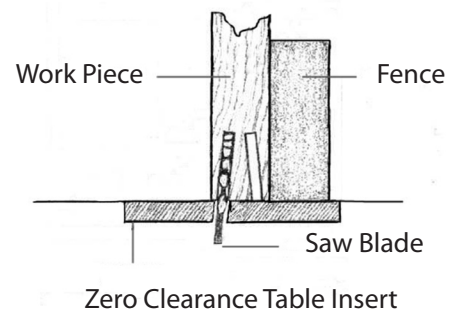
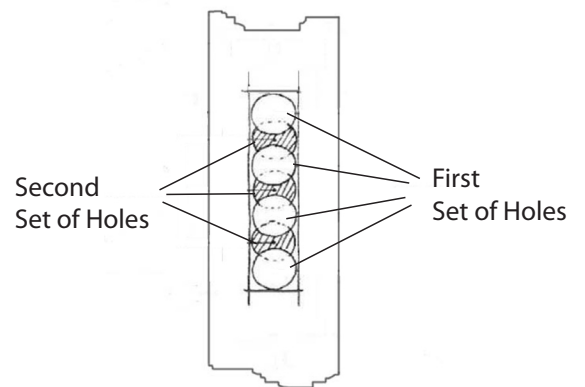
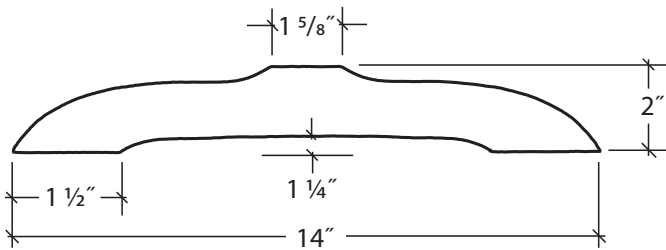
mortise & tenon means that the tenon goes all the way through its mating piece with its end grain showing on the other side. Making a through mortise & tenon joint clean and tight is a challenge no matter how accomplished a woodworker you are.

There are probably at least a half dozen methods for cutting mortise and tenon joints and I'm not going to go into all of them here. Over the years I have tried every conceivable method of making these joints, and I've found that no single method is best in all cases. The method I use most and the one I used for this piece is with a hollow chisel mortiser and a tenoning jig on the table saw. If you don't have either of these tools you can still cut clean joints with just a drill, chisel, and hand saw, but don't tell your wife that. One word of caution here, if you ever consider buying the type of mortising jig that bolts on to your drill press. DON'T! They are more trouble than they're worth.



Project: *BLANKET STAND*

PARTS	No.	Qty	Dimensions			Cut
			L	W	T	
Foot	A	2	14	2	1 1/8	
Legs	B	2	34 1/16	1 7/8	1/8	
Cross Arms	C	2	10 1/2	1 1/4	7/8	
Rails	D	2	30	1 1/4	5/8	
Arms	E	2	38	1 1/4	1/4	





Drilling mortise



Cutting tenon



Saw kerfs



Wedges in place

Cutting the tenons

Scribe the length of the tenon $\frac{1}{16}$ " longer than the thickness of its mating piece. Or if you really want to get fancy and add a little Arts & Craft style to your project add another $\frac{3}{16}$ " to that tenon and then chamfer the end after assembly. I use a tenoning jig on the table saw to make the cheek cut and the band saw for the shoulder and width cuts of the tenons. Make your shoulder cut about $\frac{1}{32}$ " shy of your scribe line and then clean up that last $\frac{1}{32}$ " with a chisel.

Dry fit

If you did everything perfectly the tenon will be snug fit in the mortise, this almost never happens. If you need more than a few light taps with a mallet the joint is too tight. If you continue trying to pound the joint together, you are just going to blow out a chip on the face of the mortise. If the joint is too tight, check for shiny spots on the tenon. These are the areas that are binding. Remove a thin shaving from these spots with a shoulder plane or chisel. Work slowly and deliberately — *you can always take more off but you can't put it back on.*

If the joint does come out a little loose, all is not lost. Depending on how loose the joint is, you can cut some feather wedges from some of the cutoffs and tap them in where the joint is loose. If you pay attention to the grain direction this repair will be practically if not totally invisible. If the joint is a little more than a little loose you can still save the joint, but the repair will be noticeable so it's going to have to look intentional. I once heard

from a very accomplished woodworker that most of us have heard of say — *The only difference between an artist and a backer is that the artist knows how to make his mistakes look intentional.*

To make it look intentional you're going to have to go back and do this on every mortise & tenon joint. Make some wedges at 3-4 degrees. These can be in a contrasting wood — remember the look is supposed to be intentional. Make a thin saw cut in the direction parallel to the direction that is loose. If it's loose in the long direction make a saw cut down the middle of the tenon. If it's loose in the short direction, make two cuts each about $\frac{1}{8}$ " in from the edge. Tap in your wedge and hopefully the joint tightens up. If not, go back and make a new part.

Glue up

Make up several clamping blocks out of pine that will allow the tenon to push through the block as pressure is applied. Glue the feet to the legs then rails to the posts. Be sure to check this for square as you tighten the clamps as it's easy to pull it out of square. Glue up the cross arms and arms separately. They can be glued together when both halves have set for a few hours.

Finishing

For a finish, I sanded the piece to 180 grit then applied three coats of *General Finishes Satin Oil* urethane. I finally rub out the first two coats with 320 paper, and the last to 0000 steel wool and wax. ■



by Tom Fama

Double Your Jointer Capacity

Flattening wide boards without the fuss

If you are like most woodworkers, you probably have a jointer with a capacity of half your thickness planer. Typically, I would rip wide boards to the width of my jointer to face flatten them. Then I would joint and glue the edges of flatten boards back, matching grain direction, clean up the glue joint and feed the wide board through my thickness planer.

The technique described here eliminates ripping, gluing and cleaning up wide boards. You can flatten and thickness boards as wide as your thickness planer's capacity — typically about twice as wide as your jointer's capacity.

To begin, remove the auxiliary table and the guard from your jointer. Set the fence to the maximum width of the jointer table. Take your oversized board and run several light passes over the jointer until it is flat. In effect, you are rabbeting the board on its face side. The oversize width will remain rough and hang beyond the cutter (and below it) — Figure 1.

You will need a piece of melamine or similar flat sheet for a bed on which to place the flattened surface of the board. The flattened side of the board will face down on the bed with the rough half overhanging the bed — Figure 2. The feed rollers in the thickness planer will keep the board flat during cutting. The bed may need a stop to prevent the board from slipping.

The bed/board package is fed through the thickness planer, rough side up, until the second side is completely flat — Figure 3. Remove the bed, flip the board (Figure 4) and finish off the face side that was half-jointed — Figure 5. ■

Reprinted with permission — Eastern Massachusetts Guild of Woodworkers — www.emgw.org

1 Flatten a portion of first side resulting in an overhanging rabbet.



2 Place board on temporary bed with first side down (rabbet side) and feed into thickness planer.



3 Flatten the second side.



4 Remove the bed, flip the board with the first side (rabbet side) up and feed into the planer.



5 Completed board.

Reclaimed Lumber



Tyler Evans

Reprinted with permission — Guild of Oregon Woodworkers — www.guildoforegonwoodworkers.com

An interview with Tyler Evans at Urban Hardwood Recovery in Portland, Oregon — by Regis DeAndrade

As part of the series on sustainable lumber resources, I sat down with Tyler Evans at *Urban Hardwood Recovery*. Tyler specializes in recovering local hardwood logs and turning them into usable lumber. His selection varies a lot and his prices are great. I talked to him recently at his facility. — **Regis DeAndrade**.

What do you do for a living? — I am an Operations Manager for LSI during the day. I manage a group of nineteen customer business analysts spread around the world in locations such as Israel, Ireland, as well as Portland. This team manages the customer order to invoice process for LSI's Engenio Storage Group. This business group designs, manufactures, and markets digital mass storage devices (server storage arrays) for storing digital media.

How did you start in woodworking? — I am a local guy, originally from Pendleton. I grew up in Beaverton. I graduated from Sunset High School and the University of Oregon. I started woodworking quite

young. We lived on 10 acres out behind PCC Rock Creek Campus, and in those days that was way out in "the sticks." I started woodworking because I enjoyed it and we had the space to allow me to have some tools. I used to buy pine 1x6s from Supply One and cut small tulip flowers out of them. I would insert a dowel painted green for a stem and paint the tulip tops bright colors. I would send a couple dozen wooden tulips to work with my mom, and she'd return in the evening with a couple dozen dollars.

How did you start recovering urban lumber? — After college I re-started wood working, but found it to be a bit expensive to get access to quality wood. I would buy from the local retail outlets, but they always left me wanting a bit more value for the dollar and a bit more on the service side as well. I started in on some home

remodeling and couldn't believe the cost of kitchen cabinetry. I started studying the construction and decided I could do it myself with high quality for less. I stated using increasing amounts of hardwoods purchased retail and decided that there had to be a more cost effective way. From there I started buying wholesale from a local lumber wholesaler. That was more cost effective, but I couldn't choose my pieces and all the wood was rough sawn and required more work to get it to a finished state.

One day I was in the shop planing



large amounts of hard maple when I thought to myself, "this is so much work that I may as well just get the wood directly from the tree". I looked into small scale milling and drying mostly via resources available on the internet. Shortly thereafter, I purchased my first large chainsaw and chainsaw mill. I started milling to see if I could do it and found that it was a lot of fun. Today most of the dimensional wood that I sell is cut on a Wood-Mizer bandsaw mill (www.woodmizer.com/us/sawmills), and the large slabs are cut by hand with a large Alaskan chainsaw mill (www.granberg.com/alaskan_mill.html). I learned a lot from those who started recovering urban wood before me. Once I convinced myself that I could find wood and mill wood, my sights turned to drying wood.

Where do you get your wood? — Most all of the wood that I cut, dry and sell comes from the Portland/Vancouver area. I have gone as far as Hood River for a log, but the vast majority are much closer than that. In the first few years of my business, I actively looked for logs to mill, but today the logs mostly find me. People find me via my website or word-of-mouth, and I stay plenty busy. I also maintain relationships with arborists who know where trees are coming down. I'd say about a third of the trees I get involved with are storm damaged "blow downs", another -third are removed for road widening or lot clearing, and one-third are trees that homeowners have decided to take down for one reason or another. I get involved and try to create win/win economic situations for the people who own the trees.

What do you currently have in your inventory? — My lumber inventory goes up and down depending on the kiln loads. Some kiln loads contain a broad variety of species, and are milled to a variety of thicknesses, while others are mostly consumed by large slabs, or dominated by a few species. I tend to not do too much work with soft woods because they are typically of lower value, consume large amounts of space, and dry differently than hardwoods.

That said, I do some work with redwood and cedar. I try to keep some inventory of each of the major local species in both dimensional and slab wood if possible. I also try to keep turning blocks for turners, as well as any unusual offerings that I may come across.

Tell us more about your kiln? — My kiln is a dehumidification kiln based on a Nyle L200. It is housed in a permanent structure in my backyard in suburban Beaverton. It was constructed based on Nyle's blueprints of convention wooden stick framing. It has heavily insulated and vapor barriered walls and ceiling to maximize the controllability of the conditions on the inside of the chamber. The Nyle L200 system consists of several large fans, a central dehumidifier/heater/blower unit, and an externally located control unit. I found mine on eBay from an outfit that went out of business in Idaho. The components are all electric. — www.Nyle.com.

How does the drying process work? — In general, felling, milling, air drying and then kiln drying. Within the kiln drying process there are additional sub-processes including drying, conditioning

and sterilization. Dehumidification lumber drying and how lumber dries is a whole other topic that I probably don't have space to address here.

Any tips on lumber storage? —

There is a good article in a recent issue of *Fine Woodworking* that discusses storage of green lumber.

The techniques described are the best known methods and are right on. The important thing to keep in mind when dealing with green lumber is that it needs to be kept as flat as possible while it air dries. Shortcutting the process here can ruin the whole effort. For dry lumber, attempt to keep it in equilibrium with the environment in which it will be used. For indoor furniture lumber, the closer it can be kept to the conditions inside the home, the better. Once wood has been dried, it achieves its full hardness and can be stored in whichever position is most convenient for the woodworkers' space. For more on wood drying and storage I would suggest the sawing and drying forum on www.woodweb.com. ■



embarking on a journey

Altus Ornamentus



The Federal style often incorporates the use of ornate design embellishments such as stringing, bellflower and other decorative inlays, and the use of veneers selectively to decorate otherwise a simpler, straighter form of furniture.

In searching for the perfect definition of what Period Furniture means to me, I turned to my high school latin for the answer. After flipping through dictionaries, I eventually found exactly what I was looking for — *Altus Ornamentus*.

Just what does Altus Ornamentus mean? Besides being a definition of what I hope becomes a regular column, it is also a carefully chosen pairing of Latin words to form an expression. Better yet, it is not only an apropos genus and species categorization for every period furniture enthusiast, but I think it more completely describes the objects of our passion. *Altus* is the Latin word for noble, high, early and old-style, while *Ornamentus* is one of several Latin words used for furniture, but not just any furniture. To me, it is the word for high-style, carefully crafted furniture designed to last generations — a treasured “ornament” created by hand in a period design style. Put these two words together, and you have the very essence of Period Furniture that better describes

what every period furnituremaker I have come to know hopes to achieve.

I hope to share with you my personal journey of taking Period Furniture to a higher level — Altus Ornamentus. It is not an overnight process, but rather a process of many years of acquiring skills, learning, tools, and a lot of practice. I am still on the road with a long way to go, but I have also already covered a lot of miles. Also, as I learned so profoundly in John Whiteside’s premier article about *Right Brain Woodworking* published in the first edition of *The Journal*, I now enjoy every step along this long road and take lots of time to enjoy the scenery and gain the full experience along the way. In fact, it is not really the end of this road I look forward to, but rather the full experience of the trip. Truthfully, I have defined my journey to be a road that never ends. It will always provide me with new areas and techniques to learn. And I enjoy the chance to teach and inspire others on the road, just as I have from others who are

ahead of me on this road.

What is it that drives us Altus Ornamentus enthusiasts? For me, the answer came to me recently in the *End Grain* column which appears at the back of the Spring 2009 *Woodworking Magazine* written by Jeffrey C. B. Levine. He writes “...For when we fuss over tiny details, spending ridiculous amounts of time to make a piece perfect instead of merely very good, we’re striving to deliver a part of ourselves into the future to be used and enjoyed by persons yet unborn.” He follows with a great way to summarize this thought as “We seek to touch others, after we’re gone, through the work of our hands.”

That’s it! That’s exactly how the furnituremaker from the 18th century is speaking to me when I view a fine period piece, and it is my desire to speak to someone 200 years from now — finally, I have an answer!



The Federalist Period — Following the end of the Revolutionary War in 1781, our young nation ratified the newly drafted U.S. Constitution in 1788. In April of 1789, George Washington took his oath as the first President to uphold the Federal Constitution.

As the young America formed, a new style in furniture was also formed to suit the tastes of the new Federalist era. This time period was known as the Federal period, and it represented a somewhat reactionary change to the previous England influenced design styles of Queen Anne and Chippendale, known for its graceful and showy curves, and then its heavy use of ornate carving for adornments to furniture respectively.

In fact, each period of furniture is a reaction to a previous period representing a dramatic change. Starting with the William & Mary period in the early 18th century, furniture was made to rather large blocky proportions, set atop heavy turned and stretched legs. A reaction to this style was the Queen Anne era characterized by its curvy cabriole legs and porringer tops to break up the rectilinear lines of the

Photo 1 — Seymour-style tambour writing desk by Rob Millard illustrates the neoclassic proportions of the Federal period.

previous period. Following Queen Anne, the Chippendale period represented somewhat more ornate versions of Queen Anne style, but incorporated ornate carving and decorative cartouches to embellish the furniture. Sub periods of this genre include the Rococo and Gothic which were typified by heavy carving and larger proportions.

Despite the long struggle of the new Federalist party to gain its independence from England, England continued to provide design influence to its former colony. In England, a new period following Chippendale had already established itself known as neoclassicism. This neoclassical style once again represented a reactionary change to the Chippendale/Rococo/Gothic periods by reducing the scale of the furniture back to rectangular tapered legs and smaller proportions.

The word neoclassical in fact describes exactly the style of furniture. Neo ("new") Classical derived its inspiration from the ongoing European (and English) fascination with the ongoing discoveries and study of the Roman and Greek classical period. Much was learned and copied from the former architects of both the Roman and Greek societies including the use of column orders, the golden ratio and the well defined rectilinear surfaces of buildings. All of these elements heavily influenced the neoclassical style.

Neoclassicism is credited with having

begun in France after the discovery of the first-century Roman objects. These had been excavated and preserved at Roman settlements such as Pompeii and Herculaneum according to the accompanying study guide published by the Columbus Museum in support of its extensive exhibit of American Federal Furniture from the Watson Collection. Rob Millard, an accomplished Federal period furnituremaker has produced some breathtaking examples of period furniture. Photo 1 is a Tambour writing desk made by Rob Millard that illustrates these classic proportions.

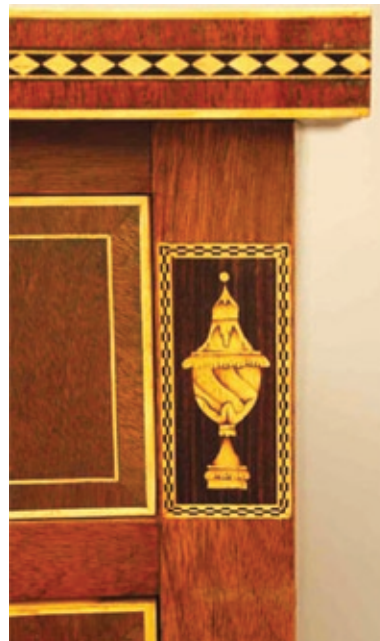
Meanwhile, in the new Federalist society in the young America, the well educated population and emerging cosmopolitan markets of Boston, New York and Philadelphia drove the demand for furniture. As Michael Dunbar writes in his book *Federal Furniture*, "With the end of the Revolutionary War and the normalization of relations and commerce between England and America, neoclassicism spread to the new republic. For Federal period Americans, the similarities of their own political experiment and the democratic experiences of the classical world added significance to their embrace of the neoclassical movement that went far beyond the desire to copy the most up-to-date European fashion."

Expanding on the specific design elements applied to neoclassical style



to become known as the Federal style, Dunbar continues... "Favoring simple, geometric lines, it observed rigid symmetry in its overall design and borrowed enthusiastically from classical decorative motifs. Among these motifs were vases, urns, plumes, swags, bows and reeding. Patriotic elements like the eagle found their way into many Federal pieces as well. In addition to classical ornament,

Federal furniture also made frequent use of string and pictorial inlay and veneering. Photos 2, 3, & 4 from Rob



Photos 2, 3, 4 — Rob Millard pieces illustrate use of pictorial inlays and veneering common to Federal furniture.



Belts, Pulleys & Vibration

Have you ever brought home that shiny new tool from the tool store and after you carefully set it up, plugged it in and turned it on, had a terrible vibration that gave you buyer's remorse? I have. There are many causes for this vibration, but two of the most common are the belts and pulleys. Most of the stationary tools used in woodworking have a belt and pulley drive system. Until John Gates developed the V-belt in 1917, most of the belting used was flat leather with a few small machines using a round leather belt.

Flat belts could transmit large amounts of power but required careful alignment and tensioning. Early woodworking shops used a system of line shafts to drive the machines from a central power source, either water power or a steam engine. This system had long shafts hung from the ceiling and powered the individual machines with flat belts. One of the largest manufacturers of flat belts was Page Belting located in Concord, NH. Another was Tilton Endless Belts in Tilton, NH.



Flat belts & pulleys

After Gates' V-belt was introduced and electric motors became more economical, the use of the line shaft and central power was greatly reduced. By the early 1930s, most machines being produced were using V-belts and individual motors. This allowed for flexibility in locating machines in the shop and also the introduction of portable machines. The changes even went so far as to use separate motors for different functions on an individual machine, such as a four sided planer or a dual arbor, dual motor table saw like an Oliver 260D.

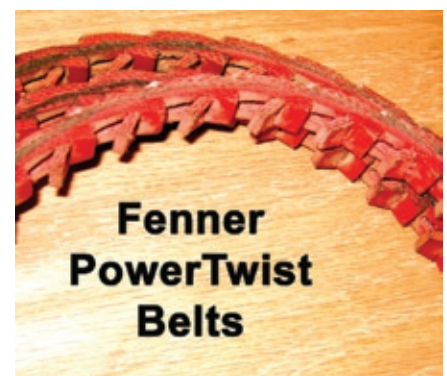
Along with the introduction of V-belts, came the general use of die cast pulleys made of aluminum or zinc. They were inexpensive and relatively easy to make and the quality could range from poor to good. They came into widespread use, especially on multiple or stepped pulley applications like multi-speed lathes and drill presses. In slower speed applications, they proved to be adequate, but the inaccuracies in manufacture caused the pulleys to be less than perfectly round. This out of roundness introduced vibration into higher speed applications such as table saws, lathes, and belt driven grinders. For the hobbyist this might be acceptable, but for others, it was not and the use of machined cast iron or steel pulleys as either standard on upscale machines or as an aftermarket addition became popular. The most recent change in belt drive systems is the use of the Poly V-belt. This is the type of belt is used in automotive serpentine configurations and is now becoming common on some woodworking machines, especially those that use small diameter pulleys.

The most efficient method of transmitting power from a motor to a machine is to have the blade or arbor made as part of the motor shaft. Any system that transmits the power from the motor to a separate shaft will have some power loss and the potential of introducing vibration due to irregularities in the parts of the

system. Quality control can reduce both the power loss and vibration, but comes at a monetary cost. This cost/quality is balanced by the manufacturers trying to satisfy both the market and their bottom line.

Replacing stock belts and pulleys with aftermarket upgrades can greatly improve the performance of woodworking machines, but there is a point of easiest and least expensive upgrade that will probably yield the greatest improvement. There are several options. One of the most touted is the use of link belts, introduced by Fenner as PowerTwist. This belting is available at most woodworking suppliers and also from any bearing supplier. It is a good choice if the machine must be disassembled to replace a belt. One of the biggest advantages of the PowerTwist belt is that it doesn't take a set. Standard V-belts tend to want to return to an oval shape and also because of the materials used in their construction, they tend to acquire the shape that the belt was in when the machine was shut off.

The PowerTwist belt is not the answer to all problems, however. First of all, it is expensive — about \$8.00 per foot — so a five foot piece for a jointer would run \$40. Second, it is directional. It must be run in one direction only and so can't be used on machines that can be reversed such as a shaper. Third, because it is made from links that are a fabric/urethane composition, it is hard and somewhat abrasive and will



wear soft die cast aluminum/zinc pulleys. And forth, because it rides high in the V pulley grooves, there may be clearance problems. In spite of these issues, because it does not take a set, it is very effective in transmitting power smoothly and can reduce vibration in many cases.

Another option that is being used more and more often is the “AX” series of V-belts. These are sometimes called cogged V-belts because the inside surface has a series of side to side cuts which results in a series of teeth or cogs. These cuts allow the belt to more easily bend on small diameter pulleys and reduce its tendency to take a set.

Another factor that separates the “AX” series of V-belts is that the sides are machined to an even surface. This makes for smoother running. The cost is about 25% more than a standard hardware store or original equipment belt. It is often being used on higher end new equipment. These are available locally from bearing supply houses or on the internet from suppliers like *McMaster Carr* and *MSC Direct*. This upgrade might be worthwhile on any new or new-to-you piece of equipment.

While on the subject of replacing belts, most machines will benefit from a new high quality American made belt.

The original equipment belts on most imported machines are generally of low quality and older belts dry out and become hard and stiff.

Good quality machined and balanced replacement cast iron pulleys are another inexpensive upgrade. One brand commonly available is *Browning*. It is not necessary to buy the expensive machined steel sets that are sold by the various woodworking suppliers. Many machines will benefit from this upgrade. However there are some machines that use a proprietary pulley made especially for that machine and only direct replacement pulleys should be used. The Delta DJ20 jointer is an example of this. When mounting and aligning the pulleys, if possible, it is desirable to mount the pulley with the V-groove next to the motor and the set screw on the outside. This gets the belt load as close to the motor bearing as possible and puts the least strain on the motor bearing resulting in longer bearing life.

Another factor that can cause vibration in belt driven equipment is belt tension. A belt that is too loose can vibrate just as the strings on a guitar vibrate. Also, a loose belt may slip under load. A belt that is too tight will cause premature bearing failure,



so the key is finding the correct tension. Generally speaking, you should be able to deflect the belt ½” with reasonable finger pressure at a point half way between the pulleys. While there are many variables in this test, it will generally get you into the right area. A more modern method uses a frequency meter to measure the vibrations of the belt as it is plucked, the same way a stringed instrument is tuned.

In summary, machine vibrations can be caused by low quality, stiff or worn out belts, out of round pulleys or incorrect belt tension. Usually these problems can be corrected by the average woodworker and at a small cost. The improvement in the quality of the cuts can be dramatic. ■

PERIOD FURNITURE — continued

Millard's portfolio illustrates several examples of these pictorial inlays and veneering.

Among my favorite Federal style inlays are that of bellflowers and stringing. In Photo 5, you see a high form of this as produced by Freddy Roman, a member of our Period Furniture subgroup who is also an accomplished period furniture maker.

Like other furniture periods, there were associated sub categories or sub periods. The Federal period was no different. Two of the more recognized names were actually associated with period designers, not specifically furniture makers. These are Hepplewhite and Sheraton. Ironically, they never really promoted their own designs, but rather simply illustrated the style that was currently popularized in England in their pattern books *The Cabinet-Maker and Upholsterer's Guide* (1788) by George Hepplewhite and

The Cabinet-Maker's and Upholsterer's Drawing-Book (1791-93) by Thomas Sheraton. No period furniture maker's library is complete without a copy of the widely available reprints of these books to serve as inspiration for Federal furniture design.

Another furniture style known as the Shaker Style was yet another sub-genre of Federal Furniture produced in large volumes by the religious Shaker societies. Proportions and dimensions were that of the Federal style, yet all of the decorations and adornments were left out which more suited the simplistic living style of the Shaker society. According to Michael Dunbar, this style of furniture became so popular on its own that it became disassociated from the Federal style, and was produced well after the Federal period had moved on to the much heavier (again reactionary) style of Empire furniture

which coincided with the industrial revolution.

Take someone with great woodworking skills, and combine an appreciation and sense of history and design, and you create an artisan period furniture maker, and also someone who typifies the passion of an Altus Ornamentus enthusiast. ■



Photo 5 —
Freddy Roman's
bellflower inlays.

Members Gallery

Kevin Ainsworth Manchester, NH

PEMBROKE TABLE — This is a Pembroke table that I made while a student at North Bennet Street School. It is a Baltimore style table combining elements used by Levin Tarr of Baltimore and John Shaw of Annapolis. It is mahogany with shop made satin wood bandings and bookbind inlays. The bookbind inlays were first cut out of solid satinwood, sand shaded and then glued up and shaped. Holly stringing was used on the legs with roping inlays. The top is serpentine with canted corners and holly stringing on the edges of the top. The table measures 29 $\frac{3}{4}$ " x 31" x 17- $\frac{3}{4}$ " (39" open). The top was scaled from a photo out of the book *John Shaw Cabinetmaker of Annapolis*.



Stuart Blanchard Strafford, NH

DEMILUNE TABLE — Constructed of cherry with ebony feet, ebonized walnut beading and ebony/aspen inlay. The finish is a wipe-on polyurethane — General Finishes Gel.



Bob StLaurent

Northwood, NH

WINDSOR WRITING CHAIR — Finished with milk paint and wipe-on varnish. Materials are hard maple legs, white pine seat, red oak spindles and crest. Writing tablet is poplar.

