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A few of the 60 limited edition Turners Collection miniature bells made by members of the Register of Professional Turners, displayed and sold at Carpenters' Hall in November 2018



Items from the Turners Collection on display in the St Paul's Cathedral gift shop back in 2018. The miniature bells shown here were turned by Gabor Lacko and decorated by Patricia Spero



One of Andy Pickard's beautiful handmade pen and pencil sets, made using heritage oak from the Bells of St Paul's

Welcome

For many, putting a value on something, especially when that in question isn't necessarily tangible, is a difficult task. For example, how much do you think your time is worth, or what rate do you charge for a service as opposed to an item you've made? It's a troublesome area and one that continues to crop up.

It was actually an email from Jacqueline Skelton that set my mind on this path, telling me about the latest creation to come out of Shane's workshop – the St Paul's Cathedral Saw. An absolute one-off in every sense of the word, it's truly a thing to behold. Modelled on the design of Shane's Chippendale Dovetail Saw, what sets it apart is the use of heritage oak for the handle, taken from the headstocks of the Bells of St Paul's Cathedral following the 2018 restoration.

Miniature bells & offcuts

Going back to All Saints' Day 1878, the 12 bells in the north-west tower of St Paul's Cathedral – four of these gifted by the Worshipful Company of Turners – were dedicated and rung for the first time. In 2018, during refurbishment of the bell tower, these were taken down and sent back to Loughborough where they were originally cast and turned.

Setting up the St Paul's Bells Appeal, the Turners' Company aimed to raise £30,000 to help towards the total cost of the renovation. Saving the wood from the bells' headstocks and wooden surrounds, pieces of this heritage oak were given to various Registered Professional Turners around the country. Using this valuable timber, they were asked to turn miniature bells in their own style, which would then be sold in the Cathedral's gift shop. As a reward for their efforts, they could keep any timber they had left over, using it as they deemed fit. One such turner with a portion remaining was Andy Pickard, who Shane knew previously. Thinking how amazing it would be to use this old oak to make a saw handle, Shane negotiated with Andy, a deal was struck, and so he set about planning and making this special saw.

A saw like no other

So, to rephrase my original question slightly, can you really put a price on a handmade item such as Shane's bespoke saw, which is truly one-of-a-kind?

Many would argue that if you factor in the time required to make it – some 80 hours – then add to that the heritage oak's perceived cost – which seems impossible owing to its rarity and age – the resulting price tag would either be astronomical or priceless, given the fact it's incredibly valuable. Those that make a living from their craft face this dilemma, and as a result, sadly many end up underselling their wares and devaluing their skills in the process.

The St Paul's Cathedral Saw has a price tag of £3,850, which, depending on interest from buyers and collectors, could potentially skyrocket, especially in the event of a bidding war. From an outsider's point of view, and to someone who isn't familiar with the heirloom tools market, their reaction is likely be one of surprise. Again, this is an objection faced by many, even more so in this day and age where ancient skills are dying out, people are used to buying cheap, often disposable items, and therefore don't fully appreciate or cannot comprehend the value and importance of handmade work.

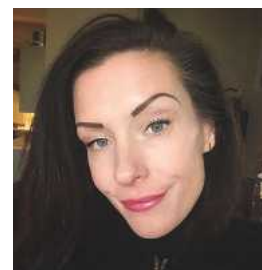
Conversely, those in the field, perhaps makers themselves, may think the price fair and justified given the fact the item's market value is likely to only increase, perhaps even exponentially. Those familiar with Shane's work know what a pivotal part he plays in keeping the craft of British sawmaking alive, and it's only a matter of time before someone – recognising the saw's intrinsic value – steps forward and declares themselves the lucky owner. Watch this space...

Clocks, carving & a new Men's Shed

So, what else can you expect from our August issue? Well, we have the first of a two-part on making a Laterndluhr-style wall clock; a technical masterclass and profile on wood artist Mark Doolittle; Bordon Men's Shed members share the story of their recent relocation; and in turning, we have a wonderful coloured and textured bowl plus some handy gardening aids. Enjoy!

Tegan

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24 AS TIME GOES BY – PART 1

In this complex two-parter, wishing to make his version of a German Laterndluhr-style wall clock, Peter Skilton opts for octagons rather than squares as he embarks on this impressive build



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PROJECTS & TURNING

52 Take a seat

Gifted two elm seat blanks by a neighbour – one first rate, the other with twist – Geoff Ryan sets about making his first stool. Sharing mistakes made along the way, the end result is not only functional, but more importantly, comfortable



67 Out of this world

Colin Simpson takes inspiration from our great galaxy to create an eye-catching bowl with a cosmic twist

76 Gifts for gardeners

Les Thorne's handy turned garden aids make great gifts as well as offering the perfect opportunity for practising tool skills

90 Design remedy

Not content with his original design for a farmhouse chair, Glenn Perry sets about replacing the arms and updating the finish. Now much improved, it enjoys regular use as well as being much easier on the eye

ON TEST

15 Triton TCMS254 1,800W sliding compound mitre saw

20 Festool HK 55 EQ-Plus saw with FSK 420 rail

TECHNICAL



46 Carving with Mark Doolittle

Fine woodworking artist Mark Doolittle shares the tips and techniques he uses to create his intricate carvings. According to Mark, the secret to success is 'continuous refinement'

58 Woodworker's encyclopaedia – part 29

As he continues with the Ps, which happen to be subjects of particular interest, in part 29, Peter Bishop focuses on plywood but also spends time in the countryside where pleaching and pollarding are rife

82 Mitre magic

Despite looking very attractive when cut well, mitre joints can be some of the most troublesome and inaccuracies can cause them to gape open. Here, Andy Standing shows how to get your mitres just right, every time

REGULARS

3 Welcome

8 News

9 Timber directory

22 D&M editorial

34 Archive

62 Letters & readers' tips

92 Next month

97 Marketplace

34 Jerkin & baggy hose

Delving into *The Woodworker* of May 1948, Robin Gates is diverted from a history of 'The Pley'n' by cameos of medieval craftsmen

36 A slice of history:

The St Paul's Cathedral Saw

Shane Skelton takes inspiration from the work of his 18th century contemporaries to produce a true one-of-a-kind creation. Not only is this saw steeped in history, it also features a handle made using heritage oak from the headstocks of the Bells of St Paul's Cathedral

ON THE COVER 40 Biology meets art

Celebrating biology through the medium of wood, Mark Doolittle's pieces serve to express the dynamic form of growth and symmetry encountered in cells and tissues, as well as in whole organisms throughout the natural world



72 The Bordon Men's Shed:

A rebuild in progress

Having to relocate their thriving Men's Shed to a new building and start things from scratch, the project is still a work in progress. Here, Clive Handy of Bordon Men's Shed talks about their recruitment drive and search for new members, to not only help build the workshops but also carry on the legacy

85 Raising the roof

After the devastating 2019 fire which set the iconic Notre-Dame de Paris cathedral ablaze, restorations for the city's landmark carry on in earnest, as Paul Greer documents

98 Take 5

From a hand-carved donkey pull-along toy to a wonderful tea box in exquisite bog oak, it's difficult to pick a favourite from this month's selection

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2021 NORTH OF ENGLAND WOODWORKING & POWER TOOL SHOW – cancelled

THE NORTH OF ENGLAND WOODWORKING & POWER TOOL SHOW

It's with regret that we must announce cancellation of the 2021 North of England Woodworking & Power Tool Show. Originally scheduled for 12–14 November, taking into consideration government guidelines on organised events, uncertainty still exists and our priority is to keep visitors and exhibitors safe. Due to the nature of the event, maintaining social distancing would be difficult and potentially compromise the number of trade stands and visitors we'd be able to admit.

Our overall goal is to put on an event which not only meets expectations, but also exceeds them. Therefore, we've taken the difficult decision to defer this year's event and come back in 2022 with a renewed focus, delivering the very best 'Harrogate' show possible.

We are incredibly saddened to have to cancel the show for a second year running, but this is the trend across the industry and we must



follow suit, putting the health and safety of attendees and exhibitors at the forefront.

The confirmed dates for 2022 are 11–13 November. We look forward to welcoming you back to the Great Yorkshire Showground, Harrogate, next year. Further details of exhibitors, trade stands and demonstrators will be announced in due course.

Once again, thank you for your continued understanding, support and patience regarding uncertainty and disruption caused by the



COVID-19 pandemic. In the meantime, stay safe and if you have any questions, etc. please don't hesitate to get in touch – email shelley.calver@mytimemedia.com.

For more information on the North of England Woodworking & Power Tool Show, see www.mytimemedia.co.uk/northofenglandshow.



Another cordless world first from HIKOKI – the M3612DA 36V cordless router

HiKOKI Power Tools has launched another cordless world first with the announcement of its M3612DA 36V brushless router. Whether it's grooving, bevelling, cutting, copying or engraving, using the new M3612DA router, battery-smooth shape cutting into timber materials has never been easier.

This new cordless offering is powered by HiKOKI's ground-breaking 36V Multi Volt batteries, delivering the shunt, grunt and high cutting performance normally associated with mains-powered tools. What's more, thanks to the Multi Volt battery, you can now work



anywhere – including building sites where mains power isn't available or often not permitted. A high efficiency brushless motor rounds off this must-have tool, which is aimed at woodworkers and the trade.

Easy to operate, this router doesn't hang around, thanks to its fast-cutting speed. Compact and lightweight, HiKOKI has packed the tool with a high specification, including a ½in collet chuck capacity, 50mm main body stroke and a weight of 3.8kg, giving the user a sure and powerful feel when in use. It also comes with a wrench, straight guide, dust collector set, template guide, plus ½in and ¼in collet chucks – all backed by an outstanding five-year warranty, subject to T&Cs. Following a 70-year history, the M3612DA 36V cordless router is another industry-first from HiKOKI, helping to fulfil its promise of bringing innovation and world class technology to the marketplace.

For further details and information, visit www.hikoki-powertools.co.uk.

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Professionals are now able to arrange COVID-Secure appointments locally with an experienced Makita team member, allowing them to get the most out of the wide range of cordless power equipment. Demos are available for the 40VMax/80VMax XGT or the cordless Outdoor Power Equipment (OPE) range, with both offering guidance on tool and accessory selection, as well as the opportunity for a hands-on test.

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The product demos will be organised locally with COVID safety protocols in place. Makita staff will arrange a visit on a mutually convenient date where selected machines can be tested and evaluated. Each tool will be cleaned before and after use, staff will wear face masks, and social distancing will be implemented.

Kevin Brannigan, Makita UK's Marketing Manager, said: "After a year of restrictions imposed by COVID-19, we're pleased to be reigniting our hands-on product demonstration service. As part of our ongoing commitment to training, product demos offer end users the chance to stay up-to-date with the latest product innovations, put our products to the test and discover the possibilities that cordless offers."

To book a demo, simply fill out the online form at www.makitauk.com.



BOB NEILL'S 2021 pyrography courses

One of the leading exponents and demonstrators of pyrography in the UK, Bob Neill will be re-opening the doors of his South Derbyshire workshop and holding courses on the following dates: **7 and 21 August**, and **4 September**. If you prefer a week day, however, then contact Bob to discuss requirements.

Having developed his techniques over the last 20 years, recent work includes Art Deco abstract designs on a variety of turned work including bowls and platters. Prior to the COVID-19 pandemic, Bob could be seen demonstrating at many of the major woodworking shows as well as giving talks to groups up and down the country.

For more information and to book yourself on to one of Bob's courses, call **01332 792 036** or email bob.neill1@btinternet.com.



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IronmongeryDirect and ElectricalDirect have announced expanded delivery options to include Call & Collect and has added new postcodes to their same-day delivery service, making it even easier for professionals to order products flexibly and in line with the demands of their project schedules.

The Call & Collect service offers a new way for tradespeople to quickly access the wide range of IronmongeryDirect and ElectricalDirect products essential for getting the job done. Once the order is placed, customers can conveniently collect their items directly from the trade counter in Basildon, Essex, an hour later.

Same-day delivery has also been expanded to include CO, N, EC and WC postcodes, building on the Southend-On-Sea, Chelmsford and Romford IG, and E postcode areas, where the service is already available.

The new services join an existing line-up of delivery options, making ordering from both companies' wide range of stocked architectural



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Marco Verdonkschot, Managing Director at IronmongeryDirect and ElectricalDirect, said: "We know how important it is to keep our customers supplied with the goods they need, when they need them. We already offer free next day deliveries and a Click & Collect service to over 6,000 pick-up points nationwide and are delighted to expand our delivery options with a one-hour Call & Collect service and

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RYOBI launches first UK e-commerce site with exclusive new tools selection

Ryobi is delighted to announce the launch of its first e-commerce site for the UK customer. An exclusive selection of tools are available to purchase directly through the online store, allowing customers to browse through the manufacturer's extensive range of garden and power tools across multiple cordless voltage platforms. This includes the Ryobi 18V ONE+ system, the 36V MAX POWER system, as well as a large selection of accessories.

MAX POWER is an innovative system for garden tools, incorporating the company's most advanced motor technology, electronics, and battery performance. As a result, users no longer need to rely on corded or petrol tools to tackle even the toughest garden tasks. This date also marks the launch of the new ONE+ HP range in the UK, which will be available exclusively via the online store. ONE+ HP tools are Ryobi's highest performing 18V tools to date, featuring energy-dense brushless motors to bring ultimate power to users' DIY and garden projects.

Along with access to promotions and exclusive new tools, the e-commerce site will feature unique online deals. Users can also enjoy free shipping on all orders over £50 and register their tools online to receive an extended three-year warranty.

For more information, visit www.ryobitools.co.uk.

CLARKE CBS205 205mm electric bandsaw (250W)

Ideal for DIY and hobby use, the new Clarke CBS205 205mm electric bench-top bandsaw allows for accurate cutting in all types of wood.

A tilting table, mitre gauge and rip fence provide the facility to produce accurate straight, cross, rip, mitre and bevel cutting. For added stability, the CBS205 can be bolted onto a worktop surface using four holes located on the base – bolts sold separately.

The Clarke CBS205 bandsaw is supplied with a push stick, work table, rip fence, table inserts, 4mm and 3mm Allen keys, 10mm spanner and fixings. The full range of Clarke Woodworker bandsaws also benefit from a 1 year/12 month manufacturer's warranty.



Features

Motor: 250W/230V

Cutting capacity: Width – 195mm (throat depth); thickness – 80mm

Table size: 302 × 304mm

Blade speed: 15.8m/sec

Blade: 1,400 × 6.35 × 0.8mm – 6tpi

Tilting table: 0-45°

Supplied extras: Quick-release rip fence and dust extraction outlet

Priced at £131.98, see www.machinemart.co.uk for more details.



LIBERON makes it easier to choose the right wood dye

If you fancy changing the colour tone of a piece of woodwork in your home in order to better complement your decor, you'll be trying to work out which wood dye to choose from the myriad of options available – and there's quite a difference between the poorest and highest quality products. Liberon has been providing specialist woodcare solutions since 1912, and is widely regarded by professionals as being the most-trusted brand in this field. The company's advice is to start by considering the wood to be treated.

Liberon's Spirit Wood Dye

If you're dealing with a dense hardwood such as mahogany or oak, then you need a dye featuring extra absorbency. The dye's solvents must be capable of achieving a high level of penetration into the wood. This capability also makes it ideal for already-finished timbers. Liberon's Spirit Wood Dye is ethanol-based, which makes it ideal for this type of application, as well as suitable for use on new and reclaimed timbers. It may be over-coated with wax, oil or varnish, and even used to tint French polish.

Liberon's Spirit Wood Dye has a consistent formulation, meaning any of the eight colours in which it's offered – Antique Pine, Dark Oak, Ebony, Georgian Mahogany, Light Oak, Medium Oak, Teak and Walnut – can be mixed together to achieve the preferred shade.

Liberon's Palette Wood Dye

If high density wood isn't the issue and there's an exact finished shade you're looking for, this can be achieved by mixing any of the 13 colours in which Liberon's Palette Wood Dye is available: Antique Pine, Dark Oak, Ebony, Georgian Mahogany, Golden Pine, Light Oak, Medium Oak, Teak, Tudor Oak, Victorian Mahogany, Walnut, White and Yew.

Palette Wood Dye is a quick-drying, top quality, water-based option suitable for either soft or hardwoods. The dye's formulation includes light stability for excellent colour retention, easy absorption, and its specialist acrylic formula minimises the raising of wood grain.

Liberon's Palette Wood Dye & Natural Finish Varnishes

If varnishing is also required, it's possible to save time by mixing Liberon's Palette Wood Dye with Liberon's range of Natural Finish Varnishes to create a single-application product. This allows you to achieve a beautiful result more quickly than applying the two products, one after the other.

For further information on Liberon and the company's extensive range of woodcare products, see www.liberon.co.uk.

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TRITON TCMS254 1,800W SLIDING COMPOUND MITRE SAW

If you're looking for a double bevel sliding mitre saw with generous capacities, you won't go far wrong with Triton's new TCMS254, says Phil Davy

Unlike some larger woodworking machines, the sliding mitre saw is equally at home in the workshop as it is on site. While its predecessor, the radial arm saw, was confined to the shop due to its considerable size and weight, the mitre saw is portable, making it far more versatile. As well as cutting boards accurately to length, the major advantage lies in its ability to make trenching cuts – where the blade can be set to a precise depth – as well as quickly cutting joints such as housings and tenon shoulders. With an appropriate end stop in place, repeat cuts are simple and accurate.

Triton's new TCMS254 sliding mitre saw offers double bevel cutting, decent capacities and a laser guide. Equipped with an 1,800W motor, there's no shortage of power for those



With an 1,800W motor, there's no shortage of power for those deep cuts in heavier timber, which are often necessary for compound bevels



Locked for storage with a thumbscrew, twin offset horizontal bars allow the saw head to travel a maximum distance of 210mm



One of the TCMS254's significant features is the fact it's relatively compact – at least in depth



The saw can be positioned so the bar ends are almost touching the wall, which is significant in a small workshop where space is limited



A built-in handle on the upper bar allows you to move the machine around, though at about 20kg it's not exactly lightweight



When not required, brackets at the rear allow the mains cable to be neatly wrapped for storage



A pair of removable support rods at the rear of the base add stability, though I found these superfluous for most cutting tasks

deep cuts in heavier timber, which are often necessary for compound bevels.

Cast construction

Mitre table, fences and saw head are made almost entirely from cast alloy, with most locking levers and adjuster knobs from dense plastic and steel. Not surprisingly, the motor casing is plastic with an alloy guard shielding the top half of the blade. A clear polycarbonate guard covers the lower half, retracting as you lower the head downwards. A pair of rubber wheels at the bottom help it travel along the plastic table inserts, which are located either side of the blade. The sliding carriage consists of twin horizontal bars, which are offset, allowing the saw head to travel a maximum distance of 210mm. This can be locked for storage with a thumbscrew. One of the TCMS254's significant features is its relatively compact size, at least in depth.



For making trenching cuts, simply flip over a steel plate on the sliding carriage



The laser guide is ready calibrated, though a pair of thumbwheels are provided for tweaking alignment either vertically or horizontally



Operating the saw is a cinch, the sizeable front handle incorporating a big on/off trigger to activate the motor, with rubberised palm grip

The mitre saw can be positioned so that the bar ends almost touch the wall, which is significant in a small workshop where space is limited. This does mean, however, that the dust bag tends to get squashed if this is tight.

A built-in handle on the upper bar allows you to move the machine around, though at about 20kg it's not exactly lightweight, so you probably won't want to carry it further than necessary. Brackets at the rear allow the mains cable to be neatly wrapped for storage when not required, but at 2m it's not particularly long, so you may need an extension cable.

A pair of removable support rods at the rear of the base add stability, though I found these superfluous for most cutting tasks.

Making a cut

To enable the saw head to tilt both left and right – for bevel cuts – the motor is mounted at an angle, rather than horizontally.



A laser guide is fitted to the upper guard, with an easy to reach on/off button behind the front handle



Zipped for easy waste removal, the large fabric dust bag has a decent capacity



The head can be locked down for storage with a push pin next to the pivot point

Operating the saw is a cinch, the sizeable front handle incorporating a big on/off trigger to activate the motor, with rubberised palm grip. To make a cut, depress the power lock-off button alongside with your thumb, then plunge down. The head can be locked down for storage with a push pin next to the pivot point. I found this pin could get fouled slightly by the cable, which is a tad irritating. The single speed of 3,200rpm is fairly typical for a big mitre saw.

For making trenching cuts, simply flip over a steel plate on the sliding carriage. This prevents the saw head from being plunged down completely, an adjuster screw above for depth setting. To return to full-depth cutting, you swing the plate back again. A laser guide is fitted to the upper guard, with an on/off button in easy reach behind the front handle. It's ready calibrated, though a pair of thumbwheels are provided for tweaking alignment either vertically or horizontally. It's possible to set the single beam to either side of the kerf, an advantage if you're left-handed.

Zipped for easy waste removal, the large fabric dust bag has a decent capacity. It fits over the 57mm outlet at the back of the saw head, though here you'll almost certainly need an adaptor if hooking up a flexible hose.

Turntable & fences

Eight mounting holes are provided on the base, with two different diameters to suit 6.4 and 9.5mm bolts. This means you can mount the machine on a universal mitre saw stand or build it into your own bench securely. Both turntable and adjacent workpiece



Like any mitre saw, static fences located each side of the blade support your timber



To make bevel cuts, you release plastic locking levers at the back, or these can be removed completely if you prefer

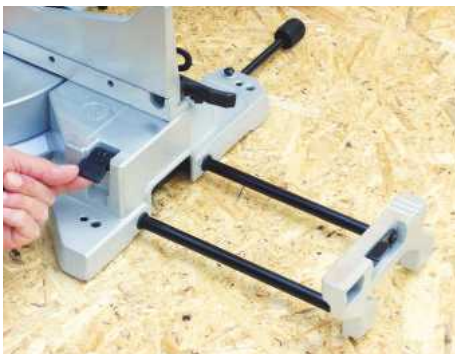
supports have finely polished surfaces, with no sharp edges. Like any mitre saw, static fences either side of the blade support your timber. Each has an upper sliding section that's moved sideways when tilting the saw head for bevel cuts. To do this, you release plastic locking levers at the back, or remove these completely if you prefer. The fixed fences have screw holes for attaching timber facings, to prevent breakout or make life safer when cutting mouldings or similar.

Easy to read, the turntable's protractor scale has 22.5° and 31.6° – crown moulding – marked in red on both sides, the remainder in black. The red metal pointer can be adjusted with a screwdriver if necessary.

Swivelling the turntable is via the front mitre handle, while a quick-action cam lever underneath ensures the saw head is solidly locked at any angle. Nine mitre detents are provided at 15, 22.5, 31.6 and 45° – both sides – plus 0-90°. When these settings aren't required, simply depress the detent override button; this allows you to swing the turntable without it stopping automatically at one of the pre-set positions. To reverse this action, squeeze a second lever, which releases the button. Simple but effective.

Extra support

For securing timber to the table, a sturdy steel hold-down is included, which can be fitted either side of the blade. This is locked into holes behind the fence and can accommodate material up to 120mm deep. Adjustment is slow, which is a faff if cutting components



A handy table extending wing at either end offers extra support for your timber



Easy to read, the turntable's protractor scale has 22.5° and 31.6° – crown moulding – marked in red on both sides, the remainder in black

that vary widely in thickness, although a couple of suitably-sized offcuts used as cramping spacers speeds things up.

A handy table extending wing is located at either end, adding extra support for your timber. Running on steel rods underneath the base, you simply flip up a lever to release these wings, then slide them out from left or right. A hinged steel end stop on each is useful when making accurate repeat cuts. Depending where you lock the wings, minimum distance from the blade is 280mm; maximum is 506mm.

Head tilt

You can tilt the saw head up to 45° either side – 47° on the left – via a Bristol locking lever at the rear of the turntable. The protractor scale is easy to read with detents at 33.9° – both sides – for making crown moulding



When the mitre detents aren't required, simply depress the detent override button; this allows you to swing the turntable without it stopping automatically at one of the pre-set positions



Swivel the turntable via the front mitre handle, while a quick-action cam lever underneath locks the saw head solidly at any angle

cuts. As you'd expect, the stop pin at zero means you don't need to check blade accuracy with a square again afterwards. You can tweak the metal degree pointer with a screwdriver if you ever need to recalibrate.

Blade change

With a diameter of 254mm, the 60-tooth TCT combination blade has a standard 30mm bore and kerf width of 2.6mm. Producing a very clean cut, it's easy enough to change if you require a coarser finish or when a blade needs to be sent off for sharpening. Removing a screw on the main handle allows you to slide the lower guard around, exposing the blade retaining nut. This is then slackened off with a wrench in conjunction with a spindle lock button at the rear of the motor. There's no excuse for losing this tool as it's conveniently



For securing timber to the table, a sturdy steel hold-down is included, which can be fitted either side of the blade



A hinged steel end stop on each is useful when making accurate repeat cuts



You can tilt the saw head up to 45° either side – 47° on the left – via a Bristol locking lever at the rear of the turntable



The protractor scale features detents at 33.9° – both sides – for making crown moulding cuts

stored behind the right-hand fence, mounted on a couple of brackets.

With the blade set at 90° – 0 – you can crosscut timber up to 318 × 64mm in section, which is impressive for a blade of this size. Swing the saw head round for 45° mitres and timber width reduces to 222mm. For bevel cutting at 45°, maximum timber thickness is 40mm, though you'll need to remove left or right upper fences for some of these cuts.

In use

I cut a variety of softwoods and hardwoods, including 290 × 40mm oak worktop, 225 × 50mm rough-sawn pine, plus odd pieces of plywood and veneered boards. The finish from the blade was really clean – important for joinery or furniture components – with very little chipping on the sheet materials. Both slide and plunge action are pretty smooth. It's easy enough to make accurate



I cut a variety of softwoods and hardwoods, including 290 × 40mm oak worktop...



It's easy enough to make accurate trenching cuts, though as with any mitre saw, you'll need a spacer placed along the back edge of the workpiece



Producing a very clean cut, it's easy enough to change the blade if you require a coarser finish

trenching cuts, though as with any mitre saw, you'll need a spacer placed along the back edge of the workpiece. This ensures the blade cuts at a consistent depth right across the timber. With a brushed motor it's not the quietest of machines, so ear protection is therefore recommended. With no soft-start electronics, firing it up can seem a bit fierce until you get used to it. I found dust extraction much more efficient when hooked up to an extractor as opposed to relying on the bag. This doesn't pose a problem when using it outdoors, though probably more important in the workshop.

When using the saw outside in broad daylight, like most laser devices, Triton's is of little use. In a workshop setting, however, you can usually adjust lighting levels to suit, where it's easier to see the beam.

Conclusion

The Triton is big, brash and capable of making virtually any compound mitre cut you're likely



... 225 × 50mm rough-sawn pine, odd pieces of plywood and veneered boards



The Triton is big, brash and capable of making virtually any compound mitre cut you're likely to want, plus housings and tenons



A wrench is conveniently stored behind the right-hand fence, mounted on a couple of brackets

to want, plus housings and tenons. It's capable of precision work, though if you only envisage sawing smaller section timber, it could be overkill. It may be noisy, but that's true of many woodworking machines, and it may seem pricey, but you could easily pay a lot more for a saw with similar features.

If you're looking for a double bevel sliding mitre saw with generous capacities, you won't go far wrong with the TCMS254. It also comes with a three-year warranty. ✂

SPECIFICATION

Bevel range: 0-47° left/right

Blade diameter: Ø254 × Ø30 × 2.8mm × 60T

Bore diameter: 30mm

Dust extraction: Yes

No load speed: 3,200rpm

Number of teeth/segments: 60T

Power: 1,800W

Dimensions (L × W × H): 775 × 622 × 525mm

Weight: 19.9kg

Sound power (LW): 109.2dB(A)

Sound pressure (LP): 96.2dB(A)

What's in the box: TCMS254 sliding compound mitre saw; 254mm TCT blade; workpiece clamp; Hex key; dust bag; instruction manual

Typical price: £462.75

Web: www.tritontools.com

THE VERDICT

PROS

- Heavy-duty, precision double bevel cutting; good capacities; laser saw guide

CONS

- Hold-down slow to adjust

RATING: 4.5 out of 5



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FESTOOL HK 55 EQ-PLUS SAW WITH FSK 420 RAIL

Solid, comfortable and with a low centre of gravity, the **Festool HK 55 EQ-Plus** is a pleasure to use

This truly is a golden era for power tools; never have they performed so well nor suited user requirements so completely. The new rail saw from renowned German specialists Festool is a case in point. Designed purely with the on-site carpenter in mind, the combination of a robust and reliable plunge saw with the versatile accuracy of a lightweight rail is an irresistible solution. Proving the worth of lengthy research, stringent quality control and a loyal workforce, Festool has upped the stakes again in the worldwide quest for improved performance and constant precision. That's not to say it's perfect, mind, but this particular sawing system is definitely heading in the right direction.



Solid & comfortable

It's a solid and comfortable fit in the hand and, although designed primarily for right-handers, it's not as cumbersome to use for lefties as some power tools can be. If anything, the improved view of the blade could be considered an advantage by some of this particular minority.

It shares most of the features common to a hand-held circular saw, and there's nothing to stop you using it freehand if you so wish; it functions just as well as a regular circ. Sharing a feature with a few other design-conscious manufacturers in the market,

the user interactive elements of the tool are cast in the company's trade mark lime green colour (RAL 6018), and clearly identify all of the controls and adjusters.

Plunge facility

There's a standard soft grip handle from which the thumb slide can be reached and enables the trigger to be pulled. This activates a short slow start for the motor, the running speed of which can be readily set prior to operations courtesy of a rolling switch nearby. Speeds vary from very slow indeed to the familiar



The Festool HK 55 EQ-Plus features a solid and comfortable build format with a low centre of gravity



Depth adjustment is precise and features an easy-to-read scale



This lever controls the blade guard and will flip it back with ease



The hex key for changing the fine-kerfed blade is tucked away in the handle



The guide rail, showing the plastic edge strip – a darker colour would have shown up better



Speed control: at its fastest, it remains un-scary

brisk rate found on most other similar machines. It's a comfortable saw to use, especially with the forward-mounted handle or tote, and its weight and balance inspire confidence right from the start. This model is the 55 – the 55 being the maximum depth of cut from the blade (without the rail). The cutting depth can be set from the start by means of a sprung lever, a clear scale, and a positive adjustment action. The saw also has a plunge facility, useful for piercing cuts as might be found on a kitchen worktop, for example. The saw is first set to depth then, on releasing the plunge lever, the body of the saw lifts off from the base from whence it can be readily plunged into the workpiece.

The rail

The rail, available in three different lengths, features a sliding stop on one side, which allows the user to make a variety of angled cuts – on either hand – and sets the whole system up as a serious rival to a portable chop saw. Common to this type of saw, there's a plastic strip at the cutting edge of the rail, which is lightly trimmed on setting up for the first time; from then on the blade will give the cleanest of cuts and with no break-out on cross-grain work.

Blade guards on hand-held circular saws can often prove troublesome, frequently getting snagged on even the smallest of obstructions. You definitely don't want to be employing

excessive force when using a power saw – and don't even think about taking the blade guard or riving knife off! – so it's always necessary to stop and attend to the problem. Most saws only have a tab on the actual guard itself, but the Festool saw boasts a geared lever, which flips the guard out of the way from the safety and comfort of the handle. Top stuff.

Saw & rail connection

One feature I wasn't sure of at first is the way the saw and rail stay connected throughout; after each cut the rail springs softly back into place in readiness for the next job. This conjoining soon grew on me throughout the day on site,



On site the saw really proved its worth, and was judged indispensable. It saved me having to drag my chop saw along, too

however, and I realised it was actually a boon for awkward repeat cuts or when you can't spare another hand.

Conclusion

A terrific cutting system; after the initial shock of parting with the money wears off, you'll never regret buying one. ✂

SPECIFICATION

Power: 1,200W
Idle engine speed: 2,000-5,400rpm
Angular range: 0-50°
Blade diameter: 160mm
Cutting depth – 0°/90°: 0-55mm
Cutting depth - 45°/50°: 42/38mm
Dust extraction connection diameter: 27/36mm
Weight: 4.4kg
Typical price: £484.80
Web: www.festool.co.uk

THE VERDICT

PROS

- Accurate; efficient; versatile

CONS

- The plastic edge strip on the rail could be better adhered

RATING: 4.5 out of 5

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MAKITA DTM52Z 18V BRUSHLESS MULTI-TOOL LXT BODY

MANUFACTURER: Makita

D&M GUIDE PRICE: See our website

The new DTM52 cordless multi-tool from Makita is powered by an 18V LXT Li-ion battery and designed to be compatible with all Starlock, Starlock Plus and Starlock Max accessories, allowing heavy-duty applications such as rebar cutting to be carried out.

The new multi-tool features AVT (Anti-Vibration Technology) for extra-low vibration performance plus a small diameter easy-grip, which ensures added comfort and control in use. The 3.6° oscillation angle is engineered for faster, more aggressive cutting and sanding together with a brushless motor, which delivers higher cutting/sanding efficiency. An LED light with afterglow function illuminates the work area and the variable speed control dial – from 10,000-20,000rpm – allows the user to match appropriate speed to chosen application. 12 angle settings are present at every 30°, from 0-360°.

Blade changing is carried out using the easy-to-operate slide switch, which increases productivity and facilitates continuous use. The compact, lightweight design allows access to restricted work areas, resulting in reduced operator fatigue. An anti-restart function minimises accidental start-up and smoothness is guaranteed thanks to a soft start feature. A dust extraction system, ideal for aggressive dust removal applications using a sanding pad, is available as an optional extra. The DTM52 is sold as a body-only unit.



REACH CLOSER WITH THE NEW MIRKA® LEROS-S 950CV

MANUFACTURER: Mirka

D&M GUIDE PRICE: See our website

Mirka® has introduced a new sibling to go alongside its successful LEROS wall sander – the new LEROS-S. Featuring all the well-known abilities of the LEROS, it benefits from a shorter, even more easily handled length.

The new Mirka® LEROS-S 950CV is a compact length wall sander with a highly flexible sanding head, making it the perfect tool for sanding walls in confined spaces. Thanks to its lightness, balance and easy manoeuvrability, the LEROS-S facilitates faster and easier sanding of large areas. The generous sanding pad features a 5mm orbit, which works especially well for tasks such as levelling filler on large areas and surfaces and in situations where a longer wall sander is more difficult to handle. It can, however, still be fitted with an extension for those occasions when greater reach is required.

In construction and decoration work, the LEROS-S shines when used for applications such as sanding bathroom walls, narrow corridors, walk-in closets and more, with two dedicated grip points allowing full user control. The LEROS-S features dual suction points for dust removal, making sanding virtually dust-free – a significant benefit when working in confined spaces. Just like its bigger brother, the LEROS-S uses brushless motor technology for constant speed under load with no loss in efficiency experienced under heavy pressure.

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AS TIME GOES BY PART 1

In this complex two-parter, wishing to make his version of a German Laterndluhr-style wall clock, **Peter Skilton** opts for octagons rather than squares as he embarks on this impressive build

The Laterndluhr-style wall clock – German for lantern clock but quite unlike the much earlier English lantern clock – was the predecessor of the better-known Vienna Regulator wall clock, popular throughout Europe during the mid and late 19th century. The elegant cases of the Laterndluhr were produced in Austria and Hungary around the 1820s and basically consist of a framework comprising three boxes: the hood, the trunk enclosing the pendulum, and a housing to enclose the pendulum bob. The vast majority of Laterndluhr-style clocks, which can be found in specialist clock magazines and expensive antique shops, will feature square enclosures at the top and bottom, plus a parallel-sided trunk.

General considerations

The decision to build a framework with octagonal enclosures for the clock movement and pendulum bob, connected by a tapering trunk, undoubtedly made the project more complex but the overall appearance seemed to be more pleasing and less box-like. As with most designs, the result was a compromise – in this instance between a slender, attractive case, which allowed easy visibility of the clock movement and matching-leaf, veneered walnut backboard, and the strength necessary to accept the weight of the movement, as well as over 2.5kg of 2mm-thick glass.

The two octagons in particular could appear bulky if the width of the glazing bars for the 12 glazed sides dominated the glass areas. They needed to be slim, hence the width of adjoining horizontal glazing bars was reduced in comparison to the width of the highest and lowest sections. This point is more clearly demonstrated in the accompanying drawings.

Use of 2mm glazing grooves would have made the final assembly straightforward and yielded an attractive appearance to the inside of the enclosures; however, the reduction in strength that would have resulted from removal of material to enable the glass to be a sliding fit, caused this idea to be rejected. For a similar reason, the idea of unequal depth glazing grooves on opposite sides of each frame with miniature retaining screws for the glass, was also rejected in favour of the more time-consuming, albeit



1 Movement and dial set up to check case dimensions

stronger, glazing bars with the glass bedded into a bead of silicon rubber. Traditionally, this would have been a bead of brown putty; the silicon rubber was a 21st century gesture to ease the task of replacing glass should the need ever occur.

For a project such as this, before working on the design details, it's essential to obtain the clock movement and set this up, complete with the gong, on a dummy backboard. Dimensioned sketches were made of all parts of the movement that could affect the case design: the fall of the weights, the distance of the weights and pendulum from the backboard, the swing of the pendulum, and so forth. These figures enabled the dimensions of the case to be finalised and a thorough check to be made

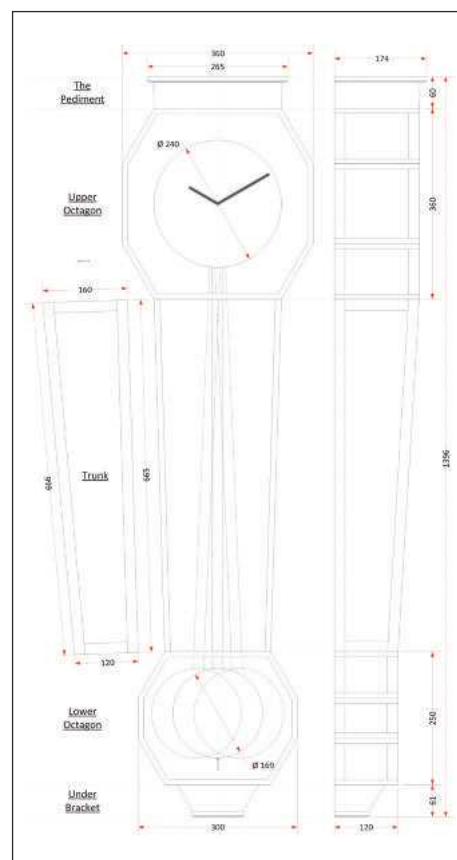


Fig.1 Overall case dimensions

for errors, which might come to light at a later, more advanced stage of construction.

I chose a Kieninger RWS wall clock movement of 15 days' duration, with a 'seconds pendulum'. This has an overall height, from top of the gong to tip of the pendulum, of 1,215mm. The diameter of the dial is 240mm (photo 1). Although the supplier of the clock movement I used is no longer trading, an online search will reveal other specialist suppliers of Kieninger movements. A full-size drawing of the front and side elevations of the case was created to help with planning and this proved invaluable throughout the project. The first drawing (Fig.1) shows the main dimensions of the case while the lower octagon and upper octagon are shown, in more detail, and with part numbers, in Fig.2 and Fig.3, respectively. ▶

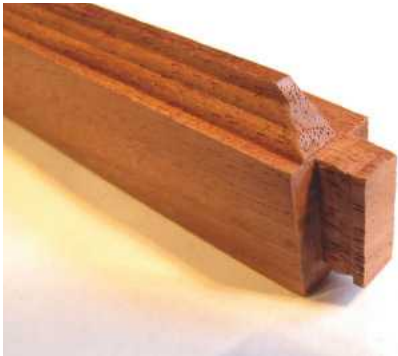


CUTTING LIST

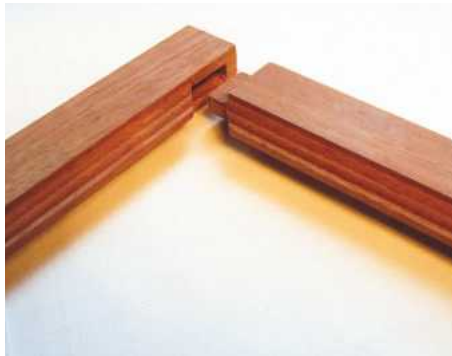
PART NUMBER	PART NAME	NUMBER REQUIRED	DIMENSIONS (MM)			NOTES (Unless stated otherwise, all material is American walnut and NO allowance has been made for waste)
			(No allowance for waste)			
Lower octagon including under bracket			Length	Width	Thickness	
1	Three-part side frame – horizontal glazing bar – all frames	12	120	20	11	20mm width allows for waste to cut a bevel between frames – see drawings for details of each frame
2	Three-part side frame – vertical glazing bar – middle frame	4	68	20	11	68mm length includes a 5mm tenon on each end
3	Three-part side frame – vertical glazing bar – top and bottom frames	8	92	20	11	92mm length includes a 5mm tenon on each end
4	Base	1	200	120	11	
5	Top open frame – front	1	200	20	11	
6	Top open frame – side	2	110	20	11	110mm length includes a 10mm tenon on one end
	Loose tongue – to fit between horizontal glazing bars, base and top frame	8	75	5	3	Not shown in drawings
7	Under bracket	1	154	96	53	Fabricated block of beech – finished in American walnut veneer
8	Under bracket base	1	66	50	10	
9	Under bracket moulding – front	1	98	16	11	Ebony
10	Under bracket moulding – side	2	66	16	11	Ebony
11	Under bracket dovetailed tenon	1	60	50	10	Not shown in drawings – fixed to base of lower octagon
Upper octagon including pediment			Length	Width	Thickness	
12	Three-part side frame – horizontal glazing bar – all frames	12	160	20	11	20mm width allows for waste to cut a bevel between frames – see drawings for details of each frame
13	Three-part side frame – vertical glazing bar – middle frame	4	144	20	11	144mm length includes a 5mm tenon on each end
14	Three-part side frame – vertical glazing bar – top and bottom frames	8	112	20	11	112mm length includes a 5mm tenon on each end
15	Base open frame – front	1	240	20	11	
16	Base open frame – side	2	150	20	11	150mm length includes a 10mm tenon on one end
17	Top	1	240	160	11	
	Loose tongue – to fit between horizontal glazing bars, top and base frame	8	110	5	3	Not shown in drawings
18	Pediment – front	1	243	55	11	Beech – finished in American walnut veneer
19	Pediment – side	2	163	55	11	Beech – finished in American walnut veneer
20	Corner blocks	2	55	30	30	Beech

Continued overleaf...

Upper octagon including pediment (continued)			Length	Width	Thickness	
21	Fixing strip – front	1	240	45	4	Beech
22	Fixing strip – side	2	160	45	4	Beech
23	Moulding – front	1	265	17	11	Ebony
24	Moulding – side	2	174	17	11	Ebony
Sides			Length	Width	Thickness	
25	Vertical glazing bar – front	2	636	20	11	636mm length includes a 5mm tenon on each end
26	Vertical glazing bar – rear	2	635	20	11	635mm length includes a 5mm tenon on each end
27	Upper glazing bar	2	160	20	11	
28	Radiused bead – upper	2	160	16	5	Ebony
29	Lower glazing bar	2	120	20	11	
30	Radiused bead – lower	2	120	16	5	Ebony



2 Vertical glazing bar tenon for both upper and lower glazed housings



3 Completed mortise & tenon joint

One vital check to make is to ensure that the movement and pendulum can be positioned within the case without the top frame of the lower octagon or the base frame of the upper octagon interfering with access. Both U-shaped frames have a horizontal bar across the open aperture of the case and could prevent the pendulum being suspended on the movement, or impede the fall of the weights as the clock movement runs down.

A final check – the lateral position of the

weights will change as they descend and the line unwinds from the winding barrel. Ideally, they will move towards the backboard as they descend. In my case, they moved towards the glazed front of the case, so the case depth had to accommodate this shift in lateral position as the clock runs down.

The choice of material from which to build the case was relatively easy. In the late 1980s, I was given a Model 383 Campaign Bed made by Robinson's of Ilkley in around

1870. It was beyond repair and taking up much needed space in a friend's garage. Over 30 years later, American walnut salvaged from this beyond-restoration bed provided the material to build the wall clock.

CONSTRUCTION OF CASE FRAMEWORK Octagonal enclosures

The construction of the upper and lower octagons is similar and shown in detail in **Fig.4**. Both comprise six glazed frames, an open, U-shaped frame and a solid side: top or bottom. Bevelled joints, reinforced with a loose tongue, connect these parts of each octagon.

Using a table-mounted router, lengths of walnut were prepared with a glazing rebate and moulding. Mortise & tenon joints, incorporating a mitre for the moulding, were used at each frame corner (**photos 2 & 3**). The rear edge of each frame was rebated to a depth of 2mm to accommodate the veneered backboard's 10mm finished thickness. The cross-section of the two open, U-shaped frame members was 11 x 11mm. To retain sufficient strength in the corner joints, these were made from 11 x 20mm material and

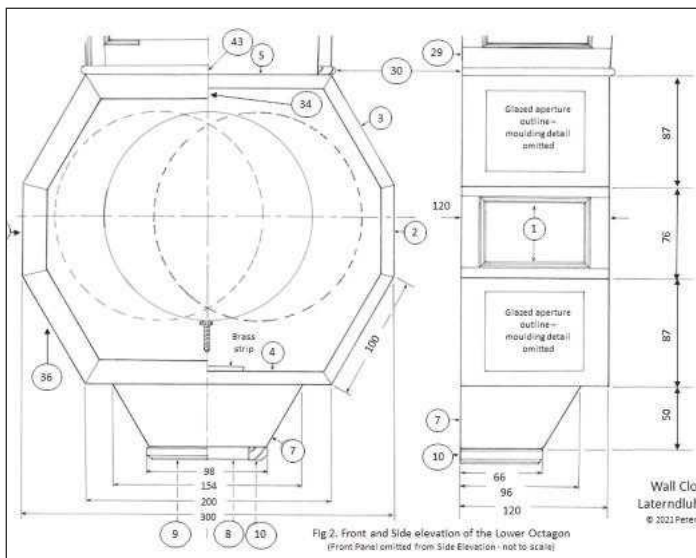


Fig.2 Lower octagon

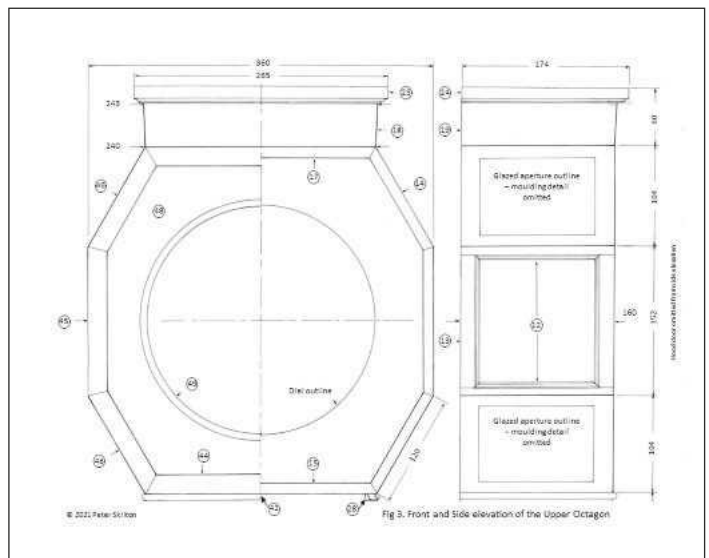


Fig.3 Upper octagon

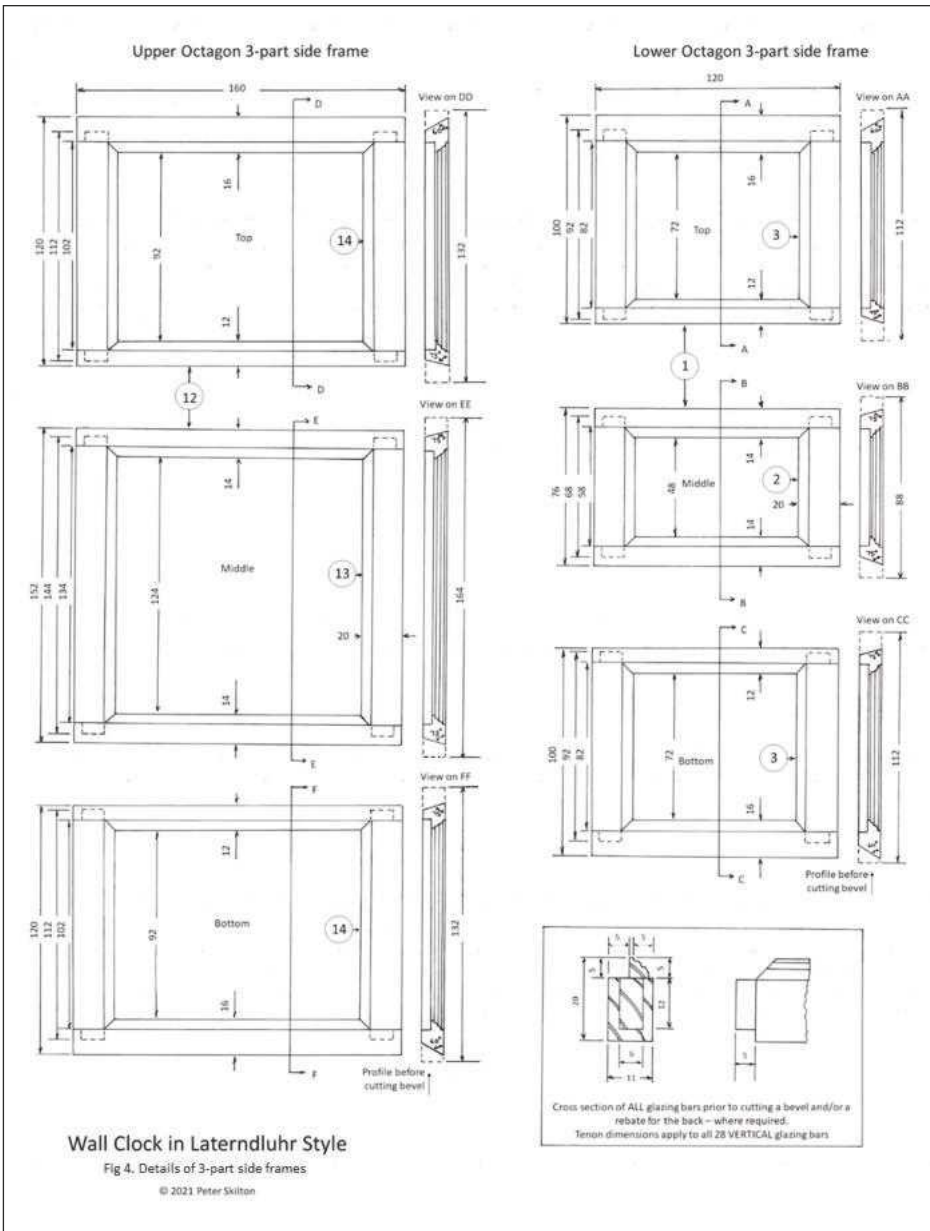


Fig.4 Side frames

reduced, as shown in **Fig.5**, while retaining an internal 25mm radius at the weakest point of the assembly to improve strength. The pieces of scrap material temporarily glued between the frame sides, visible in **photo 4**, served to provide strength while the radiused internal corner and bevel were cut.

To achieve the desired octagonal shape, two bevel angles were necessary: 60° and 75°.

The bevelled joints were reinforced with a loose tongue set into a 75mm long (lower octagon), or 110mm long (upper octagon) 3mm wide stopped groove in each half of the joint. The jig used for this is described in the panel on page 32. The loose tongues don't inherently add much strength to the joints but they do make joint alignment easier as well as providing a larger surface area over which the glue can act.



10 Dry assembly of the lower octagonal enclosure...



11 ... and upper – resting on the full-size plan



4 Cutting an internal radius in the corner of the upper octagon's bottom frame



5 Loose tongue in the top of the upper octagon (left) and bottom of the lower octagon (right)



6 2mm deep rebate around the sides of the top frame (lower octagon)

Before assembly, a 2.5mm wide stopped groove was formed in the base of the lower octagon to accept a brass strip, which would provide a locating ridge for the glazed, lower octagonal front panel. A 10mm wide section was also removed from the rear edge of the base to allow the backboard to pass below the base and engage with a recess cut in the under bracket. A similar 10mm wide section



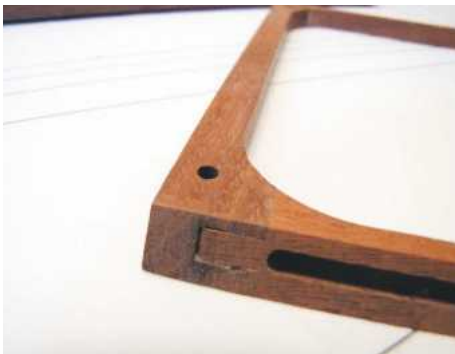
12 Clearance hole for a No.3 screw drilled in beading



7 Dovetailed tenon fixed to the underside of the lower octagon's base



8 Starting to assemble the octagons using a pair of 150° formers to ensure consistency



9 Hole in the lower octagon's top frame, for the locating pin

was removed from the top of the upper octagon, again to allow the backboard to pass above the top, where it would later be drilled to provide a suspension point for the finished clock (photo 5).

Other minor tasks that were easier to complete before assembly of the octagons included continuing the 2mm deep x 10mm wide rebate for the backboard around the ends of the two open, U-shaped frames (photo 6) and fixing the dovetailed tenon (part 11 & photo 7) to the underside of the base where it would eventually engage with a matching dovetailed rebate in the under bracket.

Four 5mm deep beads, in a contrasting wood to the American walnut, were fitted between the case sides and upper and lower octagons. I was planning to use the heartwood from a long-felled, well-seasoned laburnum tree, but I had some scraps of ebony, so I chose to use these instead as they provided a more consistent colour. Before assembling the

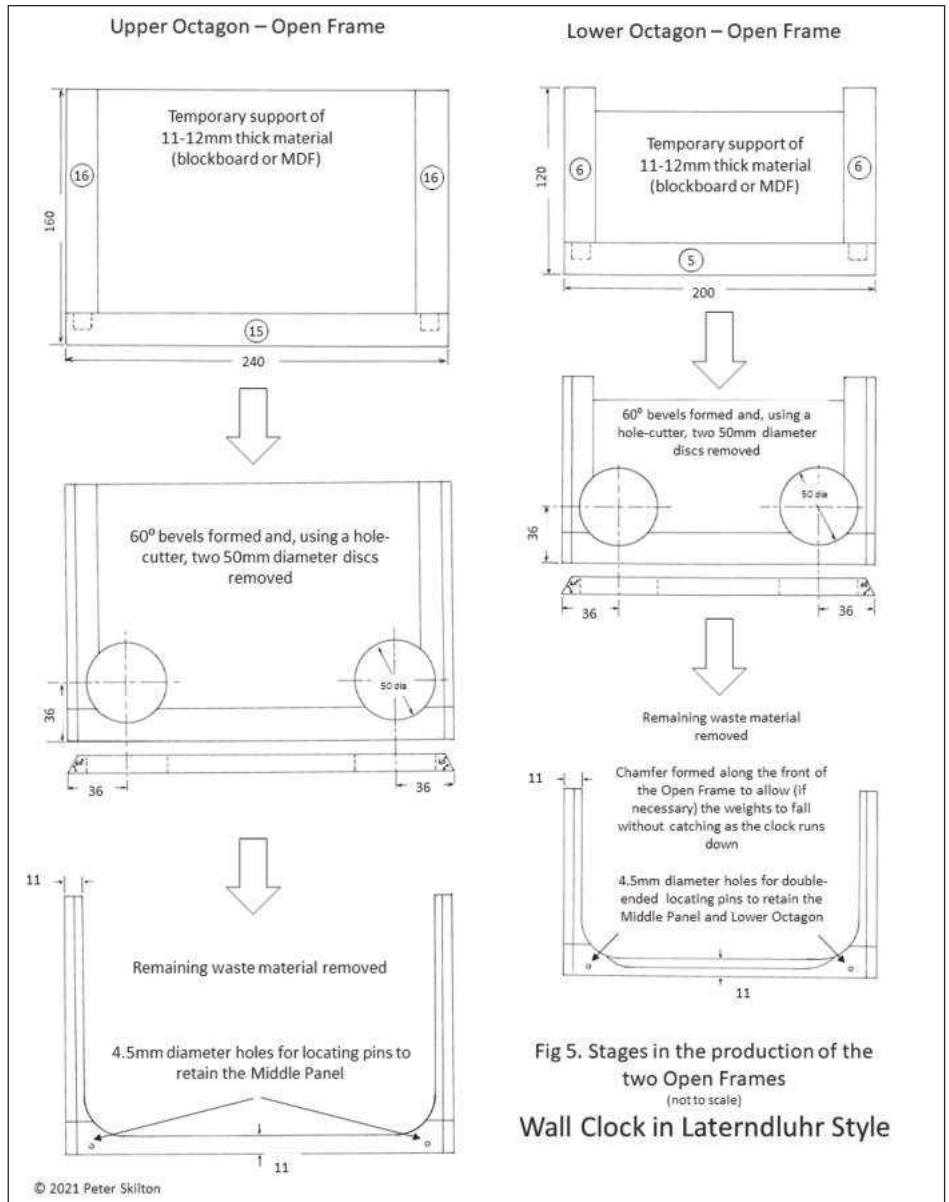


Fig 5. Stages in the production of the two Open Frames
(not to scale)
Wall Clock in Laterndluhr Style

Fig.5 Assembly of the open frames



13 Beading with clearance hole drilled to allow screwing to side frame during assembly



14 Toolmaker's clamp and screw to hold joint when gluing

octagons, these beads were glued to the sides of the upper and lower open, U-shaped frames.

Thinking ahead to the clock's everyday use, it was clear that I needed to find a convenient, inconspicuous, yet reliable method of locating the glazed front. Access to the upper octagon would be essential for regular winding while the other two front panels would need to be removable, on a less frequent basis, for adjusting the pendulum length, cleaning and maintenance. The lowest of the three removable glazed front panels was to be secured using the brass strip mentioned previously and two brass locating

pins. A similar pair of pins would be used for the middle panel.

Although a trivial task, it was easier to drill the two pairs of 4.5mm holes before the octagons were assembled (**photo 9**), hence, in the upper octagon, pairs of holes to accept 4mm brass locating pins were drilled through the front of the open base frame. In the lower octagon, a further pair were drilled through the front of the top frame. A pair of recesses to accommodate the hinges for the glazed front, which would ultimately enclose the dial, were formed in the left-hand side of the middle frame's vertical

glazing bar. Assembly of the octagons is mainly described in the 'assembly jigs' panel below. **Photos 9-13** hopefully illustrate any details omitted in the panel.

Sides

The case tapers both in width (from 240-200mm) and depth (from 160-120mm). As a result, the sides had to be made in the shape of a trapezium, 655mm tall with a top of 160mm and a bottom of 120mm. Construction of the corner joints was identical to that of the side frames and to achieve the sloping front, the shoulders of

JIGS

Jointing jigs

To aid accurate cutting of the grooves for the loose tongues between each section of the octagonal frames, two jigs were made: one for the 60° bevel and one for the 75° bevel. These allowed the router to be safely moved over a clamped frame with a lateral guide and two end stops to control the location of the groove. The narrower, lower octagon frames – and base – were cut first, then the jigs modified for the upper octagon's wider frames. An alternative approach would have been to assemble the jigs to accommodate the larger frames and use packing pieces to prevent movement when grooving the smaller frames.

Assembly jigs

Several simple jigs were used throughout the construction process to ensure that frames were flat, free of twist and, where appropriate, joints were at right angles. A few of these are shown below.



1 The original height of the 60° jig used to cut mortises in lower octagon frame members



2 Upper octagon top in the 60° jig – note leg extensions on the jig



3 Side frame in 60° jig



4 Completed 3mm wide x 3mm deep slot



5 Jig to ensure frames that make up the octagon are square and to compress joints while glue sets



6 Clamps applied to jig



7 Similar right-angled jig used to ensure side frames are square

the top and bottom tenons were cut to 87° (top) and 93° (bottom).

A similar assembly jig to that used for the rectangular frames comprising the sides of the octagons was used for the sides of the trunk. It was essential that the upper and lower glazing bars were parallel and the finished frame free from twist. Clamps were used to gently force the frame into a precise right-angle – see **photos 7 & 8** in the 'jigs' panel.

At the top and bottom of each side are the 5mm deep beads, made from a contrasting dark wood with a radiused outer edge. Strictly

speaking, these are part of the sides but, as previously mentioned, for ease of assembly, they were first fixed to each side of the two U-shaped open frames and drilled at the front, to assist alignment between the sides and upper and lower octagons during final assembly (**photos 12 & 13**).

Assembly

Completion of the case framework entailed joining the two octagons to the sides of the case. Four screws were used in the holes previously drilled at the front of the two U-shaped open frames, through the 5mm deep ebony beading

and into the upper and lower glazing bars of the sides. While the glue was drying, a toolmaker's clamp was used to secure the back of the two open frames, to the upper and lower side glazing bars (**photo 14**). ✂

NEXT MONTH

In part 2 of his wall clock build, Peter makes the backboard, under bracket, pediment, front, plus front octagonal panels, before embarking on finishing and final assembly – don't miss it!



8 In this case, the frames are compressed while glued joints set



9 150° formers used in assembly of the upper and lower octagons' sides



10 A flat board covered in glue-resistant film and a pair of right-angled fences



11 Any sideways movement of the octagon is restricted by the guide in the foreground



12 A load-spreading block forms the fourth side of the clamping jig



13 Gentle pressure applied to the block closes the joints as the glue dries

To aid accurate assembly of the octagons, a pair of 150° formers were produced from scrap material and lined on the angled surfaces with shiny paper – the inner bag of a breakfast cereal packet is ideal – to avoid sticking to any glue squeezed from the joints. The eight, 150° joints on the sides of the octagons – two on each side of the two octagons – along with the loose tongues, were individually glued and clamped to the formers while the glue dried.

To complete assembly of each octagon, the open frame,

top (upper octagon) and the smaller open frame and bottom (lower octagon), needed to be glued to the already formed sides. To ensure the frames were perfectly assembled, a simple jig was again used. This time a flat board, lined with glue-resistant film (cereal packet lining), was fitted with three sides of a square to enclose the octagon. These served to ensure perfect right angles and constrain any movement in the width of the octagon when gentle pressure was applied to the fourth side of the square, holding the final four joints of each octagon in place as the glue dried

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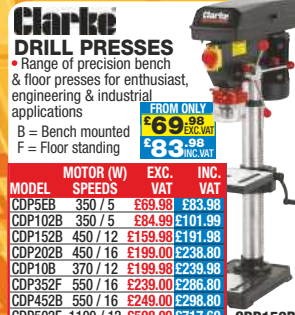


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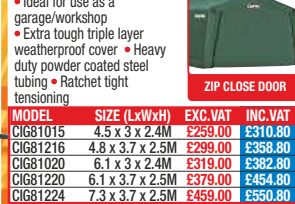
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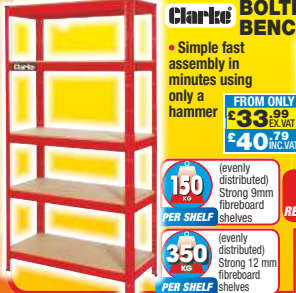
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Jerkin & baggy hose

Delving into *The Woodworker* of May 1948, Robin Gates is diverted from a history of 'The Pleyn' by cameos of medieval craftsmen

In the 1940s, *The Woodworker* published instruction charts on everything from a Regency china cabinet to the timber roof of Westminster Hall, but it's 'The Pleyn' from May 1948, which catches my eye. The Middle English spelling seems straight out of Chaucer's *The Canterbury Tales*, although this tale begins a millennium or more earlier with two Roman planes – *runcinae* in Latin – the first made of wood, the second metal.

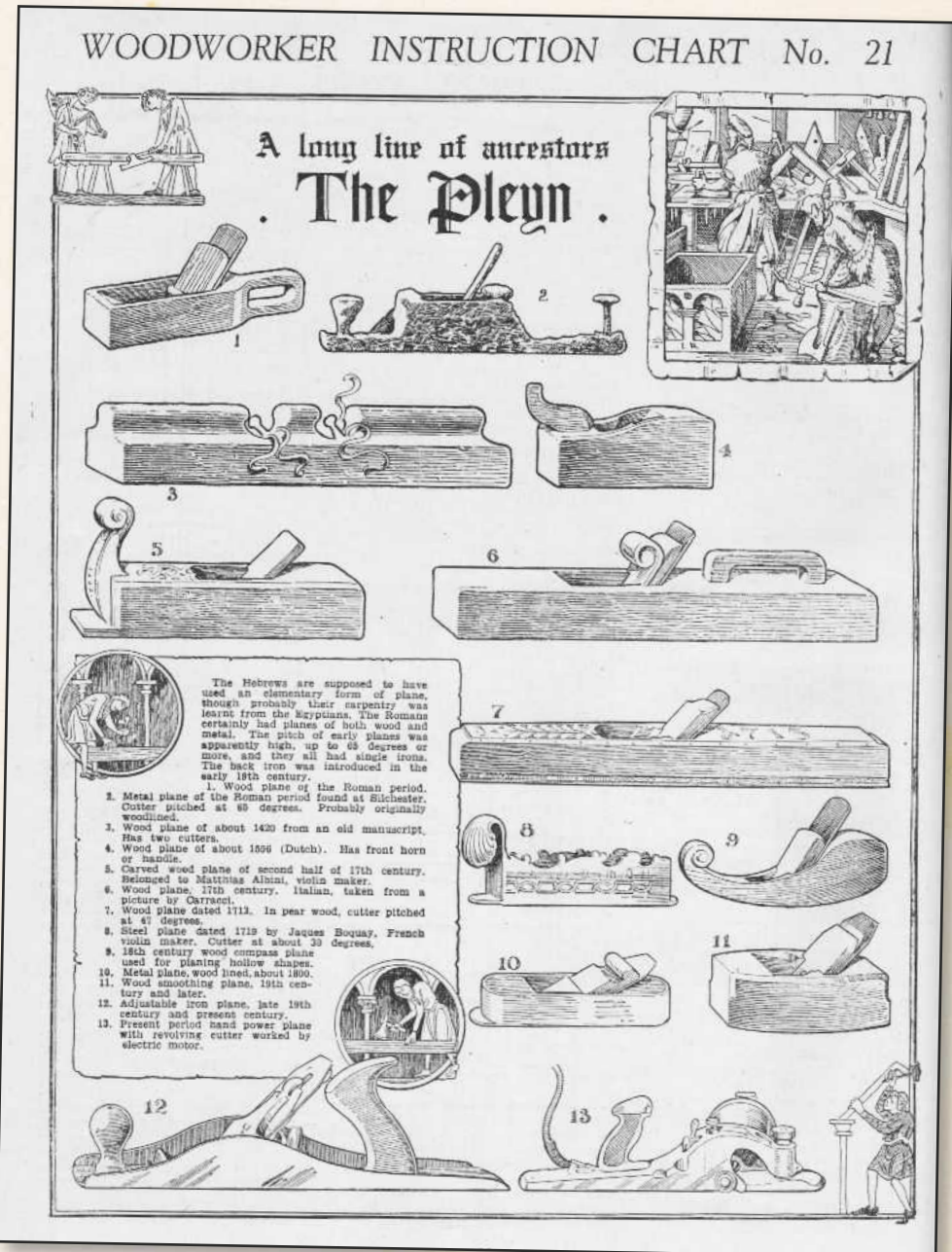
Fascinating as planes are, it's the design of the page which draws me even closer, recalling an old style of educational comic using illustration as the primary means of narrative. In particular, it's those little cameos of people at work which fascinate, and all the more so because they're not explained.

I'd say the characters at top left are Saxon timber framers. The fellow on the right is using a broad axe to square a beam while his companion, resting a Danish battle axe on his shoulder, prepares to check the quality of the work with his try square. The beam is supported on trestles and it strikes me as odd that the man with the axe is standing on the opposite side to the one he's hewing – artistic license, perhaps, or they did things differently in those days.

The Joiner woodcut

Switching attention to the workshop scene at top right, this is clearly a facsimile of 'The Joiner', a woodcut of 1568 by the Swiss-German artist Jost Amman. The two joiners attired in snug jerkin and baggy hose typical of the time appear to have a panelled chest under construction. Measuring against the length of his forearm, the joiner at the bench is working with a horned jack plane. Its horn is carved in a decorative volute like the fifth plane illustrated. Elsewhere on the bench lie a jointer, dividers, a try square, mitre square and either a twin-stemmed marking gauge or grooving plane. The pear-shaped tool at extreme right is a well-worn carver's mallet; in Amman's original woodcut there are racks of carving chisels on the wall above it. Meanwhile the joiner in the right foreground is cross-cutting a board with a large frame saw, using a tree stump as his sturdy sawing bench. A handsome goose-wing broad axe leans against the stump.

I'm sure the next two cameos, at middle left and centre bottom, have been borrowed from an image of two shipbuilders woven into the 11th Century Bayeux Tapestry, which shows events leading up to the Norman invasion of Britain in 1066. In the tapestry the two are working together on the hull of a longship, one using a double-edged tool – possibly a



twybil – while the other is hewing with an axe. Here, the tool depicted at middle left seems one edge short of a twybil and facing backwards – perhaps he's using it to tamp something home with the butt of the handle?

And so to bottom right, and I'm not sure what's going on there – the chap is wielding a mallet above his head, perhaps driving the peg of a mortise & tenon joint we can't see.

Returning to the real subject of 'The Pleyn', surely this is the most diverse of all woodworking tools, essential to so many trades. It ranges

in size from the tiny finger plane of the luthier to the colossal inverted jointer of the cooper shaping barrel staves, and varies in finesse from the savage bite of a scrub plane, ploughing great furrows with its heavily cambered iron, to the tissue-thinning surgery of a Japanese kanna yielding shavings so thin they float to the floor like thistledown. The plane is without doubt the iconic hand tool of carpenter, joiner and cabinetmaker; you'll find one somewhere on the bench in even the most high-tech workshop. ✕

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A SLICE OF HISTORY: The St Paul's Cathedral Saw

Shane Skelton takes inspiration from the work of his 18th century contemporaries to produce a true one-of-a-kind creation. Not only is this saw steeped in history, it also features a handle made using heritage oak from the headstocks of the Bells of St Paul's Cathedral

Standing at a staggering 365ft and with its iconic dome, St Paul's Cathedral in London dominates the skyline. It's magnificent design and awe-inspiring interior is of course credited to one of Britain's most notable and famous architects, Sir Christopher Wren. His vision for such an aesthetically enchanting building was brought to life between 1675 and 1710, after the previous cathedral had burnt to the ground amid the Great Fire of London in 1666.

In 2018, 1.66 million people visited St Paul's Cathedral and it's really not difficult to see why. The famous 'West Door' towers at an impressive 29ft and is only ever opened for ceremonial occasions, the most prominent including the wedding of The Prince of Wales and Lady Diana Spencer in 1981, and Winston Churchill's funeral in 1965. More recently, however, the cathedral held a thanksgiving service for Queen Elizabeth II to mark her 90th birthday, and one imagines that something will no doubt be planned to

honour her Platinum Jubilee in 2022.

If you're ever fortunate enough to visit St Paul's, as well as marvelling at the sheer opulence, you'll also come across the renowned 'Whispering Gallery' whereby words uttered against the wall of the dome can be heard on the opposite side of the gallery. Furthermore, there's the tombs of many 'greats' including Nelson, Wellington, Florence Nightingale, poet John Donne, painter J. M. W. Turner and of course the aforementioned Sir Christopher Wren, who lived to the fine age of 91 and whose plain headstone reads – translated from Latin: 'If you seek his memorial look about you.'

The Bells of St Paul's

Let me start by giving you a short insight into the Bells of St Paul's, which include Europe's largest swinging bell, 'Great Paul'. Housed in the south west tower and although currently out of action, it used to strike at 1pm every day. In addition, there's also 'Great Tom',



which, weighing in at an impressive five tons, is one of three clock bells that strikes both on the hour and to mark the death of senior members of the Royal Family as well as Heads of the Church.

The bells we're concerned with, however, are those housed in the north west tower. Besides 'Banger', dating from 1700, which is rung for 8am services, there's also a ring of 12 bells cast by John Taylor & Co of Loughborough, which are hung for change ringing. Change ringing demands a reasonable level of physical fitness and is an extremely skilled practice, taking a number of years to master. The loud ringing – also known as peals – of these 12 bells mark special occasions such as State weddings and, more recently, the 800th anniversary of *Magna Carta*, and also on New Year's Day and Easter Monday respectively.

Back in January 2018, for the first time in 140 years, the 12 bells were removed for restoration. The bell frame/headstocks from which these hung would be both strengthened and replaced. This was the first time since World War II that the bells had remained silent for any length of time.



One of the 12 Bells of St Paul's being removed from the bell chamber opening
Photograph courtesy of **The Worshipful Company of Turners**



The piece of heritage oak used to make the handle of the St Paul's Cathedral Saw measured approximately 8.5in across



Some heritage oak taken from the original headstocks was donated to the Worshipful Company of Turners – one of the oldest Livery Companies in the City of London – to help towards the £30,000 they were raising through their St Paul's Bells Appeal, which equated to one-twelfth of the 2018 restoration cost.

Historic oak

At the 2019 North of England Woodworking & Power Tool Show in Harrogate, we met up with professional woodturner and teacher Andy Pickard, who we know through the woodworking community and various shows. As a Registered Professional Turner, Andy was lucky enough to be in possession of some of this historic timber and I remember thinking how amazing it would be to use this for a saw handle. A number of months later, I negotiated with Andy and he agreed to give me a small piece, left over from that which he was originally gifted, and it was from here that the St Paul's Cathedral Saw idea began to take shape.

Following refurbishment, the 12 bells were re-hung in September 2018 and rang for the first time again on All Saints' Day – 1 November. Ordinarily, oak is considered unsuitable for

saw handles due to tannins in the wood, which corrode steel. However, I'd already worked out how to overcome this problem: my solution was to make the handle so that it'd fit one of our elegant Chippendale Saws. Thanks to a uniquely designed and crafted bronze dual-tensioning device located on the saw's reverse, the oak handle wouldn't come into contact with the steel plate. Thomas Chippendale, our Chippendale Dovetail Saw's namesake, was alive around the time St Paul's was built and his workshops were situated little more than a mile down the road, all of which seemed to make the creation of this particular saw especially serendipitous.

In my mind, the heritage oak is, without doubt, centuries-old. While the bells date back to 1878, the timber used in the building of the Cathedral could also be original – definitely a plausible assumption. Oak is renowned for standing the test of time and notable examples include the foundations of York Minster and many shipwrecks discovered at the bottom of the sea, preserved for hundreds of years despite obvious exposure to the elements.

Unfortunately, despite our best efforts, we've not been able to find any archival

evidence proving that the timber dates back this far, as only the bells were logged when they were removed, although this might still prove its originality. I believe, however, that the oak likely dates back to Wren's time – perhaps even earlier. So, taking this into account, we know for certain that the timber is definitely old, not to mention rather rare.

As the piece of oak we acquired was very small, and, as with most timbers, not all of it usable, I had to be very creative when it came to planning the handle shape. In the end, I found there was sufficient material for two handles, albeit only enough for one pistol grip style with the rest being put aside for a future, smaller version of our straight-handled Gents Saw. The St Paul's Cathedral Chippendale Saw will therefore be the only one of its kind ever made – a true world first.

An exquisite, one-of-a-kind hand tool

As this is a very special one-off, bespoke saw, to ensure it can always be identified, Ian Houghton of Chalco Stamp & Die Company hand-engraved the brass saw back to read, as follows: 'Oak From The Headstocks Of The Bells Of St Paul's Cathedral 1878'.



The heritage oak handle, seen from both sides...



... on the truly unique St Paul's Cathedral Saw



Certification of heritage wood used to make the handle of the St Paul's Cathedral Saw

Making this special tool has been more of a personal project, and something I've enjoyed working on outside of normal business hours. Taking around 80 hours in total to complete, it incorporates some of Chippendale's most innovate design features including hand-shaped bronze flutes. As with all our saws, this precision tool is equally luxurious as it is elegant.

A true piece of handmade British craftsmanship, packed with history, whoever ends up owning this bespoke saw can certainly count themselves lucky. We suspect, and hope, that in years to come it will also be recognised as, at a certain point in time, the world's most expensive saw and definitely one to look out for. From our perspective, running a small heritage craft business, it's important that we occasionally make a saw specifically aimed at the luxury/collector's market and doing so allows us to sustain and help keep alive the critically endangered craft of British sawmaking.

This exquisite saw, which fits up to a 10cm palm, is supplied with the necessary certification that proves the use of heritage wood from the Bells of St Paul's Cathedral, and utilises the design of our Chippendale 1 1/2" Dovetail Saw.

The 'Shakespeare of furniture'

Central to the design of this brand-new offering is our aptly named Chippendale Saw. In order to understand how the idea for the concept came about, however, we need to transport you back in time by 300 years, to 18th century London.

Having been ravaged by the Great Fire of 1666 and in the hands of notable architects such as Sir Christopher Wren, 18th century London was rapidly expanding. Demand for skilled craftsmen and artisans soared and 'Journeymen', with their tool chests, descended on the city from all over the country looking to gain employment in their given craft. One particular Yorkshireman instilled with an entrepreneurial vision also arrived looking to make his fortune, and this was no other than the undisputed 'Shakespeare of furniture', Thomas Chippendale. Beyond the city, grand Georgian and stately homes were beginning to spring up and wealthy owners wanted only the best stonemasons to build them and the finest London-made interiors to fill them. Owning exquisite pieces of handmade furniture soon became something of a status symbol and the man everyone wanted to commission was of course Thomas Chippendale.

His most revered work was completed for Edwin Lascelles at Harewood House, Leeds from 1767–1778. Costing a colossal £6,838 19s 1d, it's true to say that this commission almost broke Chippendale whose payments fell into arrears, so much so that he couldn't afford to pay his workers. Having to take drastic action as a result, he was forced to sell his best mahogany to competitors in order to bridge the gap.

The book that made Chippendale's name

Arguably one of the world's most critically acclaimed cabinetmakers and himself the son of a joiner, Thomas Chippendale was born in Otley, West Yorkshire, in 1718. Serving his apprenticeship with a furniture maker in York before seeking work in London, he went on to open his very own workshop at 60–62 St Martin's Lane in 1753. A fairly private man, despite appearing greatly successful, Chippendale did, however, live a fairly humble life. Despite being an immensely skilled craftsman, what really 'made' Chippendale, however, was the publication of *The Gentleman and Cabinet-Maker's Director* in 1754. Regarded as one of the most luxurious and comprehensive furniture design books ever created, the rich loved it. The craftsmanship that evidently went into producing this book alone is noteworthy, with each steel plate individually and meticulously carved with intricate designs before being inked and printed onto the page.

Chippendale's outstanding reputation understandably attracted many wealthy clients from the aristocracy. Never short of offers for financial backing, it's noted that an affluent Scottish merchant, James Rannie, invested in Chippendale from the outset. Luck wasn't always on his side, however, and in 1755 a fire reportedly broke out at his workshop, going on to completely destroy the tool chests of 22 cabinetmakers. At its peak, it's thought that around 50 people worked for Chippendale in St Martin's Lane, from clerical staff through to upholsterers, gilders, furniture makers and apprentices. While it's not known how the fire started, speculation has led some commentators



Shane at the site of Thomas Chippendale's London Workshop

to believe that it could even have been deliberate, at the hands of a competitor, but we'll never know for certain. Two things we can be sure of, however, are that the insurance didn't cover all losses incurred by the workers, and Chippendale was forced to take to the streets in order to raise funds to replace all their tools; and secondly, the saws that were replaced would've been acquired from no other than esteemed London sawmaker, William Squire.

William Squire & 'The Golden Saw'

One of the most well regarded and documented sawmakers in 18th century London, William Squire was based just around the corner from Chippendale at 'The Golden Saw' on Dean Street, Soho, in 1754. Squire was renowned for using some of the best quality materials and therefore producing some of the finest saws. Normally associated with clockmaking and referring to the use of steel in the making of clock springs, this was the first time the term 'spring steel' had ever been linked to sawmaking. Only the best London saws were made using this material, which is why we've carried on this practice today.

As it turned out, 1754 was a very eventful year. In addition to Chippendale's '*Director*'

An inscription by Ian Houghton has been hand-engraved on the brass saw back





Exposed dovetails and overshoot, as seen on Chippendale's 'Diana and Minerva commode'

being published, this date also marked the opening of 'The Golden Saw' by William Squire, not to mention the creation of his most perfect dovetail saw handle pattern, which we've since adopted for our 'Chippendale Saw'. Given that Squire made the best quality following the fire, it's hardly surprising that by 1760, given the quality of his tools and collaborations with the likes of Chippendale, he was able to afford brand-new premises at 102 Wardour Street, going on to die a wealthy man.

Making the Chippendale Saw

'A colliding of art, quality and precision' – these are the words used to describe the Chippendale Saw. 2018 also marked what would have been Chippendale's 300th birthday, and what better way to honour this extraordinary man than by making a saw bearing his name, also incorporating his innovative design elements.

Inspired by the sumptuous appearance of Chippendale's work, the saw features luxurious dual-tensioning with an adjustable spring bronze back. Finely hand-crafted fluted bronze edges mirror the stop flutes, both of which were introduced by Chippendale and seen on his world-renowned furniture.

When carrying out research prior to the

saw's creation, the next phase of the journey would take us to Harewood House. The Harewood collection includes Chippendale's most expensive and extensive furniture commission – the 'Diana and Minerva commode' – made in 1773. Granted access by the collections team, we were very privileged to be given the opportunity to look inside one of the world's most celebrated pieces of Chippendale furniture. Most interesting, and likely never before spotted by the untrained eye, on this piece of furniture the craftsman actually overshot the line while sawing. The dovetails are, in the main, concealed throughout the piece; however, I asked if I could look at a separate side drawer and luckily the dovetails here were exposed. Further examination of these allowed me to establish the kerf size required for making the Chippendale Saw.

Having worked as both a furniture maker and restorer of fine 18th century pieces, I've always been passionate about Georgian design, believing it to be the pinnacle of making due to the immense skill required by the craftsmen. As such, I already had previous knowledge of Chippendale's work and have always been enamoured by his inventive designs, almost all of which incorporated carved elements, as like myself, Chippendale was also a master carver.

Sawmaking innovation: 'Dual Spring Adjust'

As well as being a sawmaker first and foremost, I also see myself as an innovator and while passionate about tradition and 18th century design, I always endeavour to ensure the components used within the saws I make perform to their optimum within these parameters. As a result, the Chippendale Saw features my 'Dual Spring Adjust'. Milled from 2in spring bronze, this innovative mechanism retains the blade in a constant two-way tension by means of an internal leaf spring. Never before seen on a conventional hand saw, it benefits the user by not only allowing for an accurately straight cut, but also eliminating any vibration encountered during the sawing process. A nimble in the hand, accurate and elegant 11 $\frac{3}{8}$ in all-round dovetail saw, this hand tool features 21st century mechanics, retaining the beauty and traditional appearance of a timeless 18th century saw and Chippendale piece. ✂



102 Wardour Street – the site of William Squire's 1760 workshop

THE ST PAUL'S CATHEDRAL SAW

Technical specification

- 11 $\frac{3}{8}$ in Dovetail Saw
- Cantled blade – 2in at heel to 1.5in at toe
- Open pistol grip handle in heritage oak, certified as being from St Paul's Cathedral, fits up to a 10cm palm
- 0.015in plate thickness
- Luxurious innovative 'Dual Spring Adjust' bronze back with stop flute details
- Incurvate spear top
- Struck with 'Chippendale' signature
- 0.002 set per side
- Rip – 17ppi/16tpi
- Engraved with: 'Oak From The Headstocks Of The Bells Of St Paul's Cathedral 1878'
- Price tag – **£3,850**

FURTHER INFORMATION

If you're interested in declaring yourself the lucky owner of this wonderful one-of-a-kind hand saw, which will no doubt be one to watch, contact Jacqueline and Shane Skelton who will be happy to provide you with more information:

Email skeltonsaws@gmail.com

Web: www.skeltonsaws.co.uk

Instagram: [@skelton_saws](https://www.instagram.com/skelton_saws)



The innovative 'Dual Spring Adjust' mechanism

Mark Doolittle





BIOLOGY MEETS ART

Celebrating biology through the medium of wood, **Mark Doolittle's** pieces serve to express the dynamic form of growth and symmetry encountered in cells and tissues, as well as in whole organisms throughout the natural world

The first time I saw one of Mark Doolittle's sculptures, had I not known it was in fact carved from a piece of wood, I wouldn't have thought twice about assuming it was real coral. What I didn't realise at the time, however, is the sheer range of specialist techniques that Mark draws upon, not to mention the countless hours he devotes to a piece's creation. In his 'Coral' series, each of the many individual polyps are brought to life using a range of carving tools, with Mark working in minute detail. I knew I was seeing the work of a creative genius, so decided to reach out in a bid to find out more about the man behind these amazing works of art.

After looking at Mark's portfolio of work, his background in cell and molecular biology – which he studied back in the '70s and '80s, going on to graduate from UCLA with a PhD in biology – might not come as a surprise. He clearly has a deep understanding of natural structures, although his interest in woodwork took a fair few years to develop alongside this, before he eventually decided to become a full-time wood artist.

After receiving his doctorate, Mark stayed

on at UCLA for another 25 years, continuing on the path of biomedical research, working as an Associate Professor of Medicine. During this time, however, he discovered a passion for woodworking, and in 2002 made the leap, choosing to focus solely on his craft.

Mark confirms that his background in biology was in fact the major influencer behind his work's style and vision, finding beauty in the complexity of biological organisms, cells and forms. "In my artwork," says Mark, "I try to express the dynamic form of growth and symmetry encountered in cells and tissues, as well as in whole organisms throughout the natural world. My work is designed to provoke an emotional response in the viewer, like a flower would to a child."

Mark says that while his work isn't representational – he's not attempting to accurately portray biological structures using the medium of wood – it instead develops through the use of simple shapes and structures, such as branching arms, holes and fissures, but changing their size, shape and location as they are repeated in order to build up complexity in the overall design. He usually orders this complexity along lines of symmetry



A selection of fossils, which Mark uses in his artwork



'Sea Fan' – basswood fan with Amboyna burl centre on a bubinga base – contains five inlaid fossil ammonites – 432mm high x 508mm wide x 150mm dia.



'Art in Art #4' – a collaborative piece in Chakte Viga – a tropical hardwood from Mexico – incorporating Michele Foster jewellery – 302mm high x 305mm high x 75mm dia. The butterfly brooch is easily removable from the wood sculpture, allowing it to be worn, then replaced as desired. "Thus, when not worn, the jewellery becomes part of a sculpture to be enjoyed, rather than being hidden away in a jewellery box"

– often radial – which is a major feature of natural forms – the arms of starfish and the whorls of seashells, for example.

In terms of other makers who have impacted his creative style and vision, he references the work of world-class sculptural turners Bill Hunter, Alain Mailland and Mike Shuler, as well as Mark's older brother and his brother's wife, both of whom are career artists.

Carving a niche

Creating such complex and intricate pieces obviously requires a great deal of skill and patience, but how did Mark come to discover

the techniques for executing such fine detail? He explains that the starting point for developing his artistic style was in fact gourd carving: "Early on with gourds, I was carving Native American motifs as a way of learning basic carving techniques, but I soon progressed to a style that reflected my interest in biology," he tells us. Although he still practises on gourds today, he favours wood as a primary medium due to its ability to allow greater creative flexibility with regard to shapes, thickness, colour and textures.

Mark's earlier pieces were more functional – clocks and boxes – but he soon found himself concentrating on the pursuit of purely sculptural

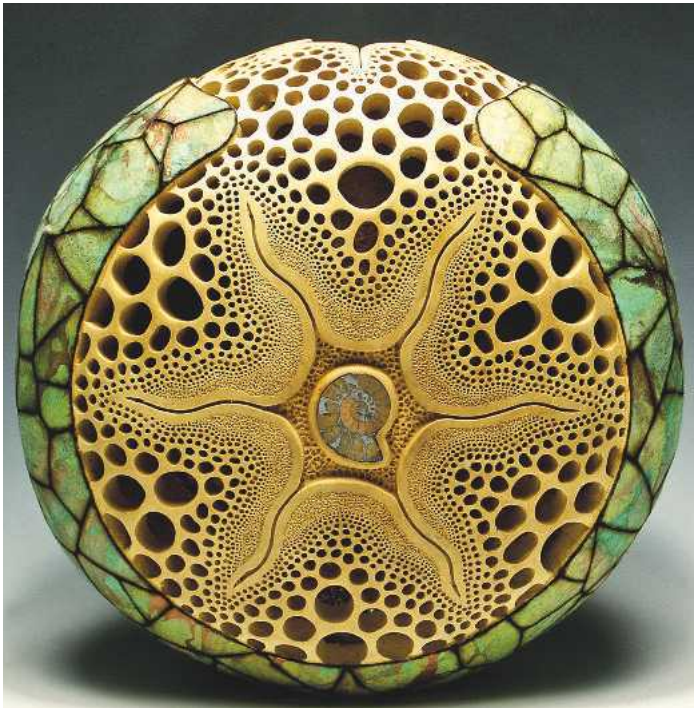
pieces. Deciding to explore vessel forms, he started turning on a lathe around five years ago: "Vessel forms have an innate functional quality to them, but can be used to create purely sculptural pieces as well. In addition, grain pattern and the characteristics of a particular piece of wood are often best exhibited after turning. By adding my carving style to a turned wood vessel, I can create unique sculptural objects, utilising the timber's characteristics, but in an overall form that's familiar to everyone," he says. Mark usually incorporates biological specimens – mostly fossils – within his pieces by inseting them into the wood, much like a



'Beautiful Mind' – basswood (bust), mahogany (shields) and Julie Lence-Panto butterflies – 1,016mm high x 762mm wide x 203mm dia.



'Tall Red Gum Vase' – turned red gum eucalyptus burl with accents of turquoise inlay; top carved from a piece of mahogany – 419mm high x 216mm wide x 125mm deep



Canteen gourd featuring inset ammonite and a great deal of texturing. "As always, my gourd artwork is a collaboration with my wife, who is responsible for the beautiful paper collage work on the un-carved portion of the gourd, which adds such a nice – and colourful – touch to my carvings"

craftsperson incorporates a stone into jewellery. "I often use these biological specimens as central features in my sculptures, playing off their form and symmetry. A really good example is my piece 'Ancient Tide Pools' (see page 46), which features 15 fossil ammonites inset into individual carved cups, which add form, colour and movement to the piece."

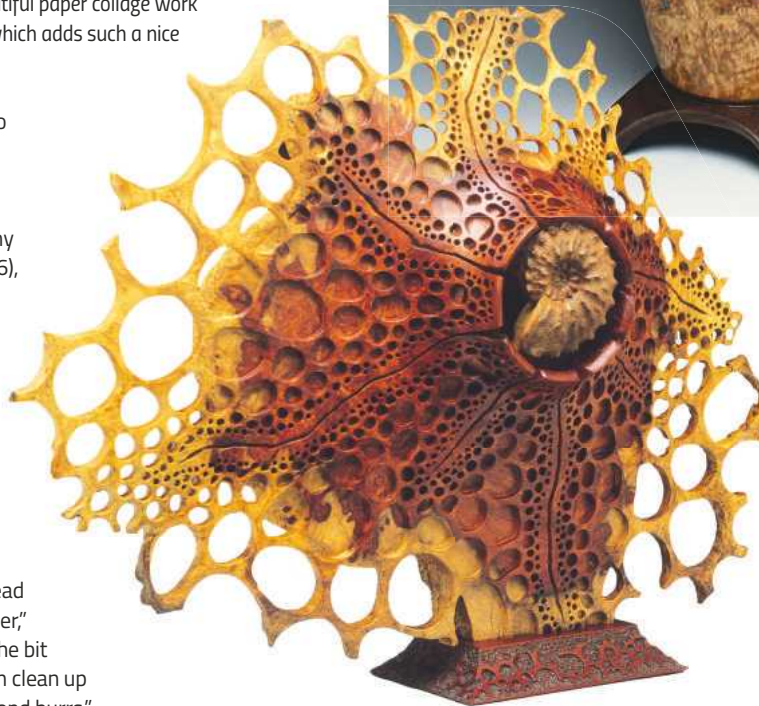
In terms of tools and equipment used to create these fantastic works of art, Mark says that most of the piercings are made using rotary burrs and bits, mounted in a Foredom micromotor: "I usually use bits that have a cutting head with the geometry of a straight cylinder," he explains. When I'm cutting, I hold the bit perpendicular to the surface and often clean up the pierced areas using 150 grit diamond burrs."

Mark enjoys carving with both hand and power tools, although he prefers gouges for carving human faces, and for organic work, rotary carving offers the most effective technique for the forms he's trying to create. In a nutshell, a carving dictates the tools used.

In terms of processes, there are several methods for creating his sculptures, including milling – the machining and gluing of rough wood into usable blocks with true faces and sides; shaping and turning – carving the milled blocks into the sculpture's basic form; detail carving – carving the complexity of forms that comprise his style; and finishing – sanding and application of a finish. "Of these methods, detail carving is often the most time-consuming, but it's also probably the most enjoyable aspect.



Vase turned from cottonwood burl; natural voids and fissures filled with turquoise, features a top carved from a single piece of 50mm mahogany with three inset fossil ammonites, sitting on a turned and carved walnut base



'Ammonite' – Amboyna burl on an African padauk stand – 330mm high x 1,127mm wide x 75mm dia.

The creation of these detail forms flesh out my sculptures, bringing them to life."

Commissions & collaborations

In terms of commissions, Mark explains that his methodology for dealing with these is very unique to him. When making a piece for a client, he shares his concepts with them, the wood he's chosen, as well as photos documenting its development: "I really enjoy sharing the process of my work with clients, and often find we strike up a friendship as a result." Mark says he's happy working to a brief, although he does require a high degree of freedom as far as creative aspects are concerned.

Mark has collaborated with others,

including a butterfly artist and jeweller, to produce one-off pieces: "In these cases, the concept was mine, and I utilised their expertise in a specific medium. In the case of the butterfly artist, they helped choose and install real butterflies, which were arranged around the carved head of the woman depicted in 'Beautiful Mind' (see bottom of page 42). In the case of the jewellery artist, I used items that were already made, and created wood pieces around them to hold items of jewellery, allowing these to be removed if desired." 'Art-in-Art #4' is pictured at the top of page 42.

Design process

When coming up with ideas for new work, this arises in one of two ways. In the first, Mark



A selection of Mark's carving tools

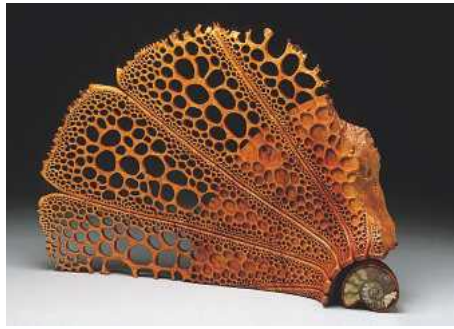
begins with pencil and paper, sketching out shapes and experimenting with forms: "Sometimes I have in mind a certain type of fossil or mineral that inspires me – e.g. an ammonite or fossil fish – and I create around these objects. In executing the designs, I often use milled wood with straight edges, and glue boards together to obtain appropriate dimensions. The resulting wood block therefore becomes the canvas, and I often use fairly detailed plans and templates to rough out the carving. Of course, final shaping and detailed carving is always carried out freehand, and I often sketch these elements directly onto the wood to guide my efforts." Mark says that in some cases, he uses wood dyes, pigments, and glazes in order to 'pop' the carved elements or to emphasise an edge.

In his second method, the wood becomes Mark's primary motivation, and he carefully works to design around preexisting grain patterns, colours and textures, which occur within the wood itself. Before starting, he examines the wood periodically, often over several weeks, in an attempt to discover underlying patterns and forms, which make that particular piece of wood unique and striking: "In these cases, the timbers I choose have highly figured grains with rich colours and depth. I like to present a natural – 'live' – edge, so choose those which haven't been milled. In executing these designs, I usually don't use templates, choosing to rely solely on freehand carving."

The amount of time Mark spends on a piece obviously varies tremendously depending on the size, shaping and carving detail, as well as timber characteristics, all of which influence how well it carves. He says he can spend anywhere between 8-180 hours on a piece, but an average time is around 40-60.

Workspace

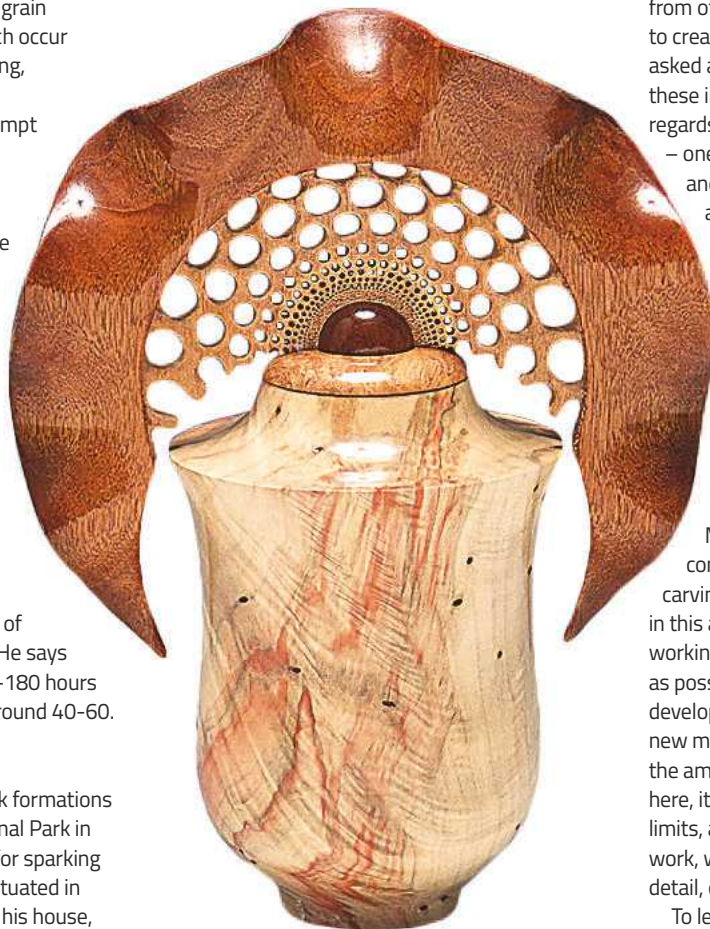
Having a view of the desert and rock formations that make up the Joshua Tree National Park in southern California, does wonders for sparking Mark's creativity. His workshop is situated in an 800sq.ft building, separate from his house, featuring a 10ft high ceiling and three large, north-facing windows. There's also a 100sq.ft temperature and humidity controlled 'finishing



'Sea Fan' – maple burl with African padauk stand – 432mm high x 635mm wide x 150mm dia.

room', in which wet wood, and other temperature/humidity sensitive materials are stored. In terms of large equipment, there's a table saw, 18in bandsaw, 30in drum sander, drill press, router table, 6in jointer, 12in disc sander and a spindle sander, plus a Nova DVR XP lathe, which Mark admits is probably his favourite piece of kit. He describes woodturning process of "dynamic" in terms of its ability to transform a rough piece of wood into a variety of beautiful shapes and styles.

On the carving side of things, Mark's collection includes routers, micromotors, a larger variety of bits and burs, a whole set of gouges and chisels, as well as various rasps, rifflers and files. Unsurprisingly, he spends a great many hours in this space, and it's very much a hive of constant creativity.



'Flame Vase' – main body turned from flaming box elder; top portion carved from mahogany



'Seascape' – Honduras mahogany with Claro walnut base, featuring seven inlaid fossil ammonites – 660mm high x 343mm wide x 178mm dia.

Accolades

Although many of Mark's pieces have been awarded various awards and 'best in show' commendations over the years, he says that his proudest accolades come from other artists who know what it takes to create and sell artwork for a living. When asked about the pieces he's most proud of, these include 'Ancient Tide Pools' – which he regards as his best wall hanging; 'Seascape' – one of his favourite freeform sculptures; and 'Sunken Vase' – his favourite turned and carved piece to date. While Mark's work has appeared in a variety of galleries over the years, he's currently represented by Steidel Contemporary – a leading platform for international, contemporary works of art – and his work seems to fit perfectly with their ethos.

The future

In terms of what the future holds for Mark, he continues to be fascinated with combining the techniques of turning and carving and feels there's still a lot to explore in this area. With this in mind, he hopes to keep working with the medium of wood for as long as possible with an ongoing goal of continuous development, exploring new ideas and learning new methodologies along the way. Judging by the amazing and ever evolving pieces shown here, it's clear that Mark's creativity knows no limits, and we eagerly await his next series of work, which will no doubt include even greater detail, depth, and depiction of natural wonders.

To learn more about the techniques Mark uses to create his intricate works of art, and to pick up some expert tips for yourself, see his carving masterclass on page 46. ✂



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CARVING WITH MARK DOOLITTLE

Fine woodworking artist **Mark Doolittle** shares the tips and techniques he uses to create his intricate carvings. According to Mark, the secret to success is 'continuous refinement'



The most frequent question I'm asked at art shows is "how do you do it?" Most people think there must be a magical technique that I've invented, or specialised tools I've fashioned in order to create my intricate carvings. Many think I use lasers, sandblasting tools, 'wood-eating' chemicals or insects, to name a few. However, the simple answer is that I use standard carving tools, both rotary and hand-held, and in a very orthodox manner. My 'secret' technique is my imagination, not so much the process. Carving is like sculpting: you must first imagine in your

mind the features you wish to create, and continuously appraise these during the sculpting process. This takes practice and patience, and the appreciation of positive and negative space. Indeed, the actual removal of material can be done in a variety of ways, using hand-held tools or rotary burrs. Once you understand the shapes you're trying to create, it becomes pretty obvious which tools work best.

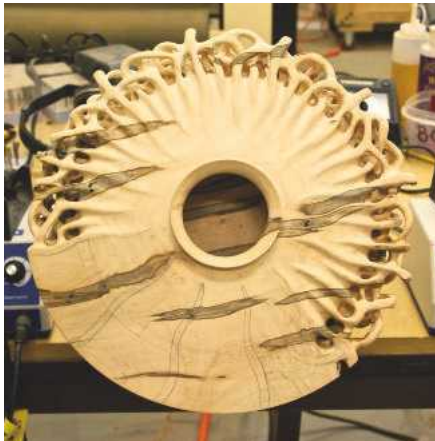
Continuous refinement

From a technical standpoint, I can summarise my carving approach as 'continuous refinement',

which involves three basic steps: 1) roughing out the basic features of the carving; 2) refining shapes and details; and finally, 3) clean-up. In roughing out, the aim is to obtain the basic geometry and general shapes of the carving. At this stage, don't be concerned about carving detail, but ensure to leave behind enough material where detail features will emerge.

Use bits and burrs that remove wood efficiently, such as Typhoon and DuraGrit burrs, sleeves, discs and wheels. Hand-held gouges, rasps, rifflers, files and abrasives are also important at this stage of the carving process.

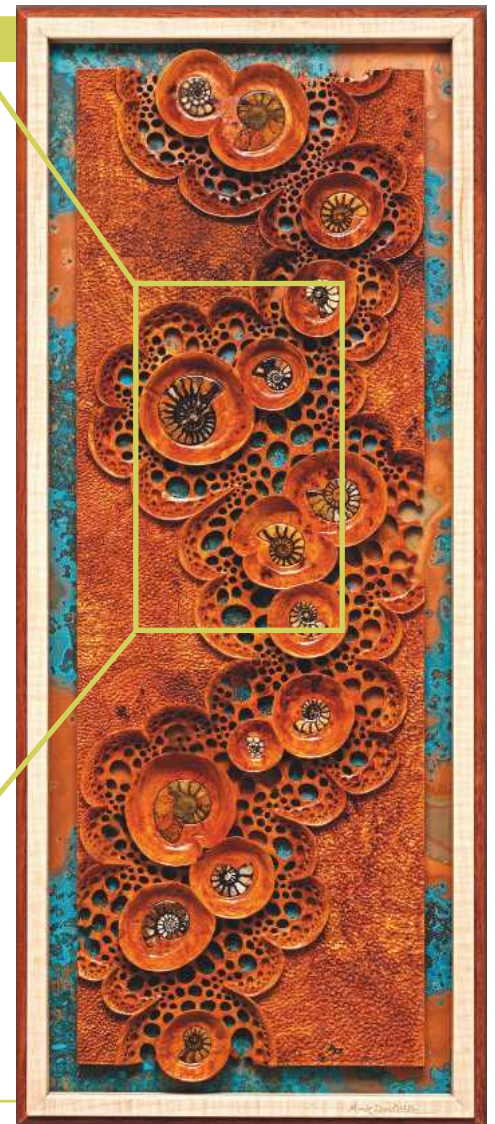
THE PROCESS: FROM PLAN TO FINISHED PIECE



1 Above can you see a two-image compilation of 'Anemone'. The top photo shows the piece after woodturning and partial carving; the bottom photo shows the finished result. 'Anemone' is made using Ambrosia maple and measures 100mm high x 330mm wide x 330mm dia.



2 The photo above shows an area of 'Ancient Tide Pools', which has been magnified to show details of the carving and inlay of the fossil ammonites; the right-hand photo of the entire piece is shown with lines to identify the magnified area. The piece is carved from Afzelia burl and features 15 inset fossil ammonites. The sculpture rests on a patina copper sheet within a maple/bubinga frame





FURTHER INFORMATION

To find out more about Mark's processes and techniques, and to see more examples of his wonderful pieces, visit his website: www.markdoolittlestudio.com

Shapes & details

The next stage is refining the carving's shapes and details, which is accomplished by repeatedly removing small amounts of material until the desired shape is achieved. Multiple passes using finer and finer burrs and bits characterise this refinement phase, so that less and less material is removed at each subsequent pass. Along with bits featuring a machined cutter head, I also use diamond and carbide bits in various grits, as these allow me to remove small amounts of wood. As always, fine hand-held files, gouges and abrasive wrapped around small sanding blocks of appropriate sizes and shapes, are also useful.

Clean-up

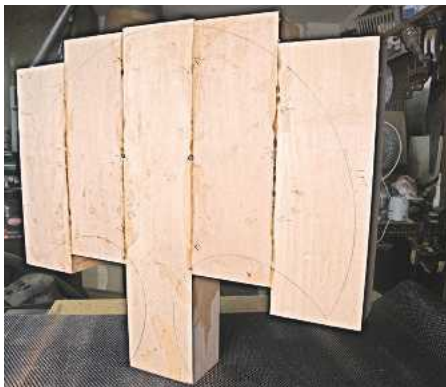
The final 'clean-up' phase is really a continuation of the refinement phase, where the objective is to remove – as much as possible – unsightly tool marks, sharp edges and protruding fibres. Use abrasives for accessible areas, and diamond and carbide bits to clean up deeper, hard-to-reach spots. When using diamond and carbide bits, spin them very slowly and apply using a very soft touch; this reduces the creation of tool marks and makes the tool act more like an abrasive.

Appraising shapes & structures

The approach of 'continuous refinement'

– i.e. the removal of small amounts of wood during multiple passes – allows you to continuously appraise shapes and structures as they are being created, while providing the control necessary to achieve very detailed work. It also prevents a cardinal sin of carving: trying to remove too much wood during a single pass, by either pressing the tool into the wood too hard or spinning the bit too fast. Applying this approach means you can avoid another very frequently asked question of mine: "Don't you slip and break these fine little features during carving?" No, because the approach of continuous refinement provides the necessary control. ✂

'CORAL' IN PROGRESS



1 This photo shows five blocks of timber – North American basswood – each about 100mm wide x 100mm-thick – and of varying heights – which were glued together to create the 'canvas' for the piece entitled 'Coral'

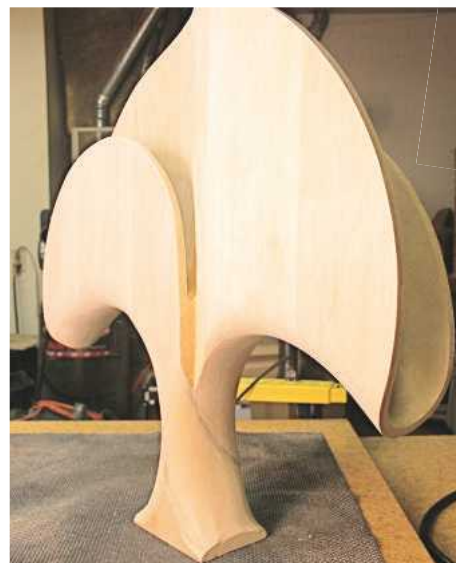


2 After glue-up, I used a bandsaw to cut out the basic shape



5 With this particular piece, the detail carving had to form a continuum across all faces and sides. The photo here shows how I created the transition between faces and sides

This series of in-process photos shows how I create a piece by gluing up multiple planks of wood to produce a large 'canvas', which I can then shape and carve. Here, the design takes precedence over the wood, and I use wood with neutral colours and small, even grain. This process is much different when I use highly figured woods, where the precedence is the wood and the design is carefully chosen to bring out the nature of the wood – see 'Reef' in progress on page 42



3 After the cut-out, I shaped the piece with large rotating burrs, hand-held rasps, files and abrasives to obtain the curves and hollows. The inset photo to the right shows a different profile of the shaped piece



4 After shaping, the detail carving begins using small rotating bits and burrs



6 This photo shows the piece after around half of the detail carving had been completed



7 All carving is now completed



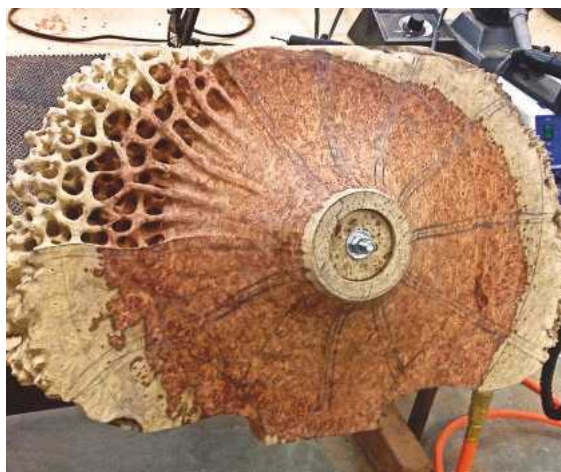
8 After carving was carried out, I used an airbrush to apply wood stains to the edges of the piece, which provide colour and emphasise the lines. After staining, about six coats of polyurethane finish were applied, sanding between each coat. A final rubbing with '0000' steel wool allowed me to achieve a low-gloss satin finish

'REEF' IN PROGRESS

This series of in-process photos shows how I create a piece from a single burl wood slab. Here, I'm very careful when designing the piece in order to take into account the timber's inherent colour and grain patterns



1 The two images above show the burl slab I used to create 'Reef'. The left-hand photo shows me holding the slab, backside out, to give an idea of size, and the right-hand photo shows the front of the piece with pencilled circles locating the centre. The wood is Amboyna burl from Southeast Asia, with its distinctive golden-coloured sapwood and red-coloured heartwood. The pin-like extrusions covering the surface of the sapwood – see right-hand photo – creates the 'live-edge', which is typical of the surfaces of most burls. The shape of the burl is as I received it from the mill – at this point, I'd not touched the wood

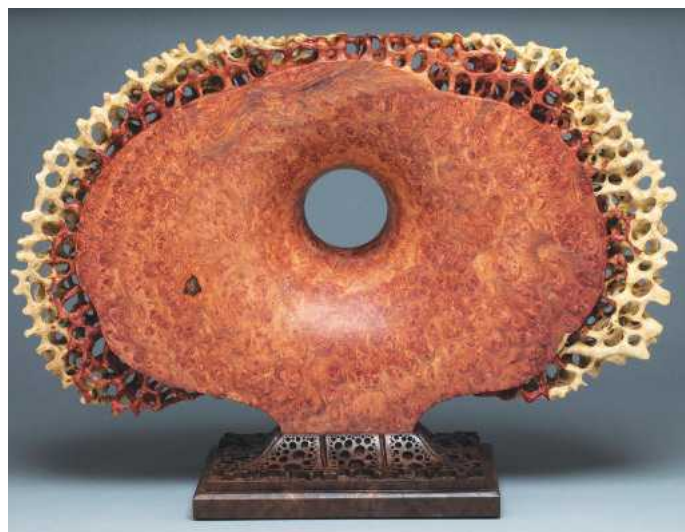
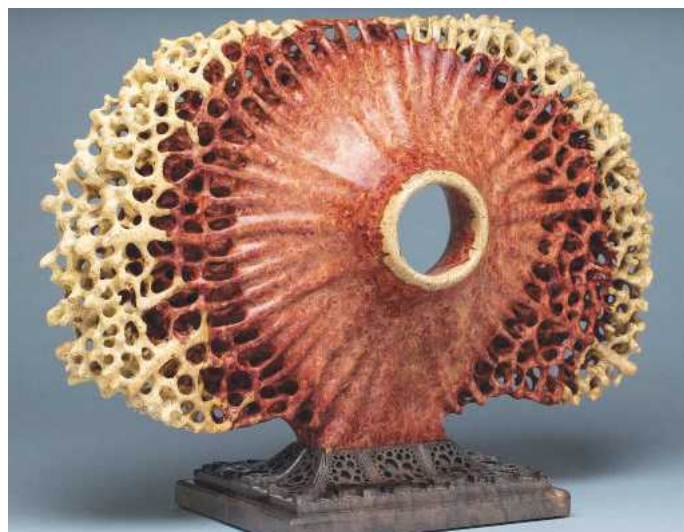


2 I used large hand-held gouges and rotating burrs to rough out the front of 'Reef', to create a cone-like face.

The right-hand photo shows the result of using hand-held rasps, files and abrasives to smooth out the cone to its final shape



3 The photos above and top right show the beginning of the detail carving, where I used small spherical burrs and bits to create an intertwined network of tubes, which are reminiscent of corals. The bottom right-hand photo shows how I finished the backside, creating an inverse cone to match the front profile



4 Once the carving of 'Reef' was completed, the piece was placed on a stand carved from Oregon Claro walnut. For 'Reef', I applied multiple coats of Shellac, which I then buffed out to achieve a medium lustre. Shellac brings out the timber's colour, particularly the rich reds of the heartwood. The photos here show the front and back of the piece, respectively

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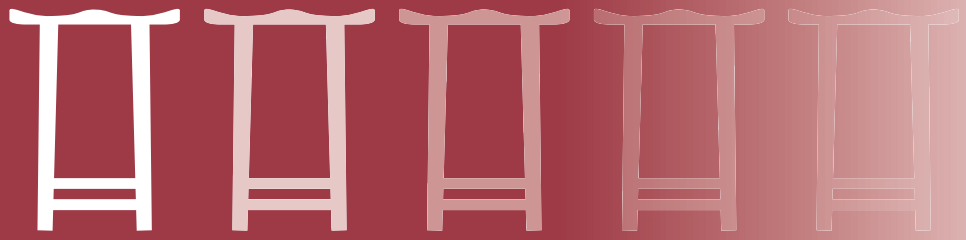
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TAKE A SEAT



Gifted two elm seat blanks by a neighbour – one first rate, the other with twist – **Geoff Ryan** sets about making his first stool. Candidly sharing mistakes made along the way, the end result is not only functional, but more importantly, very comfortable

It's often said that we learn from our mistakes. If that were true then I should be a genius by now, but I know I'm not – or so my wife keeps telling me! What is true, however, is that we can learn to deal with our mistakes and hide them.

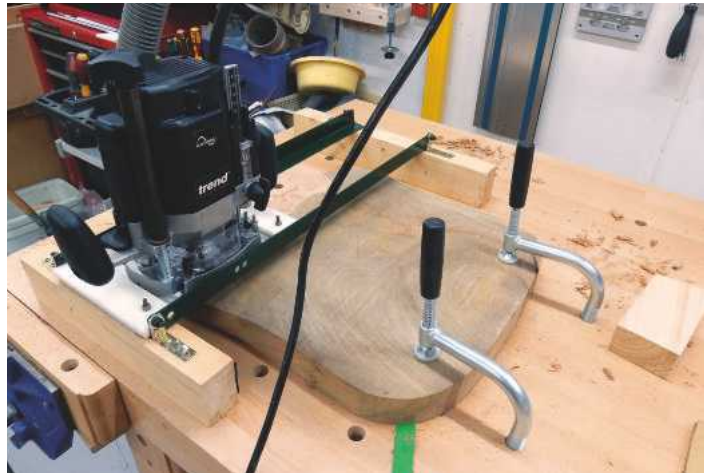
My neighbour gave me two elm seat blanks when he stopped making Windsor chairs and rockers and instead went back to building model steam locomotives. He also generously gave me his big lathe... One of the blanks was first rate but the other had a twist – a void with bark inclusion – along with some woodworm holes. To remedy this, I doused the pair with some woodworm killer, before moving to my wood store, while I thought about a possible use for them.

Up to this point, I'd never made a chair or stool, and didn't relish getting into all the complicated compound angles normally associated with traditional construction methods. It was over a year before I decided to have a go and came up with a simplified approach to achieving the angles. The plan was to make two identical frames, which would be joined in the middle of their cross rails. I would also need to add a foot rest rail and my first idea was to use a length of chrome wardrobe rail, but this proved to be harder than expected, so I ended up using wood instead. As this was my first attempt, I decided to use the wobbly seat blank and put the perfect one aside for a future project.





1 The seat blank was far from flat, so using a hand plane, I started by removing some of the high points from what would be the top surface



2 When the blank would sit upside down without rocking, I set about flattening the bottom with a simple router sled made from some steel angle and two blocks of wood. The router is fixed to an aluminium plate with some pieces of old plastic kitchen cutting board fastened to it, which provides a surface that would slide easily against the sides of the steel rails. It took many passes, with light cuts, to achieve a flat bottom across the entire surface



3 The blank was already roughly the right shape and just needed some refining using a drum sander and belt sander to clean up all the edges. The void was cleaned out and filled with epoxy resin. I added a blue dye to the epoxy as I thought it would provide some interest, but in hindsight, I'm not sure it was the best choice



4 After drilling some holes around the seat area to provide a depth gauge, rough shaping was carried out using an old Arbortech disc. I then used flap sanding discs to refine the shape. This process proved to be faster and easier than I'd imagined although the surface did require some hand sanding in order to achieve an acceptable finish



5 I rounded over all the edges with a router and, after more sanding and some buffing, the grain pattern came alive. There were some air bubbles exposed in the resin but as these would be on the underside and therefore hidden, I chose to ignore them



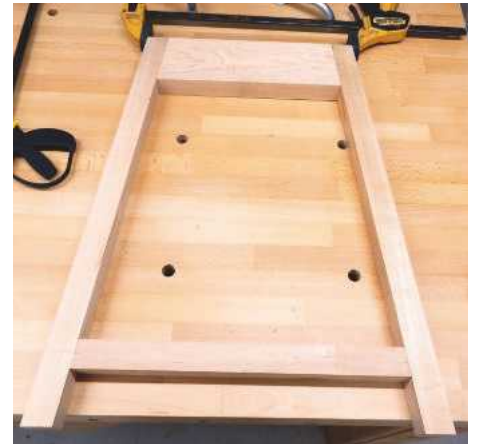
6 The next step was to apply two coats of Osmo Polyx Oil 3032 Clear Satin. The brush marks previously visible luckily disappeared after the second application. The seat was then put aside while I turned my attention to the frame



7 I was given two baulks of the hardwood shown here by a friend. The two looked identical and one was definitely ash, but the other wasn't. When planed it looked more like beech, but I'm not convinced. If anyone can identify it from the photos, I'd really appreciate you letting me know! The baulk is shown sitting on my old Performance Power (B&Q) mitre saw just before I added supports to either side. Cutting the baulk in two aided handling and both halves were just the right length to provide material for legs and cross rail. This old saw had provided many years of good service, but the bearings were becoming worn, leading to play in the blade, and I was awaiting delivery of a new saw to replace it



8 After planing and thickening both halves, these were then sawn up to provide the blanks



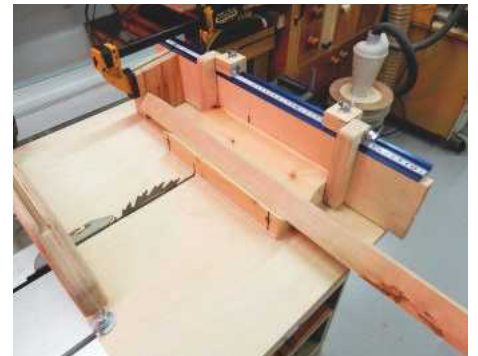
9 With all components squared up, the new mitre saw was employed to cut the angles. Based on my existing kitchen stool dimensions, I chose an angle of 7°, which would provide the required leg splay. The components were then clamped together to mark them up for joint positions. The top rail would be shaped once the dowel joints were drilled. The legs are 675mm long while the frame is 380mm wide at the top and 530mm wide at the bottom



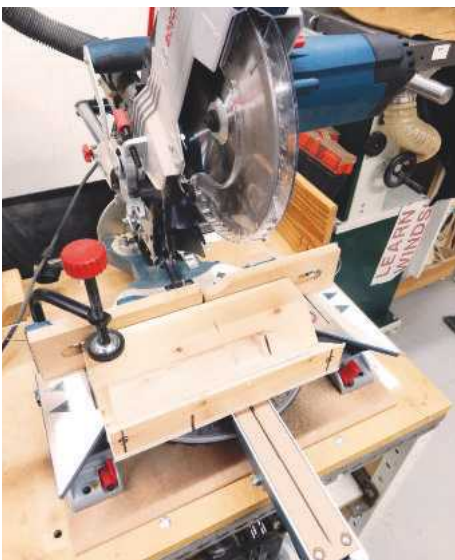
10 I used 10mm dowel joints: three in the top rail and one in the bottom rail. **Mistake number 1:** I managed to slip while drilling one of the holes in the top rail and therefore ended up with an oversize hole. To overcome this, I decided to use epoxy to glue the joints together, although I have to admit that I'd never done this before



11 Mistake number 2: I somehow managed to drill the wrong mark on one of the legs. Luckily it was easy enough to plug the hole and drill a new one, and once sanded and finished, the error was difficult to detect



12 In order to install a wooden foot rail, I needed to make cut-outs on adjacent legs. These were largely made using the table saw, fitted with a blade with flat-topped teeth, and a cradle jig sat on a crosscut sled



13 Next, I trimmed the ends of the cut-outs to 7° using the new mitre saw, which has a trenching feature. The photo shows a practice run on an offcut before I committed to doing this on the legs



14 Here you can see the foot rail being checked for fit. While the fit on the top surface was good, I noticed a small gap on the underside, but luckily this isn't visible when the stool is in use. Next, pocket-hole screw holes were made on the underside



15 The next step was to shape all components using a bandsaw and drum sander, before rounding over most of the edges on a router table



16 Unfortunately, assembly of the first frame wasn't going too well. The top frame on one side wouldn't come together fully, so I gave it a tap with a leather-faced mallet – then heard a pop...



17 Mistake number 3: I'd applied too much epoxy to the dowel holes and the hydraulic action when I tapped with the hammer burst the wood along its grain. At least the joint now came together, though!



18 The offending tool: this mallet belonged to my father and, over the years, has helped with the assembly of all sorts of things, including scooter and motorcycle engines, car gearboxes and differentials, to knock dents out of my first car, and generally persuading things to go back together. I can just imagine his words if he were here to see my mistake – all in good humour, but quite unprintable! I decided to pack up for the night and left the epoxy to fully cure



19 The next day, I cleaned out some of the cured epoxy so that the piece fitted back in place. More epoxy was then applied, albeit sparingly, and the component clamped in position



20 When the epoxy had cured, I scraped and sanded until the repair was only just visible. Once finish was applied, however, it was very difficult to detect the repair at all



21 The second frame was assembled with just one leg glued – the other needed to be removed to allow the two frames to come together



22 With the unglued leg removed, the two frames were brought together. I came close to another mistake, however, by having the leg with foot rail cut-out in the wrong position...



23 The foot rail was then glued and screwed in place



24 After some further light sanding, two coats of Osmo Polyx Oil were applied – note plastic lids under the legs, which prevent them sticking to the cardboard



25 To protect the foot rail, I fitted a length of aluminium stair-edge rail, which was left over from my last camper van build. While a very practical solution, it isn't very elegant, but so far I've not come up with a better solution. I ended up drilling fixing holes a little too close to the edges and was therefore unable to get the drill in place to make the pilot holes. The solution was another tool I inherited from my father – a pin chuck for small drill bits – and if this hadn't worked, then a flexible drive might have



26 The frame was then screwed to the underside of the seat using eight screws. The two silver ones are shorter than the others as the seat is shallower at that point. I used some wax on the screws to aid lubrication...



27 ... and that was it – my very first stool. It's certainly robust and, I'm pleased to report, very comfortable. Next time round, I'll do my best to produce something a little more elegant and refined, but I can't guarantee there'll be no mistakes to rectify! ✂

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WOODWORKER'S ENCYCLOPAEDIA **PART 29**

As he continues with the Ps, which happen to be subjects of particular interest, in part 29, **Peter Bishop** focuses on plywood but also spends time in the countryside where pleaching and pollarding are rife



Steam-bending is an age-old process that allows wood to be manipulated into an array of remarkable and interesting shapes
Photograph courtesy of www.tomraffield.com



Planks of wood

Plank

There's an actual definition for a 'plank' and it's not just any old sized piece of wood – it's a big one! Thickness can vary from 50mm through to 150mm and the width should be 280mm or more. I think the best way to think about it is that anything big and chunky is a plank

while anything smallish is a board or scantling – we'll define that when we get to the Ss.

Plasticity

Another of those useful, versatile properties of wood. In this instance, it means that wood

will retain its shape when bent under pressure using steam and heat. The object pieces need to be bent to shape, then held in a former until they've cooled and 'set'.

Plastic wood

When I first wrote this directory, over 30 years ago, there was only one plastic wood around, and that was wood filler. But, as innovation and technology have moved on, there now



Wood-plastic composite

exists a wood substitute made from recycled plastic. The filler is useful and plastic wood, or one of the other propriety wood fillers of many colours, will be useful in our workshops. The substitute wood is another matter. Although I'm a fan of the real stuff, I have to say that some of the plastic woods I've seen are pretty good. I guess it depends on their destined use, but whatever turns waste into a usable product has got to be a positive thing, don't you think?

Play

In woodworking terms, a bit of 'play' can sometimes be helpful. It refers to a gap that has been designed into our project to allow free movement. For example, a gap at the hinge side of a door, which ensures that it does not bind.



Hedge laying taking place in Borrowdale, Cumbria

Pleaching or plashing

Depending on where you are in the UK, you might use one or the other of these words to describe a type of hedge laying. I thought I'd add this one for interest! If you get out in the countryside, you might see some hedge laying going on. 'Pleaching' is a method of achieving this through the use of angled stakes, around which live hedging is interwoven. When all the live lengths have been woven, a series of thin 'whips' are then twisted around the top of the stakes to hold everything in place. The stakes and whips are made from the hedge thinnings, so everything gets used up, and the end result is a great stock-proof hedge.

Plough, to plough, or ploughed

A 'plough' is a tool that will cut a groove or trench, and 'to plough' is using it to make that groove or trench. A slightly more sophisticated



Veritas miniature plough plane, available from Axminster Tools



Peter Follansbee ploughing a groove with a plough plane

tool than an 'old woman's tooth', plough planes are available with a variety of cutters in various widths. If you're a hand tool enthusiast, you'll use one of these while the rest of us may pick up a router or set up the circular saw.

Plucked up

Basically the same as 'picking up'. When planing interlocking grained material, you might find it difficult to achieve a good finish without it 'plucking up'.



Veritas 10mm tapered plug cutter

Plugs & plug cutters

I have two or three different-sized plug cutters in my drawer for things I don't use often but would hate to be without! If you want to hide those screw heads, you'll need to cut a recess and cover them over with a plug. Try to match the plug to the socket it's going in and do make sure the grain runs in the same direction. If you find a dead knot on your show wood surface, you can always chop it out and fit one or more plugs into the recess you've created. Make sure you have the right sized drill bit to match your plug.



Montana Brand plug cutters: the self-centring bit ensures accurate results with a hand-held drill. The bit is tapered just a little, so plugs fit snugly

Plug tenon

A short, stubby tenon, sometimes called a 'spur' tenon, which you might use in between some more substantial ones – a good example is at the end of a glazing bar within a window frame.



12mm birch plywood

Plywood

One of my favourite sheet materials, which is extremely flexible in use, and you can literally get flexible plywood to create curves with. Until MDF turned up on the market, plywood was the first choice for many jobs and is still unbeatable in some cases. The basic principle is that layers of peeled veneers are laid one on top of the other with opposing grain directions in each layer. This creates the inbuilt stability and makes good use of the raw material. The outer layers can be top quality while the core layers might not be quite so. Plywood becomes outstanding when made up from timbers like birch, which yields an extremely good quality product. Depending on the type of adhesives used, highly durable versions are also available.

But do be wary, as there's some awful stuff out there! Overleaf you'll find a listing of useful abbreviations applying to types of adhesives used to fix the laminations, plus the use of products so labelled.



Marine plywood



Softwood plywood made from spruce

- **WPB (Weather and Boil Proof)** – the adhesives used for these plies have proved to be highly resistant to weather, micro-organisms, cold and boiling water, steam and dry heat.
- **BR (Boil Resistant)** – these joints have good resistance to weather and boiling water tests but fail under prolonged exposure. Will stand the cold and attacks from micro-organisms.
- **MR (Moisture Resistant)** – using this grade in exterior applications is risky. It can stand cold situations for long periods and resists micro-organisms, but falls apart if boiled.
- **INT (Interior)** – the adhesives used will withstand the cold, but that's about it!



Aircraft plywood, which is among the highest-grade, most durable kind available

In addition to choice of adhesives, the composition and type of specie used in the surface ply's appearance is graded. This is based on defects present. They do vary according to country of origin, so be careful. An ISO – International Standard – defines five grades according to end use:

- **Grade E** – Natural surfaces remaining visible
- **Grade I** – Surfaces that may remain visible
- **Grade II** – Surfaces that may be directly overlaid or painted
- **Grade III** – Surfaces generally intended to be unseen, coated or painted
- **Grade IV** – Surfaces with no requirements for appearance.



Structural plywood, also known as sheathing plywood



A selection of laminated plywood panels – 12mm thick

With so much choice and options available, it's best to first define exactly what you're looking to achieve before speaking to your supplier. As long as you've told them what you're looking for, if it's wrong, you can go back to them.

Pocket rot

These are small patches of rot in wood that don't cover the whole surface. It's an indicator that further damage can occur and will be a problem, unless you're able to plane it out.



Big white pocket rot in conifer, caused by the *Phellopilus nigrolimitatus* pathogen

Pocket-hole screwing

A useful technique for joining or strengthening. The objective here is to create a 'pocket' into which the screw head will disappear while pulling up the joint. To help achieve this, various jigs are available, allowing you to make perfect pockets every time. I'm not sure that's quite right; however, pocket-hole screwing is a useful way of making joints.



The Trend Pro Pocket Hole Jig PH/JIG/AK in use

Poker work

An interesting pastime. Our ancestors, the Victorians in particular, seemed to be leaders in this field – that's according to the antique experts anyway! The practice of poker work, using a red hot iron or needle, is to burn patterns and images into the wood's surface. Some can



A poker work coffer from the late 19th century



Poker work on bamboo in the Philippines

be extremely intricate and detailed, while others are rather simple and boring.

Polishing

I don't need to dwell on this; it just depends on whether you're using wax or French polish, but the outcome is the same – a nice lustrous or glossy finish to our work.

Pollard & pollarding

A similar but slightly different technique to coppicing. When we 'pollard' a tree today, it's probably done to control the growth and stop



A line of willow pollards near Sluis, Zeeland, Netherlands, shortly after pollarding...

... and two years later

that tree getting too big. Originally, this was a method of producing larger numbers of useful boughs, which could be used for fencing posts, etc. Usually applied to oak or willow, known as 'sally' in the country, you would 'pollard' – cut – the trunk through at about head height or higher. The main trunk and branches cut off could be used for firewood or posts if large enough. Over time, the remaining live trunk would then sprout a number of leading tops. These, after a few years, were then harvested again. This technique has been used for centuries and fine examples are dotted around the countryside. The clumped and flattened central part of the pollard forms a great platform for birds to nest in and other creatures to thrive. ✂

NEXT MONTH

In part 30, Peter watches his Ps and Qs and starts to trickle into the Rs for a bit of a rabbit



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LETTERS

★ LETTER OF THE MONTH

Michael's model is based on his friend's 1979 ERF B series truck



MODEL TRUCK

Hi Tegan,

It's been two years since I last corresponded with your most enjoyable magazine, so I thought it about time that I did so again, to show you some photos of my latest project.

This is a model of my friend's 1979 ERF B series truck. I've previously made a few model vehicles, but this is the first that I've scaled and drawn plans for myself. I was sceptical at first that I'd be able to do it, but as you can see, all seemed to work out OK in the end, particularly considering it was made from offcuts that were just lying around the garage.

I have to say that I really enjoyed making it, idling away some hours during lockdown.

Best regards, **Michael Excell**

Hi Michael, thanks for getting in touch. Wow, the truck looks absolutely brilliant and it's obvious that many hours have gone into its construction – amazing work! The sheer detail is obvious to see, and I love your little touches such as the windscreen wipers! Lots of readers have been sharing their lockdown projects, so it's great to be able to feature yours as well. Many thanks again! Best wishes, Tegan



HOMEMADE PINCH STICKS

Hi Tegan,

Building a set of cupboards in alcoves, I found myself faced with the task of having to accurately measure a number of internal spaces and checking diagonals. As you do, I searched online for a solution and found various forms of 'pinch' sticks. I decided to make a set of my own and shown here is the result. Using four sizes, I'm able to measure or test from 150mm up to 1.5m. The wood used was leftover from a project that had been lying in the wood pile for some time. The collars are from scrap 25mm steel box section, and the knobs from eBay. I've used brass inserts to prevent the locking screws damaging the wood. The only real cost was my time and a can of spray paint. As I'm retired the time is free, and I now have something I can use for a good few years. Kind regards, **John Roberts**

Hi John, many thanks for your very interesting email. I have to say that before you got in touch, I'd never before heard of pinch sticks, but from what I can gather they're incredibly useful and capable of delivering exceptional accuracy. What a great use of offcuts and spare materials. As you say, these will no doubt come in handy for future projects, and even better that you made them yourself! Best wishes, Tegan



John's pinch sticks, in four different sizes



One of the pinch sticks being used to measure a cupboard alcove



Collars for the pinch sticks use scrap 25mm steel box section

GIFTS FROM OFFCUTS

Hi Tegan,

Being half Scotsman and half Yorkshireman (i.e. tight), I've always made use of offcuts. With this in mind, I came up with the idea of making gifts that use these spare pieces of wood, which are ideal for Christmas presents – it'll be here before we know it! I thought that an article on making gifts from offcuts would be a good addition to the magazine.

I've made lots of things for my own use as well as many which I've given away, and pretty much all of these only require very limited tools and machinery. The only item I had to purchase was the £1.99 battery movement for the clock – sourced on eBay – which I've recently finished.

I attach a couple of photos, the first showing a pile of offcuts I've used and the second illustrating some items made as gifts from these.

Best regards, **Robert Couldwell**

Hi Robert, thanks for sharing the items you've made using offcuts – they look fantastic! I think a dedicated article on this subject and the projects you can make using these is a great idea. As you say, one on making Christmas gifts would be perfect, and yes, it may seem a long way off but you know how time flies! I particularly like the tealight holders and chopping boards, which look to be very sturdy and brilliantly finished. Watch this space for a future article! Best wishes, Tegan



From a pile of offcuts such as these...



... many useful items can be made

READERS' HINTS & TIPS



Due to major stock issues with the Veritas range, a decision has been made, in conjunction with Axminster Tools, to substitute the original prize for a similar one within Axminster's Rider range. Rider planes represent traditional, quality plane manufacture and feature a ductile iron alloy body, accurately ground sole and carbon steel blade. The new prize – the **Rider No.5 1/2in Jack Plane** – is not only versatile, but also perfect for flattening, jointing and general preparation.

To be in with a chance of winning this great piece of kit, just send your top workshop hints, tips or pointers – indeed anything that other readers may find useful in their woodworking journeys – to tegan.foley@mytimemedia.com, along with a photo(s) illustrating your tip in action. For more information on Axminster Tools, see www.axminstertools.com



ELECTRIC HINGES & LATCHES

Referencing Peter Vivian's 'back in the game' article (Sept 2020 issue), he shared the process for making a Mancala board, so well that I reckoned it might just be within my capability to make one for our grandson.

When I retired seven years ago, my wife gave me some beautiful lengths of finished beech with which to make a workbench. The bench has long been completed and in regular service. Since that time, however a leftover offcut of about 305 x 100 x 75mm has been patiently waiting for a transformational opportunity. Making a drawing using the dimensions given in Peter's article made clear that, with a little help, the small offcut could just be big enough to morph into a Mancala board.

The first test was to rip the offcut into four even slices. To minimise wastage, I did this using my thinnest saw – a Japanese pull saw with 1mm kerf. Despite careful marking and even more careful saving, the slices weren't totally even. I don't have a thicknesser but do have a pillar drill, so used that instead. Fitting it with a sanding disc, I repeatedly ground each slice, gradually raising the baseplate until they were all the same thickness – it took a long afternoon but luckily I'm retired! I then glued them in grain-matched pairs, forming two pieces. With the pits scalloped



1 Old two pin plugs



2 Hinges fashioned from the two pin plugs

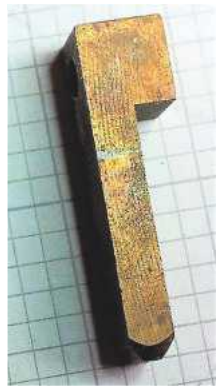
out there was insufficient breadth for the wooden hinges. A search of my salvage drawer for alternatives failed to turn up anything suitable, but a couple of days later, while looking for an electrical fitting, I found some old two pin plugs

(photo 1) – eureka! As you can see, the pin splits, in addition to their primary function, had clearly been designed to allow the pins to become hinges in later life (photo 2)! To make them, I drilled a 2mm hole through the tip of each pin, cut half off, then joined each pair with brass rod.



3 Hinge layout

To fit these, I drilled a pair of stepped holes at 45° in the inboard edges and 'plugged' them in (photo 3). Next, I needed to make a closing mechanism as I didn't have any magnets. Still in electric mode, I found an old three pin plug. With a little modification,



4 Earth pin



5 Latch pin

the larger earth pin (photo 4) made an ideal latch (photo 5) – the centre screw hole is deliberately offset so that the latch is flush when open (photo 6).

When working in the Middle East over 40 years ago, I remember watching the game being played with stones in scooped-out pits. I didn't understand it then and still don't to this day, but at least I now know what it's called!

To finish the job, I plan to scour local beaches for 48 suitably contrasting stones, which I'll then polish and use as counters.

Nigel Groves



6 Latch arrangement



7 Mancala board prior to waxing

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Out of this World

Colin Simpson takes inspiration from our great galaxy to create this eye-catching bowl with a cosmic twist ▶

A real-life nebula, which was the inspiration behind this piece

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1 Find the centre of the blank and screw a faceplate to it

In this article, I'm going to turn a simple wide-rimmed bowl before showing you the process for colouring it. I've used the same Jo Sonja iridescent paints, in micaceous-based colours, within a previous article, but here, I'll use them slightly differently to create a specific effect. I've called this piece 'Nebula 8' as it's the eighth piece I've made in this series of work and the colouring is reminiscent of the interstellar cloud of dust, hydrogen, helium and other ionised gases, which make up a nebula.

Establishing shape

I'm using sycamore for this project and started with a 300 x 70mm deep bowl blank. Sycamore is a light coloured, close-grained timber that lends itself to this colouring process. First, decide which face of the blank will become the top of your bowl, find the centre and screw your faceplate to it (photo 1). Mount the piece on the lathe and flatten the base with a fingernail-profile bowl gouge using a pull cut (photo 2). Place the tool on the toolrest, on its side, with the flute facing the wood. The bottom wing does the



2 Flatten the face of the blank with a pull cut

work – it's really a scrape. Start at the centre and pull the tool towards you, moving it nearer the edge of the blank. Don't push hard into the wood, but keep the pressure down on the toolrest.

Using a parting tool, measure and cut a spigot to fit your chuck (photo 3), then shape the outside using a bowl gouge. This can be achieved entirely with pull cuts, using the bottom wing of the gouge to cut, or with push cuts, or a combination of both. The push cut (photo 4) is a bevel-supported cut, which should give you a cleaner surface.

With the waste wood removed, cut the



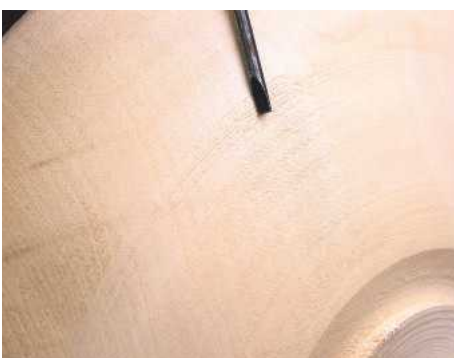
3 Use a parting tool to cut the chucking spigot



4 Shape the outside of the bowl using a bowl gouge



5 Dovetail the spigot and cut a pop mark in the very centre



6 Despite a careful cut, I still managed to experience some tear-out...



7 ... but a finishing cut...



8 ... producing fine spiral shavings...



9 ... cleans up the surface well



10 Start hollowing with the tool handle well over the bed bars



11 Once the cut is started, roll the tool anti-clockwise...



12 ... and swing the handle, moving the cutting edge towards the centre



13 Repeat this cut, going a little wider and deeper each time



14 Use the same cut to shape the rim

dovetail on the spigot, using a skew chisel on its side. It's also a good idea to cut a small pop mark, with a corner of the skew, in the very centre of your spigot; this will help when centring the bowl later (photo 5).

Despite using a push cut to shape the bowl, I did experience some tear-out of the fibres (photo 6). This can be cleaned up using

a finishing cut with the swept-back gouge. These cuts can either be bevel-supported cuts or shear scrapes (photo 7). Lower the handle until the cutting edge is about 45° to the surface of the wood. To shear scrape, put the bevel onto the wood, then roll the tool gently until just the cutting edge is touching the wood. Take light, gentle cuts, aiming to achieve very fine spiral

shavings (photo 8), remembering to keep the handle low so the cutting edge stays at 45° to the wood. The surface finish should be greatly improved (photo 9). It's worth practising these finishing cuts as they will greatly reduce the amount of sanding you'll need to do. Once you're happy with the outside shape, sand down to 400 grit, but don't polish it at this stage.



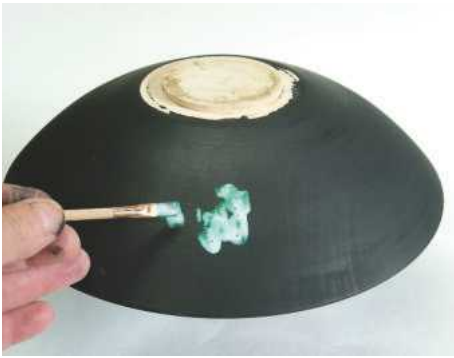
15 Jo Sonja iridescent paints

Hollowing

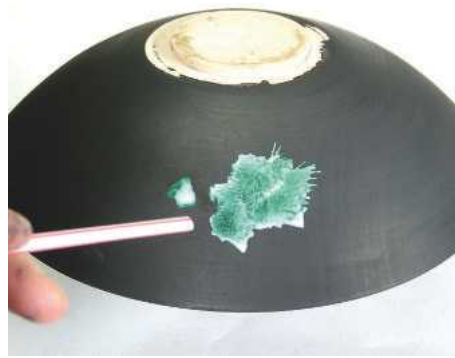
Take the piece off the lathe, remove the faceplate and mount the bowl in your chuck using the spigot cut in step 3. Flatten the top of the bowl using a pull cut, then start to hollow. Imagine the bowl blank as a clock face. Position the handle away from you over the bed bars and use the tool on its side with the flute pointing towards 3 o'clock. To help prevent the tool from skating across the surface, place your thumb on the tool over the toolrest and apply pressure towards 5 o'clock (photo 10). Push the tool confidently into the wood until a



16 Ebonise the rim using Liberon ebony wood dye



17 Dab on a little of the thinned paint...



18 ... and move it around the surface by blowing through a straw



19 Repeat this process, applying all the colours in a random pattern...

little of the bevel is rubbing on the side wall of the hollow you're creating, then rotate the flute up to about 2 o'clock and start to swing the handle towards you (photo 11). Continue to swing the handle towards you at the same time as pushing the cutting edge down the side wall and across the bottom of the bowl towards the centre. This action should be carried out at the same time as rotating the tool anti-clockwise until the flute is pointing to about half past one (photo 12). Repeat this cut going a little wider and deeper each time (photo 13). The same cut is used to lower the rim of the bowl (photo 14). Again, once you're happy with the shape and finish from the tool, sand the bowl and rim down to 400 grit.

Colouring

The Jo Sonja iridescent paints mentioned previously (photo 15) show up far better if painted onto a dark background. I used Liberon ebony wood dye to darken the rim and back of my bowl (photo 16).

The next process is easier to do off the lathe.

I use an old Lazy Susan and place the bowl on this, which allows me to rotate the piece while colouring it. Use the iridescent paints very sparingly. I squeezed out a pea-sized blob of each colour into separate containers.

For this particular method, the paints need to be thinned down with water to the consistency of single cream. Use a small soft paintbrush to dab on a splodge (photo 17), then blow through a drinking straw to move the paint around (photo 18).

If you have a compressor, an air gun can be used to move the paint around, which is a little easier, particularly if you get short of breath. Continue to apply random colours in a random manner and move the paints around using your air source (photo 19). If you don't like a particular area, carefully wipe off the colour with a paper towel and start again.

I think these pieces look better if you don't cover up all the dark background, but you can carry on until you're happy with the effect. Photo 20 shows the bowl turned over and the rim almost complete. Let the paint dry,

then return the bowl to the lathe for finishing. I felt the rim was a little too wide, so reduced its size with hollowing cuts (photo 21), before power sanding the bowl part (photo 22). I didn't want to disturb the paint by brushing on a finish, so used Chestnut's acrylic gloss lacquer in aerosol form (photo 23). I sprayed on a couple of coats, lightly rubbing back between each one, then used burnishing cream (photo 24) to perfect the surface.

Finally, reverse chuck the piece to remove the chucking spigot. I use a mushroom-shaped dolly held in my chuck with a piece of thin leather sandwiched between this and the inside of the bowl. The tailstock is brought up to the pop mark in the centre of the chucking spigot cut in step 5 to keep the piece pushed up against the leather and dolly. This method of holding the piece gives access to the chucking spigot and base (photo 25). Use a 10mm spindle gouge to remove the spigot and slightly dish or concave the base, leaving just a small stub for the revolving centre. This stub can then be removed off the lathe, using a sharp chisel. ✂



20 ... and do the same with the rim



21 You can then complete hollowing of the bowl area



22 ... before sanding to a finish



23 I used Chestnut gloss lacquer to finish the piece...



24 ... and polished it using burnishing cream



25 Reverse the bowl onto a mushroom-shaped dolly and remove the chucking spigot



26 The completed bowl should look something like this

BORDON MEN'S SHED

A rebuild in progress



Having to relocate their thriving Men's Shed to a new building and start things from scratch, the project is still a work in progress. Here, **Clive Handy** of **Bordon Men's Shed** talks about their recruitment drive and search for new members, to not only help build the workshops, but also carry on the legacy

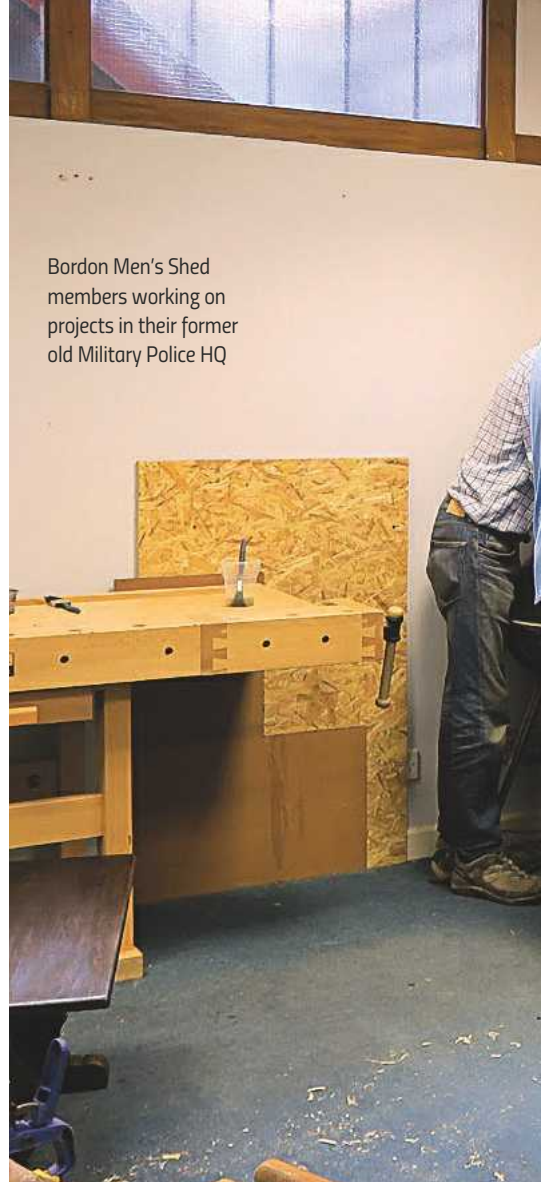
Various features on regional Men's Sheds have appeared in this magazine over the years, and I imagine a fair few readers may even be members within their own communities. For those who aren't familiar with Men's Sheds and what they can achieve, however, simply put, these are community spaces in which men can connect, converse and create. The activities on offer are often similar to those typically carried out in garden sheds, but for groups of men to enjoy together, especially when it comes to working with wood and the associated skills required, which is a common interest.

These community groups help to reduce feelings of loneliness and isolation, which many can experience, especially in the

wake of the COVID-19 pandemic, but most importantly, they're fun to be a part of. The Men's Shed is very inclusive, but members are expected to be able-bodied, due to the sometimes arduous nature of the work. Everyone is a volunteer. The Men's Sheds governing body – UKMSA (UK Men's Shed Association) – strive to raise awareness of Men's Sheds and the life-changing impact they can have.

All change

Here in Bordon, Hampshire, our thriving Woolmer Men's Shed, started a few years ago but closed since the first lockdown in 2020, previously made use of an old Military building in the town, which we shared with



Bordon Men's Shed members working on projects in their former old Military Police HQ

The Furniture Helpline (FHL). Due to the planned redevelopment and building of 3,300 new homes, however, we were forced to find a new place to meet. Since FHL provides us with administrative support, we had no choice but to follow them. Luckily, FHL were able to secure a new building on Prince Phillip Park – one end of a large hangar-type building – which was empty and ready for occupation, so we joined forces once again.



1 The new Shed is housed in a large hangar-type building



2 Equipment requiring sorting out having moved from one premises to another



Starting over

Within the new building, we were allocated the small area shown to the extreme left of **photo 1**, behind the left-hand white line. This gave us two 6 x 3m areas, where we'd build our workshops plus a smaller area for a tea bar.

In our previous residence, we were allocated furniture to restore and renovate from FHL and hope to carry this on, once we've finished building our workshops. All five members

carrying out the build are in their 70s, and one in his 80s, so progress since January, when we started the build, adhering to COVID-19 regulations and social distancing, has therefore been slow.

Once we'd moved everything from the old workshops, we found we had a lot of equipment to sort out (**photo 2**), some of which was given by generous donation. The aim is to build the partitions out of OSB with roofs as well as

installing insulation. We used steel stanchions, which hold up the walls, as dividers and built the walls using a mixture of reclaimed 6x2 and 4x2 planks, plus new 8x4 ply sheets, which are 12mm thick.

The middle wall

The main walls are now in place and the door frames constructed (**photo 3**). The flooring is reclaimed OSB covered with new 4mm ply in readiness for vinyl contract flooring, which is being installed by a flooring expert. The walls have been screwed together in anticipation of future moves.

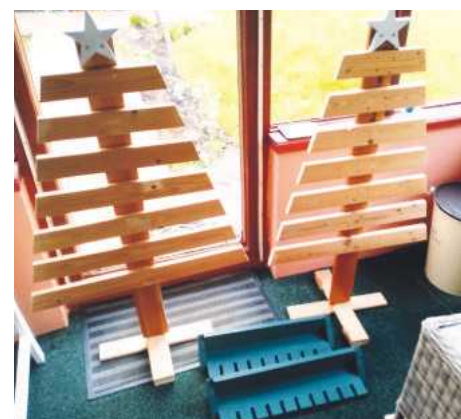
We needed to have internal workshops in



3 The middle wall, once constructed



4 Construction of a wall



5 Pallet wood Christmas trees – the last group project completed by members



6 2019 display at the Weald and Downland Living Museum, West Sussex

order to separate ourselves from FHL warehouse stock, which would also be stored in the hangar, so money was therefore required to build partitions, install electrical sockets and relocate all our equipment.

Internal workshops

In the months since January, the build has progressed well (**photo 7**), and with the landlord's permission, we've built two rooms – one 'clean' and one 'dirty' – which will contain all the machinery. We've yet to put a roof on, but it will be lightweight in order to keep the heat in – luckily waterproofing isn't required! Inside the rooms, we've mounted old kitchen cabinets brought from our previous address (**photo 8**), and in a few weeks' time, we should be able to move all benches and machinery,



8 Typical cupboard installation



7 The most recent photo of the whole project, which was taken up a ladder to give an indication of room size

tool boards and storage, back into the rooms. We were also lucky in that one of our members had a friend who was giving up his workshop, so he donated an overhead sliding saw, pillar drill, lathe, bandsaw, table saw and many minor machines for sanding and finishing, along with various power and hand tools.

Once fully built and sorted, we'll have numerous benches to work on, as well as a comprehensive wood store – mostly reclaimed – which will be used for all sorts of projects.

In terms of past projects carried out by our members, these include the building of a plywood rocking horse, conductor's podium, three crucifixion crosses and notice board for a church, as well as working on various group ventures, the last being pallet wood Christmas trees, requested by the local regeneration company, which were well received (**photo 5**). We've also shown our wares at the Weald and Downland Museum's craft fair (**photo 6**) – where BBC 1's *The Repair Shop* is filmed – as well as selling our display wheelbarrows, trugs, bowls and Christmas decorations.

More recently, the local council have asked us to build ground and fence planters to place around the town. Whitehill and Bordon Town Council have been very helpful, providing us with a £3,000 grant to help towards building the workshops as well as offering ongoing

financial support, with another grant in the pipeline. The Trustees of the Furniture Helpline have always supported us in many ways, and continue to do so.

Join our Men's Shed

We currently have six members, pictured in **photo 9** on a recent Zoom call, who are as follows, from top left to right: Ted Wood, Clive Handy and John McGlary; bottom: Peter Benson and Jim Bryant.

We previously met twice a week, but when three people were in our old 3 x 5m workshop, it felt crowded. In the new place, however, we have a lot more space – the whole side of a disused hangar. It's hoped this will allow many more people to take advantage of the facilities.

As stated above, most members of our Men's Shed are in their 70s, and we need new blood: first to help us build the new workshops, and secondly, to carry on the legacy and assist with community projects. As already mentioned, we repair and renovate FHL's furniture when required as well as working on individual projects.

We're hoping that the local population will support our recruitment drive for new members and join us at the club. We'll be advertising via social media, the press and local radio, where I've already spoken about Men's Sheds. We'd love to hear from any readers, or indeed anyone reading this who has an interest in working with wood. Our aim is to be open every day, providing supervision to anyone who wants to join and work on their own projects. Thank you. ✂



9 Current Bordon Men's Shed members, from top left to right: Ted Wood, Clive Handy and John McGlary; bottom: Peter Benson and Jim Bryant

FURTHER INFORMATION

For more information on Bordon Men's Shed, contact Senior Member Clive Handy on **07799 154 748** or email **clive.handy@gmail.com**

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Les Thorne's handy turned garden aids make great gifts as well as offering the perfect opportunity for practising tool skills

Believe me, I'm no gardener – I could kill artificial flowers. My dad, on the other hand, has always grown vegetables on a biblical scale. Saying that, if you don't have green fingers, then you're bound to know someone who has, and the simple projects shown here make perfect gifts. The paper pot maker is a great eco-friendly way of recycling newspapers and I had fun making the pots even though I wouldn't be using them for the intended purpose. The garden dibber is something I used to make with beginners as it teaches basic spindle turning techniques along with practising turning tapers. Plus, burning lines on wood is always a satisfying thing to do. When you're making something that's either going to be used or left in a damp environment, you need to choose a timber that won't mark or rot too easily, so I settled on oak for this project, although sweet chestnut would also be suitable. I'd like to thank Alan Sturgess from the Hampshire Woodturners' Association, who drew up the drawing shown opposite as well as providing me with the idea for one of the projects shown here. ✂

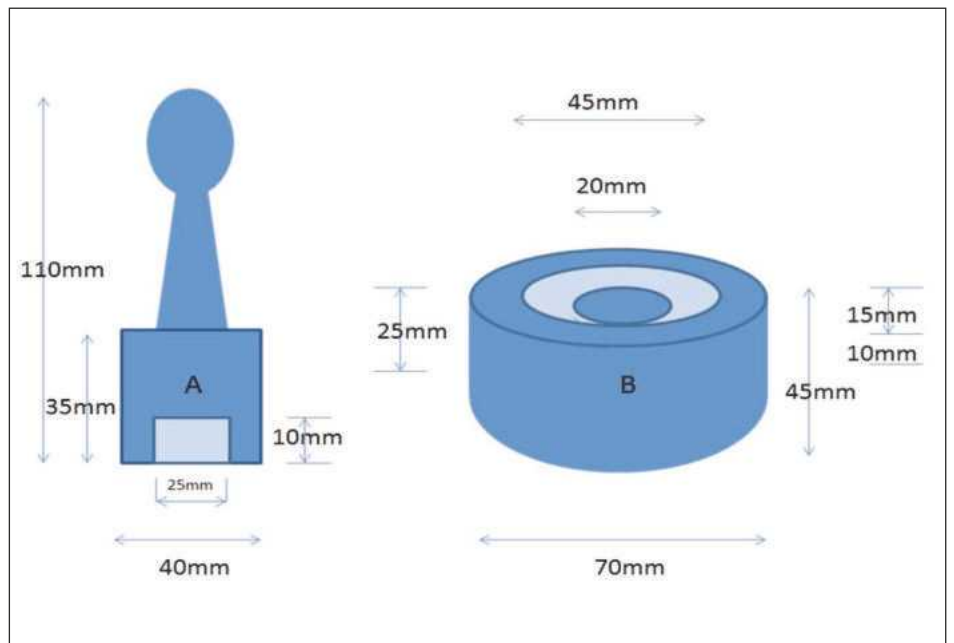


Fig.1 Garden aid dimensions

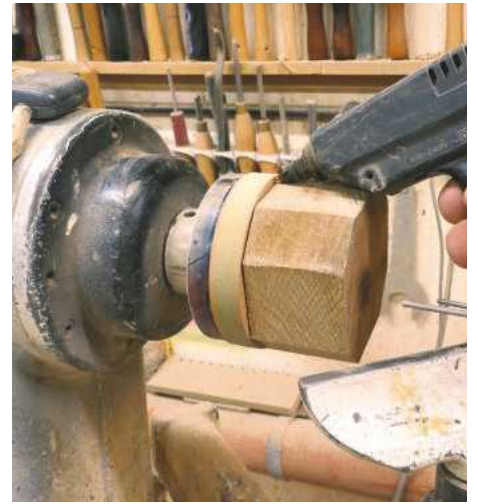
PAPER POT MAKER



1 The base is made from a piece of side-grain timber. On a blank this size, it's not worth making it round on the bandsaw, so I just take off the corners using my bandsaw's tilt feature



2 All ready to go. Cutting the blanks round on the bandsaw would wear the blade more on one side than the other, which means it would struggle to cut in a straight line



3 I needed to mount the blank on the lathe without any screw holes in the top, so the best option is a glue chuck. A hot glue gun is both quick and easy to use, but do make sure the glue is dry before starting up the lathe



4 Use a bowl gouge to take the blank down to the required size. To make the piece parallel and to achieve the best cut, run your finger along the toolrest; this fixes the depth of cut but you must move the tool at the optimum speed in order to achieve the best surface finish



5 Using a long-grind bowl gouge allows me to clean up the bottom surface with a pull cut. Remember to start the tool cutting on the centre point of the wood and make the base slightly concave



6 The large jaws on this Nova chuck are the perfect size for gripping the oak. I learnt this technique when making trophy bases, and it means you don't need to use a dedicated chuck recess or spigot



7 The size of the jaws' internal diameter needs to be transferred onto the wood, using a pair of dividers. You must ensure this is accurate otherwise chuck marks will be left on the blank



8 I use a signature gouge to cut a small groove about 5mm up from the bottom. If you struggle to do this, a small 'V' type scraper will work fine just as long as you take small cuts



9 Here I'm just trying the chuck for size. The jaws need to make a perfect circle so as not to compress the wood unevenly. You can see there's just a tiny gap between the jaws



10 Complete the bead using a spindle gouge. Best results can be achieved with the bevel in contact and using a push cut. In the photo you can see the direction the tool needs to be presented in, which ensures it cuts with the grain



11 Carefully sand the bead from 120 to 400 grit. Fold the abrasive over to allow access into the tight groove at the top of the bead



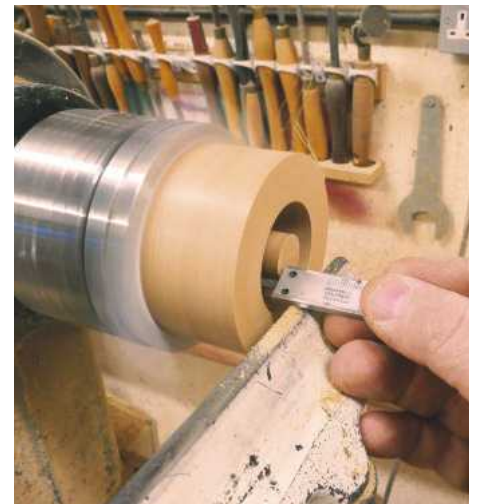
12 The chuck is on the lathe and the oak is gripped on the bead. You can see that I've put a piece of tissue between jaws and timber, which will stop the metal of the chuck reacting with the tannins in the wood



13 You'll need to true up the top face, making sure you remove all the glue. Use a gauge for this as sanding just melts the glue and spreads it around. Use the dividers to mark the measurements shown in **Fig.1**



14 The 10mm multi-purpose tool is best for turning the large slot in the top. Line the tool up with the bed of the lathe in order to keep it parallel and try not to force the tool through the timber – allow it to cut cleanly



15 This needs to be accurate, so I use the depth gauge on my Vernier callipers to achieve the correct size. Take it steady at this stage; you can always go deeper but making it shallower is a little trickier



16 All that's left to do on the base is to remove the sharp edges so the paper doesn't rip. You could sand them off with a piece of 120 grit, but I use the 10mm skew chisel in scraping mode



17 I've had this Veritas centre finder attached to the wall of my workshop for about 15 years and I'd forgotten how well it works on square and round stock



18 Mount the plunger between centres and once round, put a chucking point on one end. Once again, I use the Vernier callipers to achieve an accurate size



19 The end will need to be faced off, with a skew chisel, using a slicing cut to clean this up, if you're confident. A gouge, however, will be a little more forgiving. For the best cut, you'll need to ensure the height of the toolrest is correct



20 Use a 25mm sawtooth machine bit mounted in the tailstock to drill a hole to the required depth. If you make a tiny dimple in the end using a chisel, the drill will always start off dead centre



21 At this stage, I've made two marks on the blank: one indicates the size of plunger and just as important, the waste on the handle end, which is taken down to give two points to work between



22 This is good practice with the skew: open a 'V' using the point of the tool in a slicing-type cut, then roll a convex shape on the left-hand side. Make sure the bevel of the tool is constantly in contact with the wood or you'll experience a dig-in



23 Here I've switched to a gouge in order to turn the concave shape on the handle. This classic handle shape is particularly good to look at and comfortable to use. Keep the bevel rubbing in order to achieve the best finish



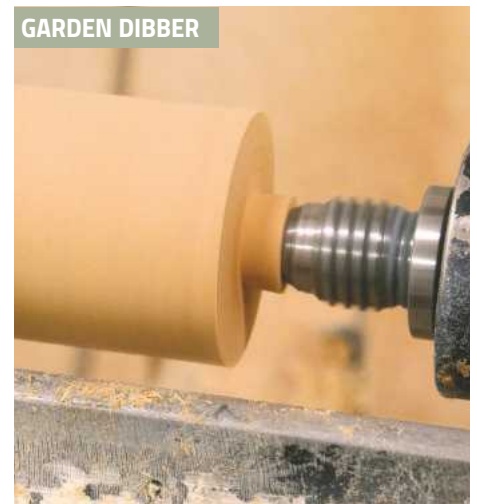
24 As I've held one end in the chuck, I can almost turn this to a finish. Keep making slicing cuts until about 5mm of material remains. I then add finger tip support and keep going until the piece falls into my waiting hand



25 A liberal coating of oil helps to protect the wood from moisture – here I'm using lemon oil. Once the oil is dry, give it a light rub with 400 grit and apply another coat



26 I found that a piece of newspaper around 200mm long x 80mm wide is about the right size and amazingly, the pots do stay together – I might even have to plant something now!



27 The dibber blank is about 200mm long and 40mm square. Once round, take the waste down on either end; this will stop you having those annoying little drive marks in the end of the piece



28 All marked out and ready to go. Take care not to weaken the blank by making the detail too thin at this stage, as vibration will lead to difficult cuts



29 Learning how to turn a taper is important in your turning life. I've set the toolrest up on an angle, giving me a guide to work to. The bulk of the stock is taken down using a spindle roughing gouge



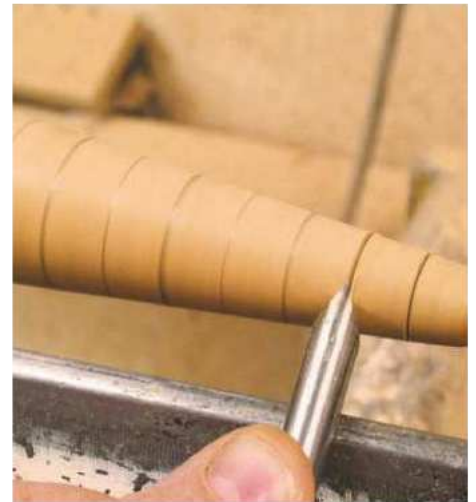
30 The finish off the spindle roughing gouge will be pretty good, but the skew will afford you a brilliant finish, requiring little or no sanding. This is a planing cut and the photo shows the optimum position of the cutting edge



31 The shine on the wood shows that the bevel is in contact with the surface, causing the timber to burnish as the tool goes through the cut. The ball on the end will make the dibber easy to use



32 The last parts to be completed are the small thin details; first the cove underneath the ball followed by the rounded over point at the tailstock end. The secret is to leave just enough to support the wood through the last stage



33 Mark a series of increments on the dibber's shaft – I've used 10mm steps on this particular one – then, using the point of a skew, cut a small groove on each line



34 One of the most satisfying things you can do on the lathe is to burn lines with a friction wire. I use a strong steel wire held in some handles. Don't try and hold it in your fingers as it does get hot



35 You should only have a small amount to finish by hand. In order for the piece to look its best, you want to make sure you don't flatten the top of the ball. A good soaking of lemon oil and the dibber is ready to use



36 The completed paper pot maker and garden dibber should look something like these



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MITRE MAGIC



Despite looking very attractive when cut well, mitre joints can be some of the most troublesome, and inaccuracies can cause them to gape open. Here, **Andy Standing** shows how to get your mitres just right, every time



Mitre joints appear in many forms, ranging from the simple version with both components cut at 45° to meet at a right angle, to the more complex joints needed for shapes such as octagons where the mitre angle must be carefully calculated – see ‘Calculating mitre angles’ sidebar opposite.

The joint allows two components to be assembled without showing any end-grain. It’s a vital joint when making up moulded frames as it lets the moulding’s profile flow

through the joint without distortion. It’s a demanding joint to cut, however, as even the smallest inaccuracy shows up as an open joint.

Mitres are extensively used in joinery, though never on the internal corners of skirting boards, the reason being that timber invariably shrinks after jointing, thus causing the inside of the joint to open and show a marked gap. These joints should always be scribed. Whenever possible, strengthen your mitre joints with tongues or biscuits; this also makes them considerably easier to glue up and assemble. ✂

CALCULATING MITRE ANGLES

Divide 360° by the number of sides your project has, then halve the result. Shown below are calculations for working out the mitre angles required for a hexagon.

- **Divide 360 by the number of sides:**
360 ÷ 6 = 60
- **Halve this figure:** 60 ÷ 2 = 30
- The mitre angle therefore required is **30°**

MITRING A FRAME



1 Use a mitre square to mark the position of the corner mitre on your workpiece



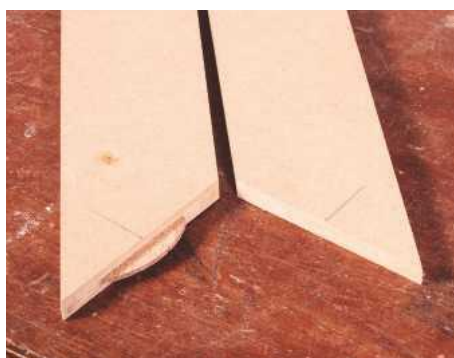
2 Extend the line onto all faces; this will allow you to line up the cut with your saw blade



3 Clamp the workpiece securely in position on the saw table and make the cut



4 Insert a biscuit to strengthen the joint, then mark its position on both parts



5 Cut a slot close to the inside edge on each part, then insert the biscuit into one slot



6 Apply glue to the mating surfaces and assemble the external corner joint

MITRING A SKIRTING BOARD



1 Using a mitre square, mark out the 45° cutting angles on the two components



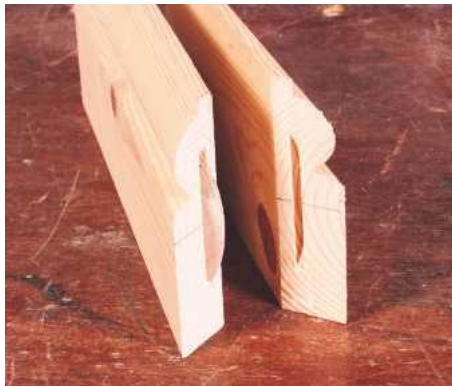
2 Make the cut on both parts. Using a mitre saw is the most accurate method of doing this



3 Bring the components together and mark biscuit positions across the joint



4 Set the joiner to position the biscuit centrally in the thickness of the timber



5 Apply some PVA glue to the biscuit and insert it fully into one of the slots



6 Glue the mating surfaces of the components and bring the joint together: perfection!

MITRING UNEQUAL WIDTHS

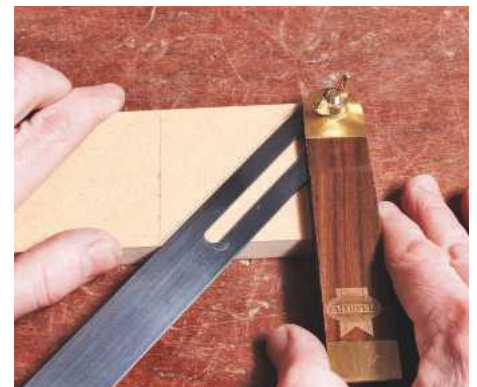
If the two pieces to be joined aren't the same width, the mitre angle won't be 45°, even if they are to be joined at a right angle. You have to work out the angle, but this is quite simple.



1 Using a try square for accuracy, mark the width of one piece on the end of the other



2 Mark the diagonal – this is the mitre angle you need to cut on the first part



3 Use a sliding bevel to take the angle – this is the mitre angle for the second part



4 Transfer the angle from sliding bevel to mitre saw, then make the cut



5 Re-set the sliding bevel on the second piece, transfer this angle to the saw, then make the cut



6 Assemble the right-angled joint, after adding a biscuit if additional strength is required

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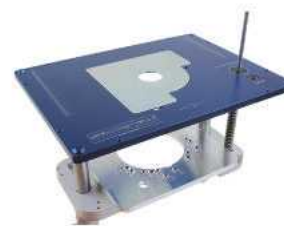
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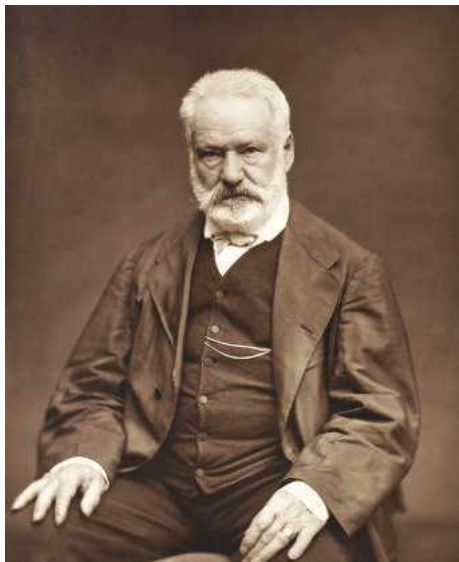
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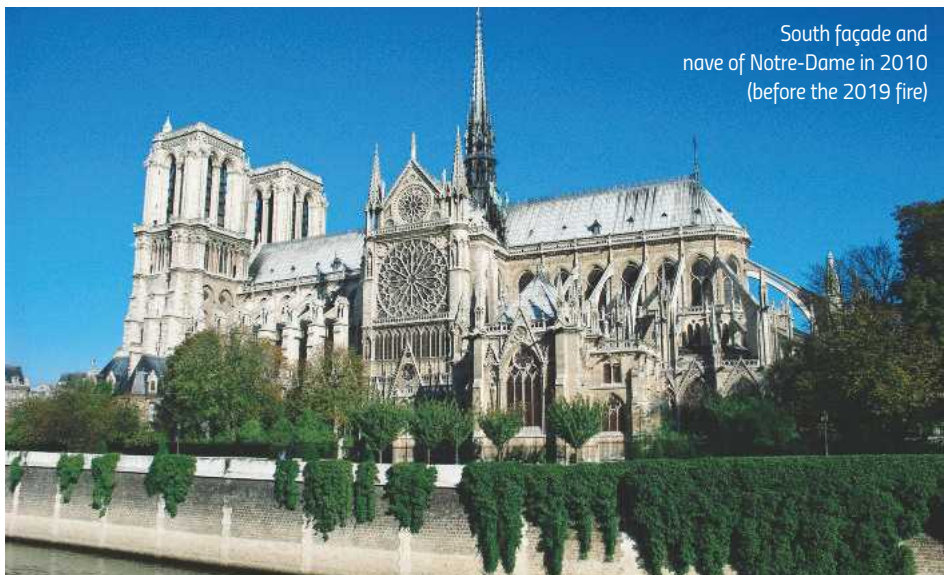


RAISING THE ROOF

After the devastating 2019 fire, which set the iconic **Notre-Dame de Paris** cathedral ablaze, restorations for the city's landmark carry on in earnest, as **Paul Greer** documents here



Victor Hugo, author of *The Hunchback of Notre-Dame*, which was published in 1831



South façade and nave of Notre-Dame in 2010 (before the 2019 fire)

Though Paris' famous cathedral was, by 1831, already 500-years-old, it was Victor Hugo's novel of that year, *The Hunchback of Notre-Dame*, which elevated it into the consciousness of an international community, as well as the people of France. Having endured a long period of sore neglect, it was finally accorded the care commensurate with this revived national pride.

Fast forward to early evening on 15 April 2019 and a fire alarm sounded at the cathedral, but despite only a slight delay in locating the flames, this was sufficient for them to take hold. Sadly, the heroic efforts of many skilled firefighters were in vain, as they failed to prevent the wooden spire and roof structure of the 13th century landmark being reduced to a charred heap.

The place the building continues to hold

in the hearts of the French people was reflected in the pledge of their Premier, Monsieur Macron, to rebuild it, though many have since felt his declared target of 2024 – in time for the city's hosting of that year's Summer Olympics – to be optimistic. However, a realistic estimate of the true nature and extent of the damage had to wait until the whole area – contaminated by melted roof-lead – could be made safe for experts to enter, and take readings on which action could be based.

Some of the first assessors were highly-trained timber scientists, who, wearing anti-contamination clothing and using pulley apparatus, recorded the exact position and state of the numerous fallen beams.

Quick thinking had prompted firefighters to douse the wooden structure beneath the twin front towers with large quantities of water, to prevent the flames progressing there. ▶



Artist's impression drawn up for Paris' bid for the 2024 Summer Olympics

Without this, the bells – the heaviest weighing 4 tons – could, unsupported, have turned into wrecking balls as they plummeted to the ground.

Restoring 'the forest'

In time, it became evident that, while requiring a mammoth cleaning operation, most of the cathedral remained intact, including its many magnificent stained glass windows. By contrast, the 500 ton wooden roof would have to be replaced in its entirety. The complex of destroyed oak beams – known as 'the forest' – was huge, making replacements a monumental undertaking exclusively for heritage carpenters.

Another major woodworking task had to come first, however, which was to cut and assemble wooden frames to fit inside the flying buttresses, situated outside the walls. 28 were needed in total, all very large, and of slightly differing shapes and sizes. Modern woodwork technology was the answer here, using power saws set to very precise measurements. Only once



The nave's early six-part rib vaults. Ribs transferred thrust of the roof's weight down and outwards to pillars and supporting buttresses

these frames were in place could the roof structure then be declared safe to work on.

A three-month break caused by the COVID-19 pandemic ended in June 2020, when work began once again. A few weeks later, the National Commission for Heritage and Architecture (CNPA) approved a plan to restore Notre-Dame to the condition immediately preceding the fire, and using the same materials. Suggestions to include modern elements in any rebuild were discounted, to ensure 'authenticity, harmony, and coherence'.

The organisation accorded responsibility for restoring 'the forest' was 'Charpentiers Sans Frontières' (CSF). Based in France, but composed of heritage woodworkers from across Europe, it has vast experience of large-scale projects. One recent job was reconstructing a wooden drawbridge nearly 80ft long for an 11th century castle in Normandy, using only duplicate tools of that era.

Knowing that over 20 like it would be required for the cathedral's nave, in September 2020, CSF made a triangular wooden truss. This took 25 carpenters five days to construct, was over



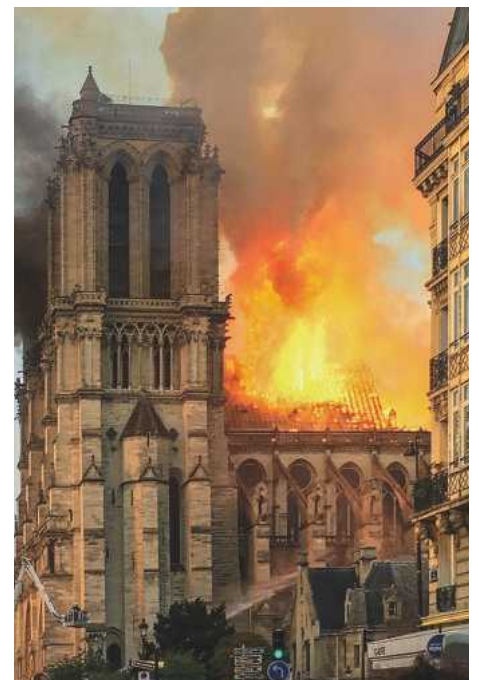
The massive buttresses, which counter outward thrust from the nave's rib vaults. The weight of the building-shaped pinnacles helps to keep the line of thrust safely within the buttresses

30ft high, and weighed in excess of three tons. To mark European Heritage Days that month, and using rope cables and a pulley system, the same as that employed over 700 years previous, CSF raised the huge framework into place, as a spellbound crowd looked on.

Their demonstration justified the CNPA's decision to reconstruct the roof using original materials. Until then, fireproof cement was also being considered, having been used in the restoration of the Nantes Cathedral, which was consumed by fire in 1972.

Scouring for oak

The French newspaper, *Le Figaro*, reported specialist teams scouring forests in the Eure



The 2019 fire destroyed the roof and spire but left the structure intact



Ongoing stabilisation of Notre-Dame
(29 February 2020)



Stabilisation of Notre-Dame and removal of
roof debris and scaffolding (29 February 2020)

region – near the city of Rouen – for suitable oak trees. Any chosen will have been selected for height, trunk diameter and wood quality, and aged 150-200 years. Far back in history, French kings were enthusiastic planters of forests, as a source of timber for their navies, and partly for this reason, about a third of the country's landscape is woodland.

Some of the oaks to replace the cathedral spire will come from Berce, in the department of Sarthe, where drones are being used to help locate them. To meet the desired criteria, they must have a specified curve, be free of flaws, at least 60ft long and 3ft in diameter. Half the trees required are to come from public forests, the rest from private ones, whose owners have donated them. If possible, the French government wants to include trees drawn from across the country, thereby symbolising the importance of the restoration to the whole nation.

Since the cathedral's roof, as well as its spire, needs replacing, over 2,000 oaks will be required in total. Once felled, however, problems remain, as the trees have to be left to dry for around 12-18 months before they can be shaped. This cuts deep into Monsieur Macron's deadline of April 2024, which marks the fire's fifth anniversary. In addition, some environmental groups have criticised the harvesting of so many old-growth trees, even in so public a cause. In this context, however, it's well to recall that carbon-capture in timber is still very beneficial.

Future fire safety

While striving for authenticity, this vast programme must also seek to reduce the risk



The framework holding up the cathedral's
roof, known as 'the forest'



Notre-Dame tower bells

of future fires. Next to prevention, containment is best, something achieved in many old, wood-rich buildings with a fire wall. Its purpose is to block (slow) the progress of flames, and is especially useful in a roof space, where these can grow rapidly to a blaze, undetected. York Minster's fire wall may therefore serve as a reference-point for the Notre-Dame team.

A particular hazard in certain fires is that of re-radiation. This typically occurs where their relative positions allow the flames of ignited materials to strengthen one another. An institution devoting research to this and similar phenomena is the University of Edinburgh. The speed with which its small-scale wooden test models are consumed by flames vividly demonstrates the importance of finding solutions to such problems.

The University of Edinburgh has been involved in fire safety since the 1970s, and today, its Fire Safety Engineering Centre (FSEC) boasts 40 academics and postgraduates, the largest related research group in Europe. It has strong international links, and besides



Latticework making up 'the forest'



TIMELINE

- 4th century** – Cathedral of Saint Etienne, dedicated to Saint Stephen, built just west of present cathedral
- 1163** – Bishop Maurice de Sully begins construction of new cathedral
- 1185** – Choir completed
- C. 1200** – Construction of nave, with flying buttresses, is completed, Flying buttresses added to choir walls
- C. 1210–1220** – Construction of towers begins
- C. 1210–1220** – Two new traverses join towers with nave. West rose window completed in 1220
- 1235–1245** – Chapels constructed between buttresses of nave and choir
- 1250–1260** – North transept lengthened by Jean de Chelles to provide more light. North rose window is constructed
- 1270** – South transept and rose window completed by Pierre de Montreuil
- 1699** – Beginning of major redecoration of interior in Louis XIV style by Hardouin Mansart and Robert de Cotte
- 1725–1727** – South rose window, poorly built, is reconstructed, going on to be entirely rebuilt in 1854
- 1790** – During the French Revolution, Revolutionary Paris Commune removes all bronze lead and precious metals from the cathedral so they can be melted down
- 1793** – The cathedral is converted into a Temple of Reason, then Temple of the Supreme Being
- 1801–1802** – With the Concordat of 1801, Napoleon I restores cathedral's use (though not ownership) to the Catholic Church
- 1804** – On 2 December, Napoleon Bonaparte crowns himself Emperor at Notre-Dame
- 1844–1864** – Major restoration by Jean-Baptiste Lassus and Eugène Viollet-le-Duc with additions in spirit of the original Gothic style
- 1871** – In the final days of Paris Commune, Communards attempt, albeit unsuccessfully, to burn down the cathedral
- 1944** – On 26 August, General Charles DeGaulle celebrates the Liberation of Paris with a special mass at Notre-Dame
- 1963** – Culture Minister Andre Malraux orders cleaning of cathedral façade to remove centuries' worth of grime and soot
- 15 April 2019** – A fire destroys a large part of the roof and spire. Reconstruction begins, and continues to this day



A member of Charpentiers Sans Frontières using a medieval axe



Centuries-old French oaks being felled for the Notre-Dame rebuild



Research carried out by the University of Edinburgh's Fire Research Centre

delivering engineering and research skills to its students, offers consultancy services to industry, and others whose responsibilities require a full understanding of how fire behaves. As its website states: 'Innovative design allows more interesting and functional architecture, but challenges traditional concepts of fire safety.'

The University offers a four-year BEng degree course in Structural and Fire Safety Engineering,

plus an MSc, for which a class 2(i) first degree in Civil Engineering or a related subject – or equivalent – is normally required. There is great demand for graduates in this field, world-wide, and the FSEC's own research group is composed of nearly 20 nationalities.

Mapping the restoration

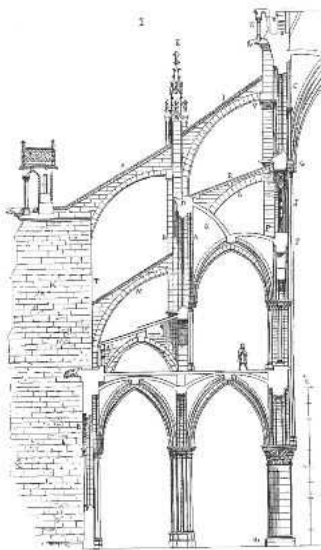
As with its stained glass windows, widespread relief was felt when another of the cathedral's most prized features, the Grand Organ, was found to require cleaning, but not repair. Being the largest pipe organ in France, however, this operation is scheduled to take a total of four years. Around 900 of its 8,000 pipes are wooden, and also likely to need repainting and re-staining. Most are being removed and stored carefully to await their turn, but those too fragile or hard to remove will instead be cleaned in situ.

The cathedral has housed a Grand Organ since the 15th century, and even the current one has experienced a good deal of change. A relatively recent restoration, which began in the 1990s, brought together the two very different worlds of organ-building and IT. With this in mind, it's therefore no surprise that computers will also play a major role in the roof restoration.

In 2016, cameras and computers were linked to scan the cathedral interior to form a 'point cloud', affording an exact picture of even the smallest feature. This, together with an exact map of 'the forest', made

by a respected architect two years earlier, will prove invaluable when calculating the position of new beams. Hundreds of years ago, the carpenters marked each beam to show where it fitted, and, even on charred surfaces, these indentations still show today.

Two years after the fire, a great deal of work had been completed, but a news report stated: "There's still a hole on top of the church, and they're also building a replica of the spire." More oak trees have since been shipped to Paris and will require drying before use, which must be factored into the proposed timeframe. Given the fact these are essential to the restoration's completion, it remains to be seen whether or not the 2024 deadline will therefore be met. ✕



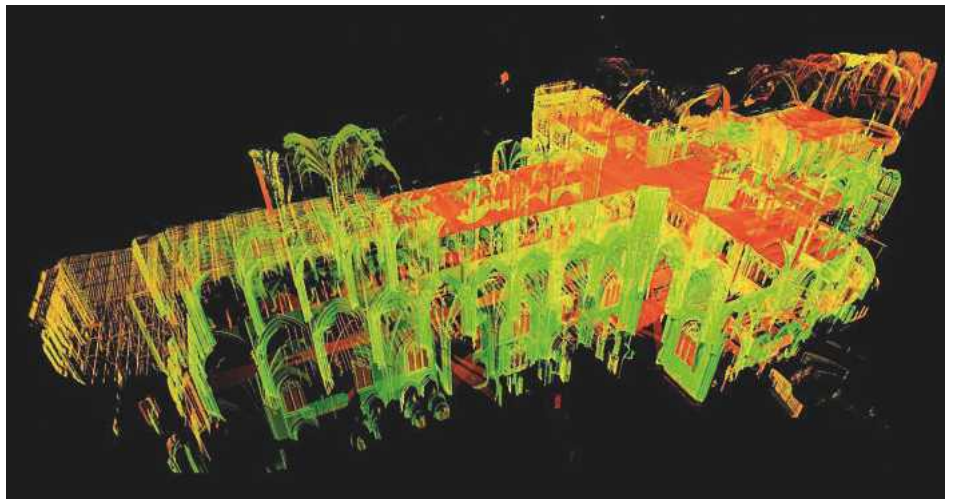
Cross-section of the nave's double supporting arches and buttresses, drawn by Eugène Viollet-le-Duc as they would have appeared from 1220–1230



The cathedral's organ contains 8,000 pipes, around 900 of which are wooden



Notre-Dame workers in harnesses have been enlisted to clean and restore the cathedral's charred remains



3D laser scan of the cathedral

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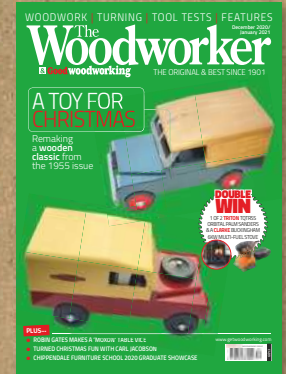
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DESIGN REMEDY

Not content with his original design for a farmhouse chair, **Glenn Perry** sets about replacing the arms and updating the finish. Now much improved, it enjoys regular use, as well as being much easier on the eye

I've always had an interest in Windsor chairs – that is, those with a solid seat where the spindles, arm supports and legs are affixed by drilling or tenoning. As a hobbyist woodworker, I decided that I wanted to make one. I started with a 'smokers bow' type, entirely of ash, the seat made from two planks glued and dowelled together, then a 'farmhouse' type chair detailed here. The farmhouse chair is often referred to as a 'Granddad's' chair, although I'm

not sure why – perhaps people picture an old gentleman relaxing in one beside an open fire in a country cottage? These chairs, in various designs, have been around for a couple of centuries. Original examples would have been made in beech, ash and fruitwoods, with a solid elm seat. In the 19th century, elm was plentiful and selected due to its ability to resist splitting when drilled with several holes. Over time, however, its tendency to warp has become

apparent, especially in modern centrally heated houses.

Original chair

Farmhouse chairs, with their high backs and wide crest rails, can be quite comfortable and further enhanced by blankets or throws draped over them. I wanted to make my chair with an elm seat due to its lovely figuring, but it is hard to come by, especially in wider planks. I decided to use ash for the seat and chair parts, but the largest planks I could locate at 50mm-thick were 457mm wide. As I wanted the seat to be slightly wider, I had to deviate from my original plan, and ended up settling on a large, square piece of cedar, over 0.6m square and 50mm-thick.

I bought the timber not knowing whether or not it would be suitable. When I came to make my chair, the seat ended up around 495 × 482mm after moving some imperfections – unfortunately a knot had to remain.

I turned the legs, stretchers and spindles



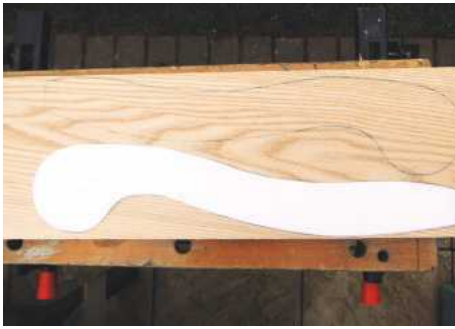
1 Original chair with straight arms, prior to alterations



2 The original chair featured an unsatisfactory coloured beeswax finish



3 Cedar seat after stripping the finish using scrapers



4 A card template was used to create a more pleasing shape for the arms



5 The completed arms, showing short spindles



6 Setup for drilling the back uprights

from ash. I'd seen three ring leg profiles on many old chairs, so loosely copied these. The back spindles were made heavier than original examples to avoid a flimsy construction. The curved crest rail was steam-bent using a jig based on one from Mike Abbott's book, *Green Woodwork*. The seat was hollowed and shaped using an inshave, convex spokeshave and curved scraper. An angled drill guide was used to bore the holes. Using cedar for the seat didn't present any problems during assembly as the chair was sturdy and taut when completed.

New arms & finish

Over the next couple of years, in between other woodworking projects, I made two more chairs. Two aspects of my original chair's design bothered me, however: the 50mm-thick straight arms looked out of place (photo 1) and the coloured beeswax used to finish the piece was patchy and unnatural looking (photo 2), especially on the seat.

So I set about remedying both of these problems. I carefully sawed off the arm rest spindles and under arm supports and stripped the finish from the seat using scrapers (photo 3). A piece of ash was selected and planed flat using a No.5½ jack plane, then reduced, using a thicknesser, to 38mm thick. Using a card template, I created a more pleasing shape for the arms, which I then cut out (photo 4); these were then shaped with a spokeshave, file and abrasives (photo 5). Two small, turned spindles were drilled into the ends

of the arm rests, attaching them to the back uprights. Once the drilling angles had been established, holes could then be drilled in the back uprights and seat.

As my cordless drill has a flat base with the chuck axis parallel to it, drilling the uprights was made easier having built up the height with blocks of wood (photo 6). The original sockets were drilled slightly oversize with a clean finish – 26mm for the seat, 19mm for the arm. Two points to mention here: firstly, the drilling angles need to be accurate: 1 or 2° difference may not be noticeable, but any greater discrepancy and the chair will look unbalanced. Secondly, it's definitely worth investing in good quality Forstner bits. I bought a couple of Clico ones and find they cut very cleanly and easily. After assembly and gluing, I finished the chair with three coats of medium oak-coloured liquid wax.

Overall, I'm pleased with the altered design and am equally happy that it now enjoys regular use in our back room. ✂



7 The new arm assemblies in place



8 The new chair, showing added modifications



Owing to its new and improved design, the chair now enjoys regular use



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Matthew White takes inspiration from a vintage effect hall tree, creating his own walnut version that incorporates even more storage space – perfect for keeping your winter accessories tidy



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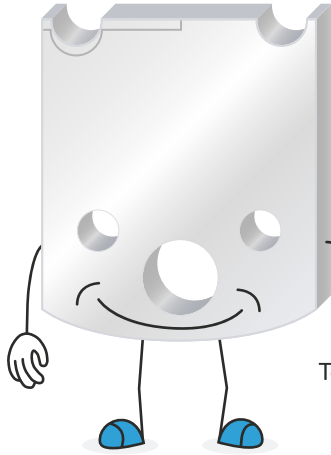


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 TAKE

5

From a hand-carved donkey pull-along toy to a wonderful tea box in exquisite bog oak, we're finding it difficult to pick a favourite from this month's selection, but which would you choose?

1



2



3



4



5



1

One of a pair of recently completed 'Leafsprung' console tables by Andrew Hauge – [@hauge.andrew](#) – made to go alongside various Art Deco features in a client's home

2

Ecce Opus 'W' by [@ecccycles](#) – handmade wooden frame model with brown leather yokes – uses ash, maple and cherry varieties due to their rigidity and lightness

3

Turned salt/pepper grinder series by Gilbert Besnard – [@bwanob_woodturning](#) – featuring CrushGrind mechanisms in a variety of species and sizes

4

Donkey pull-along toy in walnut, hand-carved and painted by Italian illustrator and sculptor, Enrico Massetto – [@enricomassetto](#)

5

Stunning tea box designed to store loose leaf tea, made by [@robinsonhousestudio](#) 50-week student [@fraumitholz](#) – bog oak exterior, gold-leaved glass interior, Richlite lids, hand-carved spoon held in place by a magnet, top surface finished using shellac and hand polish

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