Guild of Oregon Woodworkers

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August, 2019

OREGON WOOD WORKS

Ten Principles of Good Design

In the 1970's Dieter Rams redefined the parameters for successful mass-produced (and craft) design by creating his Ten Principles of Good Design. These tenets continue to inspire makers around the world:

#10 - Good design is as little design as possible.

Less, but better - because it concentrates on the essential aspects and the products are not burdened with non-essentials.

In This Issue

Next Program:

Jigs, Jigs, and More Jigs!

Tuesday, September 17

Social Time 6pm, General Meeting 7pm

Multnomah Arts Center (MAC)

No, this isn't going to be a meeting about Irish dancing, as much fun as that may be. One shop tool that doesn't get nearly enough publicity is the jig. Perhaps that's because jigs can come in all shapes and sizes and usually no two are exactly alike. They can be small enough to fit in the palm of your hand or take up a decent amount of space in your shop. Whether it's a handmade jig, or something that was purchased from the store, each jig has purpose and function.

At the next Guild meeting on Sept.17, will be an opportunity to give your hard working jigs a chance to shine! Bring some of your favorite jigs to share with everyone and be ready to explain what they do and how they have helped you in your shop! Perhaps bring an example of something you made with your jig and share at show and tell. Look around at the various jigs and collect ideas to either make your own or further enhance a jig you already have. There will be tables set up around the auditorium to browse through all of our members wonderful creations!

Be sure to bring your show and tell items to share. Also, don't forget money for the raffle, there will be some excellent prizes!

Also happening at the Sept. meeting, our president Steve Poland will present the proposed new Guild structure in preparation for membership to be asked to vote their approval in October.

John Sheridan will bring a copy of the 34-page Richard Jones "Estimating for Furniture Makers" that was developed for the students of the Leeds Design Workshops teaching program in England. John says that "if members want copies we can get them run off" and that Jones felt that at best a professional furniture maker could only get productive work accomplished about 75% of each week. The rest was administrative and sharpening time. Evidently the pricing estimation system has been accurate for many makers.

Social time starts at 6pm with the general meeting starting at 7pm. The board meeting will be held in room 8 at the MAC from 5:30-6:30 for anyone who would like to attend.

If there are any questions please contact CJ Marquardt at cj@cjmwoodcraft.com .

NOTES FROM THE GUILD PRESIDENT

Steve Poland

Hello woodworkers, I hope your summer has been enjoyable whether you were spending time with family or diving into projects, or doing projects with family even better! There is a lot going on, and I hope you look through the newsletter and web page to see what grabs your interest.

The strategic planning goal groups will be presenting some advancement proposals to the September general meeting in preparation for a vote on them at the October meeting. Primarily this will be a revised Board structure that will need your approval as Bylaw revisions. This consists of:

- Instituting two Vice President positions: *VP for Programs* and *VP for Member Support*. The idea is for VPs to assist and coordinate between assigned program Leads and the Board, rather than just warming up for taking on the President role.
- Changing the title of Treasurer to *Finance Director*, reflecting that this has developed from a stand-alone role to one working with a financial administration committee, possibly at some point a bookkeeper, and also with the Development Fund Raising committee that will be needed as we work toward a larger facility.
- Adding the board position of *Planning Director* which will essentially manage continuation of the work that has been outlined by the Strategic Planning process.
- Revising the current three different Membership Directors to *Membership Director* and *Volunteer Director*. (Sponsors, Monthly Programs and Professional Member positions become non-board Program Lead positions).
- Importantly, we will also be defining Lead and Program definitions for Diversity, Security, and a couple of other positions.

Shop users should also be aware that your Safety Committee has been studying hazardous materials in the shop. They will be looking at the Material Safety Data Sheets, determining which are needed for shop activities, and which may be taken out of the shop.

After that any "new" materials brought into the shop should first have a proposed reason and copy of MSDS information submitted to the Shop and Safety committees. Decisions will go through consideration of the safety and potential impact on the User, others in the shop, surrounding neighbors, and our equipment.

A temporary ban on the use of epoxy has been in place for several weeks. There are two aspects to the epoxy risks:

1) Toxicity - which can vary with the type of epoxy used as well as the cure state. **All** epoxies have exposure risks, even those that are advertised as non-toxic.
2) Dust - Although it is generally accepted that dust from ***cured*** epoxy is non- toxic, some of the particles produced by machining operations; such as cutting or sanding are smaller than can be trapped by ***any*** of our dust collection equipment. The tiny size of some of the particles (which can be as small as .010 microns) make them a threat as they can readily lodge in the lungs and have a permanent negative effect.

A Safety Committee team is working on policy specifics to be presented to the board at the September meeting. To repeat, *safety is our priority*.

As usual our Bird House building booths at Multnomah Days and Clackamas County Fair were a big hit with young craftspeople, and as a bonus, the Guild information booth at Multnomah Days also brought in about $500 in sales of some of the Toy Build products while elevating our exposure in the neighborhood. Thanks to everyone who volunteered for these events, and be sure to visit our booth at Art in the Pearl on Labor Day weekend. 32 volunteers have signed up for this!

And last here are a couple of Toy Build projects for your viewing enjoyment.

The Guild of Oregon Woodworkers is...

,,, a group of amateur and professional woodworkers committed to developing our craftsmanship.
Our Mission: To promote the craft of woodworking to the woodworkers of today and tomorrow.

Our Vision: A community of woodworkers that provide significant opportunities to develop, practice, enhance, and share woodworking skills.

The Guild offers many benefits for members, including:

- *Monthly programs*
- *Monthly newsletter*
- *Weekly Volunteer Special Interest Groups (SIGs)*
- *An education program to help members develop woodworking skills through a variety of hands-on and lecture classes*
- *Sponsor discounts*
- *Woodworking shows (such as Gathering of the Guilds)*
- *Network of business partners.*
- *A woodworking shop*
- *A network of friends and opportunities to volunteer and make a difference in our community*
- *Free and low cost community programs to join in learning woodworking skills through special interest groups, community build, & estate sales volunteering*

What you can do for the Guild

- *Volunteer your time to contribute, assist, organize, lead, teach*
- *Take a class*
- *Contribute your knowledge*

For more information see the Guild website or visit the shop.

Guild Shop - 7634 SW 34th St, Portland, OR 97219

Guildoforegonwoodworkers.org

Welcome New Members

Welcome to our newest **34** members. We're happy to have you with us and hope you'll make a regular appearance at the monthly program, contribute articles to the newsletter, and volunteer in other ways. Say hello at the next meeting so we can get to know you. New member orientation is 6:30-6:45 at each monthly meeting.

Adam Batz, Nicolas Boese, Jeremy Cannell, Michael Collins, Christopher Davis, Mitchell Drake, Matt Dunphy, Sue Flocke, Tim Glenn, David Goff, David Greimann, Nolan Johnson, Steven Judd, Erin Madden, Kat Maloney, Morgan Mcbride, Larry Mitchell, Amber Novak, Chris Oliver, Aaron Olson, Sarah Persha, Brendan Richards, Ezra Richards, Lisa Richards, Nick Sawyer, Nick Schneider, Shane Seaman, Albert Shiue, Blane Smith, Chase Stevens, Joshua Talbert, Colin Watson, Elan Weisz, Fred Williams

Guild Meet-Up!

Many of us who have joined the Guild recognize that woodworking can be a lonely avocation. It's fun to get together with other woodworker's to swap stories, share successes, and failures, and to ask questions. Come join the fun at the next Meet-Up ...

Monday, September 9 - 11:30am

The Lodge at Cascade Brewing.

7424 SW Beaverton Hillsdale Hwy, Portland
It is just west of New Seasons Market and the intersection of Scholls Ferry Rd and Beaverton Hillsdale Hwy.
www.cascadebrewing.com

Monday, October 7 - 11:30am

Sckavone's

4100 SE Division, Portland, OR 97202
Sckavone's is across the street from "Carbide Saw" a Guild sponsor. We will **not** be having a tour of his shop, but it is a good time to bring your dull blades to be sharpened and its always fun to see what bargains he has. (bring your dull blades he's a Guild sponsor)

The monthly Meet-Ups are held on the first Monday of the month and try to visit all parts of Portland. The goal is to allow members to get to know each other and develop friendships. Attendees order off the menu and pay on their separate check.

All the Meet-Ups gather at 11:30 am, but late comers are always welcome. Everyone in the Guild is invited.

Mark Your Calendar: Future Guild Meetings

October Meeting: Tuesday the 15nd
Mary May Carving Presentation

November Meeting: Tuesday the 19th
Terra Firma Design NW, Tom and Jennifer, teachers from Port Townsend, Marquetry and leaded glass focusing on furniture and lighting pieces.

December Meeting: Thursday the 12th
Annual Guild Holiday Party at the Multnomah Arts Center

STRATEGIC PLAN UPDATE – CHANGES ARE COMING

Ed Ferguson

On June 22nd, your Guild Board held a retreat to focus on the key priorities coming out of the planning process that was initiated last fall. It was a working session, and it came about as a result of months of researching, evaluating current operations, and developing our vision for the Guild's future. Three key goals were established. These goals will be the focus of our efforts for the coming year.

Goal #1:

Create an organizational structure that effectively provides the core administrative functions needed to support the Guild's programs.

Our current organizational structure was established 15 years ago, when we had no shop, very limited educational offerings, and little in the way of community outreach programs. Our membership was less than a quarter of what it is today and our operating budget has grown more than tenfold since then. We're a far more complex…and more diverse…organization than we were back then.

In order to support today's Guild, we will be restructuring the organization. The new structure will be better aligned with our expanded programs and changing membership and will provide the administrative functions needed to support these operations. Our President, Steve Poland, will be presenting this new structure at the September general meeting. The membership will be asked to vote their approval in October. Be sure to mark those dates on your calendar.

Goal #2:

Develop a volunteer culture of service that engages members as volunteers at the levels needed to meet the Guild's program and leadership needs.

The Guild is an all-volunteer organization. Our past success is due to the dedication of our members…and our future depends on it. We have a lot of offerings and encourage our members to take full advantage of them. We also ask our members to give back to the Guild. Our shop, classes, and community service programs would not exist without their efforts. It's a good bargain. Take advantage of it…and do your part.

With about a 1,000 members and hundreds of volunteer opportunities each year, managing this effort has become a challenge. Ed Swakon is leading a team that is creating new processes and tools to help accomplish this task. When you renew next year, you will be asked to identify your interests and the skills you can offer to support this effort. Be sure to let us know where you can help out. It's important to your Guild. And it's a cliché, but it's truly personally rewarding.

Goal #3:

Maintain woodworking resources that meet the needs of the Guild today and in the future.

We have a great shop. It is the hub of our programs and activities and a familiar gathering spot for many of our members. But looking down the road, we see the need to identify other opportunities for expanding our member's access to woodworking resources. We don't know what that looks like yet, but we need to explore the possibilities.

In the June newsletter, our Vice President, Gary Weeber, wrote about a new team authorized by the Board called the Woodworking Resources and Planning (WRAP) Group. And he asked for volunteers with particular experience and skills. That group has been constituted and is engaged in the assessment of options for meeting our future needs. They will be presenting their preliminary findings to the Board in January. So stay tuned.

The changes outlined in these goals will not happen overnight…or in the next few months. They are part of a long term process…and a change in our culture…that will keep our Guild centered on our mission of …
"Promoting the craft of woodworking to the woodworkers of today and tomorrow".

The Guild's new structure will be presented at the September general meeting. The membership will be asked to vote their approval in October.

GUILD OF OREGON WOODWORKERS

GUILD COMMUNICATIONS DEPARTMENT

Roger Crooks

As part of the new Guild organization and planning committee, a new Communications Director role has been established for which I was elected last month. This is a short article about what this means.

Communication Chair

- IT Department –Matt Kowalczyk, Jason Ray, Bill Keay, Roger Crooks
- Website – Roger Crooks, Matt Kowalczyk, Web Admins
- Newsletter – Linda Howarth
- Social Media – Position is Open
- Shows – Position is Open

IT Department - Details of what the IT group is doing can be seen on page 6 in the newsletter.

Website – After the programs detailed in the IT article are underway, I will start an initiative to update all the pages on the website along with the web admins.

Newsletter - Linda has been our newsletter editor this year and doing a fantastic job. As the editor, she takes content sent to her and formats it for the newsletter. Without content we have no newsletter so please send Linda articles, photos, ideas etc. To contribute to the newsletter, see guidelines on the website. Send content to Linda at newsletter@guildoforegonwoodworkers.org

Social Media – This position is responsible for the Guild's presence on social media applications such as Facebook, Instragram or other applications. Ken Hall got us started but we need a full-time social media lead. You need to be technically competent with these applications and more importantly, have the time to monitor these applications almost on a daily basis. If you are interested in taking on this position, contact Roger Crooks and see details on the website

Shows – This position is responsible for managing the Guild's involvement in shows such as Gathering of the Guilds, Multnomah Day, Art-In-The-Pearl, fairs, and other similar activities. If you are interested in taking on this position, contact Roger Crooks and see details on the website.

ALL IN THE FAMILY

Gary Weeber, Vise President

Some of us remember this TV show. It was cutting edge at the time and very much about the role of family in life.

We know that we have families in the Guild and are in the process of determining what role non-adults have in our environment of woodworking. Some of you may remember an effort that was done over a year ago but due to a variety of factors that effort never reached fruition.

We have taken a new look at Guild families and the Board has approved a family policy that will be in effect for now. Here are the critical pieces that are important to know:

- All family members must complete the Guild safety orientation class.
- All must sign the Guild liability release form with guardians also signing for the youth.
- Eligible youth will be considered only those ages 10-17.
- One or more legal guardians must be onsite and responsible for the youth whenever onsite at the Guild Shop.
- Under no circumstances will youth be allowed to use the equipment in the machine shop portion of the Guild Shop. They may only pass through the machine shop to access the bathroom or library and when doing so must be accompanied by their legal guardian. All Guild safety procedures must be adhered to when passing through the machine room - such as, personal safety equipment.

PARTICIPATION:

- These youth are allowed to have working access to the *bench room only*. They may use all hand tools and the battery-operated drills.
- If desiring to use sharp-edged tools, the youth and legal guardian shall review their knowledge of such tools with the Shop Attendant to ensure that their use will be in accordance with safety expectations.
- The member legal guardian must participate in all activities with the youth and ensure safe participation of the youth.
- Youth have access to and use of *the library* and bathroom but must be accompanied by the legal guardian when in the library or passing through the machine room.
- Youth are encouraged to attend monthly program meetings but must be under the direct supervision of the legal guardian when doing so.

What's in the future? Well, stay tuned but for now this is the policy that we will operate from.

GUILD IT GROUP AND UPCOMING ENHANCEMENTS

Roger Crooks

Did you know that the Guild has an IT group? IT stands for Information Technology and it is responsible for managing the website, the shop computers, shop camera, Google Drive and Guild emails. Much more information will be coming out over the next two months. The IT group is part of the Communications Group.

- Roger Crooks – Director, Web Content
- Matt Kowalczyk – Web Administration and Emails
- Jason Ray – Google Drive Manager
- Bill Keay – Shop Computers, cameras, and technical advisor

Below is a short summery of what the team is working on.

Website Management – **Matt Kowalczyk** manages the technical aspects of the website.

Website Content – **Roger Crooks** and a small group of admins manage the web content. Once the Google Drive and Email projects are underway, the next project is updating the website pages, hopefully by end of the year. Comments about the website content/errors should be sent to Roger. Technical issues go to Matt.

Shop Computers & Cameras – **Bill Keay** – The shop computer is mostly used by the Shop Attendants and is a closed system (meaning it is not to be used for any other applications other than what is installed). Bill manages this system and has done a fantastic job in setting the shop up in a logical and manageable way. Bill also assists in all other aspects of the IT group.

Google Drive –Jason Ray - This is a repository for all Guild documents. The goal is to move Guild documents from people's personal computers, so we have a secure and lasting place for the Guild's important documentation. We are about ready to roll out the next phase of Google Drive. We rolled it out last spring but with our new Role and Named emails, we are making changes on how to access it so we will roll it out again along with another training session for this second phase. Jason Ray recently joined the Guild and has an extensive background in this type of technology and an excellent communicator.

Guild Emails – Matt Kowalczyk – this is a major enhancement to Guild operations. The goal is to eliminate the use of personal emails for Guild business. In addition, it will simplify contacting Guild officers when people change roles and, once implemented, the website and other documentation will not need to change over time.

For example, contacting the President will always be president@guildoforegonwoodworkers.org – this is called a Role Email. When a new president takes over, that email remains the same, but the emails will be directed to a new person which is called Named Email. For example the above role email will send messages to steve.poland@guildoforegonwoodworkers.org . When Steve leaves, the role emails will go to the new president's names email. Thus, Guild Role Emails will never have to change.

These are being rolled out now. About 20 people will have a Role Email and Named Email by the time you read this. A document is being developed with more details for all those affected.

Role Emails Groups – A feature of the Role Emails is the concept of a group. This lets, for example, the Education committee to add all the people in the committee to be in a group making it easy to send a message to everyone in that Group.

While the concept looks simple, the implementation will take some time and will require users to adapt to the new system in how they manage their emails.

New Support Tools – to help users with these changes and manage Guild technology better we have some new tools;

> ***Google Hangout*** - Hangout is a set of free conferencing tools that enable our members to conduct meetings without having to be in a single location. This will allow us to have team or group meetings, as long as you have an internet connection, regardless of where everyone is. Hangout lets us share our screen or your screen

Bottom Line – Guild members will need to start using the role emails to communicate to the Guild. We expect there to be a transition period while people get used to these and update their contact lists. The IT team is here to help so if something does not work as expected, don't get frustrated, give us a call.

New Leadership in Guild Shop Safety

Recently, two new people have taken charge of groups dedicated to safe shop operations. **Jeff Hilber** is now the head of the Safety Committee and **Bruce Coorpender** is the Lead Shop Attendant. They recognize that machines used in woodworking are dangerous, particularly when used improperly or without proper safeguards. Workers operating woodworking equipment suffer the following common injuries: laceration, amputation, severed fingers, and blindness. Wood dust and the chemicals used in finishing are health hazards, and workers in this industry can suffer from skin and respiratory diseases.

Jeff, Bruce, the Safety Committee members, and the Shop Attendants want to remind all shop users of the following Guild Safety Statement:

The Guild of Oregon Woodworkers recognizes that there are safety and health hazards associated with woodworking shop activities. The Guild wants all users to benefit from the use of the machine shop and bench room without harm to the user or other people in the shop. The principal safety hazards common to woodworking are:

- Machine hazards
  - Point of operation – contact with sharp edges
  - Rotary and reciprocating movements
  - In-running rip points (pinch points)
- Kickbacks – when saw seizes the stock and hurls it backwards
- Flying chips and material from machinery
- Tool projection – parts thrown from tool failure
- Fire and explosion hazards

Most health hazards are associated with long-term exposure. These principal safety hazards common to woodworking are:

- Noise
- Vibration
- Wood dust – carcinogens
- Chemical hazards – from exposure to coatings, finishings, and adhesives, and solvent vapors

The shop user has primary responsibility for their personal safety. The shop user is required to be knowledgeable in the equipment used, follow shop guidance, assess risks of each operation, wear personal protective equipment, and maintain an orderly workplace.

The Guild supports safe operations with:

- Training
- Safety Manual and equipment operation standard requirements
- HOST test of potential users to assess minimal acceptable skill competence
- Requirement for using personal protective equipment (e.g., safety glasses, ear protection, and dust masks)
- Maintenance of machinery and implementation of physical safeguards
- Posting of warning signs and maintaining first aid kits
- Dust control system
- Requirement to maintain good housekeeping
- Investigation of accidents to determine causes and prevent similar incidents
- Shop attendant oversight and safety enforcement

Watch for Dangerous Decibels: Protect Your Hearing

Linda Howarth

Working in a woodworking shop is fun, it can also be noisy. I know you have heard about protecting your ears but do you understand why and how?

I am an occasional woodworker but before retirement I coordinated a program at the OHSU called Dangerous Decibels. The program was designed to teach kids about protecting their hearing.

It is never too late to protect your hearing. Even after you have lost some of your hearing, you probably would like to preserve the rest of it so that, for example, you can hear your kids and grandkids laughing, or the roar of a waterfall and whisper of the wind in the trees, and more.

There are three concepts that I'd like to share with you because they will help you understand what, why, and how.

How Loud is Too Loud?

Decibels are a measurement of sound just as inches and feet measure distance. According to NIOSH (National Institute for Occupational Safety and Health) 85 decibels (dBA) is a safe dose for up to 8 hours over a 24-hour period. That means that you can be working in a factory or other occupation where the noise level is 85dBA for 8 hours and most people will be fine. But if you then go to the shooting range or music venue, or go into your workshop after work, you add more noise to the equation.

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DANGEROUS DECIBELS...*continued from page 7*

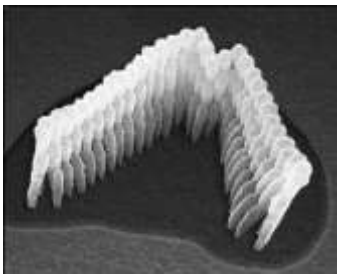
For every additional 3 dBA, your safe listening time is cut in half. Meaning; if the sound is 91 dBA you have just 2 hours of relatively safe listening time per 24 hours. (Don't worry about the "A", it just gives a more actuate reading of the sound)

So what is 85dBA anyway? 85dBA is the sound of a busy street corner. Next time you are standing at the busy city street corner, listen to the sound. That is about 85dBA. 91dBA is the sound level of a gas lawn mower. A band saw is about 98dB when measured at the ear drum.

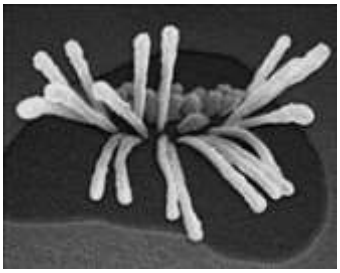
OSHA (Occupational Safety and Health Administration) says that 90 dBA is the limit for 8 hours. This difference between NIOSH and OSHA is because OSHA is specifically for industry. Economics and politics come into play for their limits. Many countries in Europe are more conservative and put the 8 hour limit at 70dBA.

How do loud sounds damage hearing?

You probably already know that sound is vibration. The vibrations are the sound waves. They strike the ear drum to make it move. The ear drum makes the middle ear bones move to send that energy into the cochlea of the inner ear. Within the cochlea are tiny cells called hair cells because of the hair-like structures called hair bundles on the top of them. There are about 18,000 hair cells in each ear. The sound moves the hair bundles, which in turn changes the movement into electrical energy stimulating the auditory nerve. The signal travels up the nerve to the brain and the brain recognizes the sound. These tiny hair cells are very important in the process of hearing. They are also very tiny (all 18,000 could fit on the head of a pin), sensitive, and delicate. If too much movement (sound) pushes them over too much or too often, they can break off. If too many of them are damaged, the whole cell dies. That group of 18,000 hair cells is all you get to last you a lifetime.



Normal
Inner Ear Hair Bundle



Noise Damaged Inner Ear
Hair Bundle

Think of hair cells as you would a patch of grass. You can walk across that patch of grass and the grass bends but comes back up straight. But if you walk over the grass over and over again or you drive a truck over the grass not all the grass will come back up straight, many blades will be broken. The truck is like loud noise. The blades of grass or the hair bundles bend over and are broken off, killing the cell underneath. The death of a cell is permanent. No hair cells will grow back to take its place. Lose enough of those cells and you may have lost a whole frequency of sound.

It is the hair cells that we need to protect. They have to last our whole lifetime. Even if you have already lost some of your hearing you should protect what you have left so you don't lose even more. Hearing aids will only amplify sound, they will not take the place of the hair cells you have lost.

Three Ways to Protect Your Hearing.

1. TURN IT DOWN – If you turn it down below 85dBA you can listen to it for as long as you want. Rule of thumb for personal music users – if I am an arm's length away for you as you listen to your device and I have to raise my voice for you to *understand* what I am saying, the volume is too high.

2. WALK AWAY – Just by moving away from the sound will reduce the decibel level enough to make it safe depending upon how loud the sound is at the source. Even moving away just a few feet will make all the difference.

3. WEAR HEARING PROTECTION – Wear ear plugs or ear muffs. Depending on the circumstances, your own comfort and needs, and personal preference either of these options works.

Proper insertion of the ear plugs is important. You can get foam plugs in grocery, hardware, and drug stores but there are many types of plugs available. Foam plugs take some finesse to put them in properly. (Roll the plug between thumb and finger tips, pull the top of your pinna (outer ear) up to straighten the ear canal, insert the plug and hold it there for a few seconds while it expands to fill the space.)

Personally, I like the flange, or reusable ear plugs. They are easy to fit into the ear canal and fit many sizes of ear canals. Yes, there are large and small ear canals. Find the plugs that fit best and most comfortably for you. Again proper insert is important. With this type of plug, again pull your ear up with one hand and insert the plug with the other. As you are pressing the plug into the ear twist the plug slightly and it will fit nicely into your ear canal. When removing the plug twist slightly again and pull. They often come in little boxes and with strings attached so they keep clean and ready for use.

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DANGEROUS DECIBELS… *continued from page 8*

You can even get them specially for listening to music. These are high fidelity plugs that reduce the volume by about 20 decibels but also maintain the integrity of the music – great for concerts!

Ear muffs are good for the shop also. They are comfortable and you don't need to insert them. Watch out if you wear glasses. The seal around the muff might not be as tight as it should be so it might allow in more noise than you want. Lots of ear muffs are available depending on what you are looking for. My husband Gig wanted ear muffs that allowed him to hear the radio and other sounds around him but still protected him. I got him a pair of Bilsom Impact muffs from Howard Leight. They have a microphone to allow him his listening choices but keeps all sound lower than 82dB. You can get muffs that connect to your IPod or have a built-in AM/FM radio. Whatever your situation or need, there is an ear muff that will do what you want.

Most ear plugs and ear muffs are rated at about 25dB which means that it should reduce the sound level by 10 - 15 decibels. It is very approximate – basically one-half the listed NRR rating until standards are better set. If you are dealing with a lot of noise you can try combining the plugs with the muffs for the most protection.

Places to buy ear plugs or muffs are a safety supply stores or go online to www.earplugstore.com or similar website.

Remember to have several sets of ear muffs or plugs available in your shop. They are only effective if you use them properly and you will only use them if they are handy and comfortable.

AS HISTORY WOULD HAVE IT

Gary Weeber

> *"A people without the knowledge of their past history, origin and culture is like a tree without roots."*
> ***Marcus Garvey***

As many of you know, the Guild of Oregon Woodworkers started in 1978. Although that is relatively recent in time, it was still 41 years ago. In that 41 years the Guild has grown and changed in many ways.

How much do we know about that history? Why was the Guild started? How has it changed? What are some significant events that have happened? Who have some of the leaders been and what are their stories?

We have pieces of that fascinating history known by some but the history is not known by many and it is not captured in writing. Although there is some wonderful information on our website about our history there is so much more that can be told.

Do you find yourself fascinated by history? Do you have a particular interest in the history of woodworking and the Guild of Oregon Woodworkers. Well…information about the Guild history is out there, including pictures. How about even adding some oral captured from some of the 'old-timers' that are still around?

We would like to see the history of the Guild captured for future generations. Would you be interested in helping us do that? If so, please contact me at siweeb@gmail.com. I would LOVE to talk to you. The stories are just waiting to be told.

2007 Monthly Guild General Meeting.

GUILD CLASSES - *See the Guild website for registration and details. Contact the Class Coordinator with questions. All classes are held at the Guild Shop unless otherwise specified. 7634 SW 34th St, Portland, OR*

BASIC BUILD - MAKE YOUR FIRST CUTTING BOARD

Mike Chia
Sep 3, 1-5

Class Fee: $60
Class Coordinator: Craig Jones
This is an introductory hands-on class where students will learn the steps to making a laminated cutting board. The class is designed to also provide an introduction to several shop machines, including planer, bandsaw, router table and sanders.

FOUNDATIONS OF CLASSICAL CARVING

Chuck Rinehart
3 Sessions, Sep 7-21, 9:30 - 1:30
Class Fee: $180

Class Coordinator: Larry Wade
This class was designed as a hands-on introduction to the essential topics of carving and also to satisfy the prerequisites for Mary May's 2 hands-on classes. If it is full, please add your name to the Wait List.

INTRODUCTION TO SKETCHUP FOR WOODWORKERS

Mike Chia
Oct 8, 1-5, $60
Class Coordinator: TBD
This class is an introduction to 3D modeling using SketchUp Free, a free browser-based modeling tool. The class assumes no prior experience with SketchUp and will cover the basics of getting started with the software.

Attention Wood Carvers! The date is fast approaching when world renowned wood carver Mary May returns to the Guild. She will teach a demo and Q & A session targeted at wood carvers of all levels and have two smaller hands-on classes for the experienced. Also, in her presentation at the monthly October Guild meeting, she will make the case that those of us who think of ourselves to be furniture makers (but not carvers) should consider adding wood carving to our skill set and to our projects.

Check the listings on the Guild website under the Education Calendar. Also notice that some free bench room time on Tuesday mornings, called **Open Carving**, have been scheduled before Mary's visit. These are opportunities to practice carving and sharpening, whether for Mary's or Chuck Rinehart's classes. While you are on the site, take a look at the Interest Lists (shown on Sep 30) for carving class opportunities taught by Chuck Rinehart.

CARVING HINTS & HELPS

Mary May
Oct 15, 10-2, $50
Multnomah Art Center
Class Coordinator: Larry Wade
In this program, Mary will use slides and projected close-ups of demonstrations to present tips and techniques that she has learned over the years. Beginning and intermediate carvers should find the ideas interesting, and there are no prerequisites. Submit your questions— here is your chance to get them answered.

LETTER CARVING - PERSONALIZATION AND SIGNS

Mary May
Oct 16-17, 9-5, $350
Class Coordinator: Heidi McNamee.
Carved letters can enhance your own furniture or be used to make lettered signs. This class will focus on straight as well as cursive letters. Advanced beginners and intermediate carvers are welcome, but be sure to check the prerequisites.

SHELL AND FAN CARVING

Mary May
Oct 19-20, 9-5, #350
Class Coordinator: Ruth Warbington
This class is full, but if you are interested please add your name to the wait list. If we should have a cancellation we want to be sure to fill the empty slot.

AFFILIATE UPCOMING CLASSES

See their websites for more details and offerings.

Northwest Woodworking Studio
Inlaid Bookcase
Tuesdays, Oct 15-Dec 17
Instructor: Gary Rogowski

Anvil Academy
Women's Blacksmithing
Sep 25
Instructor: Rob Lewis

Multnomah Day and Clackamas County Fair
A Big Day for Area Kids and Birds

Roger Crooks

Saturday August 17 was a busy day for the Guild with three simultaneous booths. We had 34 volunteers step up for 4-8 hours shifts. In the village, we had a 10x10 booth on the street selling toys from the Toy Team. It can't get any better selling cool toys to little kids who are hyped up on sugar and the excitement of a parade.

Parents talked about the toys their Dad made for them that they cherish. The eye-catching toys were the pull toys with movement – especially the grasshoppers. We received a lot of nice comments about the charter of the Toy Team. I think we will get a half dozen new members – at least they said they would ☺

The second booth in the village was in the Multnomah Arts Center's (MAC) kid's zone. This is the fourth year we have partnered with the MAC to help kids build a bird house. After the parade, there was a steady stream to the 20 x 20 booth. Kids as young as three could walk away with the bird house and go to other booths to decorate them. By 1:30, the team had gone through all 150 kits.

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BIRDHOUSES AND KIDS...*continued from page 11*

Across town was the Clackamas County Fair where Don Cline led a team of 13 members also building bird houses. The Guild has been doing this for many years and they are almost a staple at the fair. Another 130 birdhouses were built and then decorated.

This was not just a one-day event. The Toy Team and Project Build work year-round with lots of volunteers. Over 300 birdhouse kits were made this year with improvements made to over the years to make them as easy as possible for kids.

MANY THANKS TO ALL THE VOLUNTEERS!

A New Adventure - Steam Paddle Wheel Tugboat

Steve Poland

Community Projects has a new adventure coming up. Our own Jim Spitzer, has volunteered with the Oregon Maritime Museum (OMM) for many years. OMM owns the steam paddle wheel tugboat PORTLAND and they contacted Tim Moore asking if the Guild would work with them to replace a dozen fixed sash window frames in the engine room.

Tim, Roger Leverette, and Steve Poland met with Dan Butler, Fireman of the Steamer Portland (and a licensed River Pilot) on Saturday August 10 to look at the existing window situation.

We will have to go back to measure and document in more detail, but the basics are that there are a dozen fixed wood window sashes that are bolted to the inside face of the ¼" steel engine room wall plates. Partly because these openings are tilted inward about 30 degrees from vertical, they are suffering from poor sealing and drainage and are rotting.

They were replaced within the last 20 years, and are simply made from D.Fir 2x4 stiles and 2x6 rails. It is not yet clear whether these are typical mortise and tenon construction, half-lap, or bridle joint, but a couple of them appear to have the stiles set between the rails, and these are in worse shape than the others. The other challenge is that they are not rectilinear, but instead have a parallelogram shape where each port-starboard pair has a different angle to the rails in order to follow the curving shear line of the deck.

We will be doing some research to come up with the best way to construct and install the replacements, which may include exterior trim and or flashing to improve water shedding. We also plan to visit Versatile Wood Products, a firm that specializes in repairing and replacing historic wood windows to seek tips on wood species, detailing and finishing.

It may be a several weeks before this project is ready for production, but it should be interesting.

What Our Members Build

Send in your photos *- Please send us photos and notes about your wonderful work. Please include a little info on the piece: type of wood used etc. Send your photos to newsletter@guildoforegonwoodworkers.org*

John Sheridan won second place in the woodworking section, "Creative Living", at the Oregon State Fair. Congratulations John!

The mirror is titled "A Key to a Journey of the Heart." -- Bird's Eye Maple.

The other piece is a laminated step stool.

HELPING THEM BUILD A PLACE OF THEIR OWN

Tim Moore

Many of our members have run into CMAG before. That is the Creative Metal Arts Guild, a not-for-profit organization of metal artists that includes artists, makers, metal smiths, jewelers, sculptors and hobbyists. It currently meets at the Multnomah Arts Center but is planning to establish a new workspace in Vancouver, which will allow them to work more intensively and hold more classes.

More classes will both meet the desires of their members and allow their Guild to become far stronger financially, which could allow more collaboration with other Guilds in the future. To help establish the new facility in Vancouver, they will need to come up with about a dozen workbenches, and we are looking at building the benches for them as one of our own community projects. They will also need a great deal of other equipment, for which they are seeking donations. So you could look at this as a welcome opportunity to do a little selective culling, and pass on that fourth pair of Starrett 6" dividers to a very worthy organization.

Jewelers of course have many highly specific tools that woodworkers are unlikely to have at home, but there is a surprising overlap as well, everything from anvils to X-acto knives, along with many files, hammers and mallets, grinders and buffers, etc. They would like to get a drill press, for example, though their dream machine is far smaller than the kind woodworkers lust after; it stands about 12" tall.

Here is a partial list of the tools they are seeking, and the full list can be found here. If you would like to see the full list, contact me.

Steel rulers
Dividers
Household (claw) hammer, ball peen hammers
Brass, Wood, and Rawhide mallets
Pliers, Metal snips and shears
Dental tools
Forming stakes
Anvils and mechanic's vises
Bench grinder
Drill press
Flex shafts (like Foredom)
Forming stump or bench
Worktables
Welders' goggles
Safety glasses
Sandpaper (240-2000) grit

Note that due to their 501(c)6 status, these donations are not tax deductible except if you can write them off as a business expense.

Donations can be left at the Guild and I will get them to the CMAG facility committee.

THE SHERIDAN SCOOT STOOL

John Sheridan

The Scoot Stool (copyright) was originally designed by John Sheridan and published in Woodwork (Feb 2004). Presented here is a revised, 2016, version with a simplified process and made from available scrap material. This was also one of the introductory projects that students at the San Francisco WoodShop complete within their first few weeks.

The material used in this version was salvaged plywood from packing crates. Originally 3/8", the ply was laminated, doubling the thickness to ¾". Any similar scrap plywood can be used, laminating if necessary for an adequate thickness.

INTRODUCTION & OVERVIEW

The "Scoot Stool" is the handy kitchen, bath, garage, and shop companion that you will find yourself using all the time to get the paint roller up to the ceiling, the serving platters down from the upper cabinet, and the scrap wood off the highest rack. I have built many of these with recycled plywood and a few with solid wood, all with Lamello biscuits and a Lamello cutter but certainly it can be made with other joinery. Whichever joinery you choose, the angled sides that provide the exceptional stability need to be cut carefully and accurately.

The stool is a tiny ladder, designed to be sturdy, dependable and as light as possible with simple, fast joinery carefully laid out and executed. I also wanted it to look elegant so that it could sit comfortably in any room. I worked through a series or prototypes that were first hastily constructed and appeared clumsy. But that journey through various iterations is essential to the designing process. In later versions, the footprint of the base was moved outside the perimeter of the top, which improved stability, safety and appearance. The current version now has a narrower top than the version I originally published.

This is the procedural outline for making the revised "Scoot Stool" with a simplified process and made from available scrap material. Guidelines for both laminated plywood and solid wood versions are included and we will discuss both limited production and one-of-a-kind construction.

TOOLS

- Rasp
- Protractor
- Angle Gauge
- Straight Edge
- Table Saw
- Sanding Block
- Panel Saw or Table Saw with a Slider Box
- Hand Plane or Jointer
- Lamello Biscuit Cutter

JIGS AND SPECIAL EQUIPMENT FOR LIMITED PRODUCTION RUNS

- Tapering Jig #1 & #2
- Handle Jig
- Step 2008 Layout Gauge
- Top 2008 Layout Gauge

PROCESS SUMMARY

- Mill and sand 8 to 10 board feet of timber to the thickness preferred.
- Cut the top to a snug fit for the special handle router jig (square edges)
- Cut and round over the handle.
- Rip cut the lower step to 8 3/4″ width with a 12 degree bevel.
- Joint and rip the sides to a 12″ width.
- Crosscut the sides and step with a 7 degree bevel on the edge. The sides are 15 5/8″ on a side, and 15 3/4″ overall. Fit to the tapering jig. The step is 13 7/16″ long.
- Taper the sides. Place a side in the first jig and mark the line. Bandsaw 1/16″ outside the line. Rout the edge. Place in the second jig to mark, remove to cut, rout. Repeat.
- Lamello. Check the longer instructions. Cut the lower step first. Dry clamp to find the correct spacing for the top/side connection. Lamello the top and sides.
- Sand and Assemble.
- ♦ Finish.

See detailed step by step instruction on how to make your own Scoot Stool follows on the next few pages.

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SHERIDAN SCOOT STOOL...*continued from page 16*

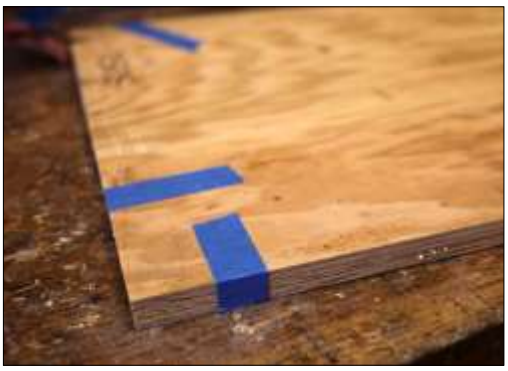
DETAILED STEP-BY-STEP PROCEDURE

Preparing the Recycled Plywood

My plywood materials are the 3/8" sides of the shipping cartons in which the Swiss company Caftec sends its $14,000 automated espresso machines to California and around the world. Other than these remnants, which I laminate for thickness and strength, virtually any material that is at least ¾" thick (except MDF or particle board) could be used.

- The first step is to dismantle the crates and strip the wood of any hardware (screws, nails, etc) and stickers that might interfere with gluing. Trim off ragged or unusable edges if necessary.
- Pair pieces of similar size together and apply wood glue thoroughly to one side of a piece. Working quickly, sandwich the two pieces together and tape the edges at each corner to keep the boards from sliding out of alignment. I place mine in a vacuum press overnight at the standard 14.7psi. The glue is Titebond "Extend" to allow more assembly time.
- Once the pieces have been removed from the vacuum press and the glue is set and dried, peel off the tape to prepare for surfacing and thicknessing of the boards. Remove any edge roughness with a rasp or coarse sandpaper. I have a wide belt sander so I send each board through 3 passes for each side at 60 grit, and one pass each side at both 80 and 120 grit. The final thickness is approximately 11/16" from our original thickness of ¾

Jodie Prud'homme and John Sheridan



Trimming and Sizing the Rough Stock

From the lot of prepared plywood, we used two sheets of approximately 18" x 33" in size to yield all four pieces of our "Scoot Stool" with some extra left over. This size may vary depending on the original material available to you. The important thing is to have enough original stock in either solid wood or plywood to yield the following rough-cut sizes:

(2x) 17" x 12" for the legs

(1x) 16" x 6" for the top

(1x) 15" x 9" for the step

Note that for strength, the grain of the solid wood or of the outer veneer of the plywood should orient along the length of each of these pieces.

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SHERIDAN SCOOT STOOL...*continued from page 17*

For the Laminated Plywood Version:

- As previously mentioned, before the first cuts can be made the uneven edges from the laminating process have to be trimmed off. To do this, first take a rasp to one of the long edges of the board to clean off the dried glue beads. This edge can now be smoothly run along the fence of the table saw.
- Rip first one long edge, then the opposite edge on the table saw to produce two clean, square edges on each board, trimming off only about ½" each time. Now the boards can be ripped to width. Trim one board to 12" for the legs and one to 9" to accommodate both the top and the step.
- On the panel saw trim off the remaining uneven edges and cut the boards down to pieces of appropriate lengths. An additional cut to width will yield the 6" wide top piece.

For the Solid Wood Version:

- You will need less than 8 to 10 board feet of 1" thick wood per stool. If you do not have wide stock you can rip to any convenient width. Your available wood will vary. When rip cutting for safety always set the blade height first- one tooth above the work height- and then the ripping fence.
- Follow standard milling techniques with the jointer, planer and table saw to flatten, square and trim your solid wood.

If necessary given the width of your original stock, glue up oversize panels to the sizes above. To ensure that the glued panels are flat and tight, the edge joinery of the wood is "accordion-folded". That is, after laying out the wood to be glued up, paired edges are run through the jointer to offset any small deviation from 90 degrees to fence/bed alignment. Test the accuracy of your technique. Put a straightedge across your work and look for gaps. For ease of alignment when gluing panels, one can add a couple of Lamello biscuits. Be careful where you place them so that they are not revealed when the tapers or hand hold are cut.

Rough Cutting and Routing the Handle in the Top Piece

Again, my shop has a jig for layout and routing of the handle in the top piece, useful for small production runs. Either this jig or any suitable slot template can be used or made for this purpose.

- If not already done, rip and cross cut the top piece to its final dimensions of 5 ½" x 15 ½".
- Center a template on the top piece (or place the top piece in the jig) and mark the outline of the slot.

- Take the top piece to the drill press and, using 1" or 1 1/16" bit, drill out overlapping holes inside the handle marking. Start from either end and work your way towards the center.

- Place the template back on the top piece aligning it properly to the marking (or replace the top piece in the jig). Using a straight cutting bit with a bearing, use the template or jig as a guide to rout the slot.

- Choose a roundover bit and repeat the routing from both the top and bottom of the piece to give a comfortable internal radius to the slot. A 5/16" radius bit works well.

Cutting the Beveled Edges on the Legs

The beveled edges along the width of the legs allow them to splay out when the piece is assembled, providing stability. Be sure to carefully observe orientation of the work pieces during this step as it's important that the planes of the bevels are parallel to each other.

- Set the blade of the panel saw to a 7-degree angle. Use an angle gauge to check the tilt of the blade against either a protractor or a pre-existing template piece.
- For each leg, trim one edge along the width - enough to produce a full bevel while leaving plenty of material for the final size.

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SHERIDAN SCOOT STOOL...*continued from page 18*

- Flip the piece over end-to-end so that the opposite edge is presented to the blade and the opposite face is upward. This will produce two bevel cuts that are parallel to each other.
- Before making the second cut, set the length of the cut to 15 5/8". We used a pre-existing leg template for this purpose. When placed on the saw bed, the edge of the template should just touch the teeth of the blade when the guide is set at the right distance. Lock the guide in place and make the final cut-to-length on each of the legs.
- Check that both legs fit into the first tapering jig. If the fit is too tight, trim the edge again on the panel saw, removing the slightest amount of material until the piece slides in snugly.

Layout and Cutting the Taper on the Legs

The taper cut of the legs that produces a wide, stable base and a simple but refined look can be accomplished with careful layout and use of the bandsaw for a one-off version. However, to expedite the process for limited production my shop has two leg tapering jigs for the router table. These jigs make cutting the tapers on the legs quick and repeatable. Both process are covered here and you can refer to whichever method you prefer.

Layout and Cutting the Taper Without a Jig

• On each leg, measure and mark the centerline that divides the piece lengthwise. At the top of each piece (that is, at the edge that will join to the top of the stool) mark off a distance of 2 ¾" on either side of the centerline. At the bottom, mark off a distance of 5 ½" on either side. Draw a diagonal line from each of the top points to each of the corresponding bottom points. This will produce a layout of the 11" to 5 ½" taper from the bottom to the top of the legs.

- On the band saw, trim off the excess material up to approximately 1/16" outside of the taper layout lines.
- Cleaning up the tapered edges of the legs can be done in one of the following ways:
- Sandwich the two legs together—inside face-to inside face—being sure the center markings at the top and bottom are aligned with each other. The legs can be taped together for convenience to keep them properly aligned.

Place them in a vise and using a hand plane, plane the sides down to the layout lines.

- If using solid wood, run the sides of each leg through the jointer. Multiple passes on each side may be necessary to bring the edge down to the layout lines.
- Plywood can be trimmed with a router bit that has guide bearing and a straight cutter, using a straightedge as a guide.

Layout and Cutting the Taper With a Jig

- Check that both legs fit into the first tapering jig. If the fit is too tight, trim the beveled edge again on the panel saw, removing the slightest amount of material until the piece slides in snugly.
- Place one of the legs in Tapering Jig #1 and mark the backside of the piece along the edge of the jig. This line demarks the first taper cut.

- Out of the jig, trim away excess material on the band saw up to 1/16" outside of the line.
- Place the piece back in the jig and use the routing table to clean up the band saw cut and produce the final edge. The jig acts as a guide for router so be sure to choose a router bit with a bearing beneath the blade to run along the jig's edge.

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SHERIDAN SCOOT STOOL...*continued from page 19*

- Now, place the leg in Tapering Jig #2 and repeat as before: mark, trim and rout the second taper.

Repeat this process to cut the tapers on the second leg.

Cutting the Beveled Edges of the Step

The step has two bevels along its width at a 7-degree angle and two bevels along its length at a 12-degree angle. The 7-degree angle matches the tilt of the legs; the 12-degree angle matches the taper of the legs. All bevels taper into the same face, producing a trapezoid when viewing on-end.

- For the width-wise bevels that will join to the legs, keep the tilt of the panel saw blade at the same 7-degree angle as when cutting the legs.
- Make the first cut as before, trimming one edge of the step width-wise and taking off just enough material to produce the full bevel.

- Rotate the piece (rather than flipping it over) to present the opposite edge to the blade while keeping the same face upward on the sled. This will produce bevels that taper into the same face.
- For the second width-wise bevel cut, set the stop on the panel saw so that the final length measures 13 7/16" along the 'long' face. (If you're using the jigs and templates you can use the 'Step Template 2008' for setting the length of this final cut).
- Layout a horizontal line on the inside face of the legs that is parallel to the top and bottom edges and is at ½ the height of the final stool (including the thickness of the top piece—16 ½" for a stool constructed of ¾" material). This should fall at 8 5/8" from the bottom inside edge of the leg. This line represents the location of the bottom edge of the step when the stool is assembled.
- Lay the step flat on top of the leg, aligning the beveled edge with the just-marked horizontal line. Center the step by eye and mark on the edge of the step the location of the sides of the legs. This marks the final width of the step.
- On the table saw, set the angle of the blade to 12-degrees for the length-wise bevel cuts. Again, use an angle gauge to check the angle against a protractor or against the taper of one of the legs.
- Set the fence so that the cut aligns with the first width marking. Be sure that the correct face of the step is facing up when setting up and making the cut such that the bevel tapers into the same face as the previous bevels.
- Rotate the piece (don't flip it over!) and repeat the previous step, re-aligning the fence to match the blade to the second width marking. Make the final cut-to-width.
- ♦ Double check the width by laying the step back onto the legs with the width of the step aligned to the horizontal line and the top face of the step facing upwards. The corners of the step should just reach the tapered sides of the legs.

Cutting the Biscuit Joints

The joinery of the Scoot Stool is done entirely with "mid-panel" biscuit joints cut with the Lamello cutter. For this style of joint, careful attention to orientation and reference surfaces is important. Proper reference marking will help get the biscuit slots accurately aligned.

- First, before any cutting is done, mark the final orientation of the two legs with respect to each other by placing the two inside faces back-to-back. Mark one edge with a triangle. This helps keep track of which face is towards the inside of the stool and where the biscuit slots belong.

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SHERIDAN SCOOT STOOL...*continued from page 20*

- Likewise, mark the appropriate face of the step with "up" and "down" to help keep track of the correct orientation of the step in the final piece.

- Start with the biscuit slots for the step-to-leg joints. For this joint, your reference surfaces are the 'inside' of the leg and the 'underside' of the step. Lay one leg on the table so the 'inside' face is upward. Lay the step on top of the leg so that the face marked "up" is visible. To double check that your orientation is correct, the short beveled edge of the step should be sloping away from the face of the leg, creating a 97-degree angle between them.
- Align a short edge of the step with the horizontal line marked previously on the leg at the half-height distance from the bottom. Center the step left-to-right on the leg. The corners of the step should just hit the tapered edges of the leg on either side.
- Clamp down both work pieces. Layout and mark three locations for slots for #20 sized biscuits—one at the center and one 2 5/8"inches from the center on either side.

- Cut the 6 biscuits slots with the Lamello cutter. Note that when cutting the slots into the beveled edge, the base of the Lamello cutter needs to be tilted up so that its face is flush against the bevel. Leaving the cutter flat against the leg when making these cuts will produce slots at the wrong angle for assembly.
- Repeat this process with the opposite end of the step and the second leg.
- For the side-to-top joints, the process is similar but first requires some layout and marking. The reference surfaces are the 'inside' of the leg and the 'underside' of the top. Mark the layout by dry assembling the step and legs. Lay the top piece in position, properly centered and mark a line at the inside, top edge of each of the legs on the underside of the top piece. The markings should be equidistant from the center.
- Disassemble the stool and lay the top piece face down (underside face up). Now lay one of the legs with the *outside face* upward on the top piece. Align the top edge of the leg to the line just marked on the top piece.
- Clamp down the work pieces and mark two locations at 1 ¼" from the center for two #20 size biscuit joints. Cut the four slots with the Lamello cutter. Again, angle the cutter so that its face is flush to the bevel when making the cuts into the beveled edge of the leg.

Gluing Up and Finishing

- Sand the interior, hard to reach surfaces prior to gluing the piece together but being careful not to sand the mating surfaces in the joints.
- Assemble with four clamps as shown. Note that for clamping the leg-to-step joint, angled blocks that keep the face of the clamp perpendicular to the step are required. This ensures the pressure applied by the clamp is acting to properly pull the joint closed and keep it flush and tight.

- After approximately 15 minutes, scrape off any jelled, excess glue that has squeezed out from the joints.
- Once the glue has set, complete the piece with a final sanding and a coat of finish of your choice. Knots and other defects can be filled.

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