



IWG News

The Newsletter of the Island Woodturners Guild

April 2023



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

President:
Tim Karpiak

Vice President:
Don Robinson

Treasurer:
Peter Pardee

Secretary:
Michael McEwan

Members at Large:
Hovan Baghdassarian
Virginia Lee
Marlene Speckert

Past President:
Steve Werner

Newsletter Editor:
John Kilcoyne

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THE PRESIDENT'S TURN

Back when I became President of our Guild, I remember thinking how great it would be that I could write a monthly article for our newsletter. While I still think that's a great thing, I realized a long time ago that I'm not really a writer. I think about all sorts of things to write about during the month but when John reminds me that my article is due, I draw a complete blank.

Having said that, I will miss writing my monthly bit. Although I'm sure John won't miss tracking me down to get that bit!

I've been looking over some old newsletters lately. It's interesting to look back and see what we've done in the last few years. Our group has always been supportive of each other and in the process, I think we've all learned some great skills and techniques.

Last month's meeting was a good example of that. We had a great turnout and a large selection of jigs to look at. I can't wait to get my shop up and running just so I can make and try some of the jigs. Although I'm sure I'll need help with the constructing of them.

This weekend's meeting will feature a demo from Kade Bolger from Ontario. It promises to be a good one. I won't be there in person, but I will run the Zoom meeting from Calgary. If you're going to attend in person, please help with set up and teardown if you can. And if you have anything for the *Show and Tell* but won't be there in person, please send a picture/description to Virginia at remoteva@gmail.com. Even if it doesn't get shown at the meeting it will be on the website.

I look forward to seeing everyone on Saturday!

Tim Karpiak

(Tim in Hawaii contemplating sand(ing)?)



NEXT MEETING: SATURDAY APRIL 22: 1:00 P.M.

Our next meeting, which will be a hybrid offering, will feature a remote demonstration by Kade Bolger on turning a Lotus Bowl. His presentation will include preparation and mounting of the blank, balancing, safety, grain orientation and chucking.



In his early years of turning, Kade received multiple awards from the Woodturners Guild of Ontario which spurred his interest. In 2018, he attended the Association of Woodturners of Great Britain Conference where his box “Le Feu” was chosen for the AWGB Travelling Gallery of 50 wood turned art objects to be displayed throughout the European Union and the United Kingdom.



His work has subsequently been featured in the Wood Symphony Gallery Exhibitions *Inside the Box* (left) and *The Art of Giving* (right).



He has delivered a number of presentations regionally and internationally and we look forward to his presentation.

MAY MEETING

Our meeting in May will feature a short AGM session which will include the election of a new Executive. Following this, Graeme Evans will demonstrate turning a natural edge bowl.



MARCH RECAP: JIGS

The March meeting involved displays of a wide variety of homemade jigs and tools by Guild members.

(Note: In shifting back and forth from taking notes and taking photos, I missed some of both. My apologies to anyone who I missed.)

INDEX WHEELS

An index wheel is typically used to lay out equally spaced lines or carvings on a turning. They can be used to locate the feet to be carved on a vessel, the waves on a wavy-edged bowl or patterns to be carved or burned into a turning. When used in conjunction with a Dremel, micro-motor or trim router and a sled, they can be used to cut flutes, slots, mortises, or other features which need to be evenly spaced.



If your lathe does not have an index wheel, has one with a limited capacity or is simply cumbersome to use (hello Powermatic), you may want to consider an after-market wheel.

Many years ago, Tim Soutar and John Kilcoyne both purchased inexpensive plastic wheels. For the pin holder, Tim opted for an indexing bracket while John opted for a wooden frame which allows him to use it for other applications.

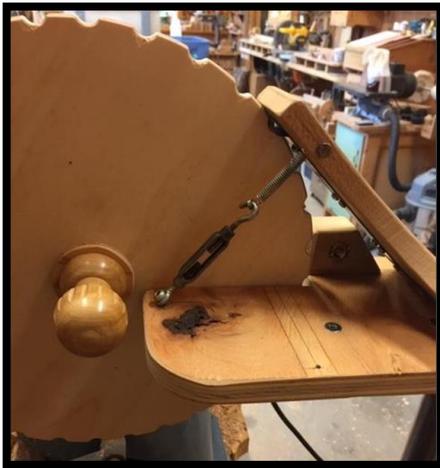
However, the only wheels that are commercially available today are metal.



A popular source is Alisam Engineering which offers two wheels: one is designed to fit lathes with 7 – 12” swing while the larger one is designed for lathes with a 10 – 24” swing. The complete large wheel set (including 10” wheel, bracket, spring indexing pin, jam nut) sells for US\$100 (right) while the wheel alone sells for US\$59. (<https://alisam.com/large-indexing-systems.html>)

An internet search will produce a wide variety of plans for a homemade pin bracket arrangement.

To no one's surprise, Gil Heise opted to make an index wheel from scratch and his design includes a locking mechanism that is far easier and quicker to use than the traditional pin method.



After turning the wheel, Gil routed a series of $\frac{1}{2}$ circle indents around the circumference at designated positions.

On a platform, he mounted a hinged arm with a half-circle "ball" which matches the indents in the wheel. A turnbuckle and heavy-duty spring are employed to securely hold the "ball" in the desired indent. Coloured dots on the wheel allow him to quickly skip notches.

BISCUIT JIG

Tim Soutar brought the tools he uses to make and insert biscuits to stabilise a crack or void in a turning.



1. Cutting the Slot(s)

Using a biscuit (plate) joiner, the slots are cut after the outside of the form has been turned to near finish and piece is still mounted on the lathe. While one can use a platform in the banjo and the joiner on its side, there are limitations with this method.

It will only work well for cracks/voids that are relatively straight and aligned longitudinally with the lathe. Moreover, it will only produce a symmetrical layout (right) which may not always be desired.



To overcome this limitation, Mike Neal designed a unique jig to hold the joiner (left). It consists of a platform to which the joiner is bolted and a post for mounting in the banjo. A flange on the bottom of the platform bolted to a U-form mounted on the post allows one to adjust the vertical angle of the slot.

When coupled with rotating the post in the banjo, it provides a wide range of slot locations and angles which allow him to deal with a variety of cracks and voids (right).



Tim indicated that while it is very versatile when working on a hollow form, the fence on the joiner does impose some limitations if trying to make a slot near the bottom of the turning (especially on a bowl), and the chuck. Accordingly, Mike modified the original version by adding a top mounting plate which allows the joiner to be reversed, thereby providing greater access (left).

2. Making the Biscuits

To make the biscuits, Tim first mills thin stock which is slightly oversized. He then refines it to the exact thickness using a lathe-based “thickness sander”.



He made the drum by turning a cylinder and wrapping fabric-backed abrasive tightly around it. The ends are secured with screws and washers.

He then built a hinged table which is mounted to the lathe using adjustable knobs.

A bolt is mounted in the lower plate shelf and fits in a hole on the underside of the top plate. A wing nut on the bolt allows very fine adjustments to be made when thicknessing. The stock is then run through the rig to the desired thickness.



He then cuts the biscuits from the finished stock using a bandsaw.

“FLUTELESS” GOUGES

Introduction

This term is generally used to refer to a blank of round HSS stock. While the rod can be ground for a variety of uses, most of the commercial versions are designed to be used in detailed spindle work.

One of the earliest versions was made by Allan Batty for use as a detail tool and a variation of this was subsequently offered as the Sorby *Spindlemaster*.

Another variation is the *Skewchigouge* (right) Designed by English turner Alan Beecham, it consists of a round bar shank with a standard bevel, an elliptical radius on the cutting edge and a concave top face for chip ejection.



As the name implies, it is designed to perform some of the functions of a skew chisel (with a reduced chance of catches) and a spindle gouge. It can be used to cut beads, coves, v-grooves, and the like (left).

In the early 2000's, Stuart Batty offered what he termed a *Vortex* tool. While it had a concave top bevel similar to the *Skewchigouge*, it had a very narrow tip for use in fine detailing.



Cindy Drozda and Ashley Harwood both sell versions of the Vortex tool. In common with Stuart Batty's tool, they both have a very narrow tip for turning fine details, typically on finials.



2. Adam Wanczura's Tools

However, unlike these tools, Adam has made several "fluteless gouges" for use in faceplate turning such as bowls and platters.

a. Half-Round Scraper

Adam indicated that the inspiration for this tool arose as he was using a conventional flat scraper to make a shear scrape at the transition from the bottom to the side of a bowl. This was a challenging cut as the bowl was thin walled with several knots and swirling grain. He found that when the scraper was rolled over at an angle, it was difficult to control as the edge supported on the tool rest was not under the contact point of the tool on the workpiece.



His solution was to use a "fluteless gouge" to make a half-round scraper. The tool consists of an end mill welded to a length of stainless-steel rod. The matching ends were beveled about 1/8" deep, lined up in a long narrow vee block and welded together before being ground to the final dimensions.

When rolled over to an extreme shear angle, the tool is supported by the tool rest under the contact point, resulting in a very smooth finish.



b. Flat Bottom Finishers



Adam also made these gouges for finishing flats and transitions on platters. They have a slight radius at the cutting edge and, taking inspiration from the *Skewchigouge*, the top is ground to a flat 20 degrees.



Used on their side so that the lower part of the edge is nearly vertical, they slice through the wood.

Adam indicated that he would be pleased to answer any questions you may have.

For more information on “fluteless tools” check out the following sites:

<https://www.youtube.com/watch?v=suRxCxdMn4k>

<https://turnedwoodenbowls.co.uk/2014/12/26/homemade-fluteless-gouge/>

WAVE BOWL JIGS

Further to the note in the March newsletter, Lin Bayford brought in the jig he built according to the specifications laid out by John Beaver.



As mentioned in that note, Mike Neal opted to modify the plan to produce a simpler, but equally effective jig. If you are interested in making one (out of wood), Mike has indicated that he would be happy to discuss the plans for his version.



FLUTING JIG

Traditionally “fluting” referred to a series of shallow concave grooves, typically running vertical on a column or pilaster.



However, in recent years the meaning has expanded to include a variety of cuts on a turning both in terms of form (concave, V-shaped, slotted, etc.) and orientation (vertical, horizontal, arcs, spiral, etc.).



A. STANDARD JIG

1. Carriages

Fluting may be done with a trim router, a micromotor or a Dremel and they all require a carriage that secures the tool to a flat base.



Wooden carriages range from the simple (left) to more complex rigs such as the one that Gil Heise made for integration into an XYZ platform (right).



Mike Neal has fashioned metal carriages for both a trim router and, for lighter duty, a micromotor.



2. Platform

Most turners use a simple platform which consists of a sheet of plywood secured to a post sized to fit in the banjo. (A metal post is strongly recommended.)



A track with adjustable stops can be added to limit the carriage's travel.

3. Depth Adjustment

Some turners use a fence to set the depth of cut which works well when fluting a spindle with a consistent diameter (right).



However, when fluting a convex surface such as the outside of a bowl, it requires one to make a custom curved fence (left) which matches the outside of the turning which can be a pain.



Accordingly, most jigs rely upon a "nose bushing" which rides on the surface of the turning. These can be made of wood, plastic, or, in the case of Mike's carriages, metal.



NOTE: As I ran out of time and space, the "advanced" fluting jigs of Lin Bayford, Rob Dunlop and Gil Heise will be discussed in the May newsletter.

MISCELLANEOUS

CHUCK GUARD

When doing fine spindle turning – particularly finials – Gil frequently reaches across the chuck to use his hand to stabilize the turning. He made this jig to protect his arm and body from the spinning chuck.



EGG CHUCK



If turning an egg from a blank held in a chuck, one is faced with the challenge of finishing the end of the egg which was in the chuck. This jig enables Graeme Evans to quickly complete this task.

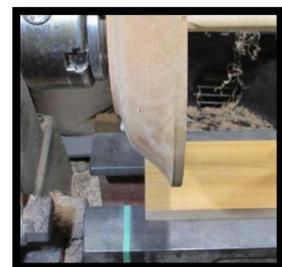
The slots provide flexibility for inserting the egg and a recess for a hose clamp enables it to be securely held. Graeme did caution that the “tail” of the clamp must be positioned away from the direction of travel to avoid impaling yourself. (A wrap of tape around the clamp could also be used to protect your knuckles.)

DEPTH GAUGE (aka ANTI-FUNNEL JIG)

This is the jig that Graeme uses to measure the thickness of the bottom of a turned piece (and to avoid turning a funnel). The height of the dowel is set to the centre of the drive centre and the end of the dowel is perpendicular to the front edge of the base. A block of wood on the underside of the base secures it between the ways.



He lines up the end of the dowel with the face of the chuck jaws and marks the position of the jig with masking tape on the ways.





When the dowel is engaged with the turning, the distance between the masking tape and the front edge of the base indicates the thickness of the turning.

LIVE CENTRE JAM



If your live centre does not have a cone or similar fitting for securing a turning without marking the surface, you might want to consider making this jig.

It consists of a nut with an internal thread matching that of the live centre (3/4" x 10 tpi for the *Oneway*) that is sandwiched between a nose cone and a small wooden washer using epoxy. Craft foam on the cone will help protect the surface of the turning.

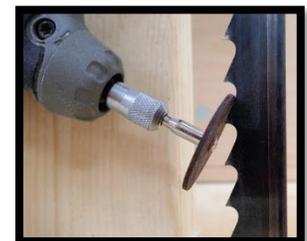


BANDSAW SHARPENER



If you own a Dremel (or facsimile), you can use this jig to quickly sharpen your bandsaw blade using a cut-off disc.

For information on dimensions, see: <https://ibuildit.ca/projects/bandsaw-blade-sharpening-jig/>



MICRO PARTING/GROOVING TOOL



This simple tool consists of a reciprocating saw blade epoxied between two wooden strips. It is useful for cutting fine grooves for decoration or burning.

While it can also be used as a parting tool for small turnings such as finials, caution should be exercised. To avoid bending the blade (with serious safety risks), it should not extend very far beyond the handle. (This heavy-duty blade extends approximately $\frac{3}{4}$ ")



CHAINSAW: SAFETY

For many years, Al Lundgren has been our “go-to” member for information and advice concerning chainsaw safety, maintenance, and sharpening.



As a member of the IWA Local 1-80, Al was a major player in developing safety guidelines and training in the forest industry which were subsequently enacted into law in the early 2000's. These measures had a huge impact in reducing the number of deaths and permanent disabilities amongst fallers. A short video by the B.C. Labour Heritage Centre honouring his efforts and discussing his involvement can be found at: <https://www.youtube.com/watch?v=JZXF9tTTSTo>

The following are his speaker notes on Chainsaw Safety for a 2023 presentation to the Comox Valley Woodturners Society.

INTRODUCTION

In planning for a session on chainsaw safety, I was reminded of the similarities between what we do as wood turners and what we should be doing as chainsaw operators when gathering turning wood.

My background includes working in the woods for 40 years and falling timber for 34 of them. I also have an extensive background as a safety advocate consulting to IWA Canada, WorkSafe BC and the BC Forest Safety Council among others.

In 2015, I presented a session similar to this at the Island Woodturners Guild, in Brentwood Bay. I am still a member of the Guild, although a long distance one now.

So, let's first take a quick glance at wood turning:

- Each of us have a standard work procedure and consistent steps that we take whenever working on the lathe. Some of what you use may be in the following.
- We carefully and securely mount a block of wood on the lathe after studying how to get the best grain orientation out of the turning.
- We turn it by hand to check for clearance.
- The tool rest is adjusted to clear the wood and yet be close enough to support the bowl gouge properly.
- We pick up our favourite bowl gouge, one that we previously had taken to the grinder to touch up the cutting edge before calling it a day.
- We had inspected the cutting edges at that time to ensure we maintained the correct profile on the face and each side of the gouge.
- We put on our personal protective equipment, which will vary for each of us. My preference is to use a zip-up smock and a full-face screen.
- I have a large exhaust fan that is turned on at this time and because I use dry wood as a segmented turner, I always wear a good quality dust mask.

- At this time, the belt speed is checked and finally after all that, the lathe is switched on and turning can begin.

Now let's look at using a chainsaw:

- Your neighbour gives you a call because he had a large black walnut felled and the wood is yours for the taking.
- You quickly search under the lumber pile, find your chainsaw, shake off the dust and head over.
- **So, what is the first thing you do?** For many, it will be to pull on the recoil to start the engine.
- But remember how we prepared for wood turning? The last thing you did in that case was to start the machine, just as it should be for any chainsaw cutting.
- And this is where we start the session.

SAFE CHAINSAW HANDLING

Is the wood secure?

- Just as mounting a block of wood on the lathe, you must ensure that wood you want to cut with a chainsaw is well secured.

Don't do the following to secure the wood:

- Have a buddy hold the block with his hands.
- Support it with your feet inches from the running chain. Any of this sound familiar?
- When we adjust the tool rest to clear the turning, we need to follow a similar rule on the log we want to cut.

- You need to inspect all sides of the log. Check the far side for loose chunks, limbs etc., that can be thrown back at you. Look under the log for rocks and other loose debris.
- Remember that loose debris, chunks and limbs can be thrown directly towards your face if the running chain comes in contact with any of it.
- And, of course, rocks and other parts of B.C. can ruin a chain in a heartbeat.

Is the Chain Sharp?

- Since we know that it is critical to use sharp tools when turning wood on a lathe, it is just as important to cut wood with a sharp chain. We will talk about maintaining the chain and guide bar shortly.
- The point is the saw should have been put away after use with a sharp chain ready for the next time. You will do a better job of filing at the end of the day than when you are in a hurry to use it the next time.
- The chainsaws in manufacture today can run from about 8500 rpm to well over 12,000 rpm. For that reason, you should never have to push on the guide bar to make the chain cut.
- Working with a dull chain is the same as pushing on a dull bowl gouge, only in this case, the results can be even worse than a simple catch on the lathe.

Is the saw ready to go?

- So, if we have a sharp chain and a decent guide bar, let's take a quick look at engine maintenance.
- Find the manual that came with the saw, or go onto the net, or ask your chainsaw mechanic and check such things as sparkplug gap, carburetor adjustments etc.
- Clean the air filter. The simplest and easiest thing to do, but oftentimes forgotten until the motor is gasping for air and your eyes are watering from all the exhaust smoke.
- Always fill the oil pot with proper chainsaw oil whenever the fuel mix tank is filled. They are designed to empty at the same rate.

- Inspect the little aluminum **chain catcher** under the clutch cover. If it is missing, the only thing that will catch a loose chain will be your knee.
- Professional saws with full wrap handle bars have traditionally made use of the handle bars as a chain catcher.
- Go over the saw looking for any loose screws and secure.
- It can be a pain to have do this maintenance just when you want to make a few cuts. But remember, if the maintenance had been done before putting the saw away, it would have been ready to go.

Are you wearing proper personal protective equipment?

- Most people wear running shoes, blue jeans, tee shirt and a ball cap when running a saw.
- Remember how you outfit yourself when turning a bowl?
- Let's compare the differences between a wearing a regulation hardhat with a protective face screen and hearing protection, and then compare that to a baseball cap. Whew! That's a bit scary.
- A common location for serious cuts suffered from a kickback situation is your face and upper body, most especially when operating a light weight chainsaw.
- We will come back to this when we discuss pivot points.
- You also really need leg protection devices like chaps to protect your legs in event of a kickback. One of the common locations of serious injury from chainsaw users is your front left thigh.
- Good footwear is a must. Hiking boots are a vast improvement over running shoes, offering good traction in various situations.
- Professional fallers and other chainsaw users in the forest industry would never operate a chainsaw without having a pressure bandage and pocket first aid kit on their person. This a practice we all need to copy.
- Chainsaw cuts are never pretty, and you need a pressure bandage to plug the hole.

- To eliminate situations while working with a chainsaw, a single bit axe, at least one plastic bucking wedge, spark plug/bar wrench, screw driver, round file with handle and a fine-tooth flat file should be on-hand.
- A small pocket knife can be handy along with any other assorted tools like Allen wrenches required for your brand of saw.
- Have a CSA approved fuel container filled with correctly mixed fuel. Don't use a bleach bottle!!
- Have a container of proper chain oil. The oil is available at various sources such as Canadian Tire or any saw shop. OK, a bleach bottle is OK for the chain oil.
- If you prefer to wear gloves, use something thin like glove liners or other light weight gloves. Heavy leather gloves and/or monkey faced gloves will impact on your ability to control the saw in event of a kickback.
- So, let's look at what the pro's do at the end of each day. The saw went through a visual inspection looking for missing screws, casting cracks etc. The fuel tank and oil pot were both filled. The air cleaner cleaned. And since the machine was to be left on site until the next day, a cover was placed over the power head. This might be as simple as the wedge belt, and/or an undercut slab. The point is, when the faller arrived the next morning, the chainsaw was ready to work. Not 20 minutes later.
- It is worth repeating, the pro's always wear all the necessary personal protective equipment. As mentioned, this includes hearing, eye, hardhat and leg protection devices. It also includes proper footwear. And as previously mentioned, a pressure bandage and a pocket personal first aid kit will be included.

Do you have a Plan?

- Never start cutting up a log without first considering the end-result. Will the log swing towards you? lift up? Fall down? Or swing away from you?
- Remember gravity will be towards the slope of the hill when bucking a log, not straight down.
- You need to determine if the cut will bind and pinch the bar and chain. Conversely, will the log split open, catching the chain.

- Determining bind is extremely important to figure before you start cutting. Where is the balance point?
- This is where the single bit axe and bucking wedge become handy when the saw gets pinched. And yes, it happens to the best of the pros too!

Starting the Chainsaw Safely

- So, after all that, we can finally start the saw.
- Some chainsaws have a combination choke/part throttle/ignition switch. This will allow the saw to start at part throttle. The designer obviously never worked with chainsaws in the real world. So how do you safely start a saw, when it will run at part throttle?
- All modern chainsaws come equipped with a chain brake mechanism and this can be helpful.
- Locking the chain brake when starting a cold chainsaw will stop any potentially exciting moments with this design flaw. If you decide to try it, this practise will not harm the chain brake.
- Most if not all saws have an enlarged pistol grip designed to allow for your foot to secure the saw to the ground when starting. This actually works. Try it.

CHAINSAW CONTROL

Since I have been hinting about kick back situations, let's spend some time on this.

Kickback Zone:

- The kickback zone on any guide bar is at the top front section the guide bar, right where the chain starts to rotate down the front. This is the point where the rakers are no longer protecting the exposed front of the cutter teeth.
- If you push the guide bar straight ahead into the cut, you can almost see the teeth grabbing more wood than it can cut, resulting in a kickback.

- This is similar to taking your bowl gouge at 90 degrees and sticking it directly into a spinning block of wood on the lathe. You can almost see the gouge flying out of your hands toward the ceiling. Same thing.
- I guess it could be said to never touch anything with the tip of the guide bar in the kickback zone, but unfortunately, that wouldn't always be practical. However, if you can find an alternate method of attaining a clean cut without boring or coming in contact with limbs, then it should be considered.

Controlling the Chainsaw:

- Use a proper stance when working with the saw for good balance. One leg slightly behind the other.
- Always, always use two hands on the saw.
- Maintain a comfortable grip, not too tight, to allow for reserve strength if a kickback occurs. Compare it to holding a golf club, baseball bat, shop broom etc.

Let's talk about Pivot Points:

- **One handed use** has the kickback pivot point at your wrist. The saw will fly out of your grasp towards your face and upper body.
- **Two handed bent elbow use**, has the pivot point at your elbow and similar consequences as one-handed use.
- **Straight-arm use**, keeps the pivot point at your shoulder, allowing the saw to fly to the clear above and behind you.
- Do keep the saw close to your person for good control.
- One thing to consider is that all chainsaws are designed for right-handed use. The ergonomics are designed that way, so they balance best with the right hand on the pistol grip and the left on the handle bar. All saws are awkward to use left-handed.

Helpers and Bystanders:

Let's talk about those around you when you are controlling the chainsaw.

- First of all, it is essential for someone to be with you whenever operating a chainsaw.
- If you get cut and need a driver, a young child is of no use to you in this situation. Always have an adult with you.
- Just as in turning, never let them stand in front of where you are cutting and most importantly never let them stand directly behind you.

Examples:

- In the late 1970's a Franklin River log truck driver died when struck in the chest with a flying tooth when it exploded off a running chain when he was standing in front of a landing buckler who was cutting a log.
- I had a four-inch piece of chain break off and fly forward when bucking with an 090 Stihl and never recovered the missing section.
- A TimberWest landing man was cut from his hand to his elbow when struck from a flying chainsaw that kicked out of a cut when he was standing directly behind the landing buckler.

A simple rule to follow if anyone enters your no work zone:

Somebody walks in front. Shut down. Somebody walks behind, shut down. Somebody comes too close from the side, shut down. Easy....

Some other ideas:

- If purchasing a new chainsaw, buy from a dealer. Canadian Tire and London Drugs are of no help if you need service work done.
- The two top brands for the forest industry are Husqvarna and Stihl. I recommend both for home use as well. They cost a bit more but will reliably last for many years.
- If purchasing another brand, check to see what the warranty is and make sure it is CSA approved as some are not.

Review:

- Make sure the chain is sharp.

- Make sure the saw runs well.
- Wear the correct safety equipment.
- Have the necessary fuel, oil and tools on hand.
- Go with a buddy not a kid.
- Let someone at home know where you are going and when you will return.
- Don't start a cut you cannot complete.
- Remember your pivot points in event of a kickback.

Al's notes on guide bar and chain maintenance will be included in the May Newsletter.

PARTING OFF

Many thanks to all who brought jigs to the meeting and a special thanks to Adam W. for answering a never-ending succession of questions! And as usual, thanks to the members of the Executive for continuing to persevere in offering programmes for the membership.

CONCLUDING THOT

