June 2021

Crosscut

◄ **Jacaranda pot with painted decoration.**

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Next Turners Meeting on **Monday, the 7th June 2021** from 18h00 at **Made in Workshop** – Demonstration by John Speedy on making a long, thin-stemmed goblet.

New Year - General Meeting on **Wednesday, the 9th June 2021** from 18h00 at **Made in Workshop**. – Furniture restoration by Michael Minassian.

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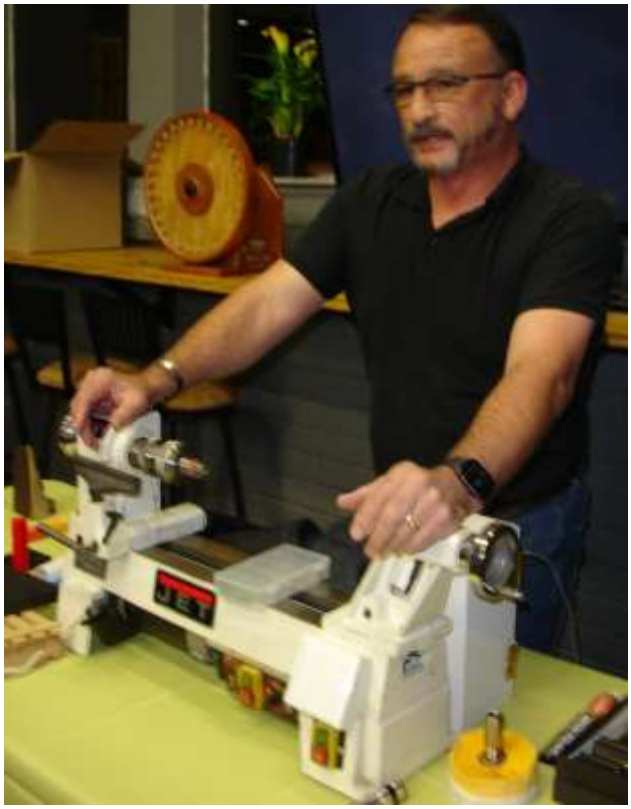
Wood of the month - SA Pine: Different varieties grown in South Africa by Chris Van Heeswijk

News

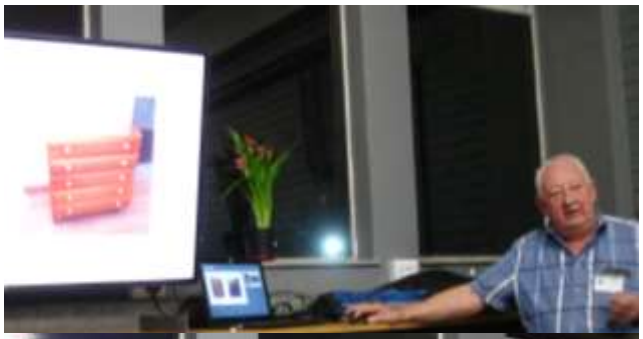


Turners' meeting. Monday, 3rd May 2021. Talk by Shane Bester on making pens and rings in wood and resin. Shane has been making turned and engraved pens for about 10 years, during which time, he has developed many techniques. For the barrels of pens, he uses wood, carbon fibre and resins as a base and then enhances them with engraving, inlays and overlays. He also makes dress rings using similar techniques. Resin casting is one way he makes pen blanks. He explained his recommended materials and techniques and the processes he uses to make solid colours. He explained some of the techniques he uses to mount and turn ring shanks to which he adds materials such as wood, carbon fibre and resin. He finds Goldsmith and Jewellery Supplies in Parkhurst a good source for polishing buffs and mandrels and supplies such as rouge. Shane can engrave pens and medallions if required. Contact Shane on 082 5544 896 or shaneb1@global.co.za
(You may be wondering what the lathe in front of Shane is. It is a somewhat modified Jet 1014, with the DC motor and variable speed electronics from a Nova Comet 2 added. There is also a spindle speed display above the switch buttons on the right. Mounted on the spindle is a collet chuck and mandrel for ring turning.)

Wood of the month – Privet – Ligustrum Vulgare is the common privet. Chris pointed out that although this wood is valued for turning, being pale and uniform, the tree is a Class 3 alien invader. The purple berries are popular with birds, who after eating them, prefer to perch above clean washing or vehicles. The small-leafed Chinese privet (Ligustrum Sinense) is popular as a hedge.

Main Club meeting. Wednesday, 12th May 2021. This year the AGM was held at the normal time of the year. The present committee has agreed to stand for another year. The chairman Alistair reported on the activities for the previous year and the plans for the forthcoming year. He thanked all those members that have contributed to the running of the club over the past year.

The treasurer, Peter Bourne reported that the club is in a sound financial position. We have a good relationship with Made in Workshop, which we hope will continue some time to come. Free bockwurst rolls and a drink were supplied.
After the AGM, Frans Joubert and Lynton Dennill gave presentations on the furniture that they have made over the years.



The list of books in the WWA library compiled by Ray Deftereos can be found here:
https://handtoolbookrev.libib.com/i/wwa-library

Hobby-X 2021 has been postponed from April to November. It will take place at the Kyalami Convention Centre from the 4th to 7th November 2021. WWA will have a stand as before. The annual toys-for-charity braai is shortly afterwards, so this is an opportunity to showcase the toys we make. If you want to show off some of your toys, please bring your toy making schedule forwards a few weeks!

Woodworking 101 – Continues on Saturday 5 June at Made in Workshop. Starting at 09h00. Bobby will be following up the Spice Rack Project and will handle any woodworking issues you may have.
The group will also decide on what new projects to handle

Schedule for Regular Events at Made in Workshop

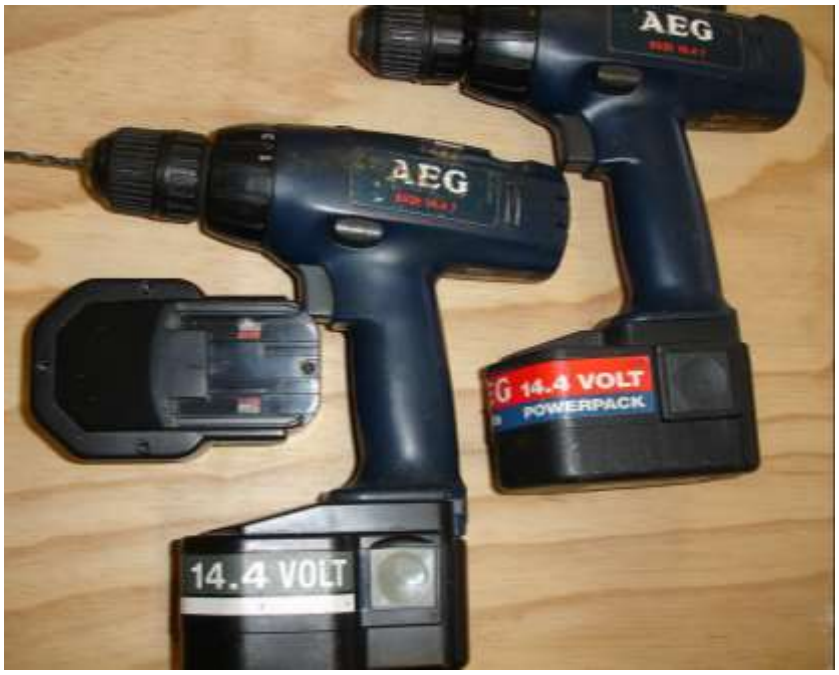
Meetings – regular meetings in addition to those given above

1. First Saturday of the month – Bobby Bezuidenhout – Woodwork 101 for beginners. Contact Bobby on 083 873 3872 or bobbymel109@gmail.com
2. Second Saturday of month - Herman – all things turning related – 083 631 0501 hermanpotgieteresq AT gmail.com

This list is subject to change, so please consult your Crosscut each month.

Replacement NiCd Batteries for Cordless Tools

Trevor Pope



I have two rather old AEG drill/drivers that have served me well.
The one on the right I bought probably 20 years ago and after about 10 years the battery pack failed, which is good going. I bought some replacement cells from RS in Kyalami and repacked the battery myself. After 10 years it is still going, but is becoming a bit feeble. This is the battery with the AEG label in the picture. The individual cells I bought from RS were quite expensive, being nickel metal hydride, so they have lasted well.
The drill/driver on the left was given to me by Werner Heise, who some may remember, but without a battery pack.

I managed to source two replacement packs from Battery Experts in 2015. These are 2.0 Ah packs, a higher capacity than the original 1.4 Ah pack. At the time, Battery Experts only had a branch in Durban, so they couriered them to me.
One of the two packs failed after about three years, but the other only started becoming a bit feeble last year, 2020, after about 5 years of use.

Battery Experts now have a branch in Edenvale, so I took the two packs that I bought from them 6 years ago for repacking. They are not able supply complete replacement packs as before, only to repack the old ones with new cells. After a few days, I was able to collect them from Edenvale.

The drills are still mechanically sound, although the chucks don't tighten quite as well as when new. I have tried squirting in some light oil into the chucks, but this hasn't really helped. For most of my tasks, they are fit for purpose, and will certainly be good enough for the remainder of the life of the new battery packs.

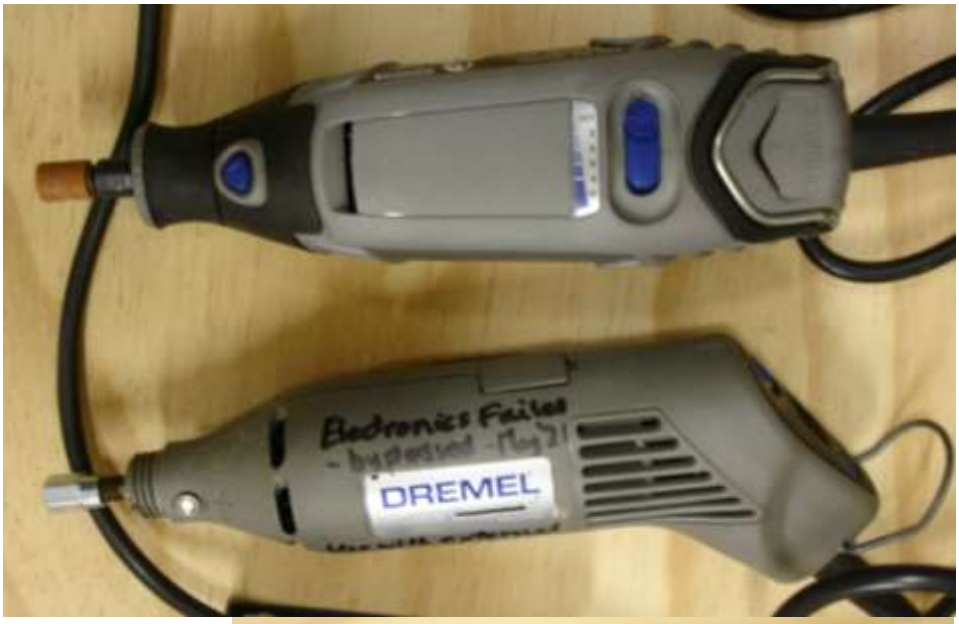
Battery Experts can be found at https://www.batteryexperts.co.za/

Their Edenvale branch is in the shops diagonally opposite the Edenvale Home Affairs and SARS offices, and Chamdor Trading (the giant material shop in the old Checkers location). If you are old enough to remember Scott Myles, their shop is in the same building, above where his shop used to be.
They also do a good selection of replacement laptop batteries as well as other specialist batteries.

Dremel Modification

Trevor Pope

In about 2005, I bought a Dremel high speed grinder model number “400 Digital” with electronic speed control. This is the bottom one in the picture on the right. The upper one is a model 3000 bought last year.



You can see the rather oddly shaped body with the display and buttons. The + and – buttons are to set the speed and the on/off slide switch turns the motor on and off.

Unfortunately, the electronics failed last year. The display would flicker and then blank, and it wouldn’t turn on. I spoke to Audrey Myles (you will know her from the Bosch stand where she demos Dremels.) She said it wasn’t Dremel’s best model and was withdrawn a couple of years after being launched. It has a rather strange shape as well and doesn’t fit into some of the attachments. No spares are available and she advised that I replace it with a newer model, which I did with the Model 3000 shown above.

When I complained to John Speedy about the failed unit, he suggested that I just bypass the speed control and use it at full speed.

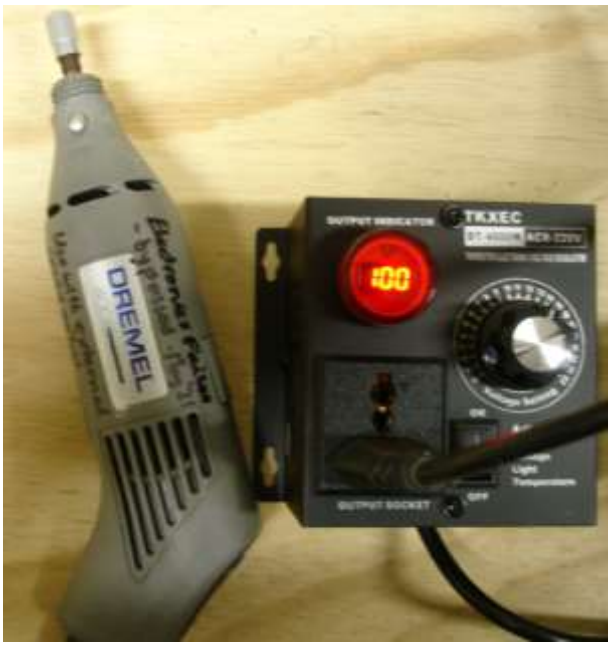
Being an electronics engineer, of course, I had to pull it apart to see if it could be repaired. Dremels are quite simple machines, with a universal motor, controlled by triac speed control circuit. This model has a PIC micro-controller that responds to the buttons, updates the display and controls the speed by varying the phase angle of the triggering circuit to the triac. Most of the circuit board was surface mount components, which are difficult even to identify, let alone work on. There were a couple of small electrolytic capacitors, which if they were to fail, would cause the symptoms I saw. I replaced those with no success.

I decided to take John’s advice and disconnected the speed control circuit and bypassed the triac, so the machine now just runs at maximum speed. A Chinese-made external speed control was bought to allow the speed to be reduced as required.

The on/off switch still serves to turn it on and off, but the rest of the circuit has been bypassed and deactivated.

Speed controls for universal motors are easy to make, as they just reduce the average voltage seen by the motor. Universal motors are found in most low-cost portable power tools intended for

operation on 230V AC mains. The field winding is wired in series with the armature winding and brushes are used to excite armature. These motors are quite simple, and have a good power to weight ratio for portable power tools. They run very fast and are usually very noisy. Aside from the brushes that are easily replaced, there is little to go wrong. Unless you have complicated electronics…



The speed control circuit reduces the AC mains voltage seen by the motor. A phase angle trigger circuit is used to vary the proportion of the AC cycle that is passed onto the motor by the triac, thereby controlling the speed. A lamp dimmer works on the same principle by varying the voltage seen by lamp.
Incandescent (filament) lamps present a simple resistive load. A universal motor presents a combination of a resistive and inductive load. This can confuse some triac control circuits used in lamp dimmers which is why a more specialised circuit is used for motor speed control.

(A triac is a semiconductor switch that is used to regulate AC power. It is a four-layer device that has a sensitive gate input which can be triggered to turn it on for the duration of the AC half cycle. The point in the half cycle that is triggered determines that amount of power passed to the motor. So, by triggering the triac early in the half cycle, more power is passed to the motor, conversely, later triggering reduces the power.)

The external speed control box shown is designed to deal with inductive loads, but is still quite simple. A digital display indicates the voltage seen by the motor – it is only a guide, because the circuit is simple and doesn't read correctly if the motor is disconnected. This speed controller is not designed to work with induction motors such as found in larger stationary machines. A much more complex circuit that can vary the frequency seen by the motor is required for controlling the speed of an induction motor.

I intend to use the Dremel "400 ~~digital"~~ with the bypassed electronics, and the external speed control circuit with a flexible shaft. I expect it will provide many more years of service.