

The Newsletter of the Minnesota Woodworkers Guild

NORTHERN WOODS

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Michael Fortune, RCA
At this year's Fall Seminar

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NORTHERN WOODS

President's Notes

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Since I have been the president of our guild, I have had the opportunity to meet many of you for the first time. I have noticed that while there is a great diversity among our 1200 members, there are strong ties that bind our group together.

The bond that impresses me the most is our collective passion for the art of woodworking. Whether expert or beginner, we seem to have a thirst for every woodworking nuance...and a willingness to share what we have learned. There appears to be very little pretentiousness...the size of our house or paycheck, the kind of car we drive, the neighborhood we live in, seem not to matter when it comes to woodworking.

This is good. This is refreshing. This is the real essence of craft.

So...as we close out this year, allow me to express my thanks to each of you who I have met while president. I am a better person, and more skilled at my craft today than I was a year ago...because of you.

My tip for the month!! Run out and buy *The Power of Limits* by Gyorgy Doczi. This is a wonderful little book about proportional harmony in nature, art and architecture. For years, I have found it to be a treasure trove for design inspiration. It has enough math to satisfy the engineers....but lots of pictures and philosophy for the rest of us!

pura vida, mark

New Membership Coupon

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Fall Seminar with Michael Fortune, RCA

Articles by David Mitchell and Bob Rocknem

Photos by Paul Schalekamp

The Speaker

During the late '60's after Michael Fortune had completed studies about art, design, and especially woodworking techniques, he bought property in the Kawatha Lakes area north of Toronto. He and his son, using only hand tools, enlarged a log home and added a large building for a shop. After electricity arrived, they bought power tools and started making furniture with hard wood lumber from a saw mill nearby. Some was already air dried, but more was dried carefully for future use.

With his considerable artistic and woodworking talents, he designed and built unique bent wood chairs and tables. In 1971, after 5 months of work, his very comfortable and beautiful "chair#1" made of ebonized steam bent wood entered production. Thirty- two jigs were needed to make the exact and repeatable joints. This chair with silver alloy inlay for the backs and a specially constructed seat as well as other chairs and tables he designed, gained him national and international recognition and many private and governmental commissions. He now works in larger facilities to accommodate making large furniture such as conference tables and big cabinets.



photo from Michael's web site

He has received the prestigious Saidye Bronfman award for exceptional craftsmanship and in 2000 he became a member of the Royal Canadian Academy of the Arts, a special honor (thus the RCA which appears after his name) He teaches all over North America as well as the Caribbean, Central America and Mexico, and closer to home, at the Mark Adams Woodworking school where, for example, with a 2 week course one can make the #1 chair using his jigs. He has written 15 articles for Fine Woodworking magazine. The first, in 1981, "Fixtures for Steambending", was also included in a FWW wood bending compilation published in 1984. (This book, by the way, is worth reading because there are articles about other types of wood bending and techniques). He has also written for Wood, Canadian Home Workshop, and Woodwork.

Wood Bending

People have been bending wood in various ways for at least 3000 years. Examples of Egyptian furniture with parts that have been bended with steam have been discovered in tombs; Other cultures probably knew how also, but the dry desert climate in Egypt allowed the tables and chairs to survive. They also laminated the wood and used hide glue. European and American furniture did not steam bend very much until the early 1900's when Biedermeier introduced his style of very refined couches, chairs, and tables.

A few years later Michael Thornet from Vienna caused a sensation with remarkable curved rocking chairs, café chairs, and numerous variations. His methods and use of long steam chambers made it possible to patent the techniques. A good article about Thornet is included in FWW "On Bending Wood."

Successful steam bending depends on softening lignin to the point where it and the wood fibers can be compressed. Stretching is not possible (Lignin is present between fibers and in the cells and stiffens all plants so they grow upward).

After subjecting hard wood to 200 degree steam for about 45 min. per inch thickness, the piece of wood bends like plastic. It needs support for the outside and a form for the inside, and it must remain in a form until it cools and the moisture content drops to about 6%. The wood will then keep the shape indefinitely.

Only air dried wood bends successfully. Kiln drying disrupts the lignin bond so it cannot plasticize. This is one reason Thornet's type of furniture ceased production, and why most furniture today does not use steam bent wood.

The outside of the wood needs compression usually with a steel band so the outside fibers, which cannot stretch, don't splinter. Domestic hard wood bends well. Oak, hickory, and elm best, walnut good, and cherry and maple less easily. Lee Valley has extensive information about steam bending and the equipment needed. This pamphlet was a handout at the seminar. It is available on line.

Fall Seminar - continued

To demonstrate the process, Michael used a 2 ft. tube of 4 in. diameter made of abs plastic pipe with the ends closed loosely with wood plugs, and mounted on a stand. Steam from a tea kettle was carried by a short tube through a hole in the bottom of the pipe. References: Fine Woodworking On bending wood. The Taunton Press and www.leevalley.com Steam bending booklet #05f15.01 free.

Hot Pipe Method

For thin pieces of wood (3 in. wide or less and about 3/8 in. thick), dry heat works very well for bending.

The equipment used is a 6 in. length of 4 in. diameter black pipe heated by a small propane torch (a "nipple" threaded at both ends and screwed into a floor flange). This is all mounted on a board and stand using 3 auto gaskets to prevent burning. The torch enters through a hole from the back of the board and is strapped in place on a shelf. This system works well for many varieties of wood including exotics. In addition to being used by furniture makers, it is ideal for stringed musical instrument manufacturing. The board is passed back and forth over the pipe until the lower side is hot enough to liquefy the lignin, it can then be bent with or without a form. Reference: www.buildyourguitar.com/resources/tips/bending.htm



Michael discusses technique while assistance bends wood on form

Building a Chair

A dining room chair can be designed to be comfortable so a person will want sit and converse for a long time or the dimensions can be altered so he will want to get up and leave. Many styles exist and appearance may vary from beautiful to ugly, but comfort depends on four factors .

Seat height should be 16 ½ inches to 17 and the seat depth 17 inches. Even tall people are happy with this because they can stretch their legs. The seat slant of 5 degrees feels better than a flat seat. A straight back is very uncomfortable. 108 to 113 degrees feels much better especially if there is a curve to support the lower back.

The height at about 33 inches is best because the top of the chair does not hit the neck and head.

The need for strength is obvious; people are hard on chairs. Well made joints and the use of the triangle from arms, seat, and back along with stretchers all make a good long lasting chair. Laminated wood is very strong and is used extensively in Michael Fortune's chairs and tables.

So designing and building a chair requires many considerations. A 1 to 4 scale model is a way to start, then a mock-up, followed by a prototype. Finally, correct the problems after using the prototype and build the final piece and it will be right.

Vacuum Laminating

Creative use of shapes is an excellent way to set your work apart from others and the industrial mass market. Vacuum laminating is an excellent technique for creating what you can imagine.

There are three key elements involved in creating vacuum laminations: the materials—the substrate base and/or the veneer; the form, be it flat or curved, necessary to create the desired shape; and a vacuum bag and pump system to supply the clamping forces.

Materials

While you can laminate to practically any type of wood, if you want to create a curved surface wiggly wood is a particularly good choice because it is so flexible.

The introduction of the glue lines is a key factor in getting good strength and shape retention. There is no clear and concise rule to formulating the number and spacing of the glue lines. Two laminates are joined with one glue line. A single glue line would produce a weak and unstable assembly. Three laminates require two glue lines. The opposed glue lines create more strength. Generally, increasing the laminates and glue lines creates an assembly that will hold its shape more securely.

Avoid trying to apply veneer edge-to-edge at 90 degree corners. Instead, try to utilize solid wood banding at the edges.

Veneer can move or shift—getting a good mating surface at 90 degrees can be difficult.

Dealing with glue squeeze out in your project can be difficult. Two methods of limiting the amount of glue squeeze out that must be cleaned up were discussed: using clear tape and using waxilit. Use clear plastic tape, (cello tape or packaging tape), to protect against glue squeeze out. Where possible, dry assemble your project and apply the tape at vulnerable surfaces. Use waxilit for masking glue squeeze out. Waxilit is non-silicone based paste wax. Not only does it work well for preventing glue squeeze out, it also works well on table saw and jointer surfaces, as well as on your pipe clamps.

Fall Seminar - continued

Waxilit is available from a number of sources, in a number of sizes and price points. One source is Lee Valley Tools at www.leevalley.com.

Controlling the amount of adhesive is an excellent method of limiting excess squeeze out. To have more control, use a glue spreader instead of a roller. A glue spreader is a notched trowel. The notches are specifically sized for an even or consistent coat of adhesive. Look for one with approximately 12 points per inch at a depth of less than 1/8 inch. Finding a good glue spreader for this type of work can be difficult. The Ace Hardware stores carry this product at a reasonable price. Most of the notched trowels on the market are designed for tile setting or thicker applications of construction adhesives. You can also search the web with the keywords of “econo scraper notched trowel” to find a suitable trowel.

When cutting the veneer for laminating, cut it 1/8 to 1/4 inch short or narrow. When you use white glue, the water moisture in the adhesive may cause the veneer to expand across the width direction of the grain. In some cases you may find as much as 3/4 inch movement per foot of width.

After you've applied the adhesive, you need to move your project into the vacuum bag. Wrapping it snugly in clear plastic wrap will prevent movement within your assembly.

For oily or imported wood veneers, look for the Industrial Formulator G2 epoxy. The G2 is commonly available from marine suppliers. Consider the G2 product if you desire a water proof or water resistant application, especially if contact with the ground is probable. Epoxy glues will require a setting time. If they wick into the end grain, re-apply.

White and/or yellow glues work well in most conditions. These glues can produce a harder set with the addition of 5-10% cornstarch. Warning—with cornstarch as a hardener, the glue squeeze out will produce ridges sharp enough that you may cut yourself while handling of the assembly.

Forms

Care is needed in form creation. Any variation in the surface or shape of the form translates directly to your finished project. Think about any way you can make your form reusable for other projects, for example, making it larger than you need for your current project.

Forms are often created using a flexible plywood surface over a series of ribs that will generate the desired shape. The ribs need to be spaced at two inches or less. You'll need spacers between the ribs, especially at the ends or edges, to create structural stability.

You can utilize high density solid foam for surfaces on your form. The foam will support smooth surfaces well within the vacuum bag. But any sharp edges of the foam will deform. You will need to provide extra banding width or edge support protection where the foam will deform at corners.

Remember that the forces generated inside a vacuum bag act in every direction. You may be thinking in terms of surface for your project, but the vacuum created within the bag will act on the ends and edges as well.

Do not create any sealed chambers inside the form. The vacuum pump will work to remove all the air from the bag. Any sealed chamber will create a pocket of interior air which will destabilize process.

You can use the vacuum bag in a two-step process—first to create the form itself as you apply the flexible plywood to the rib structure, and second to use the form (plywood over ribs) as you laminate your project.



Jeff Hand and John Griffin-Wiesner
win this years door prizes

Vacuum Bag and Pump

You can create your own vacuum bags. You can find plastic at Wal-Mart or Harbor Freight. Use a plastic repair adhesive to create the vacuum hose connection.

Generally you'll find two choices for the plastic bag material, vinyl or poly. The vinyl is a good choice for the beginner. It can be successfully reused, but after each use it retains that project's shape, making storage between projects more challenging. Industrial poly bags will return to flat after each use. This will make poly a preferred choice for storage between projects.

A pure vacuum measures at about 33 inches of mercury. A 1/2hp pump will deliver approximately 26 inches of vacuum. This produces close to 15 lb per square inch of pressure. Most adhesives recommend 25 lb per square inch. This discrepancy is usually not a problem because the vacuum process compensates by creating even pressure over the entire veneer glue line.

In the rare cases where higher pressures are needed, an air compressor will deliver 125 lb per square inch. Using this to inflate a water hose captured in a closed top/bottom metal frame sandwich will provide adequate pressure.

The bulk of the air can be removed quickly from a vacuum laminating bag by using the suction side of a shop vacuum. The shop vacuum will not deliver enough pressure to pull the layers together—that is the job of the vacuum pump, which is designed to move small quantities of air, but with more pressure.

There are two styles of vacuum pumps—a venturi pump and a mechanical vacuum pump. A venturi pump creates a vacuum by blowing compressed air across an intersecting orifice. This resulting differential air pressure creates a vacuum pressure. Venturi pumps are not as effective as the mechanical vacuum pumps, but they are also more affordable.

Vacuum bags are designed to create consistent clamping force over the entire project. Voids, tented spaces, and jutting pieces reduce clamping forces and may even risk the integrity of the vacuum.

Bandsaws

The speaker, Michael Fortune, prefers to use a bandsaw over circular table saws. The thinner saw kerf of the bandsaw blade produces less wood waste. The downward cutting force of the bandsaw blade does not produce kick back forces.

Unless significant mobility of your machine is required, use appliance type slider/levelers in lieu of mobility kits. The polyurethane slider/levelers are heavy duty and work excellently for the minor adjustment motions needed for changing the orientation of stationary machines. Never move your machines by grabbing the table or fence. Lateral forces on the table may knock it out of alignment.

To produce a fine bandsaw cut, use a coarse blade with large gullets. The key to getting a good cut is to have the gullet between the teeth large enough to carry away the sawdust. A fine tooth blade will quickly fill with sawdust creating burning and wandering of the blade. If you experience a curved kerf while resawing, you probably don't have enough gullet space between the teeth to carry away the sawdust. A coarser blade will not lodge compacted sawdust in the gullets. Use a 1/2 inch three tpi skip tooth blade.

The quality of the bandsaw blade is largely measured in terms of the quality of the weld. If you have experienced the click-click-click noise from your bandsaw, examine the weld in the blade. Good quality bandsaw blades do not have to be expensive. You simply want to find a supplier that is knowledgeable and experienced in creating a weld that is non-overlapping, solid, and correctly mated within the tooth-to-tooth distance.



*Michael demonstrating resawing
after tune-up*

continued on page 8

**November Meeting - Spike Carlsen and his book
“A Splintered History of Wood”
article by Bob Rocknem**

Spike is a carpenter and woodworker as well as a writer and editor for wood craft magazines and newspapers. His life-long interest in wood led him to write a fascinating book about the many ways wood is used and how it is part of human lives. Wood is everywhere; so much so that we take it for granted. And Mr. Carlsen has done a great job making us more aware.

He has done extensive research and documentation, traveled to many countries, and interviewed many interesting people. He has visited shops where blind craftsmen build furniture using power tools, was given a short time to interview Jimmy Carter in his shop where he talked about his Habitat for Humanity and other nonpolitical subjects.

On his European tour he visited the workshops where Stradivari and Guarneri made their instruments and their descendents still do. During the lectures given at these shops, he learned about the methods of work, the different kinds of wood used then and now, and the surprising fact that all the surviving violins have been modified and altered through the years by successive owners.

In Bronx, NY he watched with amazement as skilled workers made parts and assembled a grand piano at the Steinway factory. Later, during another visit, he talked to James Olson about his renowned and very expensive guitars.

There are chapters about how wood developed through a billion years and about the thousands of varieties: the colors, density and hardness, structure, and usefulness.

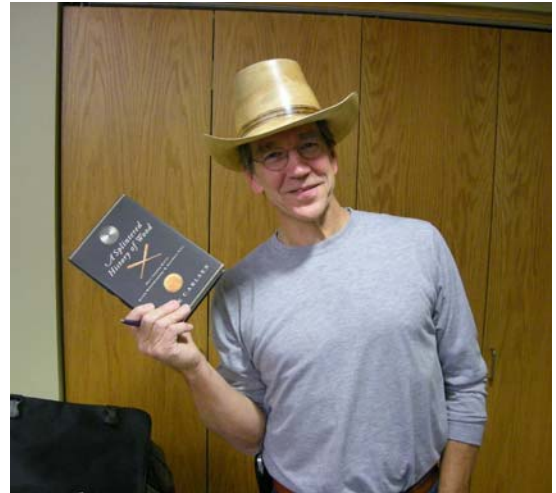
For more than just wood hobbyists, there is an International Wood Collectors Society. There are over a thousand members in every country, avidly storing and cataloging samples. Among them is Gary Green from Indiana who has 3500 samples, 700 microscope slides and many grain curiosities.

And then, there are the people who make sports equipment: MaxBat in Booten, MN for maple baseball bats, Louisville Golf for persimmon golf club woods, and Arnot Wadsworth III for very special pool cues. Also there is a chapter about special wood and techniques for tennis racquets and the logs for sawing contests. Sports use a lot of wood. Several million board feet for Louisville Sluggers each year and that's only for one sport.

War weaponry, especially during ancient and medieval times, used vast amounts of oak for siege towers, catapults, and ships. The description of the huge catapults that hurled 300 pound stones as well as diseased animals and humans, flaming balls of junk, poisonous snakes and hornets nests into ships and against walls is especially interesting.

There's much more; these are only samples of the subjects, details and descriptions. There are chapters about bows and arrows, Howard Hughes' spruce goose, the ill fated Swedish warship, Vasa, which capsized and sank when launched, and the art of coopers and barrel making.

I'm sure you will enjoy the book. I certainly did.



Spike holding his book.

Fall Seminar - continued

When you change a bandsaw blade, start by turning the wheels backwards by hand. Until you set the proper tracking and guide bushings, there is a risk of catching a tooth. By turning backwards until you know it turns freely you minimize the potential damage to your blade.

Most people apply too much tension to the bandsaw blade. If the bandsaw is adjusted correctly, tracking correctly, and guides set correctly, only low to medium tension is required on the blade. Set the blade tension such that you can get approximately 1/4 inch of deflection on the unsupported blade without turning your fingernail white. The bandsaw tires should last your lifetime, and the lifetime of whomever inherits your saw. Premature bandsaw tire damage is usually the result of running too much blade tension.

Tracking should adjust the centerline of the bandsaw blade with the center line of the tire wheel. If this is off, then you will need to compensate the drift of the cut by offsetting the bandsaw's fence from square. If the blade is tracking on the centerline of the tires, then you can set the fence square to table and not bother with compensating drift angles. Dust collection is an important issue with bandsaws. Most bandsaws are equipped with a dust port at the lower guide bearings or bushings. Use this dust port. If you have enough dust collection capacity, consider adding a second dust port in the lower left corner of the bottom wheel housing. Consider adding a brush on the lower wheel. The brush will help keep the tire debris free.

Adding a task light to the bandsaw is easy to do. These lights are commonly available and the additional illumination will help you follow a line correctly.

A 1/2 hp motor is adequate for virtually all applications. Even when resawing wide stock, you can modulate the load on the motor by slowing your cutting speed.

A bandsaw blade should be good for cutting approximately 800 linear feet of hardwood. With particle board, you should not expect more than 200 linear feet before the blade dulls. Either avoid cutting particle board on your bandsaw, or dedicate an old blade to this task.

end of Fall Seminar Article

Cryogenic Processing and Tool Steel ***by Ron Corradin***

The quality of our woodworking depends mainly on how sharp our tools are. Good design and proper materials selection are important. But wood is shaped with edged tools and the better the edge, the better the results.

There are many books and articles about sharpening hand tools, about the best ways to do it and what materials and techniques to use. But the metallurgy of the steel that makes up the tools gets less attention. What we know about our plane blades, chisels, knives, and other non-carbide edges is that they are made from some type of high carbon steel and have undergone heat treating.

Heat treating involves heating steel to a high temperature (usually over 1800°F) and then cooling it at a precisely controlled rate to room temperature. Reheat cycles to anneal or temper the steel are also used. This all affects the crystalline structure of the steel. Done properly, heat treating optimizes the balance of hardness, strength, toughness, and ductility of steel. But we now know the process does not stop at room temperature. By adding the step of cooling steel to cryogenic temperatures (-300°F) and then warming it at a precisely controlled rate to room temperature the properties of the steel can be further improved.

I recently got a lesson in the present state of the art in blade metallurgy from an unexpected source: a sword maker at the 2008 Minnesota Renaissance Fair. Daniel Watson is the head of Angel Sword Corporation in Driftwood, Texas. He holds a Master's Degree in metallurgy and has become an expert in the cryogenic processing of blades. He has multiple patents in this technology, which he continues to advance. The next nine paragraphs (used with his permission) are from a flyer I found at his Fair booth.

What is Cryogenic Processing?

Cryogenic processing is a computer-controlled thermal treatment that uses extreme cold to enhance a material's uniformity, strength, durability, and toughness. **Metal Science Services** uses a multi-wave thermal process that cools materials, in stages, at precise temperatures and for precise durations, with each step tailored to the specific properties of the alloy being tested.

Thermal Cycling

Cryogenic processing cools materials to -300°F and maintains them at that temperature while they undergo a thorough molecular transformation. Once the transformation is complete, the temperature of the material is carefully raised until it reaches ambient equilibrium. The entire cycle can take 70-75 hours, depending on the intended applications. For steel, a tempering reheat to stabilize the crystalline structure follows cryogenic processing.

When cryogenically processing steel, the molecular transformation accomplishes several important things:

Austenite to martensite conversion – Normal hardening transforms austenite, with its unstable crystalline structure, into martensite, which is much stronger and more durable. However, normal hardening doesn't convert *all* of a steel's austenite to martensite. For that to occur, cooling technology is required. Cryogenic processing results in the nearly-complete transformation of retained austenite to martensite.

Carbide particle formation – Normal hardening creates carbide deposits that disturb the alloy's crystalline structure. During cryogenic processing, small carbide particles precipitate out of the crystalline lattice, and are more evenly distributed throughout the material. This reduces residual stresses and creates a very hard, fine carbide lattice structure.

Refines steel grain structure – All the individual particles that make up an alloy steel are placed into their most stable state. These particles then are aligned optimally with surrounding particles. In addition, molecular bonds are strengthened in the process.

Relieves internal stress – Particle alignment and grain refinement combine to relieve internal stresses. This results in steel that is optimized for durability, eliminating internal stresses, which might normally lead to early fracturing.

Cryogenically processed steel is:

- **Stronger and tougher** – Cryogenic processing affects the entire internal structure of the treated part, creating a stronger, more uniform crystalline structure.
- **Wear-resistant** – The enhanced strength and toughness of the martensite structure improves wear-resistance.
- **Permanently improved** – One treatment lasts the lifetime of the part. Grinding, sharpening, or refinishing does not affect the temper's benefits.

For non-ferrous materials:

The extreme cold temperature of cryogenic processing also slows movement at the atomic level, increasing the internal molecular bonding energy and promoting a pure structural balance throughout the material. The end result is a material with an extremely uniform, refined, and dense microstructure, with vastly improved properties. Aluminum, polymers, copper, titanium, and many other materials can benefit from cryogenic treatment. Furthermore, the materials are permanently enhanced- one treatment lasts for the lifetime of the part.

Daniel told me that cryogenic processing increases the hardness, the abrasion resistance, and the impact resistance of blades. The tempering reheat is done in a carbon monoxide atmosphere that carburizes each tool to a significant depth.

I took a college course in metallurgy in 1972. Based on that, I can say that more complete austenite to martensite conversion, better carbide particle distribution, refined grain structure, and lower internal stresses are all good things to have in a steel blade, whether in a sword or a hand plane. Will cryogenic processing actually do all this to a steel blade? Daniel Watson's description of his work convinces me that it will. Cryogenics is a major advance over 1972's state of the art.

What works for swords works for woodworking tools. The Hock Company sells cryogenically processed hand plane blades, and their blades have gotten good reviews.

If you want to learn more or are interested in having tools you own cryogenically processed by the Angel Sword Corporation you can visit their web sites: www.angelswordstore.com, www.angelsword.com, and www.swordarts.com. The company's e-mail address is: info@angelsword.com. Phone/fax: (512) 847-9679.

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The following suppliers offer special discounts to Guild members. To receive a discount you must be a member in good standing and show the merchant your current membership card.

Abrasive Resources

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Eide Saw Service

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1329 Tyler St. NE (Behind Youngblood Lbr.) Minneapolis 612-789-3288
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Hirshfield/Lathrop Decorating Centers

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www.hirshfields.com

Holdahl Company

1925 Annapolis Lane, Plymouth (612) 333-7111 or (800) 777-8992.
Commercial cabinetmaker's

supplier but will sell at wholesale to Guild members - router bits, saw blades, abrasives, tools for laminating, laminate, decorative and functional hardware.

Nob Hill Decorative Hardware

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Decorative hardware for doors, cabinets and bathrooms. 10% discount, 15% on orders over \$1000.
www.nobhillhardware.com

Rockler Woodworking

Minneapolis, 3025 Lyndale Ave S (612) 822-3338; Burnsville, 2020 W Cty Rd 42 (952) 892-7999; Maplewood, 1935 Beam Ave (651) 773-5285; Minnetonka, 12995 Ridgedale Drive (952) 542-0111
10% discount on all regularly priced items except power tools.
www.rockler.com

Savitt Brothers

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Woodcarvers Store & School

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www.woodcarversstore.com

Youngblood Lumber Co.

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Wholesale prices to Guild members.
www.youngbloodlumber.com

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Mike	Klemm
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Ken	Bott
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Brian	Lorentzen
Kim	Spence
Chris	Van Ballegooyen
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Marc	Paulson
Jon	Cumpton
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Bob	Meyer
Douglas	Cohen
James	Kaley
Dennis	McFadden
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THE CLASSIFIEDS

Material;

8/4 and 10/4 Hard Maple Slabs. All are 30" wide and 121" long. I rescued this log from being burned! They were sawn on a bandmill, dried in a vacuum kiln to 6%, and are quite flat. There was not a knot in the whole flitch. I've got 10 of these available. I'm asking \$5/bf, discount possible if purchasing more than one. Contact: jason@jholtz.com, 715 557-0328

Nemadji Woods of Sandstone Minnesota would like to announce that we have a full assortment of hard and softwoods for purchase at very competitive prices (Ash, Maple, Oak, Basswood, Pine, Hickory and Cherry). We have both a Vacuum Kiln and D/H Kiln for drying wood. We also have a full service milling operation for custom requests, which is able to produce and replicate moldings. We are able to accommodate the needs of both the large and small wood worker. For types of wood available, pricing and other information contact Ken, Toll Free at (888) 496-5556 or (320) 245-6909 during regular business hours.

Woodturning – Architectural, Furniture components and Artistic. Diameters up to 18" and lengths up to 8 ½ feet. I can help with design or duplicate an original and supply the turning blank or use yours. Quantities from 1 to 100 or more. Contact Don Wattenhofer at 763 360 8282 or 218 573 2386 drwatt@arvig.net

Wood For Sale: 175 board feet 4/4 white birch S2S (milled to 13/16") SL1E @ \$3.00 a B/F (mostly 8' lengths) and 225 board feet 4/4 clear alder S2S (milled to 13/16") SL1E @ \$3.25 a B/F (mostly 8' lengths) Contact: Larry Moy, 651-208-7525 or I.A.Moy@att.net

Tools;

Ryobi Woodworking Drill Press, Model 1850. Includes, fence, adjustable tilt table, hold down, depth stop, automatic speed control (no belt change), adjustable height, turns 180 degrees for tall work. Good condition. \$100.00 cash. Contact Nick (763) 476-1621.

Performax 22-44 Pro drum sander. Full size floor model, 22" working width, 44" in two passes. 1-3/4 HP TEFC 110 Volt motor. Includes all accessories, casters, infeed/outfeed tables and abrasive storage shelf. Extra abrasives included. Made in USA (Burnsville MN). Excellent condition! \$1,275. Imagine perfectly flat glue-ups, no scraping or hand sanding. Call 612-810-4813 or email warren.weber@comcast.net

Restored trade and collector tools from early 1800's to 1950's. Large assortment of quality planes, chisels, saws and hand tools. Grey Wolf Antiques will provide current guild members with a 15% discount on all tools. You must present your membership card. Located at Midtown Antique Mall, 301 South Main Street, Stillwater, MN or Email: gwa@lighthousebay.us

Personal & Services

Share a large fully equipped woodworking shop with 2 or 3 other woodworkers. Conveniently located in the former Singer building at the corner of University and Hampden St. Shop has total of 1820 ft.² with 1000 ft in common space and 18' X 20' personal space in separate rooms. Office space with kitchen facilities included. Stationary tools include:

- 10" Delta Unisaw with 50" Biesemeyer fence
- Rockler router table with JessEm router lift - - your bits
- 12" Band saw
- 10" Delta radial arm saw
- 10" Milwaukee miter box saw with table
- 12.5" Delta surface planer

- 6" jointer with 4' bed
- 12" Delta drill press
- Kreg pocket hole jig setup

Price (utilities included) \$230 month to month rental. Contact Dave Skogstrom at 612-822-1937

Plane soles milled flat, price ranges from \$12 for a block plane to \$40 for a #8. Sides can be milled square to the sole for \$15-\$20. Contact Chuck Pitschka at 952-935-0660, or by e-mail at cpitschka@mn.rr.com.

Mike Siemsen's School of Woodworking

We have a great line up of classes for 2009! Not only will you get to work with Mike but also some fantastic visiting instructors like **Garrett Hack, Adam Cherubini, Mary May, and Tom Schruck.** With a maximum of 9 students in a class you will get plenty of one on one time with your instructors. Classes are held in my shop on a quiet rural setting 35 miles north of the Twin Cities. We want our classes to be fun and relaxing as well as educational. Snacks and beverages will be on hand throughout the day and a healthy lunch will be provided. The shop is air conditioned. Visit my website at www.schoolofwood.com for more information.

Phone: 651-257-9166

e-mail: mike@schoolofwood.com

Advertising in The Classifieds is provided to members of the Minnesota Woodworkers Guild free of charge. The ads placed herein should be for goods or services that are of general interest to the crafts people who make up the membership of the guild. Ads for services will run until cancelled. Ads for tools and materials for sale will run for one issue unless renewed. For submissions, renewals and to cancel an ad, please contact Bob Bridigum, e-mail RLBridigum@aol.com or snail mail to 4755 Laura Lane, Shoreview, MN. 5126

Minnesota Woodworkers Guild
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www.minnesotawoodworkersguild.com

Guild Meetings

Mark Your Calendars

NOTE DIFFERENT DAY

Thursday, Dec. 11th - Gallery Tour - Landmark Center We've been invited to tour the gallery at the American Association of Woodturners national offices. Tib Shaw, Director of the Gallery, will speak about AAW and about the gallery itself as well as about the artists that contribute to the gallery. Hors d'oeuvres will be served.

Location: Landmark Center, 5th and St. Peter, Downtown St. Paul (across from Rice Park, the Ordway and the St. Paul Hotel).

Time: 7:00pm – 9:00 p.m.

Tuesday, January 20th – Cecilia Schiller's Woodcarving

Sculptor and wood carver Cecilia Schiller will demonstrate her traditional European relief woodcarving and Balinese sculptural carving techniques. Award winning sculptor and wood carver Cecilia Schiller spent several years mastering the art of traditional European relief woodcarving before traveling to Bali Indonesia in 2000 where she learned traditional Balinese sculptural carving. She now combines both methods in her amazing original works. She will show us how.

Location: Acme Tools of 4150 Berkshire Ln N, Plymouth, MN. From north I-494 to exit 23, Rockford Rd/Co Hwy 9, right at Rockford Rd., then rt at Berkshire Ln.

Time: 7:00pm – 9:00 p.m.

Normal Program times

Time: Show & Tell at 7:00 p.m.; Program starts at 7:15 p.m.

Check the guild website www.minnesotawoodworkersguild.com for updates.