



Crosscut

Newsletter of the Witwatersrand Woodworkers' Association

PO Box 411346, Craighall, 2024

Thin CA glue from Qualichem used by Wood-turners for filling cracks.

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Go to <http://mysite.mweb.co.za/residents/tpope/homepage.html> for back issues of Crosscut.

Next Main Club Meeting on Wednesday, the 12th September from 18h00 at the WWA clubhouse at REEA. John Allen will talk on jointing of long pieces of wood.

In October, [Winston Klein will talk on making miniatures](#) (furniture).

Next Turner's monthly meeting is on Monday, the 3rd September at 18h00 at the WWA clubhouse at REEA. Rick Florence will be demonstrating his turned acorn boxes and John speedy will do a quick demo on turning a lace bobbin.

News

August Main Club Meeting. Dennis Lock (from the East Rand Club) gave a most informative talk on **Designing and Constructing Cabinet Doors**. He used slides with diagrams and photographs of examples of his own work to explain the principles of frame and panel design for doors. He showed examples of joints and panel designs and the pros and cons of each. Even the most knowledgeable members probably learned something from Dennis' talk.

Ken's Tiger. Ken Bullivant showed a tiger made from a variety of woods using intarsia, which is an inlay technique that uses thicker wood, shaped to form a relief carving. Ken used a number of different coloured woods, and estimates that it took about 200 hours to make. He also showed some puzzle joints that look impossible to take apart, unless you know the trick. The book that the ideas come from is called *Wonders in Wood* by EM Wyatt, first published in 1941 and republished in 1997 by Linden.

Winston's Chair and Table. Winston Klein showed a chair (one of two) and table made for a child, to replicate a similar set, for somebody's grandchildren. They were made from meranti, using mostly handtools. Some of the wood was dimensioned using the bandsaw and thicknesser. Otherwise Winston used muscle power and skill as is his wont.

August Turner's Meeting. Butch Smuts talked on harvesting, treating and preserving your wood for turning. He explained some of the principles for dealing with shrinkage on drying. He also showed how he makes up small sanding discs that he uses to carve and embellish his work. Butch brought a large lead-wood bowl to show an example of what can be achieved using these discs.

From the committee:

Show-and-tell and Ask-the-club. If you have something you would like to show off – a project or a clever solution or tool, please come and share it with the club. If you have a problem or question, don't be afraid to ask. Free raffle tickets for contributions and questions.

Subs are overdue. If you haven't paid by the time the secretary sends out the next Crosscut, you will be excommunicated. (On authority from the Pope!)

Clubhouse Ventilation. The club house has a ventilation problem – there is too much of it in winter. Being located down by the Braamfontein Spruit, things cool down very quickly at night. At least three layers of clothing are recommended for our winter meetings. To reduce the flow of cold air, it is proposed to close up the gaps between the tops of the walls and the roof. A ceiling is part of the long term plans, but in the meantime, we will just close up the gaps. A work party is scheduled for the Saturday, 13th October at 09h00. We need at least six helpers, so please volunteer to Costa at the next meeting.



Rosebank Rooftop Market.

Unfortunately, the mid-winter chill kept many people at home, but that did not deter the Wits and Pretoria turners from putting on a good show on Sunday the 29th July 2007. We had five Jet Mini lathes running, to



demonstrate turning. The market ran from 9h00 till 17h00, but Rick and few helpers were there at 7h30 to start setting up. It was definitely a day for hot drinks to keep out the chill. About ten tables were filled up with turned items for sale. Tom also filled a table with antique tools.



Thanks to Rick Florence for coordinating. Well done to all those that took part.

On the left, top, you can see the stage area where we set up. Below that is Eddie Marchio (left) talking to At Smit from the Pretoria club. In front of At is his portable lathe stand for his Jet Mini. Wally is doing his Fagin impression, explaining how cold it is. In the white coat over three additional layers, is the editor, showing Ken Mutch how to make shavings.



Top, right is Rick holding forth. Below him is John Speedy. A display of Tom's antique tools provided some interest for those interested in old tools. The two pictures at the bottom show some of the items on display.



Thanks to Harold Theunissen for the pictures.



Toymakers. The toymakers meet on the first and third Monday of every month, at 09h00 till 12h00 at the new clubhouse. Contact Eddie Marchio on (011) 678-8062 or renato@pixie.co.za for more information.

Wednesday Workshop. The Wednesday evening workshop is on the first and third Wednesdays of the month, from 18h00 till 20h00. Contact Winston Klein on (011) 674-1513 for more information.

For Sale:

Record No 3 lathe plus tool Good condition. R3000. Phone Dave Rossouw 083 5483 927(Roosevelt Park.) This belonged to his father in law who passed away.

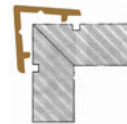
Bandsaw. Kity with 305mm throat, 200mm depth of cut. Extension table. Mounted on castors. Six new blades included. In mint condition for R6700- Contact Bill Parrack on 011 849 5643 .

Kitty K5 Combination 5 in 1 (saw, thicknesser, planer, mortising bit & spindle) + 13 Spindle Cutters
5166 Skill Saw

All in Good Condition Contact: Lionel Williams 011 488 1892 Office 082 851 1594 Cell

Radial Arm Saw De Walt model 1139 R4000– Contact Winston Klein for more information on 011 674 1513.

Wood Joining System. To prepare your work piece, mitre ends and cut a 3mm deep groove parallel to these, cut the “Snapfix” to the required length then snap or slide it into the grooves. It is that simple. The Snapfix extrusion is available in 1, 2 or 3 m lengths at r1245/m ex Capetown.. See www.jointadventure.co.za or contact Harvey on 021 556 0039 or info@jointadventure.co.za



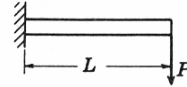
Training Course Schedule. Anybody that is interested should either contact Ken Jackson or the facilitator. The cost of the course is R50 for members. All courses listed below are on a Saturday morning.

Date	Time	Course Name	Facilitator	Contact No	Email Address
25 August 2007	11:00	Introduction to Turning	Trevor Pope	083 388 2214	tpope@iafrica.com
01 September 2007	11:00	Hand Planes - Setting Up	Winston Klein	011 674 1513	kleins@telkomsa.net
08 September 2007	11:00	Routing	Jenny Tomlinson	072 329 0407	jenny@regency.co.za
15 September 2007	11:00	Finishing	Trevor Pope	083 388 2214	tpope@iafrica.com
06 October 2007	11:00	Table Saw	Jenny Tomlinson	072 329 0407	jenny@regency.co.za
20 October 2007	11:00	Sharpening Plane Blades and Chisels	Winston Klein	011 674 1513	kleins@telkomsa.net
27 October 2007	11:00	Sanders, Grinders and Drill Press	Roger Matthews	082 893 0193	rbmatthews@vodamail.co.za

Lathe Work holding – an analysis of forces

Have you ever wondered why a long work-piece held at one end in the chuck on your lathe deflects so much when you try to cut it with a tool? If you studied mechanical engineering, you will have come across the models to predict this deflection. It may help your understanding to review some of the theory so you can understand why a longer work piece deflects so much more than a shorter one.

The diagram shows a beam solidly attached at one end with a point load at the other. In the case we are interested in on a lathe, the work piece is firmly held in a chuck on the left and force exerted by the cutting tool is shown at the opposite end, on the right, approximating a point load.



The work piece is cylindrical, so paging through my old mechanics textbook formulae, I found one that predicts the deflection δ , for the above geometry:

$$\delta = \frac{64PL^3}{3E\pi D^4}$$

Where: P is a point load such as from a lathe tool
 L is the length of the work piece from the chuck
 E is the modulus of elasticity (how strong the material is)
 D is the diameter of the work piece.

Absolute values are not important. This equation is to help you understand the effects of changing different values.

Logically, if you increase the load P, the deflection δ increases proportionally.

Also if you increase the length, the deflection increases, but to the third power of the length. So if you double the length, the deflection increases eight times! (2^3) This explains why you can only take very light cuts on the end of a long work piece only supported at the opposite end. Alternatively, you need to add another support, such as bringing up the tail stock, or using a steady as Wally does for his long, narrow vessels.

The stronger the wood, the larger is E, so the equation predicts less deflection, as one would expect.

Another insight is the effect of the diameter of the work piece. This is also logical – if you increase the diameter, the work piece becomes stiffer or if you reduce it, it deflects much more. D is to the fourth power! This means that if you double the diameter, the deflection goes down by a factor of $1/2^4 = 1/16$. The work piece becomes much stiffer. Conversely, if you halve the diameter, the deflection increases by a factor of 16! This change in stiffness may help to explain why when making a goblet, the sequence of cuts is most important.

When turning a goblet from a cylinder of wood, imagine the cylinder is clamped in the chuck at the end where the base will be. The correct way to make a goblet is to hollow out and finish the cup on the other end before thinning down the stem. You start by shaping the outside of the cup and hollowing out the inside to a uniform wall thickness. Then, you turn down the stem and finally part off the base. When the stem is cut, it could have a diameter one tenth (or less) of that of the cup, so the stiffness of the stem decreases by a factor of $1/10000$ ($1/10^4$). This explains why once the wood is cut down to the thickness of the stem, there will be so much deflection from any pressure on the cup, that it will be impossible to make any cuts on the cup. Only light sanding is possible.

The maths helps to explain why the sequence of removing material when making an object is sometimes so important.

(If you wish to make some real calculations, the Encyclopaedia of Wood published by the American Forest Products Laboratory and Sterling 1987 gives tables of E. This depends on the direction of the grain, but working values of 1 to 2 million psi are a start.)