

Northwest Woodworkers Association

THE SAWDUST NEWS



May 2017

An association for woodworkers of all skill levels to share their common interest

The Next Meeting

NOTE: The final Date, Time, and Location of the June 2017 meeting are currently being established by the Steering Committee.

An email notice will be sent out to the membership when the details become available.

May 2017 Meeting Highlights ***Newsletter Notes by Jan Erickson***

The **May 2017** meeting of the **Northwest Woodworkers Association** was held on **Thursday, May 25**, 2017 at **Woodcraft Supply**. Seventeen members and two guests were present.

We want to express our appreciation to **Ron and Michelle and the Woodcraft Staff** for providing a wonderful venue for this meeting. We really appreciate your long standing support of the **Association**.



We were pleased to have a visit from long time members **Bonnie Klein** and husband **Robert Purdy** who have been busy enjoying the Arizona sunshine! They brought along a big box of grapefruits they had picked from a tree in their yard to share with the group. Thanks for your gracious gifts – we will enjoy them! And thank you for bringing along some of your abundant sunshine to grace our Memorial Day weekend! They mentioned that they are seriously considering moving to Arizona, so they are envisioning downsizing, which will involve disposition of much of their extensive inventory of shop equipment and supplies. It was suggested that they provide a list of items that we could send out to our membership or post on our website.

Problems & Solutions

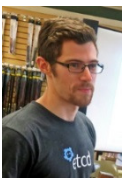


Mark Martinez showed us a photo of a triangular teak panel, approximately 70" along its longest side, that someone had given him. He solicited suggestions from the group regarding possible uses for the item and potential ways to reconfigure it. Recognizing the value of teak wood these days, many in the group were willing to take it off his hands to solve his dilemma...! Some of the suggestions included making the panel into a patio table, since it was made from a wood commonly used on boats and other outdoor items. Other suggestions included having custom welded wrought iron legs made for it to complement the teak. **Bill Bond** even made him a rough hand sketch to illustrate the concept.



Al Falco mentioned that he was also downsizing his shop and had brought along a number of 3/4" pipe clamps and various lengths of pipe which he was offering for sale after the meeting. Several of the members expressed interest in the items, so no doubt **Al** had no trouble lightening his load on the way home!

New Tools / Show'n'Tell

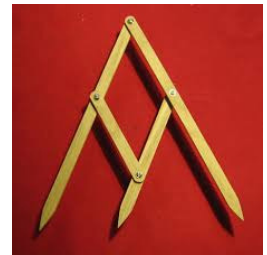


Tony Grosinger brought along a reconditioned hand plane to add to his working collection. He noted that a crack in the body of the plane had been welded – somewhat inexpertly, but adequately. After spending some time patiently reworking the sole, he was able to flatten it sufficiently for use. He noted that he purchased a replacement lever cap on **eBay** to complete the restoration.

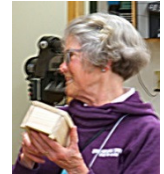
He also showed us some photos of an old **Delta-Rockwell** drill press he had acquired and refurbished for his shop. He also showed us pictures of a **Delta** strip sander he had rebuilt, which had required replacement of the deteriorated plastic guide wheels.

And lastly, he displayed a wooden fidget spinner made of different species of wood. **Jan Erickson** said she laughed when she found the spinner was too large to fit her hands or those of **Mark's** two sons who were visiting our meeting!

Bonnie Klein brought along two different style **Fibonacci Golden Rectangle** proportional dividers. One of them, similar to the one in the photo, had been made by **Charlie Culler** some time ago as a gift to each of the members at a previous meeting. The second one was a unique design having scissor-like handles and apparently made from laser-cut plastic laminate or similar material.



Bonnie noted that she frequently uses them in her wood turning classes.



Jan Erickson displayed a lovely box she had designed and built from **Grey Ash**.



The box was constructed with butt joints at the corners, dowelled to add strength. A prominent feature was the integral, full width wooden hinge gracing the back edge of the box. In addition, the curved shape of the lid complemented the unique grain pattern surrounding the through knot featured in the center. Very artistic, **Jan**! Nicely done!

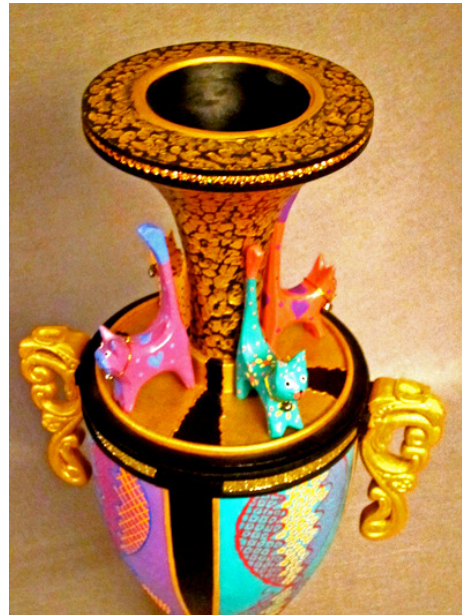


Chris Green showed slides of two of his beautiful, colorful, artistic creations that he recently completed, noting that some of the construction techniques had been described in previous meetings. He also noted that these two pieces have been accepted into the juried three-dimensional art category of the **Edmonds Arts Festival** to be held the weekend of **June 16-18** at **700 Main St. in Edmonds**!

Congratulations, **Chris**! We hope that your lovely pieces will be judged highly at the show. Please update us at our next meeting.



“Chaos – the New American Mode”



“Cat’s Meow”

Chris mentioned that these turned six-segment hollow forms seriously pushed the bed length limits of his lathe! He also noted the ceramic cat figurines were purchased during a trip to Italy some years ago and have been patiently awaiting an opportunity to display themselves!

[Ed. Note: As a cat person, I think these figurines are delightful! Would get my vote, for sure!!]

Program Highlight

Lichtenburg Figure Wood Burning



Background: According to **Wikipedia**: “**Lichtenberg Figures** are branching electrical discharges that sometimes appear on the surface or in the interior of insulating materials. **Lichtenberg Figures** are often associated with the progressive deterioration of high voltage components and equipment. **Lichtenberg Figures** are now known to occur on or within solids, liquids, and gases during **electrical breakdown**.” This phenomenon was discovered during laboratory experiments in approximately year **1740**.

For some time, there has been interest in the woodworking community in using **Lichtenburg Figures** for enhancing a wide variety of projects. Characteristically, the **Lichtenburg Figures** are produced by applying **very high voltages** to wood surfaces which have been coated with a liquid electrolyte solution such as sodium bicarbonate (baking soda). A pair of electrodes, attached to an electrical power supply, are held in contact with the treated surface, to provide the means of applying the high voltage electricity. The electric current travelling between the electrode contact points burns a somewhat random appearing path along the surface of the wood. Many of the current paths branch out as they are generated, producing fascinating, artistic shapes, many of which look like highly branched tree limbs – some of them with finely divided arms which indeed look like a branch with small twigs. Highly branched **Lichtenburg Figures** are especially beautiful on colorful wood species such as **Aromatic Cedar**.



Very appropriately, and in accordance with the sign shown behind him, **Herb Stoops** began his excellent program presentation with a discussion of the **safety concerns** that must be seriously considered and addressed before deciding to apply **Lichtenburg Figures** to woodworking projects.

He emphasized that this process involves working with equipment that generates voltages as high as **12,000 to 15,000 volts ...!!** – that are not only dangerous, but **LETHAL!** These voltages will not just shock you, **they will kill you!**

As further evidence of the risk associated with this process, **Herb** noted that there have been **two electrocution fatalities reported recently**, one of which was here in **Walla Walla, WA**. It appears that both fatalities involved persons that were somewhat experienced in using the process. It is not known whether they were using commercially-made or DIY equipment.

That said, this wood burning process **can** be performed relatively safely, if the operator uses properly manufactured equipment, employs the correct personal protective equipment, and follows the established procedures for working with high voltage equipment. Failure to comply with **any** of these requirements can place the user in a very dangerous, life-threatening situation.

These statements are not intended to be frightening – they are just the hard realities of using this process. **Do not underestimate the danger of working with high voltages!**

Equipment – Commercial

Herb wisely chose a commercially made unit for this wood burning adventure. This unit, manufactured by the **Conestoga Works, Edmond, OK**, (www.conestogaworks.com) consists of a **12,000 volt, 35 mA**, solid state power supply, two insulated probes connected with high voltage rated insulated wire, and a Deadman foot pedal switch. The Deadman switch is a safety feature that requires the operator to depress and hold the pedal with his foot to activate the unit. Releasing the pedal instantly deactivates the unit.



Conestoga Works Lichtenburg Wood Burner

The unit appears to be well thought out and constructed in a safe manner, and uses industry standard materials and fabrication techniques consistent with high voltage applications. It should also be noted that with the operating instructions, the manufacturer includes a list of recommended safety procedures and accessories to be used with the equipment. Of special importance is the recommendation to purchase and wear **Class II rubber gloves designed for high voltage use** per OSHA standards. These standards are outlined in its electrical protective equipment standard [29 Code of Federal Regulations \(CFR\) 1910.137](http://www.grainger.com/content/qt-electrical-safety-gloves-inspection-262), which provides the design requirements and **in-service care and use** . For more information, see: <http://www.grainger.com/content/qt-electrical-safety-gloves-inspection-262>.

Despite the ~\$200 price, the Class II rubber gloves should be considered a requirement – and an investment in your personal safety! Lower cost alternatives should be avoided.

[**Ed. Note:** In my opinion, even though the risk is reduced by the use of the recommended **Class II** rubber gloves, using two hand-held probes to select areas of the project for burning increases the risk of a lethal accident because it provides a potential path of electrical current through the body, directly across the heart. An alternate technique involving one clamp-on electrode and one hand-held electrode probe would allow one-handed operation, (a common procedure when working around high voltages) a definitely safer method. Using two clamp-ons is even safer.]

Equipment – DIY

There seem to be a lot of innovative folks who publish a plethora of online DIY videos on almost any subject you can imagine. While this medium can be a valuable source of information, it requires the viewer to 1) take the time and make the effort to become educated on the subject using information from multiple, reliable, credible sources, and 2) exercise good judgement, particularly in respect to the safety aspects of fabricating and operating electrical devices.

[**Ed. Note:** I am frankly appalled at the naivete so blatantly demonstrated on some of the online videos regarding DIY equipment for making **Lichtenburg Figures**. It seems as though some of those folks consider the voltages (~**6,000 -10,000V**) from a hacked microwave oven transformer no more dangerous than dealing with our common 120/240V house wiring. To see some of them using ordinary house wiring rated at **600V max.**, wraps of electrical tape for insulation, lack of Deadman safety switches, etc. makes me shudder. I am truly amazed that there haven't been a number of fatalities, particularly since many of the viewer's comments do not appear to reflect a real understanding and acknowledgement of the inherent danger of this process and equipment.

Unequivocally, I am opposed to dissemination of such dangerous DIY information on the internet, because it is so easily accessed and applied by anyone, including curious children, who may fail to recognize and understand the dangers involved. Please, if you are interested in doing any of the **Lichtenburg Figure** wood burning, **DO NOT BUILD YOUR OWN UNIT!** Instead, purchase one of the units available commercially, and strictly follow the manufacturer's instructions regarding safety and operation. Your life may depend upon it!

In addition, do not allow any access to this equipment by children! I would not have one of these units if I had children at home. Curiosity not only kills cats, **it also kills children!**]

Ventilation

Herb noted that this wood burning process produces smoke! Depending upon the species of wood being used, more or less smoke will be produced. Due to the tendency of high voltage discharge to ionize the air and produce ozone, some of the smoke can be very acrid and irritating to breathe. That being the case, good ventilation should be provided when using this process – a suitable canister type respirator should be worn for indoor use, along with some sort of air exchange method (open window or door, portable fan, etc.) Outdoor operation would be better.

Burning a Lichtenburg Figure

Herb then proceeded to describe the process of burning a **Lichtenburg Figure**, illustrated by a fascinating sequential slide show showing the progressive burning of an actual project (which was subsequently shown at the meeting!) – a tissue box holder made from **Aromatic Cedar**. The burning of the panel shown took just over one minute. Note that the burning track tended to

follow the grain pattern in the wood, but occasionally went across the grain in an unpredictable fashion – while producing beautiful tree limb-like figures in the surface of the material. Though somewhat difficult to see in the photos, note the glowing orange tracks, minor flare ups, and smoke produced during the burning process. The initial dark red appearance of the panel was due to the damp electrolyte solution applied to the surface before burning to provide an electrically conductive medium. After burning, the dried surface appeared somewhat dull and uninspiring, but fortunately, as illustrated by the opening program photo, the vivid color returned after applying the final finish to the project. (Note that the blue color of the burned tracks in that photo is due to light reflection from the glossy surface of the finish in the black, burned tracks.)



Burning a Lichtenburg Figure

Post Processing

After completion of the burning operations, **Herb** applied a dilute water-vinegar solution to the panels to neutralize the electrolyte, rinsed the panels with water, and allowed the panels to dry. He then sprayed the panels with shellac to seal the surfaces. When dry, he lightly sanded the panels with 320-400 grit sandpaper to remove any rough edges of the burned figures. He noted that careful sanding is required to prevent removing the finely branched figure patterns, which tend to be quite shallow. Additional coats of shellac finished the project.

An Added Blessing

Herb also displayed a number of uniquely designed napkin holders, with one side having a full width integral hinge to allow easy loading. These napkin holders were made from several different wood species, including **Oak**, **Maple**, **Poplar**, **Spanish Cedar**, and **Aromatic Cedar**, each decorated with its own unique **Lichtenburg Figures**. To the delight of the group, at the end of the meeting, each person was gifted with one of these beautifully crafted items as a meeting souvenir. Each napkin holder had its own unique **Lichtenburg Figures** – no two of them were alike!

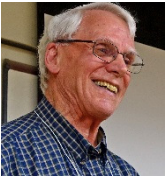
In addition, a drawing was held and the four beautifully decorated tissue box holders were gifted to the winning ticket holders.



Thank you, **Herb** for your kind and creative generosity – what memorable, one-of-a-kind gifts!

As a final footnote, **Herb** noted that due to the risks involved, he is no longer going to use this process. He said he enjoyed the adventure, but was moving on to other challenges.

Note from the Editor



I have only known **Herb Stoops** for about **80** years, but he never ceases to amaze me! In the last **10+** years that we have both been members of the **Northwest Woodworkers Association**, I have been continually blessed by his woodworking knowledge and skills and his willingness to reach out and do things he has never done before – taking on new projects, adapting to new tools and technologies, and exhibiting such a generous willingness to lend a helping hand, share what he has learned, and teach others. Through his long career in the construction industry, **Herb** has acquired a vast reservoir of knowledge and information that has served him well in his woodworking hobby, as well as an amazing ability to think on his feet and come up with practical problem solutions, unique tools and jigs, etc. He has been a great resource, help and inspiration to me.

Haven't we all been amazed by the many unique, well crafted projects, and interesting presentations **Herb** has given over the years? And how many of us have been beneficiaries of his wonderful generosity in making gifts for the Christmas meetings, as well as his behind the scenes influence in helping guide the **Association** as a **Steering Committee Member**.

So again for this month's meeting, **Herb** generously invested a significant amount of time and effort making the napkin holders and tissue boxes, decorated with the beautiful, elegant **Lichtenburg Figures**, he gifted to us as souvenirs. What a guy! We are blessed to have him in our midst!

Not having actually seen the burning of the **Lichtenburg Figures** in person, I was delighted when **Herb** asked me to come over to his shop and photo document the process so he could share it as part of his presentation for this month's meeting, as well as on some of the woodworking forums to which he belongs. However, in his usual, crafty, low key manner, he didn't disclose to me that what he was actually doing was making gifts to be given away at the meeting.....!

Though not surprised, I was very impressed with **Herb's** seriousness and healthy respect for the safety considerations involved in applying this process. He had obviously carefully researched the process and acknowledged the real dangers presented by working with a piece of equipment that was putting out **12,000** volts between the electrodes he was holding in his hands – **respecting**, but not **fearing** the potential danger, in the same manner he approaches operation of the many power tools in his shop. He correctly and carefully applied the safety measures recommended by the equipment manufacturer and gave the process his full and undivided attention while making the burns.

Fortunately, the photos came out quite well, (for a couple of point 'n' shooters) and we were able to successfully capture the progressive burning of one of the **Lichtenburg Figures** shown in this **Newsletter**.

In retrospect, I am now even more thankful that I had an opportunity to see the process in action, since **Herb** announced he is no longer going to be using the process, due to the risks involved.

And I have to confess – selfishly perhaps, that I am relieved **Herb** has made that decision – I want him around to be able to share whatever amount of sand we have left in our **80-year** old hour glasses.....!

However, thank you **Herb**, for sharing your adventure with this fascinating **Lichtenburg Figure** wood burning process with us, and making us aware that despite its elegant, attractive results, the process does entail inherent dangers that must be addressed in order to use it safely.

Happy and Safe Woodworking,

Paul

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We encourage our members to contact any of the above individuals with questions, comments, or items that may be of interest to the membership.

In addition, please visit our website: <http://www.nwwoodworkers.org>