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Welcome

Having exhaustively discussed the job, the editor carries out some light shop fitting

It's good to talk. However hackneyed and over exposed this short phrase might be, it's nonetheless very true, and, as the years and the woodworking jobs have gone by, I've found it really is the answer to making life easier. No longer will you be assuming one thing while friends, family and customers are thinking another, the realisation often coming way too late. No, by verbally going over everything you can think of at the start of the job and all the way through, you're sure to improve a whole load more than you could ever have imagined.

These days, when it comes to discussing a job, I make a point of voicing all of my worries, concerns and just general ideas right there and then before we get started. In the old days I used to think that:

a) *This would confuse people unnecessarily*
b) *They might be put off and change their minds*
c) *They would see me as the chancer I once felt I was*

Clearly I was hugely mistaken, and if anything, the responses I get these days when talking about minor details confirms my belief that people:

a) *Can understand anything if it's clearly explained*
b) *Actually like to be consulted about their tastes and preferences*
c) *See me as a solid professional who knows what he's talking about. I only wish that I'd operated like this before.*

Now, it's clear that we're in 20/20 hindsight territory here, a familiar place for most of us I would think, but that's no cause for worry or guilty feelings. It's all about improving things and benefitting from experience, and if we can help someone else along the way, then great.

It's likely that I'm preaching to the converted here, and that many people reading this will have had similar experiences, and worked it out for themselves. Or just be that sort of person who intuitively knows these things right from the get go and hasn't had to learn it all the hard way. I do hope, though, that my simplistic philosophies may well strike a chord and that perhaps someone out there will take these simple words on board and maybe spend a few extra minutes when discussing the next job with the recipient. Not only will your woodworking experiences benefit, but it's quite likely other aspects of your life will, too.

Mark

You can contact Mark on mark.cass@mytimemedia.com

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80 AXCALIBER CARVING & SHAPING CUTTER

Mark Griffiths uses this powerful tool to rough-out a replica Iron Age wooden vessel

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THE AUTUMN ISSUE IS OUT ON **30 SEPTEMBER**

WOODWORK

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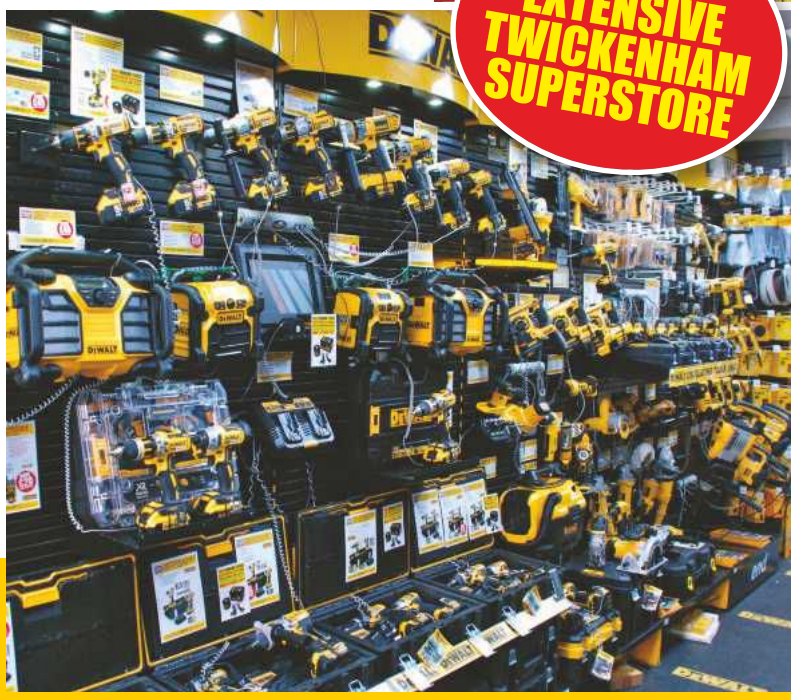

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In brief...

ANY OTHER BUSINESS

When they first started up those check-a-trade websites a few years back, I was bombarded with calls from salespeople hoping to sign up as many tradies as possible for what was then a sizeable number of similar sites. As is the nature of these things, the situation has stabilised and now there are only one or two popular sites in use. While preferring to go with recommendations and word of mouth myself, I've joked with other carpenters and builders that we ought to set up a check-a-customer site so's we could all avoid the nightmare ones who only seem intent on bringing a working man to his knees. Fortunately these are in short supply, but one has to be careful nonetheless.

Regardless of websites and hashtags, these days I do make a point of extolling good work and good service wherever I go, and especially to the person providing it. I've just got off the phone to Sandra at Festool who made the potentially tricky task of ordering a spare part a smooth and enjoyable transaction. Not only did I manage to get the right number from the official website prior to the call, but the item itself (an on/off switch module) was in stock here in the UK and would be sent straight out the next day. And when I heard there was no delivery charge for spares, well, my happiness was complete. Many readers may have noticed an increase in requests to complete feedback forms of late; sometimes it represents an unwelcome addition to an already busy schedule, but wherever possible, it's a good exercise to participate in. A little praise can go a long way, and if my experience of customer service departments is anything to go by (non-stop complaints with the occasional death-threat thrown in), anyone receiving a compliment will almost certainly leave work with a smile on their face. Remember, we're all here to help each other... ***MC***

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This eagerly anticipated show is now in its 16th year, making it one of the longest running woodworking shows in the UK and probably the largest display of branded tools at a UK event.

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13–14* & **26–27** Routing
14 Pyrography – Ben Beddows
16 Sharpening with Tormek
20–21 & **22–23*** Woodturning
27–28 Bowls & platters
30 Fine-tuning hand planes
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The latest edition of our eagerly awaited new annual catalogue was released in August, featuring over 650 full colour pages packed with the very latest power tools and woodworking machinery, hand tools and accessories plus a huge range of clothing and workwear, from all the leading brands.

Now in its 23rd edition, **'The' Tool Catalogue** from D&M Tools has become the 'bible' for all discerning tradesmen and DIY enthusiasts. If you are already on our mailing list, you will receive your catalogue delivered direct to your door, otherwise you can order your copy free of charge by following the link on our website – **www.dm-tools.co.uk** – or by phone on **020 8892 3813**, or why not collect one in person from our Twickenham Superstore.

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Wood, boring? NEVER! PART 2

Finding more tools for making holes, Robin Gates gets into gear with ratcheting hand drills, restores a classic Stanley and suggests simple things for children to make

The brace was developed simply by putting a U-bend in the shank of an auger but the hand drill or wheel brace brought gears into play and is a far more sophisticated tool. With drive wheel and pinions turning in different planes and at different speeds, a hand drill is a proper little machine. I've been fascinated by it since childhood.

Back then my interest paid off in the shape of a bright red Fleetway Rapid, which Dad bought for my expanding tool kit, joining a Record 102 apron plane and a tiny brass-backed dovetail saw.

Tom using the massive Millers Falls 97 breast drill

With Dad holding the breast plate the MF 97 is Tom's temporary pillar drill

The whirring of that drill's bevelled drive wheel meshing with its single pinion plays soothingly in my memory even now, though it and I parted company long ago.

When my son, Tom, aged nine, did a year of home schooling and we included woodwork in the curriculum, I was keen that he should know something of the delights of drilling holes by hand. But at that time my only drilling tools besides a set of unwieldy Scotch augers were the odd couple of a vintage wooden brace and Sparky, a jumble sale power drill whose worn carbon brushes lit up a darkened room like a box of fireworks. None of these seemed right for Tom's small hands, but then again neither did the drill I bought next.

Santa appears happy with Tom's drilling

Iron giant

Fully intending to buy a small hand drill akin to the long lost Fleetway Rapid, I fell under the spell of an iron giant – a circa 1920 top-of-the-range Millers Falls No.97 breast drill in stunning condition. Measuring some 46cm overall and weighing in at 3.5kg, this dream machine promised to be a home school engineering project in itself, with so many parts to dismantle and explore.

Eager to place the drill in Tom's hands (and allay suspicion that I'd bought it for myself) I found that by gripping the breast plate to support the drill in a vertical plane he could operate it as a pillar drill (**photo 2**). His first project was a Christmas decoration, drilling eyes for a Santa he was making from a scrap of plywood found on the seashore (**photo 3**). The arrangement worked well, and as Tom turned the handle and set the gears in motion, I felt time itself being rewound. With eye holes cleanly bored and hat and beard glued on, Santa's face was painted and smiling in good time for Christmas.

From that point this sturdiest of drills became my unlikely tool of choice for many

Four pinions flank the gearbox of the MF 97

Ratchet action of the North Brothers Yankee 1530 is useful in tight spots

Drill bits housed in the Yankee 1530's detachable handle

In-line gearbox of the Yankee 1530

The Stanley 803 hand drill as found

Scraping old paint to reveal beech handles

Treating the handles with boiled linseed oil

jobs around the house. When boring holes in walls its weight behind the bit helped ride out the bumps and hard spots, cutting through timber and brick with ease albeit at a slower pace than a power tool.

A useful feature for this kind of work was a spring-mounted selector on the crank enabling rapid switching between high and low gear ratios without interruption; on other breast drills you have to reposition the drive wheel to change ratios.

But its most exciting feature was a five-way ratchet, a kind of gearbox nestling in-line with the four chunky pinions (**photo 4**). By moving a knurled ring I could select 'plain' forward or reverse motion, right- or left-hand ratchet motion, and right- or left-hand 'onward' motion in which the chuck would turn continuously while the drive wheel was pumped back and forth. Ratcheting is essential where there is insufficient room to turn the drive wheel through a full circle and this drill's gearbox makes an engineering marvel of the necessity.

I'd find myself running through the ratcheting options and gazing spellbound under the influence of its whispering gears, in the way I'd watch the front wheel going round on a bicycle – and similarly coming to grief. Because just as I'd been mesmerised by the glittering spokes of my old Raleigh tourer and ridden into a ditch, so I'd drift off course with this mighty drill. Although its weight was a help in urging the bit through tough material, the down side was that, when supported in a horizontal plane, my tired arms would sag and I'd bore a vertical slot instead of a round hole.

For most of my work, using this monster was taking a sledge hammer to crack a nut. This tool was more at home in a shipyard than in my front room.

Pocket-sized

They say good things come in small packages and that's certainly true of the drill I turned to next, the North Brothers Yankee 1530, because despite being literally pocket-sized, it also boasts a versatile five-way ratchet (**photo 5**).

Reading from the chuck end of the ratchet box the selections on this tool are: 'Plain', meaning the chuck rotates clockwise or anti-clockwise as the crank is turned similarly; 'LH Ratchet', meaning the chuck rotates anti-clockwise as the drive wheel is pumped back and forth; 'RH Ratchet', giving clockwise rotation with pumping; 'Double Ratchet', for continuous forward motion when pumping; and 'Lock', which immobilises the spindle to facilitate operating the chuck.

Taken together, the range of ratcheting options and compact size of the Yankee 1530 make it the ultimate tight access hand drill, able to get on with the job where other drills can't even get a look in.

Drill bits are notorious for playing hide-and-seek among the shavings but this

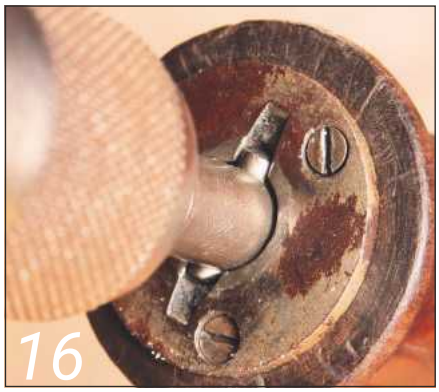
Tightening on the drill by turning the crank while holding the chuck firmly

Stanley 803 restored to use

Lee Valley brad-point drill points up to 6mm fit the 803's 1/4in chuck

Tidy holes bored in oak by the Lee Valley bits

Goodell-Pratt No.101 reciprocating drill designed for boat builders



Pins on the spindle engage with the travelling handle to ease using the chuck

The Goodell-Pratt 185 automatic drill is used one-handed

hand drill has a detachable hollow handle where frequently used bits can be housed (**photo 6**). Without the handle, overall length is a mere 16.5cm, so it really is a pocket-sized drill.

When some serious tool-thinning became necessary for a house move in 2014, I gave up the magnificent Millers Falls 97 with little more than a shrug, but the Yankee 1530 travelled with me under the driver's seat.

Then as I went around the new abode boring holes for a new generation of hinges and brackets, something changed in my relationship with this drill. Perhaps I'd been more careful with it while under the spell of its clever little ratchet, but under pressure of an extensive to-do list I began to find its operation cramped. With so little distance between the handles, when the turning handle reached the top of its arc, my thumb nail was scrazing the knuckles of my hand supporting the frame.

And then there was the ratchet gearbox itself (**photo 7**). I still valued the spindle locking facility but the tiny selector button was proving fiddly and most of its settings were proving redundant. The gearbox was fun if I was on a carefree journey through the wood to inhale the resiny air and admire the scenery of tumbling shavings, not caring when I arrived or if I found myself ratcheting along in reverse gear, but under the self-imposed deadline of how long the simple business of boring a hole should take, I needed a hand drill that would get me in and out with less fuss.

Goldilocks

Having dallied with the too large and the too small I found my Goldilocks in the common-or-garden Stanley 803 – a hand drill which feels just right (**photo 8**). Not only does it leave a clear centimetre between my moving thumb and stationary knuckle, but it has a steadying side handle that's useful when drilling horizontally.

And simple is as simple does: when I turn the handle clockwise the chuck follows suit, and ditto for anti-clockwise; that's the extent of the operation. As for changing

Eight bits are stored in the handle and the holes indicate their sizes

Spiral drive shaft, return spring and its wooden guide rod

Three parts cut out to make a tea towel shelf

Centre bit boring a hole to hang a tea towel

The tea towel holder installed

Boring a small sycamore log with a centre bit…

bits, there's no need for a gear lock: you cradle the drill with its side handle on your wrist and grip the chuck between forefinger and thumb while working the drive wheel forward or backward with your other hand – a technique I found illustrated in Stanley's 1958 catalogue, when the 803 cost 29/6d.

With its easy-turning drive wheel, rugged iron frame, nickel-plated bright parts and heavy-duty ¼in chuck, the Stanley 803 is a tool box classic and not hard to find – it's the hand drill equivalent of the Stanley No.4 bench plane in terms of numbers. Like the little Yankee 1530, it's also a double pinion drill, meaning there is an idler gear engaging with the top of the drive wheel to make for more balanced running.

For a user at a fair price, I'd suggest looking for a drill that's grown tatty only through lack of use such as the one I found, complete with cobwebs, having spent several decades hibernating in a garden shed. The original toffee-apple finish on the handles was flaky but some scraping and a wipe of boiled linseed oil brought the glow of solid beech to light as a pleasant alternative (**photo 10**). As to the machinery, there's little to go wrong besides excessive wear, which would be reflected in a floppy relationship between the drive wheel and pinions. This example only required cleaning, using a toothbrush to reach between the gear teeth. I didn't bother flossing (**photo 12**).

Birthday bits

With the drill restored to work again, whirring steadily as a nightjar, I felt the urge to give it a birthday present of some new drill bits. And if the name brad-point bit has the ring of a Hollywood movie star about it, so much so appropriate because these bits should be on every woodworker's A list.

I opted for Lee Valley bits (**photo 13**), which were supplied with their sharp ends embedded in a peelable gel, and for good reason – they are wickedly sharp, not only on the cutting lips and spurs but all the way up the flutes. The point locates the hole's dead centre so you can skip the step of using a bradawl – it's a bull's eye on the pencil mark every time, and an almost surgical operation as the spurs neatly circumscribe the hole and the bit burrows in like a rabbit with a ferret on its tail.

Since the metric bits are 'shanked to size' and the Stanley 803's chuck has a ¼in capacity, I bought the 3, 4, 5 and 6mm bits, which cover all my clearance and pilot hole requirements from screw gauge 4 to 12.

Push & pull

Besides the twist of the auger, the swing of the brace and the meshing of gears in a hand drill, there's yet another motion for making a hole in the push and pull of a reciprocating drill.

This example is a Goodell-Pratt No.101 from the 1920s and was designed with boat builders in mind (**photo 15**). The travelling handle houses a bronze nut, which rides in two oppositely spiralling grooves in the spindle, so that as the handle is pumped back and forth, the spindle is rotated (**photo 16**).

The compact mechanism lends itself to boat construction where there is often insufficient room to swing a brace, but this drill develops only a fraction of the brace's torque and the going gets distinctly difficult in tough timbers. Pins in the shaft engage with slots in the travelling handle to immobilise the chuck when changing bits.

More handy is the automatic drill or push drill whose party trick is one-handed operation (**photo 17**). The sleek nickel-plated Millers Falls No.185 shown here is solid brass underneath, so it hefts well despite its small size. Concealed within the slender tubes is a slickly engineered spiral mechanism (**photo 19**), which

… and enlarging the hole with a gouge…

… to make a dice shaker…

… or a pot for a hyacinth…

… or a play tube for a hamster

Boring nest holes for mining bees with the brace and auger bit

rotates the chuck clockwise on the push and anti-clockwise on the return, making the drill point cut in both directions. Surprisingly the return spring's guide bar is made of wood. Holes around the handle show the gauge of drill point contained within, and the points are dispensed through a hole in the rotating cap. Here's an old tool, which is as useful now as it was when made.

A red mason bee (*Osmia rufa*) attracted to nest in the garden

Get drilling

An introduction to woodwork often majors on the saw, plane and chisel but to engage the interest of children, I'd say 'get drilling!' Holes suggest any number of simple projects, and offer solutions to real problems. When Tom was on his home school year he made a bracket shelf to end a long-running battle with the tea towels. Two holes suspend the towels in use while those in waiting sit on top (**photo 22**).

Making wooden pots from branchwood is one of my addictions. With a few turns of the brace and some chiselling you can soon make something useful. When my daughter Annie presented me with a 1m long sycamore branch one Christmas, I thought, 'what a perfect home-grown gift', and put it to immediate use (**photo 23**). A dice shaker (**photo 25**) brought a pleasant woody rattle to our winter board games, a pot for a sweet-smelling hyacinth (**photo 26**) became our harbinger of spring, while another piece bored through made a play tunnel for Annie's hamster, Sid (**photo 27**).

Not forgetting it was the pesky wood-boring beetle which inspired me to bore a better hole, I occasionally repay my debt to the insect world by boring 6mm holes in wooden posts around the garden (**photo 28**), making nest holes for solitary mining bees, such as the red mason bee (*Osmia rufa*) (**photo 29**). Instead of tunnelling through our furniture these industrious creatures pollinate our crops – and if that isn't a good reason to get drilling then I don't know what is! WW

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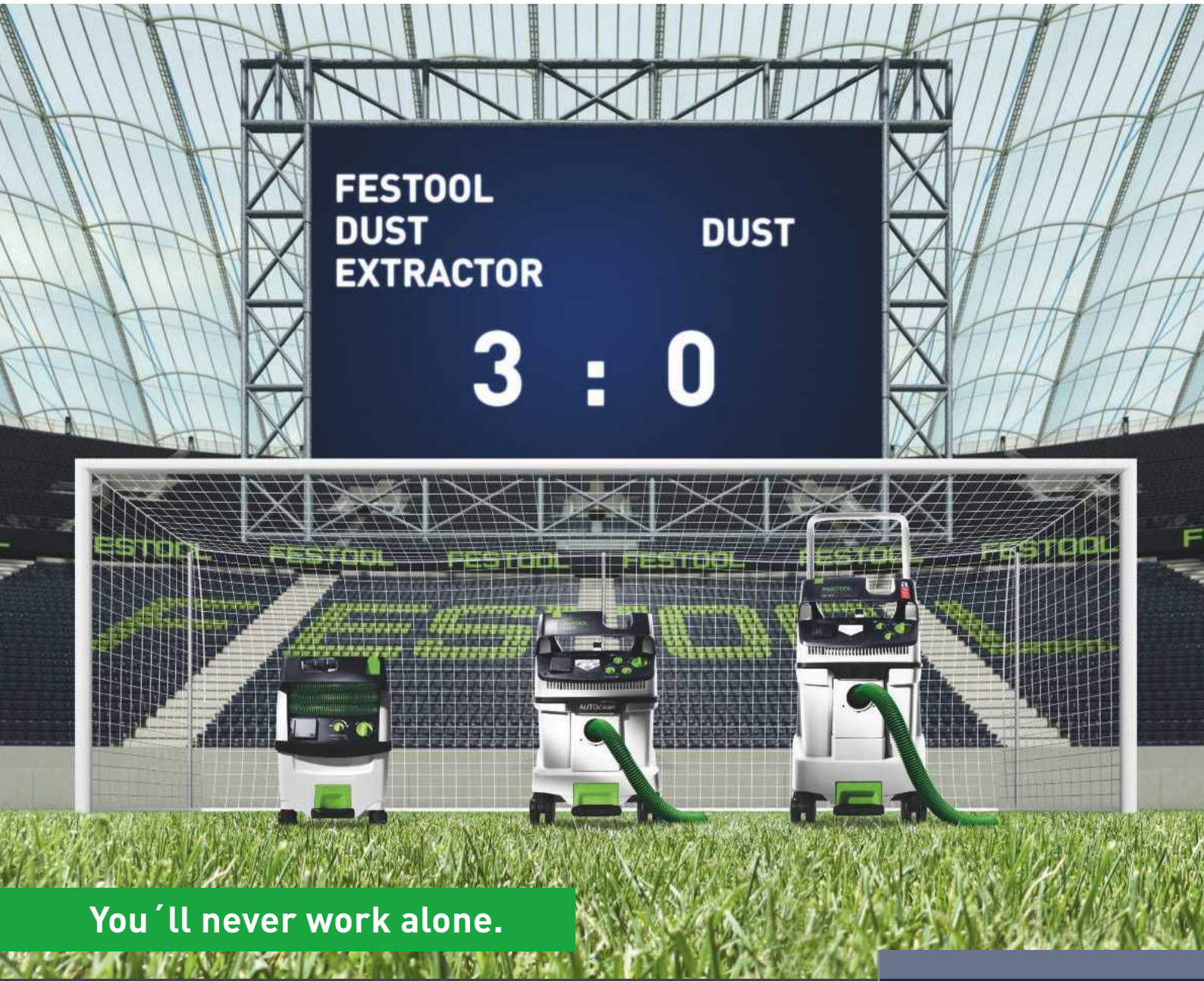

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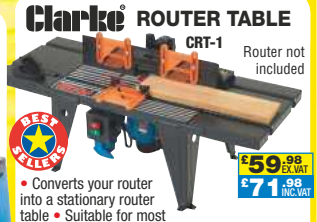

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In your own write...

Here are just some of the latest letters we've received since the last issue. Drop us a line on paper or via screen and keyboard to add your voice to the woodworking crowd; you might be one of the lucky few who will manage to get their hands on a coveted *Woodworker* badge!

The Woodworker & Woodturner

SNAIL MAIL OR EMAIL?

You can write to us at *The Woodworker*, MyTimeMedia Ltd, Suite 25, Eden House, Enterprise Way, Edenbridge, Kent TN8 6HF or send an email to **mark.cass@mytimemedia.com**

SCORES ON THE DOORS

Dear Mark,
Please find attached some photos of my latest venture: six sets of folding doors in oak, of which three are completed and installed, the other three being underway. Please do not take too much notice of the tidiness of the workshop. I started several weeks go, with waney-edged oak in the boule, 50mm-thick, rough-sawn. My wife is varnishing the frames and doors, so it's a joint effort. Hope you like the photos.
Regards,
John Topping

Nice job, John – *those doors look great and they're a nice colour, too. I like the dovetails on the frame; easily as good as a tenon in that situation (i.e. fixed in place to the walls). It's a great piece of joinery; there's nothing like making things for your own home.*

And if you think your workshop is in a bit of a state, you should see mine (or perhaps not!) Many thanks, and I hope to hear from you again.

Mark

John's folding doors in oak – a great bit of joinery!

PLUG CUTTER CONUNDRUM

Hi Mark,
As a result of the 'on test' article in September's issue, I purchased from Axminster a 10mm and 1/2in cutter as recommended. Not until I received them did the penny drop that my 'pilot hole/countersink' bits only made an (at best) 9.5mm hole for the plug to fit into, which of course it does not! Neither Axminster or Veritas do pilot hole bits to match the plug cutter plugs. The idea of the tapered plug cutter is to make a snug neat fitting plug, but if you are unable to make a 'matching' hole then the concept is lost. The on test article does not mention that side of things. A nice plug is no good without a matching hole. I know some plug cutters come as a 'pair', but the hole is only 8mm and their plug cutters seem to 'burn' rather than cut.

Any ideas and help would be very useful.
John Rice

Hi John,
My apologies for this omission; I can't think why I didn't mention it. Most people I know use a regular drill bit, an auger or a speed bit of a matching size; the taper on the plugs generally ensures a good fit.

My favoured bits are a 10mm spur tip, and a 1/2in spade bit; you just need to go through all of your drill bits until you find one that's the perfect match. **Mark**

Veritas' Snug-Plug Cutters, as tested in *WW* Sept

BANDSAW BLUES – ADVICE

Hi Mark,
I read Jason Townsend's letter with interest (see *WW* Sept), and would like to offer some advice. I note that he is using a 6mm-wide blade and trying to use it to resaw a 75mm-thick workpiece. A blade of this size is great for scrolling thin workpieces, but will drift off line on a thicker piece.

In my experience, to make a straight cut in this thickness you need to fit the widest blade your bandsaw will take. I use a 12mm-wide 3tpi blade in my bandsaw for this type of operation, and achieve a consistent width of cut over workpiece lengths of up to 1m, and as thin as 2mm on some occasions.

When setting up the blade, adjust the tension to allow around 3-5mm of sideways tension, then readjust to find the best tension through practice.

I agree with you, Mark – the quality of the blade can make all the difference. Throw away the blade that is supplied with your machine; it will be poor quality. I purchase my blades from Tuff Saws – see **www.tuffsaws.co.uk** – where you can find a great selection of bandsaw blades in a wide variety of sizes.
Kindest regards,
Rob Winter

Thanks, Rob – *that is sound advice, and I'm pleased to share it. It can be very frustrating at first, trying to resaw thick timbers, but immensely satisfying when you finally crack it!*
All the best, **Mark**

GET IN TOUCH!
Don't forget, we're always keen to see your photos, so please don't hesitate to send them in if you've snapped something of interest recently. Email me at the usual address: **mark.cass@mytimemedia.com**

A tight squeeze

Faced with the dilemma of hiding some unsightly loose cables, Michael Forster comes up with the clever idea of building a slimline hall cabinet

The brief – from Woman With Insight – was simple enough: find a way of tidying up our hallway – and in particular those untidy, long-standing 'temporary' electrics (**photo 1**) – hide the cables, house the telephone and wi-fi, organise the keys and don't narrow the already narrow hallway any more than absolutely necessary. Oh, and we need more light. Nothing complicated, then…

My answer was to hide the loose cables within or behind a slim display cabinet (**photo 2**). However, the bottom line may be that it's the most over-engineered length of cable trunking in a domestic dwelling.

The wi-fi router, power and telephone points are hidden in the top cupboard and the cables run behind the cabinet back. I also incorporated a key cabinet (**photo 3**) and somewhere to stow paper directories where they would be tidy but accessible. To keep the unit as slim – and the hallway as spacious – as possible, I turned the directories through 90° in a side-facing compartment (**photo 4**).

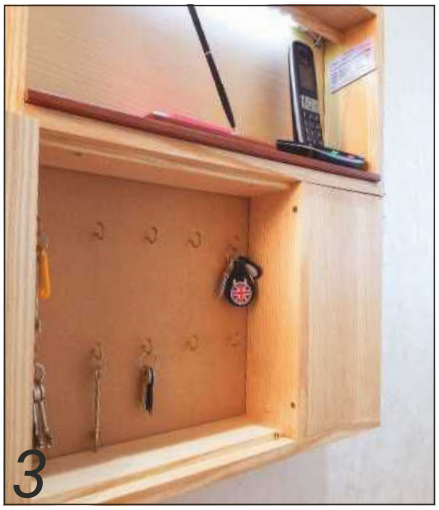
Carcass work

Exact dimensions obviously aren't critical and will doubtless be adapted to individual needs and circumstances, but some overall figures might be a useful starting point. My unit is 1,520mm high × 535mm wide and a slimline 120mm deep to allow the portliest of visitors past. The individual compartments, from the top, are 355mm, 500mm, 240mm and 342mm high. The rebate at the back is 20mm deep, providing a narrow cable void behind, and the doors are all 18mm-thick, while the display section framing is 50mm-wide. My preference would have been to make the unit in solid timber. However, I had some remnants of ash-veneered MDF which, once edged with solid, would form the vertical sides. They were cut to width and edged (**photo 5**) before I turned my attention to the shelves. As the surfaces would be hidden completely, three of the five could be plain MDF with edge lippings. The shelf forming the bottom of the display section would need either solid ash or veneered MDF as the underside is visible above the telephone, while the bottom shelf of all really had to be solid ash to show authentic end-grain at the directory slot.

So for the five shelves, I thicknessed two pieces of solid ash and three edge lippings to the same thickness as the MDF. The latter I made wide enough to extend beneath the doorstops so they would completely conceal the plain MDF (**Fig.1**).

My brief for this project was to hide a selection of untidy, long-standing 'temporary' electrics in our hallway

The solution was to hide the loose cables within or behind a slim display cabinet



There is also a handy key cabinet…

… and space for paper directories in a side-facing compartment

I had some remnants of ash-veneered MDF which, once edged with solid, would form the vertical sides. They were cut to width and edged

The top is vented via a gap at the back to allow any heat from the transformer plugs to escape

Housing joints

It's worth spelling out some detail about the shelves (in which term I include the top and bottom of the unit, making five in all).

- **Shelf 1** (the top), in plain MDF, is vented via a gap at the back to allow any heat from the transformer plugs to escape (**photo 6**).
- **Shelf 2** (top of the display section), can be in MDF and runs right to the back edge of the unit, providing a mounting for the French cleat (**photo 7**) – note the provision for cables to pass down through the back of the unit. This is the highest shelf that is actually housed in and so able to take the whole weight of the cabinet securely.
- **Shelf 3** (bottom of the display cabinet) aligns to the deep back panel rebate, leaving a clear void for the telephone cables to pass behind. It, too, is set in housings.
- **Shelf 4** (telephone shelf), can be in MDF and similarly aligns to the rebate. It is housed in on the left side, but secured to the bottom of the shorter right-hand panel with pocket screws.
- **Shelf 5** (bottom of the unit), in ash, is secured to the left panel with pocket screws. The right-hand end floats free, forming the bottom of the cubby hole, supported by screws into the vertical divider, fixed front panel and the substantial back panel.

The back panel for the key cupboard needs to be thick enough to take the hooks – so another remnant of 18mm MDF was used up (10 or 12mm would be more than adequate according to what's lying around). You might prefer this panel to be veneered, but for this purpose I am quite happy using the plain MDF rather than buying more veneered board. The back panel needs a lipping, similar to the sides and shelves, on the exposed edge behind the directory cubby.

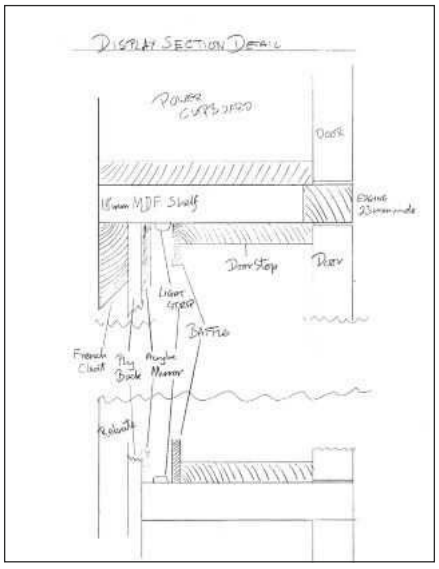


Fig.1 Display section detail

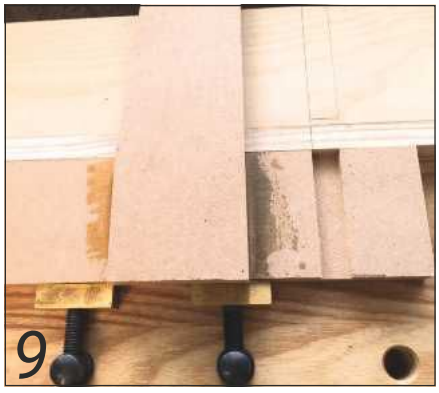
The top of the display section runs right to the back edge of the unit, providing a mounting for the French cleat

Lighting

This needs to be planned in thoughtfully so that it is integrated and not an afterthought. I used the Saxby Chop LED Display Lights – four slim strips of plastic, 300m long, each house a row of lights, and running off a transformer plug so simple to connect up. I decided to fit two in the display cabinet, top and bottom. Shining up and down, they were much less likely to catch the eye directly of people passing by than if they shone from side to side – those little LEDs are remarkably bright. The third one I placed above the telephone shelf, and that left one apparently redundant – but remember I wanted to maximise the light in the hallway, so I attached the fourth light to the top of the unit to serve as a concealed uplighter, reflecting light off the white ceiling.

In the display cabinet, setting the lights top and bottom also avoided interfering with the glass shelves. All the lighting strips except the top one are concealed behind

For the housings, I used a hand-held router with an 18mm straight cutter, run against a simple T-square guide



Positioning the T-square is then simplicity itself

simple baffles so that the glow is seen but not the source.

Construction

Having edged the veneered MDF sides, I turned to the housings and rebates. For the housings, I used a hand-held router with an 18mm straight cutter, run against a simple T-square guide (**photo 8**). These are quick and easy to make, so I have accumulated a number, each appropriate to a specific router bit size. Positioning the T-square is then simplicity itself (**photo 9**).

The housings are stopped short of the front, and the relevant ends of the shelves notched at the front edges. This needs to be precise to avoid unsightly gaps at the front edges of the unit. Squaring up the routed housings is easily accomplished with a sharp chisel (**photo 10**).

The back rebate is 18mm wide, to accommodate the 6mm ply back plus the French cleat wall mounting and leave a void for those concealed loose cables (see **Fig.1**). It runs from the top of the display section to the bottom of the unit (the power cupboard at the top is backless, which allows for access to the power and telephone points).

Initial carcass glue-up

Begin with the two sides, and shelves 2 and 3, which are both housed in at both ends (**photo 11**). This sets the basic structure, ready for the fitting of the other shelves after the glue has gone off and the thing is easy to handle.

Shelf 1 can then be added. I have a pocket screw jig (**photo 12**), which has proved a fantastic investment having facilitated the creation of quick, secure joints on a wide range of projects. For assembling the joint, I find a scrap piece of MDF to brace against very useful (**photo 13**)

Before adding shelves 4 and 5, it's a good idea to cut the expansion slots (**photo 14**) for the screws that will secure the cubby hole front panel. It's important to make this provision for movement across the grain. Once this provision is made, shelf 4 can be fitted, gluing the housing joint up and pocket screwing the opposite end. The key cupboard and cubby hole are now completed by screwing together. The upright partition separating the key cupboard from the directory cubby is simply screwed in from above and below – the screw heads will all be out of sight when the project is complete. Screwing on the edged MDF back panel completes and further strengthens the structure.

Door stops & light baffles

The cabinet doors need something to close against, and so I added 10mm-thick strips, which also serve to cover the MDF surfaces. Attached to the back of those in the display section are the baffles that hide the lighting strips (**photo 15**). Do remember that the backs of these will be visible in the mirror and should therefore be cleaned up and finished – a point that I overlooked, resulting in more work dismantling the cabinet after assembly to attend to it.

Another baffle will be needed under the shelf above the telephone; this can simply be glued along its edge and clamped in position.

At this stage, I also drilled the holes for the glass shelf supports in the display section, setting them out with dividers and using a 5mm drill with a piece of masking tape for a depth marker (**photo 16**).

Wiring

Routing the wiring is quite simple to do but perhaps less so to describe – but this is a good time to make provision for it. The cables that need to be considered

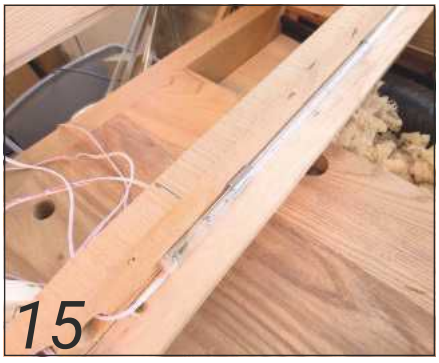
Squaring up the routed housings is easily accomplished with a sharp chisel

Begin with the two sides, and shelves 2 and 3, which are both housed in at both ends

Shelf 1 can then be added using a pocket screw jig

For assembling the joint, I find a scrap piece of MDF to brace against very useful

Before adding shelves 4 and 5, cut the expansion slots for the screws that will secure the cubby hole front panel



Attached to the back of 10mm-thick strips in the display section are the baffles that hide the lighting strips

are those for the telephone and lighting that pass behind the thin ply back.

The two cables to the telephone, running from the sockets at the top down to the telephone shelf, need to pass through a hole in the top shelf into the void behind the back panel. I drilled 16mm holes at each end of the shelf, allowing the cables to bypass the French cleat that would be used for hanging the cabinet. These cables then emerge through a hole in the back panel, which will be hidden by the telephone itself when in place. The wi-fi router is in the same cupboard as the power and telephone sockets, so that's simple – any excess cable can just be pushed through the same or another hole so that it hangs down in the cable void.

Lighting cables

The supply socket for the lighting is lower down on the wall beside the cabinet (**photo 17**) to make it more accessible for controlling the lights. The main cable enters through the hole in the side behind the back panel and runs up through one of the same holes to the supplied junction box, which just sits in the top cupboard. From there, individual feeds run back down to the light above the telephone shelf and the lower light in the display section (routed via the telephone space to avoid drilling the mirrored back).

The display section upper light is fed through another hole, which passes into the cabinet between the back panel and baffle. Finally, the feed to the top uplighter simply uses the ventilation gap.

With all this now in place, the lighting strips can be fitted, using the spring clips provided, and following the instructions supplied.

Back it up

The back panel is in two parts. The back of the key cupboard has already been mentioned, and above that is a thin (6mm) ply panel. Of this, only the area behind the telephone space is visible, so, while I wanted to use veneered ply, purchasing a full sheet was really uneconomic, so I settled on using iron-on veneer.

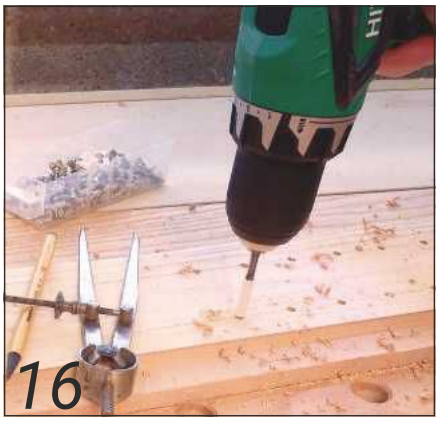
With the ply cut to size, I ironed on the veneer over the exposed area (**photo 18**), following the instructions to smooth out any air bubbles (**photo 19**). Then I glued the French cleat at the top, just to stiffen the panel and hold it flat.

The back panel needs two access holes for cables: one for lighting, at the top of the telephone space, and one for the telephone wires near the telephone shelf itself.

The acrylic mirror in the display section is glued to the back panel with mirror adhesive. This is available from good DIY stores and doesn't attack the silvering on the rear. I then dropped the whole back assembly into place, screwed through the shelf above to secure the cleat properly, and then screwed the back panel to the cabinet (**photo 20**). That's the cabinet carcass completed.

Doors

For the solid doors, and the cubbyhole front panel, I chose to use panels of solid ash – a simple process in itself but one that requires some care to minimise seasonal movement. This means either using quartersawn timber or jointing up from several boards (**photo 21**), alternating the end-grain to balance it out. I'll be saying more about this in a forthcoming article on this subject. If a simpler approach is preferred then there are various other options, including veneered MDF doors or simple Shaker-style frame-and-panel styles.



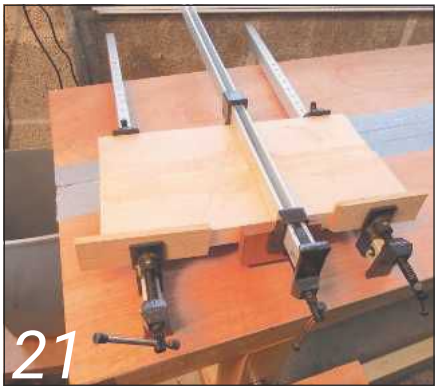
Drill the holes for the glass shelf supports in the display section

The supply socket for the lighting is lower down on the wall beside the cabinet

With the ply cut to size, I ironed on the veneer over the exposed area…

… following the instructions to smooth out any air bubbles

The final step for the carcass build is to screw the back panel to the cabinet

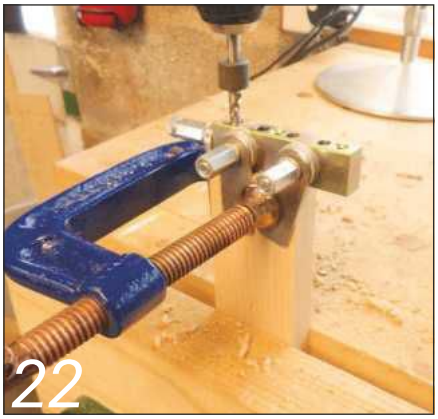


I chose to use panels of solid ash for the solid doors and the cubbyhole front panel

Once the cubby hole panel is ready, it can be screwed into place using dome-headed screws to allow movement (**photo 14**) and the telephone shelf's contrasting overlay added to cover the screws. This is just a piece of contrasting timber, sized to overhang the top of the key cupboard by a few millimetres and with the edge slightly rounded with a hand plane. You'll need to relieve the underside to allow it to sit over the domed screw-heads.

The glazed door is a simple dowelled construction, quickly made using my Jointmaster jig (**photo 22**). The rebate for the glass can be cut on the router table before assembly (remembering to stop the stile rebates short of the dowels) or, more simply, afterwards using a bearing-guided cutter in a hand-held router (**photo 23**). Either way, some squaring up of the corners with a chisel will be necessary.

Once prepared, the doors are shot in using the usual method, planing each edge in turn until the gaps are parallel and equal. I used 1p coins in the time-honoured way to get a 'penny joint' all round. The doors are held closed with rare-earth magnets – see sidebar at the end of the article for supplier details – (**photo 24**), with steel screws driven into the edges of the door stops serving as adjustable keepers.



The glazed door is a simple dowelled construction, quickly made using my Jointmaster jig

The rebate for the glass is best cut afterwards using a bearing-guided cutter in a hand-held router

The doors are held closed with rare-earth magnets

A corresponding batten on the wall serves as a hook

The completed hall cabinet in situ

Wall mounting

Mounting a heavy cabinet on the wall, if like me you work alone, presents obvious issues about holding the thing in place while at the same time marking and drilling the wall. Those issues are easily avoided, though, using a French cleat under shelf 2 (**photo 20**) – a very effective and secure method that also allows for easy removal at any time, should it become necessary.

The French cleat is a simple batten, bevelled at somewhere between 30 and 45°, screwed to the underside of the highest housed-in shelf behind the back panel. A corresponding batten on the wall serves as a hook (**photo 25**). It's a simple and non-strenuous task to screw the batten on the wall nice and level, and then your average out-of-condition pensioner (or even, at a push, yours truly) has no (well, relatively little) trouble lifting the cabinet into place and simply letting it settle firmly onto the cleat. It's a wonderful thing, gravity.

I prepared the cleat as one piece, to ensure a complementary angle, first thicknessing it to fit snugly into the rebate behind the back panel – a very quick, simple solution in every respect.

With the area prepared by the electrician and decorator, all that was left was to lift the unit into position, connect up and furnish the display cabinet with some appropriate contents. So we now have a tidy hall to welcome us and our visitors to our home. WW

SOURCING THE BITS & BOBS

The additional items needed for this project are easily sourced from a combination of the internet and local DIY stores.

Acrylic mirror – www.simplyplastics.com – this can be supplied as needed

LED Saxby Chop cabinet lighting – www.lumen8.co.uk

Hinges and handles – www.ironmongerydirect.com

Glass for the display door and shelves is best sourced from a local supplier. Tell them what you want it for as there are complex regulations governing glass in domestic dwellings

Rare-earth magnets – www.axminster.co.uk

Iron-on veneer – www.woodveneer.co.uk

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Keepsake box

This handsome, easy to build router project by John English features mitred mouldings, decorative splines, brass hardware and a quarter-matched bird's-eye maple lid

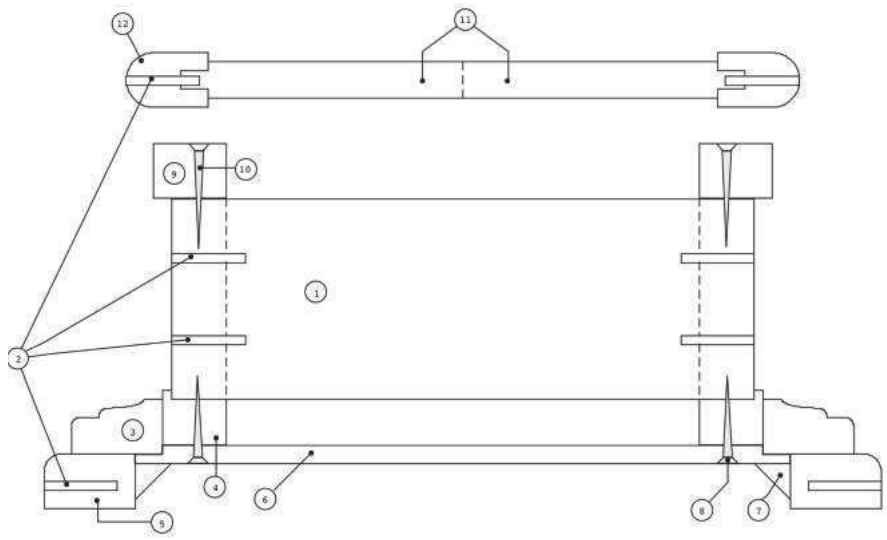
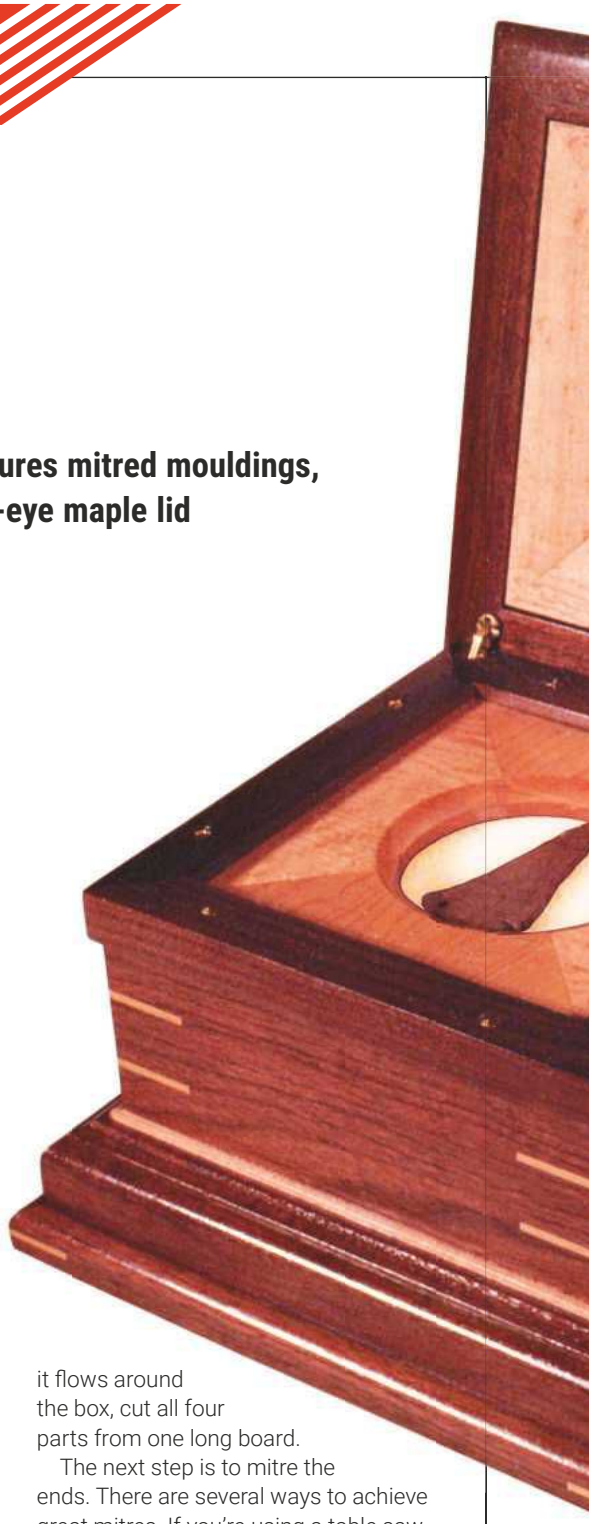


Fig.1 Keepsake box



This project was built to house a customer's 2,000-year-old artefact, but my wife suggested that it would also make a wonderful repository for old love letters, photographs, jewellery and other personal items. If your passion is cigars, or you know a tobacco aficionado, you could also line the inside with Spanish cedar to create a humidor.

The box is essentially a collection of mitred frames that are stacked one upon the other, so it's not very complicated to build. I used walnut for the mouldings, figured bird's-eye maple for the lid panel and soft maple for the mitre splines.

Cutting corners

The first step in construction is to cut the walls to the dimensions shown in the cutting list. To match the grain pattern as it flows around the box, cut all four parts from one long board.

The next step is to mitre the ends. There are several ways to achieve great mitres. If you're using a table saw or mitre saw, think about this: the blade is never going to be absolutely 45°. The angle will be a tiny bit fat or thin – let's say it's 44.9°. If you make the first cut at that angle, and then flip to the other side of the blade to make the next cut, the second part will have a 45.1° angle. Add them together and they come to a perfect 90°. Of course, you have to be pretty close to 45° to begin with, or the cumulative error will be too much to allow the box to sit square.

Another great way to get perfect 45° angles is to use a chamfering bit (or even a locking mitre bit) in the router. This needs to be done by clamping a straightedge to the board as a guide, and taking light passes. You can remove most of the waste on the saw first to save time, and just clean

CUTTING LIST

Box sidewalls (4)	20 × 70 × 203mm	Dark
Splines (16)	3mm – trim to fit	Light
Ogee moulding (1)	20 × 32 × 1,016mm	Dark
Rebate moulding (1)	22 × 20 × 914mm	Light
Lower base moulding (1)	32 × 20 × 1,016mm	Dark
Bottom panel (1)	6 × 229 × 229mm	Light plywood
Lower frame screws (8)	No.6 × 32mm	Brass
Angle fillet (1)	12 × 12 × 914mm	Light
Top frame moulding (1)	25 × 20 × 914mm	Dark
Top frame screws (8)	No.6 × 38mm	Brass
Lid panel (1)	12 × 197 × 197mm	Light, figured
Lid moulding (1)	20 × 32 × 1,016mm	Dark
Hinges (2)	10mm cylinder	Brass
Foot pads (4)	20mm diameter × 6mm	Felt

up with the router. If you simply chuck the bit in the router table and rely on the fence, the edge will give a little as it gets thin and this can be both annoying and even a little dangerous.

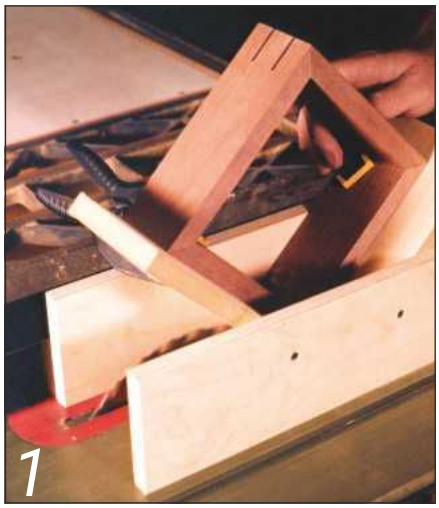
Dry-fit the sides and when you're happy with the mitres, apply glue and clamps. This is such a small box; there's no need to reinforce the joints with mini-biscuits or splines, but it does require a good coat of glue, as all the glued surfaces are end-grain. Be sure the assembly is flat and square as you apply pressure. Clean up any excess glue using a damp, but not wet, rag. Allow the assembly to cure overnight and then give the frame a thorough sanding, being careful not to round the corners.

Grooving for splines

The decorative splines add beauty and even a little strength to the frame, and they're easier to install than one might think. The key is a simple jig that runs across the table saw (**photo 1**), guiding the workpiece through the blade as it cuts 3mm wide slots (or narrower, if you're using a thin-kerf blade). It's just two sidewalls with a 90° bed set at 45°. Once you've used the jig on this project it will come in handy on others, so you might want to make the bed a little wider than the parts being milled here. Be sure there are no screws anywhere near where the blade will travel.

To use the jig, begin by marking the mitred frame where you'd like the splines to appear (see **Fig.1**), then snug the frame to the side of the jig that is closest to the fence and secure it with a couple of spring clamps, as shown in the photo. Slide the jig against the fence, and move the fence and jig left or right, so that the blade lines up with your marks. Remove the jig and raise the blade close to the desired height (not all the way up yet), then turn on the saw and make the first pass with the jig empty – no mitred frame on board – to see where the blade is cutting through the bottom of the jig. This will help you set the correct blade height. With the saw turned off, place the mitred frame in the bed of the jig, with one edge touching the blade. You'll be able to slide the jig back and forth and see exactly how deep the cut will be in the mitred frame. You want to go almost all the way through the frame, but still leave enough material so the splines don't show on the inside.

Once you're satisfied with the setup, slide the jig back from the blade, check everything again, then carefully make the two cuts in each corner. You can leave the fence in place and just flip the work to make the second cut. And you can of course make the spline grooves wider by moving the fence before making a second set of passes.



To cut the decorative splines, use a simple jig that runs across the table saw

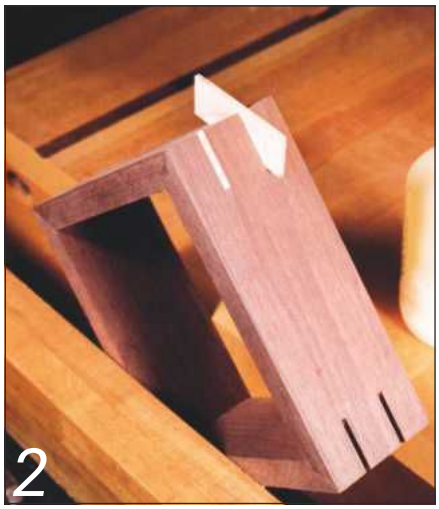
Making splines

To make the splines, you'll need some 25mm-wide strips of a light-coloured species, such as apple or maple that are just a tiny hair thicker than your grooves. Rip these strips from a 25mm-wide board, with the board on edge as it goes through the table saw blade. Clamp the strips to a flat surface and remove the blade marks with a sanding block. Dry-fit the strips in their slots in the mitred frame as you sand, stopping when their thickness is a perfect fit. If you have access to a planer/thicknesser, secure the strips on a thicker board with two-sided tape to reduce them to the perfect thickness. On the bandsaw, or using a hack saw or fine dovetail saw, cut the strips a little bit longer than their final dimensions. Don't try to cut such small parts on a table saw or chop saw.

Glue them in place (**photo 2**): a gentle tap with a mallet will seat them. After the glue dries, trim most of the waste on the bandsaw and then plane and sand the splines flush with the sidewalls.

More mitred frames

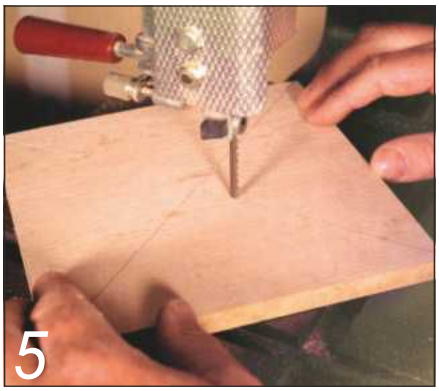
The base of this box is comprised of two mitred frames set on top of each other. The top frame consists of two simple mouldings that are milled separately and then glued together before being mitred to length. The first of these (see 'ogee moulding' in cutting list) is milled from 75mm-wide stock and gets an ogee profile routed into each edge (**photo 3**). This is done in several light incremental passes on the router table, to deliver a clean cut, then it's ripped down the middle to create two separate lengths of moulding. If you have a router bit that is close to the decorative profile I used,



Glue the splines in place: a gentle tap with a mallet will seat them

Rout an ogee profile into the edge of each mitred frame

Face glue the two parts of the base together, making sure that the top of the rebate is lined up with the top of the walnut moulding



Start with two 12mm-thick bird's-eye boards that are 203mm square, and then draw diagonal pencil lines across the top of each. Use the bandsaw to cut along these lines

that'll work fine. The second half of the base (see 'rebate moulding' in cutting list) is milled from a length of maple. This is simply a rectangle with a rebate milled along the top face (see **Fig.1** for dimensions). The easiest and safest way to mill a rebate on a thin moulding is to cut it on the edge of a wide board on the table saw, and then rip the moulding to width from the wider board afterwards.

Face glue the two parts of the base together, making sure that the top of the rebate is lined up with the top of the walnut moulding (**photo 4**); this will leave a small, square, light-coloured tongue on top of the completed assembly. After the glue dries, mitre this compound moulding to fit around the bottom edge of the sidewall mitred frame that you built earlier, and then glue and clamp it in place. Sand the inside so the sidewalls and moulding are flush.

The second part of the base is just ripped to the dimensions given in the cutting list, mitred to length and glued up as a simple frame.

After the glue on the corners dries, sand the frame, then use your splining jig to create slots in the corners for maple splines, and glue these in place. After this glue dries, trim and sand the splines just as you did before, then chuck a 6mm radius roundover bit in your router and profile the top edge of the frame. Looking down from the top to make sure it is centred, glue and clamp this subassembly to the bottom of the box.

The bottom panel is a square of 6mm light-coloured plywood. Trim this panel so it is about 1.5mm undersized in each direction; this will allow the hardwood elements around it to move slightly as they adjust to changes in humidity and temperature. Rout a rebate along its top edge (see **Fig.1**), then secure it in place with screws that are driven through pre-drilled, countersunk holes. You can leave it thus, or go a step further and rip a small angle fillet from some scrap maple to secure it. This is just a 45° cut on your table saw on the edge of a wider board, which is then trimmed to width. Sand the fillet and glue it in place. It will act as a glue block and add some strength to the assembly.

The last frame on the display box body is the top frame moulding (see cutting list). Aside from its decorative merits, this mitred frame provides a wider base for installing the lid hinges later on. It can be cut from a single length of wood. Mitre the moulding to fit, then apply glue and a band clamp to assemble the frame. After the glue dries, lightly sand the frame and break its edges, and then attach it to the top of the box with a thin line of glue and eight brass screws. Pre-drill and countersink for these screws.

The lid panel

The lid is a framed decorative panel that picks up on the mitred theme. If you're not comfortable making the mitres and doing the joinery, then by all means choose a piece of figured or veneered plywood, or even a marble tile or a piece of thick glass that is cut to the correct size. You could even frame a photograph under glass here. It's an opportunity to be creative and make something truly personal.

The lid panel that I built is easier to create than one might assume. It's a quarter-matched panel, made up of four triangles with grain running parallel to their longest edge. Start with two 12mm-thick bird's-eye boards that are 203mm square, and then draw diagonal pencil lines across the top of each. Use the bandsaw to cut along these lines (**photo 5**). I used a 6tpi 6mm blade with no set, but most sharp blades will be adequate. Each square yields two triangles with vertical grain, and two with horizontal grain. If you decide to build a second box, save the offcuts and you can create a second lid panel where the grain runs from the edge to the centre. Or you can do that one now, of course.

These triangles are a little oversized for now. True up all eight of their short edges by sanding them on a disc sander (**photo 6**), or use a stationary belt sander with a fine grit. Dry assemble the panel as you work: the sander will eventually yield a perfect fit along the angled edges. If an accurate sander isn't available, you can secure them to a larger board or bench-top and clamp on a fence to gently trim the edges with a bearing-guided laminate trimming bit chucked in your router.

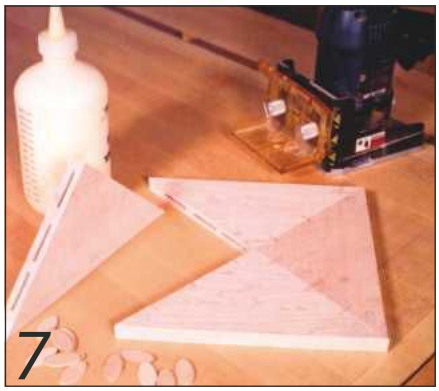
To align the parts during glue-up, use thin shop-made plywood splines or mini-biscuits (**photo 7**). When everything fits perfectly, glue and clamp the lid panel together, making sure it's flat. After the glue dries overnight, trim the panel to fit. The easiest way to do this is on the bandsaw, followed by a sander, then set up your router to form a tongue on all four edges (see **Fig.1**).

Complete the lid

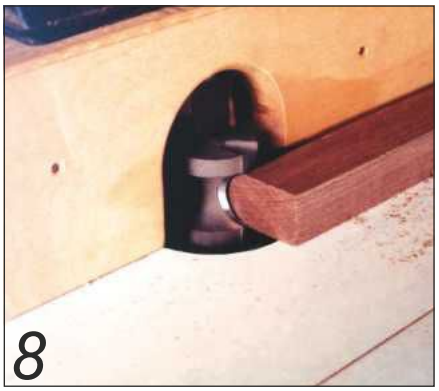
Next, rip the frame elements to size. The outside edge of the lid is bull-nosed, and you can certainly create this profile by using a roundover bit in the router table, but I prefer to go with a bull-nosed bit (**photo 8**) that mills the top and bottom at the same time. If you're using a roundover bit, be sure to use a fence to guide the workpiece, and don't rely on the bearing. If you make the first cut with a bearing-guided bit, you'll remove the bearing surface for the second cut and the two arcs won't align. Make several passes, to avoid stressing the cutter and/or the workpiece.

Stay on the router table and install a straight bit to plough a groove in the inside

True up all eight of their short edges by sanding them on a disc sander



To align the parts during glue-up, use thin shop-made plywood splines or mini-biscuits



A bull-nosed router bit mills the top and bottom at the same time

face of the moulding (for the panel, or glass). Use a couple of push-sticks when milling short parts so your fingers stay clear of the bit.

Install the panel in the frame, but don't glue it in place because it needs to move to accommodate changing humidity. The fit should have about 0.7mm of free play all the way around. Glue and clamp the mitred frame together and after the glue dries overnight, sand the frame. Use your splining jig to create slots for the mitre splines, and then glue the splines in place. Trim and sand the splines after the glue dries, and you're ready for some hardware.

I chose hidden barrel brass hinges for this project because of their low profile. As the lid is cantilevered over the box sides, more traditional butt hinges would have been a possibility, too. The ones I used are very inexpensive and they have an added appeal: brass hinges, in combination with the eight brass screw heads on top of the box, lend the case an air of antiquity and grace. Apply strips of masking tape under the lid, centre the lid on the box, and then use a pencil to mark the box location on the masking tape strips. From this, you can determine and mark the best locations for the hinges. Follow the manufacturer's instructions for installing the hinges. I also cheated a little: I left the hinges about 1.5mm proud of the surface on the lid, so they would never bind.

Finishing the box with a satin or semi-gloss will further impart a sense of antiquity. I used four coats of clear lacquer, rubbing with steel wool between coats to gain a smoother surface. You can apply lacquer right over the brass screws and hinges: the lacquer will stick to them and actually help prevent tarnishing. I also stuck four small felt pads on the bottom of the case, to protect any surface upon which it is placed. WW

The completed box should look something like this

HOUSING AN ARTEFACT

This box was originally built for a friend who owned some land in Wisconsin. His father had been out walking the property and came across a 2,000-year-old spearhead. Its pedigree, confirmed by the Minnesota Historical Society, is impressive: it had been fashioned from Knife River flint around the time of Christ, and had been carried from the vicinity of present-day Beulah, North Dakota to Somerset, Wisconsin – a distance of some 500 miles. This was before the Conquistadors introduced horses to North America so a hunting or war party actually walked the distance. Of course, as the Lakota (Sioux) were nomadic, the spear could have made the journey over several years, or even generations. To accommodate this unique treasure, I installed a small lamp in the box with a piece of translucent milk glass above it. I then made another mitred frame (using the offcuts from the lid) and cut a circle in it to create a repository for the artefact.

The completed keepsake box, shown opened and closed. You can see the circular section, which houses the ancient spearhead. The contrast between the two timbers is very striking

STEADY AS SHE GOES

Niall Yates takes us through the steps for making your very own home-made lathe steady

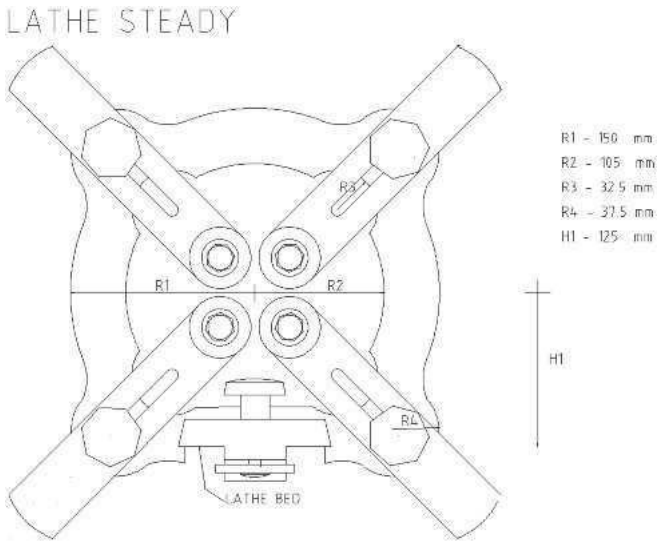


Fig.1 Lathe steady

When it comes to obtaining a lathe steady for turning hollow vessels, there is not a great deal of choice available. The problem faced by manufacturers is the sheer variety of lathes out there, each with its own idiosyncrasies. Those fortunate among us can purchase units off the shelf; the rest of us have to find our own solution. Here is a version I made, which with simple modifications, could be adapted to fit most lathes.

Wheels mounted on the aluminium arms

Design considerations

The first thing to consider is the height of the lathe centre above the bed. This dictates the largest possible diameter of any turning carried out on the lathe and is shown as H1 on the diagram (see **Fig.1**). When in use the frame of the lathe steady restricts this diameter, as do the wheels and the fastenings to the lathe bed.

When choosing any particular design, one has to try and maximise the turning diameter, while keeping the structure as strong and as safe as possible.

With the design illustrated, the turning diameter is just under twice the radius R2, and at 190mm I feel this is an acceptable compromise.

A second consideration is the type of lathe bed. In my own case I have a Union Jubilee lathe; this has a flat bed with a 50mm central gap, and 38mm of bed to front and back. More importantly, this is arranged symmetrically below the lathe centre and is not offset either forwards or backwards. Therefore this did not present me with any great difficulty when fixing the steady in place. Of course, other lathes have different bed designs, probably the most common being that formed of two round bars. It should be easy enough to adjust the design shown to accommodate these variations.

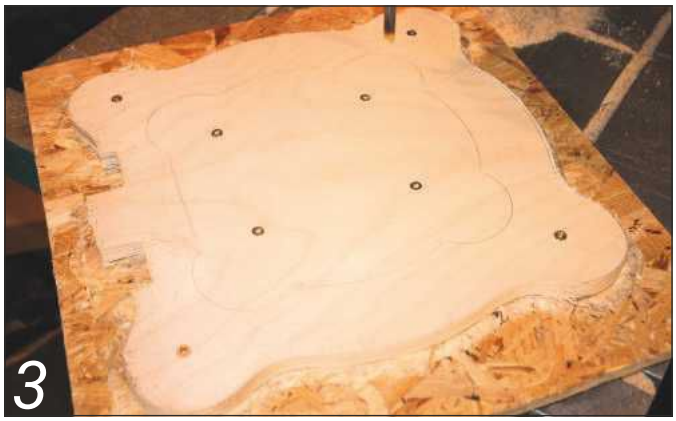
The diagram shows the layout for the steady with the method of fastening that suited my lathe. You will note that the shape of the frame is of a modified square and I have chosen to use four wheels. The reason for using the square layout is that it enables me to tuck the wheels into the corners, which in turn allows me to use slightly larger wheels and to add a little more to my maximum turning diameter.

Other steadies I have seen make use of triangular or circular frames, but on balance the design I have chosen seems to make more sense.

Safety considerations

Safety is an issue when fitting things to a lathe. As a woodworker it was a lot easier for me to use wood to make the frame, which I chose to construct using three layers of 12mm birch ply. This gives a very robust framework. However, for the sliding arms I opted for 50 × 6mm aluminium bar, which is a lot stronger than its equivalent in ply and without the breakout. Everything is firmly fastened with 10mm diameter bolts,


OSB base with template mounted


Ply blank being routed on the template

which gives the steady a very solid feel. If you are considering making the steady a lot larger, it would be well worth upgrading the size of the components.

The making

Having taken delivery of the main components that I ordered online, I set about marking out the sliding arms on the length of aluminium. I left a small amount for waste between each arm, but left them uncut before routing the 10mm slots on the overhead router. Make sure these are exactly central to the bar as any inaccuracy can cause problems later on.

Aluminium can be cut with a router fairly easily, but it does need lubrication. There are proprietary waxes to suit but WD40 works just fine. You will also need to stop frequently to clear the swarf with a brush (not your hand). Eye protection is also essential here.

A hand-held router can be substituted if the work is held down firmly and a template is used with a bearing to cut the slots – much the same setup you would use when routing the joints for a kitchen worktop.

The aluminium bar is now held in a metalworking vice and the individual arms are cut from it. When holding aluminium in a vice, it is best to wrap it in some cloth or paper towel to stop it being marked. The 10mm holes for the wheel bolts can be drilled on the pillar drill and the radiused ends of the arms marked and roughly cut with a hack saw. These are trued up to the marked profile on the disc sander.

Any machined areas can be brought to a finish with a smooth file and fine emery cloth. Rubbing with a fine grade wire wool in one direction along the length of the component will give the slotted arms a polished satin appearance.

The particular wheels I used were 50mm in diameter and 8mm-thick. They have a nylon outer rim formed around a ball-race with an internal diameter of 10mm. These I fastened to the arms with 10mm-thick bolts. The wheels are held proud of the arms with three washers used as spacers leaving the outer rims free to revolve. The whole assembly is held in place with a nylon lock nut.

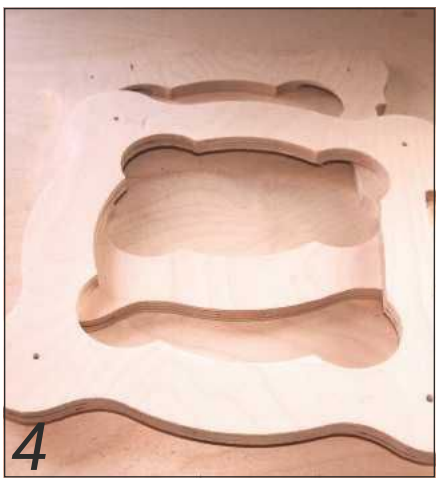
Since the bolts might not be able to be obtained in the exact lengths required, the excess material will have to be trimmed and the cut end cleaned with a file (**photo 1**).

The frame

The next stage is to make the template for the frame. This is marked out on 6mm-thick MDF. The internal curves in the corner that accommodate the wheel profiles I first cut with a hole saw, then using a hand-held router fixed to a radius arm, I cut most of the inner and outer circumference of the frame; the rest I cut with a coping saw as close to the pencil line as possible. The advantage of using thin MDF for templates is that you can easily finish to a line with abrasive paper. The template was then glued and pinned to a baseboard of OSB (**photo 2**).

I have a 10mm pin protruding from the bed of my overhead router, which lines up exactly with a 10mm cutter in the router above. Setting the template directly over this pin allows me to rout the faint ghost of the profile on the OSB baseboard. This makes it easier to position the plywood blanks before screwing them into place for routing.

Next I routed the first two of the three plywood frame sections. These were held down on the templated OSB bed with four screws in the central waste section and four additional screws just off the centres of the


Two sections of the routed frame


Third section of frame housed for arms


Part of the frame being glued

The foot is rebated on the radial arm saw

Two sections of the foot with plugs

Feet glued with frame in position

four rounded ears where the bolts holding the sliding arm will locate (**photos 3** & **4**).

The third section first needs to be housed in a saltire pattern to take the sliding arms. This was achieved with a hand-held router, using a template and bearing follower. The housings, where they form part of the frame, I temporarily filled with thin sections of MDF using a couple of spots of CA adhesive. This stops breakout when the inner and outer profiles are routed (**photo 5**).

After being sanded to remove their whiskery bits, the frame sections are glued up with a rapid urethane glue two sections at a time. It's a lot more difficult to line things up if you're juggling with lots of pieces and keeping things aligned is important at this stage (**photo 6**).

The profile of the frame can now be sanded using a drum sander set in the pillar drill.

Fitting the sliding arms

The holes for the 10mm coach bolts are now marked and drilled in the frame where they are to hold the sliding arms. This was completed using a pillar drill to keep the holes vertical and true.

Everything needs to be adjusted so that the arms slide easily in their housing, the bolts slide easily in their holes, and the sliding arms do not bind against the thread of the bolts. A combination of sanding, filing and reaming out the holes will be needed to make this happen. A square profile has to be filed at the top of the drilled holes in the ply frame to accommodate the coach bolt and allow its head to seat flush.

Fitting the frame to the lathe

The frame can now be fitted to the lathe, making sure that it sits vertically and square to the bed. Any small radii on the base left from the routing will have to be filed square to achieve this.

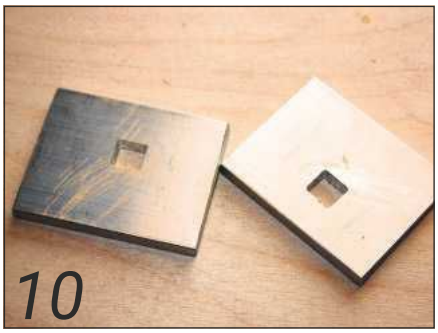
The foot is now made. This was machined as one piece on the radial arm saw and divided in two (**photo 7**). For this I used maple, though any firm hardwood is suitable. Two holes are drilled for the bolts that hold the feet to the lathe bed. Four holes are counterbored to accommodate fixing screws complete with plugs, which hold the feet to the frame. These holes are offset so that the screw positions do not clash (**photo 8**).

The frame is positioned on the lathe bed, which is protected with masking tape and the feet are screwed and glued in place. The plugs are glued and when the glue has set they are finished flush and the whole assembly is sanded to a finish (**photo 9**). The frame can now be varnished or sprayed with a cellulose lacquer to keep it clean in use.

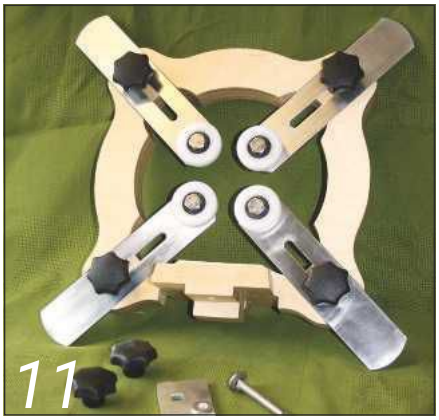
And finally…

The final stage is to cut the two aluminium plates that hold the frame onto the lathe bed. These are cut and filed to slide easily in the housing on the lathe bed. The holes to hold the coach bolts are drilled and filed square. The plates are filed, sanded and polished with wire wool (**photo 10**).

All the elements are now assembled with the 10mm star knobs used in place of nuts to hold the sliding arms and the lathe foot (**photo 11**). The steady rest is then ready to be put to use (**photo 12**). WW



Plates for holding the steady to the lathe bed



The completed lathe steady

The lathe steady in use

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WARRANTY 3 THREE YEARS

Perfect patio pair

This pair of simple folding chairs are ideal for outdoor use but are equally at home in the conservatory. Ken Jones takes us through the steps for making them here

Having been caught out on several occasions with insufficient chairs in the conservatory or patio, I decided to do something about it. Not wanting to crowd the area further, I concluded that the best solution would be to make a pair of folding chairs that could be stood against the wall when not needed.

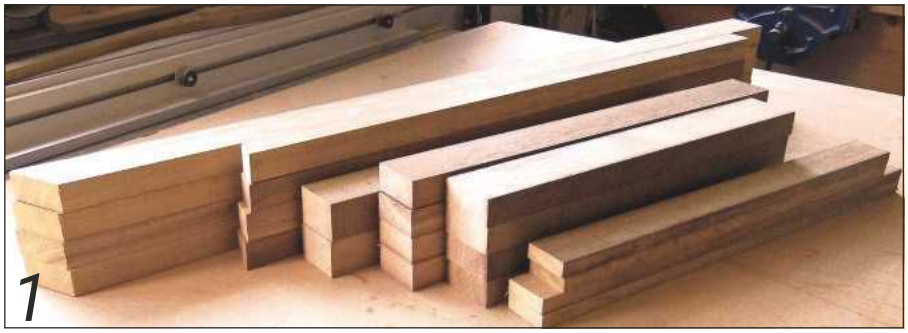
A simple stacking chair that was popular some years ago seemed to fit the bill. These chairs were usually made of beech, but as I had some iroko offcuts, I thought that I would use these to make them.

Iroko is a tough, resistant timber. Giving them an oiled finish means that a drop of summer rain won't do them any harm.

Preparing parts

Having set out a rod, I began to cut out and prepare the parts for the frames (**photo 1**). At this stage I didn't cut the seat slats, preferring to wait until the seat frames were assembled to allow me to measure the correct widths.

Next, set out and cut the angles on the bottoms of the legs: 65° for the front frame and 75° for the rear (**photo 2**). The positions of the mortises and pivot holes need to be set out, being careful to arrange them in pairs. The holes can then be drilled with a counterbore to allow the nuts to finish flush (**photo 3**), and the mortises cut. The widths of my mortises were $^{5}/_{16}$in (8mm) – sorry this is an imperial size but it's the width of



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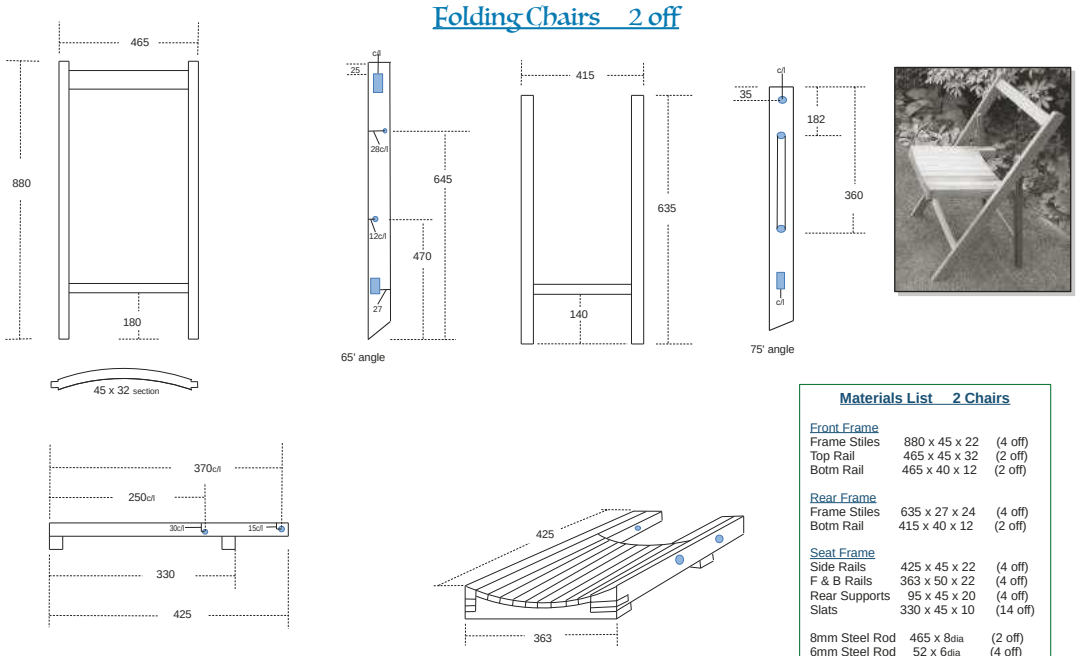
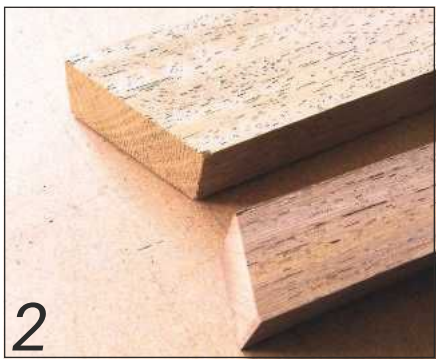
Once you've set out the rod, begin to cut out and prepare the parts for the frames



Materials List 2 Chairs

Front Frame		
Frame Stiles	880 x 45 x 22	(4 off)
Top Rail	465 x 45 x 32	(2 off)
Botm Rail	465 x 40 x 12	(2 off)
Rear Frame		
Frame Stiles	635 x 27 x 24	(4 off)
Botm Rail	415 x 40 x 12	(2 off)
Seat Frame		
Side Rails	425 x 45 x 22	(4 off)
F & B Rails	363 x 50 x 22	(4 off)
Rear Supports	95 x 45 x 20	(4 off)
Slats	330 x 45 x 10	(14 off)
8mm Steel Rod	465 x 8dia	(2 off)
6mm Steel Rod	52 x 6dia	(4 off)
6mm Steel Rod	48 x 6dia	(4 off)
8mm Hex Nuts		(4 off)
6mm Hex Nuts		(8 off)
25mm x 4 c/s screws		(28 off)

Fig.1 Folding chairs



Set out and cut the angles on the bottoms of the legs: 65° for the front frame and 75° for the rear

mortise chisel that I have. The slider grooves can now be set out and cut to a depth of 11mm (**photo 4**). Again, I used a ¼in (6mm) imperial cutter. This works well as it allows a little clearance with the 6mm rod.

Cutting & marking tenons

The tenons now need to be marked out and cut. Note that I have used barefaced tenons on the bottom rails (**photo 5**). The tenons on the top rail are cut centrally and the curved profile shape worked afterwards. Use a rounding over cutter in the router to radius the top edge.

Seat frames

The tops of both the front and rear legs can now be rounded over and cleaned up, removing all sharp arrises. Both frames can now be assembled (**photo 7**), checking for squareness, and inserting wedges in the tenons (**photo 8**). Once the glue is dry, the wedges can be trimmed flush and the frames cleaned up ready for finishing.

It's now time to tackle the seat frames. The front corners have a double bridle joint and the rear rail has twin mortises (**photo 9**). Remember to set the front and rear rails 10mm below the side members to allow for the slats. Mark out and drill the pivot holes. The front and rear rails need a curve on the top edges; this can be cut with the bandsaw (**photo 10**), and tidied up with a spokeshave. The frames can now be glued up and the support blocks glued in.

When dry, extend the pivot rod holes through the support blocks and clean up the joints ready for the slats. Prepare the seat slats and drill to take 4 × 25mm countersunk screws and screw in place (**photo 11**). **Photo 12** shows the completed seats. At this stage I gave all the components two coats of external finishing oil for protection.

Drill the holes with a counterbore to allow the nuts to finish flush

The slider grooves can then be set out and cut to a depth of 11mm

I decided to use barefaced tenons on the bottom rails

The tenons on the top rail are cut centrally and the curved profile worked afterwards

Both frames can now be assembled…

… checking for squareness, and inserting wedges in the tenons

The front corners have a double bridle joint and the rear rail has twin mortises

The curve on the top edges for the front and rear rails can be cut using a bandsaw

Prepare the seat slats and drill to take 25mm × 4 countersunk screws, then screw in place

The completed seats

All the rods ready for assembly

Metalwork

Now for the metalwork. Cut to length two pieces of 8mm round steel rod to make the seat pivots, also the top pivots and the sliders, which are made from 6mm rod. The ends of the 8mm rod needs to be threaded long enough to allow the nuts to enter the counterbores to full depth. The same procedure is required for the 48 × 6mm top pivot rods. I decided not to thread the 52mm rear slider rods, but instead insert them with a smear of epoxy resin glue to keep them in place. **Photo 13** shows all the rods ready for assembly.

Final assembly

All that's left is the final assembly. Lay the front frame down with the front surface downwards. Next, place the rear frame in position, making sure that it is the correct way around. Fit the pivot rods in place and fit the nuts. To stop the possibility of them loosening, I applied a trace of epoxy to the threads. Turn the assembly over, place the seat in position between the legs and slide in the 8mm seat pivot rod. Apply the nuts, again with a trace of epoxy. Finally tap the slider rods into position, making sure that they do not quite bottom in the grooves. I tapped them in to within 10mm of home and again applied a trace of adhesive. **Photo 14** shows the completed chairs. Now check that the sun is shining, place the chairs on the lawn or patio and enjoy a well-earned drink! WW

The completed folding chairs should look something like this. You could even make a table to match, using the same principle

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FIRE HAZARD

Dominic Collings replaces an old eyesore of a mantelpiece with a clean, oak creation

After recently finding a new home for my piano, there was nothing stopping me from converting the huge supply of oak that I had bought into the furniture planned for my home office. Nothing, that is, apart from another item desperately in need of sorting: the mantelpiece surrounding our fireplace.

The current one had to be taken off due to a spot of wire chasing – I wanted to conceal the wiring behind it. My wife had always hated the mantelpiece, though, finding it too ornate and the wrong colour, and as it had effectively been siliconed to the wall and would cause a reasonable amount of damage when removed; it seemed silly to simply put it back after plastering and repainting the wall, so before I could crack on with the office/study furniture, it was decided that I should make a new mantelpiece.

With the old surround removed, I could take some basic measurements; the new surround had to be pretty much the same size as the original. I didn't want to have to replace skirting boards, which had been cut to butt up against the old surround, and the height and width of the marble back panel dictated the minimum depth of the horizontal upper panel of the fire surround, and the width of its vertical legs. Typically, nearly all of the required widths were in excess of 150mm, the maximum capacity of my planer, which meant that every panel would have to be glued up.

During my recent piano rebuild, it did cross my mind that as I don't have many clamps, I would be better off making one large glued-up panel, sanding the whole thing in one go and then machining the individual parts out of one piece. With this in mind, planks of a similar colour were grouped together, planed, run through the thicknesser and clamped up using no other fasteners; at this stage I was unsure of where the cuts would be and I didn't want to end up cutting through the large glue-up and accidentally revealing a domino or biscuit in the centre. Held by the clamps, the panel measured in at about 1.5m long × 700mm wide (**photo 2**).

SketchUp & sanding

With the large panel left in the clamps overnight, I could turn to the design in the evening. For this I decided to have a go at using Google SketchUp; this is not

The original fire surround, with turrets, cornicing and trim, needed replacing

I glued up the boards in one piece so that they could be machined in one go

This enabled the components to be sanded quickly with a random orbital sander

Again, ripping the parts to the correct width from one panel was a very quick task

An offcut of 12mm MDF made a quick substitute for a 'zero clearance' insert...

... which produces tear-free cuts across the grain even when using a combination blade

The leg fronts were glued up separately to give matching glue lines

Cutting the mortises for the buttons, which will eventually hold the top

something I'm good at or particularly comfortable with using, but with so many people I know giving the software nothing but praise, trying it again has been on the 'to do' list for some time. The mantelpiece was a relatively easy project to map out using the software, and so it afforded me some good practice.

With the proportions looking correct, I began the sanding process the following day starting with 80 grit and working my way through to 180 grit on the orbital sander (**photo 3**). A further sanding at 240 grit was done diagonally by hand in one direction, then repeated in the other direction, and finally I sanded with the grain to eliminate any remaining pigtails. With this done, I produced the individual components by ripping the large panel down to the correct widths, adding an extra 2mm to account for a 2mm finishing pass on the planer on each side (**photo 4**).

Making the components

On cutting across the grain I encountered a problem in that my 'zero clearance' insert appears to have zero clearance no longer – another thing added to the ever-increasing 'to do' list – and in need of a quicker solution, I made a zero clearance top for the sliding table of my table saw. This was simply an offcut of 12mm MDF with a hardwood batten nailed to the underside to locate against the side of the sliding table top (**photo 5**). This board butted up against the fence of the sliding table and was left long so that, with one cut on the saw, the board was trimmed exactly to the correct length. This effectively gives zero clearance to the left of the blade and the end of the board shows the actual cutting line of the blade. By aligning the desired pencil line with the edge of this board, I could get perfect tear-free cuts in the correct place every time (**photo 6**).

The advantages of making one large glue-up paid dividends when after only an hour or two, the top, front lateral panel and leg sides – both inner and outer – were all cut to their final dimensions. The drawback was that for the front of the legs, I would have been left with an uneven glue line between the left and right legs, so I made a subsequent glue-up. Again, to save time the next day, I cramped the four boards of the two glue-ups together simultaneously (**photo 7**). I jointed the outer sides of the

By countersinking for screws, replacing this part at a later date was made possible

Doing it the easy way, I drew a curve for the bottom of the front lateral panel

A thin blade in the bandsaw cuts away the bulk of the waste for the curve...

legs with Dominos, but when cutting on slim boards, I still generally find it difficult not to accidentally cut the mortises out-of-square, so to combat this I effectively disregarded the fence and used the precision-ground top of my table saw to rest the base of the Domino on. I used the same technique to pre-cut slots in the front panel for the buttons, which would later be used to attach the top (**photo 8**).

I decided to attach the inner sides of the front legs with screws. For the time being I plan to keep the existing marble hearth and back panel, but these will be replaced in the future with black granite. As I can't guarantee that the replacements will be the same thickness, I screwed these sections on without glue, meaning that I can remove them easily if I have to make thicker pieces to account for thinner marble or granite, or plane down some of the material if the new sections are thicker (**photo 9**).

To create the curve on the bottom edge of the lateral top panel, I planed down an offcut to the thinnest thickness I could get – approximately 2.5mm – and used clamps either end to support this strip. I then bent the strip 50mm higher at the centre and drew a pencil line curve (**photo 10**). The curve was rough-cut using a thin blade in the bandsaw (**photo 11**) and smoothed to the depth of the pencil line using a bobbin sander (**photo 12**). With simple joinery, I screwed the front lateral panel to the legs using stainless steel screws in pre-drilled and countersunk holes; galvanised steel will stain oak. To attach the structure to the wall, I made double French cleats on both sides, on the top and on the bottom, then glued and screwed them to the frame and to the wall (**photo 13**).

Final adjustments

Once in place, it immediately struck me that – despite using SketchUp to check the final appearance of the design – the mantelpiece looked out of proportion (**photo 14**). In particular, the 26mm top was too thin. Unfortunately, this was about as thick as I could get it from the oak stock I have.

The solution was to plane down the original top to 20mm and produce a second, identical top, with the resulting glue-up creating a 40mm-thick top. This presented another problem, though, because the join line was too visible and ruined the look of the front, so I made an additional front and attached it using a series of Dominos. From the front, the top appears to be one piece; you'll only spot the glue line when looking at it from above.

As for attaching the top, I made long buttons by cutting a rebate on the router table and countersinking for two screws. I've learnt from previous mistakes with these; a single screw usually means that they rotate as you screw them in, misaligning the top, but making them longer with two screws eliminates this problem. After a final sanding down to 320 grit, I applied my usual finish of Osmo Polyx Oil in two coats, with a light de-nib in between with 600 grit paper.

... and then the bobbin sander was used with care; this looks simple but it's easy to dig in

French cleats make the mantelpiece easy to remove for access to wiring

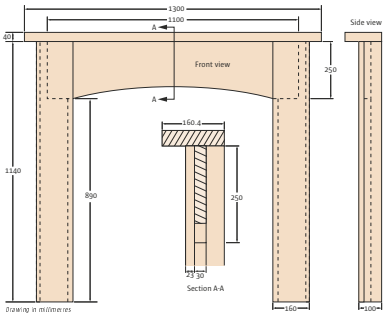
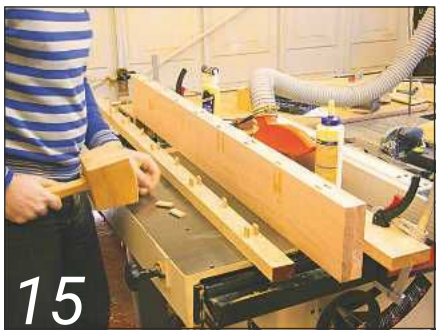


Fig.1 Mantelpiece

The end result is a clean, contemporary mantelpiece that fits in with the rest of the living room. I'm certainly pleased with the result, but happier still that it didn't take very long to make, which means that I can finally start on the office furniture that my oak was originally intended for! WW

Temporarily mounted in situ, something about the piece didn't look right...



... so I doubled the top's thickness and made a front piece to mask the glue line...

... and here's the finished result

Hanging out

This excerpt from *The Woodworker* of June 1957 ticks all the boxes in terms of shelving options that are light, elegant and entirely in keeping with the intended conservatory siting

When it comes to shelving, it's a job that can either gladden the heart or plunge the putter-upper into a fit of nervous anticipation. The biggest single factor for concern is usually fixings: can I get enough solid ones in and avoid being called back later if something comes loose? The answer is usually yes, but there's generally a whiff of anxiety, which doesn't dissipate until the shelf is up and fixed solid.

A domestic success

There's a lot to be said for avoiding the challenge of accurately drilling a set of close holes for a bracket (and the attendant risk of the wall crumbling into one large crater) and instead going for a batten or wallplate on which the shelf brackets can be fixed with ease and assurance. This is a method which the designer of these simply elegant open shelves has adopted, and the results are clearly a domestic success.

Featured in *The Woodworker* of June 1957, the plant shelving fitment ticks all the boxes for me; it looks good and is clearly doing a job of supporting an assortment of earth filled terracotta pots. Once the job has been marked out and the various mortises and notches cut, the brackets would have been glued up and wedged in, leaving a fairly straightforward job of ascertaining the optimum fixing positions for the four upright battens to ensure the shelves would all come out level.

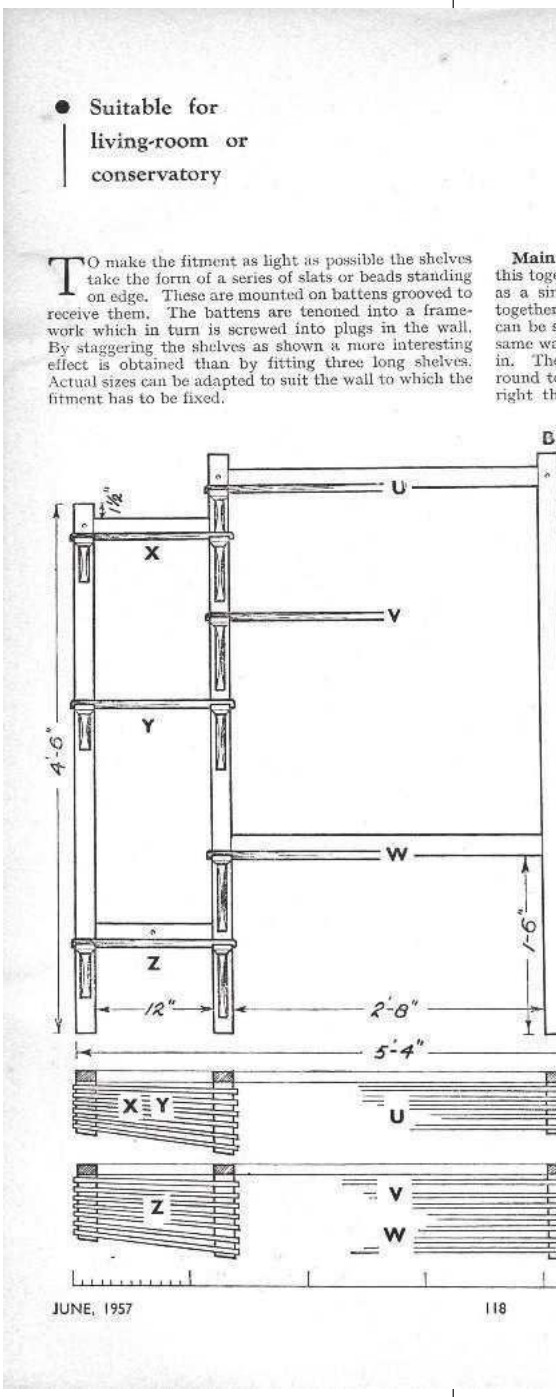
Fixing technology

DIY power tools were a little more basic then, but the average Wolf or similar drill plus masonry bit should have been able to cope with the brick wall pictured here. Failing that, it would have been a laborious stint with a Rawlplug tool and a big hammer to form the holes, then plugging with the asbestos fibre plugs of the day or even the paste filler which was mixed with water, rammed in and then left to harden. I for one am very glad that fixing technology has moved on, and regularly give a silent shout of joy as my hammer drill or big SDS powers into seemingly impenetrable concrete. And thank goodness for Fischer plugs too; my absolute favourites.

Light & elegant

But let's not forget the slatted shelves the maker used either, the design makes the whole job seem a lot lighter and elegant, and is entirely in keeping with the intended conservatory siting. And what about the tapered or slanting outer shelves? Really top design and simple too, and the contrast colours really work. A possible improvement could have been the use of a dark-coloured hardwood for the slats, but I think we're just being picky here. If any reader has made something like this, then I'd love to hear about it... WW

Mark



● Suitable for living-room or conservatory

TO make the fitment as light as possible the shelves take the form of a series of slats or beads standing on edge. These are mounted on battens grooved to receive them. The battens are tenoned into a framework which in turn is screwed into plugs in the wall. By staggering the shelves as shown a more interesting effect is obtained than by fitting three long shelves. Actual sizes can be adapted to suit the wall to which the fitment has to be fixed.

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JUNE, 1957 118

DO GET IN TOUCH
If any readers have memories and photos of things they or their forebears made from *The Woodworker*, please get in touch as we'd love to see them. Just email me on the usual address: **mark.cass@mytimemedia.com** and we'll get them in the mag

PLANT SHELVING FITMENT

Many people today like the idea of having plants in the house, and when a conservatory is available a range of shelves, hooks, and so on can be installed. The fitment in Fig. 1 or an adaptation of it would look well, and could be used equally well on the wall of a passage, or even a living-room. In the photograph in Fig. 1 the fitment is in a room facing the garden

Frame.—Make up the framework first, putting ether with mortise and tenon joints—or halvings npler alternative. By fixing all four uprights temporarily with a cramp the mortise positions squared across, ensuring all being alike. In the y the mortises to receive the battens can be put e marks for the last named should be squared o the back because the tenons have to be taken rough and be wedged from the back. Extra marks about $\frac{1}{16}$ in. outside the lines are squared across at the back to allow for the wedging.

Each batten has its strut, and sloping notches to take these are needed in both battens and uprights. As, however, the lengths of the battens vary, the notch positions vary also. The calculation is simple, however, since all slope at 45 deg. If then the notch in the batten is, say, 5 in. from the shoulder the corresponding notch in the upright is 5 in. also from the mortise. To ascertain the exact strut length the simplest way is to set out in full size.

To save work the strut tenons are bare-faced, which means that the notch depth must be exact and equal throughout since the strut ends bear on them. As a guide to cutting, a strut should be prepared and pencil lines drawn across the end at 45 deg. where shoulder lines would normally be. The struts then fit in as far as this line and no more. Those who have access to a circular saw can set the mitre gauge at the required angle, and fix a stop to it to ensure each set of struts being cut to the required angle. After cutting to size the curved chamfers should be worked with chisel and spokeshave, and finished with glasspaper. Fig. 3 shows how the full-size drawing is prepared.

Since the flanking shelves are narrower at the sides than at

(*Continued on page* 121)

FIG. 1. DESIGN WHICH BREAKS AWAY FROM THE CONVENTIONAL
Instead of solid shelves a series of slats or beads is fitted, giving a light appearance. These slats are painted black and look well against the cream paint of the main framing

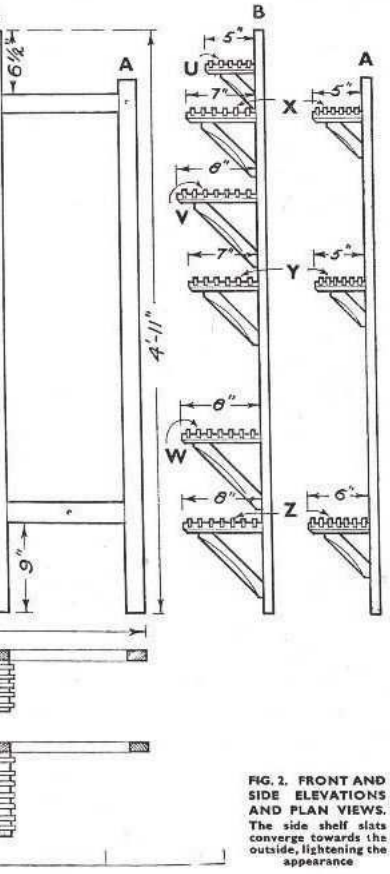


FIG. 2. FRONT AND SIDE ELEVATIONS AND PLAN VIEWS. The side shelf slats converge towards the outside, lightening the appearance

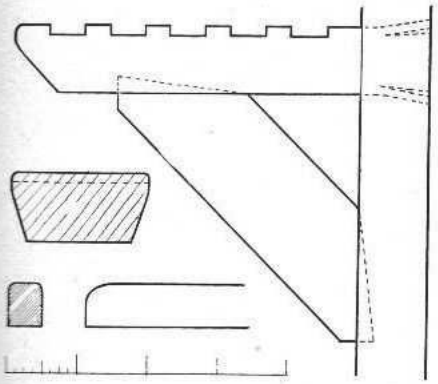


FIG. 3 (above). **SIDE VIEW OF BATTEN AND STRUT SHOWING JOINTS**

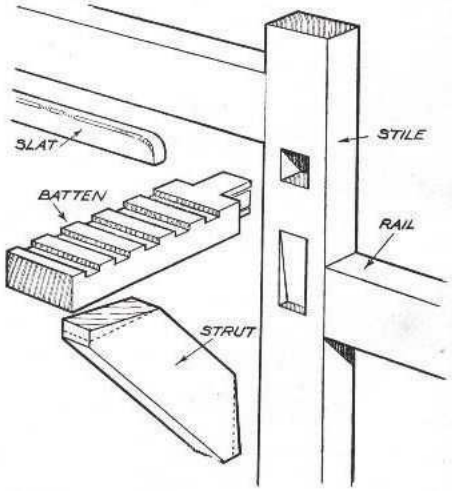


FIG. 4 (right). **HOW THE PARTS ARE FITTED TOGETHER**

Flexible THINKING

Mark Griffiths shows you how to make furniture with enviable curves

When starting to design a project, it's all too easy to only think in straight lines. Why? Well, because straight lines are usually easier to draw than round ones, for one thing. But also, it's far less complicated to construct linear shapes than abstract ones. A free-flowing, curvy piece of furniture is all very well at the design stage, but bringing such artistic flurries to life can prove a formidable challenge and so make you think twice at the drawing board.

If you ask me, though, it's a mighty shame to omit curves from your work for the sake of an easy life. After all, if you look through any book on classic contemporary furniture design, it's the curves that stand out. Just think of a Charles Eames, Marcel Breuer or Arne Jacobsen without a curve. These designers were inspired by the plywood-forming technology developed for aircraft production during World War II.

As well as softening and feminising a piece of furniture, curves allow the character of the timber to reveal itself as the eye moves over the form, and light plays over the surface.

In the not-too-distant past, creating curved furniture was just the preserve of large well-equipped workshops with radio frequency gluing systems and industrial-scale bag presses. But then came along flexible plywood and flexible MDF and the very useful mini-bag press, opening up a world of endless shaping possibilities for everyone. Due to the construction and make-up of both flexible plywood and MDF they can be bent around a former without the need for great cramping pressure; they can also be attached directly to a framework without much effort.

Why plywood?

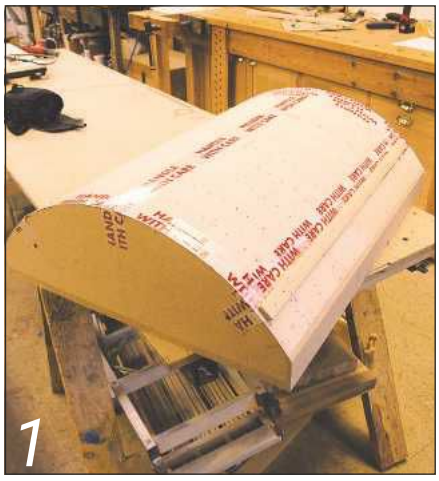
Flexible MDF is machined with slots across its length or width; it is available in a standard 2,440 × 1,220mm board size with thicknesses of 6 or 9mm. For me, it has two limitations: firstly, flexible MDF offers little constructional strength in itself, even when layers are laminated together; the other downside is that the machined slots or kerfs – which give the board its flexible qualities – can be seen on the reverse side as slight flat lines when the board is bent, and can show through even after sanding and veneering. In my view, it is best when used on shallow curves and as a core when laminating multiple sheets.

Flexible plywood is also available in 2,440 × 1,220mm boards, but with thicknesses of 5, 6, 7, 8 and 9mm long and cross-grain, and 3 and 16mm long-grain. It's more expensive than its MDF counterpart, but offers more strength. There's an issue of surface splitting when you bend it around a tight curve, but splits can easily be filled prior to sanding and veneering or painting.

Making a former

After creating a rod of the finished curve you wish to create, the next stage is to start to construct a former. If you were bending laminae of timber or standard plywood, a male and female former would be required. The two-part construction allows a greater amount of pressure to be applied due to the ability to cramp on two faces and at the same time force the laminae into a confined area. This system of male/female former-making is complicated and time expensive, but the joy of using flexible plywood is that you only require the single convex former. It will still need to be strongly constructed to stand up to the rigours of the job in hand, of course.

My formers are built to last and can be used for years to come; I may have a repeat



If you are bending laminae of timber or standard plywood, a male and female former would be required...

... but using flexible plywood boards means you only need to use a single convex former, like the one shown here

With glue applied, the boards can be positioned over the former and placed into the vacuum bag

order for the same piece or the same curve can be incorporated into a different job. I will start by running off a number of ribs, made ideally in 25mm-thick MDF from a template of the inner curve. When calculating this there are a number of different considerations, including the inevitable spring-back that occurs when laminating; although not as severe as when laminating timber, even with flexible plywood you should allow approximately 20mm spring overall depending on how tight the curve is between the shape ends when taken from the former, a tolerance that should be allowed for when creating the template. Also, when cramping, a superior finish will be achieved if the MDF ribs are wrapped in a 2mm standard plywood, which will prevent the laminae from being marked by the ribs when applying pressure. But beware, I speak from experience when I say that it's all too easy to spend hours making a precision former only to realise it's 2mm oversize because this was not calculated and removed from the template. So, depending on the size of the curved panel to be made, a spacing gap of about 30 to 50mm should be left between each rib; this can then be packed out with wood fillets glued into place.

It's best to mount the whole construction onto a board of plywood, marked out with the correct spacing and ideally drilled out in order to attach the ends of the ribs to it using construction bolts. A timber or plywood strip should run down each edge housed into a haunch that has been removed when routing off the template; this would be marked up to correspond with the base and also secured with construction bolts. These bolts give a much stronger and positive fixing into MDF that has a tendency to split when using standard screws in its edges. Making sure the former is square, true along its length, and strong, are crucial to achieving a good end-result. Even so, I would still always recommend building the section of a carcass to fit a finished curved panel or door rather than the other way around, if possible. It can save a lot of heartache when trying to align the two together – once a form has been produced, it's hard to adjust.

The result is that something as simple as a TV stand becomes far more interesting...

Forming methods

With the former made, the plywood board sections can now be cut to size, making sure the grain of the board is running in the correct direction for the shape of the curve. The panels should be cut so that they are flush with each end of the former and sitting about 20mm up from the former's base, ensuring that they don't get in the way when cramping.

Before the glue comes anywhere near the boards a full cramping tryout is essential. There are two ways to apply pressure to the plywood laminations – the easiest and arguably most effective being to use one of the many small bag presses on the market. These start retailing at about £370 for a basic setup that includes a vacuum pump and a 1,300 × 800mm bag, giving a cramping pressure of about seven tonnes per sq.m. For a system with a bit more capacity in a 1,300 × 2,500mm bag, you'll pay around £830, and can expect a vacuum capacity of 4sq.m per hour.

Alternatively, you could use your own workshop compressor and just buy the polyurethane bag kit. These kits start from £197.95 and for that you get an 800 × 1,300mm bag giving approximately seven tons per sq.m. Axminster's online store is a great place to start looking, but I have personally had great success with a kit I bought from a company called Airpress Developments Ltd. Overall, I would bite the bullet and buy the largest and most powerful press you can. When a project comes along that is just out of your bag's capacity, it is so frustrating.

The other method is to use ratchet strap clamps, which are quick and simple to use. If applied correctly they will deliver an even cramping pressure that is hard to achieve with any other form of workshop clamp.

Ratchet clamps can be found in any DIY superstore, tool shop or car accessory store for about £6-£8 each. It's worth buying ones with at least 32mm wide straps and at a minimum of 3m long; I was enticed into buying some 1m ones on a good deal once, and they are still sitting in a drawer somewhere unused and useless.

Whichever method you decide to use, a dry run will show up any potential issues that may arise and give you the confidence to know that when the glue is applied and the clock is running, nothing is going to get in the way of you forming that perfect curve.

Gluing & cramping

Before starting out a lamination using a bag press, I stack the panels close to hand and cover my bench in newspaper. I also mix up plenty of powdered resin wood glue with water to a consistency where it will run off a mixing stick without effort, but not so thin that it dribbles – I want to be able to easily and evenly coat the surface of the boards using a toothed spreader. When playing about with this form of glue, it's always advisable to wear protective gloves as it can cause dermatitis.

After the prep, it's just a simple case of pouring glue onto one face and evenly spreading it, then repeating this on another board and laying the two wet faces together. Keep gluing and adding until you have your correct laminated thickness with a dry face top and bottom. The sticky mass can then be placed in the vacuum bag and positioned on the former, which has had some newspaper placed over it; the boards are held in place while the pump sucks out the air. Beware of the fact that as the air is drawn out, the bag will be drawn up into any gaps between the former and the plywood laminae, which will distort the finished curve, so it is essential to hold the boards tight to the former with your hands and somebody else's while the vacuum is created.

The process for cramping with the ratchet straps is pretty much the same, but instead of placing the ply boards in a bag it is best to locate them on a pair of saw horses and spread lots of paper around the floor. The last plywood lamina on the top should be covered with newspaper and then an additional dry cramping board of ply laid over the top; this will help give an even cramping pressure and protect the face of the work. It's a good idea to set the clamps to the required size before they are needed, as it saves time and grief when the gluing rush is on. Again, a second pair of hands for this process will make all the difference.

If you require a thick laminated shape of, say, 30mm, or your curve is tight, it can be a good idea to glue up half the job first. The advantage of this is that you have less of a rush when gluing up and you will have less to line up and correctly position on the former. Also, buy the correct thickness of plywood for the job in hand: light and tight curves call for thin ply; chunky and shallow curves require thick ply.

... and ordinary items of furniture, like these two variations on drawer cabinets, become talking points of the rooms they live in

The final prise

When all is finally set and dry the finished curve can be carefully prised away from its former and checked over for any flaws that may have occurred. The former's job is not yet over, though – it can be used to hold the curved panel while it is being sanded and its straight edges are a great reference point for marking straight lines on the curved surface, which is an otherwise tricky operation. I have had some success using a cheap, simple laser fixed above the workpiece, projecting a straight reference line, which can be traced onto the job with a pencil to give a starting point when plotting out your cut lines.

When you have a reference line it can be cut on a bandsaw, taking care to check the desired edge angle is the correct one for your design. Fixing a high, false face to your ripping fence will provide an area for the curved surface of your panel to sit against when ripping. To cut the ends of the panel, keep the face of the panel tight to the crosscut fence and, starting with the side edge flush with the table, roll it through the saw blade until the other side edge is sitting parallel and tight up to the fence.

When a design calls for a curved section to be joined to another curve or straight panel, by far the best way to join them is with a Domino jointer. If you haven't come across one of these power tools yet they are well worth looking into. The price of a Domino jointer is quite steep, with entry-level models starting at around £600, but they offer a wide range of very strong jointing options that easily surpass the biscuit jointer and are ideal for the fixing of curved panels.

The only real issue when gluing together curves is how to apply cramping pressure to the correct place. This is a job of trial and error – and patience – spent creating cramping blocks to fit an individual curve. If a 2mm-thick, good quality birch-faced plywood has been used as a top layer on both sides of the flexible plywood form, you'll get a far superior finish when applying a veneer.

The panel can be veneered post-forming using either a contact adhesive or scotch glue; however, if the design allows it, veneering during the forming process will save you time and will arguably produce a better result. You just add the veneer section to the start and end of your laminations.

On the whole, flexible boards are relatively cheap, easy to use, and allow a creative mind to move into new and exciting areas. It is well worth experimenting with a few boards and exploring possibilities, before heading to the drawing board with a set of French curves and getting flexible. WW

SUPPLIERS

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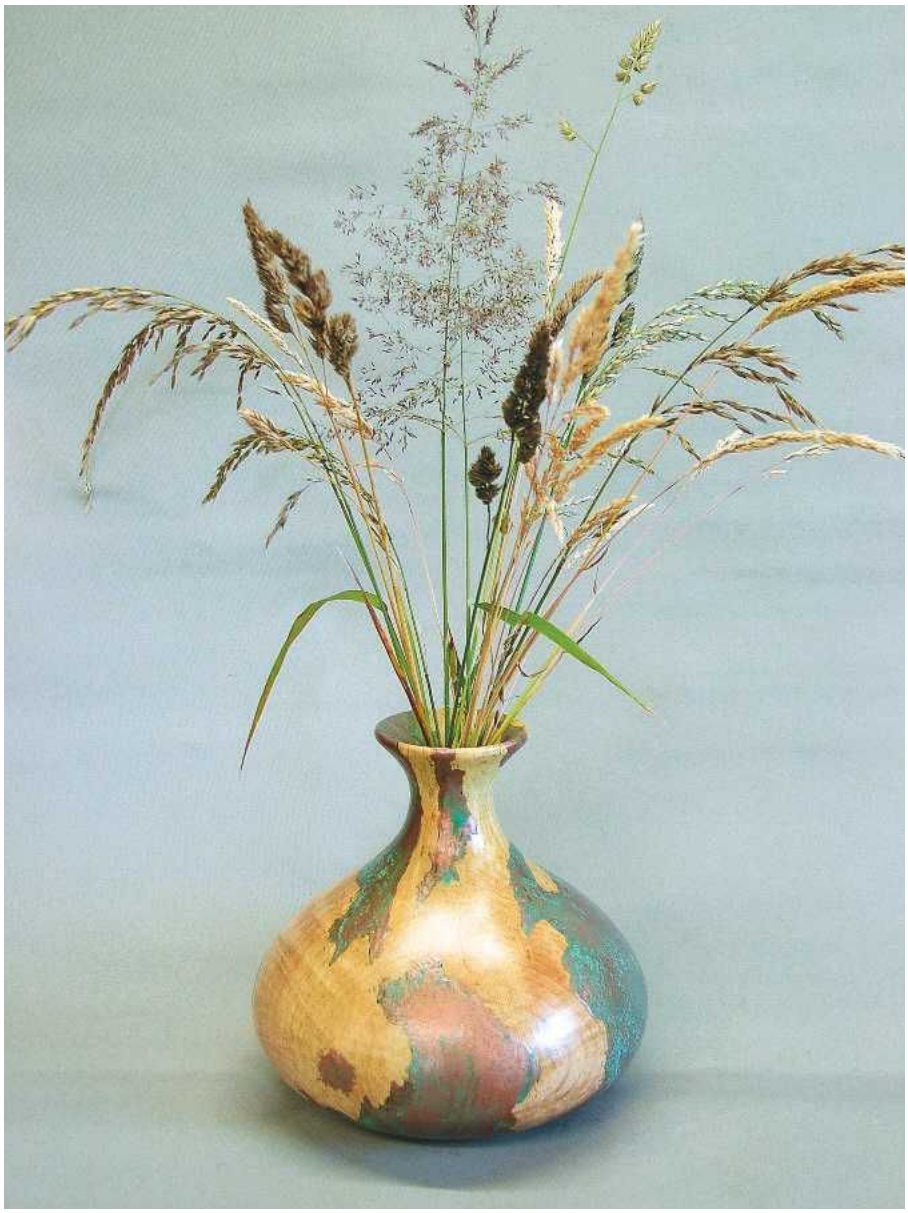
Pedal to the METAL

Colin Simpson experiments with reactive metal paints to add an aged appearance to a tear-drop vase



Creating the tear-drop shape

For this project, you'll need a block of sycamore measuring 200mm square × 220mm long. First, mount the blank between centres and turn it to a cylinder using a spindle roughing gouge. The same gouge can be used to start rough shaping the piece (**photo 1**). Refine the shape using a spindle gouge (**photo 2**), but do not take too much wood away from the neck of the vase at this stage. This area needs to remain strong in order to support the hollowing of the vase a little later. Turn a spigot to fit your chuck at the headstock end; this end will become the top of the vase. Turn a similar chucking spigot at the tailstock end, but also turn a larger step just above the spigot (**photo 3**). I intend to hollow the vase from the bottom and this step will become the plug to fill the hole. Make several 'witness marks' on the vase and plug, so that the grain can be lined up later (**photo 4**). Remove the piece from the lathe, replace the four-prong drive with your chuck and mount the vase in the chuck, using the spigot at the top of the vase. Next, use a narrow parting tool to part off the plug and chucking spigot (**photo 5**). If you don't like the idea of cutting this off with the parting tool, then stop the lathe and cut the plug off using a saw (**photo 6**).

Turn your blank to a cylinder and start shaping

Refine the shape using a spindle gouge

Cut a spigot at both ends and a step above the spigot at the base

Hollowing the vase

Next, drill a hole in the bottom of the vase using a spindle gouge. With the tool resting on its back on the toolrest – handle down – gently place the tip of the tool in the very centre of the revolving wood. Hold the tool firmly and raise the handle until the tool is horizontal and the handle in line with the axis of rotation. Now push the tip of the tool into the vase to drill the hole. Remove the tool often to release the shavings, but


Mark several witness lines on the plug and vase


Use a narrow parting tool to cut off the spigot…


… or use a saw if you prefer


Start boring the hole using a spindle gouge


Hollow the vase, starting in the hole and swinging the handle away from you, making the cut on the left wing of the gouge

re-insert it using the method described (**photo 7**). To hollow the vase, start by using a 10mm spindle gouge with the wings swept back. If the hole you have just drilled were a clock face, start with the flute of the tool pointing towards 11 o'clock and the cutting edge on the left wing of the tool, just inside the hole (**photo 8**). Push the handle away from you, pivoting the tool on the toolrest; this action should make a semi-circular cut. Continue hollowing in this way but as the hole gets deeper, the tool cannot just be pivoted on the toolrest, but must be pushed through your front hand at the same time as swinging the handle away from you. As the hollowing gets deeper, the tool will overhang the toolrest too much and will begin to chatter. When this happens, move to a larger tool. I changed to my 12mm fingernail profile bowl gouge but the cutting action is the same. In **photo 9** I am using the bowl gouge right over on its side, using the bottom wing as a scraper. Note I am also using the side of the hole on the right as a fulcrum to help apply a bit of leverage on the tool. With this shape of vessel, you cannot hollow the area adjacent to the hole using conventional tools. This is not necessarily a problem – no one is going to see the inside of the vase – so you could just accept the fact that the bottom of the vase is going to be a bit thicker. However,


Use a bigger gouge to cut deeper into the cavity…

this would also add more weight to the piece and I chose to remove this area of wood. I did this using one of my cranked or articulated cutters, in this case the Rolly Munro hollowing tool (**photo 10**). You can, of course use this – or any other similar hollowing tool – to hollow the entire piece. I like to use these tools starting with the cutting edge rolled over to about 8 o'clock and then roll it upwards towards 9 o'clock to make the cut. This way the top guard can contact the wood before the cutter and, to an extent, you can control the depth of cut by rotating the tool towards 9 o'clock. These tools are very efficient at removing wood, so stop the lathe often to remove the shavings from the cavity.

Refining the shape

When you are happy with the inside hollowing, cut a parallel-sided step at the entrance to the hole using a skew

… and a cranked or articulated tool to remove wood next to the opening

Cut a parallel-sided stepped recess at the vase's opening…

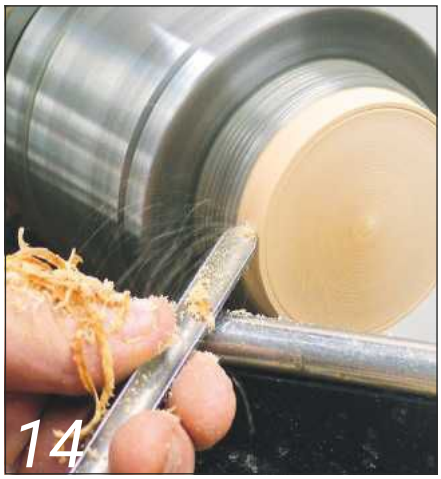
… and measure its diameter

chisel on its side (**photo 11**). Check to ensure the sides of this step are parallel and measure the diameter of the step using Vernier callipers (**photo 12**). Remove the vase from the chuck and replace it with the plug. Transfer the diameter of the step in the vase to the plug (**photo 13**) and turn the plug down to a fraction larger than this measurement. Now cut a small chamfer of the plug down to a fraction smaller than this measurement. Offer up the vase and rub the side wall of the step against this chamfer (**photo 15**). It should leave a slight burnish mark (**photo 16**). Now cut the plug down to the burnish line and it should fit the hole perfectly. Take your time here and keep offering up the vase. This needs to be a good, tight fit as the rest of the vase will be turned from this chucking point. Glue the plug in place, making sure the witness marks are lined up and use the tailstock to ensure the vase is aligned correctly and also acts as a clamp while the glue dries (**photo 17**).

Once the glue has dried the final shaping can be done. Keep the tailstock in place for additional security and refine the shape of the whole piece, using a spindle gouge (**photo 18**).

Remove the tailstock and shape the inside of the vase's neck. Cut carefully here as at some point you will break through into the cavity of the vase (**photo 19**).

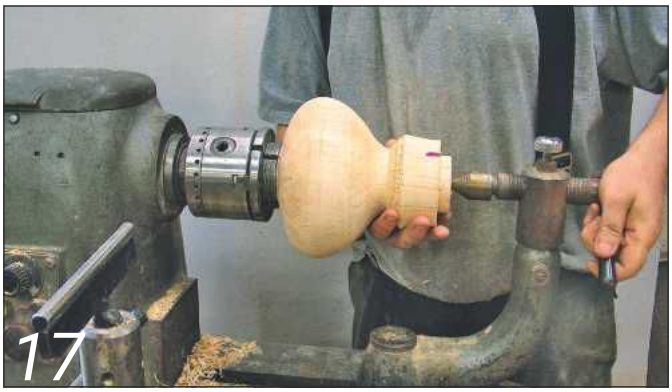
Transfer the diameter of the opening to the plug



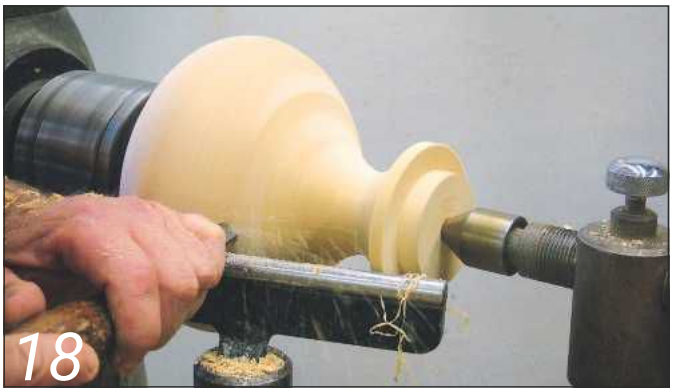
Reduce the plug to the correct diameter and cut a small chamfer

Offer up the vase and rub the corner of the stepped recess on the plug's chamfer…

… which should leave a slight burnish mark



Glue the plug in place and use the tailstock as a clamp



Do the final shaping of the outside using a spindle gouge….

… and carefully shape the inside neck, breaking through to the cavity

Sand and finish with two coats of sanding sealer

I use Modern Masters metal reactive paints

This carving clamp enables me to tilt the vase into any position, making the painting easier

Draw and shade in the areas to paint….

Applying the reactive paint

When you are happy with the shape, sand the piece down to 320 grit and apply two coats of sanding sealer (**photo 20**). You now have a finished vase and if you do not want to apply the metal paint, simply reverse chuck the piece to turn away the chucking spigot, then the project is complete. **Photo 21** shows the metal reactive paints I use. They are made by Metal Masters and I bought mine online at www.goldleafsupplies.co.uk. These paints are water-based and contain real metal particles. Unsealed, the paints will tarnish naturally over time, but to speed up the process, use the patina ageing solution. I chose a spalted wood for this project because I wanted to colour areas bounded by the natural spalting lines. My thought process was that instead of the fungal spores eventually rotting the piece, they were converting the wood into metal – artistic or what!

I mounted my vase, still in the chuck on my carving clamp, which is conveniently held in the toolpost of my lathe (**photo 22**). This clamp holds the piece firmly while allowing me to rotate it through all axes to enable me to reach any part of the workpiece easily. I outlined the areas of spalting that I was

… and apply two coats of primer…

… followed by two coats of metal reactive paint

Lightly spray the ageing solution from a spray

Here is a close-up of the tarnishing when left overnight

Reverse the piece onto a dolly and turn away the spigot

going to colour and shaded them in to avoid confusion (**photo 23**). Next, I carefully applied two coats of the primer (**photo 24**). When this was dry I painted on the metal paint – I used copper. The instructions say that two coats of the metal paint are required and, to give the metal part a little texture, I stippled on the second coat using a cheap glue brush (**photo 25**). Before this second coat dried, I gave the paint a light misting of the ageing solution using a spray bottle (**photo 26**). This chemical takes a little time to work – I left the piece overnight. **Photo 27** shows a close-up of the piece the following morning. I need to give you a word of warning here: the chemical in the patinating spray reacts with the metal in the paint, tarnishing it. It also reacts with the metal of your chuck. My chuck, left overnight, was covered with a very light coat of rust by the next day. It was easily removed with a wire brush, but you might wish to protect your chuck from the spray, by masking it with tape or suchlike.

The instructions state that the green or blue patina does not require any further finishing, but I chose to give my piece a coat of the Permacoat Extreme, which I thinned down 50/50 with water. Once this was dry, I sprayed the entire piece with Chestnut's acrylic matt lacquer. Finally, I reverse chucked the vase onto a mushroom-shaped dolly to remove the chucking spigot (**photo 28**). WW


29
The end result is very effective

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In brief...

NORTHUMBERLAND WOODWORKER HITS THE RIGHT NOTE WITH CURVY GUITAR STAND

An engineer turned personnel manager has quit the corporate world to start his own business creating bespoke wooden items, including a unique range of guitar stands that have proved a hit with Billy Mitchell of Lindisfarne.

Dave Foote has based his company 'U Wood' on the Northumberland coast at Longhoughton and is fast gaining a reputation for his one-off pieces, from furniture and decorative artwork to instrument stands. He works on each concept with the customer, from the design through to the type of wood and finish required.

Dave said: "I've always had a passion for creativity and enjoy working with wood. After 30 years in the corporate world, the time was right to go for it and start up on my own."

The wooden acoustic guitar stands are evidence of Dave's different approach. Whereas most guitar stands are made from metal or plastic and are very straight and functional, the U Wood stand is beautiful to look at and incorporates an organic shape and a minimalistic style. "It was a design challenge I set myself and it took 10 months and six prototypes before I got it right. The result is an organic, flowing piece and each one is different. The stands are handmade in woods including ash, cherry and elm, and each one is numbered, signed and dated by me," he says.

As well as guitar stands, Dave produces smaller variations for violins and larger music stands. He has also developed a more robust version for electric guitars and he is currently working on a portable folding model for touring musicians. To find out more, see **www.u-wood.co.uk**.

GET BURNING!

Create personalised wooden gifts and decorative patterns with this pyrography tool. Burn creative designs or wording onto wood and leather products – the possibilities are endless: name plates, egg cups, wooden spoons, chopping boards, etc.

The Pyro Master comes with 19 different tips for branding, drawing and shading – this is the Antex entry level pyrography tool for decorative items. It comes with a safety stand plus a keyring and leather fridge magnet to get you started. Priced at just £24.95, see **www.antexcraft.com** for more information.

AXES AT THE READY!

Engineered from CrMn steel forgings, Narex axes and adzes are honest, straightforward, workmanlike tools. Designed by Narex specifically for professional timber framers, their down-to-earth appearance belies exceptional edge taking and retention, good balance and comfortable handles. The range includes a small carver's axe; a large hollowing axe; a carpenter's side axe (left-handed); and a carpenter's side axe (right-handed). Prices start from £31.20; see **www.workshopheaven.com** for more information.

REVOLUTIONISING APPRENTICESHIP TRAINING

The NAS (National Association of Shopfitters) and BWF (British Woodworking Federation) have launched a new Centre of Excellence (CoE) network of colleges and training providers to ensure the survival of quality apprenticeship training for the joinery and wood machining industry. In the wake of the government's decision to implement an apprenticeship levy and the industry's call for quality skills training, the CoE pilot concept could not have come at a better time.

The launch of the CoE network was marked with the signing of a Memorandum of Understanding (MOU) by four Centres from across the UK: Building Crafts College (Stratford, London); Didac Limited (Bristol); Leeds College of Building (Leeds); and Neath Port Talbot College (South Wales).

The ultimate aim is to ensure there is a Centre in each region, with Didac able to offer national in-house apprenticeship training provision, so that the network has nationwide coverage from the off.

Robert Hudson, Director of NAS, explains: "The CoE concept gives the industry the opportunity to access high quality and flexible apprenticeship training that includes bench joinery and wood machining. These Centres were selected as part of the pilot as they have actively engaged with us and employers to ensure they offer the skills employers want and need. Over the coming months, we'll be honing the CoE concept

to ensure it delivers for employers, apprentices and providers and will look to expand the network."

Each apprentice will be on a nationally recognised apprenticeship framework/standard and will have the option of adding extra modules needed for their training to meet employer needs. This will be packaged together as a NAS/BWF Apprenticeship, raising the bar on government requirements.

CITB has supported the pilot, including the financial support of a research exercise to map demand for joinery apprenticeship training and the supply currently available. The results will inform the second phase of expansion for more Centres across the UK.

To find out more, email **rhudson@shopfitters.org** or call **01883 624 961**.

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In brief...

WIZARDRY IN WOOD 2016

Wizardry in Wood, the exclusive quadrennial exhibition of the finest contemporary woodturning, returns with its fourth showcase this October (Wednesday 12–Saturday 15) at Carpenters' Hall in the City of London.

Presented by the Worshipful Company of Turners, the 2016 exhibition will be its largest and most diverse to date with an unparalleled showcase featuring 70 of the most skilled leading UK and international contemporary turners alongside two extensive curated collections of outstanding modern and historical pieces.

At the core of the exhibition, visitors will be able to see work from 24 of today's leading woodturners who bring traditional craft skills, steeped in history, to a setting of newness and innovation. Live demonstrations will allow visitors to engage with the unique craft skills and processes while daily guided talks will offer an insight into the materials, methods and designs on show. Visitors will also have the opportunity to see the entries and winners of the Turners' Company 2016 Competitions, and with many of the works on sale, visitors will be able to purchase a diverse range of high quality original works.

Exhibitors include Nick Agar, Nick Arnull, Angus Clyne, Paul Coker, Louise Hibbert, Ray Key, Eleanor Lakelin, Carlyn Lindsay, Rodney Page, Stuart Mortimer, Mark Sanger, and Joey Richardson.

The Daniel Collection

Shirley and Jonathan Cuff have created one of the UK's largest private collections of modern woodturning. Around 50 works from the outstanding Daniel Collection will form a curated display of the skill, range and creativity of contemporary UK and international craftsmen. Pieces on show include works by Benoît Averly, Roger Bennett, Tony Boase, Seamus Cassidy, Petter Herud, Bert Marsh, Binh Pho, Mike Scott, and Don White.

Kew Gardens Economic Botany Collection

Wizardry in Wood is also delighted to be showcasing the Kew Gardens Economic Botany Collection; a curated collection presenting over 100 of the finest examples of woodturned botanical specimens – the first time that the collection will have been exhibited to the public in the City of London.

Whether visiting Wizardry in Wood for business, pleasure, inspiration or just inquisitiveness, there will be much to be captivated by. Tickets can be purchased in advance from Eventbrite (**www.wizardryinwood.eventbrite**) and to find out more about the event, see **www.wizardryinwood.com**.

NEW FROM NOVA

A range of new drive centres, threaded toolrests, toolposts and bars have recently been added to the NOVA range. The new Flexible Point Drive Centres load directly into NOVA chuck jaws, which allows you to switch between spindle turning and chucked pieces with ease. These also offer a significant advantage when preparing or roughing-out pieces between centres that are then finished in the chuck.

The new Flexible Centres are available in a variety of sizes to handle most spindle work. The 'Flexible Point' spring-loaded centre point allows you to set your workpiece in place (or remove it) with the lathe running. As you increase tailstock pressure, the drive centre teeth bite into the wood and your work begins to rotate. With light pressure, it will drive your work, but allow it to stop if you have a dig-in, which will minimise damage to your workpiece. With increased pressure, it will power through even the heaviest of cuts. Prices start from £28.96 inc VAT.

Threaded toolrests, posts & bars

The NOVA Modular Tool Rest System is a flexible solution, allowing you to mix and match toolrest bars and toolposts to create the perfect toolrest for your needs. Simply pick a toolpost to fit your lathe and then choose your toolrest bar. The toolrest bars have a female thread, screw directly onto the NOVA toolposts and are fully interchangeable. If you own a second lathe requiring a different diameter toolpost, then the purchase of a second one allows you to use all your existing toolrests. Toolposts are available in 15.9mm or 25.4mm diameters.

The toolrest bars are stainless steel and the 100mm length is perfect for most mini or small lathes. Prices for toolrest posts start at £6.96, and toolrest bars at £16.96 inc VAT. For more information, see **www.brimarc.com**.

WOODTURNING OPEN DAY

Surrey Association of Woodturners will be holding their annual open day on 30 October. Members of the public, woodturners and all those interested in wood are welcome to attend this event and visitors can expect to see demonstrations from professional turners including Mark Baker and Simon Hope. In addition, there will be a range of craft stalls to entertain you, a raffle to take part in, refreshments, and a wood sale. More more information, see **www.sawoodturners.org**.

WIN A HI-VIS TOOL CHEST

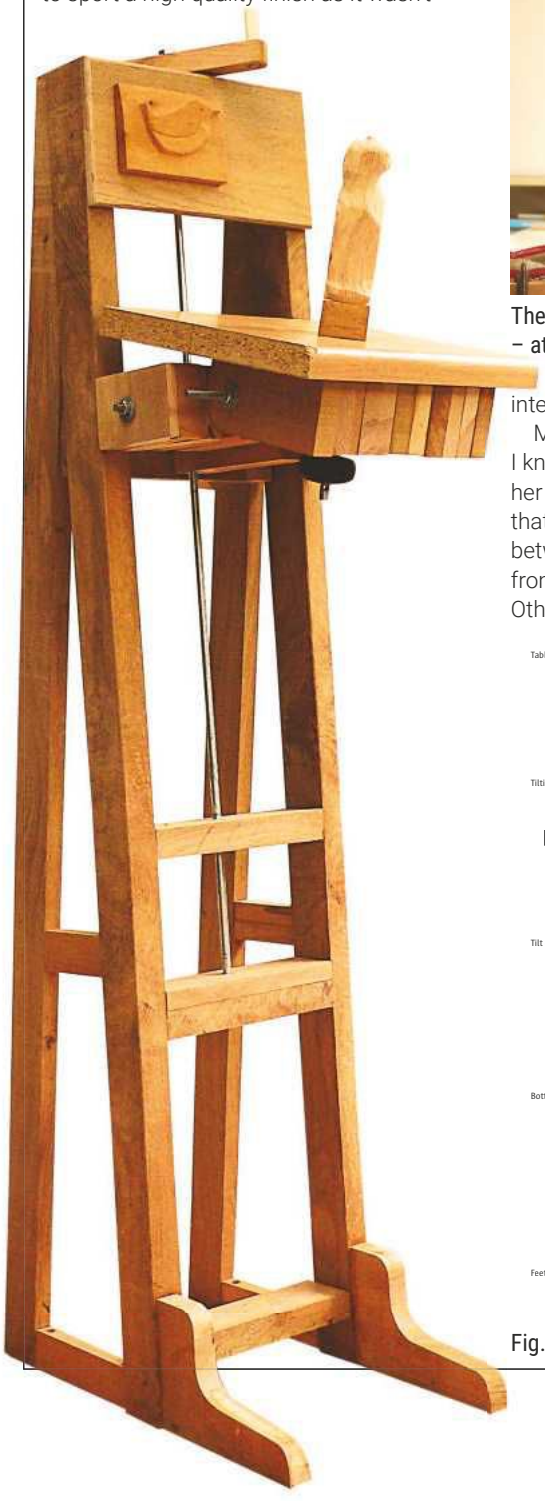
Sealey are giving one lucky reader the chance to win one of their new six-drawer top chest and roll cab combos, worth over £165, in either purple or hi-vis green, which feature ball-bearing runners.

Sealey's new hi-vis tool chests are built with the same professional quality as their American PRO® Ball Bearing range. Manufactured with double skin side walls for extra strength and finished in smooth, hi-gloss, triple-baked enamel, which resists scratches, oil, dirt and most solvents, the drawers run on 25mm ball-bearing runners for strength and drawer faces have full length pulls with chrome style trim. These tool chests are a great addition to any workshop. For your chance to win, visit **www.sealey.co.uk** and follow the competition link. Good luck!

Ample support

Peter Benson presents a work stand that can be adapted for any carving enthusiast

Some time after we returned from a woodcarving course in Austria, and having taken two weekend carving classes at West Dean college, my wife announced that she would like "one of those carving stands" that we had been using. A carving stand is just my kind of project, as it involves several interesting challenges, needing to be sturdy and functional while not being an eyesore as you work on it, though it wouldn't need to sport a high quality finish as it wasn't intended to be a piece of fine furniture.



The original stand, which tilts but is clamped – at a fixed height – to the workbench

My wife is quite short at about 5ft and I knew that she may need to do some of her carving while seated, so we decided that the worktable should be adjustable between 610mm for sitting and 1,370mm from the ground when she is standing up. Other than that, the design could follow the template of commercial stands, though it would need to accommodate whatever my wood supply permitted.

When I was getting started in woodwork some years ago, I bought a second-hand Kity 2000 five-function machine as well as several chunks of well-seasoned oak, which look a bit like railway sleepers, albeit dirty and twisted. They might not have been top quality timber, but I believed that there should be enough decent material for the stand's long pieces, possibly laminating them to obtain the thickness needed. If you want to make your own carving stand, any hardwood should be suitable for the 64-76mm posts.

The stand was to be narrow and upright and had to be designed in such a way that counteracted any tendency towards falling over with the pounding of chisels and mallet. The commercial units we had used were made of steel and anchored to the floor which, of course, wasn't an option, so mine would require feet for stability. In view of the need for solidity, I included a shelf right near the bottom of the stand, enabling me to add an extra ballast if that should prove necessary.

The worktable needed to be adjustable

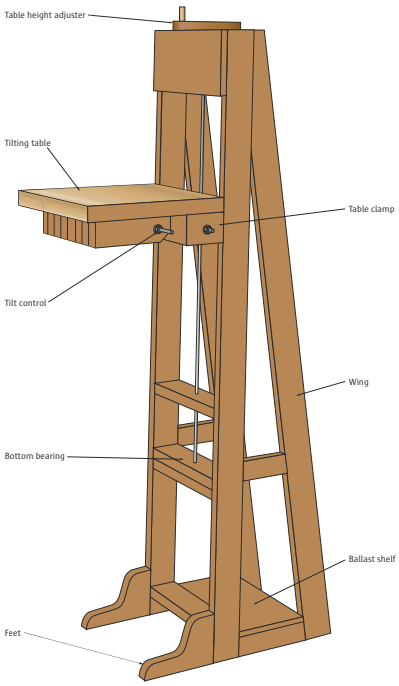
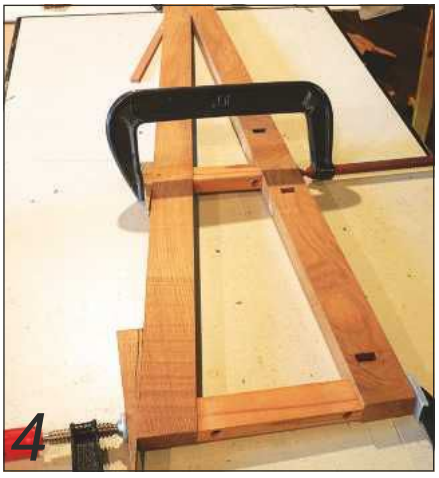


Fig.1 Carving stand

The first step was to cut a straight edge on each of my oak 'sleepers' by putting them through the table saw attached to a sled

To cut the 9° angle at the top of the wing, I clamped it to another homemade sled

The slot mortiser cut the mortises for the 8mm loose tenons at the top of the posts



The wings were assembled on the bench, using wedges retained from the angle-shaping

for angle, as well as for height, while being rugged and permitting easy access. The adjustable angle was achieved through a sturdy homemade pivot, and the variable height was catered for by a vertical threaded rod, which would raise and lower the entire table. Once at a suitable height, the table was anchored by a large handle that clamps the table to the vertical posts.

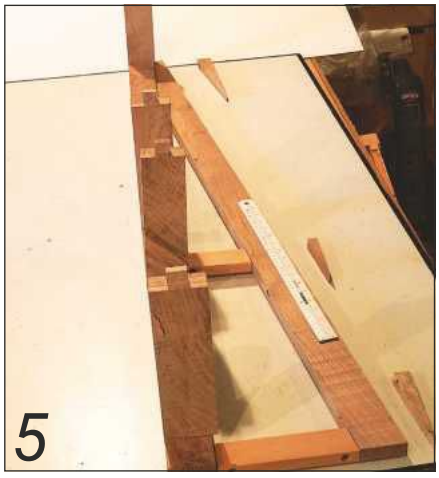
Preparing the wood

The oak sleepers – saved for so long – turned out to be very challenging to work with. They were about 1,830mm long, 76mm-thick and 230mm wide. Not only were they dirty and hardened with age, but they also contained many knots and 'interesting' grain patterns; they might've had lots of character, but this wouldn't help in getting long, straight posts from them.

Given their dubious provenance, I went over each with a metal detector. I also screwed each in turn to an MDF sled for the table saw so that I could run this against the fence and create one flat edge to work from (**photo 1**). Using this edge for reference, I was then able to plane the face at right angles, and gradually pry out some straight oak pieces.

With this done I was feeling more confident, but there were still a lot of knots to worry about – the 76mm square posts I had been hoping for weren't going to happen. I thought of laminating them in pairs to achieve the required thickness, but eventually decided that instead of making each post from two pieces glued side by side, I would be better off making them into a vertical with the second as an angled support. This would provide some extra stability.

Much of the other wood in this project was recycled – you may notice marks and holes from their earlier incarnations. The holes in the cherry bottom sections of the wings are one such example.



Starting assembly – a wing was attached to the front cross-pieces using loose tenons at the top, and mortise & tenons for the others

The frame

The main frame consists of two vertical posts joined by cross-pieces and supported by the wings. The cross-pieces were fixed to the posts with mortise & tenon joints for maximum sturdiness; I cut the mortises on my slot mortiser belonging to my Kity multi-purpose machine. I prepared the tenons on the cross-pieces on the bandsaw and tested for fit. I also needed to cut tenons to attach the wings behind the posts (tenons halfway down and at the bottom, loose tenons at the top, where there was not enough material for regular tenons) and feet at the front, also using 8mm loose tenons cut from oak offcuts.

An early dry run assembly of the frame ensured that it all went together

The wings

The long piece for each wing needed an angled cut where it joined the post at the top, so I attached them to the sled at an angle of 9°, which would allow the sled to carry them safely through the table saw (**photo 2**). Then the tops had to be mortised for the tandem 8mm loose tenons (**photo 3**), which I was also able to do on the slot mortiser, squaring the ends with a sharp chisel.

I glued up the wings (**photo 4**), clamping each in turn to the bench-top so as to counter any tendency to twist. It was a great help when cramping to have the wedges which had been cut away earlier when creating that 9° angle.

Now the frame could be assembled by attaching the wings to the front cross-pieces. Glue and clamps held them into a unit lying on its back on the bench while the glue was given some time to cure (**photo 5**).

The design restricts the number of contacts between the stand and floor, to reduce any tendency to rotate or move about, so the bottom cross-piece is 25mm above the floor. I didn't want to mark or damage the floor, but the stand had to be difficult to move.

7

A blind hole was drilled in the lower cross-piece to recess the nylon bearing that carries the weight of rod and table

Front feet

The heavy table protrudes in front of the frame to give maximum access to the carving; the feet were designed to prevent it falling on the carver, but could not be too long or the carver might trip over them. I bandsawed them from two pieces of 25mm cherry, which were left over from a bedside table project, rounding the curves on a bobbin sander in the drill press (**photo 7**). The perforated box shown below the feet in the photo is connected to the extractor to remove as much dust as possible during the sanding process.

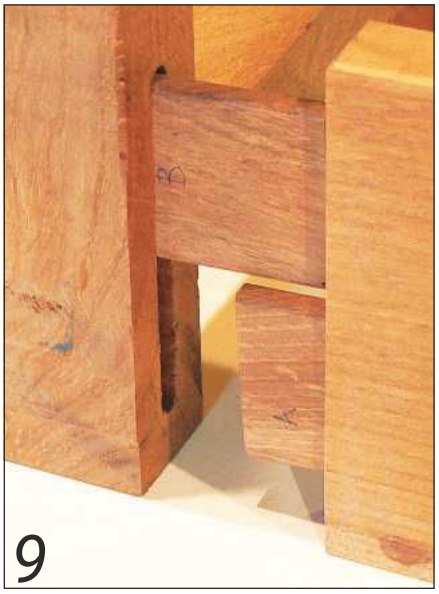
The feet were attached to the posts with loose tenons of 8mm oak, inserted with their grain perpendicular to the grain direction in the feet and posts, to ensure a strong joint (**photo 9**).

8

The feet were first shaped on the bandsaw, then sanded on a bobbin sander

Ballast shelf

Neither my wife nor I had ever used, or even seen, a carving stand made of wood, so we had no idea how strong it needed to be, how thick the oak should be, etc. I followed what I consider to be a basic tenet of Victorian engineering: 'make it twice as strong as you think will be needed'. To assist with the sturdy approach I included a shelf, mounted low down on the wings and right behind the main frame. On here I added blocks for extra mass and resistance to moving the stand. This shelf came from a small piece of 19mm ply, which fits nicely between the wings and the frame, so the added weight acts right next to the frame, resting not on the floor directly, but on the bottom piece of the wings (**photo 10**).



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Substantial loose tenons of oak attach the front feet to the posts

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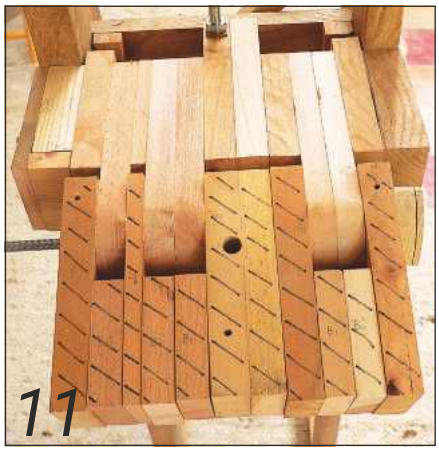
A plywood ballast shelf was attached to the wings. The extra weight can be used to keep the stand steady in use



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Two sets of ribs, made from leftovers, support the tilting table. The non-tilting set fits between the posts, to which they are clamped

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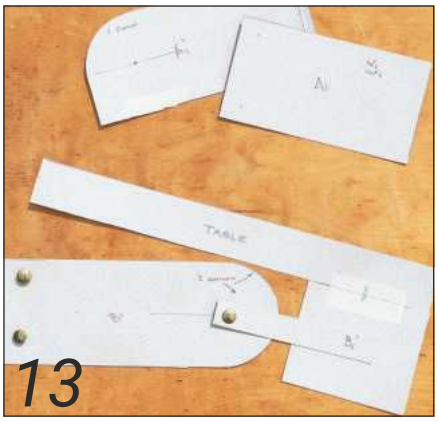
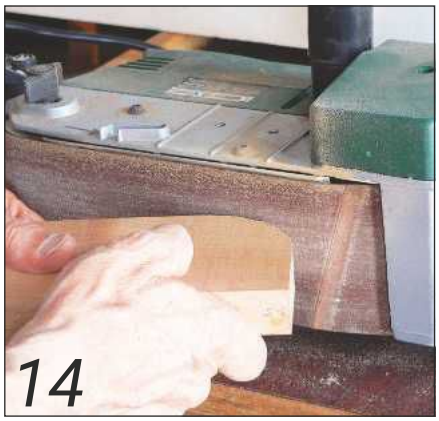
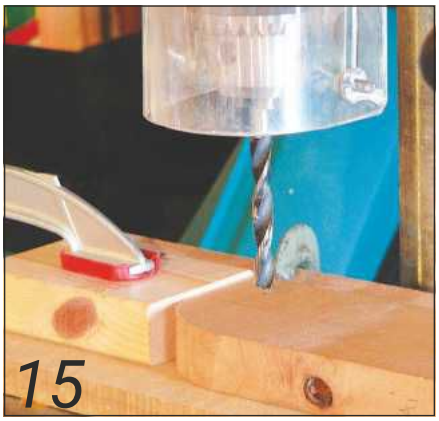
The outside ribs clamp against the posts. A 'temporary' – now permanent – non-adjustable threaded rod holds them together



I tested the design (shapes, spacing and angles) of the tilting table with cardboard cut-outs first

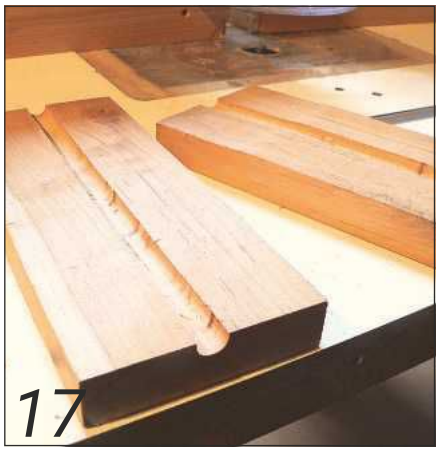


The table support ribs were shaped on the bandsaw, then on a belt sander clamped sideways to the bench



The centre table support was drilled for the M8 rod, which controls table tilting

To create a long hole along the length of the centre table support, I routed semi-circular slots in the two pieces…



... which were then glued together to provide the necessary long hole for the front-to-back rod

The rear table clamp has two vertical battens glued to it to keep it between the posts

The worktable

The table itself is a piece of counter-top material mounted on a tilting set of ribs, which alternate with another set of non-tilting ribs. The two sets are connected by an M8 threaded rod. A knob on each end of the rod allows the carver to release their pressure when adjusting the tilt, then to lock them in place at the desired angle. I felt that it was important to have maximum contact between the two sets of ribs, and the ability to squeeze them tightly together to resist the forces administered by the carver.

The table support was designed so that the two side pieces would fit inside the posts to prevent sideways motion (**photo 11**). A little wax on these eases the vertical motion of the table. The side supports fit and clamp against the posts to provide the front portion of the clamping action that holds the table in place. The centre rib is longer than the others since it carries the threaded rod, but still leaves a 13mm gap to the rear clamping board.

You will note a threaded rod holding the rear blocks together – this is a hangover from the early prototype, which I decided not to remove though it is not intended to be adjustable. My ribs are not all as neat as I would like, for they depended on what leftovers I had in stock at the time. Many of the cherry blocks could not have been used for anything else, due to knots and other blemishes, but suited this purpose well.

Before bandsawing the support ribs, I tested their tilting motion with cardboard pieces, so I could see where the ribs would need rounding, and what radius would be needed (**photo 13**). Once they had been cut out, I sanded them on the belt sander, clamping it on its side to the bench (**photo 14**).

The table-top was screwed down to the ribs with countersunk woodscrews. A 10mm hole through the table and ribs allows the carving screw to pass through and to be screwed into the underside of the future masterpiece, holding it tightly against the table. The mounting hole is a third of the way back from the front edge of the table, for best support and access.

When the table had been set at the desired height (see below), it was clamped firmly to the frame via a M8 threaded rod running front-to-back, and a clamp handle, which tightens on a plate behind the posts. This rod must pass through the centre of the main rib that supports the table; since I do not have the ability to drill a long hole so precisely, I made the centre rib from two sections, and routed two semi-circular slots that created a 9mm diameter hole when they were glued together (**photos 16** & **17**). A double nut was recessed into the front of the centre support rib so that when clamped in position, the table supports in the front and the rear clamp are then gripping the posts, thus holding the table at the required height. The posts were held between the side blocks under the table and the clamping plate at the rear (**photo 18**).

One important point to make here is that two threaded rods needed to pass each other at right angles behind the table. Clearly this was not possible, so each rod was offset by about 5mm, allowing

19

The table was screwed to the supporting ribs. Two homemade knobs at the sides allowed the angle to be clamped

20

Here is the underside of the table, showing the embedded square nut

21

The table is raised and lowered by a M10 threaded rod attached to this top handle

22

The bottom bearing was created with two cross-pieces, the lower carrying the nylon plug, the upper one holding the rod in position

23

The tilt-adjustment knobs were bandsawed from ash offcuts

24

The completed carving stand

them to pass each other while still acting almost centrally.

Height-adjusting system

A single M10 threaded rod runs full-length down the middle of the frame. It passes through the top and middle cross-pieces, and sits on a bearing in the bottom cross-piece. This bearing takes the weight of the table when the adjustment is in use; it consists of a nylon pad (originally a foot nailed to one leg of a wooden chair, which is now a bit lop-sided...) The nylon is recessed into and nailed to the lower half of the bottom cross-piece, with the upper half of the cross-piece drilled to provide sideways restraint (**photo 22**). All the holes through which the rod passes are tight but not threaded, so the rod is free to rotate when turned by the handle at the top. This handle drives the rod through the action of two nuts, tightened against each other and recessed into the handle itself. The bottom of the table contains a square M10 nut recessed into its underside and riding on the threaded rod (**photo 20**); when the rod is rotated by the handle, it lifts or lowers the table. A little wax on the rod eases its rotation in the wood without encouraging sloppiness. Two large washers and some more wax beneath the handle also ease its rotation for smooth rise and fall of the table.

Three bearings were needed for the long vertical rod (top, middle and bottom, where the nylon insert takes the weight), so as to counter the effect of the table pulling the rod sideways when being wound up or down. The rear clamping board had two small battens attached to fit between the posts and prevent its turning; the board was chamfered at the ends to allow it to ride high into the 9° angle between post and wing. WW

The carving screw and spacer – these can be purchased from Rutlands

THREADED RODS

M10 × 991mm for table height adjustment
M8 × 229mm for table clamping
M8 × 254mm for tilt adjustment of table
square, hex and tee-nuts

SOURCES

■ West Dean College
Nr Chichester PO18 0QZ
Tel: 01243 811 301
Web: www.westdean.org.uk

SHEFFIELD MADE TOOL FAIR @ THE KELHAM ISLAND INDUSTRIAL MUSEUM

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Museum entry £6
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In brief...

BIG RIG SCALE PLANS

Roger Jenkins, a wood crafts designer from Australia, is drawing up a new series of Big Rig (semi-trailer) woodworking plans, set to, initially, 1:20 scale, then later, a larger 1:15 scale range, which will have information included on how to add working LED lights to each model.

The majority of the Big Rigs (trucks/lorries) will mostly feature the big Australian long-haul Macks, Kenworths, Western Stars, along with a few Scanias (Volvos, M.A.N, etc.) makes too.

Each plan is drawn actual size on to A3 size paper from the original truck sales brochures, and from the various owners' supplied photos. Every plan comes complete with side and top elevations, templates, parts list, detailed instructions, and two chassis designs: one for commercial wheels and the other for home-made wooden wheels.

There will also be a separate range of trailers, including flat-tops, drop-decks, sliders, vans, tippers, stock crates, extendables, low-loaders, tankers, etc. and even road-train dollies.

Roger is also seeking a possible UK person or company who would be interested in importing and publishing the plans in the UK/European region under copyright license – see email details below.

The price for the 1:20 scale plan is $30 Australian dollars (roughly £17) and the price for the 1:15 scale plan is $45 Australian dollars (roughly £25). Please note that prices exclude international postage. For more information, email **rogerjenkins@internode.on.net**, or see his Facebook page: **www.facebook.com/groups/799588853424441**.

THINK BIKE, THINK COFFEE TABLE

They're coffee tables that think they should be on the open road and both are creations of newly-graduated students from the Chippendale International School of Furniture in central Scotland.

One is a coffee table with an uncanny resemblance to a Harley Davidson motorbike, made by Ronnie Payne from Falkirk, who is a former RAF technician and police officer. He is setting up Ripplewood Furniture to design and make new furniture and carry out restoration projects. A Harley Davidson enthusiast, Ronnie wanted to make something quirky and unique, but which is also sturdy and absolutely functional. Ronnie inherited his love of woodwork from his father who was a joiner and, after leaving Police Scotland, enrolled at the Chippendale school. His 'Rev-It' table, complete with wooden saddle, petrol tank and handlebars, shows how innovative design and craftsmanship can add something unique to a home – and a piece of furniture that will also become an heirloom.

The other coffee table design doesn't quite have the same va-va-vroom, but it is literally about upcycling. Daniel Brophy from Dublin is now setting up 'Bispoke Tables' from incubation space at the school, in which former students can rent space and make continued use of the equipment.

A former chef, he originally came up with the idea of using upcycled bicycle wheels when a friend opened a café in Dublin and asked Daniel to help him with the interior. His tables are made from the highest grade flexi-plywood, reconditioned bicycle wheels and either a plexiglass or toughened glass top – and each table can be made to individual customer's specifications.

For more information, see **www.ripplewoodfurniture.com**, **www.bispoketables.com** and **www.chippendaleschool.com**.

WINNERS OF WOOD-MIZER'S FIRST EU CUSTOMER PROJECT CONTEST

In Wood-Mizer Europe's first customer project contest, nine winning projects from seven countries display what woodworkers can do with timber they have cut themselves.

Inspired by Wood-Mizer's long-running 'Personal Best' contest in the USA, which is always popular and results in many inspiring and unique projects, Wood-Mizer Europe launched the 'My Project' contest as part of their 25th anniversary celebration.

Wood-Mizer sawmill owners in Europe were eligible to enter projects they had made using timber they had processed on their sawmill. Entries were divided into three categories: 'Furniture', 'Buildings', and 'Other Projects'.

In total, 40 projects were submitted from 11 different European countries. The LT40 sawmill was used to cut the timber for 12 projects, and the LT15 sawmill was a close second for 11 projects. The LT40 is often used as a mobile sawmill, has hydraulic log handling functions, which makes it easy for the user to travel to the logs, and easily manipulate them to turn them into usable timber. The LT15 is a smaller and stationary sawmill that is common for smaller workshops and hobbyists.

Less dependent on the restraints of budget and timber sizes available from local suppliers, mobile sawmill owners can cut the species and sizes they need to realise their own unique vision for their projects. Many of the projects exhibited in the contest were only possible because the sawmill enabled the craftsmen to cut costs and process the timber in the exact sizes needed.

Silvano Caveglia from Italy won first place for his interior cabinetry and stairs, made from wood cut using his LT15 sawmill; Sven Brackmann from Germany won second place with his outdoor reclining chair made from timber cut using his LT20 sawmill; and Michal Kanuk won third place for his bed and bedside tables made from timber cut using his LT40 sawmill. Congratulations to all the winners! For more information, see **www.woodmizer-europe.com**.

Forest Knights

Bow Making Courses

are held in the beautiful Sussex countryside not far from the historic city of Arundel

The site is in the beautiful South Downs National Park

We offer a range of Bow Making Courses from our 3 Day Long Bow and Flat Bow Course to one day Bhutanese style Bows.

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David and Wayne have been making bows and arrows for the past 15 years and between them have crafted hundreds of Bows using traditional and more modern techniques to create beautiful and effective bows.

Course Start Dates

Course dates are flexible; please get in touch for the next available date.

Course Length: 3 days

Price: £265.00 *(includes VAT)*

Please call Wayne on **07771 540184** or see our website **www.forestknights.co.uk**

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WHITESIDE MACHINE COMPANY

Nominated in both categories by Fine Woodworking Magazine June 2007 - in an 18 bit road-test evaluation
Author's Choice – BEST OVERALL / Author's Choice – BEST VALUE

Top performer it may be but Andy King's in a bit of a quandary

Milwaukee M18 BLDD

FROM £179

Milwaukee's 18V platform comprises standard brushed machines and the brushless Fuel range so this new model is a bit of an oddity: it has a brushless motor but is not a Fuel tool. However, this is still a top performer built to the same external tank-like robustness.

The difference may be in the gearing: Fuels boast all-metal construction and the internal gearing here may not be.

It doesn't shirk its responsibilities at the chuck end, though; this is a 13mm-capacity all-metal single sleeve keyless version, and of excellent quality. The drill also has Milwaukee RedLink circuitry to monitor and optimise the drill and battery to prevent overload while still maintaining performance.

SPECIFICATION

WEIGHT	2kg with battery fitted
SPEEDS	0-450, 0-1,800rpm
CHUCK CAPACITY	13mm
TORQUE	60Nm

VERDICT

While not overly versatile and limiting in some situations, the M18 BLDD is a powerful top performer, and features well-made components

PROS
- All metal chuck
- Brushless motor for longer runtime
- Bright worklight

CONS
- Drill/driver functions only are limiting
- Description of metal gear casing implies internal gearing may not be
- No side handle

VALUE FOR MONEY

PERFORMANCE

FURTHER INFORMATION

- Milwaukee Tools
- www.milwaukeetool.eu

At only 174mm long this drill is pretty diminutive, the brushless motor trimming the length down but still able to put out 60Nm of torque.

No slouch

With its second speed of 1,800rpm it's no slouch for drilling smaller-diameter holes, and in its lower 450rpm gear it will drill 38mm holes in timber, so it is good for chippies fitting Yale-type cylinder door locks for instance. It will also drill up to 13mm in steel, but this particular model is drill/driver only; there's no hammer function although there is a slightly longer version with identical specifications that does include this function.

Variable-speed trigger

I found the variable-speed trigger to be responsive and it also acts as the switch for the bright worklight.

It performed well piloting and running in screws up to 100 × 6mm gauge on a decking and fencing project, and a swift change to a 30mm Forstner was equally impressive in both hard- and softwood.

Switching to a 32mm auger in beech showed the need for a side handle as the torque generated on the low speed is enough to pull and twist the drill from your grip, but it certainly is good testimony to the power it generates. Softwood was easier and I could control the pull without the high wrist strain.

In summary

This drill sits well if you want technology without increased weight, but with some trade-off of overall drilling capacities in timber. But is a standalone drill/driver valid nowadays? Before impact drivers, a drill/driver for the fastening work alongside a combi drill was more commonplace, but now that the market seems to go for combi drill and impact packages the drill/driver could be a harder product to shift with the inclusion of the Milwaukee combi drill in the same configuration, and I'd err towards that just for the extra versatility. Either way, Milwaukee has a compact, powerful, well-made and competent drill here. ***AK***

A top slider switches between the gears; max speed is nippy

A worklight is activated by pulling the trigger

There's a single collar to switch between drill and torque control

Constructing some decking with 100 × 6mm screws was a breeze

These two offerings from Bessey are both excellent performers and well suited to the tasks for which they are intended

KliKlamp FROM £12.42

BAN700 Band Clamp FROM £31.04

Bessey clamps range

Bessey KliKlamps

Although the venerable G-clamp has provided stalwart service since its invention (and continues to do so), most of us have a variety of lighter clamps on the shelves and racks in our workshops. These are both physically lighter to handle than a G- and also unlikely to mark timber surfaces through excessive or casual overtightening. Like everything, a bit of variety isn't a bad thing when it comes to clamps, and if you've not tried these ones before, then it could be time to have a look.

Speedy ratchet lever

The KliKlamp is a nice alternative to the customary squeeze-grip quick clamps and trigger operated F-clamps, and offers lightness and speed around the workshop. To perform its sole function, the F-clamp employs the simple physical principles of leverage and friction between a straight bar and two jaws: one sliding and one fixed. Most F-clamps utilise a screw handle to tighten the two jaws together, some a pistol grip, but none to my knowledge which have a speedy ratchet lever such as the one used on the Bessey version.

In summary

Once you've mastered the technique of deploying the KliKlamp, there is nothing faster to make a temporary hold, and you can even use them with one hand if you're adept enough. Made mostly from a magnesium alloy, the KliKlamp is as light as it is strong, and is just the thing for the kitbag as they weigh barely anything compared to similar sized alternatives.

The KliKlamp is quick to use and firm to grip

Bessey BAN700 Band Clamp

When it comes to clamping up awkwardly shaped items, there's nothing to beat a band clamp. While you can just about get by with a luggage strap or similar, a purpose built band clamp really has no equal. This one from long-established specialists Bessey is a particularly good example of the type. Featuring a 25mm-wide woven nylon strap, it has a positive action with a crank-driven coarse adjustment, plus a screw handle final tightening mechanism.

Vario brackets

It's capable of clamping anything up to a 7m circumference, and comes with a set of four Vario corner brackets for square frames and similar. Unlike many of the simple hinged plastic examples on the market, the Vario device is engineered in ABS plastic so as to provide equal force to any corner, regardless of shape or angle. Additional Vario brackets are available to enable the efficient clamping of multi-sided constructions.

In summary

It's the best clamp I've encountered for picture frames, and is robustly constructed so as to ensure a long working life. I especially liked the wind-up spool on the side, which can be reversed by relocating the hand crank so as to make it entirely suitable for both left- or right-hand operation. ***MC***

Detail of the Vario corner brackets

SPECIFICATION

KLIKLAMP	
CLAMPING FORCE	up to 1,200N
WEIGHT	from 260g

VERDICT

PROS
- Sturdy fixed and sliding arms made from lightweight magnesium
- Stepped, vibration-resistant VIBRAFIX ratchet mechanism

CONS
- None I can think of yet

VALUE FOR MONEY ■■■■■
PERFORMANCE ■■■■■

SPECIFICATION

BAN700 BAND CLAMP	
CLAMPING LENGTH	up to 7m
STRAP	25 × 1mm
VARIO ANGLE RANGE	60-180°
WEIGHT	0.53 kg

VERDICT

PROS
- Essential if you make frames or boxes, or anything to do with mitres
- Extremely well made

CONS
- Lack of good instructions

VALUE FOR MONEY ■■■■■
PERFORMANCE ■■■■■

FURTHER INFORMATION

- Bessey Tools
- www.besseytools.co.uk

Put to the test for the roughing out of a replica Iron Age wooden vessel, this product promises very fast stock removal, represents good value for money and leaves a crisp and clean finish

Axcaliber carving & shaping cutter

THE PALLASBOY PROJECT
To find out more about Mark Griffiths and this unique project, visit **thepallasboyvessel.wordpress.com**

In the few years since Arbortech released its revolutionary Pro-4 carving disc, the power carving market has really taken off. Woodworkers were quick to see the vast potential offered by these simple tools: where before if you needed to remove large quantities of timber quickly, the only option would be to fire up the chainsaw. Anybody with experience of chainsaw carving will know that it's not for the faint-hearted, and quite brutal. Compared to a petrol chainsaw, a carving disc cutter is similar to using a scalpel.

Evolution of blades

The early discs borrowed from chainsaw blades, sporting hooked spur cutters, removed material fairly satisfactorily; however, they did have a tendency to greedily grab at the timber, and could prove quite unpredictable when faced with wild grain patterns. Cutting discs manufactured with tungsten-carbide tips were soon to appear on the market, having the look and feel of an oversized router cutter. This new design proved both accurate and less aggressive. Arbortech themselves have since gone on to replace their original Pro-4 with the more refined 'Industrial Woodcarver Blade' and the 'TurboPlane'.

The Pallasboy Project

The Pallasboy Project (see *Good Woodworking* issue 302), is a grant funded collaboration with myself and members of University College Cork. Its aim is to recreate an Iron Age vessel (the Pallasboy) that was discovered preserved in the Toar Bog, County Westmeath. Over a period of two weeks, and using reproduction Iron Age tools, we had crafted a faithful copy of this 2,000-year-old artefact. We were now moving on to the next phase of the project, which involved floating the Pallasboy in the River Lee in Cork, to test the theory that the original vessel had been used as some form of Neolithic boat. This would involve hollowing out the inside of our vessel to match the original.

In use

After some research, I decided to use the Axcaliber carving & shaping cutter from Axminster Tools & Machinery. I had used


A firm grip is needed to control the grinder


Note how dust can block the grinder's air vents


Shaping up to the vessel's rim

chainsaw-style disc cutters in the past and was interested to see how a tungsten-tipped version compared. The first thing that you notice with the Axcaliber is that it boasts five 6.8mm rounded profile tungsten cutting tips, whereas Arbortech's Industrial Woodcarver Blade has three. With a diameter of 100mm it is designed to fit 115mm angle grinders with 22mm bore. Whichever carving cutter you go for, I would strongly recommend fitting it to a capable grinder; something trade-rated that runs at around 1,200W.

Before flicking on the grinder's switch, I first set the tool guarding to give maximum finger protection, then I donned dust mask, goggles, ear protection, gloves and a hat. When in full flow these cutters throw out vast amounts of dust and chips, right over the operator. It only took a few minutes to get the feel for the Axcaliber. Given the opportunity, the cutter would love to run away and bury itself in your workpiece, so I found light sweeping passes, no deeper than 10-15mm, while holding the grinder at a 30° angle, worked a treat. The cut produced was crisp and clean with a pattern that could easily be mistaken for a gouge mark.

After two days of hard work, the tungsten tips still had a keen edge, and like a router cutter, the disc could be honed with a diamond stone when dull.

In summary

For the relatively low cost of £52.96 the Axcaliber carving & shaping cutter could add a new dimension to many of your woodworking projects. Whether enabling the production of large carving work, roughing out turning blanks, or quickly producing joints on timber frames, this versatile tool will make a world of difference. ***MG***

SPECIFICATION

FEATURES	five tungsten-carbide blades
SUITABLE FOR	115mm angle grinders (22mm bore)
BLADE	100mm diameter
CUTTING TIPS	6.8mm wide with a rounded profile

VERDICT

Ideal for very fast stock removal, this versatile cutter has multiple uses and is perfect for many carving and shaping applications

PROS
- Versatile
- Low cost
- New project possibilities

CONS
- Messy
- Can be a bit scary

VALUE FOR MONEY

PERFORMANCE

FURTHER INFORMATION

- Axminster Tools & Machinery
- 0800 371 822
- www.axminster.co.uk

The cutter leaves gouge-like tool marks

The vessel shaped and ready for floating in the river

Wood chippings soon build up

Plenty of protection is essential

Carving cutter fitted to a trade-rated angle grinder

Detail of rounded profile tungsten tip

Photographs by Brian Mac Domhnaill

This powerful machine benefits from a cast-aluminium base and produces fast, strong joints for furniture and shelving construction

Triton 760W biscuit jointer

£99.95

Since its first market appearance in the late '60s, the hand-held biscuit jointer has ranked in the top three most useful and first-to-be-purchased power tools for a large majority of woodworkers around the world. With the ready availability of modestly-priced manufactured boards (and their ease of working), the biscuit jointer has revolutionised the construction of carcass furniture and much more besides.

Solid working

The simplicity of the original model, invented by Hermann Steiner back in 1955 (the man behind Lamello) in Switzerland, is hard to improve on, though many have tried. Despite (or perhaps because of?) their reputation as industry innovators, Triton have created a pared-down, no-frills machine, and it's all the better for it. Employing the by now customary configuration of a forward direction plunge, the machine has the feel of a skeletal prototype, which made it into production before anyone could mess it up with improvements.

Despite the functional straightforwardness of a biscuit jointer, I have known one or two woodworkers who just can't get on with them and are resigned to making a mistake every time they use one. The key for me – and I hope someone else will agree with me here – is to use the baseplate as the reference surface wherever possible. Not only does this ensure a solid way of working, it also means you're pretty much guaranteed that all of your biscuit slots will come out square to the face or edge as well as lining up nicely. As long as you take the trouble to make a few trial cuts so that consistent accuracy can be assured, everything will be fine.

Uncomplicated functions

The functions of the Triton biscuit jointer are uncomplicated: set the depth of cut to match your intended biscuit (the TBJ001 is compatible with No.0, No.10, No.20 and S6 biscuits) via the (adjustable) stepped selector wheel, fit and adjust the fence to suit your jointing requirements, make a test cut, then off you go. It's quite a simple machine, really, with few points of interaction and little to go wrong. The blade is readily accessible in the hinged base, and easy enough to remove with the spanner provided and the top-mounted orange spindle lock button whenever it needs sharpening.

I particularly like the on/off switch; it becomes part of the natural gripping motion executed in the using of the tool, and makes every other thumb and finger operated device seem clumsy and ill-thought out. Equally comfortable for both left- and right-hand use, the big top-mounted handle provides additional

The front fence, fully folded down

The turreted depth-setting adjustment

leverage for the other one, regardless of preference. This handle can be reversed; I did just that but found little advantage in doing so to be honest.

On the fence

So, what about the fence, then? Many biscuit jointers of this type feature a hinged front plate that clicks via sprung-bearing indents into the popular positions on its quadrant adjuster, and an additional fence plate, which slides up and down the front plate. Between the two, it's entirely possible to set the biscuiter to whatever orientation is required by the job in hand. Depending on how complex your particular project needs are, setting the fence or fences can often be a challenging job, but a very rewarding one when you finally pull it off.

Correct extraction

All biscuiters really need proper vacuum extraction to function efficiently, and while the bag provided might be fine for a few slots, anything more will likely end in a clog-up and a waste of time. The extractor outlet, at 31mm outside diameter, didn't match my (almost standard) nozzle, which comes in at 25mm internal. Momentarily irked, and reaching for the gaffer tape, I realised that the dust bag itself held the answer. The inlet port looked like a contender and a quick snip on the bandsaw later proved me right and left me with the perfect adaptor. Nice.

In summary

All in all, a useful piece of kit, which is fully adjustable and easy to maintain. ***MC***

SPECIFICATION

POWER	760W
BLADE DIAMETER	100mm
BORE	22mm
WEIGHT	2.65kg
NO LOAD SPEED	11,600rpm

VERDICT

This powerful machine benefits from a cast-aluminium base and produces fast, strong joints for furniture and shelving construction. It is also supplied with a variety of added extras, including spare carbon brushes and a dust bag

PROS ■ Simple operation

CONS ■ The fences felt a bit light

VALUE FOR MONEY
PERFORMANCE

FURTHER INFORMATION

■ Triton Tools
■ www.tritontools.com

The dust bag and extraction port

The supplementary fence fitted; note vertical scale

Easily accessible, the blade can be readily removed

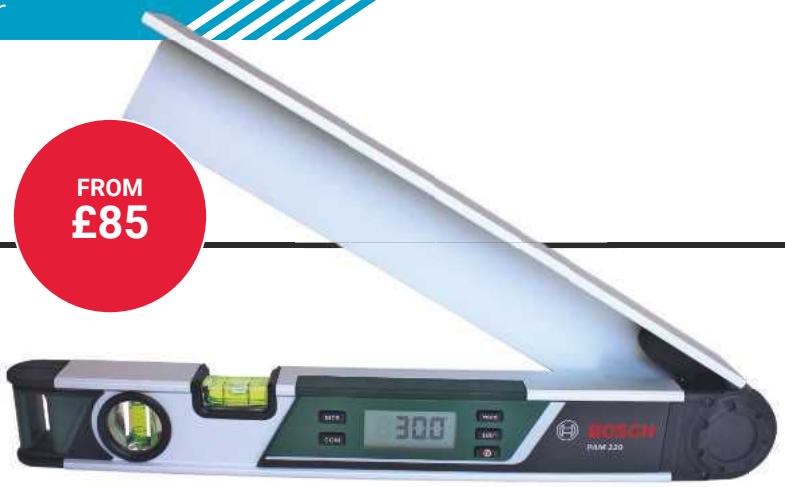
My simple modification to the dust bag frame enabled vacuum connection

The Triton was put to work and came through with flying colours

This extremely easy to use angle measurer and mitre finder from Bosch is a precision instrument that won't let you down

FROM **£85**

Bosch PAM220 angle measurer



It's not every day you have to measure an angle around the house, but when you do then using an electronic device surely is the easiest way. This one from German manufacturing giants Bosch is from their green range (more attuned to the keen amateur rather than the fully-fledged professional), but as robustly constructed and accurately engineered as all of their products.

Fits the bill & more

Resembling a compact spirit level with a hinged arm, the PAM220 is an extremely useful tool to have in your kit, and I only wish I'd encountered one earlier in my woodworking career. Like all the best tools that possess a digital readout, this one is far from useless if the batteries should ever fail. A pair of accurate bubble vials mean that you'll never be short of a means of finding level and plumb, and the hinge on the angle measuring arm is sufficiently tight so as to retain the measured angle in the manner of a sliding bevel – fine so long as you don't knock it.

Many is the time I've reached disappointedly for a giant bevel with which to measure, say, the internal angles of alcoves for fitted furniture, and come back empty handed. The PAM220 would have fitted the bill and more. Instead of a line drawn on a piece of card or something, a numerical value can now be swiftly recorded and noted down for further attention back in the workshop.

Clean mitres

While this is great and practically worth the cost of the tool alone, there is one other job which is guaranteed to try the patience of even the calmest of us: calculating the saw set for a compound mitre. Best imagined as an installation of 'crown' moulding such as a cornice on furniture or coving around the top of a domestic room, this is easiest to cut while laid face down on the bed of a mitre saw, but is a task known to make grown men cry.

Basic jigs and cutting aids are available and, while these might be fine for a lashy DIY job, if you want clean mitres then using the PAM220 is probably your best option. By measuring the angle of the moulding (then pressing the COM button), then the angle of the area to be corniced (followed by COM again), a couple more button presses gives you both the saw bed angle and the blade tilt angle. About a hundred times easier than guesswork or trial and error.

In summary

Pretty much everything relating to angles and their measurement has been considered, and from angle hold (memory function) to a calculation of inaccessible angles using the extension arm (180° function), this tool has the lot. It's very easy to use as well. ***MC***

SPECIFICATION

WEIGHT	0.815kg
LENGTH	475mm
HEIGHT	57mm
WIDTH	93mm
BATTERY TYPE	2 × AA

VERDICT

An extremely useful addition to anyone's toolkit, especially jobbing carpenters and the keen DIYer

PROS ■ Will increase your confidence on every angle and mitre-related job you're likely to encounter

CONS ■ None that I've found yet

VALUE FOR MONEY

PERFORMANCE

FURTHER INFORMATION

■ Bosch
■ www.bosch-do-it.com

This precision tool is supplied in a protective and handy case

Battery powered, the compartment stays securely clipped

The key controls and digital readout. Note extension arm, which slides out for awkward access

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01843 601 438 (Broadstairs)

Proxxon DH40 thicknesser – bought as a present but not used due to illness. Capacity: 40 × 80mm; £350 ONO
01482 893 149 (East Yorkshire)

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07951 130 694 (North London)

Hegner VB36 Master Bowl Turner lathe with long tailstock, chucks and Robert Sorby tools, gouges chisels and chucks. No faults, immaculate condition – collection only; £,4000 with all extras. Call for more information and to make an offer. Ask for Ashley
01792 426 822 (Swansea)

Felder combination machine – 1.3m sliding table spindle moulder with router attachments; F34 power feeder and AF12 dust extractor; £1,500
01435 872 222 (Heathfield)

Wickes 1,200W router: cutter capacity 40mm; £60. 1/2in 12-piece router bit set; £30. Buyer collects
01912 858 020 (Newcastle)

Martin Godfrey's famous WoodRat WR5 plus handbook and DeWalt router DW625EK; £500. Call for details
01242 222 482 (Cheltenham)

SIP-01938 woodturning lathe – cast iron; 3/4hp motor; variable 10 speed easy change; digital read out; swivel headstock; steel stand, and other extras. 36 × 12in capacity, excellent condition; £240
01206 511 071 (Colchester)

Coronet Major Universal Woodworker – complete unit with, planer, saw, belt sander and lathe complete with cabinet and tools, etc. Buyer collects; offers over £400
01623 411 407 (Mansfield)

Coronet 3 lathe with wooden bench, collet chuck, Novatech scroll chuck, 20 assorted chisels (inc nine Ashley Iles' chisels), bench grinder with Robert Sorby grinding jig, woodturning books, blanks and finishes; £500 ONO
02380 266 944 (Southampton)

Shopsmith Mk5 lathe complete with bandsaw, jointer, circular saw with spare tipped blade, moulder, sanding disc, extended table, plus many extras. Call to make an offer
01476 561 966 (Lincs)

Elektra Beckum/Metabo planer/thicknesser HC260, in mint condition; £375; 10in Shipmate radial arm saw; £150
01873 812 498 (Powys)

The Complete Guide to Joint-Making by John Bullar; £10; *Routers & Router Tables* by Fine Woodworking; £10; ***Woodworking with the Router*** by Bill Hylton; £20. Unused, brand-new
01375 891 893 (Essex)

Charnwood chuck to fit Nova thread; £50; numerous turning tools; £190; 56lb 6in ceramic tiles; £42; eight books; £5 each; eight acrylic pen holders; £28; chainsaw bib and brace, plus helmet; £65 – buyer collects
01209 211 522 (Cornwall)

A complete range of woodworking tools and equipment used for violin, guitar and cabinetmaking, all of which are in excellent or like new condition
01672 520 020 (Marlborough)

Nu Tool woodturning lathe, 1,400mm long; 300 × 850mm capacity; cast-iron; steel stand; swivelling headstock; variable-speed; 230V motor; toolrests; centres; chucks; faceplates; spanners; 10 HSS turning tools – excellent condition; £295 ONO
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01493 368 180 (Norfolk)

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01530 834 581 (Leics)

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01780 751 768 (Lincs)

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The learning is expanded

A Mosquito fighter bomber built at the factory during World War II

On returning to the Tottenham factory and being placed in HJ Shop, Peter Baker discusses the peculiar machines he used, War Work, haircuts during work time, and the many secrets that existed within those walls

The training workshop at Worship Street was located on the top floor of the building. At least up there we could not affect any sales activities going on below. To one side of the workshop there was one woodworking machine: a simple, fixed table panel saw, which we were taught to use, safely. One instance which I shall never forget is the occasion when I was standing at the back of the saw, 'pulling out', which is taking the pieces of timber and gathering them as they come through the saw, then stacking them on to a flat barrow. The piece of timber being cut was obeche, which is an almost white timber from Africa, also known as swamp or stink wood. Believe me, it has earned its name. It is very light in weight and soft in texture, despite being a hardwood. Definition time: hard- or softwood has nothing to do with the weight or texture of material; hardwood comes from broad leaf trees and softwood from needle bearing trees – simple!

HJ Shop

When we returned to the Tottenham factory we were all placed in HJ Shop. We were the staff of HJ Shop and what a sight met our eyes. There were peculiar machines and presses all around and trolleys loaded with piece parts and plywood panels. We were to be inducted into the very modern world of Radio Frequency curing of glue lines or 'RF'. We were placed in the forefront of furniture making technology. The whole concept was the product of the company's experimental and development engineer, Chaim Schreiber. A bit of history here: during World War I the factory had switched over to War Work making ammunition boxes and wagons for the army, among other things. During World War II, the works had once again gone over to War Work. This time, however, they were making sub-assembly parts for aircraft. They actually made many 'Mosquito' fighter/bombers, which Geoffrey de Havilland had designed to be totally made of wood, thus releasing metals for other purposes in armaments.

Landing craft of all sizes were made in the factory and launched, from the log yard, straight into the Lea Conservancy (or canal), which flows directly down to the River Thames, very close to the Pool of London thence to the open sea. At the other side of the factory was Lebus' own private railway siding where smaller goods could be loaded and taken up country by train.

Being of an inquisitive nature, I always ask questions so I learned an awful lot about synthetic glues and the use of RF. However, the productivity potential of RF can best be illustrated by a few examples that I experienced. One great advantage of being in HJ Shop was the fact that the barber's shop was between HJ and the polishing shop and one only had to pop in for a haircut – during work time.

Top secret

On one occasion the entire Arsenal football team was given a tour of the factory. When they left the end of the polishing shop they walked along a passageway, beside a conveyor belt carrying finished furniture, under the main road, to the warehouse located in a purpose built building, with loading bays opposite. This conveyor belt crossed the end of HJ Shop. The visitors were not allowed to linger or ask questions about HJ and what took place there, but more about that next month... WW

NEXT MONTH

Join us next month as Peter tells us about the mysteries of HJ Shop. And if any other readers have a story to tell, we'd be glad to listen. Just write to **mark.cass@mytimemedia.com**

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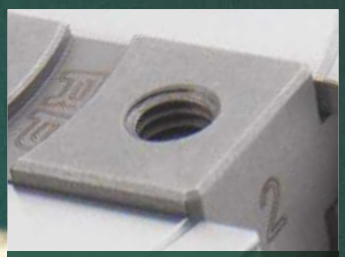

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