IWG News

The Newsletter of the Island Woodturners Guild March 2024

About the IWG:

The Island Woodturners Guild meets from 1:00 - 4:00 PM on the 4th Saturday of each month (except for July/Aug) at the Central Saanich Senior Citizens' Centre, 1229 Clarke Road, Brentwood Bay, BC.

Visitors are welcome.

Executive Committee

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Don Costello

Vice President:
Don Robinson

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Bonnie Hallas

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Michael McEwan

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THE PRESIDENT'S TURN

I have been turning for about 5 years and feel reasonably comfortable turning bowls, rolling pins, pens and, the like. However, I know that in the future I will want to move beyond these to explore different forms of turning.

I first started trying to improve my turning by making a "wack" of salt pinch bowls. I must have made 100 or so and each one taught me something new.

The primary goal of the Guild is to help each of us improve our turning skills which includes not only technique but also considerations of form and finishing. And even if the projects that are demonstrated are not ones that you intend to pursue at the present time, there are always lessons to be learned for your current and future turning.

In the case of André Robin's demonstration last meeting, I was struck by his superb tool work, his precision in determining form and perhaps most importantly, his encouragement to play by exploring new forms. It was nice to see that his process was far less mathematical and prescriptive than I imagined. I may give multi-axis turning a try. Thank you, André!

In our upcoming demonstration, Elizabeth Weber will discuss how to look at nature abstractly for inspiration, the various tools you can use for surface embellishment, and how to use colourants to enhance a piece.

As I have previously noted, I am grateful for what I have learned to date from Guild activities and have always been struck by how members welcome new people and are willing to share tips and tricks. In the spirit of sharing our knowledge, I would ask all of you to consider whether you would be willing to share your successes (and mishaps) for the benefit of all.

Don Costello

NEXT MEETING: SATURDAY MARCH 23RD: 1:00 P.M.

This meeting will feature an in-person demonstration by Elizabeth Weber on creating wave/leaf motifs on turned pieces. The session will cover inspiration tips, tools and techniques and the use of colour.

A resident of Seattle, Elizabeth received the 2023 AAW's *POP Artist Award* which recognizes turners who have shown exceptional development in their careers as artists and whose artworks have directly influenced or had a significant impact on other artists within the field of woodturning. She was also selected by Glenn Lucas to be one of 9 turners at *The International Women's Woodturning Exhibition* in Ireland and was recently the subject of a feature article in *American Woodturner*.

The session is **only open to Guild members and there is a fee of $10 to attend or view remotely**. The fee can be paid prior to the March meeting (cash or cheque payable to *IWG*) or by e-transfer to treasurer@islandwoodturners.ca.

THERE WILL BE NO *SHOW AND TELL* THIS MEETING.

MAY MEETING: CHANGE OF DATE

Our regular meeting in May is set for Saturday May 25th. However, as many members will be attending the AAW Symposium that weekend, the Executive has decided to change this meeting to Saturday June 1, 2024.

So, there will be two meetings for the price of one in June!

FEBRUARY RECAP

February's meeting featured a demonstration by André Robin on Multi-Axis Turning (MAT) in which he turned two items: a spoon and a goblet. He once again displayed his superior turning skills while offering a variety of useful tips. The following are the highlights.

SAFETY

André emphasized that there are several important safety practices to follow when doing multi-axis turning (MAT). These include ensuring that the blank is sound (no cracks, voids, punky wood), double-checking that the blank is securely tightened in the chuck, always checking tool rest clearance as the axes are changed, staying out of the "line of fire" when starting the lathe, and wearing a face shield.

INTRODUCTION

In conventional spindle work, the turning is made solely on a central axis and the result is a cylindrical form. In contrast, MAT involves turning on additional axes that are either parallel to or intersecting the central axis resulting in an eye-catching range of asymmetrical forms.

While there are a handful of commercial eccentric chucks which provide a wide array of axes settings, they range in cost from $500 to well over a $1,000.

Accordingly, André opted to use a conventional 4-jaw chuck and adopted various off-set positions of the blank to produce multiple axes. While this will make it more difficult to repeat a turning, he noted that it does mean that all members have the means to explore MAT.

A. SPOON

Andre's first project was turning a very unique spoon.

1. Tenon

He began by mounting the blank between centres and formed a tenon.

For safety reasons, André uses *Oneway Safer Drive* (LV: $46). As the tailstock is advanced, the spring-loaded point retracts until the "collar" engages the wood and acts as a friction drive. In the event of a catch, friction is immediately lost and the blank ceases to turn.

In the tailstock, he uses Sorby live-centre as the teeth will maintain a good grip on the blank.

To maximize the amount of potential offset (and preserve holding power), he recommends a relatively deep tenon. He added that this is subject to the requirement that it does not bottom out in the chuck.

2. Mounting

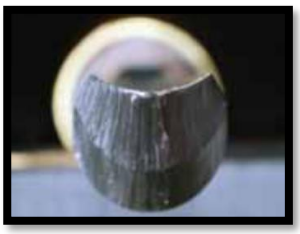
He loosely mounts the blank offset in a 4-jaw chuck and engages the tailstock near a corner. He then draws a circle around the live centre point which represents the handle of the spoon. He checks that he will have enough wood for the outside of the handle to end up flush with the outside of the bowl. Once satisfied, he securely tightens the chuck.

André indicated that he uses a chuck (Talon) with ribbed jaws as they will make a clear indentation in the tenon. If he should get a catch which shifts the location of the blank, he can use the indentations to return the blank near its original location.

3. Tools

a. Gouge

Given the asymmetrical rotation of the blank, the tool rest will need to be much further from the blank than normal. This means a larger overhang of the tool which may lead to vibration. Accordingly, some commentators recommend using a detail gouge.



As the photo shows, in a detail gouge the flute is ground into the top of the bar.

However, on a spindle gouge, the top 1/3 of the bar is removed before the flute is ground. As the detail gouge has much more metal under the flute, it is much stiffer.

However, André uses a 3/8” spindle gouge with a 35-degree bevel and reports that he has not experienced vibration problems. He added that he grinds off much of the heel of the tool for improved access in tight spaces.

Needless to say, you must ensure that your tool is sharpened frequently. If you do not have one, André recommends that you consider purchasing a jig made by Mike Neal that fits in the Oneway Wolverine System and provides fast and repeatable sharpening.

b. Light and Paper

Important tools of any MAT are a light and a piece of paper on the ways. This will enable you one to see the "ghost image" of the outside of the blank which will assist in entry cuts (right)

4. Turning

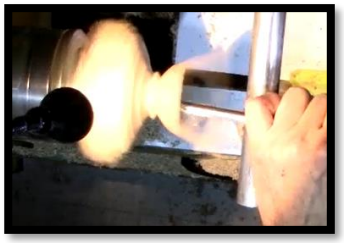
With the live centre engaged as long as possible, he starts by turning the handle of the spoon.

He will typically turn a decorative feature at the top of the handle using MAT techniques. As the photo reveals, this requires extremely precise adjustments of the various off sets in the chuck.

After turning the balance of the handle, he sands this portion.

Note: Throughout his demonstration, André emphasized the need to sand each stage of the turning before changing an axis. To protect your fingers, he recommends using a long narrow (1") strip of sandpaper.

With the handle complete, he rotates the blank 180-degrees and adopts a roughly similar off set. A pencil is used to draw a circle in order to ensure that the edge of the stem will align with the edge of the bowl that will be turned next (right)



He turns the outside of the bowl and then drills a centre hole to the desired depth. He rough hollows using a pull cut with a spindle gouge and then cleans up the cut using a small HSS tear-drop cutter. (A round nose scraper could also be used.)

He completed turning the underside of the spoon bowl and then, with the lathe off, cut the turning off using a fine-tooth saw.

B. GOBLET

In preparation for his demonstration, André had turned the cup portion of a goblet with the intention of demonstrating how he turns the full stem. However, as it turned out, he only had time to show how he turns the top portion.

He began by mounting the blank off set in the chuck after checking that he had sufficient wood for the “disc”.

Once again, using the ghost image for his entry cut, he shaped the underside of the disc and the next transition portion.

If he proceeded to turn the next disc, he would mark the offset point and then rotate the blank in the chuck 180-degrees.

He ended by parting off the goblet taking care to ensure a double wide part in order to avoid the tool binding.

In conclusion, André indicated that there is no right or wrong form in MAT. It simply provides an opportunity to play with different configurations. This point is well-illustrated by the following photos of some of his turnings.

POST-SCRIPT: SPINDLE MAT

If you want to start MAT with a less-demanding method, you could consider multi-axis turning between centres. As André noted in his introduction, this form of MAT has been popularized by Barbara Dill.

While there are many variations, the most common format is to turn a cylinder being careful to clearly mark the centre point on each end. With the blank removed from the lathe, draw a circle a specified distance (depending upon the diameter of the blank) from the centre point on each end. Then place 3 evenly spaced marks on the circle (i.e. 120 degrees apart) and number them 1, 2, and 3.

Note: Each number must align lengthwise with that on the other end. i.e. 1 -1, 2-2 and 3-3.

You then have two options. You can mount the blank at each end on the same marks (1-1, etc.) and proceed to turn through the 3 marks. This will result in an arc form which is parallel to the centre axis (right)

Alternatively, you can produce a twisted form by mounting mark 1 on one end and mark 2 on the other. After turning, you proceed to mount mark 2 to mark 3 and ultimately mark 3 to mark 1.

You can find more details on this type of MAT in the following video featuring Barbara Dill:
https://www.youtube.com/watch?v=JK1EvP_NCI0

VACUUM CHUCKING

INTRODUCTION

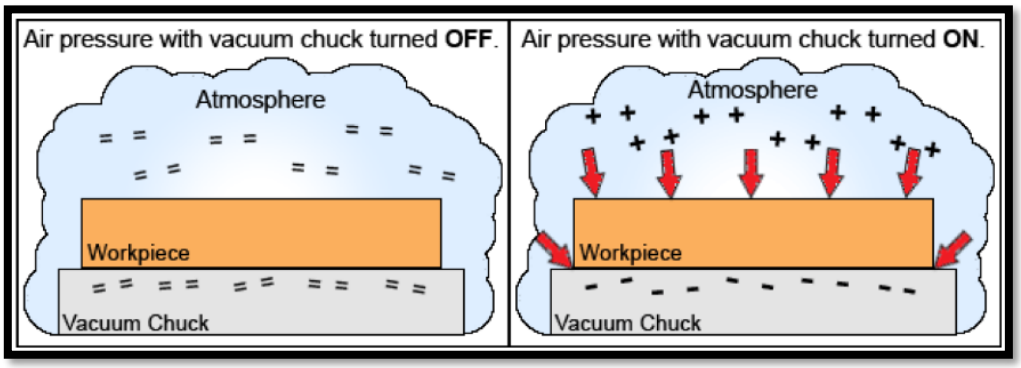
Vacuum chucking involves the use of a vacuum pump to create a vacuum in a specialty chuck which allows a platter or bowl blank to be held on the lathe.

Bearing in mind the potential expense, it is worth noting that such a system is hardly an essential tool. The tasks that can be performed with such a system can be completed using a variety of other methods involving conventional scroll chucks, faceplates, cole jaws, jam chucks, screw chucks, or simply holding a blank between centres.

Nonetheless, owners maintain that it offers greater efficiency and accuracy. Given the absence of the tailstock, it means better access for removing a tenon, applying a finish or using a router. It also makes it much easier for holding live-edge pieces and re-chucking a piece once a tenon or mortise has been removed. (To these reasons, one might add that the system also satisfies the ever-present craving for more tools!)

A. HOW IT WORKS

Despite the name, the system does not secure a piece by suction. Rather, as air is removed from inside the vacuum chuck, the outside “normal” atmospheric air pressure (14.7 psi at sea level) becomes greater than that inside the chuck. As the following diagram illustrates, this higher air pressure serves to force the workpiece onto the chuck.

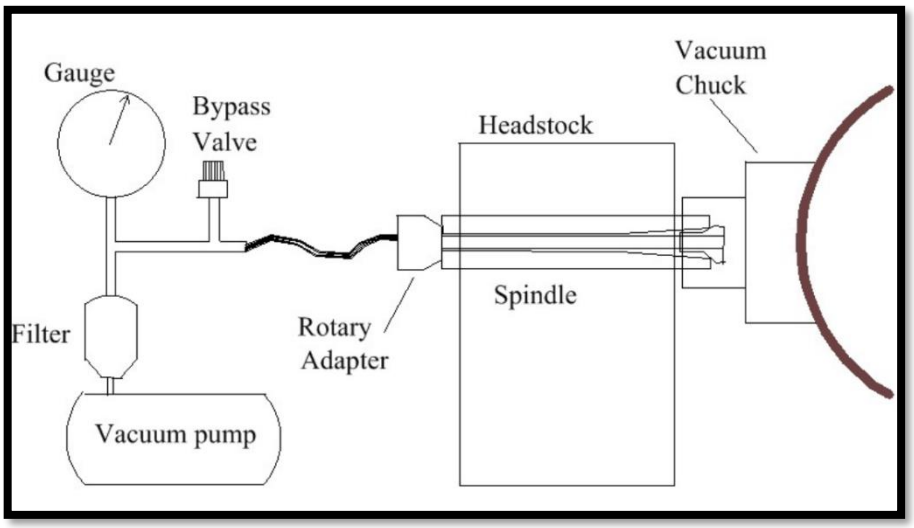


(https://www.ipolymer.com/blog/vacuum-chucking-how-and-why/)

The force produced by this system can be substantial. At 27" Hg, a chuck with a diameter of 4.5" may provide over 225 pounds of holding force while a chuck with a 10" diameter may produce over 1,100 pounds of force.

B. COMPONENTS

The following diagram by Paul Hannaby (https://www.hannaby.com/woodturning-vacuum-chuck-system/) shows the components of a typical vacuum chucking system (with the exception of the through fitting in the spindle as discussed below.)



1. VACUUM PUMP

While you can use a large shop compressor and a venturi device to create a vacuum, concerns with this approach include noise level, cfm capacity, wear and tear on a compressor which may need to run continuously for some time and the fact that it will not create as strong a vacuum as a vacuum pump. Accordingly, most turners opt for a pump.

Most sources recommend a pump that produces 3 - 4 cfm. This will provide you with a "safety cushion" to deal with the inevitable leaks in the system and through the blank. It is also recommended that you purchase an oil-less pump. While oil-type pumps are generally cheaper, they require monitoring, oil changes/oil disposal and can produce oil mist and fumes in the shop.

a. New Pump

While vacuum pumps from *Gast* and *Thomas* are excellent products, they are also very expensive ($900 - $1,400).

Accordingly, if you are going to purchase a new pump, you might want to consider the one offered by Bob Leonard at *Frugal Vacuum* ($365) (https://www.frugalvacuumchuck.com/home.html.)

It is an oil-less unit that offers 3.5 cfm, is quiet (55 decibels) and is rated for continuous operation. It is by far the least expensive new pump I could find with these features and enjoys very high ratings by turners.

Moreover, this price includes a kit consisting of a brass manifold and connectors, brass bleeder valve, gauge, particulate filter and 4' of vacuum hose – items which are offered separately by other retailers for US$90 - $100.

As for shipping, he offers a flat rate of US$25 to the lower 48 states which means you may want to take advantage of cross border shipping offered by *Seawings.* (https://www.seawings.ca/). As the pump is made in China, there will likely be duty.

b. Used Pumps

If you are going to purchase a used pump, you must ensure that it meets the minimum CFM requirements and has standard electrical requirements. Contact the manufacturer to verify seller claims. As it may be necessary to purchase a rebuild kit for parts that are worn out, you should also check that these are still available.

You can find used *Gast* and *Thomas* pumps on eBay and while the prices obviously vary, recent models generally range in price from $200 - $400 plus shipping.

As vacuum pumps are used in a wide variety of settings (laboratories, medical facilities, HVAC systems, etc.) you may be able to obtain a used unit from one of these sources.

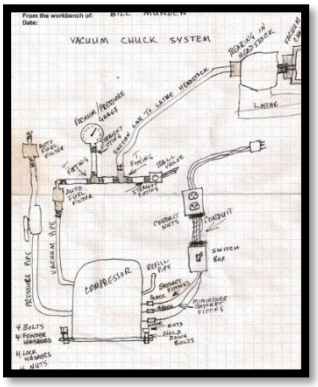
c. Used Compressors

As W. Noble notes in Building a Vacuum Chuck System for Woodturning "*Mechanical vacuum pumps use the same pumping mechanism as air compressors, except that the unit is installed so that air is drawn from a closed volume and exhausted to the atmosphere."* Accordingly, you can reverse the process in a compressor (by hooking a line to the intake port) to create a vacuum.

As compressors from appliances are often available at no cost (e.g. refrigerators, freezers, air conditioners), some turners have used these in place of a vacuum pump.

Compared to a vacuum pump, they will not pull as strong a vacuum, nor will they match the CFM which may be of particular concern in the case of leakage. Nonetheless, Bill Munden who built his system some years ago using a refrigerator compressor reports that it has worked well.

He estimates that using a 4” vacuum chuck, he is able to obtain 160 pounds of force at 25 Hg. And despite the fact that these are oiled compressors, he has never found fumes/oil discharge to be a problem.



This drawing provides details of his setup. If you would like more information, Bill has indicated that he would be happy to answer any questions.

2. VACUUM LINE (MANIFOLD)

The line from the pump to the rotary adaptor includes the following components.

a. Air Filter

You need to protect the pump from fine wood particles and dust which can, over time, damage the components. Most members use an in-line particulate filter made of clear plastic which enables one to see any buildup calling for replacement. (Pr Auto: $10)

b. Bleeder

Most vacuum pumps operate in continuous mode and generate somewhere between 18 – 28” Hg vacuum. This is typically more vacuum than is needed and would otherwise make it difficult if not impossible to mount and centre a blank. To control the amount of holding force, a bleeder valve will “bleed” air into the system reducing the strength of the vacuum.

While many sites recommend a needle valve as it will provide more precise adjustments (CdnTire: $8), most members use a simple ball valve ($14.50) as they find the handle easier to access and control.

c. Gauge

Finally, for obvious safety reasons, you must have a gauge which will indicate vacuum strength. It should be a minimum of 2" in diameter and you may want to go larger for better visibility from a distance.

d. Hose and Barbs

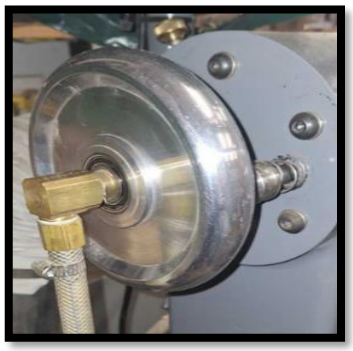
For the connecting hoses, you can use braided vinyl tubing and hose barbs. Assuming a reasonable fit, hose clamps will generally not be needed as the joins will tend to close when a vacuum is applied.

3. ROTARY ADAPTOR

The vacuum generated by the pump must be delivered through the lathe's hollow spindle to the vacuum chuck. The adaptor will include a bearing which allows the hose to remain stationary when the spindle is turning. The precise dimensions of the adaptor will vary depending upon the specifications of your lathe.

Rubber Chucky sells adaptors for over 20 different lathes including Laguna and Nova (Approx. US$115) https://www.rubberchucky.com/store/p154/Chucky_Vacuudapter.html#/

If you know a friendly metal worker, you may be able to obtain one like this for less. (PS. Mike Neal is very friendly!)



4. VACUUM CHUCK

The final part of the system is the vacuum chuck. Commercial chucks are available in a variety of sizes (3.5”, 4”, 6”, 12”) and range in cost from US$60 to over US$300. Given the high cost, most members make their own using a blank of 2” thick hardwood and a short length of PVC pipe.

Before starting, you need to decide how the chuck will be attached to your spindle.

One option is to mount the wood on a faceplate which involves drilling a hole which matches that of the faceplate opening. You must ensure that the mounting surface is flat and apply a few coats of a sealer (shellac, varnish, poly) to minimize leakage through the wood. Some sources recommend that you also apply a coat of silicone sealant and obviously you should use sturdy screws. The potential problem with this approach is that you will likely want several different size chucks and at $25 per faceplate (KMS) this can become expensive.

Accordingly, many members opt to use a spindle tap to cut threads in the wood that match those of their spindle. An appropriately size hole is first drilled in the wood using a Forstner bit and the tap is then mounted in your tailstock and rotated by hand to cut the threads. To ensure strong threads, you should apply a coat of CA to the sides of the drilled hole before tapping and then apply a second coat and re-tap.

Note: While a spindle tap will cost approximately $30 (LV), many members are willing to loan their tap (and provide advice) if you want to try this.

Once the tapping is completed, you should mount the blank on the lathe and turn it to a diameter approximately 1” greater than the outside diameter of the pipe. It should be faced off to provide a flat surface. Using a parting tool, turn a groove approximately 1/2 – 5/8” deep which matches the pipe diameter and thickness. Creep up on the outside diameter to ensure a tight fit.

Remove the blank from the lathe, apply a few coats of sealer to minimize leakage and then secure the pipe in the groove with epoxy.

Once the epoxy has cured, remount the chuck and check that the PVC coupling is running true. Any wobble on the side or end of the PVC can be corrected using a scraper and a **light touch**.

The final step is to apply a gasket to the face of the coupling to minimize leakage. Most members use adhesive-backed craft foam from Michaels.

Note: A popular and versatile vacuum chuck consists of one or more layers of plywood laminated together and mounted on a faceplate. (*While some sources recommend MDF given how flat it is, it has very little structural integrity and can be a challenge if you need to face off the surface after mounting*.)

A hole matching the faceplate opening is drilled and the blank is then turned to a relatively large diameter e.g. 12" or maximum size for your lathe. This will enable you to use it to secure flat-rimmed bowls of various sizes. Once again you should face off the surface (if needed) and apply sealer to all surfaces.

C. SOME OPERATING TIPS

1. Force

Most sources recommend using the largest chuck possible. However, you must be aware that a minor increase in chuck size will produce an exponential increase in force.

For example, a vacuum of 20" Hg and a 2" chuck will produce approximately 32 lb. of force. If you move to a 4" chuck, it will produce 126 lb. A 6" chuck will produce 285 lb. and an 8" chuck will produce over 500 pounds of pressure!

Hence, you need to consider the thickness of your bowl and whether it can withstand the resulting pressure.

2. Leakage

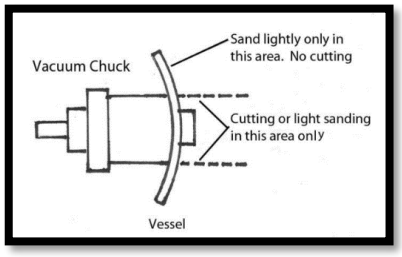
Regardless of your system, there will inevitably be air leakage which will reduce the vacuum. The two primary sources of leakage are at the gasket and through the turning. As for the latter, while all wood is porous, it is a particular concern with end grain turnings.

As a reduction in the vacuum may happen while turning, you should make it a practice to keep an eye on your gauge.

If your turning is particularly porous, you can minimize leakage by wrapping it with stretch wrap. (P.Auto: $10)

3. Turning

Vacuum chucking should not be used for aggressive turning and you should exercise caution when working on those areas identified in the following diagram by Joe Johnson, *Designing, Building & Using Vacuum Chuck Systems.*



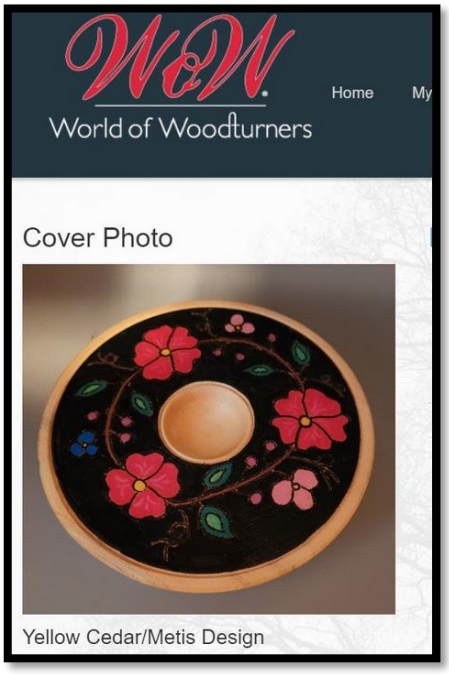
If you are working in the perimeter areas, engage the tailstock in which case, the vacuum chuck becomes a jam chuck.

4. Moveable Table

For storage and to ensure that you can easily check the vacuum gauge, you may want to consider mounting the system on a moveable table.

VIRGINIA LEE: WOW COVER OF THE DAY

Congratulations to Virginia for receiving the Cover of the Day for March 1, 2024. A small yellow cedar bowl (6" diameter) embellished with pyrography and acrylic paint - a Metis beadwork pattern!



TREASURER NEEDED

Last Spring, no member volunteered to act as Treasurer, and we faced the very real prospect of having to suspend the Guild's operations. At the last minute, Bonnie Hallas, who is the treasurer for the Westshore Quilters Guild, generously volunteered to serve for one year. That year expires at the end of April, and we need a volunteer if the Guild is to continue.

If you are willing to server in this capacity, please contact Don Costello. While the work is quite straightforward, Bonnie has agreed to familiarize you with the setup.

PARTING OFF

Thanks to Mike Neal for answering my questions late at night - at least for him! And a special thanks to André for his demonstration. Once again, it is obvious that members devote a great deal of preparatory work for our benefit. Finally, thanks to the members of the Executive for the extra hours spent revising the setup for our A/V system in addition to their normal tasks.

CONCLUDING THOT

FOR THOSE NEW TO ORNITHOLOGY!