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Issue 289 ● £3.95

Good Woodworking

Andy loves this 12V gutsy 3-in-1 kit

The No.1 magazine for aspiring designer makers

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Dom does a test run with pocket holes





ROOFING

Ed goes for room-in-a-roof trusses



JOINTING

Michael teaches mortise & tenons

SOLUTIONS

UNDERNEATH THE ARCHES

Mark Gould's London workshop is dirt cheap

PLUS...

- Cabinetry: Martin Aplin's modern twist on a trad chest
- Around the house: Phil Davy fits new window boards
- On the lathe: Les Thorne turns a cake stand

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In Slovene February is wood-cutting month

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Welcome

How much thought do most makers give to the milling process? Look at the picture above and you'll see that it can be as free range as you like. Earmark your tree, take a chainsaw safety course, buy a bit of kit and in theory it should be possible to take control of your woodwork from trunk or branch to finished piece as David Vickers demonstrates, while milling timber for a young maker to hand work a table, **p44**.

And talking of projects, we are revisiting three this month, offering you the opportunity to tailor-make Tony Sutton's ace of benches, **p38**, Martin Aplin's Japanese merchant's chest, **p48**, and Dominic Collings' first armchair project, **p56**, tested first with pocket-hole joinery.

Meanwhile Michael Huntley is taking joint-making down a more traditional route, via the mortise & tenon, **p34**, and Edward Hopkins, up to his own neck in trusses, visits a timber frame builder who puts accuracy above all else, **p62**. Phil Davy makes good after getting rid of unused window seating, **p74**, and Les Thorne turns an elegant cake stand, **p80**.

Oh, and Andy King has good words to say about a Bosch rangefinder level, Makita's new multitool, Milwaukee's 3-in-1 drill and a Trend trimming cutter.



Andrea Hargreaves, Editor



Andrea Hargreaves
Editor



Andy King
Technical Editor



Dave Roberts
Consultant Editor



Phil Davy
Consultant Editor

We endeavour to ensure all techniques shown in Good Woodworking *are safe, but take no responsibility for readers' actions. Take care when woodworking and always use guards, goggles, masks, hold-down devices and ear protection, and above all, plenty of common sense. Do remember to enjoy yourself, though.*

Contact us

Editorial 01689 869848 **Email** andrea.hargreaves@mytimemedia.com
Post *Good Woodworking*, Enterprise Way, Edenbridge, Kent TN8 6HF
See the panel on the right for a full list of magazine contacts

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BACK ISSUES & BINDERS
Tel: 0844 848 8822
From outside UK: +44 133 291 2894 (International)
Email: customer.services@myhobbystore.com

EDITORIAL
Editor: Andrea Hargreaves
Technical Editor: Andy King
Consultant Editors: Phil Davy, Dave Roberts

CONTRIBUTORS
Andrea Hargreaves, Andy King, Dave Roberts, Stephen Simmons, Jeff Gorman, Michael Huntley, Phil Davy, Tony Sutton, Martin Aplin, Dominic Collings, Edward Hopkins, David Vickers, Phil Davy, Les Thorne

PRODUCTION
Design Manager: Siobhan Nolan
Designer: Malcolm Parker
Illustrator: Michael Lindley
Retouching Manager: Brian Vickers
Ad Production: Robin Gray

ADVERTISING
Business Development Manager: David Holden
Email: david.holden@mytimemedia.com
Tel: 01993 709 545

SUBSCRIPTIONS
Subscriptions manager: Kate Hall
Subscriptions: Sarah Pradhan
Tel: +44(0)1858 438798

MANAGEMENT
Publisher: Julie Miller
Group Sales Manager: Duncan Armstrong
Chief Executive: Owen Davies
Chairman: Peter Harkness

Tel: 0844 412 2262
From outside UK: +44 (0)1689 869896
www.getwoodworking.com

http://twitter.com/getwoodworking

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Good Woodworking

February 2015

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CWL1000

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Tiger 11/250	2.5Hp	9.5	24ltr	£119.98	£143.98
Tiger 8/510#	2Hp	7.5	50ltr	£129.98	£155.98
Tiger 11/510	2.5Hp	9.5	50ltr	£149.98	£179.98
Tiger 16/510	3 Hp	15.5	50ltr	£219.98	£263.98
Tiger 16/1010	3 Hp	14.5	100ltr	£269.98	£323.98
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*was £119.98 inc. VAT #was £167.98 inc. VAT

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evolution Makita Clarke MITRE SAWS

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CBG6SB#	PRO	150mm	£49.98	£59.98
CBG6RWC	HD	150mm	£54.99	£65.99
CBG8W (wet)	HD	150/200mm	£55.99	£67.19

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* SS = Stainless Steel

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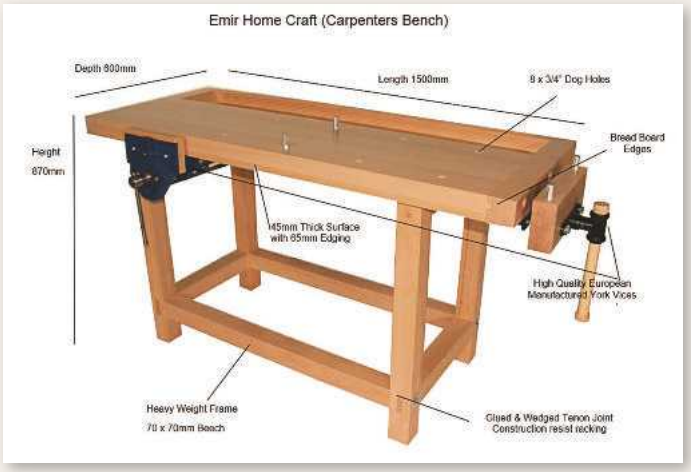
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Good Woodworking

News from the bench

Comment, insight, views and news of woodworkers from around the globe





New benches from Johnsons/Emir

While at the recent Harrogate show I managed to get a brief look at a new bench, borne from the partnership of Johnsons Tools on Merseyside and industry standard bench manufacturers Emir, based in Kent, *writes Technical Editor Andy King*.

The traditional cabinetmaker bench along with the joinery/carpentry model pictured are built with heavy-duty work in mind and would certainly sit comfortably in any pro workshop.

I was impressed by the solid construction: beech tops in 70mm thick for the cabinetmaker, or 45mm with a 60mm skirt and breadboard ends, they will certainly deaden any mallet or other chopping work.

Good work-holding options include a set of dog holes as well as both benches having European- made front and end York vices; both benches are ready for action from the off, while the full-length rear tool wells are great for keeping your most used tools close to hand.

But equally impressive, and often overlooked on many a bench, are the 70 x 70mm beefy leg frames; no scrimping or corner cutting here, and it is easy to see that both Emir and Johnsons understand the importance of a good leg assembly. Therefore it's beech again, and with wedged through mortise & tenoned joints these will take the brunt of any heavy work.

Emir's reputation as premium bench builders continues with these new models, and don't be fooled by the Emir Home Craft moniker, they are built for hard work, and to work hard.

The four benches in the range cost from £569.95 to £1639.95 and are available from specialist woodworking stores or from Emir at www.Emir.co.uk

Stanley screwdriver sets

The Stanley Precision Screwdriver sets feature a precision-engineered clamp for maximum bit retention. Supplied in a storage case, all screwdrivers utilise soft grips for comfort and control. Ranging from four to 37 pieces, the Precision Screwdriver sets include Torx, slot, hex, Pozidriv, Phillips, Triwing and Resistorx heads, with sizes ranging from 1mm to 4mm, T5 to T20 and PH0 to PH000.

The FatMax Bolster utilises a strong hex bolster for extra torque when used with a wrench. Featuring a narrow waist and large-grip domed handle, the Bolster allows for a fast spinning action and increased control. In order to reduce tip breakage, it is built with chrome-vanadium steel bars, also allowing for high levels of torque. Stanley has addressed rust problems with the introduction of the FatMax stainless steel screwdrivers. Boasting full stainless steel bars, these colour-coded and sand-blasted-tip screwdrivers are built for corrosion resistance. For further info go to www.stanleytools.co.uk





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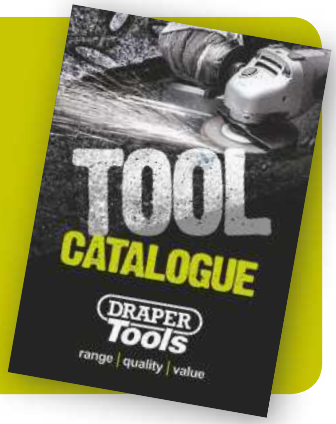
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COURSE**DIARY**

With the daffodils peeking out it's just about warm enough to take this issue of *GW* outside with the elevenses cuppa to see what courses will tempt you into learning new skills.

February
5-6 Beginner routing (Sittingbourne)
11-12 Beginner woodturning (Sittingbourne)
17 Turned boxes, into (Axminster)
17-18 Bowls & platters (Sittingbourne)
19-20 Beginner woodturning (Axminster)
19-20 Beehive making (Axminster)
21 Sharpening, Tormek Woodturning (Sittingbourne)
23 Pyrography (Axminster)
23-24 Beginner routing (Axminster)
24 Scrollsaw (Sittingbourne)
26 Spindlemoulding (Axminster)
Axminster Tool Centre
Unit 10 Weycroft Avenue
Axminster
Devon EX13 5PH
Tel: 0800 975 1905

9-13 English double bow
The Windsor Workshop
Churchfield Farm
West Chiltington
Pulborough
West Sussex RH20 2JW
Tel: 01798 815925

13-15 Make hinged case, beginners
13-15 Woodcarving, beginners
20 Woodturned bowl
20-22 Turning greenwood
West Dean College
West Dean
Nr Chichester
West Sussex PO18 0QZ
Tel: 01243 811301

March
1-6 Continuous arm Windsor chair
6-8 Furniture remake workshop
8-11 Hand-cut marquetry
12-15 Apprentice's stool
22-27 Dovetailed cabinet & drawer
West Dean College
West Dean
Nr Chichester
West Sussex PO18 0QZ
Tel: 01243 811301

4 Pen making (Axminster)
5 Fruit making with wooden chucks (Axminster)
5-6 Beginner routing (Axminster)
11-12 Beginner woodturning (Sittingbourne)
24 Taster session (Axminster)
31 Turning pestle & mortar (Sittingbourne)
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Axminster's new store in the north-east is nearing completion

Efficient dust extraction with Axminster's Numatic machine

Axminster to open in the north-east

Axminster Tools & Machinery is opening another store early this year in North Shields, about eight miles from Newcastle, to add to its retail sheds in the home counties, the Midlands and the north-west. It is situated at Coast Road Retail Park on Norham Road (NE29 7UJ), will be number seven for the company and will offer 10,000 sq ft of retail space open seven days a week.

The store will stock 10,500 product lines including all of the most popular brands, plus it will be possible to order in store anything from the full range of the Axminster Tools & Machinery catalogue.

Retail Development Director Darran McLeod said: "The new store will be the same size as the majority of our other branches and it will have some of the new concepts we introduced into the Basingstoke store. The store allows us to have approximately 10,500 lines on display and available in stock as well as some other features such as the Live Workshop, so customers can get hands-on with a wide selection of our tools and machinery. Although a new store, it will still maintain the Axminster ethos of offering high-quality advice and customer service."

Trade series extractor

Expect to see the new 'L' class XP380s extractor designed to cope with dusts from handheld power tools. The power head is made from drawn steel which is then epoxy coated and houses the highly efficient TwinFlo motor. Sound deadening keeps the noise very low and a plug-in replaceable power cable is fitted as standard. The integral PCB provides power to the external socket and powers up the vacuum motor once you turn on your power tool. Auto shut-off after you turn off your power tool keeps the hoses clear. A selection switch for manual use is also fitted.

The container of the extractor is made from Numatic's own Structafoam material. The Tritex filter system traps 99% of dust down to 0.5 micron. HepaFlo bags are recommended for use to ensure safe waste disposal.

A set of castors allows easy movement around the workplace and there's a big grab handle for use when lifting. The kit includes a 3m hose with clips to hold your power tool cable, a stepped rubber adaptor, an alloy floor wand and a 300mm floor tool.

A further upgrade to 'M' class filtration can be made by fitting the optional HEPA filter module. This simply clips into place between the power head and container. The Tritex filters must be used as well. This will give the best possible filtration and satisfies the HSE's recommendations.

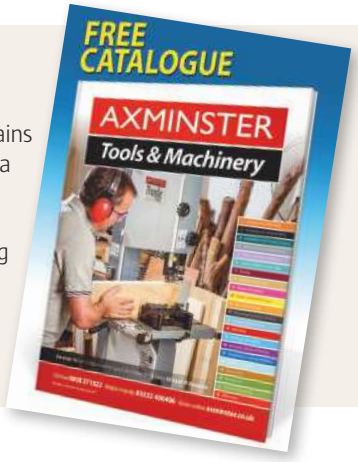
The price of the XP380s extractor is £419.95 and the HEPA filter module is £199.96, inc VAT.

2015 catalogue

Axminster Tools & Machinery's free 2015 catalogue contains 890 new lines together with all the old favourites, giving a selection of more than 10,000 product lines for the workshop, at home or on site.

New ranges include Rider planes, a complete reworking of clamps under the new brand name Axminster Trade Clamps as well as the hex shank bits, *see main text*.

For a copy call FREE on 0800 371822, mobile-friendly 03332 406406 or visit www.axminster.co.uk



All British glues

Johnson Tools has launched CA-UK, a range of British-manufactured adhesives that includes a full line-up of the latest PVA, hybrid resin and polyurethane wood adhesives plus a comprehensive range of cyanoacrylates specifically engineered for the woodworker and woodturner.

Over the last six months the range has been extensively tested to ensure all products perform as well as or out-perform all equivalent leading brands.



Johnson Tools has worked closely with a leading British adhesives manufacturer to tailor the first comprehensive range of woodworkers' adhesives specifically engineered for the UK market under ISO 9001 standards. The range includes specialist adhesives such as a wicking-grade loose joint repair formula developed to permanently repair loose joints on chairs and other items of furniture.

Woodturners will be interested in high-grade technical products like Pen Armour, designed specifically as a high-gloss hard-wearing finish for small turnings such as pens.

For more info go to enquiries@johnsontools.co.uk

Reason to feel chipper

The Chippendale International School of Furniture in East Lothian, Scotland, which celebrates its 30th birthday this year, has been named winner of the Best Small to Medium Sized Business at the 2014 Best Business Awards.

Each year the school takes some 20 students from around the world for 30-week immersive courses, cramming three years of study into less than one year. This year's intake comes from the UK, Canada, USA, Italy, Trinidad and Tobago, and Norway.

The school also offers incubation space on-site, so that graduating students can set up in business within the school, and have access to on-going advice and specialist help – a practical way to ensure that students make a successful transition into full-time self-employment.



Anselm Fraser lectures to students

The Best Business Awards judges said: "The Chippendale International School of Furniture, based near Edinburgh, has built up a global reputation and become the place to go for students from all over the world to learn about traditional and new methods of craftsmanship. What is interesting is that the not-for-profit organisation is funded by students' fees, making it totally self-sufficient. Any surplus is reinvested in the business. By focusing on a niche area of education, The Chippendale International School has raised the profile of furniture design and enhanced the reputation of the UK as centre of excellence in woodwork and craftsmanship."

Anselm Fraser, principal of the school, said: "On behalf of all of the teaching staff, we are delighted to have won this award. For the past 30 years we have worked hard to build the profile of the school internationally and are proud to have launched the careers of so many people."

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Northern makers get busy

Furniture designer and manufacturer Dovetailors has completed work on an elegant mid-century-style console table. The project was commissioned by a former customer who wanted something that would match the burr oak of their existing furniture but which had a unique style of its own.



Side table by Dovetailors

"The customer initially came to us with a hand-drawn sketch and a rough idea," said David Wilson, creative director at Dovetailors. From there the Dovetailors team worked with them to evolve a contemporary piece of furniture that would house the customer's treasured turntable and LP collection. "Functionality was always at the heart of the design process and this included developing features that would make the table a real pleasure to use, such as smooth push-to-open drawers," explained David. "The drawer fronts are in burr oak with rosewood detailing creating a beautiful piece of furniture." The legs of the console table are tapered and mitred, as is the frame, and it has been made using a combination of oak and burr oak to complement a media centre that was created for the customer by Dovetailors five years ago.

James McKay has just completed a new dining table with matching benches. The top is European oak with American black walnut stringing and breadboard ends. The legs are custom-painted ash with visible grain. Finger-pull drawers provide useful additional storage.

FFX show

Woodworkers can look forward to three days of what the organisers are promising to be the lowest UK prices on the market on offer at the FFX show at Kent Event Centre, Maidstone, with enough tools to fill 200 lorries! More than 100 major brands will be exhibiting between 27 February and 1 March, including Festool, Bosch, DeWalt, Makita, Milwaukee and Stanley. For the complete exhibitor list please visit ffx.co.uk

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Soft start allows close control during hand-held use, with even greater control available by fitting the multi-function fence, which is ideal for circle cutting. Variable speed ensures the router will handle a wide variety of cutters & materials.

For table mounting, quick-fit pins are located in the base, allowing rapid fitment to the mounting plate, so the MOF001 is completely compatible with the RTA300 Router Table.



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Good Woodworking Kit & Tools

New products, tools and tests

Andy King, Technical Editor
andy.king@mytimemedia.com



Makita DTM51 multitool

BIG & FAST

Where most tools have slimmed down, this one appears to have been on the steroids says our own muscle man

Like other tools based on a small angle grinder design, the bodies can be quite bulky but this is certainly one of the bigger ones, and its dust extraction setup further fattens it.

The upgrade of the original BTM50, this machine now sports a fast-release system for swapping the cutters. A top-mounted lever links to a lower mushroom-head retaining pin as on the tried-and-tested Fein and Bosch models. Operating the lever releases the clamping action, allowing the pin to be removed to swap the cutters. The cam lever action is quite stiff to rotate past its tightest point but it does secure the cutters or sanding head very securely once it's re-engaged.

A simple slide power switch on top of the tool is well positioned for either handed use and to get the most from the tool it has a variable-speed dial tucked in at the left-hand rear that allows easy access and 20 clickable positions.

This works well enough, allowing decent control on the fly and is suited to cutting work especially where you want to start on a slower speed and then move up through the gears to complete the cut quickly and efficiently.

Sanding work is equally efficient and the kit comes with a range of abrasives and a sanding head.

The dust kit clips firmly to the tool and is easy to remove without having to strip the tool down to do so, and it works well.

While bulky this tool is efficient. As a body-only kit it comes in a stackable Systainer-style case along with a fitted insert, dust kit and a starter pack comprising a single cutting blade, sanding pad, abrasives and adaptor to fit other manufacturers' blades.



▲ Sanding in tight spots is just one area where this multitool shines



▲ With the dust kit fitted the body becomes pretty bulky



▲ The top-mounted cam lever is pushed fully forwards to disengage the clamp



▲ This allows the retaining pin to pull out so the attachment can be swapped



▲ The clamp lever is reset and the attachment held securely

Good Woodworking The Verdict

+ Tool-free fast accessory swaps; good dust kit; accessories and stacking container supplied
– Bulky

Rating ★★★½☆

Typical price: £170.00 (no batteries or charger)
Made in China
Speeds: 6,000-20,000osm
Battery: 18V Li-ion
Web: www.makitauk.com

Prices

Our product prices reflect typical values as we go to press. We cannot guarantee these prices, though, and thoroughly recommend that you shop around.

How we rate...

★	Don't get your hopes up or your wallet out!
★★	Well, it works but really needs improvement
★★★	Performs well, but you will find better
★★★★	Great performance and value for money
★★★★★	So good, even Andy would get his wallet out!

Cracking kit

Andy almost runs out of superlatives to describe this 3-in-1 drill



Milwaukee has come up trumps with this compact little 12V drill; it really is a cracking little unit, and will immediately bring comparisons to the Festool CXS drill of similar design as it has similar design features.

Size in this case is pretty deceptive; it's a very capable drill in its own right despite what else it can do, and will drill up to 25mm in timber and deliver up to 32Nm of torque, making it a very gutsy performer and all the more impressive for a 12V drill! – or 10.8V depending on where you stand on this issue...

Talking of guts, Milwaukee quotes the internals of the drill as having full metal planetary operated via a top-mounted slider with 0-400 and 0-1500 speed ratios so it won't lag on smaller holes while still doing the bigger stuff at a decent speed, and it's built to do the job.

The variable-speed trigger is very good as well, capable of finely holding a speed as required.

Comfort plays its part in many tools and Milwaukee has done its homework here; the cloverleaf push-in battery pack design determines the handle diameter and can feel a bit lumpy on some drivers of this style but the inclusion of a sculpted 'waist' area where the web of your thumb and forefinger rest gives it a far slimmer feel and is really nice to hold, especially if you use it over longer periods.

Battery packs themselves are equally impressive, coming with 2Ah Li-ion as standard, but there are also 4Ah versions available as well, and these, having square flat bases, also allow the drill to easily be stood upright when you put it down – an added bonus aside from the additional runtimes the 4Ah offers.

A nifty set of LEDs is built into the side of the drill body to indicate current battery status so a quick squeeze of the trigger will immediately tell you how much juice remains in the tank before you get cracking.

At the sharp end

But it's at the front end where it gets all the more interesting. Although it can be bought as a standalone drill, the kit version has to be the choice as there are three chuck options, and all are supplied.

The standard 3-jaw keyless single sleeve has 10mm capacity and operates as expected for general drilling work as well as controlled screwdriving with the drill's torque collar.

But by pulling on the red collar at the back of the chuck it detaches to reveal a ¼in hex shank for screwdriver points, allowing driving jobs in tighter spots to be achieved. An added bonus is that the driver point can remain in place with



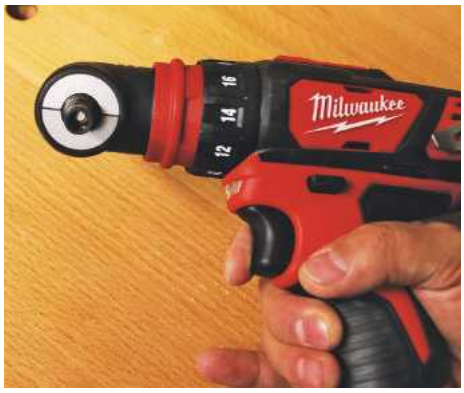
▲ Each chuck fits directly onto the spindle with the screwdriver bit still in place



▲ The offset head can be repositioned at any angle to suit the work



Milwaukee 12 BDDXKIT-202C drill


▲ Likewise, the right-angle head can be set to suit the work





▲ You can also fit the 3-jaw chuck for drilling work



▲ Additionally there's a torque collar for screwdriver work



▲ The gears are controlled with the top-mounted slider



▲ In tight spots the offset chuck and LED light are a boon

the chuck fitted so it can be quickly altered between drilling and driving functions.

Further to this is a right-angle attachment, again boasting a ¼in hex driver shank for screwdriving work, but it will also allow the standard chuck to clip to it to turn it into a fully fledged right-angle drill. The right-angle chuck can also be set at different positions to gain the best working angle, ideal for drilling joists, where the remaining floorboards might restrict you for example.

But if anything, it's with the last chuck that the Milwaukee should gain further ground. This one has an offset ¼in hex bit holder, and with a flat edge to get really tight into corners which will certainly hit the spot with kitchen fitters especially where some of the adjustment brackets for levelling units can be tucked in tightly and be tricky to get to without a long-reach screwdriver. This particular chuck has the upper hand on Festool's as the CXS model doesn't sport this type.

Conclusion

I think Milwaukee has a little gem here. It's certainly a powerful unit in its own right, but with the right-angle head fitted, it has more torque available than some of the dedicated right-angle drills out there.

The fact that the screwdriver point can stay in the drill body with any chuck fitted and each chuck disengages in a flash means you can switch between any function and do the work with just the one drill, and very quickly, although if I owned it I'd likely put it alongside a Milwaukee 12V impact driver to give additional scope for heavier general screwdriving functions.

Even so, this is me thinking aloud; this drill in its kit form will do pretty much all you need for any smaller drilling and driving functions, including the more specialist work where you'd normally have to splash out on a dedicated right-angle drill.

The saying 'the best thing since sliced bread' is fine if you like such cotton wool-type foodstuffs, although I prefer the real thing.

Either way, this little beauty certainly hits both the sliced or real camps depending on your choice!

The Good Woodworking Verdict

+ Great build quality; powerful; brilliant chuck options
– Errr, ummm...

Rating ★★★★★

Typical price: £180.00 inc VAT
Drill capacity in wood: 25mm
Capacity in steel: 10mm
Max torque: 32Nm
Chuck capacity: 10mm
Speeds: 0-400 0-1500rpm
Batteries: 2 x 2.0ah Li-ion
Web: www.milwaukee.eu



None of your lip!

This guided 1mm rebater profiler could be worth its weight in gold to anyone who does a lot of kitchen refits

If you've ever had to deal with damaged laminate worktop lippings you'll know it can be a pain to remove them easily as well as dealing with the underlying contact adhesive so that a replacement can be successfully fitted. As long as the top can be easily removed, this cutter looks to be a great solution, allowing the damaged lipping to be removed in two hits.

Looking to all intents and purposes like a top and bottom bearing-guided flush bit, it has a nifty trick up its sleeve by having a lower bearing that is 2mm shy of the 16mm cutter diameter.

By plunging the router low enough to make a pass just below half the thickness of the work it will make a 1mm rebated cut, removing the top part of the damaged lipping in doing so.

Plunging the router further so that the flush-cut top bearing engages the newly formed rebate, the second pass now completes the cut and removes the bottom part of the damaged lipping to leave a clean flat cut ready for the new lipping.

As with other routing tasks on worktops, depending on the lipping's position the worktop may have to be flipped and the cuts made from the underside to prevent the front edge from chipping out.

If you can't get the worktop out, you can still remove the majority of the lipping by working the cut in the same way but stopping short either from the front edge if it can break out, or working the cut from the front until the router comes up against another surface.

The remaining lipping can then be pared away and tidied up with a sharp chisel or plane.

Putting it to the test on a damaged lipping the process was not only fast but left a perfectly clean and true edge ready for re-lipping.

There are also a couple of other bearings available to give offset rebates for 1.5, 2 and 3mm-thick lippings.

Conclusion

While not a cheap cutter, it does exactly what it says on the tin. It's a great accessory for anyone who is doing refurb work.



▲ A damaged lipping can be a pain to remove and replace



▲ Set the router to make the first pass just over half the depth of the worktop

The Woodworking Verdict: Good

+ Quick to set up; excellent finish
– Won't take a full cut if the top can't be removed

Rating ★★★★½
Typical price: £50.40
Minimum work depth: 12mm
Max work depth: 38mm
Cutter diameter: 16mm
Lower bearing diameter: 14mm
Web: www.trend-uk.com



▲ The resulting cut removes the top part, leaving a clean surface



▲ Set the router so the top bearing engages the new rebate and is deep enough to remove the rest



▲ A second pass then removes the rest of the lipping for a clean smooth surface

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Precisa 4.0 P-1	Professional	Inc 1.4m STC + TLE (ditto)	3.5 / 5.2	87 mm x 800 mm	£1775.00	£2130.00
Precisa 4.0 P-2	Professional	Inc 1.4m STC + TWE + TLE (ditto)	3.5 / 5.2	87 mm x 800 mm	£1980.00	£2376.00
Precisa 6.0 P-1	Professional	Inc 2m STC + TLE (ditto)	4.0 / 6.5	110 mm x 1400 mm	£2416.67	£2900.00
Precisa 6.0 P-2	Professional	Inc 2m STC + TWE + TLE (ditto)	4.0 / 6.5	110 mm x 1400 mm	£2590.00	£3108.00
Precisa 6.0 VR P-1	Professional	Inc 2m STC + TWE + TLE + scrorer (ditto)	4.0 / 6.5 + HP scorer	110 mm x 1400 mm	£2890.00	£3468.00

STC = Sliding Table Carriage. TWE = Table Width Extension. TLE = Table Length Extension.

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Beyond Pythagorus

Andy King's memory is tested by the functions of this device

Digital measuring has come a long way from the ultrasonic rangefinders that I first saw; those were hit and miss at best, and pretty unreliable for anything but very basic estimates. Now the use of lasers has made them not only highly accurate in the distances they can record, but also the functions that can be incorporated within them.

This GML 80 has so many functions you need to have a better memory that the unit itself to remember all it can do! Luckily the manual tells you how to do the basics but you need to be using it quite regularly to retain the more complex functions within your own memory banks.

Many of us will most likely not use some of the more complex functions within the compact unit, but the actual measurement functions are easy to access and understand so direct measurements as well as running measurements, volume and area are certainly useful.

Of course, geometry plays a big role in woodwork and simple Pythagoras is taken for granted for many calculations involving angles and heights; roofing is a perfect example, whereby knowing two of three measurements will gain the third by a simple equation.

This unit goes way beyond that though; click through the functions by pressing the appropriate button and check the easy to read backlight display and a range of dimensions can be taken from a static point of origin to determine not only heights, but calculate parts of that height within, such as window reveals and where they are positioned on that dimension.

You can also take measurements where you can't gain access, across uneven or open groundwork for example, allowing you to fire a similar sequence of measurements and receive all the subsequent calculations.

Inclinometer

There's also an inclinometer for angles, both determining and setting them, so for example you can set the rangefinder on a rafter or hand rail and determine the pitch, or simply tilt it to a desired angle and mark the laser dot where it strikes for setting up an angle.

The display is similar to most smartphones, rotating from vertical to horizontal for ease of reading. This, along with other functions such as audio signals, can be switched on or off via various menus accessed through the button panel.

This powerful little box of tricks has an easy to understand graphic display; once you have toggled through to the mode you want to use, it shows you what measurement to take and then the next and so forth to determine the calculation as required, plus there's a built-in memory that stores them so you can recall a more complex set of values as well as do basic addition and subtraction within a set range as well.

That's not to say it's foolproof – I had to have the manual close at hand to check the sequence was correct for what I was trying to do on the more complex stuff, but I guess that's the same for most things. But where it really has added value, and lifts it above other rangefinders with similar attributes, is when it's clipped into its R60 measuring rail.

Digital level

This is a small spirit level in its own right, but becomes a digital level once the rangefinder is fitted to the body. It automatically detects the unit to set it up for this particular work, and the display reads to show the angle as well as giving an audio signal as the level hits plumb or horizontal along with arrows to indicate what side of the work needs to be adjusted to bring it to its correct position. It also increases the



▲ Checking lengths against a datum line is one of its simplest functions, but highly accurate



▲ Firing the beam at a known top and bottom position results in the overall height being determined

overall length of the inclinometer functions as well as gaining additional accuracy when checking such measurements.

I'm a fan of digital measuring devices for fast surveying jobs such as determining timber required for long runs – replacing a whole houseful of skirtings, floor areas for laminate or suchlike renovations as well as volume and basic height calculations where a tape would take forever – and the most basic models of rangefinders are usually capable of this, but I also love digital levels for fitting stuff that can often need two sets of eyes.

Kitchens or other units that need adjusting is one area – having to constantly monitor the level and then tweak the adjustable legs or brackets is quickened immensely by the audio signal telling you you're on the button – so having these two combined makes it a very powerful addition to the toolkit, and with the additional functions built into the rangefinder, there cannot be much that is outside of its remit when it comes to determining any standard, or indeed complex, measurement.

With Bosch's own standalone digital level hitting the £100 mark and, equally, a cut-down version of the rangefinder for a similar price, having top-spec kit that can be used independently of each other for less than two professionally aimed separates is well worth the outlay, even if you have little or no use for the more complex functions it offers.

The Li-ion battery charges via the USB port either with the supplied 3-pin standard house plug adaptor or via a computer port, and once charged will take around 25,000 measurements before it needs a re-charge. Pretty impressive stuff!

Conclusion

There is a raft of functions on the digital measurer that may seldom if ever get used, but this is a very powerful unit that, when docked within the conventional level, becomes all the more useful. For those who need multiple calculations, measurements and other such stuff, along with levelling and incline abilities, this combined kit will certainly make its mark.

The Woodworking Verdict

Good

+ Digital measuring and levelling in one unit; can be used independently
– Pricey; needs concentration to understand its full capabilities

Rating ★★★★★

RAIL

Length: 600mm
Levelling vials: plumb & level

RANGEFINDER

Measuring distance: 0.05-80m @ 0.1mm increments
Angle range: 0-360°
Measurement functions: length, area, volume, continuous, indirect, surface, grade
Web: www.bosch.co.uk



▲ Here the unit is set to measure room volume, each press accounting for one measurement



▲ All the functions are accessed through the buttons, with multiple calculations stored in the memory



▲ The overall position for measuring can be altered such as here where a flip-out leg allows corner-to-corner measurements



▲ The USB charging point is protected from dust and moisture ingress by this rubber shroud



▲ Clip the GLM80 into the R60 and it becomes a versatile digital level and inclinometer



▲ If tradition is also your thing there's a set of accurate vials for initial ballpark setup



▲ Level and plumb work shows a set of arrows to determine which way the work needs to move. The readout can be altered to match the level's use



▲ Placed on an angle such as stairs or roofs you can check the pitch

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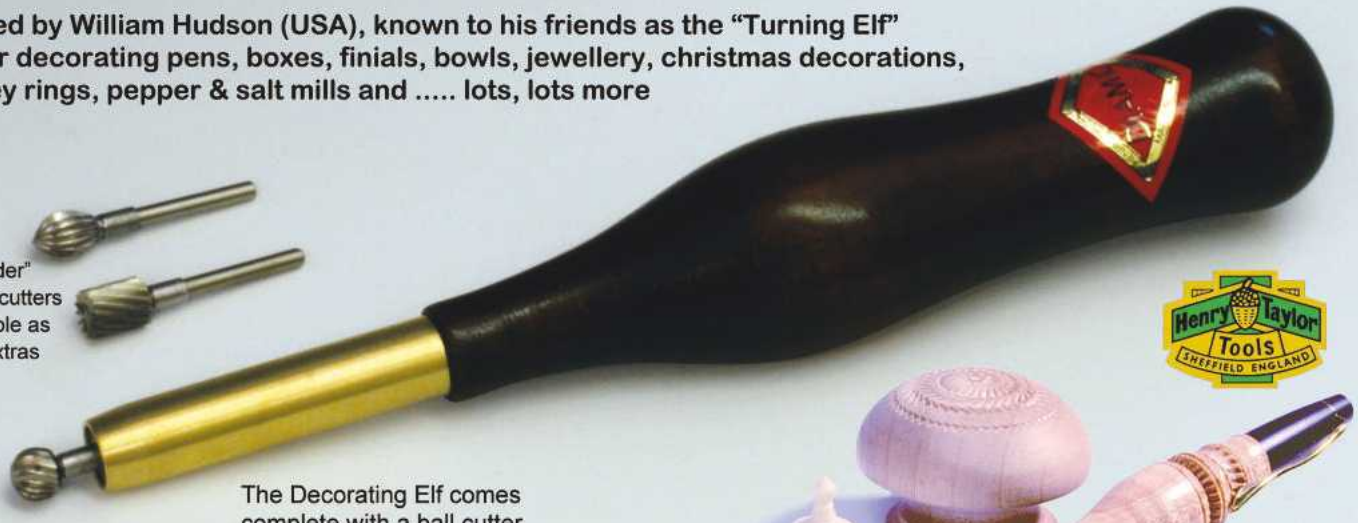
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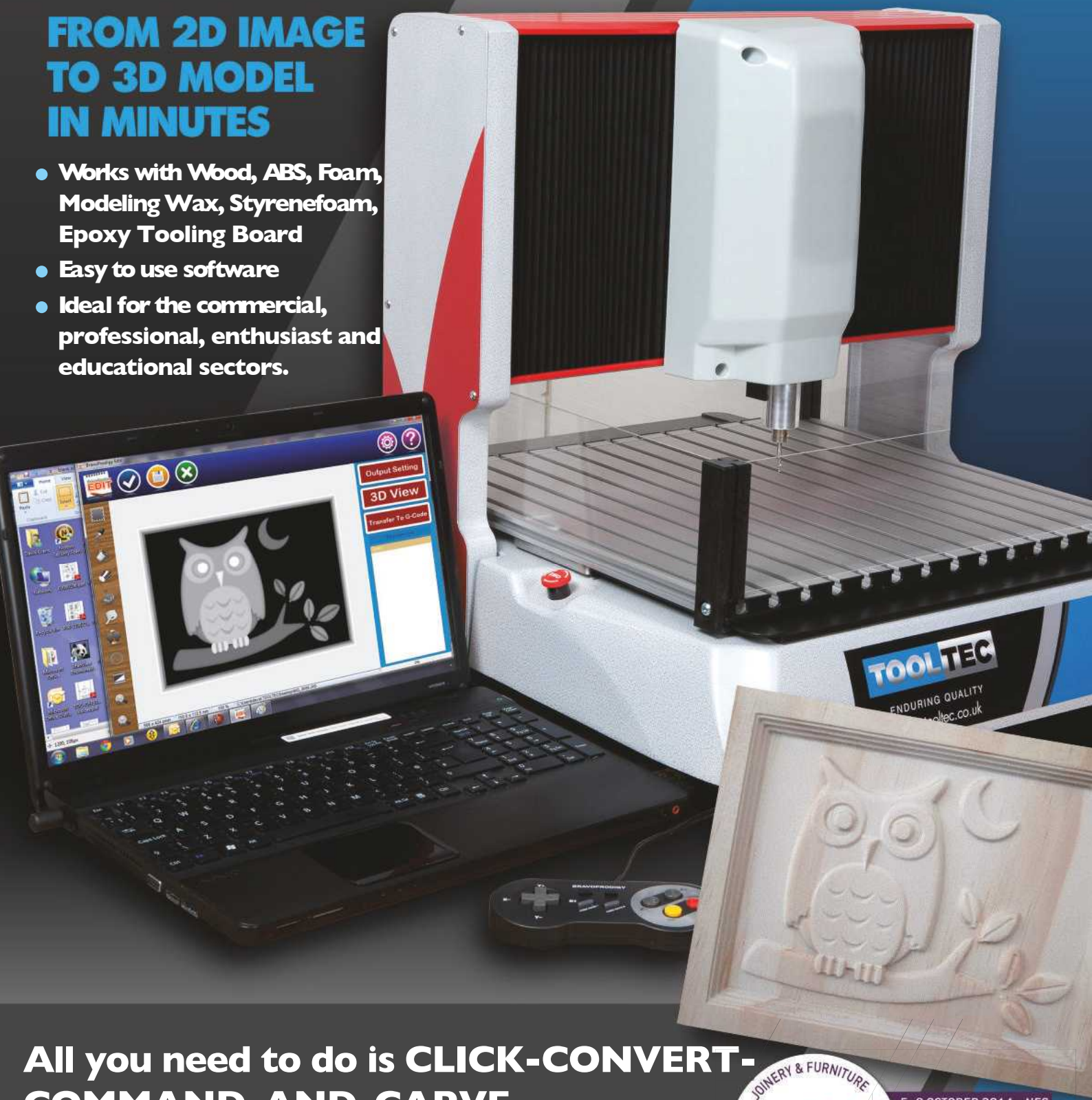
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Tough under the tracks?

However much he may know about warp drive and interstellar navigation, Captain Kirk has a lot to learn about space: far from being the final frontier, it's very often the first hurdle for aspiring makers who're trying either to find a bench at which to work, or to set up a small workshop of their own. In towns and cities, space of any kind is at a premium, and the sites that once provided affordable premises for sole-traders or small collectives – the superannuated workshops, the awkward corners, the redundant public buildings that could accommodate...



Dave Roberts, Consultant Editor

...a little noise and creative mess – are being redeveloped, either as residential properties, offices, or studios for quieter, cleaner creative practices. As he tries to find his feet, then, the jobbing craftsman is not only facing tightening financial margins but is also being squeezed into the physical margins, as Good Wood's very own East Ender, Mark Gould, discovered last year.

When he completed his foundation degree in furnituremaking at The Cass (the London College of Furniture as it was called and, confusingly, sometimes still is), he left it with commissions in hand, and a large project in prospect in collaboration with two other graduates, Mandie Beuzeval and Tim Grist. Neither Mark nor Tim, however, had anywhere to set up 'shop, and though Mandie, who works two days a week elsewhere, could have built a workshop at her home, she was looking for a different sort of environment – somewhere with the creative energy that comes from sharing space and enthusiasm with like-minded makers.



Killer doorstep: Pret a porter it's not

The problem though was finding somewhere in London – London! The most expensive capital in the world according to Savills' recent Live/Work report – that was both affordable and reasonably accessible for all three. But because Mark lives in Mile End, Mandie in Camberwell and Tim in Peckham, all the Xs marking possible spots, whether north or south of the river, were in over-subscribed territories and/or where costs are already high or on the rise, and many of the studios have been white-painted into hipness and unsuitability. The only places that two months of searching produced were on waiting lists – until, that is, Mark followed up an ad in Gumtree offering workshop space in Bow.

Parallel world

The lead took him to Arch 481 beneath a railway viaduct where Darcy Turner, the Caractacus Pott of Bow Common Lane, "fiddles and fumbles," as he puts it, inventing and developing the machines that he uses to run craft days in schools – devices that roll newspapers into structural 'stixx', or cut multiple strips of tape into handy lengths for making wire-and-tape sculptures (for more, see www.darcyturner.com).

Mark is now oblivious to the trains rumbling overhead

"It's called hiding from the world," Darcy laughs, describing the niche that he's carved for himself, though opening up the joys of creativity to children is probably anything but 'hiding'. Or if it is, then he's no more avoiding certain realities than, say, the people who ride the Essex Thameside line – part of what used to be the London, Tilbury & Southend Railway – along the estuary's north coast and into Fenchurch Street, passing over Arch 481 on their way.

Those passengers, with Docklands and the City on their elevated horizon perhaps, may not notice the houses, estates and businesses of Bow, Mile End or Whitechapel; they probably won't see the green handkerchief of the trimmed and tidied Tower Hamlets Cemetery Park – where Darcy insists that drug gangs still dump bodies; and they almost certainly won't look down into the narrow access road that runs alongside the viaduct and the steel-shuttered fronts of its rented arches. Equally, however, the sound of their train's passage reaches the arches not as the clattering syncopation of wheel on rail but as a kettle-drum rumble whose timetabled regularity sounds almost like a reminder of the day passing in a different and distant world – so distant that in Arch 481 Darcy has long since stopped noticing it. "I don't hear the trains; do you?" he asks Mandie and Mark, who shake their heads. Running beneath the railway, this is, quite literally, a parallel world.

"If I ever advertise these spaces in Gumtree," Darcy explains, "people look white by the time they [arrive]."



Mark, centre front, jockeys for space in this crowded by cheap – very for London – workshop

"It's certainly not pretentious," offers Mandie, with casual understatement. Their neighbours along the line include market traders, a supplier of scene-setting accessories to Bengali weddings, a printer, a hydroponics company and a couple of carpenter's workshops. "Proper workers," Mandie calls them; "not beardie hipsters." And in Arch 481, a number of these workers – including a couple of makers who're in full-time employment elsewhere and use their benches at weekends – have made spaces for their tools among the galleried shelving carrying Darcy's 'stock' – "Everything's important," he protests; "it's not junk."

"It's like a hotel for [gastarbeiter] in a Dubai construction company," says Mark with the rise and fall of the shoulders that tells you he's laughing. Yes, the working conditions call for a degree of co-operation and manoeuvring in order to use the bandsaw or planer/



Left to right, Darcy Turner, Mandie Beuzeval and our Mark. Obviously, there's never any time-wasting in this workshop; it's all serious stuff!



In keeping with the gritty atmosphere, monochrome seems in keeping

thicknesser. And no, there's neither heating – which is fine in the summer when the brickwork is soaked with heat; less so in the winter when that energy has drained away – nor running water, and no toilet… well, not unless you count the survivalist plastic bottle-and-funnel setup between the roller shutter and outer steel doors. And who would count that?

But if comfort was the first consideration, of course, Mandie and Mark would probably be office-bound on the train that's just passing overhead rather than here in Arch 481 doing their own thing. As Darcy remarks, the mental space you occupy while learning anything is an uncomfortable place to be: "I see it all the time when working with kids," he says, and adults find it no different except that they've learned to 'lean into' the discomfort and move forwards. It's fitting, perhaps, if the physical space you occupy when starting something new sometimes presents challenges, too.

Besides, while these premises may be at the smaller and more basic end of Network Rail's commercial properties portfolio, Arch 481 offers several compensating benefits, not least of which is the price. The rent for the whole arch is about £9000 per annum plus business rates (£1500-2000), electricity and insurance; for the space that the Cass Three share and for access to the machines, they're paying about £260 per calendar month between them, which makes Arch 481 a very affordable toehold in the city.

Then there's the company: after all, Mandie and Mark maintain, leaving college hasn't only been about finding somewhere to work, but also about moving into a work-minded environment. They've exchanged the undergraduate community – where time, they say, can be too easily dissipated in chat or queuing for machines – for something that combines creativity and commerciality, but on their own friendly terms.

Perhaps there's something to be said for the relative security of tenure too? Just up the road in Stratford, the bulldozer blades are sniffing around the perimeter of the Sugarhouse Studios – an example that we've mentioned before of makers fitting into commercial premises that are in the twilight between occupation and dereliction – but these viaducts are obviously a long-term part of the rail system's infrastructure. And while Mark says that the developer-driven gentrification of the East End has reached nearby Tredeager Square, the area isn't yet ready to throw itself over to under-the-arches bistros and wine bars; right now the catering's more about a doorstep sandwich from the nearby caff, homemade treacle flapjack and a mug of tea from the pot that Darcy can be encouraged to keep on the go all day.



If Alf Tupper can do it…

A long tradition

Finally, there is a certain poetry in Mark's struggle to find workshop space and his setting up in Arch 481. Bow is only a spit and hop from Shoreditch, Bethnal Green and Clerkenwell which, during the late 19th century, became home to a host of small workshops involved in the manufacture of furniture. That furniture-making boom, of course, was all one with the Industrial Revolution-fuelled expansion, of which the railways – and working under the arches – were other aspects.

In her paper, Underneath the Arches: The Afterlife of a Railway Viaduct, Leicester University's Emma Dwyer writes about the old Eastern Counties Railway viaduct in Shoreditch which, having been constructed between 1836 and 1840, predates the one in which Arch 481 stands by about 15 years, but which was built for much the same reasons: the arches' feet were able to high-step their way through the crowded East End, "minimising the number of buildings that [had] to be demolished, [and] raising the railway line above adjacent properties in a congested district." Like the Bow viaduct, no doubt, the Shoreditch structure was expensive: "It was a mile and a quarter in length and comprised 160 arches… To that end, many of the arches underneath the viaduct were let out as warehouses and workshops."

That Mark, Mandie, Darcy and thousands of others like them are following in a long and honourably gritty tradition, then, is best illustrated by the *Victor* comic's Alf Tupper, the duo-tone 'Tough of the Track', Olympic medallist, and all-round working-class hero who ran his welding business from a railway arch workshop. "Bloomin' Ada," as Alf would surely have said, it's a good life – if you don't weaken.

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Pearl of a job

Stephen Simmons couldn't wait to dive into this exciting project – restoring an oyster veneer chest



▲ Pic 1 **Three hundred years of use, shrinkage and sunshine plus poor restoration had taken their toll**

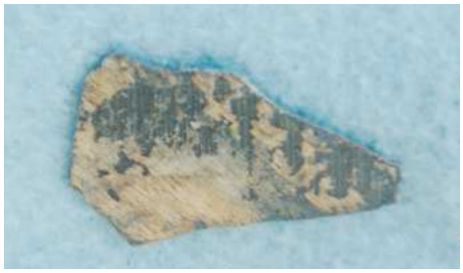
Once in a while you get a dream commission... a beautiful piece of furniture that's readily transportable, the delicate work is accomplished without anything going wrong, and the clients are knowledgeable and sympathetic. One of my favourites was a small late 17th-century oyster veneer chest of drawers. You may find several aspects of the job instructive.

Oyster veneer is the term used for transverse or oblique cuts of small-diameter timber to display their growth rings to decorative effect – superficially resembling an oyster. It's often assumed that laburnum and lignum vitae were the main timbers used for this but recent expert opinion claims that there is no contemporary evidence for this; apparently oysters could be cut from expensive cocus or princeswood or cheaper olive and walnut.

Detached veneer

The immediate problem was that a couple of sections of veneer had become detached and others would soon have followed suit (**Pic.1**). With any piece of furniture, deterioration accelerates once one piece of veneer becomes detached; and the immediate problem is often a symptom of something more serious. The basic problem here was two-fold: some of the veneer had shrunk over 300 years and the animal glue was beginning to degrade in places. Veneer shrinks across rather than with the grain, so if cross-cut veneer shrinks it will naturally do so in all directions.

Here, shrinkage was not consistent but there was a 1mm gap round some sections. Animal glue loses its strength when it becomes dessicated or damp but also when there is too much of it – a factor that's often neglected. In this case some sections of veneer had been re-set at some stage and not clamped properly, resulting in an excess of glue (**Pic.2**) rather than a close bond between veneer and substrate.



▲ Pic 2 **Too much glue can be as much a problem as too little**

On the plus side the whole structure was sound and nothing was missing, the detached pieces having been saved; and only the top was affected, this having naturally suffered more wear and tear – as well as restoration – and been exposed to more direct sunlight. In addition, the back had been removed previously and the original narrow-headed iron nails replaced by larger round-headed early 20th-century versions, the significance of which I will explain later.

Preliminary work

The preliminary work fell into three parts: determining how much veneer needed treatment; what that treatment should be; and working out how to clamp effectively to avoid replicating the glue sandwich phenomenon.

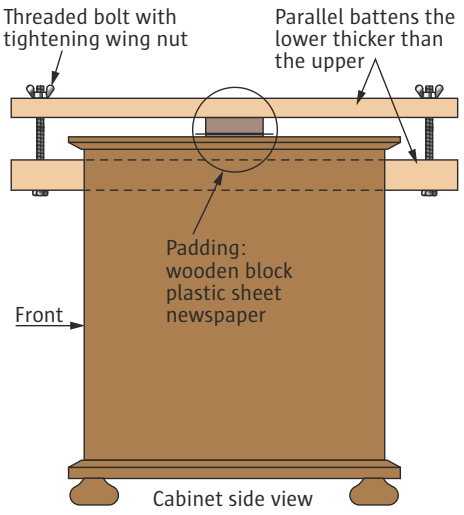
Buckled sections with lifting edges were easy to spot and less evident loose bits were located by tapping. They sounded hollow when tapped gently with fingertips. Overall about 30% of the top needed attention and each section needing treatment was marked with masking tape.

Some sections could be re-set simply by injecting animal glue under them with a needle and syringe to reactivate the existing glue, followed by clamping, but the rest had to be removed and the glue cleaned off before resetting.

The clamping would have been more cumbersome had it not been for the previously removed back. The larger-headed nails made it less risky to remove the back without splitting the pine boards; a home-made parallel batten clamp could then pass through the cabinet to secure sections in the centre of the top beyond the reach of standard deep-throated clamps (**Fig.1**).

There's always a temptation to work on the easy bits first at random, but you need to

Fig.1 Clamping with cabinet back removed





▲ Pic 3 **An original lustre is hard to replicate quickly...**

TIP Weights alone usually fail to expel excess glue and are no substitute for clamping. They only exert the pressure of their own weight which can often be too great for a delicate item to bear.

discipline yourself to work logically and steadily from one side to the other. It was also best to work on the simple glue injection and the removal and resetting in tandem rather than separately as it was often easier to inject once an adjacent loose section had been removed.

Removal of part-attached sections was the riskiest part of the operation. A warm, wet palate knife with as broad a blade as possible was worked under the veneer in a horizontal slicing rather than twisting motion, injecting a little extra warm water to accelerate the dissolution of the old glue. A narrow blade concentrates rather than disperses pressure and twisting makes breakage more likely. The work was painstaking as was the subsequent removal of the old glue using a combination of more warm water and a convex Swann-Morton No.10 scalpel blade.

Pad and clamp

It slowed progress but it was better to work on just one section at a time to ensure effective clamping, even if sections were adjacent. And whatever the clamping there was always plenty of protective padding: newspaper next to the veneer, polythene as a glue-proof barrier and then the wood block. Clamping pressure was firm enough to expel excess glue – rather excessive but note: the masking tape markers were always removed before clamping... it's alarming how even the cheapest, least adhesive tape will cling stubbornly to a surface after sustained pressure. Each piece took about 30 minutes to locate, inject or remove, clean,



▲ **...but enthusiastic clients can help speed the process**

reset and clamp, and totalled 40 hours' work – serious money for the clients – and this was before rebuilding the finish. The lustre on the drawer fronts gave a guide to the finish that had to be re-created (**Pic.3**). I worked over the whole surface with a cotton rag dipped in warm water to make a sludge with excess glue and residual shreds of newspaper to fill in shrinkage gaps. Once it had dried it was given a tinted waxing – dark brown rather than black – working in circles and in all directions to complete the filling and remove any excess. The lustre itself could only be achieved by repeated buffing, much of which was achieved by the clients. This saved them about 10% on the final bill, but this was not the point for them. They cared about their furniture and as the buffing was risk-free they wanted to be involved in the process. It was a heartening example of the importance of engaging with the client... and everybody was happy.

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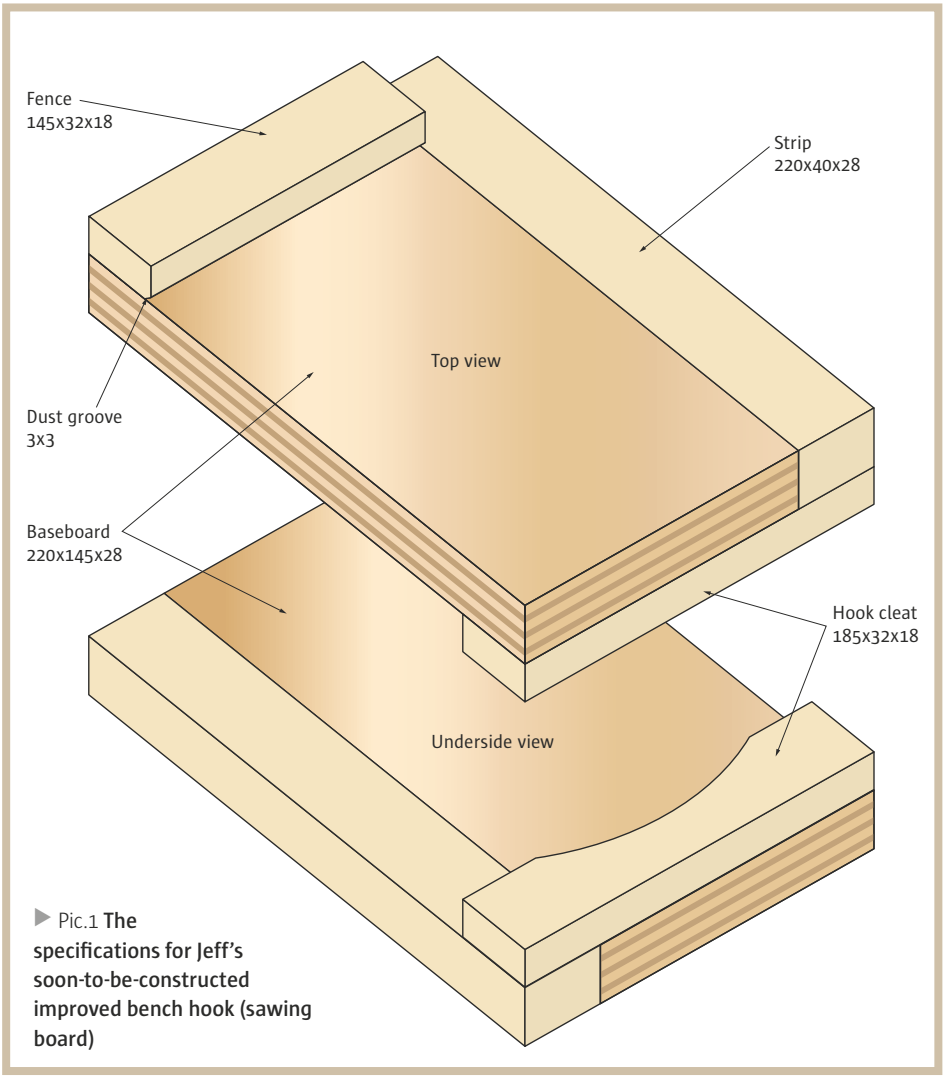
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Deluxe sawing board

It's worth taking trouble to construct yourself a really good bench hook, as **Jeff Gorman** knows only too well

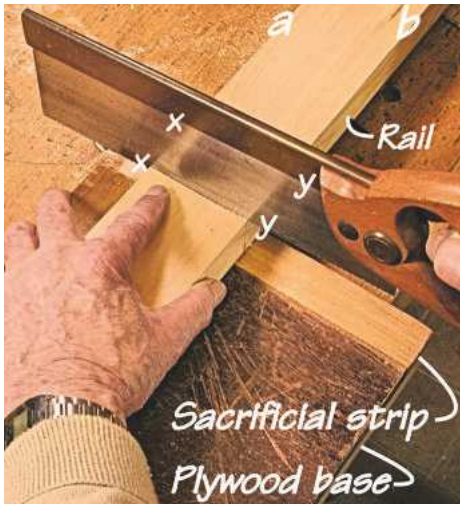


▶ Pic.1 **The specifications for Jeff's soon-to-be-constructed improved bench hook (sawing board)**

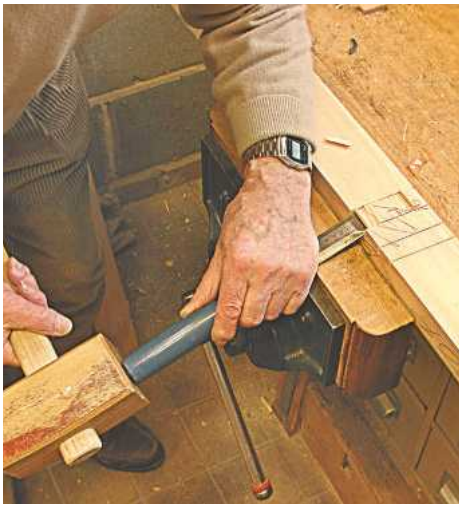
There's something about a benchwork task that always takes me right back to my schooldays. So it was little surprise when making a trench **(Pic.7)** in the top rail of my wallbench-to-be (*GW*218) that I was instantly transported back to the moment of cutting my very first corner bridle joint's tenon – the intense determination to start the saw cut in the right place, and the frustration as the saw jammed and the wood juddered in my hand. While I'm sure this can be partly blamed on inexperience, looking back I suspect that a warped and ill-designed bench hook (sawing board) may also have been at fault.

Many years after, when I had a workshop of my own, I briefed myself to make a deluxe bench hook as recompense **(Pic.1),** which had plenty of features to ensure that I never had to relive that schoolboy frustration:

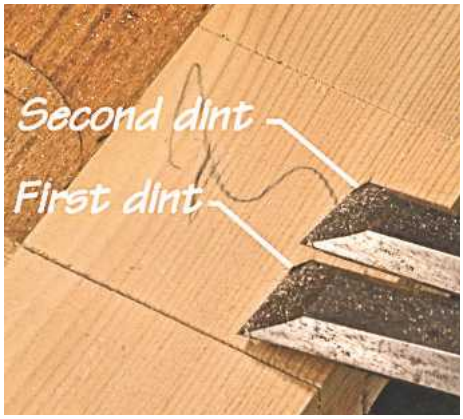
- Hands tend to get their best grip if the fingers are not too widely spread **(Pic.2),** so avoid the rather wide fences found on some bench hooks.
- Sawdust can get between the job and the fence, so it's a good idea to chamfer its underside to form a dust groove.
- Relieve the inner surface of the hook cleat to help it fit firmly against the edge of the bench.
- Warped boards have a tendency to wobble on the bench top – really, your best bet is to make the baseboard from an offcut of non-warping plywood.
- Aside from holding the work, the bench hook serves to protect the bench top from being scored by the saw as it cuts through the job. This means that the plywood's veneered surface will likely disintegrate quickly, so glue a strip of beech on to save the damage **(Pic.2).**
- The plywood board will not shrink across its width, so it's safe to directly glue the fence and hook cleats in place.



▲ Pic.2 **Knowing which parts to watch when sawing an accurate shoulder face is something that certainly comes with experience**



▲ Pic.3 **As Jeff shows, arm and wrist are able to rest comfortably on the thick jaw as he begins to chisel**



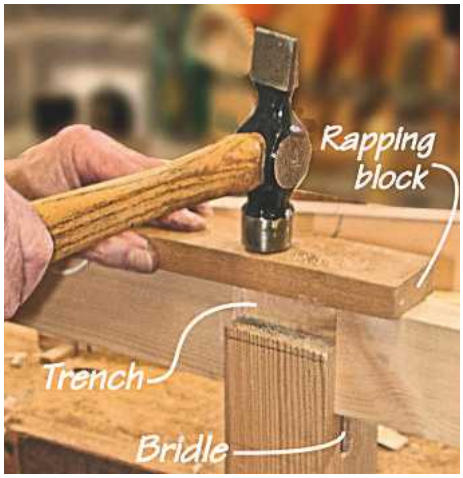
▲ Pic.4 **Marking where to make extra saw cuts before chiselling out the waste**



▲ Pic.5 **For some cuts Jeff's able to hold the job in the bench vice, which makes things easier...**



▲ Pic.6 **...however, for the opposite face he had to use his holdfast and bench hook**



▲ Pic.7 **A bridle joint is made by trenching the rail to form a 'bridle tenon'**



▲ Pic.8 **With his Stanley router Jeff was able to get a smooth finish by rotating the tool to effect a slicing cut. It's a great piece of machinery**

Sourcing

Forged holdfast – Email: Phil Koontz - phil.koontz@gmail.com
Planecraft Book – A web search reveals several sources for this authoritative book that describes the use of most Record/ Stanley pattern of metal planes

Getting some teeth into it

Pic.2 shows the stage where the saw has safely launched a kerf, the 'set' of the teeth ensuring that the kerf is wider than the saw's plate, making it possible for the saw to drift within this groove. Checking that the points 'xxa' and 'yyb' are in the same straight line tells me whether or not the saw's plate will be at right angles to both the rail's surface and its edges. While sawing it's important to keep one's eye on the narrow gap marked 'xy', trying to keep it as parallel as possible.

School spirit

The next stage **(Pic.3)** also whisked my mind back to the days in the school workshop, in particular its long wall lined with a series of drawings on how to hold the basic tools. I recall finding them so useful that I'm prompted to trust that the photo alone saves the many words needed to describe this routine task.

However, I must stress how practical it is to divide the area into manageable segments slightly wider than the width of the 25mm chisel. Two dints made by the chisel's corner **(Pic.4)** allowed me to locate the try-square for making a couple of pencil marks. As you can see, 25 into 70 would not exactly go **(Pic.5).**

Please notice the wide vice jaw facing. Without a facing my 10½in (267mm) Record vice opens to 14½in, but the thick facing reduces this to 12in (305mm). This is wide enough for most of the work I do, so on jobs like this I'm always glad to rest my wrist on its wide surface.

Paring it down

Once the series of upwards-sloping cuts had progressed down to the gauge line, I turned the wood round and pared similar cuts before flattening the hump that was left. Knowing that the result must be a level surface –a bulge could lead to a split upright as the tenon drives down the bridle – I intentionally left the surface slightly convex.

To level it I reached for the Stanley No.7 router **(Pic.8),** which was truly simplicity itself – I just had to sit the router on the job, ease the clamping collar's thumbscrew and use the adjusting nut to set the cutter depth until it reached the gauge line.

Jargon busting

Kerf: the groove cut by a saw

Finding the router

This router (including the equivalent Record 07) now only appears to be available second-hand, which is a shame, but at the time of writing a web search revealed that they could still be obtained relatively easily. The **Pic.8** inset shows the accessory shoe required for working narrow surfaces and the three standard cutters, though I haven't shown the short fence that fits the underside. My copy of Hampton & Clifford's *Planecraft* suggests that it has various possible applications, though I feel its straight edge may well be too short to match the accuracy of a proper plough plane. The fence also has a curved edge for routing curved grooves.

It happened that I could only use the vice when paring one face of the tenon **(Pic.5),** so to secure the job for work on the other face I held the wood down with the old-style bench holdfast, **Pic.6.** Although I also use the effective but clumsier Record holdfast, I find this pattern much easier to use; it drops into a plain hole in the bench top, is fixed by a clout on the head and is easily released with a sideways blow. The screw-operated Record pattern has to be fitted into a cast metal bush that is let into the bench top.

Special assembly

I'm sometimes surprised to see pictures showing a joiner's mallet being used for driving joints together. Even if you are very careful to avoid damage from the corners of the mallet, the use of any striking tool concentrates the driving force on one spot. Imagine what would happen if the tenon **(Pic.3)** happened to be rather tight and I were to use the hammer to strike the rail's top on the right-hand side. Yes, you're right! The rail is likely to be split! If I were to strike centrally on the narrow edge of the tenon, it would most likely be badly crushed. This is why I used a clean-faced 'rapping block' to spread the blows and protect the job's surface, ensuring that it can be put together flawlessly.

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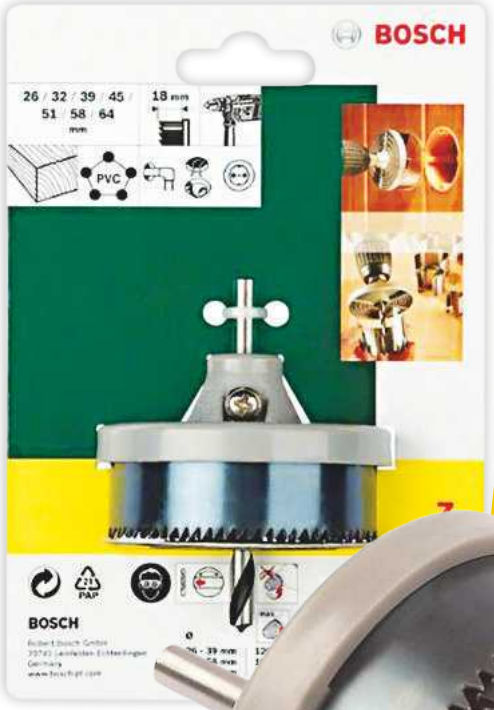
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▲ Pic.1 **Michael's old and well-used shooting board**

How to be a proper maker

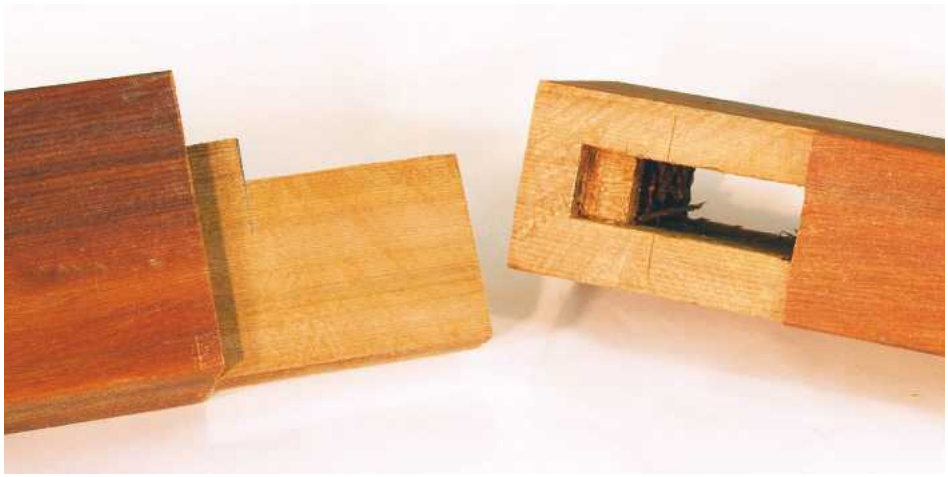
Master the mortise & tenon joint and you can start building furniture says **Michael Huntley**

The mortise & tenon joint really is the start of woodworking proper. It is the first fully interlocking joint and mastery of it will get you a long way in your woodworking life. Chairs, tables and even buildings depend upon it. It is such an important activity that it has specialist tools and specialist language.

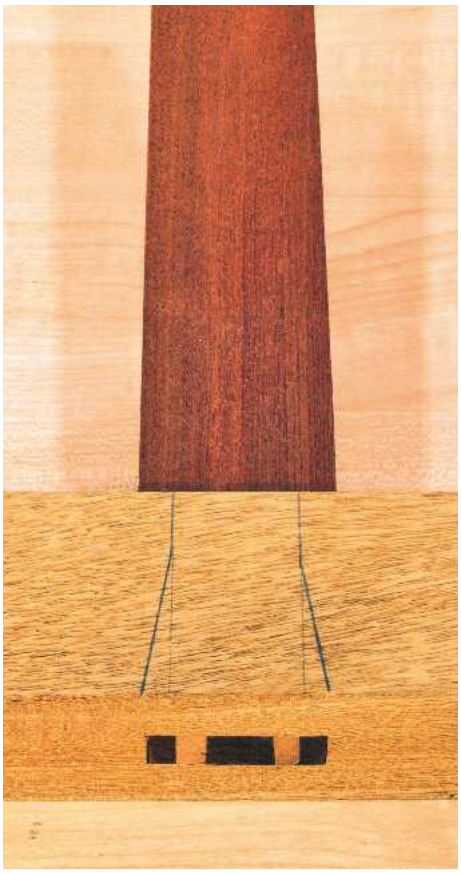
The word tenon comes from the French for hand and you could think of the projecting tenon being a hand with the fingers held straight out. Mortise or mortice (both are correct) also comes from the French, and refers to the slot that the 'hand' is put into. The sides of both the tenon and the mortise are known as cheeks. On the tenon the deep cross-grain cut is the shoulder, and the little short projection is a haunch (**Pic.3**). There are two types of mortise, blind when it does not go all the way through, and (unsurprisingly!) through, when it does. There are other related terms but that will do to start with.



▲ Pic.1 **Various mortise chisels, most of them Sorby or Marples**



▲ Pic.3 **A tenon with a haunch**



▲ Pic.2 **A wedged tenon; pencil lines show how the mortise was flared**

Because the process of chopping a mortise is such hard work for the chisel, the blade of the chisel is made thicker and often has a leather impact-absorbing washer between it and the handle. You really do need a couple of mortise chisels in your tool kit if you are planning on doing regular hand mortising (**Pic.1**).

Marking out

The rule of thirds is a good place to start. Divide the width of the timber being mortised into three and make the centre division a tad bigger than one of your mortise chisels. So if you are mortising into 23mm stock you either use a 6mm or an 8mm chisel. The mortise is cut centrally and the outer sides may come to an odd measurement, but it is a great deal easier having 7.5mm or 8.5mm sides than trying to chop a mortise to a strange size! If you make the width of the aperture significantly wider than the sides of the aperture then there is a danger that the sides will break out under stress. Likewise, if the tenon is significantly thinner than the sides of the mortise, the tenon may break off under stress. So in general, we divide the timber into three, or in some cases into five (which would give us two tenons).

In **Pic.4** I am setting a 2-pronged mortise gauge to the width of my biggest chisel. You don't have to have a mortise gauge but it does save a bit of time. In **Pic.5** I am setting the fence to the offset from the face edge of my piece of timber.

Chopping the mortise

Once all the lines are gauged and scribed it is a good idea to mark the waste in pencil (**Pic.6**). If you have also put in a centre line for the mortise then you can drill along this line (**Pic.7**) to speed up excavating the mortise.

If it is a deep through mortise you can drill in from each side. If it is a blind mortise then use a depth gauge so you don't drill too deeply. You can then chop down with a suitable chisel to remove the waste between the holes that you have drilled (**Pic.8**). You can put a cramp over the ends of the timber to stop the cracking if you lever too much, but if you have removed most of the waste by drill you shouldn't really need the cramp. If you have drilled carefully you will only need to use the mortise chisel to clean up the cross-grain ends of the mortise (**Pic.9**). Always chop over a bench leg or on a solid surface, never in the vice!

Work sequence

The sequence of work is :

1. Mark out. If marking both sides, 'drop' perpendicular lines around the outside to check the position of your end lines (**Pic.6**).



▲ Pic.4 **Setting a mortise gauge with a chisel**



▲ Pic.5 **Setting the outer face between the pin and the fence**

2. Chop in vertically with the largest chisel you have to 'set-in' the edges of the mortise. Make sure the setting-in runs right up to the corners.
3. Drill into the waste. (2 and 3 can be swapped around if you trust your drilling not to overshoot the edges of the mortise.)
4. Join up the holes with chisel cuts and remove large bits of waste.
5. Chop down again just shy of the edges.
6. Use a mortise chisel to cut into the waste diagonally. Make 'feathering' cuts every few millimetres (**Pic.10**).
7. Chop down all the way round and remove waste.
8. If a blind mortise then stop when you reach depth but if a through mortise stop half-way and come back in again from the other side starting at point 2 above.



▲ Pic.6 **The mortise marked up ready for drilling. Leave a 'horn' to one side that can be cut off later**



▲ Pic.7 **Drilling with a hand-held electric drill with keyed chuck. This stops the bits getting stuck as can happen with keyless chucks**



▲ Pic.8 **Cleaning up the long sides with a wide flat chisel**



▲ Pic.9 **Chopping the end of the mortise with a thick mortise chisel**



▲ Pic.10 **Working at an angle down the length of the mortise to make feathering cuts. Don't bruise the ends of the mortise though!**

TIP

When laying out mortises it is wise to leave a horn. This is an extra piece of timber beyond the finished length of the mortised piece. Once the mortise is glued up the horn, which was protecting the mortise from breakout, can be cut off clean

To ensure that your chopping is vertical, set up a square alongside the job and eyeball it regularly. You can also use a combination square to check the blade against the insides of the mortise (**Pic.11**), and if you have a depth gauge this will allow you to check the inside of small mortises (**Pic.12**).

Drills & bits

I am using a corded electric drill and an auger for this. Note that the drill has a keyed chuck and can be fitted with a depth gauge. It is more important when buying a tool kit to buy a good corded drill than a battery drill. This is why: the chuck will be bigger and take 13mm drills, the keyed chuck will not come undone and leave drill bits stuck in timber, the small-size corded drill is proportionately more powerful than a similar physical-size battery drill. Two safety points though: anchor the thing that you are drilling with a clamp or vice, and wear safety specs.

I am using a lip & spur bit. This will give you a faster, cleaner hole than a twist bit. If you want overlapping holes then you need to use a Forstner bit. So a tool kit should contain twist bits, countersink bits, some lip & spur bits and some Forstner bits. If you are going down the hand tool route you could use a brace and auger bits, and for smaller work a hand or an Archimedes drill and a much smaller selection of bits.

You can also set up a drill press to cut repeat mortises, or even buy a dedicated mortising machine.

Hexagon extra

Did anyone have problems with setting out the hexagon in *GW*286? If you email me at Michael@hsow.co.uk I will send some extra words on the subject that were sent to me by a reader and of course please email me if you want to discuss this article further.



▲ Pic.11 **A combination square with only a small part of the rule protruding will tell you if the ends are vertical**



▲ Pic.12 **A depth gauge with a thin shaft will tell you if the sides are vertical**



▲ Pic.13 **The tenon marked up and sat over the mortise to just check that all looks OK**



▲ Pic.14 **Cutting the tenon with the new re-sharpenable ryouba saw**



▲ Pic.15 **The tenon in the mortise and ready for glue or pegs**

The tenon

This is relatively simple after the mortise. I am not considering whether or not to have haunches and differential shoulders at this stage. That comes when you can make up a frame with four identical mortise & tenon joints and get the whole thing square and in one plane!

Mark out as before (**Pic.13**) and bear in mind whether you are working to centre lines as in, say, a table base with legs or a picture frame that needs to be flush on the front.

For cutting the tenon I use a Japanese ryouba saw (**Pic.14**). In the picture I am using a re-sharpenable ryouba from Workshop Heaven (www.workshopheaven.com). I mention this because this is, to my knowledge, the first sub £100 re-sharpenable Japanese saw imported into the UK, which means that you can now buy a lifetime rip and cross-cut saw for under £100, which has to be a good thing for students.

Cut the shoulders in the same way that we have been doing for half-lap and bridle joints and the two pieces are ready to go together and be glued or pegged (**Pic.15**). But, don't forget not to cut off your marking out lines. Just set in the saw kerfs all the way around before you sever any of the waste. Don't worry if it doesn't make sense when you read it, you will know what I mean when you have done it! Once mastered, the mortise & tenon gives you an entry point into post & rail framing for tables, chairs and chests or post & beam for buildings.

Recommended reading

Woodwork Joints, Charles H Hayward, ISBN 0237447657



Suits you, Sir

Tony Sutton shows you how to design and build a bench to satisfy your working preferences

Some 20-plus years ago, when I first became seriously interested in woodworking, I began by making furniture for the house. Money was tight, so I used melamine-covered chipboard held together with dowels and screws, and worked on a cheap copy of the famous Black & Decker Workmate in a cold, damp single garage at the end of the garden. My early skills, on the other hand, came from my father, who was a cabinetmaker and later a carpenter too, so my school holidays had been spent helping him in the workshop and on site, where I gradually learned about his craft.

This apprenticeship stood me in good stead, and it wasn't long before I outgrew the folding bench and made my first 'real' workbench: a piece of 19mm MDF that was attached to the garage wall along its back edge, and supported at the front by two pine legs.

Looking back, the things I made may have been pretty poor, but I was very proud of them at the time, and through their making I developed my skills, advanced to using softwoods, and discovered the joys of a well-tuned hand plane, sharp chisels and a reasonable quality handsaw. Another workbench followed, this time made from yellow pine, hinged at the back and with removable front legs so that it could be folded down every evening to make room in the garage for the car!

When we moved house a few years back, my woodworking needs had changed again: I was working almost exclusively with hardwoods, and to a standard that I felt justified the dedication of the new garage to service as a workshop. The heart of any workshop, of course, is the bench. I'd go so far as to say that, in being tailored to your particular needs and preferences, your ideal bench will reflect your woodworking aspirations. My own skills have developed, for instance, to a point where I only use power tools for rough dimensioning; the majority of my joinery and all my finishing is done with hand tool jobs. This approach calls for a strong flat datum surface on which to work. With the acquisition of my new workshop, then, came the need for a new bench.

Design considerations

I decided to build the bench from beech and oak in the common European form, not least because the mass afforded by this design is optimal for using hand tools. I also followed tradition in positioning a face vice on the left-hand of the bench, and having a tail vice to hold stock flat against the top and facilitate hand planing. In the past, I'd found having a face vice mounted on the end of the bench to be an unsatisfactory arrangement. However, as I was undecided whether to use a traditional European style L-shaped tail vice or Veritas's twin-screw type, I elected to build the bench and decide on the tail clamping method later!

The key areas in which I chose to deviate from the traditional design were the front apron, the tool tray and the bracing of the trestle. The front apron of the bench is 90mm deep and 90mm wide to provide a very solid and rigid work area for chiselling and sawing; it also offers a wide surface area onto which work can be clamped. The bottom of the tool tray, meanwhile, lifts out in four sections to facilitate easy rear clamping of workpieces too.

As my new workshop is essentially a single garage, space is at a premium, so I need to be able to store tools under the bench. Thus the rear of the trestle has two rails, while the front



▲ When Tony started working almost exclusively with hardwoods and hand tools, he felt the need for a new workbench that would suit his needs and practices. The result was this oak and beech bench with its custom-made tail vice

has only an upper rail, allowing portable machinery to be fitted underneath when not in use. I can't see that I'll be moving any time soon, so I decided to make the construction of the trestle section using traditional joinery techniques rather than knock-down methods. As a result, all joints are wedged mortises; several also use draw-bored dowels to provide additional rigidity and stability.

Footprint aside, perhaps the most critical dimension in a bench is the working height. Research revealed that while the tops of most proprietary benches are between 830 and 970mm high, in order to hand plane boards comfortably, my 5ft 8in frame calls for a working height of just 870mm.

Construction: sizing up

To start with, all the boards were run through the planer and thicknesser to take them close to their final dimensions. I took care to remove the same amount of material from both sides of all boards to avoid movement after machining, and removed very little material from the 55mm-thick beech boards so as to retain as much

Sourcing materials

Yandles in Martock is my preferred woodyard, as they generally sell wood from sustained and managed forests and their prices are very competitive. They also plane one side of each plank so you know what your finished project will look like. For this project, I bought a nice pile of steamed beech for the top, and enough air-dried English oak for the trestle very reasonably. The wood I used is plain-sawn stock; quarter-sawn would've been preferable but, being a relatively wasteful cut, it's more expensive.

▲ Tony found to his pleasant surprise that the bench top only needed a couple of passes with the planer to make it flat. It's finished with boiled linseed oil

thickness as possible for the top. With the machining out of the way, I planed all surfaces square with a jointer – mine is fitted with a fence – and then smoothed all surfaces using a No.4½ smoothing plane.

The bench top

As the wood had been lying in the workshop for a couple of weeks since machining to dimension, I hand planed the sides square and also planed a little hollow along their length to allow for future shrinkage as the wood dries out over the years. The boards were then glued up and clamped. Once dry, I ran a 12.7mm router against a clamp guide across the top and bottom of each end to form a tenon; the overhang at the ends was then removed with a circular saw.

The boards for the apron were cut to length, and slots were routed in the end pieces to receive the tenons on the bench ends; a set of asymmetrical dovetails was also cut to join the front and the left-hand side piece, giving extra strength to the wide apron. The front was then glued to the bench top while the side pieces were bolted in place using 8mm coach screws rather than glue so as to allow for movement in the timber across the bench's width. With the apron in place, I fitted the face vice to a block of beech that was glued and screwed to the underside of the bench-top.

The tool tray

To form the ends of the tool tray recess, I cut two lengths of 50 x 155mm beech at 45° on one end, and glued them to the rear of the bench-top. I then glued a 25 x 100mm plank of

The trestle



▲ Clean up the shoulders and faces using a shoulder plane and rabbet plane



▲ The tapers in the upper cross-brace mortises were cut with the help of an angled guide...

My design called for a lower cross-brace between the front and rear legs at the floor. As the garage floor surface is uneven concrete, however, I raised this brace by making some feet from a 25mm-thick oak board cut at 45° on the inner end. These were glued, clamped to the brace and left to dry.

The upper and lower cross-braces were mortised using a hollow chisel mortiser and a 12.7mm mortise chisel for cleaning up. The tenons on either end of the legs, meanwhile, were marked out and the shoulder cuts made using the sliding table on my Kity tablesaw; the face cuts were made slightly over-size using the bandsaw. The shoulders and faces were then cleaned up and trimmed individually using a shoulder plane and a rabbet plane to fit their respective mortises.

The next step was to cut the sides of the mortises in the upper cross-brace with a 5° taper that sloped away from the tenon faces. This taper would allow the tenon sides to open out when I secured them using mahogany wedges during construction. To cut the taper, I made an angled guide block which was clamped in place to support the chisel's back during the cut. A simple hand-sawn kerf around 10mm in from either side of the tenons is enough to accept the wedge. As an engineer, I think that stress relief's good; I drilled a 4mm hole at the bottom of each cut.

For the lower joints, I felt that wedging the tenons was unsuitable; instead, I opted for draw-boring, ensuring a very tight-fitting shoulder on the tenon, and a very strong joint. To this end, I drilled a 12mm-diameter hole through the cross-brace, located centrally in



▲ The substantial boards for the bench top were glued and cramped...



▲ ...and a tenon was formed on either end using a router and guide



▲ The front left-hand corner of the apron was reinforced using dovetail joints

Bench dogs

After finishing the top, I drilled holes for bench dogs using a portable drill stand that was clamped in place. The advantage of round holes is that the dogs can rotate to sit squarely against board ends whatever their angle. The dogs themselves are made of wood to protect my plane blades in the event of accidental strikes, and are quickly turned up on the lathe; their 40mm square tops provide good support for the workpiece, and are made in a variety of thicknesses to suit different jobs.





◀ Tony also fitted a pair of recessed metal dogs at one end of the bench for extra versatility. For more on bench fittings, see GW193:87.



▲ ...while the tenons were cut ready for the mahogany wedges...



▲ ...that were driven in and trimmed back once dry

the mortise sides. A similar hole was drilled in the tenons, offset towards their faces by a couple of millimetres so as to pull the tenon tight against the cross-brace when a 12mm dowel was driven through.

The legs were now cut with the mortises for the longitudinal braces, and some mahogany wedges prepared. A liberal coating of glue was then applied around the tenons. The wedges were driven home and the whole assembly was left to dry – no clamps required! Once cured, the protruding parts of the wedges were cleaned off.

The longitudinal braces were cut to length, and wedged tenons were prepared on their ends. These were then glued into the legs and, owing to its size, the assembly was clamped up until dry. Once again, the ends of the wedges were trimmed with the smoothing plane.



▲ The lower cross-brace used draw-boring to ensure a tight joint



beech across these blocks to form the rear of the tool tray; two pieces of 20 x 10mm beech fitted under the top on either side of the recess provided a lip to support the tray's 4mm MDF bottom.

The underside of the bench was now pre-finished with a couple of coats of linseed oil; once dry, the top was fitted to the trestles using eight 8mm coach screws driven through the upper cross-brace at either end. Believe it or not, flattening the bench top took just a couple of passes with a jointer plane. The top was then finished with five coats of boiled linseed oil, though for water-resistance Danish oil might've been better.

The wooden jaw for the face vice was made from a piece of beech 50 x 155mm, with a routed recess in the back made using the vice itself as a template; this was simply secured using a couple of screws.

The tail vice

During the build I'd settled on a traditional tail vice for the right-hand end of the bench, and had ordered the hardware from Axminster for the princely sum of £12 plus postage.

The jaw runs in a guide that was made by routing a slot in an off-cut of beech, which was then screwed onto the face of the bench top recess. The jaw itself was roughly cut to shape from a 50mm-thick piece of beech and then fine-tuned using hand planes and chisels. The aim here was for a close sliding fit between the small tenon and the slot in the bench top as any play here will be exaggerated in the final vice. The remaining tail vice parts were cut from the remains of the 50mm beech, and joined at either end using dovetails of the same pattern used on the apron. Once assembled, I cut a slot in the vice face piece that sits under the bench top so that it could ride along a plywood guide piece. The vice hardware, meanwhile, was mounted by drilling a clearance hole in the rear of the vice and through the right-hand side of the apron.

The total cost of materials for this bench was under £200, including the two vices; the build time came to just 10 days. To buy a bench of comparable size might have cost anything from £800 to £1800, so I made a saving, and have a bench that I can really call my own.



▲ A beech off-cut was used to make the face for the face vice

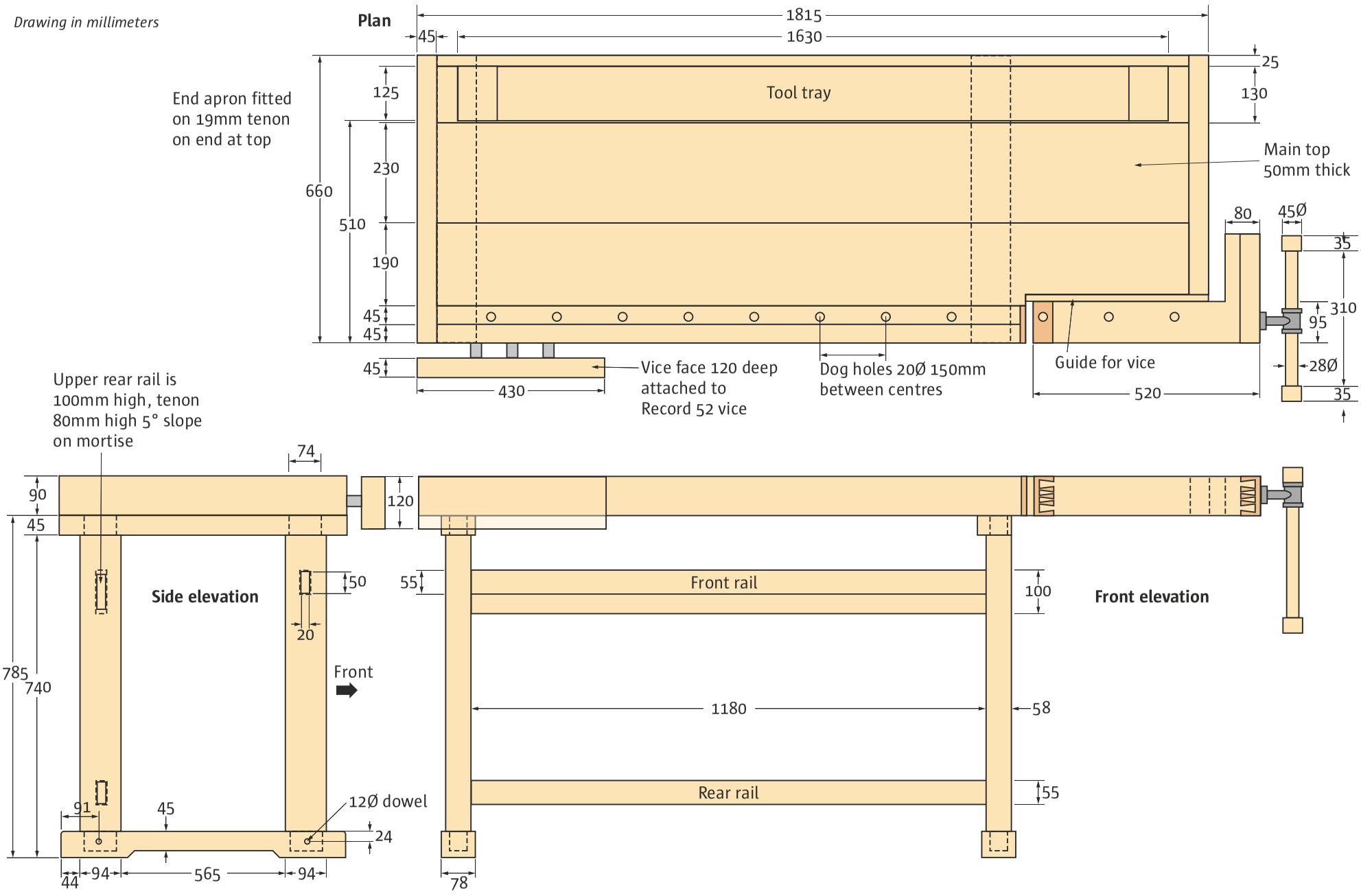


▲ The construction of the tail vice laid bare

Useful info

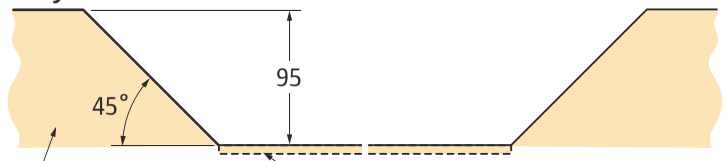
Yandles
Tel: 01935 822207
Web: www.yandles.co.uk

Workshop bench



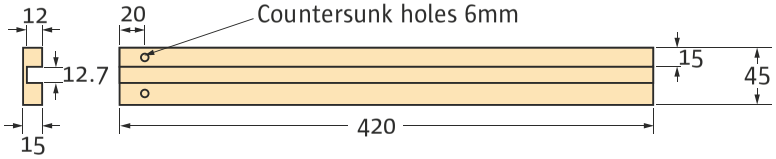
Details

Tool tray

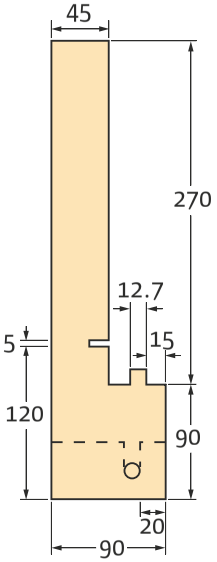


Note: I glued on small strips to support the 6mm mdf tool tray which is 4 equal lengths and are removable.
The tray also sits on top the cross brace on legs

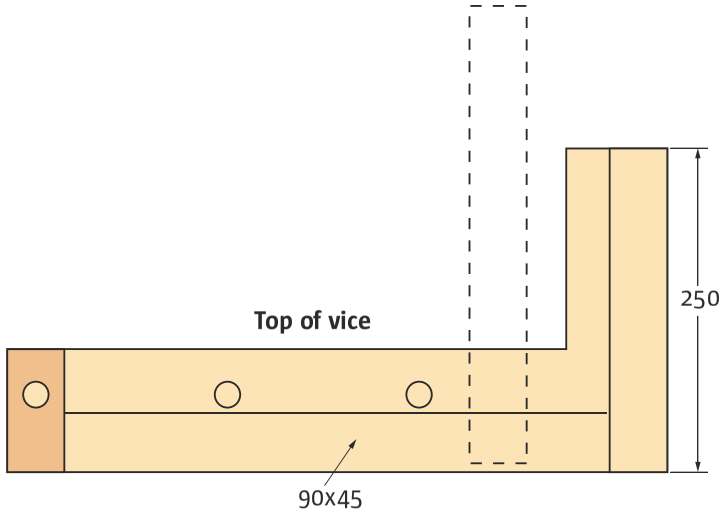
Guide for tail vice



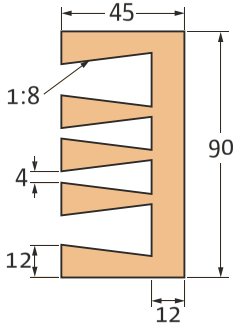
Tail vice end



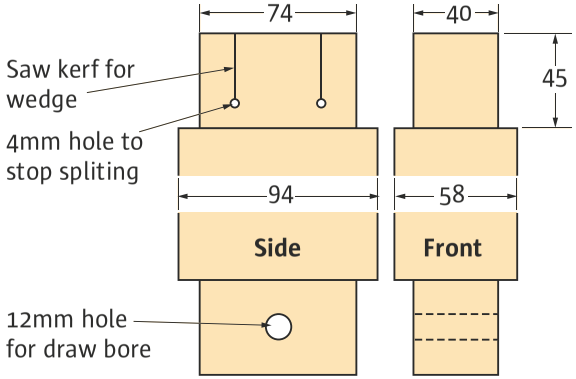
Top of vice



Dove tails on bench and tail vice

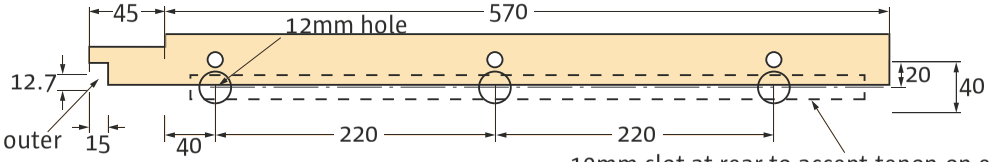


Legs



Note: Mortise sides 5° for wedges to open tenon

Right end piece



Note: Rides in slot in outer piece of tail vice

19mm slot at rear to accept tenon on end of bench, centred around 200 from top (left end the same)

Mini series



Letting rip in the coppice

This month arborealist **David Vickers** fires up his chainsaw mill to rip oak for a furniture maker

A number of windblown trees came down early in 2014, mainly birch, but one was a sizeable English oak that some of my students dealt with, using a winch to secure the rootplate while cutting the stem and canopy; with that safely completed, attention turned to seeing whether there was any useful timber to be salvaged from the stem – rather than it just going for firewood.

There was an approximately 8ft section that looked promising – reasonably straight, a diameter under bark of around 15in, and with no visible signs of rot or decay it was decided that it would be perfect for milling.

A friend of mine had an unused Alaskan Small Log Mill which, paired with the 79cc Makita EA7900P chainsaw and 20in bar, would do the job of planking the timber. The mill needed some repair, nothing major fortunately, and a quick call to Robert Dyer of Alaskan Mills, www.alaskanmill.co.uk, soon had the parts in the post... along with an upgraded Sugi Hara guide bar and a couple of examples of dedicated ripping chain.

Chain reaction

The idea had been to compare the stock bar and cross-cutting chain with the rip chain but unfortunately the rip chains were too long, so



The Sugi Hara guide bar and a dedicated ripping chain would have been ideal but the best laid plans...



David only needed a spanner to fit the mill to the chain saw guide bar



With this easy-to-operate setup...



...the first cut leaves a satisfyingly flat edge on the timber



The mill is then depth-adjusted for subsequent cuts

all the cutting had to be completed with the normal chain and bar. This does not give an ideal finish to the timber because of the difference between cutting across the fibres when cross-cutting, and cutting along the fibres when ripping. The dedicated rip chain is fitted with two 'scoring' cutters and then a 'clearing' cutter, with filing angles of around 10°; the normal cross-cut chain is filed to around 25-30° instead. The result is a rougher finish and a slower cut, but it works nonetheless!

Fitting the Alaskan Small Log Mill to the guide bar on the chainsaw is simplicity itself, requiring just a 13mm spanner to tighten two locking bolts onto the bar. The result is effective and secure, but you do lose a couple of inches of the bar length, especially if you don't remove the spiked bumpers from the saw too; as my Makita saw is used for felling as well as planking, I decided to live with the extra loss of cutting depth.

First cut

With the mill fitted, I had to set up a straightedge on which to guide the saw for the first cut; subsequent cuts can be based on the first cut, but the initial rip needs either a strong plank screwed to the timber or, what I opted for, a ladder suspended between two fixed points above the timber to be cut. The depth of cut is adjusted to suit; again this just requires slackening off another two 13mm nuts, setting the depth and tightening the nuts back up. It's quick and easy to do.

The mill runs along the ladder, with the saw hanging underneath; this way the first cut can be completed to leave a flat edge on the timber. Once this first cut has been made, the mill can be adjusted once more to give the required depth for the actual planks. I set the depth to be around 1½in, and used the newly cut – and now flat topped – timber as a guide for the next cut, which would result in the first of the oak planks.

I was operating at the limits of what could be done with the Small Log Mill, a 79cc chainsaw and a 20in bar; indeed there were occasions when the bar did not reach all the way through and I had to reposition the saw and cut back down the other side to finish a couple of the slightly larger planks.



Wedges prevent the plank from sitting down and trapping the saw



A beautiful board for Hannah

Wedges in kerf

You will need to put wedges in the kerf as you cut it to prevent the plank from sitting down and trapping the saw; these don't need to be anything special and I used a mixture of plastic felling wedges and aluminium high-lift wedges. You'll also need plenty of fuel as you'll be running the saw at full throttle constantly during cutting!

I can highly recommend the Alaskan chainsaw mills as they provide a cost-effective solution for planking timber, and one of the biggest advantages I found was that I can take the mill to the timber, rather than the other way around – it's much easier moving a single plank than the whole saw log! It also meant that I could easily set up the mill in the coppice, in a relatively confined space, and use existing equipment to convert the timber.

For more information on chainsaw mills, contact Rob Dyer at the website above as there are various sizes, accessories and solutions to meet your requirements.

NEXT MONTH
we are going to follow Hannah Dowding, www.hannahdowdingfurniture.co.uk, whose beautiful work is all done by hand, as she adapts her usual techniques to cope with wet oak.

About the author

David Vickers started Drivelink Training after leaving Sparsholt College, where he had managed forestry and arboriculture short courses for nine years. David is a qualified teacher, and is a City & Guilds NPTC-recognised trainer and assessor for land-based skills.

Drivelink Training provides high-quality training related to chainsaws, felling, tree climbing and aerial rescue, including dealing with windblown trees, assisted felling, aerial cutting with a chainsaw as well as dismantling and rigging of trees.

Find out more at http://drivelink.training or follow Drivelink Training at http://facebook.com/drivelink. Contact David at david@drivelinktraining.co.uk or phone 0790 067 7715.



THE MOOR MARKET
SHEFFIELD

Western red cedar 'timber weave' rainscreen cladding, Gustaf's Gemini Sandy Maple panel system & glulaminated timber structural elements

The Moor Market is one of the few purpose-built markets to be constructed in the UK in recent years. It brings a new retail offering to Sheffield, helping to revitalise a previously distressed high street and stimulate further investment.

High-quality timber and innovative construction techniques have been combined to create The Moor Market. The new city centre landmark meets the needs of Sheffield City Council, traders and consumers alike, while setting a quality standard for future retail and market developments across Europe.

I was inspired by both the simplicity of traditional British market halls and the structural expression of their contemporary European equivalents to create a dynamic, modern setting.

The 73,000 sq ft building needed to be a new landmark for the city centre in order to act as a catalyst for future regeneration of Sheffield's retail and leisure offering. To achieve this, timber was identified early on as a traditional material to bring the cherished 'market feel' to the new building, while the juxtaposition of modern materials such as brass brings it into the 21st century.

Leslie Jones Architecture for Sheffield City Council





Business has increased by a third since The Moor Market opened

The glulam roof structure has the advantage of lightness among other attributes

The timber weave external cladding was designed to provide ventilation as well as looking good



On Wood Awards shortlist

In the last issue we brought you the winners of the 2014 Wood Awards but quite honestly we don't know how the judges made their choice, the quality of the list being so high. So from time to time we shall be dipping into the shortlist to present examples of the finest woodworkmanship in the UK.

This month's Centrefold is devoted to Sheffield's new market building, the structure of which is built from 209 cubic metres of white wood spruce glulam members in 868 pieces. These were installed on site with hand tools.

Clear internal space was maximised through the use of 'tree' columns to provide 10m spans to the main hall. Gustaf's Gemini Sandy Maple panel system was chosen for the ceiling of the main market hall to maximise natural light and tone with the glulam structure. This is the largest application of this product in the UK to date.

The bespoke 'timber weave' external cladding system was originally developed as a means to provide ventilation. Although the ventilation function was eventually relocated elsewhere, the panels were retained to provide texture and variety to the mainly solid façades of the new building. The unique system, developed by Leslie Jones with BCL Timber, was fabricated off-site in panels that were then fixed to aluminium cladding rails to form a rainscreen.

Japanese adventure

Martin Aplin's modern take on the ancient Japanese *choba dansu* merchant's chest follows traditional design

The Japanese culture embodies both the traditional and the high-tech. I say embodies rather than embraces because Japan isn't always able to reconcile the ancient and the modern aspects of its society, and it was this contrast that gave me the first steer for this project. Study traditional Japanese furniture, and the keywords are simplicity, natural materials, and also contrasting materials – wood and wood, wood and stone, or wood and metal; lacquer and coloured glass also pop up. Storage also seems to be key – a reflection of the order in Japan's hierarchical society, perhaps, or maybe of the pressure on precious space? – and is raised to an art form in the many *dansu* or cupboards, and *kobako* or small boxes (Visit www.tansu.co.uk, for example, and you'll see what I mean).



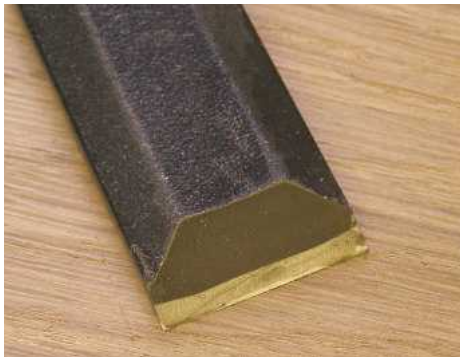
▲ ...some of the features that Martin built into his modern version



Photo: www.tansu.co.uk

▲ Drawers, cupboards, ironmongery: this antique *choba dansu* incorporates...

Of these, the merchant's chest, or *choba dansu*, offered an attractive model for our project. As the name implies, they were used by shopkeepers to store expensive goods. With their mix of shelving with sliding doors, drawers and cubby holes, often asymmetrically arranged, the cabinets have a quirky appeal that's further enhanced by the use of painted surfaces and edges. *Choba dansu* were substantially built, often using different timbers, and assembled with what, by western standards, were unusual joints, many of which rely on wedges and dowels rather than glue to hold the pieces together. In contrast to this ingenuity, some cabinets feature heavy iron bracketry, hinges,

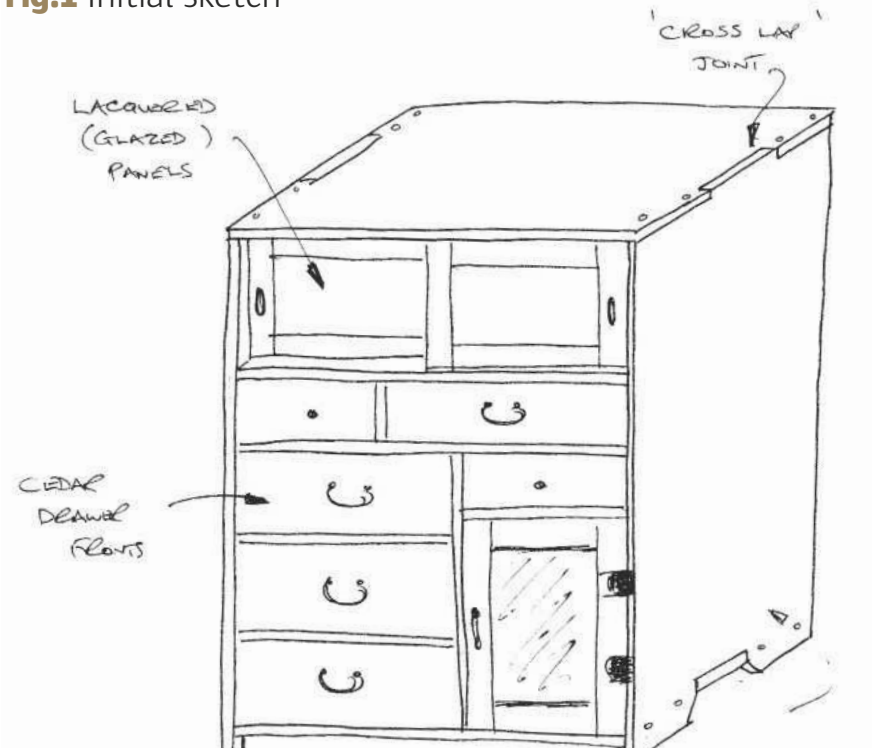


▲ Pic.1 **You can clearly see the two laminated steels in the Japanese chisel in this image**



▲ Pic.2 **The *dozuki* saw produces a very fine cut due to the thin kerf of the blade**

Fig.1 Initial sketch





▲ Pic.3 **Chiselling out the waste from the cross lap joint...**



▲ Pic.4 **...cleaning up the faces**



▲ Pic.5 **A European-pattern skew chisel is ideal for reaching the corners of the recesses**

handles and locks, often in a mix of styles.

All well and good, but what about the modern? Could we adapt the style of these traditional pieces with a function that reflects the electronics that are as much at the heart of Japanese culture as, say, Shinto? If sized correctly, perhaps the compartmentalised design of the *choba dansu* could lend itself particularly well to storing some of the tokens of our modern lifestyle? Over to you, Martin...

Update, integrate

From the outside, my interpretation of the *choba dansu* may look like a fairly traditional chest, but it's been developed for modern use so as to effectively cater for some of those twenty-first century needs. The cabinet will hold about 320 CDs in the drawers and about 30 DVDs in the top storage area, so there's plenty of useful space. The cubby-hole, meanwhile, could be used for storing bulkier items, such as headphones.

Japanese furniture was made of indigenous species, often oak and cedar, so for this updated piece I chose American oak (for the carcases and doors) and western red cedar (for the drawer fronts). The carcase panels and other frame members are finished at 22mm, so the piece is quite heavy. Apart from authenticity, this gives the stability to counteract the weight of fully loaded drawers when opened; the larger tray can hold about 80 CDs which is quite a load, especially if other drawers are open at the same time.

Except for the small drawer above the cubby-hole, all the drawers are mounted on double-extension ball slides. This enables the drawer to extend fully beyond the front face of





▲ Pic.6 **The resulting cut needs very little in the way of cleaning up**



▲ Pic.7 **The grooves for the sliding doors were formed on the router table**



▲ Pic.8 **The position of the grooves is transferred to the top panel...**



▲ Pic.9 **...so that stopped grooves can be routed on the underside**



▲ Pic.10 **A shop-made jig was used to rout the housings for the internal panels...**



▲ Pic.11 **...but it was back to hand tools when cutting the mortises for the cross members**



▲ Pic.12 **Making good use of Tool Heaven's *dozuki* saw to cut the tenon shoulders**



▲ Pic.13 **The tenons themselves were then trimmed to fit their mating mortises**



▲ Pic.14 **Because of the carcase's size, it was assembled in stages**

the cabinet, allowing easy access to whatever you're storing. The slides have locking catches so that the drawers can be removed, leaving the main part of the slide *in situ*. The sliding doors to the upper store have coloured glass fitted to represent lacquered panels and will be decorated in due course. The small drawer above the cubby-hole is a conventional one, though it is assembled in the same way as the sliding drawers. The handles and hinges were sourced from local ironmongers, DIY sheds and specialist suppliers.

Building the carcase

The large panels for the carcase are all made up of narrower planks, alternating the growth rings to reduce the risk of warping and cupping. I cleaned up the boards after gluing, both faces needing to be good because the internal faces are relatively exposed in the finished piece. The method of jointing the top and bottom panels to the sides is fairly unusual, but seems to be used quite often in the antique pieces I have seen. The joint can best be described as a cross lap, held together with wooden dowels.

Having cut the joints and dry assembled them to check their fit, I cut stopped housings into the side panels for the top shelf and the top panel for the cubby-hole. The vertical panel, which forms the inside wall of the cubby-hole, was housed into the bottom panel. This panel also forms the aperture for the small drawer above the cubby-hole. I fitted the frame cross members using mortise & tenon joints, and I router-cut the housings, although hand tools were used for the mortise & tenons.

After preparing the boards for the carcase, grooves needed to be cut in the underside of the top panel and topside of the shelf for the sliding doors. I routed these, using a table-mounted router for the lower grooves as these run the length of the shelf, and a fence-guided router for the others as these grooves are stopped, the ends of the grooves being trimmed square using chisels. The upper grooves need to be about 6mm deeper than the lower grooves to give sufficient clearance when fitting the sliding doors.

Once all the panels were prepared, I could begin assembly of the carcase. The complete carcase is quite cumbersome to glue up in one stage, so I broke it down into smaller stages. The problem with this is ensuring that the carcase is kept square and twist-free at each stage.

With the main carcase joints glued and







Japanese tools

As well the visual influence that Japanese style has had on this project, I've also incorporated structural features, such as the cross lap joints. However, to get a practical idea of how Japanese woodworkers would have tackled a chest like this, I also made use of Japanese tools. Admittedly, only some of the tools I used were Japanese, but these included chisels, saws and waterstones.

The *oire nomi*, or chisel, differs from European examples in that the blades are much shorter, more akin to the European butt chisel but with long handles.

The blades are made from very hard tool-steel that is laminated to a much softer steel backing. The chisels are designed to be struck with a mallet, so while the hard steel blade provides the cutting edge, the softer steel backing of the blade absorbs the shock. The handles also have an iron hoop fitted to the handle to prevent splitting, and the undersides of the blades are hollow ground so that there is a smaller area to flatten. As the blade shortens through successive honing, the hollowing is reduced, so keeping about 2mm of solid metal behind the cutting edge.

Japanese saws are also very different from their European counterparts because they cut on the pull stroke rather than on the push stroke. Since they don't need to take the thrust of a cutting push stroke, the blades are much thinner, which means that the kerf is very narrow. The most popular saw is probably the dozuki, which has a backed blade with very fine teeth, and is the equivalent of the dovetail saw. The other type is the ryoba, which has a double-edged blade, one with larger teeth for ripping and the other with finer teeth for cross-cutting. Essentially, it's the equivalent of our pattern panel saw.





To sharpen and hone chisels, the Japanese use waterstones which, as their name implies, are either soaked in water for the coarser grits, or sprinkled with water for the finer. The coarser stones of about 240-grit cut very quickly, but are quite soft; consequently, they wear quickly and need frequent dressing. The finest stones, of 8000 to 10,000-grit, are used for final honing and can produce a mirror finish on the blades.

Martin's Japanese tools were supplied by Matthew Platt at Tool Heaven — thanks Matt! To see his full range of tools, visit www.workshopheaven.com.



▲ Pic.15 **The trick to assembling in stages is keeping everything square. Here, Martin is...**



▲ Pic.16 **...drilling for the Miller dowels that were used instead of driving screws into end grain**



▲ Pic.17 **Once the dowels were dry, they were trimmed flush using the *ryoba***



▲ Pic.18 **The carcase assembly nearing completion and only awaiting the top section...**



▲ Pic.19 ...**Ah! There it is. With the carcase complete, it was time to start checking the fit of doors**



cramped, I secured them with wooden dowels. Because of the type of joint being used, mechanical fixings have to be fitted into end grain, so screws are not suitable as they're likely to pull out. I used the Miller dowel system, which comprises a stepped dowel that fits into a stepped hole produced by a special drill bit. I left the dowels protruding, and trimmed and planed them flush with the panel surface once the glue had dried.

Drawers and doors

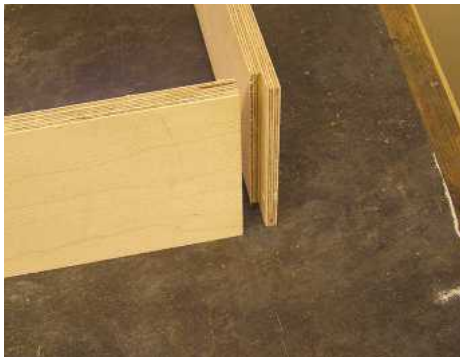
The carcases of the drawer trays were made of birch ply, assembled with simple lap joints, and strengthened with screws. You can easily cut these joints by hand. I then glued and pinned the ply bases into a rebate formed around the inside bottom edges of the drawer panels. Depending on the type of slide you're using, the width of the tray needs to allow for the width of the slides. I glued and screwed the drawer fronts, cut from a single board, inserting the screws from inside.

Cutting the drawer fronts from a single length board ensures the grain pattern flows continuously across the front of the cabinet. I fitted a spacer strip to the base of the drawers to keep the CDs apart and allow for finger access between the two rows.

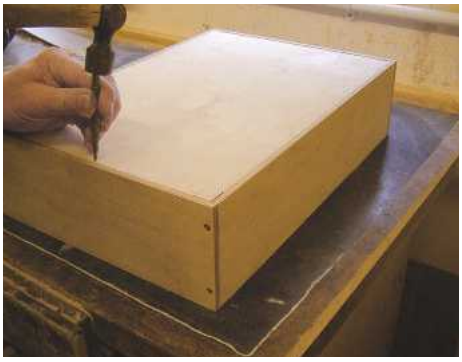
I mounted the drawers on the steel ball double extension slides, and screwed the slides directly to the side panels of the cabinet and the drawer sides.

The slides have slotted mounting holes, allowing for height and depth adjustment of the drawers.

The door for the cubby-hole was constructed from a solid oak frame, jointed using mortise &



▲ Pic.20 **The drawer carcases are made of birch ply and assembled using lap joints**



▲ Pic.21 **The drawer bases, meanwhile, are glued and pinned into a rebate...**



▲ Pic.22 **...and the drawer fronts are glued and screwed to the front of the assembled carcase**



▲ Pic.23 **The ball slides are fitted directly to the side panels...**



▲ Pic.24 **...and the drawer carcases, resulting in a very strong setup, even when fully extended**



▲ Pic.25 **Cast iron door hinges had corners and sharp edges removed to improve their appearance**



▲ Pic.26 **The drawers extend past the front of the cabinet to allow free access to the CDs**



▲ Pic.27 **The grooves for the sliding doors allow enough vertical clearance for them to be fitted**

tenons, with an oak veneered panel fitted into a rebate, held in place with moulding and pins. I used large, chunky, cast iron hinges from my local ironmongers. As they are face mounted on the door, their appearance was improved by rounding off the corners and sharp edges.

I constructed the frames for the sliding doors in the same way. To give the impression of a lacquered panel, I used glass with a coloured card backing. I did consider coloured plastic sheet material, such as acrylic or polycarbonate, but these are limited to very bright colours and didn't look right.

I needed to reduce the upper edges of the doors in width slightly and rounded them over to enable them to be slotted into the upper grooves and then be swung in and lowered into the lower grooves.

The rear panel is a single piece of MDF veneered with oak, fitted into a rebate and secured with screws. Having applied the oil finish, I painted the front edges of the carcase for the final touch; this emphasised the dramatic contrast between the different timbers.

We still may add some extra hardware to the cabinet, and will look into ways of decorating the glass. However, as it stands, the cabinet packs a lot of very practical storage into a small space – something that I'm sure would meet with the approval of the Japanese cabinetmakers who produced the original *choba dansu*.

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Just for starters

Dominic Collings' first chair was this none too simple dining design

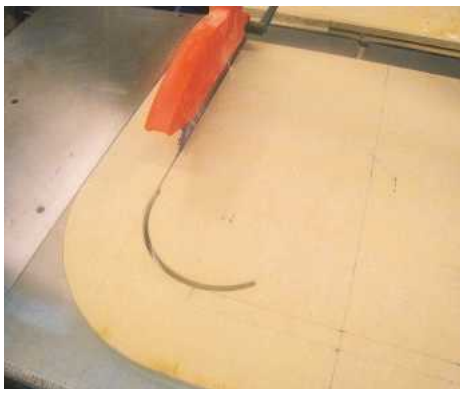


The finished article, elegant and almost simple in form – but was the build simple?

For a long time I had been contemplating making some dining room chairs. The only reason I hadn't to date is that for some reason the general consensus among amateur woodworkers seems to be that chairs are something to be shied away from; difficult, complex, better left to the professionals. It's a humorous sight to see people's faces when you say your next project will be a chair. Their eyes widen and you often see a raised eyebrow or two. I've seen this reaction before when working on cars. Say you're going to strip down an engine and that isn't a problem. However, mention you're going to strip and rebuild a gearbox and you'll see much the same facial expressions. I'd done little research before starting so there was no set plan. I simply wanted to make something different and didn't want to be influenced by other designs. I started with a sketch of a basic design concept on a plain A4 sheet. Rather than trying to draw the chair on a small scale and guesstimate whether it would be comfortable or proportioned when scaled up I decided to make a mock-up in MDF. This would effectively be the detailed plan, only instead of rubbing out pencil lines to make changes I would be cutting bits off until happy with the look and comfort. I would then use these parts as templates to make the actual oak model. I had a vision of sweeping legs and a laminated seat back requiring techniques I had never attempted before, but the aim was to make the first chair in as repeatable a fashion as possible to make subsequent chairs easier and quicker to construct. Basically this meant making lots of jigs.

Wraparound concept

The design was based on a wraparound one-piece arm concept, therefore this was the first part to be built. Using my small router and a homemade trammel jig, the curves were routed and the straights cut on the table saw (**Pic.1**). As the seat base would be exactly the same shape as the inner curve of the arm, the easiest thing to do was to simply draw around the arm onto more MDF and cut along these lines on the table saw. Next I needed a master leg profile so I bent a thin strip of wood around measured marks of the seat base and arm



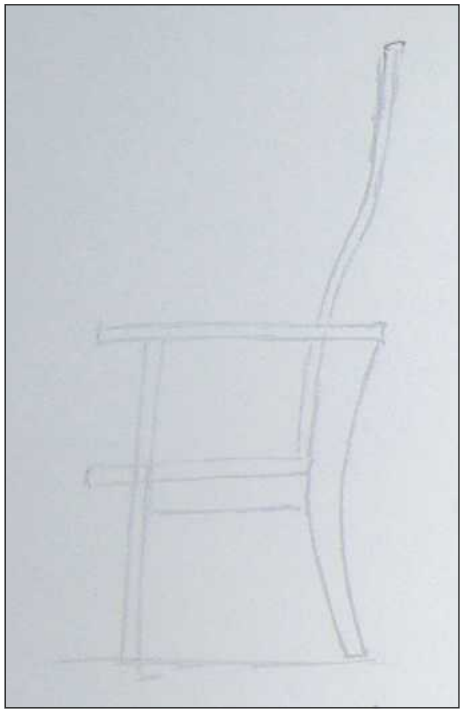
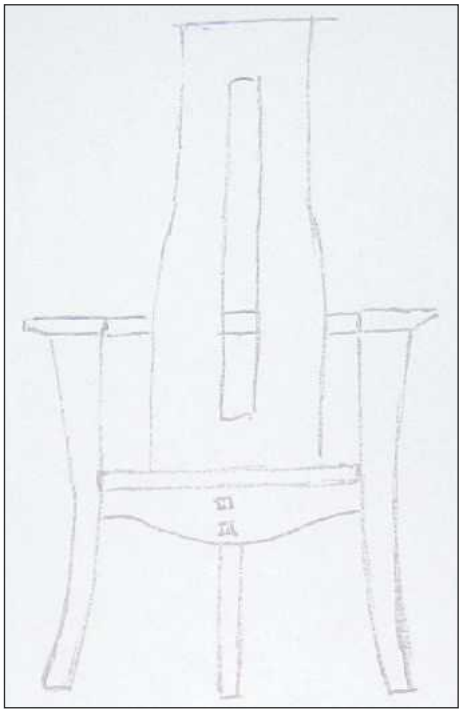
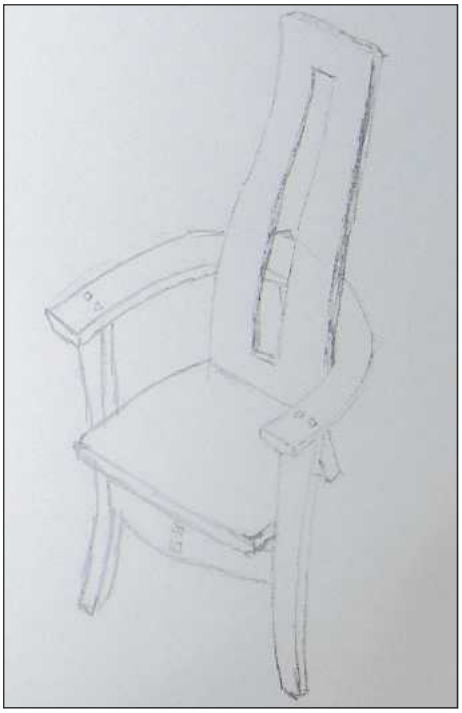
▲ Pic.1 **Cutting the wrap-around arm for the mock-up, using a router and table saw**



▲ Pic.2 **Using pocket-hole jointing sped up the mock-up build**



▲ Pic.3 **Pocket holes (and screws) were used on the back legs too, and – he mock-up chair came together very quickly**

Like all good designs, Dom's began with sketches and lots of thinking. Note that these sketches show a three-legged design

height and drew a pencil line around it. This was then cut out on the bandsaw, sanded; using my stationary belt sander for the convex curves and by hand for the inner concave sections. I initially left this leg long so I could screw it to more MDF and use a bearing-guided bit on the router table to make multiple and identical copies. All the component parts of the chair were made this way.

In no time at all I had my four test legs and I started to assemble the front section. For the mock-up assembly I use pocket holes and screws to hold it all together (**Pic.2**). The same technique was used to mount the back legs and very quickly all the parts were assembled (**Pic.3**). Now I had a full-sized test chair, without the back obviously, but it was strong enough to sit on and see if I need to make any adjustments. Pocket holes would be used for the mock-up only as I intended to avoid using them on the finished chair, with the exception of a few hidden ones to attach the seat base to the frame. To get to this stage only took two hours which is the beauty of pocket-hole joinery. After looking at what I had there were a few changes I wanted to make. The overall look was too square and proportionately too wide but I felt I needed to make the vertical back to address this successfully.

The back

The plan for the back was to make a former to laminate several thin pieces of oak to create a nice 'S' curve. I started by marking out my desired shape in much the same way as marking out the legs and cut along this pencil line using my jigsaw (**Pic.4**). This gave me both male and female halves of the jig (**Pic.5**). After much sanding of both sections, the next step was to make the jig wider. My planer is only 6in wide so it was pointless making the jig more



▲ Pic.4 **Using a thin strip of wood Dom marks out the profile of the legs**



▲ Pic.5 **Following along the line with the jigsaw Dom creates male and female halves**



▲ Pic.6 **Dom repeated the exercise to create this neat stack, ready to combine as one former**



▲ Pic.7 **These were then screwed together and cut flush on the router table**

than this. Several pieces of MDF were cut to roughly the right size (**Pic.6**) and screwed to the original template one at a time and then cut flush with the previous layer on the router table (**Pic.7**).

This took a while but eventually I was left with an S-curved sandwich (**Pic.8**). I added some scrap pine lengths which interlocked like fingers to stop the jig sliding out of line and ensuring it compressed vertically.

With the jig completed I set about making the veneers. These were cut by a repetitive process of planing a flat side on the jointer and then running this side against the re-saw fence of my bandsaw (**Pic.9**). I repeated this step several times resulting in 14 pieces planed on one side and rough sawn on the other. These pieces were then passed though my



▲ Pic.8 **Eventually Dom ended up with this S-curve sandwich**



▲ Pic.9 **Using the bandsaw Dom then started cutting the veneers from a solid piece of oak**



▲ Pic.10 **The veneers were placed seven at a time in the jig and pressed for 24 hours**



▲ Pic.11 **The two laminated lengths were then cleaned up, trued and made ready for the next stage**



▲ Pic.12 **This entailed making this monster of a jig, built as before, using 18 layers!**



▲ Pic.13 **The lengths were glued up together, applied to the jig then hand-routed to shape**



▲ Pic.14 **the back was trial fitted to the chair and the design checked for proportionality**



▲ Pic.15 **Sections of oak were then mitred and finger jointed and clamped to the mock-up arm**



▲ Pic.16 **The front lateral rail was cut to width and Domino-jointed to the legs**

thicknesser down to its minimum thickness of 2.5mm. I kept the best book-matched pairs aside for the facings front and back.

Back to the jig, with glue applied to both sides of each veneer, seven at a time were placed in it I used lengths of M10 rod on the four corners and M6 on the sides, clamping the two halves together. Cling film was used to cover the jig surfaces to ensure any leaked glue didn't stick the whole thing together. I also needed to add a paper shim to increase the pressure slightly on an area where I must have over sanded. It was a mad rush tightening it all down but a socket mounted in my drill was a great help for the M6 rods at least. The M10 rods were tightened by hand.

The results were pretty good with none of the spring-back issues I worried about. Each section was left in the jig for a full 24 hours before starting to machine the two pieces (**Pic.10**). A simple pass over the joiner straightened up one of the sides and I cut short sections to join the two curves together, leaving a gap down the middle (**Pic.11**). To join the two pieces together I'm lucky enough to have recently acquired a Festool Domino jointer. I find it a very unintuitive tool that you have to be really careful with, as cutting in the wrong place or mortising too deeply all the way through is very easy. Perhaps I'm still getting used to it. That said, it did a good job cutting mortises for three 6mm Dominos on each side.

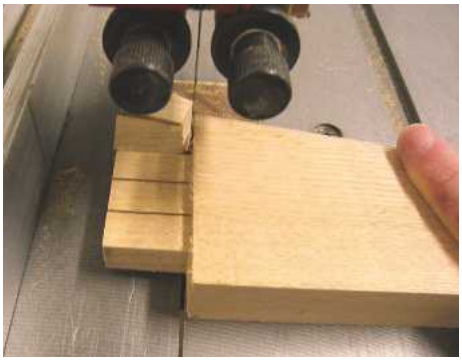
With the back glued together I needed a jig to assist in machining the curve along the sides. This was similar to the first jig but this time the full width of the back. Made in exactly the same way as the previous jig, 18 layers later I had created a monster which was incredibly heavy. The central four sections were recessed to enable me to trim the vertical hole in the back to size (**Pic.12**). I used a combination of hardboard templates, routing and hand sawing to get the profile I wanted on the jig. The oak back was then clamped to the jig and cut to its finished dimensions with a hand-held router. I encountered moderate bit chatter doing this which left quite a bit of sanding to rectify. In retrospect it probably would have been easier to simply draw on the line from the template, cut on the bandsaw and sand by hand, but where's the fun in that?

Adjusting the design

After trial fitting the finished back on the MDF lower frame, I could adjust the design. The arms were made thinner and re-cut to taper inwards towards the back. The radius of the arm was altered slightly and everything screwed back together to test the result



▲ Pic.17 **The legs were through-mortised to the arm**



▲ Pic.18 **The tenons were cut on the bandsaw with slots cut to take contrasting walnut wedges**



▲ Pic.19 **The curved base for the seat back was screwed to the frame**



▲ Pic.20 **Domino mortises were let into the base of the chair back; here the Domino tenons are in place**



▲ Pic.21 **The front rail was increased in width at either side so as to receive a decorative curve**



▲ Pic.22 **Before assembly every component was sanded down to 180-grit and checked for defects**



▲ Pic.23 **Assembly required careful clamping and some walnut wedges**

(**Pic.14**). With the design finalised, I mitred some 1in-thick planed oak to the correct angles on my mitre saw, leaving them a little long for the next step. To join them together I use a finger bit on the router table, clamping each of the pieces onto a homemade routing sled. I used the same technique to make a clock face in *GW*199. I then clamped these bits to the mock-up arm while the glue dried then again finished by trimming flush on the router table, (**Pic.15**).

The same was done for the legs, screwing my MDF mock-up leg to oversized oak and shaping them in the same way. With the legs and arm cut I set about cutting the sections to join them together. The front lateral rail was simply cut to the exact width and Domino'd into position (**Pic.16**). The rear legs, however, would be through-mortised into the arm to the rear and there would be the same feature on the front of the chair. To achieve this I needed to make another jig.

I started by cutting a test mortise using a half-inch mortising bit. Then I planed down some scrap stock so it fitted snugly in this hole. I then used this scrap to correctly space the fence of my mortiser away from the bit and make the cuts into my jig material. This gave me half 1in of material followed by a ½in mortise. Multiple strips of scrap enabled me to correctly space the second mortise (**Pic.17**)**.** This same jig was used for both the armrest and the front rail so everything would line up perfectly. The tenons were cut on the bandsaw using the same scrap to correctly space the fence from the blade (**Pic.18**). Slots were then cut again on the bandsaw for some contrasting walnut wedges. The last piece to make was a curved base for the seat back to mount to. This was sanded to my desired profile and screwed to the frame (**Pic.19**). I made Domino mortises in both the lower edge of the seat back and the base so the back slots into place covering these holes.

All the legs and arms were rounded over on the router table. The front rail was increased in depth at either side so a more decorative curve could be cut (**Pic.21**). With everything sanded down to 180-grit, I gave all the parts a check over for any defect and made sure I had everything to hand before starting the glue up (**Pics.22 & 23**). Glue was applied and the chair assembled. Walnut wedges were cut on the bandsaw, glued and hammered into the ends of the tenons while the clamps were still on. Once dry the chair was sanded all the way down to 320-grit and finished with Osmo Polyx Oil.

And finally

While the finish was drying, I upholstered the seat base. For this I bought some high-quality leather-touch vinyl. I've used this before and it's much easier to bend around the corners than leather. The 12mm MDF seat base was first covered with 1in foam, trimming the excess off with a hacksaw blade. Holding the vinyl in front of the workshop heater made it more pliable. It was then secured in place with plenty of staples. The next day was simply a case of screwing the base to the finished chair.

It looks a little unconventional but it's really comfortable to sit on. The one thing I've learned from this project is that there's nothing to fear from either making chairs or laminating.



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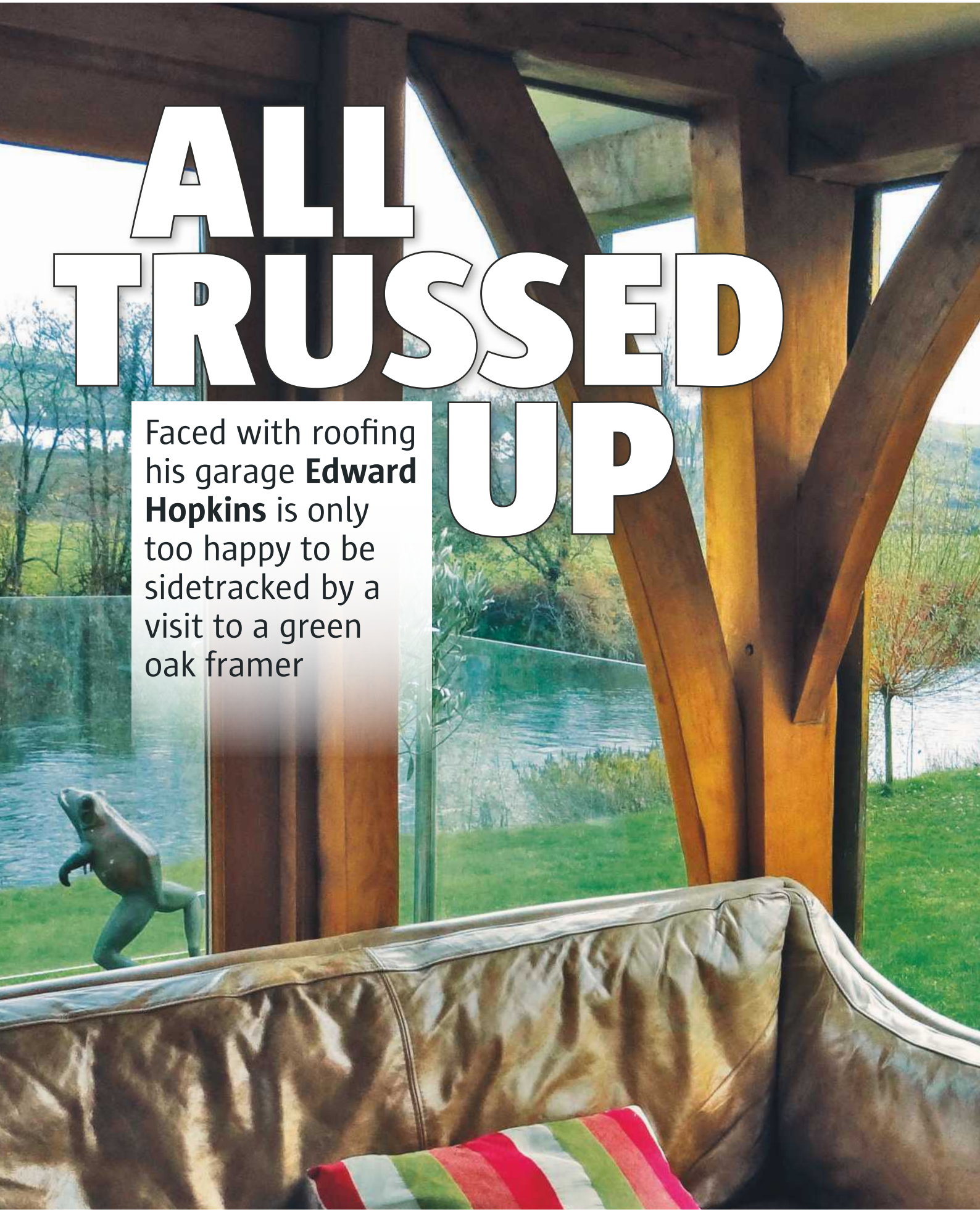
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ALL TRUSSED UP

Faced with roofing his garage **Edward Hopkins** is only too happy to be sidetracked by a visit to a green oak framer





Ed Phillips' greatest reward is a satisfied customer, especially when they ask him back



More diagonal braces are to be fixed so that the roof cannot 'parallelogram shift'. The side battens are temporary. The ceiling battens are permanent. They are over length because Edward and Paul can't get up there to cut them off

At last! Real progress on the garage! It rained this morning. I was so grateful. Paul and I have been fixing trusses. But what we seemed to do most was rearrange tons of steel scaffolding; him with the order and verve of the Edinburgh Military Tattoo – me? I'm knackered. I remarked: "You'd have done well as a Royal Engineer." "I tried," he replied "but, with my eye, I couldn't shoot straight." Local pheasants might disagree.

I didn't want trusses. I did a lot of drawings seeing how I could make a roof myself. I naturally veered towards the mediaeval, heavy in weight and money, over dimensioned and not the easiest thing to make, let alone erect. I thinned the design down and showed it to the postman – Michael was a structural engineer. He didn't really like it. That's when Nigel in the builders' merchants suggested: "Why not room-in-a-roof trusses?" and I had no answer.

" 'S'all right, they're bombproof," the driver cheerily quipped as the tele-handler mishandled and a bundle of 15 trusses lurched and crunched onto the lane. They didn't get away. Swung round by two of us with ropes they were lifted delicately and thoughtfully – trying not to knock off the lintels – up onto the wall plate; then moored against a scaffold tower with outrigger feet. There followed a great deal of shifting of trusses back and forth, re-erecting of scaffolding, heaving and hefting; trying to stay one jump ahead while not falling off.



Ed Phillips bends down to the job

Old timer

A few miles down the road and at the other end of the scale is Ed Phillips. He's been around for hundreds of years. A few things have changed. He no longer drills by hand. He uses a portable circular saw to cut tenons – no mean feat – but the way he joints and puts together his green oak frames is unchanged since the Middle Ages. He doesn't want it to change. I assumed he'd use machines wherever possible, but no, a panel saw and a chisel are his weapons of choice. He has always been practical and passionate about wood and trees. He lives in a cottage in a wood; if he's not timber framing, he might be boat-building; this winter he's restoring a





Ed leaves glazing to others. Green oak moves too much as it seasons to accommodate glass, so this is applied in secondary frames. Neither does he do first or second fix. He knows what he likes and he sticks to it

With a paring chisel Ed cleans up a saw cut

1920s' shepherd's hut: woodwork isn't his occupation; it's his ethos and his life.

The oak he uses is freshly sawn. He planes it by hand to remove iron stains and unsightly saw marks – or all of them, depending on the customer. Then he lays out the components of a frame flat on trestles, scribing in the posts & braces. He assembles the frames, pulling them together with ratchet straps, and then disassembles them for transport. The peg holes are staggered so that the peg will finally draw the joint in tight. The pegs are made by hand. Ed has a friend, a woodsman, who sits at a shave horse with a draw knife and keeps him supplied.

The full frame is assembled for the first time on site. "Does it always fit?" I ask him. He looks at me straight and says, "Yes." "What tolerances do you work to?" "One mil." Has he improved since 2005 when he moved from carpentry to framing? He smiles – just a little – and says: "It used to be two."

Ed Philips saws all his joints by hand. I don't.



Ed Phillips: solid, elemental, well rooted; here to stay at www.devonwoodcraft.co.uk

Maybe I'm impatient or out of practice or both. I took a panel saw to the first of these 6 x 2in rafters and cut a bird's mouth; a bird's mouth sucking a humbug with a sort of Elvis curl. This must be to do with my stance and the subtle bias I put on the blade. It's nothing to do with my taste in music.

I thought I'd try the jigsaw. Mine is a middle of the road model. It struggled: two inches is a lot to ask. The blade behaved like the handsaw blade: it took the line of least resistance and it skewed within the timber. A better jigsaw might cut straighter, but even here a blade that is less than sharp is blunt and readily diverted.

That's when I remembered my beast of a Bosch reciprocating saw. Surely this is the very work it was designed for? It is a heavy machine and powerful. I allowed it to skate softly by the line until it settled down and I gave it a push to bite in. Thereafter I eased the saw back and forth or rolled it over and back to vary the pattern of cut. It is nowhere near as precise in my hands as a panel saw is in Ed Phillips'. It is probably not much quicker. But easier? Well, for me, yes.

Whichever saw you use, it must be sharp



Tight screws

Frame fixings permit a wooden frame – or in this case, a wall plate – to be fixed, without it being moved, to a masonry surround. The frame is placed in its final position and a hole drilled through it to the masonry. The drill bit is changed, and the hole continued at the same diameter. Then a long screw located in a long plastic plug is pushed through the frame into the wall. When the screw is tightened, it swells the plug in the wall, grips it and winds the frame in tight.

Frame fixings are brilliant, but they're not always easy to use. Long ago I asked a builders' merchant for a screwdriver to fit these large cross-headed fixings, and was sold one. It worked, but not without effort. The last few twists of the screw can be very hard. You have to push down with all your weight to keep the driver engaged. For all that they are robust fittings, the screws are not particularly tough, and if you once allow the driver to slip in the screw head, you risk burring it. Henceforth you will not have the same purchase. Let it slip twice and you'll have no purchase at all.



The masonry bit is clogged up with slurried waste from wet concrete blocks: this should be cleaned out. The masking tape marker is worn but still works. Sharp bits are essential

My solution to this intractable problem was to grab the screwdriver handle with mole grips. This gives added leverage and I can wind the screw down hard. More than once I've sheared its head. Mole grips mangle the head of the screw – as they mangle the handle of the driver – and, as the screw head pulls down to the surface of the frame, the mole grips lose their, er, grip: it isn't perfect.

Working on my outhouse the problem reoccurred. I drilled the hole, hammered in the frame fixing and proceeded to drive the screw. It stopped, long before it should have. I withdrew the screw and, with some difficulty, the plug.

Rule number one: when you drill the masonry hole, over drill so that the screw cannot possibly be restricted by the masonry – take the screw from the plug and see that it easily reaches full depth in the hole. Repeatedly insert and withdraw the spinning bit so that its spiral shafting extracts the waste.

Rule number two: take a look at your driver. Is it worn? Is it clogged up? And crucially, is it the right size? It seemed to me that mine wobbled just a bit. So off to another builders' merchant to look for something better.

To me a cross-headed screw is large, medium, small or ridiculously small – usually found on Christmas morning, having to open a battery case on a toy or gizmo. I don't know about names. He did. Simon took a look and said 'You've got a PZ4. You want a PZ5'

'Do you have a manual PZ5' I asked, I thought quite reasonably. 'No,' Simon said, with a note of chagrin. But he did have a PZ5 bit that I could fit in a holder and use with a drill. This would never work. My cordless drill would give up at the thought of it: my mains drill would power on regardless. I needed more control.



I love this sort of thing. We went from the nearly impossible to the nearly perfect in one effortless movement. And we're so much further forward: I for one will never confuse a PX4 with a PX5 again

I bought the bit and the holder nonetheless and came home thinking I'd fit a spanner round the shank of the holder and, um, take it from there. Thankfully, I didn't have to. Before I found the spanner, I saw, sitting in a box of unused tools, a brace. I've had this brace for 30 years and used it probably 10 times, mostly with a lovely adjustable bit that I've now mislaid. Flat bits make a brace redundant, but hey! what if? I took it out and opened up its jaws. I tightened them onto the holder of my virgin PX5. I took the brace-and-bit out and handed it to Vincent perched up on a ladder. He located it. He leant down on it. He turned the cranked handle easily and surely; then he slipped it back round on the ratchet.

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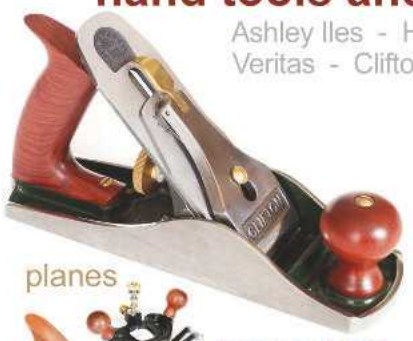
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LETTER OF THE MONTH



Hamish Low brought this lot back to his Kentish fields from the fens last year

Bog wood wonders

I've just read the very interesting and informative article on bog oak in issue 287, and having used and sought bog oak for some years here in West Cork I thought some readers might find my own findings and conclusions of some interest. Hereabouts the prevailing wind is from the south-west and at times pretty ferocious, causing the majority of trees of all persuasions to lean away to the north-east causing a lot of compression wood.

Compression wood is generally harder and denser than the rest of the tree and it's this compression wood that's most likely to hit the ground first when sodden peat gives way to storm-force winds. This might account for some wood being 'better' bog wood than others, as in harder, denser, blacker. I think also that a tree's density and height might also be reliant on its competition for nutrients and light. Water obviously would not have been a problem in the fens or in West Cork, but a tree in dense forestry would have to struggle for both and grow taller faster and not as dense as the fat, squat, ancient oaks that still stand in the middle of a field.

I think the work Hamish Low is doing is very important from many view points and I wish him continued success in bringing a greater understanding of this wonderful medium to public attention.

As an aside, I have pulled all manner of unknown but definitely not oak trees from bogs with varying degrees of usefulness. Some of them make wonderful sculptures when cleaned up. You may also take a look at www.westcorkcrafts.ie when you get a spare minute. A mention may well be inspiration to craft workers wondering how and where to sell their wares.

Ian Camfield, by email

Thanks for those observations Ian. I took a peek at the website and I think many of you will be interested in the setup. Here's what the site says: "West Cork Crafts is a new type of art & crafts shop, at 61 Townshend Street, Skibbereen, County Cork. It is run co-operatively, by the artists and crafters themselves, and offers a wide selection of local art and crafts direct from the artisans at remarkably low prices. We believe strongly in the 'shop local – support local' concept."

Andrea Hargreaves





WRITE & WIN!

We always love hearing about your projects, ideas, hints and tips, and/or like to receive feedback about *GW*'s features, so do drop us a line – you never know, you might win our great Letter of the Month prize, currently a Trend Easyscribe, worth £29.99 inc VAT. Write to the address on the left for a chance to enhance your marking capability with this versatile workshop aid.

Consider the tree

A couple of articles in *GW*287 have aroused some ambivalent feelings in me. To see Crispin Keyzar standing proudly with his 48in chainsaw on the stump of a giant sequoia, in a manner of a Victorian big game hunter with the freshly slain corpse of an elephant, made me feel a little sad for the loss of such a beautiful tree. Then to see the article about David Vickers who will teach you how to cut down a tree safely made me stop to consider my own feelings about this.

I am fortunate in that living in Suffolk there is a plethora of paths, woodlands and parks within walking distance of my home. I love to see the seasons round but along with the pleasure of hearing the songs of the birds, the occasional glimpse of a muntjac deer and the budding of the spring flowers, comes a darker thought. The burr on that oak that would make a lovely clock, a squirrel disappearing up an ash tree which would make a fine table or a shrub that makes me wonder what it would look like when turned into a bud vase or a mushroom.

You will see that along with a love of the countryside I also have a love of woodwork. I have worked with wood as a hobby since the age of 11, with varying degrees of success, and I am well aware of the connection between the tree and the wood. I know that whatever species of wood I use it was once a tree, and worse, I know that there was irreparable damage done to the forest where it grew. I have to reconcile myself to knowing that somewhere a creature lost a home for me. I shall be back in the shed soon, sorting through my stock of wood for the next project. I paid for very little of this wood as I rely on gifts, scrounging and the occasional skip for supplies. Whatever the source, I will spare a thought for the tree it once was.

Ron Davis, by email

I appreciate your sentiments Ron, but surely so long as manage our woods and forests well we should be free to make beautiful things that may even outlast the natural life of the tree. **Andrea Hargreaves**

Goon Good Wood!

I hail from Perth, Western Australia, and have been reading your mag for a year now, courtesy of our State's library. I also subscribe to *Australian Woodsmith* and *The Australian Woodworker*, which I really enjoy, but they're not in your league!

I only have a Triton saw bench and unfortunately you can't adjust the blade to saw mitres because it's fixed at 90°! I've succeeded in making a jig to saw mitres on the jewellery boxes that I've made (two only at this stage, but with 13 grandchildren there's more to come!) but they're not terribly accurate and have small gaps when the box is glued together despite extensive planing.



A 45° cutter was used to produce mitres for the tops of the sides

Anyway, what I'm getting at is that I'm reading issue 269 at the moment (page 43 to be exact) where this chap has made a couple of nice cabinets and has used a router to cut a 45° mitre on his piece of timber. I immediately realised that this will solve my problem with inaccurate mitre joints. I lined up the four pieces of my jewellery box with the mitres already cut, clamped them together and gave them a light rout with my 45° router bit, turned the four sides and ends around and did the same again. The result was, both sides were exactly the same length, as were the ends, and dry fitting the box showed exact mitres with no gaps. Perfect! I don't know why this option wasn't blindingly obvious, but I do know that without reading that article, I wouldn't have solved my problem of inaccurate mitres.

Goon on you *Good Woodworking*!!

Peter Wood, by email

Like the 'goon', Peter. Apparently, among other meanings it can mean 'tough guy'. That's us all right. So glad we are hitting the spot.
Andrea Hargreaves

Next month reader John Mullins describes how he made two built-in wardrobes.

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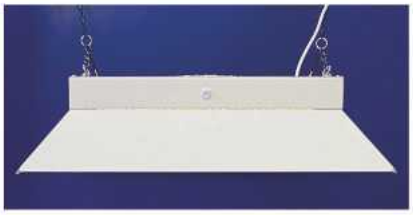
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Around the House with Phil Davy



Looks can certainly be deceptive when it comes to timber. Most of us tend to hoard wood, buying boards with particularly attractive grain as we stumble across them at timber merchants. Of course, we justify the cost by earmarking them for that special project, however unlikely it may be. Lurking in my workshop was a lovely piece of oak, ideal for slicing into strips for lipping the quartersawn veneered MDF for my window board project, p74. Cutting through it revealed no end of cavities and defects, some too deep to fill or avoid. Although I salvaged some timber, much of it ended up as expensive firewood...

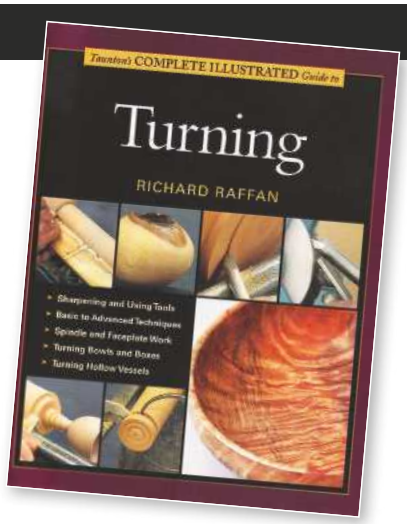


Phil Davy, Consultant Editor

Book review

Turning

By Richard Raffan



For anyone seeking a solid grounding in woodturning, you could do a lot worse than follow the guidance here from one of the most respected experts in the business. Raffan has something of a reputation for clear instruction, show demos and writing, not to mention the quality of his actual turned work – particularly hollow forms – and this is certainly conveyed throughout these pages.

The manual is split into six parts: tools and materials, preparation, spindle work, turning end grain, face work, sanding and finishing. Each part is then subdivided into specific chapters, including topics such as lathe basics, where to find wood and converting logs to producing actual face work and spindle projects. It may sound complicated to follow, but as with most Taunton guides, everything is laid out clearly and logically, with cross references throughout the text and visual maps at the start of each section helping you get the most from the bank of information within. It's easy to find your way around, with excellent contents pages and a very comprehensive index.

Photography is first rate – with more than 850 images from the author – while occasional drawings are clear and relevant. This then is a fantastic reference book, a treasure trove of information from a real master of his craft.

★★★★★

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Q&A

Plug perfect

Q I never seem to get decent results when gluing hardwood plugs into counterbored holes to conceal screw heads. Even though I use a flush-trim saw, the blade's teeth still seem to damage surrounding timber, meaning I then need to sand out annoying scratches before applying a finish. Any suggestions as to where I'm going wrong would be welcome.
Mike Driver, via email



A *Although flush-trim saws have the set removed from teeth on one face, they can still mar a surface slightly, especially if you use a couple of fingers to keep the blade held flat. These tools will usually state which way up they should be used, which helps but does not entirely eradicate the problem. The solution is simple: cut a piece of thin card to fit over the plug and use the saw above this. You'll find the plug is still slightly proud of the surface, but it can then be trimmed neatly with a block plane or chisel.*



Winter project

Takes: one weekend

WINDOW BOARD



Tools you'll need

Jigsaw, circular saw, router, sander, drill

Room with a view

Phil Davy creates more room in his cottage by stripping out window seats and replacing boards

When I bought my stone cottage many years ago, the bedrooms and living room all included traditional window seats. As the building was undergoing renovation I decided to retain this feature but replace the original softwood seating with more durable and attractive oak boards. This was a fairly straightforward job as I'd stripped the old plaster off throughout, so any new timber could be fitted before re-plastering.

Some three decades on came the realisation that these seats had rarely been used to sit on, so it was time to make better use of the surrounding walls. Removing the seating, building up the masonry beneath and fitting new window boards would mean furniture could then be placed in front. Previously, the window seats were too low for this.

As the back of each seat also sloped upwards, the existing window board would be too shallow if refitted higher up. Also, the thickness of the existing oak (30mm) meant the top surface would finish too high up the sill and look wrong. The solution was to fit a new window board some 10mm thinner. To reduce potential bowing I decided to use 19mm-thick veneered MDF, though this would need lipping along the front edge. Because 19mm thickness would appear too thin, gluing on deeper lipping would give the illusion of a thicker window board.

Out with the old

Once the old plugs were drilled and chiselled out I could clean the old screw slots with the point of a bradawl. Removing the screws was surprisingly easy.

With solid wood window boards and frames it's standard practice to machine a rebate along the rear edge of the board, with a matching groove along the inner face of the sill. This enables the window board to slot into the sill, though to allow for movement it's important not to glue this joint.

When fitting shelving or similar in an alcove it makes life easier to make a template first, particularly in old properties. Not only will this improve accuracy, but you'll potentially avoid spoiling expensive materials by sawing in the wrong place. You can make a template from any thin material that's reasonably rigid. Where several identical items need to be cut it's usually better to use 6mm MDF or similar. For a one-off project such as this it's quicker to use cardboard though. If you don't have a piece long enough for the template, simply tape a couple of sections together.

If you've not used veneered boards before, take care if sanding with power tools. Don't use a belt sander and always reduce the speed on a random orbit machine. Veneered MDF comes ready prepared, but surfaces will still need fine sanding before varnishing or oiling.





1 Although a traditional feature, the old oak window seat would have to go to free up wall space



2 Chop away plaster around timber with cold chisel. Drill through plugs, unscrew and remove window seat



3 Wall height has been increased with new blockwork. After rendering and plastering it can be painted



4 A template is necessary for making a window board that fits snugly. Use sliding bevel to transfer angle



5 If walls are uneven use scribing tool to mark card accurately. Tape two lengths together if short



6 Cut cardboard to size with Stanley knife and check template fits opening. Trim if necessary



7 Cut MDF board to correct depth with circular saw, running tool against straightedge for accuracy



8 Select best face for top surface and draw around template. Stick masking tape over pencil line



9 Cut MDF carefully with jigsaw fitted with fine-toothed blade. Tape will prevent veneer splintering



10 Check MDF fits into opening and adjust if necessary. True up front edge with a bench plane



11 Prepare lipping slightly oversize from solid oak and glue to front edge of MDF window board



12 Plane lipping flush with MDF surface. Use cabinet scraper to finish to avoid damaging the veneer



Winter project

Takes: one weekend

WINDOW BOARD



13 Saw to length, then rout front edge with bearing-guided rounding-over cutter. Complete with plane



14 Use 120-grit abrasive paper to achieve completely smooth profile, finishing with 180 grit



15 Round over ends of lipping with file, sanding block or mini-tool fitted with a drum sander



16 Mark screw positions and counterbore to accommodate matching oak plugs. Drill for 5mm screws



17 Sand window board with 180-grit abrasive. Dampen surface to raise grain and re-sand



18 Where there's a cavity between internal and external walls, fill with suitable insulation material



19 Mark and drill blockwork and insert wall plugs. Fix window board in place with 5mm screws



20 Cut matching plugs from solid oak. Brush on PVA glue and tap them firmly into holes



21 When dry, saw off the protruding plugs and trim flush with finely set block plane



22 Fill gaps in masonry next to window board and sand down. A second application may be necessary



23 Lightly sand again and brush on a couple of coats of satin polyurethane varnish, thinning first one



24 The deeper lipping actually makes the completed window board look more substantial



Good value DIY kit



Many of you will remember the Power8workshop that was launched a few years ago after its appearance on TV's Dragon's Den. In fact, I ended up using one with a project on the *GW* stand at one of the Alexandra Palace woodwork shows. The concept was great, though there were a few teething problems as I remember. So when I heard about a new range of DIY cordless tools from CEL (*GW*288) I was interested to find out more.

Like the Bosch and Ryobi cordless tool systems, the CEL 144 range is based around a single battery common to each tool. You only need buy one power pack as individual tools are bought bare (without battery). Unlike these two familiar brands, CEL features a 14.4V platform, rather than 18V. To be honest, for most work around the house 14.4V is more than adequate. Remember when 7.2V tools were popular, with 9.6V pro models regarded as a peak in terms of performance?

Allow at least 40 minutes for battery charging

Battery & charger

These lithium batteries are rated at 1.5Ah, fairly common on budget tools and this is reflected in their cost. As yet, CEL doesn't have plans to introduce a larger power pack, so it would probably be wise to buy a couple to get started. With no power level indicator it's guesswork how much juice is remaining in the battery, so a second pack will stop you from taking that extra long tea break...

The fast charger will get a discharged battery up to 80% capacity in about 40 minutes, while full capacity takes one hour.

There are two status LEDs at the front of the unit, which is all you really need. While charging a solid red LED illuminates, switching to green when fully charged.



Green means go



Squeeze the trigger to activate the worklamp



Softwood yes, but the jury's out on iroko

Making an impact

At first glance you may well think this impact driver was a Hitachi tool with its striking colour scheme. Weighing a tad over 1kg (with battery fitted), it's comfortable enough to hold with no shortage of textured, soft-grip rubber. The trigger is a decent size, while the forward/reverse button is easy to reach. As you'd expect now, an LED worklamp is located below the chuck, activated when you squeeze the trigger. At the sharp end is a standard quick-release ¼in hex drive.

Speed range is from zero to 2400rpm, fairly standard for an impact driver. Maximum torque possible is 90Nm, much lower than a professional model but still reasonable. Andy's test for an impact driver involves driving 75mm screws into softwood and hardwood without pilot holes. The CEL coped with softwood well enough, though the tool struggled driving screws into a chunk of iroko.

Conclusion

These tools are not industrially-rated, so don't expect top performance for heavy-duty work. That said, for occasional use in the workshop they're cheap enough and pretty good value. One way that CEL has reduced costs is by providing a no-frills cardboard box for each product, though if you want a capacious, heavy-duty storage bag this is available for another £19.90. Other tools in the range include an SDS hammer drill, jigsaw and drill/driver, which we'll be featuring over coming months.

★★★½☆

Typical price: £34.90
1.5Ah lithium battery: £34.90
Fast charger: £14.90
Made in: China
Web: www.cel-uk.com



CEL 14.4V rotary tool

Cheap & very cheerful

This CEL 144RT must be one of the cheapest cordless mini-tools on the market and offers an interesting alternative to pricier Dremel and Proxxon products. Part of CEL's 14.4V system, it's sold bare so you'll need at least one battery.

The body itself is fairly compact and can be gripped at its nose like a pen or held nearer the base for better control. With battery added it weighs 0.5kg, and can feel a tad unwieldy for work such as freehand engraving. Soft rubber grips means it's still comfortable, though.

The tool is activated via a simple on/off rocker switch midway along the body. Below this an LCD display shows what speed setting you've selected via the tiny + and – buttons beneath, though it's hard to read. Irrespective of the speed chosen, this is cancelled out when you switch off the tool. Switch on again and the motor starts up at the lowest setting, indicated as 08 in the display. This is no doubt to protect the motor, but it's slightly annoying if you're in the middle of sanding or using a cut-off wheel, say, when you'd normally run the tool at full tilt. It takes about five seconds to reach full speed again. Maximum speed (26,000rpm) reads in the display as 30.



The body can be gripped at its nose like a pen



An LCD display denotes speed setting via these dinky little buttons

With the battery fitted the tool is stable enough to stand upright, so you can place it on the bench and actually use it as a miniature stationary tool for shaping, cleaning or whatever. It stays put too.

It's fitted with a 3.2mm collet, the most popular shank size for mini-tools. This means it will accept a variety of accessories from other brands, although you do get plenty of sanding drums, grinding and polishing wheels, cut-off wheels and wire brushes as standard. Like Dremel tools, the collet nut is locked via a wrench and spindle lock button at the nose and works well enough.

Conclusion

I found performance was pretty reasonable once I'd got used to the fiddly speed control buttons. If you can't justify the cost of a Dremel, then this CEL mini-tool is not a bad alternative. It's less sophisticated but far cheaper if you decide to buy into the system and choose one or two other 14.4V products.



The kit is equipped with a great choice of accessories



The collet nut is locked Dremel style with a wrench and spindle lock button at the nose

★★★½☆

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Ready, steady, TURN!



Les Thorne's 3-part project involves faceplate and spindle work in ash, and should suit novices

Once again an article has fallen into my lap in the shape of a cake stand. I had an email from a gentleman explaining that he had broken his glass stand and could I set the surviving glass plate into a wooden stand. This is a 3-part project involving faceplate and spindle work and is a good thing for beginners to have a go at.

The chosen wood for this project is ash. From the same batch of timber that I made the stool from in the previous issue, it has some amazing colour and should make an impressive piece for the customer.

Whenever you are making something functional like this stand you do have to ensure that the wood is stable or else the stand will rock. The glass plate will not be glued in, allowing the finished work to be cleaned easily. If I were going to fix the glass in I would have to use a flexible adhesive such as silicon or dedicated glue designed for gluing in mirrors as this allows the timber to move without breaking the glass.

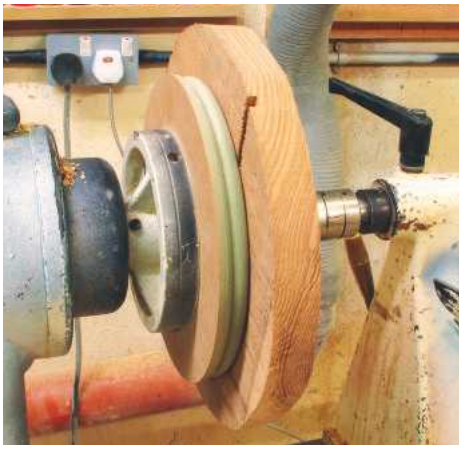
You have to be careful about the type of finish that you use on work that is going to come into contact with food and here I shall use the food-safe finish from Chestnut Products. This oil will only give you a finish on the matt side of satin, but this will suit the ash perfectly.



▲ Pic.1 Here is the wood with the glass plate. The moisture content on the ash is a little high so Les cut the wood and stored it in a warm environment for a month before turning the stand



▲ Pic.2 The split in the larger of the blanks has a split, but this will be turned out. As the timber dried he kept an eye on the fault to see if it got worse; it didn't so all should be OK



▲ Pic.3 The top plate is glued to some MDF mounted on a faceplate. The top is glued to the plate. The chainsaw cut in the blank should come out in the turning



▲ Pic.4 The 10mm bowl gouge is used in a pull cut to true up the blank. Keep the flute pointing at 10 o'clock. If you have the flute pointing more towards 9 o'clock the edge will scrape



▲ Pic.5 The edge is trued up with a push cut, the flute of the tool now pointing at 2 o'clock. The toolrest is placed in the direction of the cut and Les's fingers slide along it to act as a guide



▲ Pic.6 Les is going to use a recess in the bottom for the chuck, to act as the stem mortise. The dividers are set on the diameter required, the left-hand point mark lining up with the right



▲ Pic.7 Using the gouge, cut away the bulk of the wood from the chucking point. The skew chisel is ground at 15°, perfect for scraping out the recess to the correct size



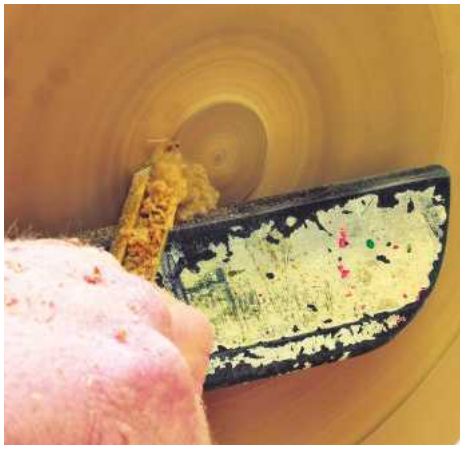
▲ Pic.8 Make sure the recess doesn't have thin walls. Remember that you will be expanding the chuck jaws into the wood. If you do not go deep enough the recess could break



▲ Pic.9 Sand the back of the simple shape, starting with 120 grit and going through to 400 grit. With ash Les blows out the grain with compressed air between each grade of abrasive



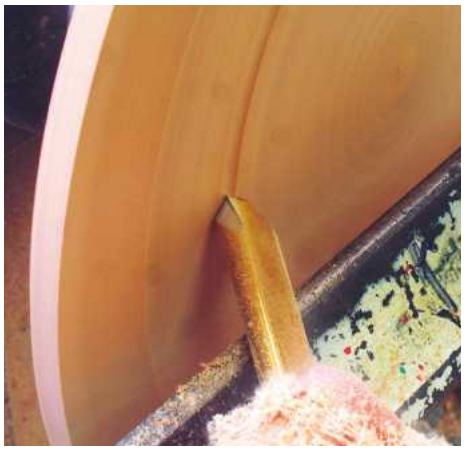
▲ Pic.10 He is using the Charnwood chuck for this. Its small-diameter jaws allow the recess to be kept down to a size that is just right for the stem



▲ Pic.11 He has to remove quite a bit of wood from the front of the blank to get rid of the saw cut. The cuts are not aggressive as the width of the blank meant it was starting to vibrate



▲ Pic.12 After marking the diameter of the glass plate he cuts a recess with a 3mm parting tool. Make sure the tool is sharp and take light cuts, supporting the back with your left hand



▲ Pic.13 Hollowing out the recess for the plate is done with the 10m gouge. This tool is pushed towards the centre with the bevel in contact with the wood. Slow the feed down towards the centre



▲ Pic.14 Getting the wood dead flat can be difficult mainly because of the differences in the speed of the wood that you are trying to cut. He uses a tool ground with a 60° angle for this



▲ Pic.15 Les decided to use a small bead to stop the plate sliding off. This Ashley Iles beading tool scrapes a bead as small as this one with ease



▲ Pic.16 He thought he would match the bead on the face with one on the edge, so the spindle gouge is pulled round the cut with the flute in the position shown



▲ Pic.17 Whoops, the bead is not in the centre. Les was hoping to get away with it but it looks odd so he has to decide whether to re-turn the back



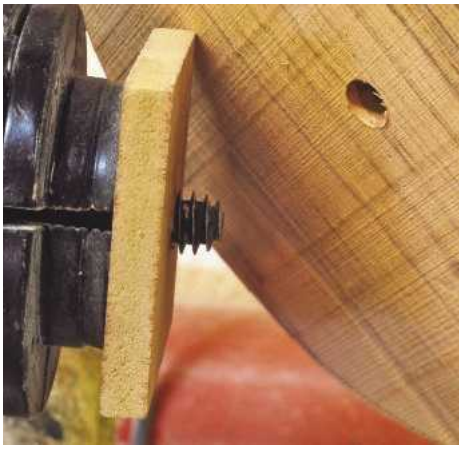
▲ Pic.18 Decision made, the toolrest is put round the back of the piece. A light pull cut with the 10mm bowl gouge is ideal but keep the flute pointing towards 2 o'clock to avoid a catch



▲ Pic.19 The large flat in the centre is best sanded using a cork block. Without the block you could cause undulations in the timber



▲ Pic.20 Les is much happier now. The edge is in balance, the recess for the plate is flat and the wood looks stunning. Finish will go on at the end



▲ Pic.21 The base is now mounted onto the lathe. Because of the depth of the wood he has drilled a shallow hole for the screw chuck so needs to use a spacer on the chuck



▲ Pic.22 He has turned the base flat and put a recess on the bottom, just like the top section. You will need to carefully sand the recess as it will be left on the finished piece



▲ Pic.23 When you have turned the work around on to the chuck, drill a hole in the top to accept the stem. He likes to use a rod inserted in the drill chuck to stop the arbor spinning in the tailstock



▲ Pic.24 The initial shaping is done once again with the bowl gouge. Les likes to achieve the basic shape before doing any finishing cut. The flat on the top will need to tie in with the stem base



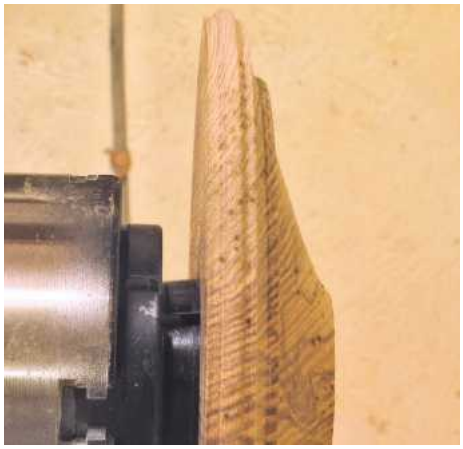
▲ Pic.25 The spindle gouge is used with the bevel rubbing so as to mirror the small beads on the top. If you rotate the tool to the left towards the end of the cut you will not remove the bead area



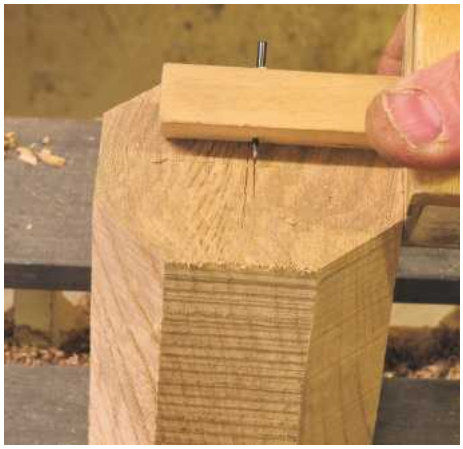
▲ Pic.26 The outer side of the bead is done with a pull cut. When turning a shape like this you will need to employ many different cuts to obtain the best finish



▲ Pic.27 Les has decided to lightly scrape this small bead with the skew flat on the rest. Also use the skew to get right into the side of the bead to give a really crisp detail



▲ Pic.28 The edge is rounded over with the gouge in the opposite way to spindle work, ie working up to the outer edge



▲ Pic.29 The centres are marked on the piece of wood for the stem. Les always uses a mortise gauge to do this, marking all the way round just in case the wood isn't square



▲ Pic.30 There are a couple of important measurements, mainly where the pieces will fit together. The first job is to transfer the top recess size onto the spindle



▲ Pic.31 The 10mm skew is used as a parting tool to take the wood down to the desired size. Les has already cut the spigot for the hole in the base, this cut matching the stem to the base top



▲ Pic.32 Just a check to see whether the spigots fit. This also helps him to visualise the height and what sort of shape he wants on the stem. At least the diameter looks about right



▲ Pic.33 Most of the shaping is done with the spindle gouge, but there is quite a lot of stock to remove. Make sure the cuts are all downhill, so you are cutting with the grain for a good finish



▲ Pic.34 The step into the centre will become the bead. Flow the tool down the curve, keeping the flute fairly open until you get right next to the bead when it is rotated away from yourself



▲ Pic.35 The centre bead is cut with the 10mm round skew. Use only the point and keep it moving forward. After sanding glue it all together and apply two coats of oil with a light rub down in between



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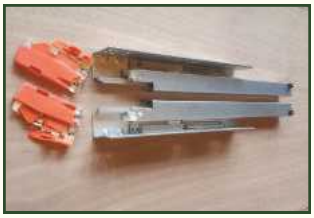
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NEW FROM LEIGH...

Andy King's excitometer went into the red when he was invited to test Leigh's latest update. And his verdict? Fast, easy and accurate jointing with diversity. Why? Read his findings in the next issue

...& FROM KREG

Andy reports that the new K5 is a radical redesign of its predecessor, and is now even more user friendly, being quick and easy to set up for faster jointing, particularly for different stock thicknesses

FROM TREE TO TABLE

In this month's Tree Talk arborealist David Vickers introduces young furniture maker Hannah Dowding who contemplates how using wet timber is going to affect her approach to joint making

PLUS...

...all your favourites, with Edward Hopkins sharing his journal, Michael Huntley furthering your woodworking foundation skills, Dave Roberts offering wacky but wise solutions, Phil Davy Around the House and Les Thorne at his trusty lathe

Service!



Pic.1 **A pretty little Edwardian tub chair**

"Not another chair," the reader will say. Well, yes it is. This is because chairs are one of the things that people must have in their houses and let's face it chairs get damaged frequently. Especially by the elderly. This chair was being used as a Zimmer frame and, unsurprisingly, the weakest foot lost its castor. Now, it is a pretty Edwardian chair, and as such the owner would have liked to have it standing level again, but not for use as a walking aid! The cost of splicing in timber to repair the shattered foot was too prohibitive so as a restorer trying to provide a cost-effective service – and that is what those of us with practical skills should be doing – it was necessary to find a cheap way of reattaching the castor.

Now you may well shout, "Ethics," or "You are only as good as your last job," or "Don't undercut quality work," but the word "Service" trumps all these. When somebody who doesn't want to spend hard-earned savings on a favourite piece of furniture gets the item back in a state that it can stand quietly in the corner of a room, they are delighted. And the workshop owner has given a worthwhile service.

All the debris of the break was cleaned out. The fit was checked and the stump filled with adhesive. Now at this stage the process sounds like a medical operation and in some respects, what we do as restorers is just that. The castor, which had plenty of good thread left on the screw for the Araldite to adhere to, was offered up and aligned. A flat board was then placed over all four legs to check for level while the chair was still upside down, and the whole lot left overnight. Time taken: less than one hour. Cost to client: nothing – not worth raising an invoice! Service to community: well, you decide.



Pic.2 **The shattered end of one foot**



Pic.3 **The stub of the screw and castor**



Pic.4 **A 'bodged' repair with Araldite was the correct course of action under these particular circumstances**

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