

The CNEW Skew

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Volume 19 Issue 12

December 2006

President's Message

Some of the best presents cannot be held in the hand! This has been a rewarding year for me - as President of a bunch of really pleasant folks engaged in a hobby which I truly enjoy. I hope I was able to share my enthusiasm and that most of you can smile when thinking of successes we have had this year. After all, as I said before, I'm only the driver on the CNEW bus and without the passengers, having a driver does no one any good. If you had fun then pat yourself on the back and get ready for another great year with Al. Think of what you will do in 2007 to make it an even better time.

I would be remiss not to mention a few of Santa's helpers that made great contributions, so here goes. Thanks of course to my Officers. Frank and Reid did great on the demo events and shows. Tim and Henry tirelessly and promptly captured our moments with Graeme publishing them, and Mickey is going to meet me in Tahiti soon... Thanks Al for taking care of the videos. We all agreed to take these jobs but I must say all the Officers did extra-great. Of the ranks, there are many to thank but I'll do that personally. However a few people keep popping up time and time again to volunteer or save the day. One superstar is Charlie and he counts as three. The guy is like that darn Eveready rabbit... just keeps going and... So who else? Gene, Ray, Jon, Dick, John M., Mike P., Mike S., Steve, Hal, Joan, Angelo, the list is endless... and when the chips are down, Mr. Harbey is first to step up. All of these members and many, many more make the club work, but I'll admit that what I'll miss most is my personal Presidential Chauffer, Norm.

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Editorial

Another year gone, and my basement seems to contain even more wood to be turned than it did a year ago. My to-do list (the stack of roughed-out blanks) doesn't seem to be diminishing either - where does the time go? Maybe next year I'll spend more time turning out interesting pieces and less time filling up the basement.

As we look forward to another year, I'd like to thank all those who contributed to the newsletter over the last year. Special thanks to Tim Elliott, who unfailingly produced the minutes in a timely manner; Henry Fairlie for the high quality photography; and Hal Mahon, who wrote not just one but several interesting and lengthy articles. And to those who meant to write something for the newsletter but never quite did, that's what New Year's resolutions are for - and if all you need is a round two-wit, I'll make you one! There must be a suitable piece of wood around here somewhere... (ctd. next page)



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Club Officers and Contact Info for 2006

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Photography, Henry Fairlie	photography@cnew.org

It had crossed my mind to buy everyone presents this year but maybe next year, OK? Don't forget to continue your giving by getting your Goodwill donations to Charlie or me at the next meeting. We'll be auctioning them off at the Woodworks show we are participating in later in January. Bring your Gallery items in too for judging and selling at the show if desired.

Here's hoping the Holiday Season treats you well. Enjoy your new tools!

Dave Eaton

Events & Announcements

Woodworks Show: At the Big E in Springfield, January 12-14th. Bring items for donation and auction on behalf of *Project Goodwill* no later than Jan. 4th meeting. Contact Charlie Croteau. Bring your

Gallery items for display and judging no later than Jan. 4th meeting. One may be entered for judging all others may not. All may be marked for sale or "NFS" (not for sale). Please mark clearly! Contact Dave Eaton. Contact Mary Maguire (or Reid Gilmore) to participate in the *booth operations*.

Freedom Pen Project: Contact Gene Spadi for info on how to make pens for USA Soldiers overseas.

AAW Website Announcement: As a result of problems with the service provider, the AAW Internet based Members Only system will be suspended while we sort out the specifications and expectations of what we hope will be a more comprehensive,

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Editorial, ctd.

When you send me material for the newsletter, here are a few tips that will make my life considerably easier:

- E-mail is the easiest way to send anything, although I'll accept typed or even handwritten if that's what you have.
- Send everything as attachments to the e-mail, don't paste it directly into the mail message. Mail programs tend to add extra line breaks, which make a mess when I flow the text into the newsletter.
- Send plain text with as little formatting as possible – that way I don't have to undo your formatting to make it look the same as the rest of the newsletter.
- Double spacing between sentences is an old typewriter rule. Page layout programs understand that the space between sentences is more important than the space between words and adjust accordingly.
- Don't worry if you feel your writing isn't that great. That's my job – to correct spelling and grammar and otherwise make it more readable.



My To Do List

Minutes of December Meeting

Tim Elliott

Two guests/new members: Christian Bonczek and Alan Gilberg.

Treasury:

starting balance: \$502

ending balance: \$667

Results of the Worcester Craft Center fair:

Total receipts: \$5016

Show costs: \$1143

2007 membership dues are due. If you have not already paid, please contact the treasurer or pay via the CNEW website. Editor's note: If you have not paid the \$25 dues for the printed version of the newsletter, this *is* the last printed newsletter you will receive!

The "Woodworks" show will be held at the BigE fairgrounds January 12-14. This show will include a Project Goodwill auction, so please bring in any last-minute donations at the January meeting. We voted to have a 10' x 20' booth – there appeared to be enough interested members to staff it. There will be a more detailed sign-up at our January meeting. This show will also include a gallery. If you are interested in displaying your work in this gallery, either bring it to the show or get in touch with Dave Eaton in advance.

CNEW will make an equipment donation to the Craft Center's wood program in thanks for providing our meeting space: a talon chuck and several boxes of screws suitable for mounting wood on faceplates.

Many thanks to all outgoing 2006 officers!

New officers voted in for 2007:

President: Al Faul

External VP: Mary Maguire

Internal VP: Reid Gilmore

Treasurer: Norma Hogan

Newsletter: Graeme Young

Secretary: Tim Elliott

Photography: Henry Fairlie

Webmaster: Dave Eaton

Book Library: Ray Boutotte

Video Library: Al Faul

CNEW store: Ray Boutotte

Wood swap: Gene Spadi

Proj Goodwill: Charlie Croteau

Freedom pens: Gene Spadi

The February meeting will be our traditional shop visits: please think about whether you would like to host. (That gives us all two months to clean up our shops!)

Events & Announcements (ctd)

cost-effective and user-friendly system. Therefore, effective immediately, if you wish to join, renew or change your membership in the AAW, please get in touch with our St. Paul office. Here is the contact information: American Association of Woodturners 222 Landmark Center 75 West Fifth St. St. Paul, MN 55102. Phone 651-484-9094. Also, the drawing for a free Powermatic lathe from the list of those who have registered or renewed your AAW memberships online, will still take place as promised (note: anyone joining or renewing by fax, mail or phone is still eligible for the lathe drawing by indicating your wish to participate on the paper renewal form or by stating so when calling in).

Yankee Woodturning Symposium: Will be held June 1-3rd at Wesleyan University in Middletown, CT. There is a website at www.yankeewoodturningsymposium.org but not a whole lot of details yet.

January Program

The next meeting will be on Thursday January 4th beginning at 6:30pm, at the usual place. Following the business meeting will be show and tell. Jim Kephart has kindly volunteered to demonstrate Backyard Blacksmithing. Jim will show how to anneal, harden, and temper steel in a "relaxed" method appropriate for making tools not commonly available. Jim will also cover types and sources for steel. This will be followed by a wood swap.

Avoiding Green Wood Splitting

Hal Mahon

Many wood species will begin splitting within a few minutes of felling a tree. The danger of checking will exist until the wood has reached moisture equilibrium with its environment. I have experienced too much wasted wood and time and decided this needed some serious study. This is a short list of what I've come up with. We may not completely eliminate all splitting, but here are some steps that substantially reduce this problem. First, here are some generalizations on why wood splits.

A freshly cut tree is like a kitchen sponge; its lumens (cavities between cells) and cells are filled with water. The water in green wood can weigh more than its dry weight. Squeeze green wood and water (sap) will pour out. As the wood dries water between the cells is the most mobile, but this first-to-leave water causes little change in dimension and almost no checking. When inter-cellular water is gone this state is called the fiber saturation point (FSP) and there is no water remaining in the lumens. The less mobile water bound inside the wood cells leaves more slowly. Wood does not start to warp until it has dried to its FSP. As water inside the cell leaves it shrinks, and the shrinkage is perpendicular to cell walls. The content of water in wood continues to change until it is in equilibrium with moisture in the air, a condition called equilibrium moisture content (EMC). Wood near the surface may be closer to EMC while green wood far from the surface may have lots of water and still be above the FSP. Because water moves along the grain 15 to 20 times faster than across the grain wood near ends of the log is first to dry out and check. Wood is hygroscopic. As humidity changes wood will absorb moisture or lose moisture and expand or shrink in the process. The relationship between relative humidity and average EMC is given in the following table together with the range for all species. For example this data indicates that at 50% relative humidity, 9% of the weight of average wood in equilibrium with its environment is water. For wood to dry the moisture content of the air must be less than that of the wood. Bowls made in equilibrium with the RH of our shop will distort according to the summer and winter relative humidities of their final location. Boxes with lids turned to fit in the winter may not fit in the summer.

%RH	10	20	30	40	50	60	70	80	90
Avg. EMC	2.5	4.6	6	7.4	9	10.8	12.9	15.5	20
Range	2-3	3.9-5	5.4-7.2	5.8-8.9	8-10.8	9.6-12.6	11.2-14.7	11.4-17.9	16-23.4

Wood dries from the outside in so that the interior is wetter than the surface. Wood splits as it dries because it shrinks by different amounts in different directions. Shrinkage along the grain is negligible. *On the average* tangential (T) shrinkage around the circumference (parallel with the rings) is twice the radial (R) change perpendicular to the rings. (The T/R ratio ranges from 1.3 for yellow birch up to 2.6 for black willow, but $T/R = 2$ is an average number to remember until you have reason to check a wood handbook for a more exact ratio). This explains why V-shaped splits in the end of a log are mostly pointed toward its center because length around its circumference is decreasing twice as much as length in the radial direction. While wood is drying some species split worse than others because the T/R ratio is greater, or because the adhesion between fibers is weaker. (Some woods, such as mesquite, have serious cracks that have nothing to do with drying).

So much for why wood splits, now let's consider how to avoid green wood splitting.

A) When you make an opportunistic discovery of freshly felled trees, green crotches or roots be prepared temporarily to enclose ends of logs with garbage bags tied with heavy twine. Before bagging the ends, the threat of splitting can be reduced by removing a 1 inch or thicker slab that includes the pith (i.e. the core of the log or first year of the tree's growth) running down the center along the length of the log. Leave the log in the largest practical length until you are ready to turn it so that any checking that develops can be cut away. Temporarily bag the ends and as much of the bare surface as possible. Enclose some fresh sawdust and optionally a cup of water. If left wrapped in a plastic bag indefinitely there could be a problem with mold and possibly bugs although this may be only a minor issue if some length of the end will be cut off prior to turning.

If you happen to make an overwhelming discovery of green wood consider calling in fellow wood turners to share your find and perhaps help with transportation.

- B) A more satisfactory method for long term protection is to coat the ends of the log, as well as cuts, blemishes and cut off limbs, with a sealer. Some turners use several coats of left over house paint or varnish. This may not always be satisfactory but is better than nothing. A better sealer such as waxy Anchorseal is less water permeable. You can make your own waxy sealer with a saturated mixture combining approximately 6 parts paint thinner with 1 part paraffin. (Take precautions as this mixture is flammable). Sealed wood should be kept under cover protected from sun and rain. The purpose is to help the wood age uniformly and reduce extreme difference in shrinkage throughout the wood. It will take years of storage for wood of any size to reach EMC. Wood dried to a moisture content of 10% should have no further danger of cracking. The use of a moisture meter would be helpful in determining the condition of your wood. I like the technology that measures moisture using electromagnetic scanning (e.g. Wagner) based on the density of the species. Another technology measures moisture based on the resistance between two probes inserted into the wood. This is an inexpensive device you could make with your ohmmeter using resistance tables of each species available on the web.
- C) Next we consider two methods for turning green wood with reduced chance of splitting. Usually it takes too long for wood we store to reach EMC and it is nearly impossible to buy bowl thickness wood blanks dried to uniform EMC. Move quickly through the following steps or tie a plastic bag around your work on the lathe if there is any delay. Some will add fresh shavings inside the bag and optionally some water.
- a. Cut the wood down to size with a chain saw (or hand-bucksaw). Shape it round with the band saw (or chain saw or hand-bucksaw) to turn on the lathe without major imbalance.
 - b. Choose one of the following two methods:
 - i. Choose this method assuming you want to end up with a symmetrically round bowl balanced on a flat bottom. First rough turn the bowl from green wood to a wall thickness approximately 10% of the diameter. This would be a 1 inch rough wall thickness for a 12 inch diameter bowl, and a thinner wall thickness for a smaller bowl. Put the roughed out bowl in a paper bag for a few months. I like to use an empty dog food bag. While in the bag it will slowly dry out and because of anisotropic shrinking it will warp from its round shape but hopefully not split. Remount your dry bowl on the lathe, remove the wall irregularity and finish turn to your desired symmetric wall thickness. Record the species of wood, length of time in the paper bag and if the rough wall thickness was OK (i.e. sufficiently thin to allow distortion without splitting and sufficiently thick to permit removing all irregularity to achieve your desired symmetry). Use your recorded observations to base plans for your next bowl.
 - ii. Use this method for natural edge bowls and for non-symmetric bowl shapes desired when you consider their irregularity to add charm and character. This method allows almost immediate completion with reduced risk of cracking during the lengthy drying process above. Quickly turn the wall to the thinness you ultimately desire. Do this as fast as possible before the wood has a chance to warp. Enclose your work in a plastic bag whenever you step away from your lathe. Once the bowl has warped out of round it may be too thin to continue shaping and impossible to add circumferential design on the lathe. Smooth the surface and apply finish as desired. Keep a record of the species, wall thickness and other observations that could help you plan your future work. Thin wall turnings uniquely shaped by natural warping dry in a matter of hours or days rather than months or years.
 - c. The web and literature is rich with other methods such as accelerated drying of green wood and replacing water entrained in wood. These are briefly reviewed to let you know what some others are trying although I have inadequate experience to justify my recommendation.
 - i. Accelerated microwave drying while avoiding splitting requires that removal of water is uniform throughout the wood. Put the wood in a paper grocery bag and apply 20 to 30 seconds of microwave energy repeated after intervals during which the heated water can move out of the interior of the wood. This will require your attention but it enables drying to be completed within hours. Ideally the weight

of the wood is recorded after each heating/cooling cycle. Drying in the microwave oven can stop when the weight no longer changes. At this point the EMC is in equilibrium with the environment of the microwave oven. Microwave drying is best suited to turners whose eagerness to dry their wood exceeds their need of time for other work.

- ii. Less accelerated drying may be achieved in a chamber equipped with a means of controlling the humidity and a thermostat for holding a steady, slightly elevated temperature of about 80°F. Drying times may be reduced from months to weeks with such a construction. Unused freezer chests and insulated plywood boxes have been described in the literature.
- iii. Boiling wood for 1-2 hours is popular with some turners. Boiling supposedly releases water bound in cells such that when water leaves the wood less distortion occurs. Boiling is reported to reduce drying time by 20% to 30%. Practitioners of boiling say they experience much reduced splitting compared to the risk of splitting by drying their rough turned bowls in a paper bag for 3 months or more. I know of no one with first hand experience.
- iv. Shrinkage can be prevented by replacing cell water with a high molecular weight polymer such as poly ethylene glycol (PEG). This works best if *very green* wood (i.e. well above its FSP) is soaked in a 50% by weight solution of PEG and water. After soaking for some weeks water molecules in the cells are replaced by PEG molecules. Absent water, cells remain in their full size and there is little distortion of wood with aging. However do not expect to rejuvenate already dried and cracked wood. Very long soaking times are required for wood thicker than 1 inch, except along end grain where there is much greater penetration. The rate of exchange increases with elevated temperature. Treated wood turns easily and it may be glued with epoxy, but polyvinyl and aliphatic type glues do not make good joints. Although more expensive, Pentacryl wood stabilizer can be used to treat wood similarly to PEG and it accepts most glues and finishes. Soaking in water with liquid dish detergent has been reported to substantially reduce splitting, but there are fewer turners using this method.

This information is the essence of how turners can substantially reduce splitting in green wood. In summary: Work quickly to cut green wood to length, band saw a circular blank and mount on the lathe.

For a symmetric bowl:

1. Quickly rough turn to a wall thickness 10% of the diameter of the bowl.
2. Enclose your work in a plastic bag when temporarily stepping away from your lathe.
3. Wrap your rough turned bowl in a heavy paper bag and let dry for some months.
4. When dry, remount, remove distortion and turn to the desired wall thickness.
5. Smooth the surface and apply finish.

For a natural edge, or non-symmetric bowl:

1. Quickly turn the bowl to the ultimately desired wall thinness.
2. Enclose your work in a plastic bag when temporarily stepping away from your lathe.
3. Smooth the surface and apply finish.

Other methods:

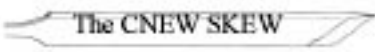
1. Dry quickly by heating the interior of the rough turned wood in a microwave. Stop microwaving after the weight of the wood stabilizes.
2. Replace moisture while the wood is very wet by soaking with PEG or Pentacryl. Dry.



Holiday Gift Swap

I did take notes as to who got what and who made the gift but somewhere along the way I lost track and the notes got disconnected from the photos.

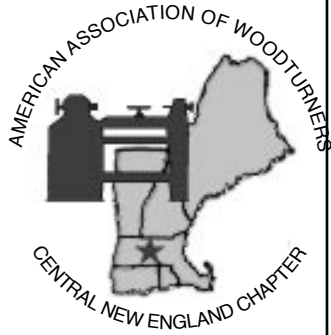
For the record, the Keeper of the Kaleidoscope this year is Phil Bowman.



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*Central New England Woodturners
A Chapter of the American Association of Woodturners*



On the web: www.cnew.org

To join or renew your membership, print this form and either bring it to the next meeting with cash or check for \$20 made payable to CNEW, or mail the form along with a check to:

Treasurer
Central New England Woodturners
c/o Worcester Center For Crafts
25 Sagamore Road
Worcester, MA 01650

Name _____

Address _____

City _____ State ____ Zip _____

Telephone _____

E-mail _____

If you wish, please let us know more about you and your interests.

Old member New member Turning how many years? _____

Selling your work? Yes No Where? _____

What programs would you like to see at our meetings?

Would you be interested in demonstrating at one of our meetings? Yes No