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April 2021

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A selection of projects made at home by various woodworkers. To join the online Instagram following, tag **@triton_tools** using **#woodworkfromhome**

Welcome

Although often nerve-wracking, planning the content for each new issue has to be one of my favourite parts of this job. But is it really possible to please everyone? Most likely not, but month on month, we do our best to ensure the magazine is continuously varied in content. What's interesting to one reader may not appeal to another, and this is all part of the risk we, as editors, take. Occasionally you hit the jackpot and receive a raft of positive emails and letters giving praise to a particular article, not only for the inspiration it gave, but also its ability to bring back happy memories of times gone by. I'm pleased to say that this was the case with our Dec/Jan 2020 issue, and ending on a high was a great way to round off what was, for many, a challenging year.

A classic brings connection

Author Peter Dunsmore approached me with the Land Rover build in 2019, rightly forecasting its popularity and the fact it would be a perfect follow-up to the original December 1955 article. I kept it on the back-burner for a fair few months before the ideal issue came around, which happily coincided with Christmas. Peter's take on the project was fantastic in that he'd run with the original brief, followed the plans, but had really added his own creative stamp, customising the various models he ended up making while still remaining true to the core of the project. It seemed that once he started, he couldn't stop, and before long he'd created, perhaps unintentionally, a whole fleet of model Land Rovers! Among these was a version for his 18-year-old son, who's keen to get driving, painted in the AA colours, as well as a customised Landy displaying the British Rail insignia on the side. It's difficult to choose a favourite and I imagine Peter has a healthy backlog of commissions.

The inclusion of the project seemed to generate a lot of excitement among the magazine's readership, which in turn, put a spring in my step. On this month's letters page (**p.58**) we've featured correspondence from those who reached out wanting to share their stories: from one gentleman who made a similar project 25 years ago for his grandson, to another who described the front cover image as leading him on a "trip down memory lane." Not only that, but many seem inspired to get making, writing in to enquire about components needed, including windscreen hinges and wheel axles, and of course **www.hobby.uk.com** is the place to go.

Wood for good

This flurry of activity is so wonderful to see and extremely heartening given the uncertain situation we are all facing: extended national lockdown, isolation from friends and family as well as wondering if there will ever be a return to the 'norm'. Echoing Jeremy Broun's sentiment (**p.24**), this is a perfect time for woodworking to provide a beacon of hope, inspiring folk to get into the workshop and make projects as a reprieve from the day-to-day stresses, while simultaneously helping to further skills.

If anything good has come out of the past year, it's seeing a notable increase in creative pursuits among people in general, many of whom have taken up new hobbies as a means of using their increased free time more constructively. Many leisure activities provide much needed escapism from daily life, and woodworking is surely the perfect antidote. As Martin Pim-Keirle interestingly reveals in his article on furniture maker Sophie Moraveg-Oskooie, furniture schools are noticing a surge in enquiries for future courses. Looking ahead, it's hoped that this increase will not only raise the profile and popularity of the craft, but also nourish and give rise to the next generation of makers.

While the Dec/Jan 2020 issue can be regarded as our 'wet dog' of recent years (a term coined by the publisher at my last company), we also look forward to many future successes. In the meantime, we hope you enjoy our April issue, and our unintended bird theme! As we ease into spring, here's looking ahead to some much deserved warmer weather as well as a brighter outlook for all.

Tegan

Email tegan.foley@mytimemedia.com

Tegan Foley
Group Editor

Rhona Bolger
Group Advertising Manager

Phil Davy
Technical & Consultant Editor

28 BIRTHDAY BOX

Wanting to make a special gift to mark his sister-in-law's 60th birthday, Geoff Ryan comes up with this stunning jewellery box design in maple and walnut, which includes corner post dovetails

The Woodworker & Good Woodworking
APRIL 2021

PROJECTS & TURNING

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FEATURES

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Published by MyTimeMedia Ltd.
Suite 25, Eden House Enterprise Way,
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BACK ISSUES & BINDERS
Contact: 01795 662 976
Website: www.mags-uk.com

EDITORIAL
Group Editor: Tegan Foley
Technical & Consultant Editor: Phil Davy

CONTRIBUTORS
Phil Davy, Cameron Sidgwick, Robin Gates, Jeremy Broun, Geoff Ryan, Shaun Newman, Peter Bishop, Dennis Keeling, Paul Greer, Chris Child, Annemarie Adams, Martin Pim-Keirle, Les Thorne, John McMahon, Dave Long

PRODUCTION
Designer: Nik Harber
Retouching Manager: Brian Vickers

ADVERTISING
Group Advertising Manager: Rhona Bolger
Email: rhona.bolger@mytimemedia.com
Tel: 0204 522 8221

SUBSCRIPTIONS
Subscriptions Manager: Beth Ashby

MANAGEMENT
Group Advertising Manager: Rhona Bolger
Email: rhona.bolger@mytimemedia.com
Chief Executive: Owen Davies

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The new **HAMMER** CNC portal milling machine: compact & precise

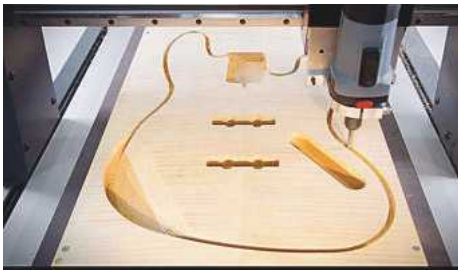
The new Hammer HNC 47.82 CNC portal milling machine makes the world of CNC routers affordable for everyone. Ideal for demanding do-it-yourselfers, ambitious model makers, quality-conscious small-series manufacturers, as well as training facilities and schools, this CNC router removes the limits of manufacturing possibilities and impresses with its Austrian mechanical engineering quality.

The HNC 47.82 can be used on a surface as small as a kitchen table and offers all the freedom of CNC machining with a unique price-performance ratio. The classic, solid and durable construction, combined with the highest quality materials, ensures exceptional torsional strength and stability. A powerful moulder spindle, precise linear guides and powerful stepper motors ensure maximum performance and efficiency for every challenge. Absolute precision and repeatability are guaranteed at all times, even with delicate work. The Hammer CNC portal milling machine can be controlled either by an integrated, intuitive software or by any software of your choice. The workpieces and numerous accessories can be fastened to the T-slot table in no time at all.

Features at a glance

- Unlimited machining options on surfaces as small as a kitchen table: working surface is 825 × 479mm; throughfeed height is 160mm
- High stability due to solid construction, high-quality materials and Austrian mechanical engineering standards
- Powerful and efficient: 1,000W moulder motor (optional 2.2kW moulder spindle), 5m/min feed speed
- Absolute precision for every application: ±0.05mm repeatability and <0.1mm backlash
- High-quality results even with the most delicate work, thanks to linear guides
- Powerful, durable stepper motors for sufficient torque at any speed
- Simultaneous operation of three axes (fourth axis optionally controllable)
- Intuitive control and an open interface with a variety of Postprocessors for the software of your choice
- Flexible workpiece and accessory fastening on the T-slot table
- Numerous accessories available

Prices start from £5,080.80 – please note that due to unexpectedly high demand, delivery will be in July 2021. View all models and pre-order now, or book a demonstration at the Milton Keynes Felder HQ. Call **01908 635 000** or visit **www.felder-group.com/en-gb**.



HIKOKI POWER TOOLS UK launches industry first C3610DRJ cordless table saw

HiKOKI Power Tools UK has launched the C3610DRJ cordless table saw, which is easy to transport, store and operate. The C3610DRJ is the first full-size 254mm cordless jobsite table saw and has a leading 880mm rip capacity. Easy to transport, it can be used cordless, when using Multi Volt batteries, or as a mains corded machine using HiKOKI's ET36A adaptor, giving users power, flexibility and convenience on site.

Every part and feature of the C3610DRJ is designed and developed by HiKOKI's Japanese engineers with the highest level of safety, convenience and accuracy in mind. The cordless table saw features a soft start, which reduces noise, as well as recoil and stress on the electrical system. The saw also has a rack and pinion telescoping fence system.

Safety features are high on this powerful table saw, with an overload protection feature automatically shutting off the motor and a security switch, which locks the saw from unintended use. An electric brake stops the rotation of the blade within seconds.

The C3610DRJ features a mitre gauge, blade guard, rip fence, push stick, outfeed support, two blade wrenches plus 4mm and 2.5mm hex keys. This machine also benefits from HiKOKI's three-year warranty cover, subject to terms and conditions, which adds even more peace of mind for professionals.

For more details, visit the website: **www.hikoki-powertools.co.uk**.

The Woodworker Timber Suppliers Directory – April 2021

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A Harrison (Northants)
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Bennetts Timber (Lincolnshire)
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Black Isle Woodturning (Scotland)
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sales@hardwoodoffcuts.co.uk

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Thorogood Timber Ltd (Essex)
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Web: www.thorogood.co.uk

Timberman (Carmarthenshire)
Tel: 01267 232 621
Web: www.timberman.co.uk

Tree Station (Lancashire)
Tel: 01612 313 333
Web: www.treestation.co.uk

UK Timber Ltd (Northamptonshire)
Tel: 01536 267 107
Web: www.uk-timber.co.uk

Waterloo Timber Ltd (Lancashire)
Tel: 01200 423 263
Web: No website

Wenban Smith (West Sussex)
Tel: 01903 230 311
Web: www.wenbans.com

Wentwood Timber Centre (South Wales)
Tel: 01633 400 720
Web: www.wentwoodtimbercentre.co.uk

W L West & Sons Ltd (Surrey)
Tel: 01798 861 611
Web: www.wlwest.co.uk

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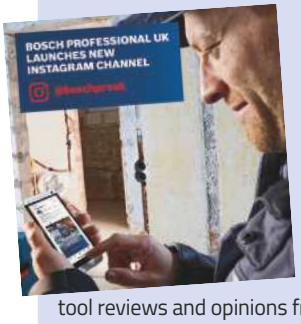
BOSCH PROFESSIONAL UK launches new Instagram channel: @boschprouk



Bosch Professional is excited to announce the launch of its new UK Instagram channel, building on the success of its award-winning UK Facebook page, which has over 45,000 followers. The new social media platform will give tradespeople the opportunity to keep up-to-date with all the latest news and information on new power tools, measuring tools and accessories from its popular range.

Alongside news, it will feature regular tool reviews and opinions from a wide range of well-known tradespeople including electricians, plumbers and heating engineers, carpenters, tilers, general construction, etc. They will show the tools in use and give their genuine, honest thoughts on these, for all UK tradespeople to see.

The channel will also showcase videos and information on the latest innovative technologies, such as BITURBO, the revolutionary performance of which is made possible thanks to a high-performance brushless motor; this exploits the full potential of ProCORE18V batteries, allowing tradespeople to conquer even the most challenging tasks. The social channel is now live and followers can look forward to the launch of a big competition each month, offering visitors the chance to win a number of tools from the BITURBO range, which include: GWX 18V-15 SC X-LOCK angle grinder; GKS 18V-68 GC circular saw; GBH 18V-45 C rotary hammer and GCM 18V-216 cordless mitre saw.

The channel will also offer UK tradespeople the chance to become tool testers, inspired by **#builtwithBosch**, where they can apply and have the opportunity to look at these products themselves. Every few months, Bosch launches a new round, with tools sent out free of charge to testers who then put them through their paces on site, before sharing their thoughts on social media. The best part is that testers are allowed to keep the kit afterwards.

Now, with the launch of their UK Instagram page, Bosch Professional is taking this to a whole new level. Rather than limiting tester numbers to just a few per round, the company wants to expand and give hundreds more people the chance to get involved. The full list of tools and accessories available for testing in 2021 has yet to be revealed, so keep checking for updates. Be sure to follow the new Instagram channel today: **www.instagram.com/boschprouk**.

INTERTRONICS introduces Born2Bond Repair

Adhesives supplier Intertronics has recently launched Born2Bond Repair, a patented gap-filling two-part 'instant' adhesive and repair product, which offers excellent adhesion to a very broad range of materials and surfaces. The material combines the strength of an epoxy adhesive with the speed of an instant cyanoacrylate (CA). Born2Bond Repair benefits from high bond strength, offers gap fill, cures hard and sandable, and is significantly faster than alternative products.

This new adhesive offers a rapid curing time of under 10 minutes, with a fixture time of 60 seconds, advantageous qualities for a repair adhesive/filler. It quickly cures into a very tough polymer, while offering a user-friendly working time. The material is suitable for filling large gaps, with minimal volumetric shrinkage – half that of competitive CA products. Born2Bond Repair has a gel consistency that enables precision in any process, while the static mixing nozzle ensures uniform and precise dispensing. It is also non-sagging, which makes it suitable for vertical applications.

"Born2Bond Repair can be very useful for maintenance and repair jobs that need to be conducted quickly," explains Ben Swanson, Sales Manager of Intertronics. "It can be machined, drilled, sanded and painted just minutes after application. This can be beneficial to aftermarket applications like side mirrors, bumpers and spoiler aprons, as well as wood repair and reconstruction, rubber door bonding and automotive joint bonding."

The product is supplied in a syringe cartridge with static mixing nozzle in 10g and 50g sizes. The 10g size is suitable for manual application and comes with a plunger, whereas the 50g size can be used with a dispensing gun for manual application, or integrated into automation.

Born2Bond Repair complements Intertronics existing range of products, offering an alternative option to traditional CA adhesives for businesses looking to reduce trade-offs in their processes. For more information, see **www.intertronics.co.uk**.

Cooler than the rest with MAKITA

Keep food and drinks either cool or warm on-site with Makita's new 20-litre DCW180Z cordless cooler & warmer box. Powered by an 18V LXT battery, this handy product has two 18V LXT battery ports, which allow you to attach two batteries in series for extended operating times. When the first battery is depleted, the unit automatically switches to the second one. This model can also be powered via 240V mains or with an in-vehicle 12V/24V AC socket. When set at 5°C (normal fridge temperature) the cooler will run for up to 17 hours with 2 × 6.0Ah batteries.

The 18V cooler & warmer box is a versatile unit with a large 20-litre capacity of storage space and as an example, it can hold approximately 30 cans, or 15 × 600ml water bottles. The solution can operate at two warming settings of 55° and 60°, with five cooling settings of -18°, -10°, 0°, 5° and 10°. The unit can run at its coldest setting of -18° for five hours and its warmest setting of 60° for around four hours.

The box features large 100mm wheels and a pull handle for convenient transport, side grips for easy lifting as well as a comfortable shoulder strap. It is highly durable for outdoor use with an IPX4 rating. The solution is fitted with a convenient LED display, to provide users with temperature and battery levels, and settings can be easily changed at the touch of a button.

Kevin Brannigan, Marketing Manager at Makita UK, comments: "We're excited to bring the new DCW180Z cordless cooler & warmer box to market as a useful addition at home, work, or for leisure. The powerful, cordless solution is as durable as it is functional and can run for up to 17 hours on a single charge. Whether at the park, fishing, camping, or on the jobsite, the DCW180 is a must-have if you're looking to keep drinks cold, or to ensure that hot lunches stay warm, regardless of the season."

To find out about this and other cordless solutions from Makita, see **www.makitauk.com**.

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Achieve the beautiful woodwork you want with **LIBERON** palette wood dyes

If you have a piece of bare woodwork in your home whose colour tone is wrong for your decor, there's no need to put up with it. From furniture and cupboards to floors and doors, you can create a beautiful effect while leaving the natural beauty of the grain visible using the correct wood dye.

Look out for a quick-drying, top quality, water-based option such as Liberon's Palette Wood Dye. Available in 13 colours, what sets this product apart from the rest is the fact an exact finished shade can be matched simply by mixing various colours together.

Suitable for both soft and hardwoods, the dye's formulation includes light stability for excellent colour retention. It's easily absorbed, and its specialist acrylic formula minimises the raising of wood grain. If varnishing is also required, it's possible to save time by mixing the dye with Liberon's Natural Finish Varnishes. The resulting single application achieves a beautiful result more quickly than having to apply two products one after the other.

A quick step-by-step guide to applying Palette Wood Dye:

1. Before you start, ensure the surface to be treated is thoroughly sanded, bare and free of dust.
2. Shake the container well before use. If more than one tin of dye is required to complete the work, mix the tins together to ensure a uniform colour.
3. Test the dye on a spare or inconspicuous area for colour, compatibility and end result. Different types of wood produce different results.
4. Apply the dye fairly quickly along the grain using a foam applicator or brush. On large surfaces such as floors, avoid overlap marks by working a small section at a time.
5. Wipe off any excess with a clean, dry cotton cloth before it cures, which will even out the colour. A second coat may be applied after two hours if a stronger colour is required.

Liberon's Palette Wood Dye is available in Antique Pine, Dark Oak, Ebony, Georgian Mahogany, Golden Pine, Light Oak, Medium Oak, Teak, Tudor Oak, Victorian Mahogany, Walnut, White and Yew in 250ml, 500ml and 5l containers. For further information on Liberon's extensive range of woodcare products, see the website: **www.liberon.co.uk**.

ROBERT SORBY celebrates being granted **Made in Britain** membership

Robert Sorby has been accredited as a member of Made in Britain. The company's adoption of the official, protected mark (see below) will help buyers recognise its products as good quality, great value and British-made.

Robert Sorby
PROUDLY MADE IN SHEFFIELD, ENGLAND

The mark also lets customers know that Robert Sorby is a trusted company that values transparency, sustainability and ethical business practices. Consumers are increasingly recognising the Made in Britain mark as one of confidence. "We are extremely proud to be accredited the mark and become part of this great community of British Made products," says Ian Finkill, General Manager of Robert Sorby Ltd.

John Pearce, Chief Executive of Made in Britain, adds: "We're delighted that Robert Sorby has joined the community of more than 1,200 British manufacturers. The more the mark is used and seen, the more it's recognised as a sign of quality. In addition to being granted access to the official protected mark, Robert Sorby will also start to enjoy the many other benefits membership to Made in Britain brings, including support in sales, marketing, PR/comms and export. We look forward to watching Robert Sorby grow with our help and support."

To find out more about the world's premier manufacturer of specialist woodturning tools, see **www.robert-sorby.co.uk** and for more information on Made in Britain, visit **www.madeinbritain.org**.

HOPESPRINGS CHAIRS 2021 course dates

Set in a charming outdoor workshop located in Sussex woodland, Jason Mosseri's Windsor chairmaking course teaches you how to make your very own Windsor chair using traditional hand tools and techniques. Whether you're a beginner, seasoned practitioner, or simply returning for another go, this is an exciting opportunity to immerse yourself in the world of green woodworking.

You'll be shown how to make a Windsor chair from start to finish, from selecting a green ash log to using hand tools such as an adze, travisher, drawknife, plus a spring pole-lathe. A wood-fired kiln is used to dry the chair components before you're shown how to frame your chair.

Jason welcomes students who have made chairs before and are hoping to develop their skills further. If you're a returning student, you'll have the chance to test and hone your skills by making a more complicated design.

If courses are cancelled or rearranged due to COVID restrictions, you'll be given the opportunity to reschedule your booking. All courses were busy last summer, and undertaken with safe guidance, consideration and precaution.

Course dates for 2021

Monday 26 April – Saturday 1 May
Monday 17 May – Saturday 22 May
Monday 7 June – Saturday 12 June
Monday 5 July – Saturday 10 July
Monday 23 August – Saturday 28 August
Monday 13 September – Saturday 18 Sept

The course costs £550 and includes all materials, tool use, lunches and refreshments (additional fees are charged for advanced chairs). A shortlist of local accommodation is available on request. To book your place, email **hopespringschairs@gmail.com**, call **07795 114 982**, or visit **www.hopespringschairs.com** for further information.

Students' **visitors' booth** helps to reunite families at local care home in Devon

A team of City College Plymouth students and staff worked together to build and paint a new visitor pod for residents of a nearby care facility. Residents of Abbeyfield House in Ivybridge can now safely enjoy visits from their loved ones thanks to the new visitors' booth, which was delivered to the care home just in time for Christmas last year.

Staff at the College contacted Abbeyfield House in late October 2020 after they saw a similar project on social media. Carpentry students then began building the pods for Abbeyfield House and other care homes in their local community, which took them six weeks. Shortly after it was built, the painting and decorating students offered to finish off the project.

Emma Hooper, Work Experience and Placement Officer at City College Plymouth, said: "We encourage our students to engage in meaningful experiences of the working world and to constantly develop their understanding of chosen industry areas. This includes providing opportunities for students to take part in projects that develop their technical skills and also support the local community, such as social action projects and volunteering. Our College team came across a visitors' booth project online and we felt that this was a perfect opportunity to give something back." Emma added: "We are so pleased to hear of how the booth has helped residents to see their loved ones."

One family member of a resident said: "Finding out the booth was ready for use was great news. It was so lovely to be able to see Mum again after such a long time." Another family member commented that the booth "will make such a difference to the residents – thank you so very much."

If you'd like to find out more about carpentry or painting and decorating courses at City College Plymouth, or for details on other community projects, see **www.cityplym.ac.uk**.

What's new from

'THE' TOOL SPECIALISTS ● WWW.DM-TOOLS.CO.UK ● 0208 892 3813

NEW POCKET-HOLE JIGS & CUTTING GUIDES FROM KREG

MANUFACTURER: Kreg
D&M GUIDE PRICES: See our website

The next generation of project building is here! Kreg has launched an all-new range of pocket-hole jigs and cutting guides.

Kreg's three new pocket-hole jigs have been completely redesigned. The **Pocket-Hole Jig 720 PRO** and **Pocket-Hole Jig 720** feature Automaxx™ one-motion clamping, saving you time and effort by simultaneously clamping your workpiece and automatically adjusting to the exact thickness of your material, together with a dust collection attachment to keep your workspace dust-free. **The Pocket-Hole Jig 520 PRO** features VersaGrip™ 360° – a rotating handle that helps the 520 PRO adapt easily to nearly any pocket-hole project. All incorporate GripMaxx™ anti-slip, which holds the project secure so you don't have to worry about it shifting while drilling pocket holes.

The **Portable Crosscut** allows you to quickly and precisely crosscut boards up to 8in wide and make accurate cuts at a 45° angle, using just a circular saw. You'll know exactly where your saw will cut every time thanks to the retractable cutline indicators. Simply align to your pencil mark and cut with confidence.

The Kreg **Straight Edge Guide** and **Straight Edge Guide XL** offer an intuitive and approachable way to break down sheet goods. Your saw rides against the aluminium guide, allowing you to make straight and precise cuts. Guided cutting makes it easier than ever to see exactly where you'll cut, so you can get the results you expect.

Finally, the **Crosscut Station** offers the capabilities of a mitre saw with just a circular saw and Kreg guided cutting. You can crosscut boards wider than most compound mitre saws can handle – up to 12in at 90° – and make a variety of angle and mitre cuts from 0-45° with the adjustable fence and moulded-in angle alignments. An MDF base and SureCut™ backboard act as a sacrificial surface for splinter-free cutting results. The MDF base also functions as a kerf line, allowing you to clearly see the blade's path and know exactly where your saw will cut every time.

Full details of these innovative new products, together with videos, are available on our website: **www.dm-tools.co.uk**.

Pocket-Hole Jig 720 PRO


Pocket-Hole Jig 720


Pocket-Hole Jig 520 PRO


Portable Crosscut


Straight Edge Guide


Crosscut Station

D&M TOOLS

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HAND, POWER TOOLS & MACHINERY SPECIALIST

DM-TOOLS.CO.UK

Have you visited us at our Twickenham Superstore?

With over 600 power tools on display from all the leading manufacturers, as well as an extensive range of hand tools and accessories our Superstore is well worth a visit!

We also have an area dedicated to a wide selection of woodworking machinery by leading manufacturers including Record Power and Scheppach, which is available to view on request.

Our fully trained and experienced staff are always on hand to help or advise you on your purchase.

So whether you are shopping with us on-line or in-store you can be assured of the highest level of service and care.

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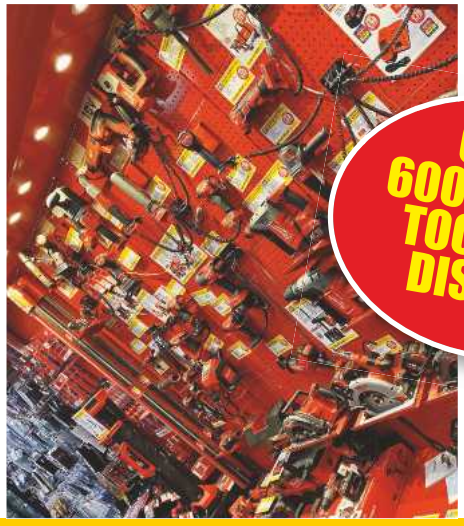

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Phil Davy looks at three handy tools, available from **Wood Workers Workshop**

FASTCAP FASTBREAK SANDER XL

At 150mm in length, the FastBreak's ridged cylinder gives a decent grip and fits the hand nicely

If you often work with sheet materials, such as veneered MDF, you'll know that cleaning up edges can be tedious. Even more so when working with melamine-faced chipboard (MFC), the edges of which can be pretty sharp when newly cut.

Where you need to add decorative lipping it's important to have a clean, square edge before applying it properly. This may be iron-on lipping, glued with contact adhesive or fitted via an edgebanding machine in a professional set-up. Once glued, tidying up the surplus is not always straightforward. Getting a neat, consistent arris along each edge can take a while, especially if all edges of a panel have been lipped. Depending on the material, you may need to use a file or finely-set block plane if it's real veneer. File or sand too vigorously and you risk exposing the glue line or core material underneath.

Knurled thumbscrews at each end secure plastic caps over the cylinder...

... enabling the paper to be slid out when removed

Abrasive strips

This simple gadget from FastCap enables you to sand both arrises in one or two passes, removing an equal amount of material from each side. It consists of a shaped, rigid plastic cylinder, a segment of which has been cut away to create two flat surfaces at 90° to each other. These act as a backing for a strip of heavy abrasive paper. Pushing the FastBreak along the edge of a board automatically captures both arrises against the abrasive. At 150mm in length, the ridged cylinder gives a decent grip and fits the hand nicely.

Knurled thumbscrews at each end secure plastic caps over the cylinder, enabling the paper to be slid out when removed. There's storage inside the cylinder for spare strips, too. The FastBreak is supplied with four strips of 80 grit and two pieces of 180 grit abrasive. You can cut your own, but these must be exact, and it must be heavyweight paper to prevent buckling and tearing as you sand.

Thicknesses from 19mm to about 60mm can be accommodated, which makes the FastBreak ideal for tidying up sawn door edges, too. A smaller FastBreak version is available for around £9, which uses one strip of folded abrasive, and enables you to sand boards between 6mm and 19mm thick.

Conclusion

This is a sturdy, professional tool that's dead easy to use. It's fast, gives consistent results, can also be used on convex edges, and these don't necessarily need to be lipped, either. It's also ideal for softening edges of ply and OSB sheets, which can be sharp when hauling full boards into place.

SPECIFICATION

- Break both edges in one pass
- Comes with 4 × 80 grit and 2 × 180 grit sheets
- Abrasive storage
- For material from 19mm up to 60mm thick

Typical price: £16.50

THE VERDICT

PROS

- A fast solution for easing arrises

CONS

- Sourcing suitable abrasive may be tricky

RATING: 4 out of 5

AUK TOOLS WHEEL MARKING GAUGE

The gauge is recessed to enable the fine, circular cutter at the end of the stem to be stored inside

Etched with both metric and imperial graduations, these aren't the easiest to read

A marking gauge is often a fairly basic tool: consisting of two pieces of beech or similar, a steel pin through the stem and a screw of some sort to tighten the stock – that's it. On the other hand, it may be a thing of beauty, made from an exotic hardwood with decorative brass inlays. Alternatively, it may contain no timber at all, such as this gauge from AUK Tools. Whatever material it's made from, however, a marking gauge only has to perform one function: produce a scribed line parallel to the edge of a straight board. Usually a line to saw or plane to, this needs to be easy to detect while still being as fine as possible.

Unlike some of the more expensive North American brass gauges, this one is made in Taiwan. It's a good weight without being too heavy. The cylindrical stock is machined from solid brass, with a nicely knurled finger grip. It's recessed to enable the fine, circular cutter at the end of the stem to be stored inside, which protects its sharp edge. Etched with both metric and imperial graduations, these aren't the easiest to read. Maximum travel is 119mm, which is similar to that of a traditional hardwood gauge.

A groove along the stainless steel stem accommodates the dual adjuster screws, so there's absolutely no play in the gauge when tightened. For fine adjustment you can lock the end screw, then rotate the finger grip followed by the second screw. Both screws are then locked off at your chosen setting. The hardened steel cutter

is attached with a cross head screw, which can be rotated should the edge begin to dull. Replacement cutters are available if required. Marking across the grain is particularly effective with such a fine blade as it doesn't tear the fibres, which can occur with a traditional pin gauge.

For fine adjustment you can lock both the end and second screw, which can then be locked off at your chosen setting

Conclusion

Accuracy and ease of use are vital in most marking tools. If you're used to a traditional gauge, the AUK's quality may seem closer to engineering standards. While a precision item, it's easy enough to achieve consistent results.

Marking across the grain is particularly effective with such a fine blade as it doesn't tear the fibres

SPECIFICATION

- 175mm long shaft gives up to 119mm depth adjustment
- Solid brass body & hardened steel wheel cutter
- Cuts, rather than tears, wood fibres
- Marks cleanly, even on cross-grain
- Wheel retracts into the face of the gauge for storage and protection

Typical price: £29.95

THE VERDICT

PROS

- Precision-made tool

CONS

- Line may be too fine for some work

RATING: 4.5 out of 5

FASTCAP 11TH FINGER PUSH STICK

Please note that all tools featured here can be purchased from www.woodworkersworkshop.co.uk

Hopefully we're all in the habit of using a push stick with our table or bandsaw. It's just not worth the risk of getting our fingers close to a moving blade, but the problem with homemade versions is that they can easily get mislaid in the general workshop clutter. This version from FastCap is bright orange, so should be easy to spot. Its curved shape makes it easy to grab, but perhaps the neatest feature is that one end contains two powerful neodymium magnets. This means you can store it on the steel casing or cast-iron table of a machine, so there's no excuse for it going astray.

Approximately 300mm long, it's made from high impact nylamax plastic and is certainly sturdy. One end is stepped to hook over the end of a board or workpiece when moving it through the blade. Your hand is raised about 170mm above the machine table when gripping the tool correctly, so well away from danger. That's no excuse for removing guards, though! I found it slightly too high to use comfortably with my bandsaw, though this obviously depends on a machine's height. Table saw beds are lower and more suited to the 11th Finger.

Two powerful neodymium magnets allow the push stick to be stored on the steel casing or cast-iron table of a machine

I found it slightly too high to use comfortably with my bandsaw

Conclusion

It may be the most basic of tools, but if it leads to greater safety in the workshop, the 11th Finger is well worth considering. It worked reasonably well on both narrow and wider stock.

One end is stepped to hook over the end of a board or workpiece when moving it through the blade

SPECIFICATION

- Two high-performance neodymium magnets
- Ergonomic handle & high visibility colour

Typical price: £13.96

THE VERDICT

PROS

- Push stick can be stored on machine table

CONS

- May not suit higher machine tables

RATING: 3.5 out of 5

ISOTUNES LINK & ISOTUNES XTRA 2.0

Perfect for those wishing to work in peace and quiet, these ear muff and earbud headphones from **ISOtunes** reduce noise levels while protecting your hearing, says **Phil Davy**

Unless you use hand tools exclusively, you've probably got at least a couple of power tools to do the donkey work. A cordless drill may not be too noisy, though if using hammer action to drill into brick or blockwork, noise levels can become pretty unpleasant. Routers are essential for most of us, but are among the noisiest of workshop tools. Some sanders are easier on the ear than others, though in a confined space over a period of time they can become quite wearing. It's when you get to machinery such as planer/thicknessers and table saws that noise levels can really take their toll. It's not just in the workshop, either – hedge trimmers and chainsaws in particular can be notorious for their sound levels.

Along with dust masks, most of us these days will either wear foam ear plugs or enclosed defenders. I generally use a basic pair of ear muffs, which have seen better days and are definitely not hi-tech. When you're faced with a pile of timber to machine up, donning a traditional pair of ear defenders can make you feel cut off from the rest of the world, but what if you enjoy listening to music while you work? If so, then ISOtunes could well be the answer.

ISOtunes sounds

Although ISOtunes may be a relatively new name to many readers, if you tend to watch woodworking videos online, there's a good chance you'll have seen their headphones or earbuds used by presenters, particularly those from the US. With any ISOtunes product you can listen to music streamed via your phone or take calls, all without having to reduce the protection to your ears. Not only that, you can skip tracks on playlists, adjust volume or activate the built-in microphone for phone conversations. A noise-isolating microphone is built in. Of course, the possible downside is that you'll need a smartphone or at least an iPad or laptop, so they may not be for everyone. I tested both versions – LINK and XTRA 2.0 – from my garage, via both laptop and phone in the house, and connectivity was OK. Keeping your phone in a pocket or on the bench where you're working will give best performance, and range is typically 10 metres.

All products are stated to be waterproof, as well as dust and sweat-proof, with rubber seals around flaps and battery cover on the LINK version reinforcing this claim.

ISOtunes LINK

Resembling a pair of traditional ear defenders, the LINK system, weighing just under 0.5kg, fully encloses each ear to block out unwanted sounds. Consisting of rigid ABS plastic outer cups, these are linked by a tough rubberised steel band, which sits snugly across your head. Polyurethane memory foam cushions ensure that each cup is comfortable over the ear. Wire arms enable cups to be adjusted vertically to fit the head, while both can be folded into the band when not in use. No bag is provided for storage, however.

Sliding a latch on the left ear cup releases a cover, revealing the battery compartment.

Resembling a pair of traditional ear defenders, the LINK system fully encloses each ear to block out unwanted sounds

The built-in Lithium-ion battery provides power for at least 14 hours, which is impressive. If you forget to charge the LINK or need them to run for longer, you can swap the pack for three standard AAA batteries, which will provide some 28 hours of use. I needed a small screwdriver to remove the Lithium-ion battery and the attached short cable, which is fiddly to unplug.

Charging up the LINK is simple, via a micro-USB cable provided. This plugs into a socket beneath the left ear cup, a rubber flap covering the compartment. Alongside this port a tiny LED glows red while on charge, changing to green when fully charged. Once the cable is unplugged the LED fades and there's no way of checking remaining battery level. A similar LED on the XTRA 2.0 version does slowly flash blue when Bluetooth is connected, however. I should also point out that an audible message alerts you – on both versions – when the battery is low and needs recharging, and the headphones will shut off automatically after four hours.

A silicone keypad is located on the outside of the right ear cup, with a minute Bluetooth microphone located at the bottom. The centre multi-function button activates power, play and pause, and is also used to answer or stop phone calls as well as allowing Siri assistance. Four further buttons increase or decrease the volume level and enable you to select playlist tracks. Pressing the correct buttons takes some getting used to as you obviously can't see the keypad while wearing the LINK.

Switching on or off requires pressing the centre button until you hear the power on or off message. Other audible messages confirm Bluetooth pairing and connectivity.

A tough rubberised steel band links rigid ABS plastic outer cups, which sit snugly across your head

Sliding a latch on the left ear cup releases a cover, revealing the battery compartment

The built-in Lithium-ion battery can be swapped for a pack of three standard AAAs

I needed a small screwdriver to remove the Lithium-ion battery and the attached short cable, which is fiddly to unplug

Pressing the correct buttons takes some getting used to as you obviously can't see the keypad while wearing the LINK

Each end of the XTRA 2.0 terminates in a rigid plastic earbud. Ear tips can be screwed on to these and several sizes are included to suit your ear canals

Pairing is a doddle when you fire up the LINK alongside your phone, however.

ISOtunes XTRA 2.0

Far less bulky than the LINK, the XTRA 2.0 is perhaps the more familiar version of ISOtunes. Weighing just 24g, they consist of a flexible narrow lanyard that drapes around your neck, each end terminating in a rigid plastic earbud. Ear tips are screwed on to these with several sizes included to suit your ear canals: three silicone and four foam pairs. Silicone tips are colour-coded, with replacements of each type available via the website. The rear of each earbud contains a small magnet, so when not in use the pair will clip together neatly, reducing them dangling about if still around your neck, and there's a drawstring storage bag provided.

This time the minute Bluetooth microphone is built into the three-button controller. You press the centre multi-function button for power, to activate or pause music, skip tracks or take a phone call. Again, this does take some getting used to. The outer buttons adjust volume up or down. Once more a micro-USB cable is supplied for charging, inserted in a port on the side of the three-button remote control. You lift a small cover to access this, which is fiddly, like many products (such as smart speakers) relying on USB charging. A single charge delivers up to 11 hours of power, but due to its size, the XTRA 2.0 offers no alternative battery option.

Performance

So, how effective are ISOtunes? I wouldn't rate their performance quite as hi-fi quality, but they're pretty good and perfectly adequate for a work environment. They certainly reduce noise levels nicely from woodworking equipment, whether you're listening to music or not. I tested both pairs with a router, circular saw, impact driver and bandsaw, and it was a good excuse to fire up the chainsaw, too.

Not surprisingly, ISOtunes meets both American and European relevant regulations. If you want exact figures, you'll need to visit the ISOtunes website but playback level is restricted to 85dB. Personally, I'd like the LINK to play slightly louder, but then my hearing is probably not what it was. Initially, I thought the LINK a tad louder than the XTRA 2.0, but it does depend on your choice of music and recorded levels. I've just listened to some classic rock tracks (via a laptop) on the XTRA 2.0 and had to reduce the volume!

Taking incoming calls is pretty straightforward, via a single press of the multi-function button. This means you don't actually need to pick up your phone, which is handy. Music is automatically muted.

Conclusion

If you want peace and quiet while working, then ISOtunes are great, though pricey if this is all you require. If you enjoy listening to music, radio or podcasts in the workshop, the LINK version is impressive. Not only is your hearing protected, but the LINK ear cups actually feel cosy in cold weather. As both formats are the same price, it's really down to preference. If you're used to earbuds for your phone, then you may find the LINK too bulky. I found myself wearing the XTRA 2.0 around the house as well as workshop. If you listen to music that perhaps others in the family don't appreciate, these are arguably more sociable than the LINK headphones. It's possible to still carry on a conversation while wearing the XTRA 2.0, though less easy wearing the LINK. I found the range outdoors slightly better with the XTRA 2.0, though there wasn't much between them. But for working with really noisy power tools or machinery, I'd say the LINK have the edge in blocking out unwanted sounds. Although an American company, ISOtunes has a UK warehouse so obtaining products shouldn't be an issue.

The rear of each earbud contains a small magnet, so when not in use, the pair will clip together neatly

A micro-USB charging cable is inserted in a port on the side of the three-button remote control

SPECIFICATION

LINK features

- 3 NRR sound rating – meets relevant OSHA & NIOSH requirements
- Noise-isolating microphone blocks steady-state noise for clearer calls
- SafeMax™ Volume Limiting technology keeps noise inside device below 85dB
- Lithium-ion battery with additional support for 3 × AAAs to extend battery life (14 hours with Li-ion; up to 28 with AAAs
- IPX4 sweat- and water-resistant

XTRA 2.0 features

- Up to 11 hours of rechargeable battery
- IP67 for dust, sweat- and water-proof
- Bluetooth 5.0 with 30ft range
- 27 NRR/36 SNR
- Steady-state background noise isolation for calls
- Magnetic multi-function earbuds
- SafeMax™ 85dB volume limit
- Tactical controller buttons for use with gloves
- OSHA & NIOSH compliant
- Comes with four pairs of TRILOGY foam eartips, three pairs of silicone eartips, a micro-USB charging cable & a drawstring storage pouch

Typical prices: LINK – £79.99; XTRA 2.0 – £79.99
Web: www.isotunes.co.uk

THE VERDICT

PROS

- Bluetooth technology means music plus ear protection

CONS

- You need a smartphone or computer

RATING: 4 out of 5

DEWALT DWE7485-GB 210MM COMPACT TABLE SAW

Small, compact, precise and smooth in use, **Cameron Sidgwick** finds this site table saw from **DeWalt** to be a strong contender

The DeWalt DWE7485-GB 210mm is a lightweight, portable, smooth cutting table saw. The simple to use design is also accurate in use and very powerful. The newer, smaller footprint makes this a must-have piece of kit for any job site carpenter.

Unboxing the DWE7485-GB, I was impressed with the size. I've been looking for a saw that is easy to transport for a solo working carpenter and doesn't take up huge amounts of space when set up on site, and this one from DeWalt ticks all the boxes. The blade has been reduced to 210mm and the table bench reduced, although this doesn't affect the power and smoothness.

Extraction & safety

DeWalt is commonly known for producing the best mid-range costing saws and this compact offering really backs that up. The features included throughout are all incredibly simple to use and cover everything you need from a site table saw. The main extraction, which is AIRLOCK compatible, exits from the back of the machine and pushes 90% of the sawdust from cutting. As a result, my vacuum extractor with universal hose fitting is perfectly snug and catches all the dust. There is also a blade protector with a second extraction point for the top of the table if required, although the blade area kicks up only minor dust. The NoVolt Release switch is large and clear, with a safety lock included. The switch fires up the saw, with no jump or jolt, and is almost immediately up to full speed, ready for cutting. The NVR switch also cuts the machine off quickly, making your work environment extra safe.

The table saw set up on site

The main extraction, which exits from the back of the machine, pushes 90% of the sawdust from cutting

Squaring the blade on the table saw – this must be checked prior to use

The NoVolt Release switch and wheel gauge

Blade depth is changed using this wheel on the side of the saw

Close-up of the blade change wheel

Back profile of the table saw showing cast table top design

Accuracy & ripping

One of my favourite features on the DWE7485-GB is the smooth bevel change for measurements. It's simple to lock on and off, and allows you to change your measurements swiftly and accurately, meaning you can double-check these from the fence to the blade and always be guaranteed perfect results. I've mostly been ripping plywood and MDF since using the table saw, and it's been flying through these materials. However, with a sharp blade fitted this saw will also rip through oak, sapele and other hardwoods of a small thickness incredibly smoothly. When it comes to sheets, however, these will need to be cut into smaller sections before ripping down as the table saw only reaches up to 600-615mm in width, and as this is a compact model, you may need to seek assistance when supporting sheet cutting or longer timber lengths.

The clear measurement scale allows you to achieve extreme accuracy

The measurement locking system is activated by pressing a lever

Quick-changing features

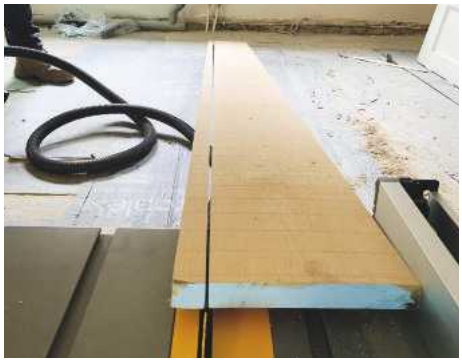
I've been using this compact table saw on the ground, although DeWalt do offer a stand for this model and a sliding table system could be constructed to support your offcuts. The fence is removable and there is a neat storage spot just under the top table, which can be clamped on and off with quick-changing features; it can also be set up in multiple locations along the table to aid your cutting. The saw is also supplied with a sturdy plastic push stick, and there is a dedicated storage spot just inside the fence for this. One thing I would like to see on the new range of table saws from DeWalt, however, is a measurement labelling of the blade depth on the wheel; this would eliminate having to set the blade with a combination square, tape measure, or the timber you intend to cut.

Conclusion

Overall, the Dewalt DWE7485-GB performed excellently across the board. It's powerful and simple to use, smooth running, and an ideal size for an on-site machine. It can get very noisy in use, however, so ear protection is always needed, but the performance in cutting makes up for that in spades. The price point is great for a machine that would make a welcome addition to any carpentry site or workshop environment, and will save any user a great deal of time and effort with every cut it makes.

SPECIFICATION

No load speed: 5,800rpm
Voltage: 240V
Blade diameter: 210mm
Blade bore: 30mm
Max. ripping capacity (right): 622mm
Max. ripping capacity (left): 318mm
Max. depth of cut at 90°: 65mm
Max. depth of cut at 45°: 45mm
Table size: 485 × 485mm
Weight: 22kg
What's included: Full length fence; mitre fence; push stick; blade change spanners; three-year warranty



Ripping a piece of 8'×1 European oak

Aerial view showing the supplied push stick and 210mm diameter blade

Features

- High power motor for extended durability, efficiency and power to cut all construction timbers
- Dual rack and pinion fence system facilitates increased accuracy
- Two-position fence with maximum 610mm rip capacity
- 65mm depth of cut at 90 °; 45mm at 45°
- One-handed bevel control for quick/accurate bevel adjustment and lock
- NoVolt Release switch for added safety
- Cast aluminium bed for increased rigidity and improved accuracy
- Compact size and low weight for improved portability
- AIRLOCK compatible dust extraction for improved health/safety and cleaner job sites
- ToolConnect ready (tag is NOT included) provides the option for job site connectivity for inventory management

Typical price: £550 – shop around for the best deal
Web: www.dewalt.co.uk

THE VERDICT

PROS

- Affordable; compact size; portable (manageable by one person); great attention to detail in its construction; simple to use; good extraction and safety features

CONS

- Loud in use; only suited to smaller cutting due to its compact size; squareness of blade must be checked

RATING: 4.5 out of 5

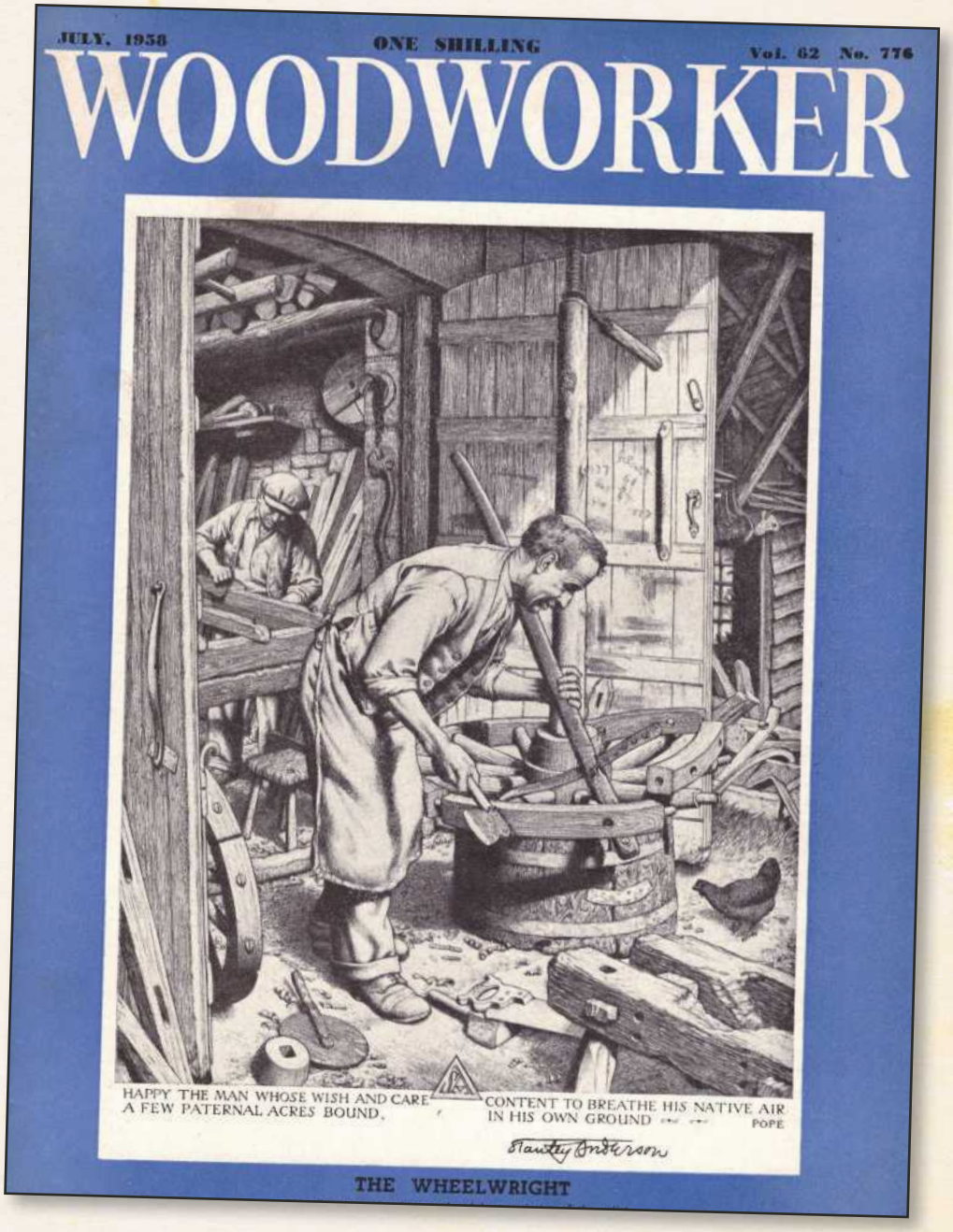
The job of art

Robin Gates shares his admiration for the artist Stanley Anderson whose engraving 'The Wheelwright' graced the cover of *The Woodworker* in July 1958

In the 1930s and '40s, the artist Stanley Anderson created a series of engravings of rural crafts that were fast growing scarce on the landscape. His first was 'The Hedger' accurately depicting the worker with bill hook, leather apron and long gloves laying the stems between stakes. Next came sheep dippers, quarry men, hurdle makers and then, in 1939, 'The Wheelwright' which, in July 1958, graced the cover of *The Woodworker.*

The man pictured is George Scott whose workshop stood in Sheepscombe, Gloucestershire, and, like all his subjects, Anderson got to know him personally and on equal terms. Anderson regarded himself as a manual worker, albeit one cutting lines in a copper plate with the fine point of a burrin. Making baskets, rakes, saddles or clothes pegs were all jobs and his own was "the job of art." We see a wheelwright's face lined with wisdom and contentment, the face of a man valued for skills and knowledge, which had been handed down for centuries. But it's also the face of an ageing workforce overtaken by progress, already hanging up its tools, the youngsters having gone to the factories, or worse – to war.

Today many are seeking to revive traditional hand work and we have cause to be grateful for Anderson having excelled at his job. With artistry he uses composition, light and shadow in focusing the eye on the matter in hand while inviting exploration of the wider context, but he's also utterly reliable in the detail of the process. In his pictures we can find both the tools of a lost craft and clues as to how to use them properly.



'Ode on Solitude'

Here the wheelwright is putting his shoulder to the 'spoke dog', pulling a spoke's tenon into alignment with its mortise in the felloe, thence to knock the felloe home with the poll of his axe. The next step is to assemble the felloes, joined by the dowels clearly visible, leaving just sufficient gap to be closed when the red hot iron tyre contracts. Notice also the small wheel mounted in a wooden fork, which lies beside Scott's foot. This is his traveller, used to measure the circumference of the wheel and then, with some adjustment applied from the experience of the blacksmith, to calculate the length of iron required to make the tyre.

In later years, Anderson recalled that on a day he was sketching at the workshop, a wagon pulled up and the wheelwright Scott recognised it as one his grandfather had built some 90 years before. Two new floor boards were required but it was otherwise "as sound as a bell." The satisfaction of such a craftsman providing a service to their local community is summed up by the first lines of Pope's 'Ode on Solitude' quoted below the engraving, which reads: "Happy the man, whose wish and care, A few paternal acres bound, Content to breathe his native air, In his own ground." In the triangle between the lines is Anderson's monogram, styled on that of German painter and printmaker Albrecht Durer, whom he much admired.

Anderson was born in Bristol in 1884, where his father's trade was heraldic engraving. At age 15 he undertook a seven-year apprenticeship with his father at six shillings per week, but his longing was to become an artist, and to that end he afforded from his meagre wage an evening class in etching at Bristol School of Art. In 1909, aged 25, he won a £50 scholarship enabling a move to London where he studied at the Royal College of Art, first painting in watercolour, then producing etchings. Finally, he became a master of line engraving, for which his trade apprenticeship gave him a sound technical foundation.

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As we face uncertain lockdown, **Jeremy Broun** highlights the importance of engaging with others as well as having dreams, aims and projects with deadlines, all of which help us feel connected and keep our spirits high

LEARNING FROM WOOD

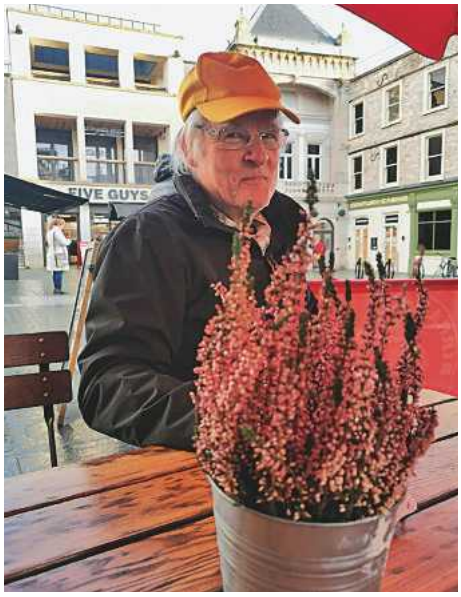
Supporting the fibres to avoid splitting the end-grain

The great thing about working with wood is that there is no fake news, ambiguity, or contradiction; it has a set of rules – if you plane the wood against the grain, it will split, unless you take precautions to prevent this and support the fibres. Of course, looking back at history, the technique of veneering does raise the question of 'fake' in that things aren't as they seem. I think both exemplify the situation we are facing today with the COVID-19 pandemic.

If people wear masks for what is known to be an airborne droplet held particulate virus, there is a very strong chance it will help stop two-way spread, and if people stay away from each other or socially distance at over two metres apart, keeping a closed space ventilated and not share it with others for over 15 minutes, these are surely solid guidelines?

Reaching up & out

The basic guidelines I would give to anyone taking up woodwork are: **1)** Select the best material and tool for the job; **2)** Keep the tool sharp; **3)** Hold the work steady (e.g. in a vice). Those who engage in woodworking are fortunate to have a natural material which demands discipline and that old-fashioned word 'respect', and in the case of machines in particular, a degree of healthy fear as well. Of course, another characteristic of wood is that it floats (except for lignum vitae) and with this in mind, we must keep our spirits high.



I always have a dream or project in mind

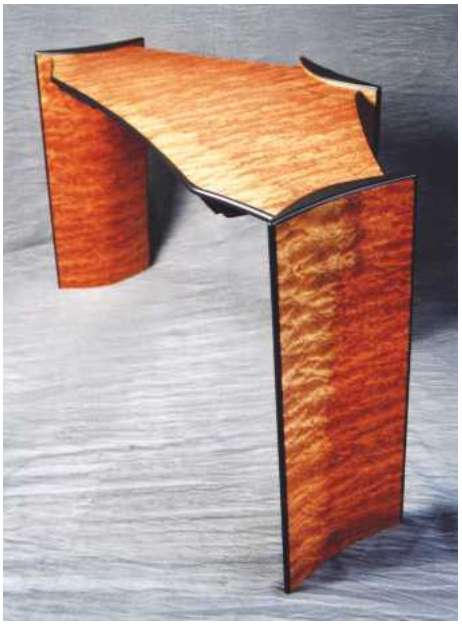
In being given the opportunity to write this article, I'm particularly aware that readers are experiencing COVID-19 in very different ways, and at the time of writing, there will be increasing impacts on mental health for many, particularly among young people.

For me to spout about how to cut dovetails 'the right way' seems a missed opportunity to try to uplift spirits at this time and share some of my own life experience, for what it's worth. My situation is not typical of the life journey of my age group, and I do have some experience of dealing with prolonged isolation, which was certainly not a personal preference. A life lesson is that things seldom go to plan and situations can suddenly change, as we are experiencing first-hand now. As woodworkers, we are used to having plans to work to, and the main change that wood undergoes is in its moisture content and subsequent movement.

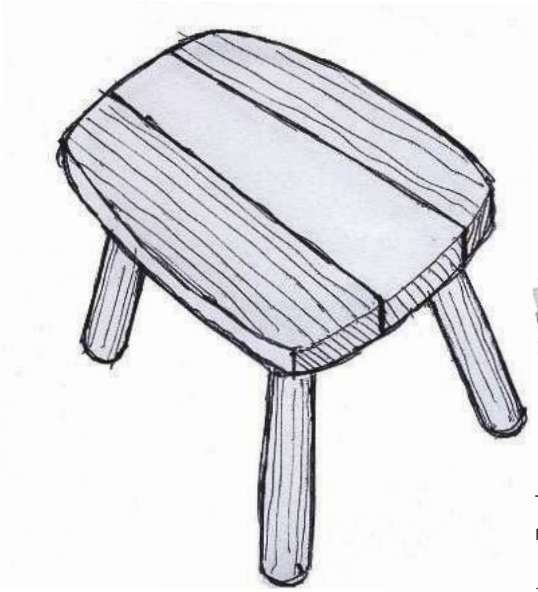
As a young furniture designer-maker, I was labelled as a 'solid wood man' as opposed to specialising in veneered work. I have done both but tend to prefer working in the solid as a way of exploring new structures and forms, as indeed I prefer to 'cross camps' when drawing on techniques (such as using carpentry joints in chairmaking, for example). Today there seems to be increasing polarity – left or right, leave or remain – and consumer society tends to encourage self-interest, which fuels this mind-set. Most of us exist in a 'bubble' – a term which the Government has been referring to in the context of the pandemic, but 'bubble' mentality has a broader implication of societal isolation. Are we looking in and becoming unaware of others? A good percentage of *WW* readers are of the older generation, and many (like me) are privileged to have a workspace they can call their own – a shed or garage, for example – and most will probably have offspring, children and grandchildren. Are we passing on and handing down? Is our obligation to not only help those who we brought into the world, our offpsring, but young people in general? Could we reach out more?

Handing on

The greatest privilege I had was a brilliant woodwork teacher at school, the first having moved on after we all failed GCE O level! Having an inspiring teacher at a young age is sheer luck. Everyone needs encouragement in order to build self confidence. For many years, I exhibited alongside John Makepeace who I believe received his first commission around



My 'Starwars' computer desk in Kevasinga veneer with ebonised maple lipping – more akin to aircraft design than cabinetmaking



The first piece of furniture that diminished in size as it was being made

The beauty of a lathe lies in the fact it takes a couple of hours to master, requires little space, is quiet in use and utilises wood offcuts

the age of 10 from his father. My own story was very different, as at that age, my father disallowed me from using his workshop for fear of messing up his tools. He wanted an academic son who could quote Shakespeare and understand Einstein.

Success is built on failure and rejection, and it is that which tests us as perseverance is key. My first piece of furniture made at school, when I was 16, was a coffee table with a top made up of sandwiches of American black walnut and ramin. I couldn't get the edge joint true with a hand plane, but persevered, which resulted in the table becoming smaller, albeit still usable.

Remembering how to play

Recently, a friend asked me if I had a small lathe he could borrow. He has a garden shed and makes model airplanes as a hobby. As a director of a civil engineering company, he's had to let go several loyal employees and is now dealing with the increasing frustration and boredom of being stuck at home. I was surprised to hear the latter. I had an old Zyliss bench-top lathe, which employs a drill, but I decided to go online and purchase a micro lathe for £50 and pass it on to him in the hope he'd find it useful. He revealed he didn't know what to make with it, however, so I suggested he just mount a piece of wood, start feeding a chisel into it and see where it took him.

I am fortunate in that I've never suffered from boredom, although I do have to face severe lack of motivation at times. Just getting the wheel to turn requires the biggest force in science.

In my first article on 'woodworking lockdown' (2020 summer issue), I mentioned patience and perseverance with the biggest challenge being that of adapting to changing circumstances, but it's already happening. As a result of more people working from home, companies are restructuring. According to news reports, in California, the home of Silicon Valley, where business overheads and state taxes are through the roof, there is a shift to Texas led by people such as Elon Musk. Necessity is the mother of invention and in my own case, lack of capital – failure to even obtain a bank loan – plus a limited set of hand tools when I set up my workshop, actually triggered some of my most inventive designs.

The wonder of nature and never losing the child in you – photograph courtesy of **Zhanna Krylova**

Outlook not inlook

So much is about attitude and outlook and I suppose we are born with a natural disposition. Talk to any mother about the way their child has always been. It is also natural to take things for granted and to have expectations, but having few expectations and celebrating the simple joys in front of us is particularly relevant now. We have become removed from nature. I have a friend who lives in a vast country that grows birch trees as we do, but she doesn't enjoy some of the human rights that we take for granted here in Britain. I found it particularly uplifting to receive a photo (see left) of her showing utter childlike joy at the sight of fallen leaves on the ground during her daily walk from work.

They say we retain the child in us throughout life and children can also let go. In the yin yang of life, letting go and having focus co-exist. Having focus can be exemplified by someone who has toothache until a ton weight is dropped on their foot! Before COVID-19 took hold, the focus was on that 'B' word and then climate change became the national media focus.

Focus can be an obsession. Highly skilled woodworkers often have obsessive tendencies, but focus as a general life skill is immensely important. Much is said about attention deficiency in young people, but the problem doesn't exist when it comes to playing video games. Again, I can only share what works for me: I can focus on tasks and this goes back to cross-country running at school, where I visualised winning.

A current focus/project of mine is a bench-top panel saw jig for 4×2 four sheets, which uses a mini circular saw. There is nothing on the market but plenty of costly 8×4 panel saws. Hopefully a major tool company will reach out to me and my concept can be mass-produced at a reasonable price! My dream is that one day, router manufacturers will consult experts such as myself when designing the tools – after all, if you design a new football boot no doubt Messi or Rinaldo are involved!

So in summary, I would say that it is important to have dreams, aims, and projects with deadlines, not to mention variety – change of environment, even if it is only the garden shed – as well as reaching out to others (online). One small random deed can trigger hope and purpose for another, and I also find it helpful to limit the consumption of news to just once a week, while choosing to focus on the positives.

My bench-top/wall-mounted 4×2 panel saw jig with Bosch cordless mini circular saw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1 Overall view

BIRTHDAY BOX

Wanting to make a special gift to mark his sister-in-law's 60th birthday, **Geoff Ryan** comes up with this stunning jewellery box design in maple and walnut, which includes corner post dovetails

I've always enjoyed making boxes and over the years have made many types, including turned and bandsaw variants, those with wooden hinges, toy boxes, and even small ones to house jewellery. This time I wanted to create something special as a gift for my sister-in-law's 60th birthday. Being in national lockdown meant I could disappear into the workshop for days on end and no-one, not even the dog, missed me!

Photo 1 shows the finished box, in maple and walnut, with corner post dovetails and a single drawer with a hand-made brass handle. The lid is bigger than the box and this made fitting quadrant hinges a major challenge. The overall dimensions are 317mm long × 196mm wide × 167mm high.

I had already bought some walnut and maple in February at the British Hardwoods open day at their warehouse in Keighley, Yorkshire. I started preparing the boards some weeks before they were needed, cutting them oversize and leaving them thicker than required. They were then left in the house to acclimatise to an indoor environment and hopefully minimise any further movement. Other materials included beech for the tray dividers and birch ply for the drawer and tray bases, plus the middle and bottom panels.

Dovetailing the corners

Once all the boards had been planed down to their final dimensions, I started by dovetailing the corners and creating the corner post pieces. **Photo 2** shows how a maple board is prepared by routing dovetail slots along its length, which are then cut into strips thicker than the box sides – after gluing in place they are sanded flush and the rear corners are then dovetailed onto the back of the box. I use an original INCRA jig for dovetail jointing and it's quite straightforward to use (after a few practice runs).

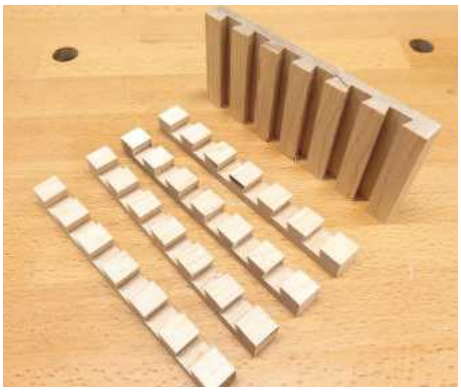
Photo 3 shows the front, back and sides – these were all cut from one board to maintain, as much as possible, grain match around the box.

Photo 4 shows the next stage before assembly. The front panel has been cut in half, the top section becoming a fixed panel and the bottom (not shown) becoming the drawer front. Slots have been routed to accommodate the middle and bottom panels and biscuit slots have been cut to fix the top panel in place. The inside faces have been finished as this would become difficult after assembly.

Photo 5 shows the middle and bottom plywood panels. These have a rebate routed around the edges as this allows them to sit low down and so the slots in the box are not too close to the bottom edges. The rebate also provides some clearance for wood movement and, during assembly, the plywood panels were only glued along the front edge.

After glue-up, I was pleased to find the box was dead square but, when placed on


WW
PROJECT



2 Maple corner posts

3 Box front, back and sides

a flat surface, had a very slight rock. While some might have picked up a block plane, I had another solution – a friend had given me some large industrial sanding belts, in various grits, and I stretched a piece of this on a flat board (**photo 6**). Carefully sliding the box backwards and forwards soon resolved the problem.

Jig for hinges

I have never before installed retained quadrant hinges and **photo 7** shows the type I used. These are available in gold or chrome-plated finish and at about £7 a pair not as expensive as some of the high-quality solid brass ones you can buy. One problem with these particular hinges is that the quadrant strap is captive, which makes setting up a problem. A search on YouTube found some guidance – you can file off the small pip (shown on the right-hand hinge in the photo) and the quadrant strap can be removed when the hinge is closed. During assembly you must ensure the filed end is pointing down otherwise the strap will fall out when the hinge is in the closed position.

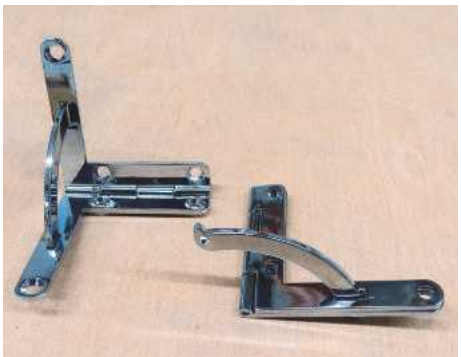
The best way to install the hinges is to make a jig for a router (**photos 8** & **9**). If the box and its lid are the same size, then one jig will cut both sets of recesses. In my case the lid is bigger than the box, so while I could use the same jig body, I had to adjust the position of the edge guides. Having cut the recesses in the box, some very careful measuring and fine adjustment was needed to get this right for the lid – I tried it first on some scrap, which was the same size as the lid and checked the hinges fitted – they didn't! Further adjustment involving paper shims and more trials eventually gave me the required fit. A mistake at this point would either ruin the box or the lid, so in future I think I will only use quadrant hinges when the box and lid are the same size!

To accommodate the hinge retaining straps, slots are required in the sides of the box and a shallow recess in the lid. **Photo 10** shows these being drilled out on a drill press, after which they were squared up with a chisel and then rather

4 Inside finished and ready for assembly

5 Middle and bottom plywood panels

6 Flattening the top and bottom edges



7 Chrome hinges also available

8 Routing the hinge recesses in the lid

9 Hinge recesses in the box

10 Drilling out for the hinge arm

11 Cleaning up the hinge arm recess

crudely finished off with a file (**photo 11**). The screws for the hinges need pilot holes and this was achieved using an old Stanley hand drill – unfortunately one hole was out of alignment so it was drilled out larger and a dowel glied in before starting again (**photo 12**). In this photo you might also be able to see a small gap in the corner joint; this was dealt with using some glue and fine walnut dust and became invisible once sanded and finished.

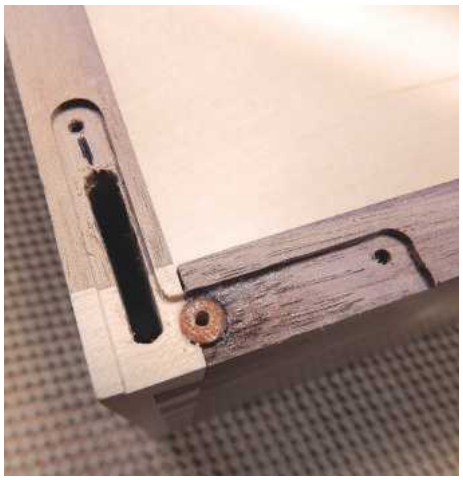
The lid

The lid consists of a walnut panel floating in slots in a mitred maple frame. The frame was chamfered to 12.5° on the table saw using a jig built solely for this purpose (**photo 13**). A length of maple more than twice the required width was trimmed along both edges, making handling easier, then ripped down the middle. I used a mitre shooting board to get the mitres just right – easier said than done as I had to build one first and then learn how to use it! To reinforce the mitred joints, slots were cut in the corners of the maple frame on the router table using another temporary jig to control the cut and reduce tear-out. The walnut used for the splines is only 2.5mm thick and was produced using a thickness sander – the walnut having its leading edge stuck to a support board with double-sided tape (**photo 15**). If you tried to do this with a thickness planer, it would likely break up. **Photo 16** shows the finished lid.

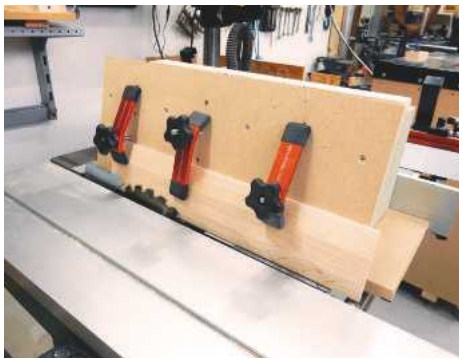
When the hinges were finally installed (**photo 17**), I discovered that the rear of the lid slightly fouled the top rear edge of the box. The solution was to chamfer the edge of the lid and box (**photo 18**) and this allows the lid to rest correctly on the hinge stays.

Drawer front & handle

I was originally going to dovetail the drawer front but changed my mind at the last minute and decided to use dowels. I already had a dowel plate made from an old towbar drop plate with several different sizes of holes drilled in it, so ran some maple through. If you have never tried this then have a go – you just produce some square section marginally wider than the hole, taper one end, put the other end in your drill chuck, then power it through the hole. When you're almost there, move your drill to the other end and pull the rest through. Make sure the finished diameter of the dowel will match the drill sizes you are going to use to drill the wood.



12 Ooops – a small mistake easily rectified



13 Lid frame jig

14 Cutting mitre slots in the lid

15 Material for the mitre splines is fed into the thickness sander

16 The mitres on the lid frame took some careful hand planing

17 Hinge detail

18 Chamfer on rear of lid and box

19 Drilling the dowel holes in the drawer

20 The drawer front held on with maple dowels

Photo 19 shows the holes being drilled for the dowels in the ends of the drawer using the drill press to keep everything square. **Photo 20** shows the finished joint – I never thought about aligning the grain direction in the dowel and the side, which might have looked better.

What to do for a drawer handle had been troubling me. Searching online catalogues turned up nothing that seemed quite right and I played around with a few designs for homemade wooden handles. Finally, I dug out my metal offcuts box for inspiration. A scruffy piece of 10mm brass, which had been crudely bent over, caught my eye and I realised there was potential under the dents and grime. **Photo 21** shows the result of sawing, filing, sanding and polishing.

Trays & dividers

The next part of the build was to make two trays: one for the top compartment and one for the drawer, which would sit on top of beech dividers. These were simple walnut mitred trays with chunky maple corner splines. **Photo 22** shows a jig to hold boxes on the router table to cut the slots for the splines, which are glued in place (**photo 23**), trimmed on the bandsaw (**photo 24**), then sanded flush (**photo 25**). Both trays were lined with stiff card covered in self-adhesive flock paper (**photo 26**).

The final task was to make the beech dividers. This was an opportunity to try out my new kerf maker (**photo 27**); these allow you to make repeated dado or slot cuts by taking into

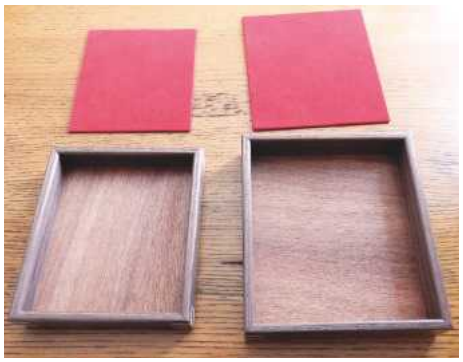
21 Brass drawer handle

22 Routing the tray corners for splines

23 The oversize maple splines are glued in place…

24 … trimmed on the bandsaw…

25 … and then sanded flush



26 The trays are lined with stiff card covered in flock paper

27 Cutting slots in the beech dividers

28 All the dividers

account the thickness of your blade and the stock you want to accommodate. I have found it useful but not as instant as the advertising makes out – you need to cut some test slots first and, if necessary, fine-tune the setting. Once set they are a great help. Note the blade I am using has flat top teeth so cuts a flat-topped kerf – I keep this blade purely for slotting purposes. I would find a proper dado cutter useful but they have been frowned upon in the UK and nearly all table saws sold here have short arbors to prevent their use (I see that Axminster Tools is now selling a saw table that will take them, but at over £4k including a crown guard and dado set, it's well outside the hobbyist budget – it is also a big machine requiring a lot of space). **Photo 28** shows the dividers after three coats of water-based satin varnish, which was the finish I used on the whole box. The completed project is shown in **photo 29**. After leaving the varnish to harden off for a week, everything received a coat of wax. The drawer is a pleasing piston-fit in the case and the trays slide smoothly across the top of the dividers.

This was a challenging build and I often felt I was spending much of my time making jigs, but the result was well worth the effort.

29 The completed box

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CDE7B	750W	850 M3/h	114Ltrs	£159.98	£191.98

Clarke PLUNGE SAWS

CPS160

FROM ONLY £59.98 EXC.VAT £71.98 INC.VAT

INC. 2X 700mm GUIDE RAILS

Was £154.80 inc. VAT

MODEL	MOTOR	EXC.VAT	INC.VAT
CPS85	550W	£59.98	£71.98
CPS160*	1200W	£119.00	£142.80

Clarke DRILL PRESSES

- Range of precision bench & floor presses for enthusiast, engineering & industrial applications

B = Bench mounted
F = Floor standing

FROM ONLY £69.98 EXC.VAT £83.98 INC.VAT

CDP152B

MODEL	MOTOR (W) SPEEDS	EXC. VAT	INC. VAT
CDP5EB	350 / 5	£69.98	£83.98
CDP102B	350 / 5	£79.98	£95.98
CDP152B	450 / 12	£149.98	£179.98
CDP202B	450 / 16	£189.00	£226.80
CDP10B	370 / 12	£199.98	£239.98
CDP352F	550 / 16	£229.00	£274.80
CDP452B	550 / 16	£239.00	£286.80
CDP502F	1100 / 12	£569.00	£682.80

Clarke 4" BELT/ 8" DISC SANDER

- Includes two tables
- 550W 230V motor

PRICE CUT £149.98 EXC.VAT £179.98 INC.VAT
WAS £191.98 inc.VAT

CS4-8

Clarke BELT SANDERS

CBS2

Makita

- Ideal for surface removal, sanding and finishing

FROM ONLY £35.99 EXC.VAT £43.19 INC.VAT

ABRASIVE SANDING BELTS IN STOCK

MODEL	MOTOR	M/MIN	EXC.VAT	INC.VAT
Clarke BS1	900W	380	£35.99	£43.19
Clarke CBS2	1200W	480	£79.98	£95.98
Makita 9911	650W	75-270	£99.98	£119.98

Clarke DISC SANDER (305MM)

- Powerful, bench mounted
- 900W
- Dust extraction port

£129.98 EXC.VAT
£155.98 INC.VAT

CDS300B

Clarke CIRCULAR SAWS

- Great range of DIY and professional saws
- Ideal for bevel cutting (0-45°)

CON185

FROM ONLY £42.99 EXC.VAT £51.59 INC.VAT

*Includes laser guide

MODEL	MOTOR	MAX CUT 90/45 (mm)	EXC.VAT	INC.VAT
CCS185B	1200W	65/44	£42.99	£51.59
CON185*	1600W	60/40	£59.98	£71.98

Clarke CPF13 ELECTRIC POWER FILE

- Variable belt speed
- Tilting head

*Black & Decker

FROM ONLY £49.98 EXC.VAT £59.98 INC.VAT

ARM ADJUSTS

MODEL	MOTOR	BELT SIZE (mm)	EXC.VAT	INC.VAT
CPF13	400W/230V	13x457	£49.98	£59.98
KA900E*	350W/230V	13x455	£59.98	£71.98

Clarke DETAIL SANDERS

- Perfect for smooth and fine finishing along with hard to reach areas or curved surfaces

CDS-1V

ONLY £26.99 EXC.VAT £32.39 INC.VAT

280W

ALL MODELS INC. SANDING SHEETS

Clarke SHEET SANDERS

CON320

- Ergonomic design for optimum comfort

VARIABLE SPEED

FROM ONLY £23.99 EXC.VAT £28.79 INC.VAT

MODEL	SHEET SIZE	MOTOR	EXC.VAT	INC.VAT
COS210	190X90mm	200W	£23.99	£28.79
CON320	230X115mm	320W	£34.99	£41.99

Clarke 18V CORDLESS LI-ION STAPLE / NAIL GUN

- Includes 300 nails and 400 staples
- 1x 2Ah 18V Li-Ion battery

SPARE NAILS / STAPLES IN STOCK

1x2Ah powered by Li-Ion

CONSN18LIC

ONLY £119.98 EXC.VAT £143.98 INC.VAT

ELECTRIC AND CORDLESS MODELS IN STOCK

Clarke CONTRACTOR 18V BRUSHLESS COMBI DRILLS

- 2 forward and reverse gears

PRICE CUT NOW FROM £99.98 EXC.VAT £119.98 INC.VAT
WAS £131.98 inc.VAT

CON180LI

MODEL	VOLTS	BATTS	EXC. VAT	WAS VAT	INC. VAT
CON18LIC	18V	2x 2.0Ah Li-Ion	£99.98	£131.98	£119.98
CON180LI	18V	2x 4.0Ah Li-Ion	£129.00	£167.98	£154.80

Clarke POWER PLANERS

FROM ONLY £34.99 EXC.VAT £41.99 INC.VAT

CON950

MODEL	WIDTH OF CUT	MOTOR	EXC.VAT	INC.VAT
CEP450	60mm	450W	£34.99	£41.99
CEP720	82mm	720W	£44.99	£53.59
CON950	110mm	950W	£67.99	£81.59

Clarke 3-IN-1 MULTI SANDER

CMS200

ONLY £44.99 EXC.VAT £53.99 INC.VAT

1/3 SHEET SANDER

DISC SANDER

Clarke PALM SANDERS

- Ideal for detail sanding of corners & hard to reach areas

CPS125

INC DUST EXTRACTION

ONLY £19.98 EXC.VAT £23.98 INC.VAT

Clarke RANDOM ORBITAL SANDER

- Adjustable front handle improves control
- 7000-14000rpm

CROS3

INC DUST BAG AND SELECTION OF 125MM DIAMETER SANDING DISCS

£36.99 EXC.VAT £44.39 INC.VAT

Clarke OSCILLATING BOBBIN SANDER

- Dust collection port
- Inc. 6 sanding sleeves/bobbins

COBS1

£129.98 EXC.VAT £155.98 INC.VAT

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Clarke HARDWOOD WORKBENCH

- Includes bench dogs and guide holes for variable work positioning
- 2 Heavy Duty Vices
- Large storage drawer
- Sunken tool trough
- LxWxH 1520x620x855mm

CHB1500

£149.98 EXC.VAT £179.98 INC.VAT

VAC KING WET & DRY VACUUM CLEANERS

- Compact, high performance wet & dry vacuum cleaners for use around the home, workshop, garage etc.

FROM ONLY £49.98 EXC.VAT £59.98 INC.VAT

* SS = Stainless Steel

MODEL	MOTOR	CAPACITY DRY/WET	EXC. VAT	INC. VAT
CVAC20P	1250W	16/12ltr	£49.98	£59.98
CVAC20SS*	1400W	16/12ltr	£59.98	£71.98
CVAC20PR2	1400W	16/12ltr	£64.99	£77.99
CVAC25SS*	1400W	19/17ltr	£69.98	£83.98
CVAC30SSR*	1400W	24/21ltr	£89.98	£107.98

Clarke BOLTLESS SHELVING/BENCHES

- Simple fast assembly in minutes using only a hammer

FROM ONLY £29.98 EXC.VAT £35.98 INC.VAT

SAVE 10% WHEN YOU BUY ANY MIX OF 4 FROM THIS RANGE SAVE UP TO £23.99 INC. VAT

150 KG PER SHELF (evenly distributed) Strong 9mm fibreboard shelves

350 KG PER SHELF (evenly distributed) Strong 12 mm fibreboard shelves

CHOICE OF 5 COLOURS
RED, BLUE, GREY, SILVER & GALVANISED STEEL

MODEL	DIMS WxDxH(mm)	EXC.VAT	INC.VAT
150kg	800x300x1500	£29.98	£35.98
350kg	900x400x1800	£49.98	£59.98

Clarke WHETSTONE SHARPENER (200MM)

- Produces razor sharp cutting edges on chisels, planes, etc.
- Inc. 3 tool holding jigs, workpiece clamp & support frame, polishing paste & water trough

CWS200B

ONLY £119.98 EXC.VAT £143.98 INC.VAT

Clarke PLANERS & THICKNESSERS

CPT800

- Ideal for DIY & Hobby use
- Dual purpose, for both finishing & sizing of timber

FROM ONLY £179.98 EXC.VAT £215.98 INC.VAT

MODEL	PLANING WIDTH	MAX THICK. CAPACITY	EXC. VAT	INC. VAT
CPT600	6" (152mm)	120mm	£179.98	£215.98
CPT800	8" (204mm)	120mm	£219.98	£263.98
CPT1000	10" (254mm)	120mm	£299.00	£358.80

Clarke OSCILLATING BELT & BOBBIN SANDER

- Sand concave, convex, straight or multi-curved pieces
- Dust collection port
- Inc. sleeves, drum & belt

£179.98 EXC.VAT £215.98 INC.VAT

COEBS1

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- Spread the cost over 18, 24, 36 or 48 months
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Clarke 40" WOODTURNING LATHE

Ideal for woodturning in the workshop

• 1016mm distance between centres allows for turning longer spindles • Inc. tool rest, tail stock, drive centre, face plate & 3 chisel • Large turning capacity of 350mm • 4 turning speeds

BENCH MOUNTED

CWL1000B

ONLY £136.99 EXC.VAT £164.39 INC.VAT

BEST SELLER

LOCKABLE TAILSTOCK

Clarke 40" WOODTURNING LATHE WITH COPY FOLLOWER

Ideal for DIY, furniture or joinery workshops where repeat quantities are required

• Large 980mm distance between centres • Variable speeds 600-2200rpm • Inc. copy follower assembly, tool rest, drive centre tail stock assembly, face plate, eye shield, 2 chisels & stand

INCLUDES COPY FUNCTION

ONLY £359.00 EXC.VAT £430.80 INC.VAT

INCLUDES STAND

CWL1000CF

Clarke BENCH BANDSAWS

• Produces fast, precise mitre & longitudinal cuts • 350W motor • 7.5" throat size • Cuts in all types of wood

£129.98 EXC.VAT £155.98 INC.VAT

CBS190B

• Great for both home & professional use • Induction 300W motor • Table tilts up to 45° • 9" throat size

£189.98 EXC.VAT £227.98 INC.VAT

REMOVABLE DUST TRAY

CBS225

Clarke PROFESSIONAL BANDSAWS

Top Quality Bandsaws - ideal for professional workshop use. Strong steel body with solid cast iron table

• Table tilts 45° • Adjustable blade guide • Supplied with stand, 4TPI wood cutting blade, rip fence, mitre guide, mitre gauge and push stick • Induction motors • Includes stand

MAGNIFIED MITRE GUIDE

QUICK RELEASE FENCE

DRIVE-BELT TENSIONING

SOLID GROUND CAST IRON TABLE

CBS300

FROM ONLY £219.98 EXC.VAT £263.98 INC.VAT

MODELS ALSO FEATURE:

MULTI-STEP DUST EXTRACTION OUTLET

FLEXIBLE LED WORKLIGHT

REMOVABLE DUST TRAY

BLADE TENSIONING CONTROL

MODEL	THROAT DEPTH	MAX CUT 90°	MAX CUT 45°	EXC. VAT	INC. VAT
CBS250B	250mm/10"	100mm	75mm	£219.98	£263.98
CBS300	305mm/12"	165mm	115mm	£398.00	£477.60
CBS350	340mm/14"	225mm	160mm	£498.00	£597.60

TURBO AIR COMPRESSORS 8/260

airmaster

• Superb range ideal for DIY, hobby & semi-professional use

FROM ONLY £89.98 EXC.VAT £107.98 INC.VAT

* 'V' Twin Pump
# Oil free

MODEL	MOTOR	CFM	TANK	EXC.VAT	INC.VAT
8/260	2HP	7.5	24ltr	£89.98	£107.98
7/250	2 HP	7	24ltr	£94.99	£113.99
11/260	2.5HP	9.5	24ltr	£109.98	£131.98
8/550	2HP	7.5	50ltr	£119.98	£143.98
7/510#	2HP	7	50ltr	£119.98	£143.98
11/550	2.5HP	9.5	50ltr	£139.98	£167.98
16/550*	3HP	14.5	50ltr	£199.98	£239.98
16/1050*	3HP	14.5	100ltr	£249.98	£299.98

Clarke 13" MINI WOOD LATHE

£159.98 EXC.VAT £191.98 INC.VAT

CWL325V

• Ideal for enthusiasts/ hobbyists with small workshops • 325mm distance between centres • 200mm max. turning capacity (dia) • 0.2HP motor

Clarke STATIC PHASE CONVERTERS

• Run big 3 phase woodworking machines from 1 phase supply • Variable output power to match HP of motor to be run

ROTARY PHASE CONVERTERS ALSO IN STOCK

PC60

FROM ONLY £239.90 EXC.VAT £286.80 INC.VAT

CONVERT 230V 1PH TO 400V 3PH

MODEL	MAX. MOTOR HP	FUSE	EXC.VAT	INC.VAT
PC20	2HP	10Amps	£239.00	£286.80
PC40	3.5HP	20Amps	£279.00	£334.80
PC60	5.5HP	32Amps	£329.00	£394.80

Clarke CONTRACTOR ROUTERS

• Powerful heavy duty machines ideal for trade and DIY use

CR4

PRICE CUT NOW FROM £44.99 EXC.VAT £53.99 INC.VAT

WAS £56.39 INC.VAT

*was £56.39 inc. VAT
#was £119.98 inc. VAT

MODEL	MOTOR (W)	PLUNGE (mm)	EXC.VAT	INC.VAT
CR1200*	1200	0-55	£44.99	£53.99
CR4#	2000	0-66	£89.98	£107.98

Clarke GRINDERS & STANDS

• Stands come complete with bolt mountings and feet anchor holes

6" & 8" AVAILABLE WITH LIGHT

FROM ONLY £35.99 EXC.VAT £43.19 INC.VAT

STANDS FROM ONLY £47.98 INC.VAT

With sanding belt
*8" whetstone & 6" drystone

MODEL	DUTY	WHEEL DIA.	EXC.VAT	INC.VAT
CBG6RP	DIY	150mm	£35.99	£43.19
CBG6250	HD	150mm	£37.99	£45.59
CBG6RZ	PRO	150mm	£42.99	£51.59
CBG6SB#	PRO	150mm	£58.99	£70.79
CBG8W* (wet)	HD	150/200mm	£59.98	£71.98

Clarke ROUTER TABLE CRT-1

Router not included

BEST SELLER

• Converts your router into a stationary router table • Suitable for most routers (up to 155mm dia. Base plate)

£69.98 EXC.VAT £83.98 INC.VAT

Clarke WOODWORKING VICES

Record

FROM ONLY £14.99 EXC.VAT £17.99 INC.VAT

WV7

MODEL	MOUNTING	JAW (WIDTH/OPENING /DEPTH)mm	EXC.VAT	INC.VAT
Clarke CHT152	Bolted	150/152/61	£14.99	£17.99
Record TV75B	Clamped	75/50/32	£22.99	£27.59
Clarke WV7	Bolted	180/205/78	£29.98	£35.98

Clarke CONTRACTOR Clarke JIGSAWS

CON750

FROM ONLY £24.99 EXC.VAT £29.99 INC.VAT

BEST SELLER

*DIY
#Professional

MODEL	POWER (W)	DEPTH OF CUT (WOOD/STEEL)	EXC. VAT	INC VAT
CON750#	750W	80/10mm	£24.99	£29.99
Bosch PST700E*	500W	70/4mm	£44.99	£53.99

Clarke SCROLL SAWS

• 50mm max cut thickness • Air-blower removes dust from cutting area • Table tilts 0-45°

FROM ONLY £79.98 EXC.VAT £95.98 INC.VAT

CSS400C

BEST SELLER

MODEL	MOTOR	SPEED RPM	EXC. VAT	INC. VAT
CSS400D	120W	400-1600	£79.98	£95.98
CSS16VB	90W	550-1600	£94.99	£113.99
CSS400C	90W	550-1600	£119.98	£143.98

Clarke 12" DOVETAIL JIG

• Simple, easy to set up & use for producing a variety of joints • Cuts work pieces with a thickness of 8-32mm • Includes a 1/2" comb template guide & holes for bench mounting

£54.99 EXC.VAT £65.99 INC.VAT

CDTJ12

Clarke MITRE SAWS

• For fast, accurate cross, bevel & mitre cutting in most hard & soft woods • 1800W motor • Laser guide

FROM ONLY £114.99 EXC.VAT £137.99 INC.VAT

CMS250S

MODEL	BLADE DIA/BORE (mm)	MAX CUT DEPTH/ CROSS	EXC.VAT	INC.VAT
CMS250S	250/30	85/250	£114.99	£137.99
C2MS210MP	216/30	65/305	£139.98	£167.98
C2MS250MP	255/30	90/305	£179.00	£214.80

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RECORD POWER

A return to UK manufacturing

Enjoying a long and impressive history of UK manufacture spanning some 100 years, **Record Power** continues to develop, expand and streamline its UK-based operation, bringing to market a wide range of tools and machines that are sold all over the world

As most woodworkers and woodturners know, Record Power is a world-renowned UK brand, with historic roots planted firmly in Sheffield. In recent years, the company has focused on developing and expanding its UK-based manufacturing capacity, beginning with the acquisition of the CamVac brand of dust extraction machines back in 2014. Since taking on CamVac, Record has improved and streamlined its manufacturing processes as well as ramping up production capacity, resulting in the worldwide sale of these machines in their many thousands.

Expanded production department

Recent significant investment in 2020 facilitated further expansion of the production department – now the largest in the company – which afforded Record the ability to competitively manufacture

Heating a spindle roughing gouge prior to shaping

A spindle roughing gouge ready for pressing into shape


Rigorous quality control procedures are followed


Tools are tested to ensure the correct levels of hardness


All bowl gouges are ground by hand


Polishing a spindle gouge flute


Polishing the outside blade profile


Spindle gouges ready to be fitted with handles

a much wider range of products with greater control in terms of quality and cost. The company's range of modern CNC machinery, semi-automatic finishing technology, grinding stations, plasma cutting machinery and more, allows for increased flexibility and capacity when it comes to producing a wide range of products to exact specifications. All of this is meaningless, however, without the right people and Record is proud to employ some exceptionally talented engineers, designers and operators, all of whom help to turn their ambitious plans into reality.

New turning tool range

Record is also proud to now feature the prestigious 'Made in Sheffield' mark across its range of turning tools as well as CamVac dust extractors, and look forward to applying it to a growing number of lines in the future.

Turning tools are the latest product to be made by Record in its own UK-based factory. Despite many years of first-hand experience making turning tools in Meadow Street, Sheffield, as part of the old group of companies prior to 2003, this range has involved several years of development before reaching the market.

For what is such a simple looking tool, there is a lot to consider. Record began by reviewing the strengths and weaknesses of the original Sheffield-made range and identified areas that could be improved. These were then benchmarked against those from other UK manufacturers, while thoroughly assessing the strengths and weaknesses of their offerings.

A rack of turning tools, ready for packaging and sending to stockists around the world


Modern CNC machining in progress

This led to an initial set of prototypes, which were then rolled out to be tested in a number of different countries by local professional woodturners, keen woodturning enthusiasts, as well as experienced specialist woodturning retailers. After many months of assessing various handle shapes, sizes and tool profiles, the designs that met a key set of objectives were finally unveiled. The requirements included full-size tools, which were professionally specified while still being safe and simple to use, even for first time turners. Record's tools feature generously-sized beech handles, which feel good in the hand while offering plenty of fine control as well as strong support for heavy cuts. The fluted tools have been refined to afford the best clearance for smooth, easy cuts, and all profiles are chosen as the safest general-purpose grind for any level of user, with maximum ease of resharpening.

Meeting the brief

However good the quality or potential of any turning tool, it will only operate at its best when properly sharpened – an area that many users find the most difficult to master. With this in mind, these new tools are manufactured according to fully professional specifications and sizes – including having the same steel and heat treatment as most of the UK competition. The profiles are simple to use, sharpen straight out of the wallet and a series of online videos show how to do this as simply and cost effectively as possible – freehand with a basic grinder.

Record's priority was to provide the best quality, performance and value possible within the normal price range of the UK-made market, while ensuring the tools were as safe to use and easy to resharpen from new as possible. They believe that brief has been met.

An increase in UK manufacturing

The company's increase in UK manufacturing is part of a long-term initiative to expand the portfolio of unique and exclusive products, which now includes turning tools, CamVac extractors, the SC series of four high-quality woodturning chucks and jaws, as well as the highly regarded range of Coronet lathes, comprising the Herald, Envoy and Regent. This range is now exported to over 30 countries, allowing Record to expand significantly across the globe while also creating local jobs and making a positive contribution to the UK's manufacturing industry.

RECORD POWER:
Over 100 years of experience, knowledge, support & experience

Record Power has a long and impressive history. Established in Sheffield, the heart of the UK's steel industry, and stretching back over 100 years, the company has an enviable reputation for creating high quality tools through many years of experience and unparalleled knowledge in manufacturing and design.

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Plasma cutting a CamVac extractor drum


MIG welding in progress


Preparing CamVac motors for installation

A PLATFORM FOR PERFORMANCE

Undertaking a rather unusual commission, **Shaun Newman** sets about making a 'cello podium', based on the original 'Klang Podium'

One of the best things about making musical instruments is the people you meet, and the understanding you can gain about what they do and how they do it. I am of course speaking both of musicians and of the craftspeople who support them. When I was asked to consider a commission to make a 'cello podium', my first reaction was: 'A cello what!!??'

It was soon explained to me that even though a cello has a very powerful 'voice', when it's played alongside, say, a piano with its volume, or a clarinet with its penetration, the cello needs a little help to hold its own. This is where a podium comes in. It is a platform upon which the cellist plays the instrument and the objective is to enhance the sound and help distribute it.

It seems there are at least two types of podium. The first is a heavy and large platform made using ¾in ply with a length of some 6ft and a width of 3ft. It was designed by Louis Condax in the 1960s for the Eastman School of Music in Rochester, New York. There is a soundboard beneath it and it's really designed to remain in one place – for example, the school's concert hall, where it would be regularly used. It has strong grab handles at either end and with its hardwood frame, thick platform and soundbox, must be most unwieldy. The second type, the 'Klang Podium' ('sound podium' in English) was patented by Reimund Korupp in 1996. Made in Germany, the design makes the podium portable, in that it folds in half. It has no soundboard and is generally of lighter construction.

While considering how I would set about undertaking the task, I decided to try to combine both designs into my own by having a portable podium with a soundbox in the front half. The line of the Klang Podium is very pleasing, so in the words of Tom Lehrer: 'Don't forget why God gave you eyes – plagiarise!' So I copied it.

The construction

And so to work. I thought that the top surface of the podium should be made from ½in ply, as it would help to make the whole thing reasonably light yet still strong, but most of all, resonant. The underside frame could be made from 95 × 19mm pine. The ply sheet is cut into the two halves of the podium, one measuring 690 × 810mm, and the second 650 × 810mm. The shorter length of one of the halves will belong to the front part and is reduced in size so that it can fit snugly into the rear half once folded. The two angles towards the front of the structure are taken from the corners of the podium with a jigsaw. To help neaten the edges of the ply, I also made some flat moulding, which helped to cover the rather ugly edges (**photo 1**).

Once the two halves of the platform were edged, the hinges could be fitted. I decided to use strap hinges as ordinary butt hinges would possibly not hold very well as the screws would be too near the edges of the boards (**photo 2**). One other consideration was to attach a low rail around part of the rear half of the structure to prevent the performer's chair from accidentally slipping off (**photo 3**) and thus avoiding an undignified image…

The rails that make up the underframe were first cut out with a jigsaw, and a simple flute was cut along the bottom edge of each outfacing side, which adds a touch of elegance (**photo 4**).

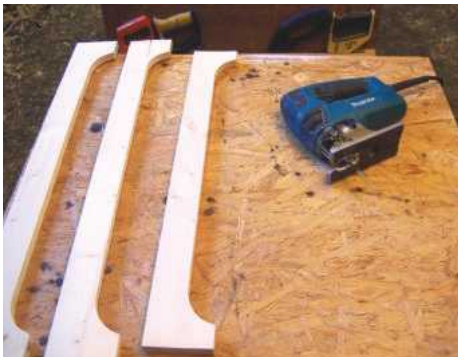
The 'f' holes & sound post

As the podium is raised from the ground and curves are cut into the lower edges of the support rails, there is ample opportunity for the sound to be well distributed. However, as I intended to attach a sealed soundbox to the underside

1 The edges of the soundboard are squared and faced with flat moulding

2 The platform halves are hinged

3 The rear safety rail is fitted



4 The support rails are cut and fluted

5 The 'f' holes are marked out

6 Each 'f' hole end is started with a different sized bit

Photograph courtesy of Phil Smith

7 The 'f' holes are cut out with a jigsaw

8 The soundpost in place

9 The soundboard edges are squared

of the front half of the podium, it was necessary to cut two 'f' holes above where the soundbox would be. These would be in visual harmony with the sound holes in the cello itself. There are many copyright free images available online showing sound holes, and the design I chose was rather stylised, but shaped in such a way that would make it relatively easy to cut them out with a jigsaw. Very fine 'f' holes in ½in ply would prove difficult even for a fine blade.

The design was first drawn onto a card template and then transferred to the board. I placed a strip of masking tape along the middle of the board, which allowed me to draw a centreline that would be easy to remove later on and which meant I could align the exact position of the 'f' holes before cutting them out (**photo 5**).

Prior to using the jigsaw, holes needed to be cut at each end of both 'f' shapes. The two nearer the player are slightly smaller than those at the further end. They were cut with my 50-year-old Stanley brace using a 16mm and an 18mm 'Clico' saw-toothed centre bit (**photo 6**). The remainder is then easily removed with the jigsaw (**photo 7**).

10 The soundboard is joined in a wedge and lace jig

Before making up the soundbox and attaching the support frame to the underside of the front half of the podium, I needed to think about creating a 'sound post'. In many bowed instruments, a sound post is placed between the back and front on the inside. This helps to transfer the sound throughout the whole instrument and adds to the structural strength. In this case it meant putting a small 12mm dowel into the centre of where the soundbox would be positioned. It was glued into a 12mm hole drilled to a depth of around 6mm (**photo 8**). The sound post itself was made to protrude 1mm higher than the depth of the soundbox when it was fitted, so that when the box was glued on, the post would push the thin spruce of the soundboard outwards slightly, ensuring there would not be any buzzing as each note is played. Later, I would increase that push with an internal cleat on the underside of the soundboard. While sketching out the position of both the post and soundbox, there was the chance to see exactly where the platform support rails should be fitted.

The soundbox

To generate as good a sound as possible, it's essential to use high quality spruce for the soundboard. My experience in making classical guitars led me to consider fine grade Engelmann spruce from North America. It is very slow growing, dense, straight-grained and highly resonant. I ordered a set of 'book matched' pieces, which came in two sheets, each measuring 600 × 230mm and around 5mm thick. The first task was to join the boards into a single piece. This requires a very straight butt join at right angles along the entire length of the edges to be joined. The two boards to be edged are cramped to the bench with a flat spacer below them holding the two edges 2mm from the surface of the bench as these are trued. A sharp shoulder plane or similar can be used to get the edges near to ready, but to ensure an exact join I use an old 600mm spirit level with 120 grit abrasive attached to either edge with double-sided tape. This is run along the edges of the boards backwards and forwards until the edges are perfectly square and straight (**photo 9**). If pencil lines are drawn along the edges to be trued, you know that the boards are ready when all of the lines disappear.

The two parts can then be joined. I used my old 'wedge and lace' jig (**photo 10**), but there are many other ways of joining the boards, not least strong tape and weights. Before it can be fitted to the frame for attachment to the underside of the podium, the soundboard must be strengthened. First a strip of cross-banded spruce, 2mm thick and 15mm wide, is attached into the outside of the board along its centreline. The cross-banding prevents the join from springing apart from the pressure of the sound post when the soundbox has been glued into position. The frame is then attached to the soundboard (**photo 11**) and on the inside a cleat is fitted where the top of the sound post will make contact. I made the cleat from 1.5mm model maker's ply (**photo 12**). This thickness, added to the 1mm protrusion of the sound post from the underside of the platform, means the soundboard will have a 2.5mm 'lift' at its centre point.

When these tasks have been completed, the soundbox can be attached to the underside of the front half of the podium using 'Titebond' or similar. I used heavy weights all around the edges of the sound box to attach it. At this point, I decided to strengthen the feet of the support rails with small blocks, which would prevent any breakage across the grain (**photo 13**).

11 The soundboard is cramped onto a frame – note the centre strengthening strip

12 The cleat that will make contact with the soundpost

13 The legs on the support rails are strengthened

14 The folded podium held closed with two viola pegs

15 The fully extended podium ready for use

16 The podium as seen from the carrying position

Folding & carrying the podium

To ensure a 'soft landing' as the two halves of the podium are closed together, I put three felt pads along the back inside edge of the rear part of the platform. I then decided to use a brass pull handle to lift the podium, but what followed was the challenge of holding the two halves together while it was being transported. I felt it was in keeping to use a couple of old viola pegs that would pass through the back anti-slip rail and into the front support rail of the front half of the structure. To hold them in place, I screwed two brass glass plates on the inside edge of the back rail (**photo 14**), which worked excellently.

One further requirement was the addition of a small housing into which the cello spike fits, which prevents it from slipping forward during playing. Some cellists use a small wooden cup attached to cords, which are in turn attached to their chair legs and set at the correct distance. For this project, a small 5mm deep hole drilled into the platform, just above where the sound post would be, completed the job (**photo 15**).

The finish

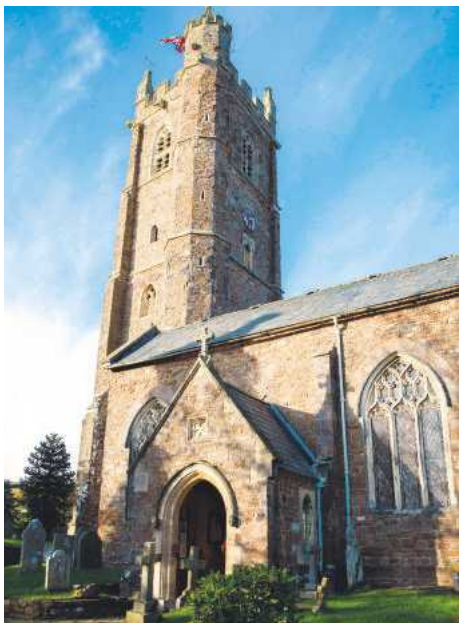
I felt it was appropriate to try to make the podium blend, at least approximately, with the cello in terms of colour and overall appearance, so I stained the whole thing top to bottom with Liberon water-based stain in Antique Pine. This helped to give the podium an aged look, and when a satin acrylic resin was applied, the finished article glowed. The strap hinges stood out a little, as they were steel, so I sprayed them with gold paint and everything blended in splendidly. When folded and on edge, the podium takes up little space, which is ideal for the owner (**photo 16**).

The moment of truth

And so the first test came in St. Disen's church in the village of Bradninch, Mid-Devon (**photo 17**) where the busy performer Hilary Boxer gave a wonderful recital of two complete Bach cello suites on Remembrance Sunday 2019. The first was Suite No.1 in G major, and the second Suite No.4 in Eb (**photo 18**). It is widely recognised that the six Bach cello suites are perhaps the most perfectly written pieces for the instrument ever. The programme began with the reading of a short World War I poem and this was immediately followed by the first cello suite. After this Hilary played the 'Ashokan Farewell', a deeply moving piece 'coming out of a sense of loss and longing' according to Jay Ungar, the composer. The melody was used in an American miniseries about the civil war, and although Ashoka is a region of New York State, the name also means 'no regrets' or 'no sorrows' in Sanskrit. So, perhaps also representing a 'farewell with no regrets'.

Next came a further reading followed by the Eb cello suite. Finally, Hilary played the famous 'Song of the Birds', a traditional Catalan Folk song arranged by the great Pablo Casals. Once again, deeply moving and speaking of peace.

The whole acoustic rang around the beautiful old church and the sound was truly enchanting. Each piece and part of both suites was played with great sensitivity and exactly in character with the intention of the music and the occasion. A truly memorable recital for everyone in the very well attended church, and a fundraiser for Help for Heroes.



17 St. Disen's church, Bradninch, Mid-Devon

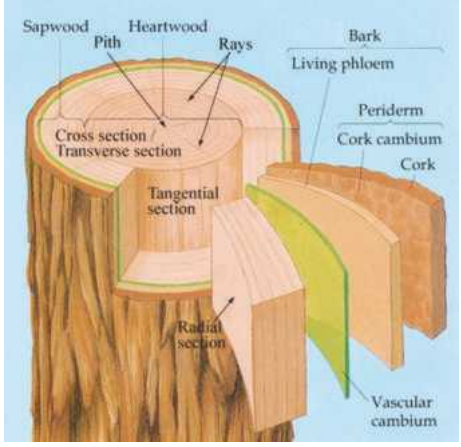
18 The poster advertising the event

19 Hilary carrying the podium after the concert

WOODWORKER'S ENCYCLOPAEDIA PART 25

As **Peter Bishop** reaches the halfway point in this series, he decides it's probably time to start covering a few key headings in detail

I reckon we're about smack on halfway through this directory now, so it's probably appropriate to cover a few key headings in detail. Moisture in wood is a subject dear to my heart, so I'm afraid you're going to get both barrels!



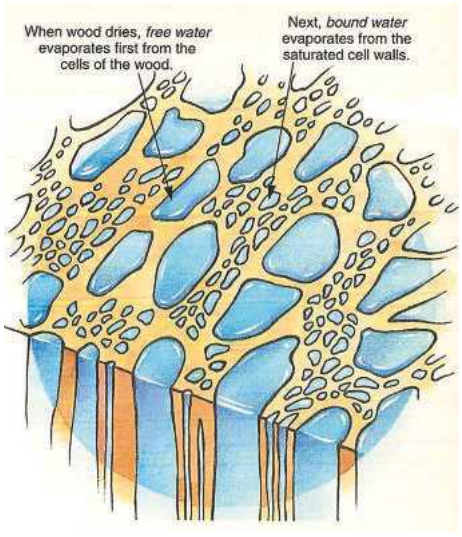
The structure of wood

Moisture content – the effects of

Now here we have a subject that we'd all best be interested in and understand. Moisture of some form or other is in just about everything and wood is no exception. When we discuss 'moisture content' (MC), we're talking about how much is in each piece as a percentage of the whole. When a tree is cut down it is more than possible that the moisture content of the planks produced may be over 100%. That means that if a plank weighs, say, 50kg, then over half of that, at least 25kg, will be water. That's quite astonishing and it's not unheard of to have even more than this!

Earlier on in the directory we discussed how moisture is held in wood within the cell cavities and also in the cell walls: free and bound moisture. Now consider that 50kg plank, and if everything is set up to dry correctly, it will reasonably quickly lose the free moisture. It'll end up at fibre saturation point (FSP), which was also discussed earlier. This is a point at which it is only the bound moisture left in the cell walls. The moisture content of our plank of wood, at FSP, will now be around 30%, give or take a bit. So instead of weighing 50kg at 100%+ MC it now weighs around 32.5kg because 70% of the moisture has dried off. Quite a difference. Now imagine the wood structure with little or no moisture in the cell cavities but plenty in the cell walls – the bound moisture. Up until now, the removal of the free moisture will have had little effect on the plank with regard to shrinkage, but that changes as soon as we start to seriously remove the bound moisture.

There are calculations available that will tell us how much shrinkage to expect, below FSP, on the tangential and radial planes of different timbers.



Bound and free moisture in wood

The moisture content of a piece of timber is something many of us take for granted

A neat and organised wood drying rack

Small firewood logs drying on-site

A point to note here is that wood does not generally shrink in its length, but only in its width or thickness. This is all to do with the cell structure; these don't shrink in their length but will all round their thickness. So at this point, we've 'air-dried' our plank of wood to around 30% MC fairly quickly. If we now leave it to dry further, removing some of the bound moisture will take time. There is an old adage, which is more or less correct: 'an inch per year'. If you follow this, 1in thick material will take a year to air dry and 2in stuff two years and so on. However, air drying, here in the UK, will only bring the MC down to an average of 18% throughout the year – less in a dry summer, more in a damp winter. At this level our plank now weighs about 29.5kg. Considering it started out at 50kg, that's quite a loss!

We now need to understand that our plank may be 'dry' but not dry enough to use its wood for internal use. In our modern, highly efficient, centrally heated homes and offices, the average moisture content is around 10% or less. If we make something from air-dried material and put it into this environment, it will dry further and shrink. This is when those cracks appear in a once perfect table top we made in the workshop a couple of months ago! Further drying and the effects of this through shrinkage, movement and distortion, can ruin our work.

Because we can only dry stuff down to around 18% naturally, we'll need to employ artificial methods to get down to the desired 10%. There are many ways this can be achieved by kiln or vacuum drying. Once the target MC has been reached, our original plank, which once weighed over 50kg, will now weigh around 27.5kg. The weight is not important but the MC is. Get it right and your projects will remain pretty stable in their designated environment. It must be pointed out that wood is like a sponge; it gives off moisture but also takes it up. So if you put that prized piece of furniture out in an old, damp shed, it will swell and distort. Just another of those many things we woodworkers have to be aware of!

A large wood-drying kiln, used for maple

Moisture content – how to calculate it

From the information above we know what impact the moisture in wood has and the different levels to which it will dry. Let's now assume we have some kiln-dried stuff and want to know if it's down to a low enough MC. To work this out, from an individual plank or stack of wood, we need to take a sample or samples. Assume we're working with one plank. Our sample can be a thin sliver cut across the grain, but not at the end of the plank. If we cut a piece off the end, it's likely to be drier than a sliver cut out of the middle. Once we have the sample in hand, we weigh it. Let's assume this small piece weighs in at a couple of hundred grams. We must note this down.

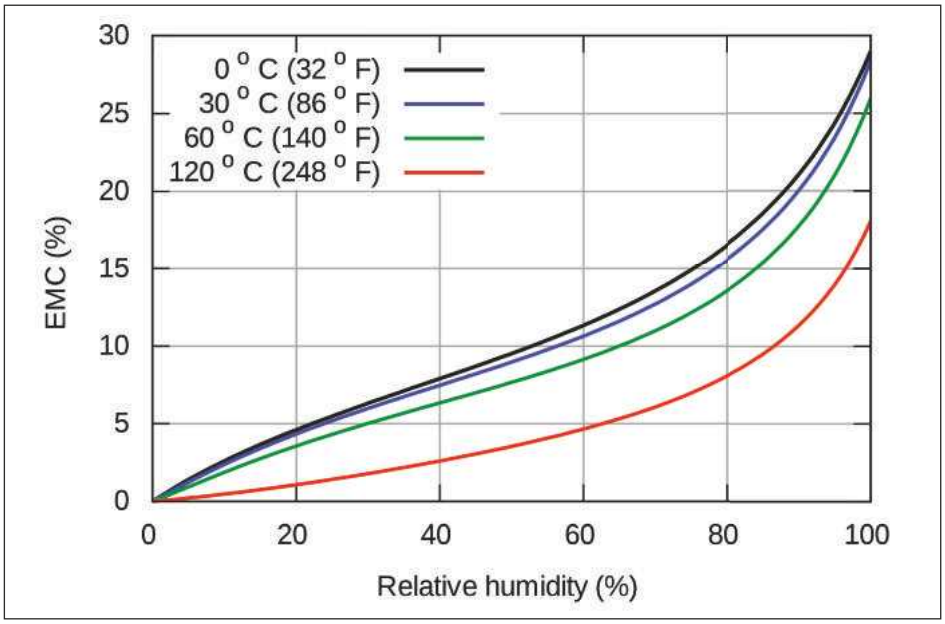
All the moisture contained within the sample now needs to be removed. In commercial premises, they'll have special drying ovens for this but we can do it at home. Simply put the sample in a standard oven and 'cook' it. If you weigh it regularly, eventually the weight of the sample will stop reducing. This will be the 'dry' weight of our piece – note it down again. Let's assume that dry weight is 180g. We can now calculate the moisture content of the sample using the following formula:

Original weight – dry weight ÷ by dry weight × 100 = the moisture content as a %

So, from the example above, we have the original weight of 200g – the dry weight of 180g ÷ by 180 × 100, which equals 11.1%

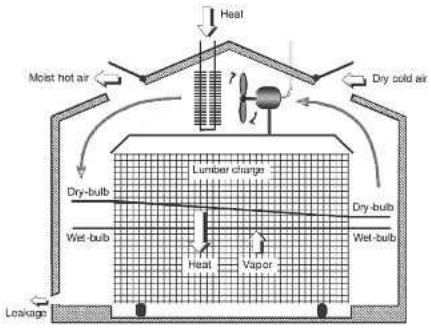
Not quite dry enough to go indoors but probably close enough!

This is just one simple example of how we can work out the MC of individual pieces. If we're talking about lots of planks or stacks of wood, then you can't take a sliver off each one. Now the law of averages kicks in. You'll decide how many samples to take, work out what their MC is and average it. With this figure in hand, you might then say that the particular stack of timber from which this came has an MC of 'x'. This is how it works with large, commercial consignments. The basic calculation we've employed here can also be used to monitor the drying process of large consignments in



Equilibrium moisture content of wood versus humidity and temperature, according to the Hailwood-Horrobin equation

Air- and kiln-dried timber at Whitney Sawmills



Basic components of kiln lumber drying

Air-drying timber at home

a sawmill with drying facilities. There are drying schedules available for all the different types of wood. These schedules will tell the operator how much heat and steam is required to remove the moisture. I could write a whole book on this subject, but I won't expound on it anymore!

The chances are that those few planks of kiln-dried material you buy may well have varying moisture contents. When making something, the best way to deal with these variations is to try and bring each piece into equilibrium with the environment it will eventually be in. I do this by cutting out my nominal sections and storing these sawn pieces inside my home for several weeks. Remember, timber is like a sponge so it will continue to give up moisture if stored inside. It's all connected to relative humidity, which we'll deal with much later on.

Moisture gradient

There is likely to be moisture graduation in each individual plank of timber. What that means is that wood may appear to be dry on the outside

Wood in a drying kiln

Beech air-drying in an open-sided storage shed

but may still be wet in the middle. If it's left long enough, this gradient will minimise as the inner moisture migrates outwards. Our experience of this will be cutting what we think is dry, thick stuff and finding a damp or wet middle.

Moisture meters

These are handy gadgets to have in the workshop but should not be considered highly accurate. Moisture meters will work on the principle of electrical resistance. Mains or battery-powered, you'll drive a couple of pointed electrodes into your sample, never into the end-grain, and press the button. The meter will then measure the resistance and display it. Some meters will have a chart showing different values for different timbers, which then give an indication of the MC of that specie. If you think about the moisture gradient mentioned above, you can see that how deep the probes go will affect the result. So, at the end of the day, don't take moisture meter readings as the gospel truth!

Drying wood in a kiln

Moisture escaping from kilns as the timber is heated

NEXT MONTH

In part 26 of this series, Peter returns to the usual format and continues on into the Ms, discussing monoculture, mortise locks and moulding planes, before starting on the Ns

There is a wide range of moisture meters available

A pinless moisture meter in use

Ernie Conover explaining the value of having a moisture meter in your workshop

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Dennis Keeling shows you how to make this simple step-stool using a CNC router

In this series, I will take you through the design and machining of simple projects using a CNC router. CNC routers are becoming widely used by both furniture makers and home enthusiasts. In this project, we will design and make a simple step-stool using this method. The mortise & tenon joints will be machined using a recessed corner technique instead of hand finishing the corners.

The stool is made from 18mm birch ply – a resin-coated birch shuttering variety, which has a smooth black resin surface. This is single-sided profile machining with a 6mm straight edge router.

The design, however, is a little more complicated to set up, due to the fact that all joints have to fit accurately.

CNC STOOL IN **30 MINS** >>>

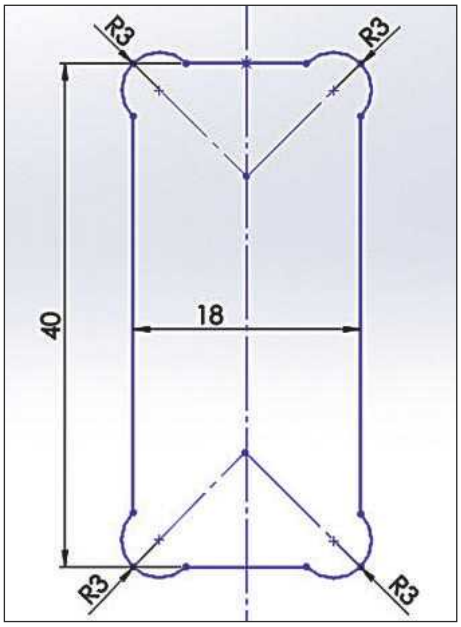
Design in CAD

The basic mortise joint (40 × 18mm) has 6mm diameter fillets set into each corner to match the size of the router cutter (**photo 2**). This is not a traditional fillet that is a tangent to both sides; it is a recessed fillet centred on a 45° construction line and coincident with the join of the two sides. In this way the corners do not have to be cleaned up and the two crescent shapes left in the machining are hardly noticeable.

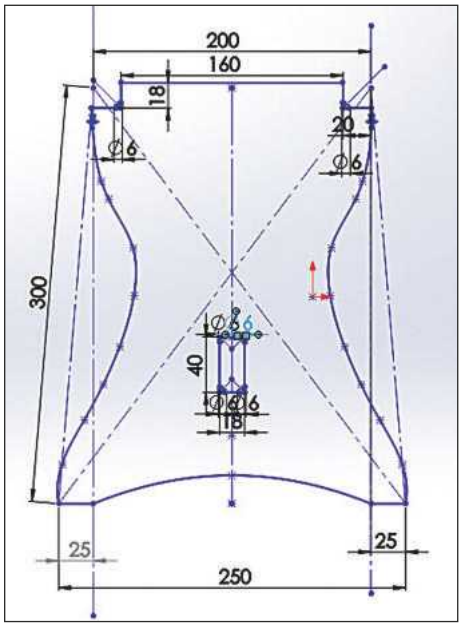
We are using a tungsten-tipped woodworking router cutter for this project (**photo 1**). The 18mm material thickness requires a tall router – 6mm or ¼in is the smallest tungsten-tipped router available that will cut to 18mm in depth.

The side has been constructed to have the same width at its base as the top of the stool (**photo 3**). This is a medium step-stool so a step

1 You will need to use a 6 × 18.5mm straight mill router cutter



2 The mortise is created in CAD



3 The side is developed...

height of 300mm has been used. This can be adjusted for taller stools. The slot in the middle of the side accepts the cross-member mortise. The top edge of the side panel becomes a mortise in its own right into the top of the stool. All of the internal corners have the 5mm recessed fillet.

The overall size of the top is 350 × 250mm. This isn't a very comfortable sitting size but is ideal as a step-stool to retrieve something out of a tall cupboard, for example (**photo 4**).

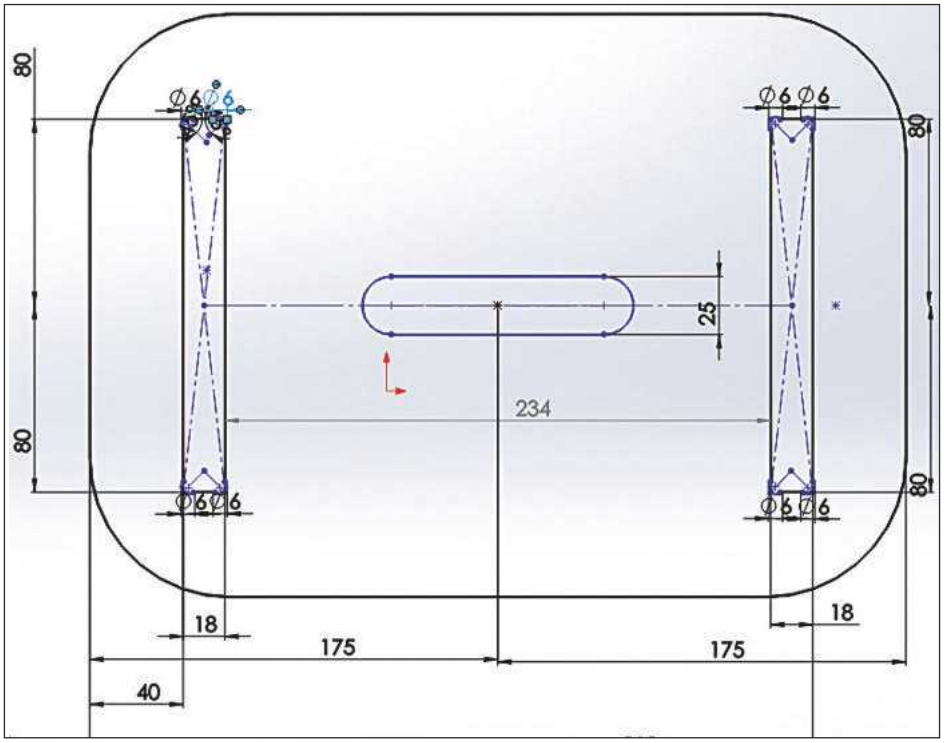
The slots in the top are now designed. The two slots either side have the 5mm recessed fillets for the side mortise joint. The centre hand slot does not have any recessed fillets but a simple 9mm tangent fillet, which makes it easier to hold. Finally, the cross-member and the peg are designed, based on the dimensions set out in the side and the top. The stool is assembled in the CAD system to ensure all the joints work correctly. There are always some that aren't quite right, thanks to operator error! The individual components are saved in dxf format for transferring to the CAM system (**photo 5**).

Configuring the CAM software

The components are imported into the CAM system (**photo 6**). This then translates the CAD design into instructions for the CNC router, in order to machine the item.

I am using the popular ArtCAM software from UK-based DelCAM, which is very powerful and user-friendly. The stool nesting has been designed to fit into a 600 × 600mm size sheet of 18mm plywood – the size of my CNC baseboard. The toolpaths are straightforward: an internal profile toolpath to cut out the slots, and an external profile toolpath to cut out the components. All the cutting will be carried out with the one 6 × 18.5mm straight mill router cutter. The CAM system has specified 'climb' for the cutter to give a much cleaner cut on the plywood. The outer toolpath contains 'bridges' to ensure the components don't move on the final pass.

My CNC is happy to cut at 15,000rpm with a feed rate of between 600mm/min (internal) and 1,000mm/min (outside) profiles for this 6mm router. I am using a step down of 5mm. These settings will depend on the capabilities of your machine. If the router cutter is running too fast or the feed rate is set too slow, it could burn the plywood. The toolpaths are saved as separate files for flexibility; they can be saved in a single file as there is no tool change.

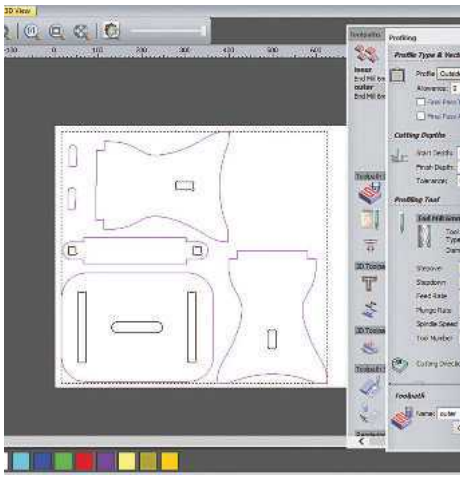


4 ... followed by the top

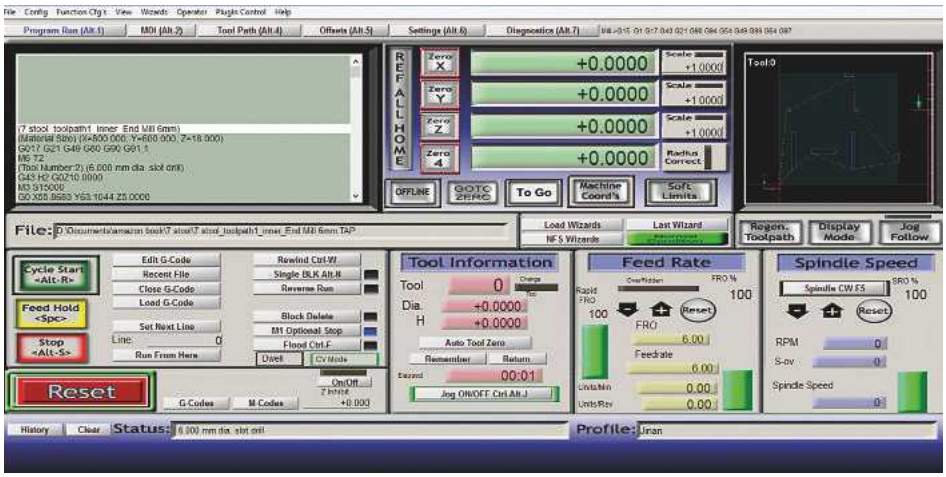
Machining the stool

The toolpaths are loaded into the CNC machine control software (**photo 7**). My CNC uses the

5 The completed design rendered in CAD



6 The design is transferred to the CAM system



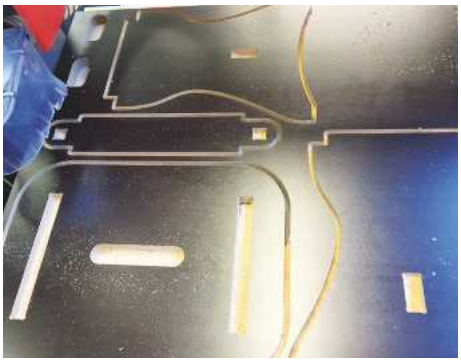
7 The file is loaded into Mach3

Mach3 software, which is a popular universal control system. The material is then loaded onto the CNC bed. In my case I have a vacuum bed, so I use a piece of sacrificial 13mm MDF sheet under the plywood; this enables my router to overcut the depth by, say, 1mm, to ensure a clean cut on the underside. The plywood for machining is then fitted to the vacuum table. There is no need to glue it down as the pieces are large enough to stay put when machining.

The 6mm straight router is inserted in the collet. With the vacuum turned on, the top of the lower left corner of the material to be machined is set up as the zero axis position.

I use a remote controller, which allows me the freedom to lower the router bit until it just touches the top of the surface material. The slots are machined first followed by the outside profiles. Bridges have been added to locate the outside profiles from moving on the last pass (**photo 9**).

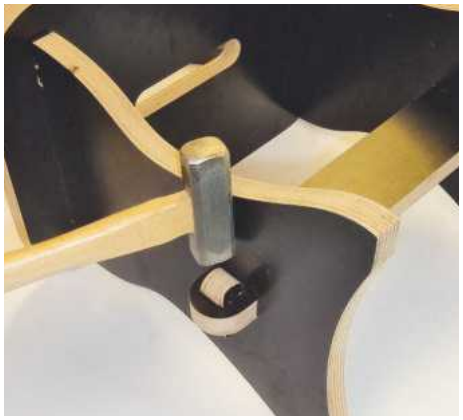
8 The start-point is zeroed using a remote controller



9 The profiles are machined by the CNC

Assembly

The side wedges for the tenons are tapped into place to secure the sides (**photo 10**). The wedges for the top are cut from ebony to match the black surface finish (**photo 11**). The ebony wedges are then inserted in the top tenon to pinch it tight in the mortise; the recessed fillets hardly show on the assembled stool. The project is now finished and should look something like this (**photo 12**).



10 The tenons are tapped into position

11 The wedges are cut ready

12 The finished step-stool should look something like this

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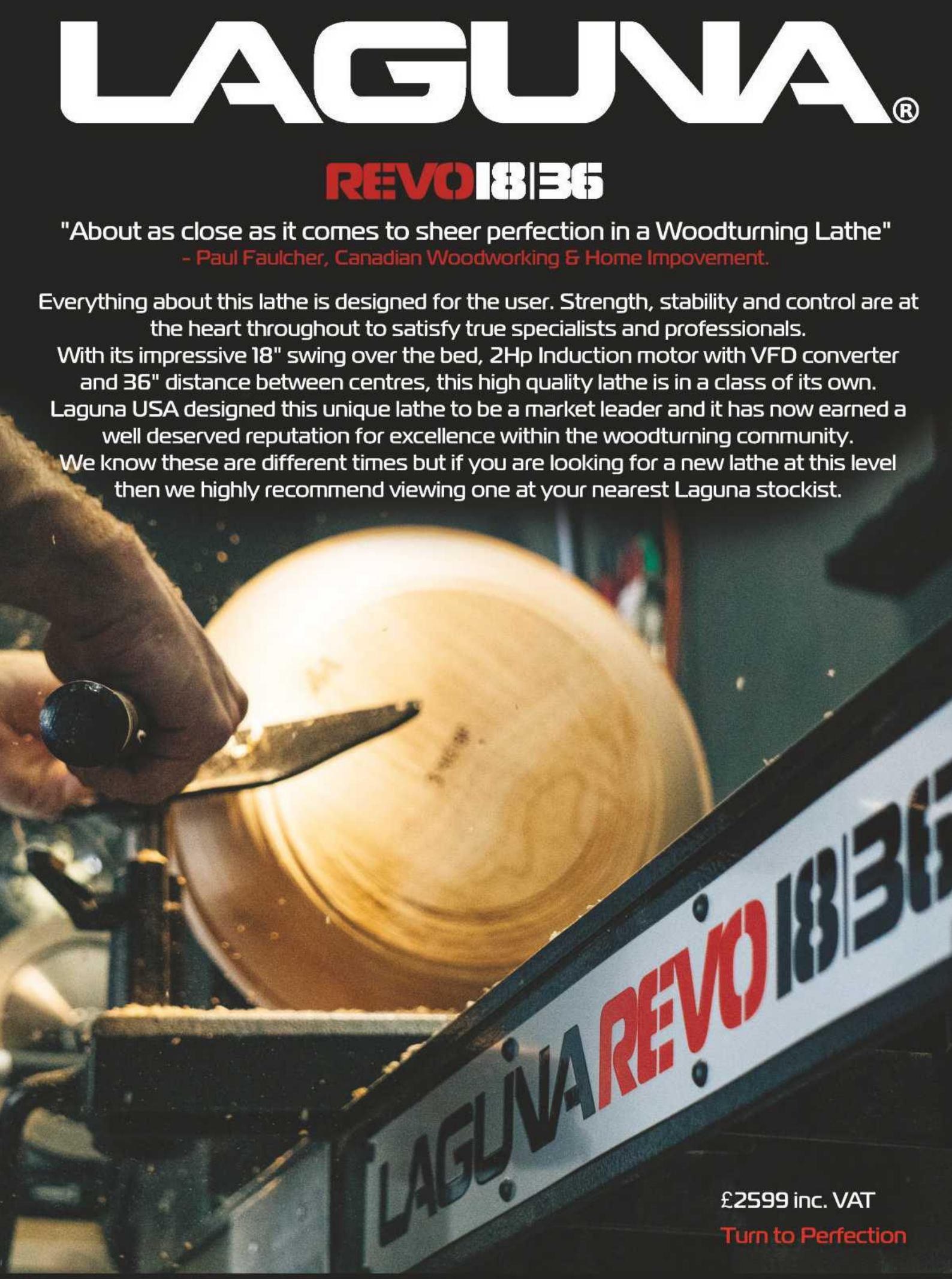

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50 SHADES OF GREY
& a few other colours

The structure of graphite consists of planar layers of carbon atoms, which form a hexagonal mesh pattern

With over 14 billion pencils made worldwide each year, and a history dating back to the 15th century, **Paul Greer** explores this fascinating subject in greater detail

The word 'pencil' derives from the Latin 'penicillus', meaning 'little tail', and originally referred to a fine brush of camel hair. *The Encyclopedia Britannica* defines it as 'a slender rod of a solid marking substance, such as graphite, enclosed in a cylinder of wood, metal or plastic used as an implement for writing, drawing or marking'.

Before pencils appeared, a good deal of writing was carried out using a stylus, often on parchment, or wax-coated tablets, frequently made of boxwood. The stylus itself was typically formed of metal, bone or ivory.

The modern pencil

The story of the modern pencil begins in 1564, when an unusually pure deposit of graphite was discovered in Borrowdale, in the English Lake District. The following year, the German-Swiss naturalist Conrad Gesner identified graphite (until then considered a form of lead) as a separate mineral. The earliest pencils were made by cutting a rod or strip of graphite, then wrapping it in twine to strengthen it, offering the user a comfortable handle.

Wax tablet and a Roman stylus

Putting the lead in your pencil – Conrad Gesner

For over 200 years, the Borrowdale mine supplied graphite to not only England, but the world. During this period it was called 'black lead', but in the late 18th century, it came to be recognised as a third natural form of carbon, coal and diamond being the others. Around this time, though, the Borrowdale mine became depleted, and this shortage of graphite meant that other materials would have to be mixed with it for pencil manufacture to continue.

Pencils & art

In the late 1830s, Lothar von Faber, by adding water to powdered graphite and clay, produced rods of uniform thickness. He also invented a machine which cut and grooved the pencil wood into which they could fit. This paved the way for pencils, which permitted variation of soft and hard marks, and dark and light, and in the course of the 19th century, artists, who had hitherto favoured charcoal, increasingly used these to make studies and preliminary sketches.

Four French artists and a Dutchman who were (or became) famous all used pencils, but in different ways. Ingres employed them for figure sketches and portrait studies; Delacroix for swift, flowing strokes which produced dramatic impacts; Degas, for fluid outlines and soft tonal shadings; Cezanne for landscape studies made in his sketch-books; and Van Gogh, who wielded a blunt carpenter's pencil to produce crude but unquestionably powerful effects.

The first pencil factory

In due course, graphite deposits were unearthed in other countries, including the USA, where pencils were first produced in 1812. There, Joseph Dixon made a half-cylinder of cedar wood, into which a graphite core was inserted, before a second half was glued on top. This produced a slim, easily-usable and uniform product. In 1861, Eberhard Faber established the first pencil factory in New York City, but trees of the preferred wood grew principally in southern states, and in time northern manufacturers relocated to places like Tennessee.

Pencils must be able to bear repeated sharpening, and without splintering. Cedar (and California incense cedar in particular), is well-suited to this, and the wood from which most are made. It has added appeal to the industry, as it doesn't warp, has a pleasant smell, and is widely available.

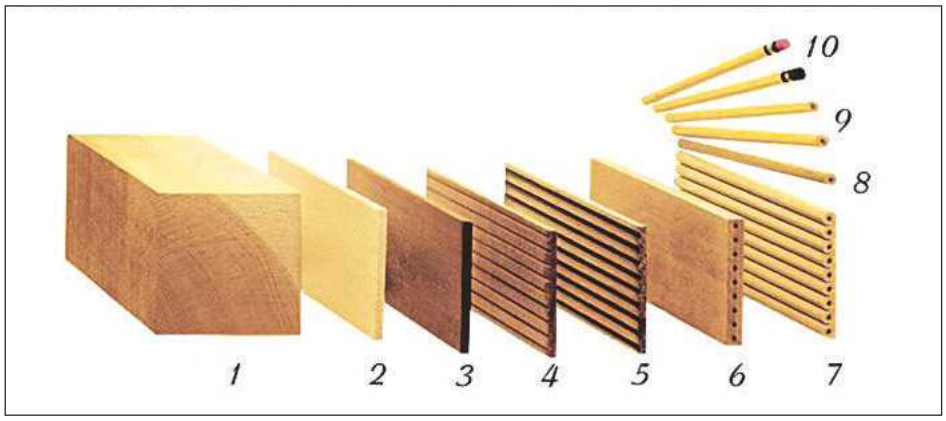
Once arrived at the pencil factory, already-treated wood is typically cut into slats roughly 7×3in and 2ft long. These are placed flat, and semi-circular grooves cut lengthwise into each. Half the slats are coated with glue, and identical cut graphite cylinders laid in the grooves. The remaining halves are placed on top, and squeezed by a hydraulic press until the glue is dry, when any surplus is removed. Each slat normally

'Dancer Adjusting Her Slipper' by Edgar Degas

Pencil drawing by Vincent Van Gogh – 'Peasant Digging up Potatoes' (1885)

In a pencil factory, the pastel cores are fragile and must be carefully placed into the cedar slats by hand

California cedar (*Calocedrus decurrens*) is also known by the common names incense cedar and California incense-cedar



The pencil making process in 10 steps

yields 6-9 pencils, which are trimmed to size, sanded, varnished or painted, and inspected by trained staff, who remove any sub-standard. Finally, a selection are sharpened and tested.

Scale and efficiency are the most striking aspects of pencil production. Machines perform most of the work, but humans are on hand at each stage, and normally play a role. The weight and quantity of the ingredients make the initial mixing of graphite with clay physically demanding. This heavily industrial environment is reflected in the slat-cutting areas, but succeeded by quieter yet amazingly rapid ones as, bit by bit, bare sticks of wood are transformed into functional and handsome writing implements.

Towards the end, very practised human eyes pick out any defects, and pluck the offending pencil from its fellows. Human hands test a selection of pencils to ensure good writing and drawing characteristics, but machines come into their own again by stressing the sharpened end to check the lead's breaking-point.

Inside the factory of General Pencil – one of the last remaining pencil factories in America. Here pencils are sharpened by rolling them across a high-speed sanding belt

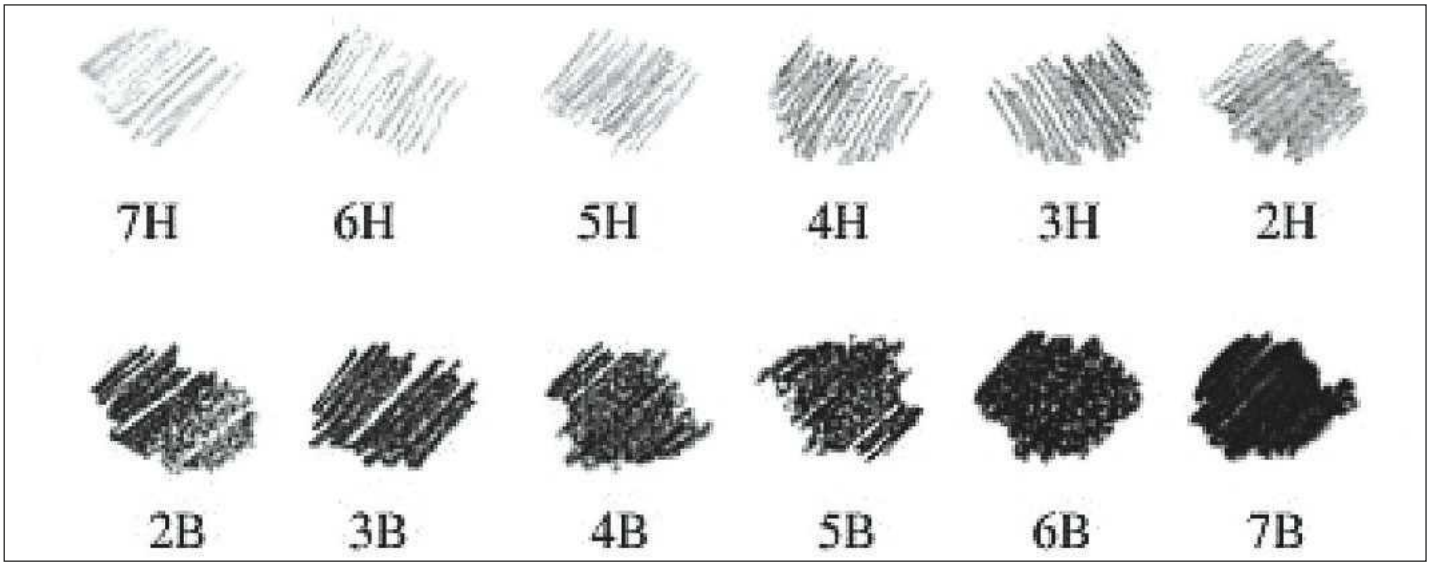
Pencils have three main uses: writing, artistic drawing and technical drawing ('draughting'). The USA has its own scale, but in the UK the letter 'H' relates to hardness, and 'B' to how black the lead is. Pencils marked 'HB' are the commonest for general use, such as in offices and schools, and represent a middle range in both hardness and blackness. Most brands offer a range from '1-9 H' and '1-9 B'.

The Derwent Pencil Museum, Keswick, Cumbria

The Derwent Pencil Museum

Pencils began to be made in 1832 at the current site of the Derwent Pencil Museum, in Keswick, Cumbria. The location is no coincidence, as nearby Southwaite is precisely where graphite was discovered more than four centuries ago. The first firm was Banks, Son and Co., whose pencils were made by hand in a small workshop; however, this process was soon industrialised, and the Banks concern became the Cumberland Pencil Company in 1916.

The Museum contains a replica of the Southwaite mine, and its displays include vintage pencil-making machinery. One of its biggest attractions (literally) is the largest



The pencil scale is a test of hardness that gives an impression as to how hard a certain coating is. The test is done by pressing a pencil with a certain hardness firmly on the surface at a 45° angle. The highest grade that does not permanently mark the surface is the score for the pencil scale

The Derwent Pencil Museum is home to one of the biggest colouring pencils in the world – the yellow pencil – which was completed on 28 May 2001; it's 7.91m long and weighs 446.36kg

Set of 72 Derwent Pastel Pencils in a wooden box

Staedtler carpenter's pencils

colouring pencil in the world, which measures an incredible 26ft!

The Derwent Company's own site moved to Workington, on the west coast, in 2007, but the Museum offers a full explanation of its production methods. Its shop also stocks the complete range of Derwent Fine Art Pencils, which are available in wooden presentation boxes containing from 12-72 colours.

The cosmetics industry

For many years, pencils have played an important role in the cosmetics industry, one of whose leading firms is 'Max Factor'. The company bears the name of the man who, in 1910, designed make-up specifically for screen actors in the emerging Hollywood film industry. So valued were his products that in 1928 it conferred on him a special Academy Award. Before long, however, Factor perceived among women in general a much larger potential market, although he'd have to wait until 1937, when available quantities and product range made this viable. Among the latter were wooden pencils for eye-lining.

Owing to reduced trade barriers, differences in the cost of raw materials, and comparatively cheap container ship transportation, the pencil industry is now internationally widespread.

Inside the pencil factory, the tipping machine adds metal ferrules and an eraser

FASCINATING FACTS

- Worldwide, over 14 BILLION pencils are made each year – that's two for every person on the planet!
- Most pencils made in the USA are yellow. The tradition began late in the 19th century, after an Austro-Hungarian company introduced one of this colour, said to be the world's most expensive
- Carpenter's pencils are square, oval, or triangular in cross-section, which ensures they don't roll off a surface
- The oldest surviving pencil is German, and dates from the 17th century. It's a prized item in the collection of the Faber-Castell company, a major pencil manufacturer

A carpenter's pencil in use

Lothar von Faber (1817–1896) of Faber-Castell Cosmetics

Max Factor, a visionary make-up artist, wig maker and inventor, was known for creating the signature looks of the era's most famous icons, such as Ava Gardner, Jean Harlow and Marlene Dietrich

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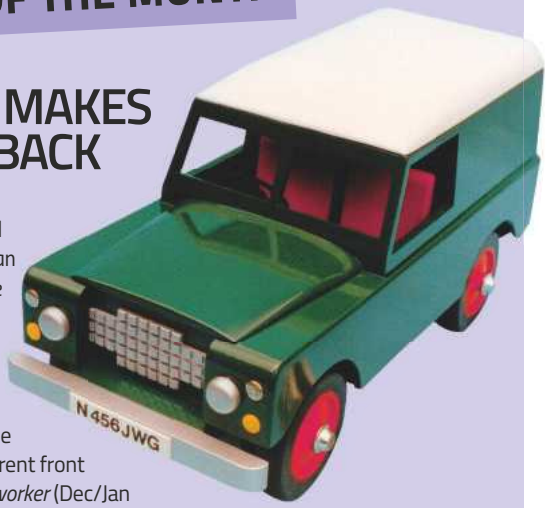
LETTERS

★LETTER OF THE MONTH

CLASSIC MAKES A COMEBACK

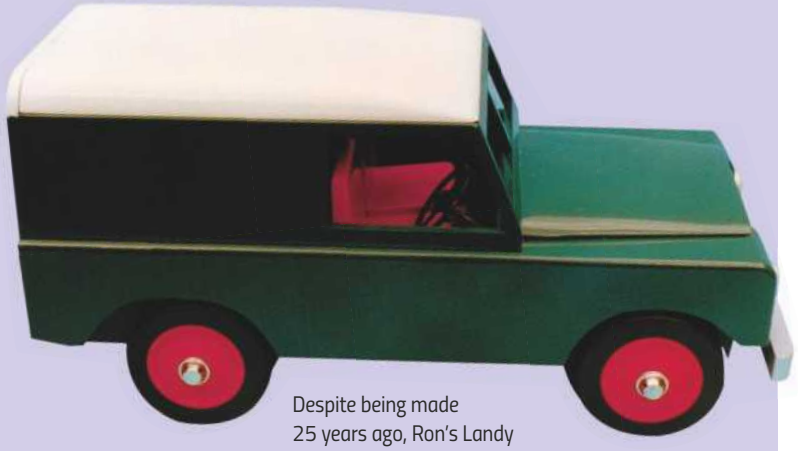
Ron's Land Rover build, which is based on Gordon Warr's plan in *Hobby's* magazine



Hi Tegan,
Imagine my surprise when I saw the current front cover of *The Woodworker* (Dec/Jan 2020) a couple of days ago. The photo of the Land Rover is virtually identical to one I made over 25 years ago for my, then, very young grandson Jonathan. The roof of the vehicle is removable and can be exchanged for a green one if required. I still have it tucked away, along with many other similar large wooden vehicles, in the hope that it may be of interest to his children in the future. He is now a second officer on Princess cruise ships, so sadly has no further use for them. I enclose some photos and a shot of the original *Hobby's* magazine from which I obtained the plans attributed to the late Gordon Warr – a wonderful gent who I met on several occasions while attending various woodworking shows over the years.

Gordon produced a number of large toy vehicle designs, published in *Hobby's*, and I've had the pleasure of making quite a few of them. I photographed each before placing into a box to be stored in the loft. These were a joy to make: everything fitted together properly once cut out as Gordon had taken care to ensure the dimensions were accurate.
Best regards, **Ron Brindle**

Hi Ron, thanks for your email – what a coincidence! Your version looks to be completed to a very high standard, and as you say, is very similar to the one featured in the 1955 issue – a slight variation on a theme, perhaps? Gordon used to write for this magazine too, and as you say, regularly attended many woodworking shows where he'd take pleasure in talking to readers and discussing projects.
Best wishes, **Tegan**



Despite being made 25 years ago, Ron's Landy looks as good as new!

Colin's homemade beeswax and mineral oil food-safe finish is ideal for items such as chopping boards

HOMEMADE FOOD-SAFE FINISH

Hi Tegan,
My latest DIY version of a product shown in the magazine relates to the Wax Oil Treatment from Brandon Bespoke (tested in the February 2021 issue). I doubt I am the only person who does this, but it's very easy to make a wax-oil paste using mineral oil and add some lumps of pure beeswax, both of which are easily obtained from online retailers.

Firstly, take a saucepan and into it place 150ml of mineral oil followed by a 30g piece of beeswax. Slowly heat the saucepan up until the beeswax begins to melt into the oil. Keep simmering on a low heat until all the beeswax has melted. Next, give the mixture a good stir and pour into a plastic container, and as the mixture cools, it will form a nice, soft paste.

Unless I have a specific need for other waxes or finishes, this is my go-to wax paste, especially where food is concerned – for example, wooden bowls, chopping boards, draining boards, etc.
With best regards, **Dr Colin R. Lloyd**

Hi Colin, thanks again for another handy DIY solution. Although a homemade variant can be made, for those wishing to purchase a ready-to-use product, it's worth noting that Brandon Bespoke pride themselves on producing the highest quality treatments, which are developed and perfected using recipes passed down through generations – see **www.brandonbespoke.co.uk**.
Best wishes, **Tegan**

THE SHIRE OAK

Dear Tegan,
How lovely to see the very old photo of the Shire Oak in Headingley, Leeds (*WW* February 2021 issue) within Paul Greer's 'our historic roots' article. It was a well-known landmark (near Headingley Cricket Ground and the famous steeple of St Michael's Church) until about 20 years ago when it was removed and replaced (almost exactly, necessarily and somewhat less attractively) by an air pollution monitoring station! The old tree, broken and obviously sickly as it was, nevertheless always produced wands of leaves each year.

Behind where the tram is shown now stands 'The Original Oak' pub: this seems to be an alternative name for such an important marker tree. More interesting is the name of the pub on the left: 'The Skyrack Inn'. This shows the Viking roots, common hereabouts, as it is a corruption of 'Skyr Ek or Aäck', meaning literally 'Shire Oak', with 'Skyr' being pronounced approximately as 'Shire' in modern Swedish and Norwegian, and 'Ek' is modern Swedish for oak (and hence 'acorn').
With best wishes,
Dr John P Dickinson

Shire Oak and tram, circa 1905

Apologies if you found the cutting list for the recent Land Rover build difficult to read. Going forward, we'll ensure that the background colour on text boxes is made lighter to avoid this

A DIFFICULT CONTRAST

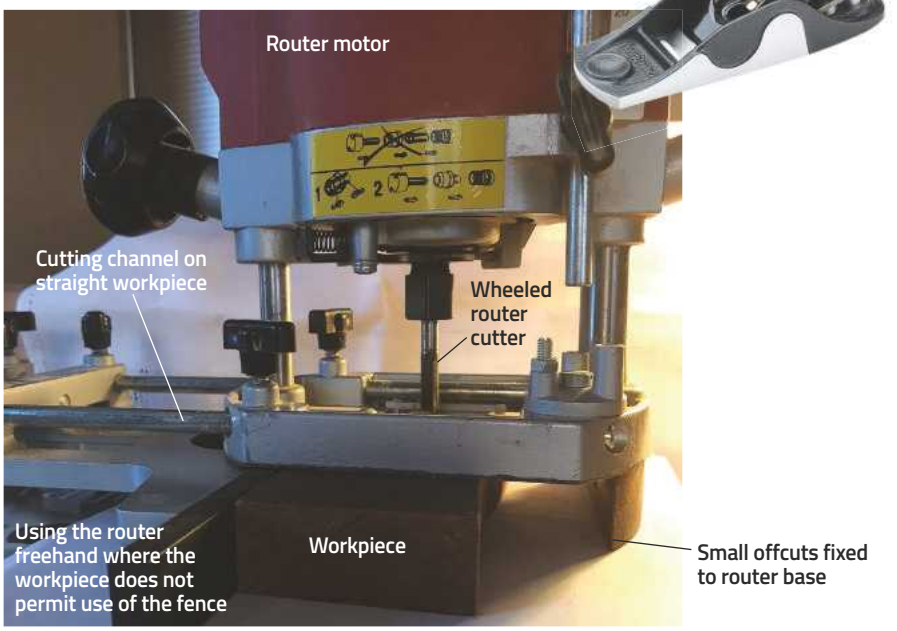
Hi Tegan,
I am halfway through trying to recreate Peter Dunsmore's 1955 Land Rover project from the December/January issue. I know this point has been raised before, but please can you ensure not to print important details in white on grey – as we get older it becomes harder to read these things! The contrast between white and pale grey makes it very hard to read numbers, particularly fractions. It makes you glad we're moving away from imperial, as this may have been less of a problem in metric. The ideal colour scheme is a strong contrast between text and background.

If you could send the cutting list separately I would love to have it. When my copy came through the post and I saw the Land Rover on the front cover, I knew I wanted to make one. I have driven several Land Rovers over the years and it is a trip down memory lane (four wheel drive at that) for me with this one.
Thanks, **Ron Davis**

Hi Ron, great news on your Land Rover build but sorry you're having trouble reading the dimensions given in the cutting list. This issue has been raised before as you rightly say, and I apologise for the colours reverting back. Looking at the page, the fractions are especially difficult to read due to the light background colour we've used. Sorry again for this. I'll send you a PDF of the table and hopefully you'll be able to zoom in and all will become clear. Going forward, I'll ensure this is corrected for all project articles. Best wishes, **Tegan**

READERS' HINTS & TIPS

For the next 11 issues, in conjunction with Veritas and BriMarc Tools & Machinery, we're giving one lucky reader per month the chance to get their hands on a fantastic **Veritas apron plane with PM-V11 blade**. Ideal for trim carpentry and featuring a ductile cast-iron body, its unique side wings allow for a comfortable, firm grip. 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. To find out more about Veritas tools, see **www.brimarc.com**

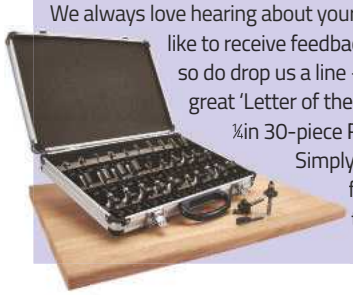


KEEPING YOUR ROUTER UNDER CONTROL

The modern router is a wonderful piece of equipment, but also a very strict taskmaster. It can ruin a workpiece faster than almost any other power tool. This is particularly true when carrying out 'freehand' work on narrow section timber. I was recently trying to cut rebates in 5 × 2.5cm mahogany, to be used on a French style bedhead. The rebating was complicated by the fact it involved following several curves. A simple straight guide was not possible, and balancing the router becomes tricky.

The problem was solved by the use of double-sided tape to stick a small 2cm square offcut of mahogany onto the baseplate of the router. There is a gap between this and the narrow workpiece, which is directly under the router bit. The idea is that the offcut rests on the work surface, thus keeping the router level and in proper contact with the workpiece. This is a very easy and cheap solution and makes the whole process much less scary. Just remember to remove the sticky tape when you're finished!
Neville Myers

WRITE & WIN!



We always love hearing about your projects, ideas, hints and tips, and/or like to receive feedback about the magazine's features, so do drop us a line – you never know, you might win our great 'Letter of the Month' prize, currently the new Trend ¼in 30-piece Router Cutter Set, worth over £100. Simply email **tegan.foley@mytimemedia.com** for a chance to get your hands on this fantastic prize – good luck!

BIRCH PERCH

A bird box is surely a garden staple and this design by **Chris Child**, made using a hollowed out silver birch log, can be turned in just a few hours

You can use almost any wood to make a bird box, but silver birch is ideal as it's soft and easy to hollow out. Its bark is also very attractive, which gives the project an organic and natural appearance. You'll need an evenly balanced log, free from large knots, measuring about 150mm in diameter and 250mm long, preferably cut from a tree that was felled a few months earlier so it's begun to dry out.

According to guidance given on the RSPB website, bird boxes need to be at least 3m from the ground, facing somewhere between north and east, which will prevent the box getting too hot or wet. Avoid placing it in direct sunlight and don't position over a doorway or well-used path. When it comes to the thickness of timber, this is important to ensure the box is insulated from cold and heat as well as to resist warping.

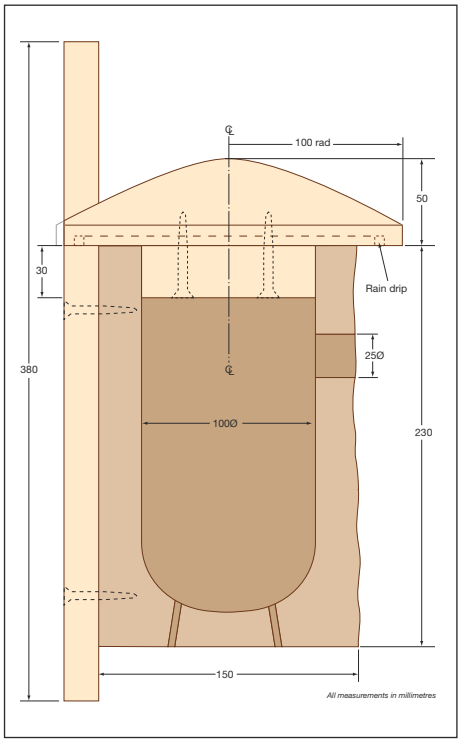


Fig.1 Bird box dimensions

Getting a grip

To start, find the centres at each end of the log (**photo 1**) and mount between centres on the lathe. It's a good idea to test that the log is held tightly enough by locking the headstock and then attempting to twist the log round by hand. If you can twist it off its drive centre, give the tailstock handwheel a few more turns to tighten it up. Set the lathe speed to 500rpm (or less) and you're ready to begin work.

The first cuts

Flatten off one end of the log with a parting tool or gouge (**photo 2**). The gouge produces a cleaner finish, but requires a slice cutting technique. Position the toolrest at a 45° angle to the corner of the log and place the tool slightly on its side with the bevel in line with the direction of cut. Then, very slowly bring the cutting edge into contact with the corner of the work and feed the tool forwards, applying only as much pressure as is required to keep the cutting edge in place. Leave a small central spigot so that the work can be more easily centred on a faceplate.

A fast fixing

When it comes to attaching the faceplate, there are no hard and fast rules on how many screws to use and how deep they need to penetrate. To hold this log, I used four Spax screws (**photo 3**), which went 30mm into the end-grain. They are precision-machined from hardened steel and have serrated threads, which cut straight into most woods without the need to drill pilot holes. Before moving on, if you're in any doubt about the hold, give the log a thump with the side of your hand to test whether it's secure on the faceplate.

1 Find the centres at each end of the log and mount securely on the lathe

2 Slice one end of the log flat using a gouge or parting tool

3 Attach a faceplate to the trued-up end; I used four Spax screws

4 Use a large-diameter sawtooth bit to bore out the centre of the log

A hollow heart

Slice the end of the log smooth with the gouge, using the same technique as before. You can then either start hollowing out the box straight away using one of the three hollowing options mentioned below, or bore out the centre first with a large-diameter sawtooth bit (**photo 4**).

Option 1: Supertip 2000

I began hollowing out the log with the Supertip 2000 from Henry Taylor Tools, fitted with their Loop Hollowing Tool tip. Before starting work, you need to adjust the height of the toolrest so that, with the handle held horizontally, the centre of the cutting edge of the tool lies diagonally across the centre of the workpiece. Start the cut by angling the bevel of the tool in line with the work face, and feed the edge slowly into the corner of the opening made by the sawtooth bit. At this point, there's no support for the tool's bevel, and the edge can easily snatch and get

5 Option 1: Using the Supertip 2000, fitted with the Loop Hollowing Tool tip

6 Option 2: Hollowing the log using the BCT Versatool Hollowing System

7 Option 3: Working with the swan-necked Hollowmaster; note the long overhang

8 Finishing the inside of the log using the reverse edge of the Supertip 2000

9 Use a bowl gouge to add the conical slope to the bird box roof

10 Cut a groove all round the edge of the underside to form a rain drip groove

11 Plane a flat area on one side of the box so you can attach the backplate

pulled down the side of the hole. Your cut needs to be very light in order to maintain control.

Once the difficult corner has been traversed, you can relax a little and let the tool feed itself across the rest of the face, which it will do as long as you maintain a suitably shallow depth of cut. If you have the angle correct, the bevel will perform like the sole of a plane, preventing the edge from cutting too deep. Watch for a spiral flow of fine shavings, which indicate that the tool is cutting correctly (**photo 5**).

Stop the lathe and sweep the walls of the cavity clear of shavings after each run. With confidence, you can take quite a heavy slice, at least while the cavity is shallow, but reduce the depth of cut as you work further away from the support of the toolrest.

Option 2: Versatool

I then tried the BCT Versatool fitted with its scraper tip. It doesn't produce as clean a finish as the Supertip, but is easier to use. The stabiliser bar, which lies flat on the toolrest, prevents the tool from twisting over (**photo 6**), thus cancelling the need for a long handle, which is usually required when hollowing.

Option 3: Hollowmaster

This tool from Robert Sorby has a similar scraper tip to the Versatool, but relies on a long handle for stability, even though it has a flat ground surface on its underside. The long handle compensates for the fact the tool has to be supported at the rear of the swan neck (**photo 7**), causing a long overhang over the toolrest.

The swan-necked shaft allows you to undercut and to also form cavities with narrow necks. Like the Versatool it scrapes rather than cuts, but I don't suppose the inhabitants of the bird box will mind if the finish is not quite as smooth as it could be.

To finish off the inside walls of the box, I used the Supertip again (**photo 8**) but this time by drawing it backwards using its reverse edge to cut. All the tools formed a cupped floor at the bottom of the box, ideal for holding a bird's nest and forming a slope to drain away any rainwater that finds its way inside.

A simple cone

You can make a simple conical lid for the bird box from any odd disc of wood, so long as it's wide enough to form a generous overhang all round. Saw your blank into a disc and mount it on the lathe using a faceplate. Trim the rim smooth using a bowl gouge by slicing in from each corner in turn. Use the same gouge to form the slope on the top of the roof by slicing from the centre of the disc towards the edge (**photo 9**), working with the grain. Next, cut a narrow groove all round the edge of the underside (**photo 10**) to act as a rain drip groove.

To locate the lid on the box, saw or turn a 30mm thick disc and screw it to the underside of the conical roof. Make its diameter about 5mm less than the hollowed-out centre of the box, to allow for the walls to shrink as they dry out over time.

A sturdy mount

Next, plane a flat surface on the back of your bird box (**photo 11**); this will allow you to screw a backplate in place for mounting on a tree or outside wall (**photo 12**). Drill a 25mm entry hole in the front of the box (**photo 13**). Enlarge the four holes left in the bottom of the project by the faceplate fixing screws, and drill all the way through them at an angle to create drainage holes. Finally, cut a notch in the edge of the roof to fit round the backplate (**photo 14**) and your bird box is then ready to install. The good thing is that you can leave all the wood in its natural state.

FURTHER INFORMATION

BCT Versatool – **www.stilesandbates.co.uk**
Hollowmaster – **www.robert-sorby.co.uk**
Supertip 2000 – **www.henrytaylortools.co.uk**
RSPB – **www.rspb.org.uk**

12 Cut the backplate to size and screw it securely to the back of the box

13 Bore out the entrance hole; a 25mm diameter is ideal for blue tits

14 Cut a notch in the edge of the roof and fit it in place on the box

GOING FOR A SONG

1 Steve Ramsey's original 'pea' whistle, which formed the inspiration for this project

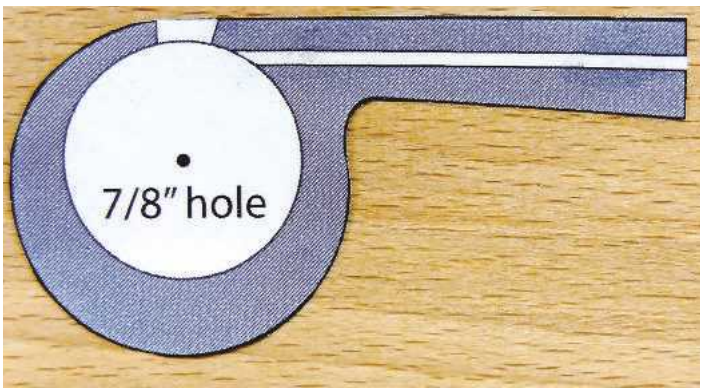
Annemarie Adams takes a simple design for a wooden whistle and gives it wings

In 2013, Steve Ramsey (a very happy man with many fine woodworking ideas) made a 'pea' whistle (**photo 1**), the idea for which was taken from Carmen Salamone. You can watch a video of Steve making the whistle by visiting **www.youtube.com/watch?v=5c3gjv-qrl0**.

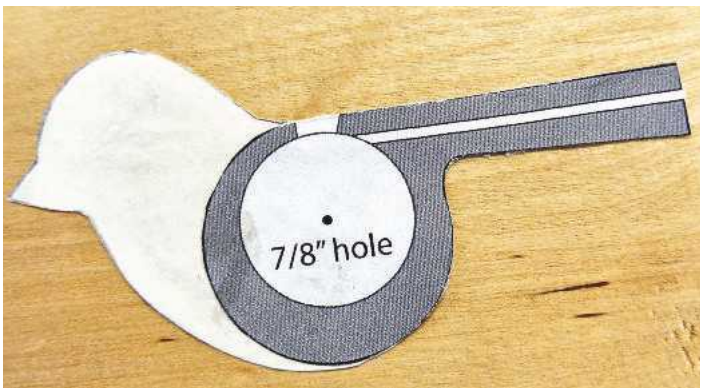
For this project, I decided to modify Steve's whistle design – originally a really loud referee or police whistle – by making it in the shape of a bird.

Gluing the template & drilling the hole

Watching Steve's video will make this step easier to understand. Glue the template onto a 19mm-thick piece of scrap wood (**photo 2**). If you want to make the bird-shaped whistle shown here, modify the template into this shape (**photo 3**). Next, clamp your pieces on the drill table and drill a hole using a 22mm Forstner bit (**photo 4**).



2 The original whistle template, showing the 22mm hole



3 The modified template, made into the shape of a bird, is glued onto a 19mm-thick piece of scrap wood

4 The hole for the chamber is drilled using a 22mm Forstner bit

5 You're now ready to cut out your whistle

DOWNLOAD STEVE RAMSEY'S TEMPLATE HERE: https://bit.ly/3b4bbSI

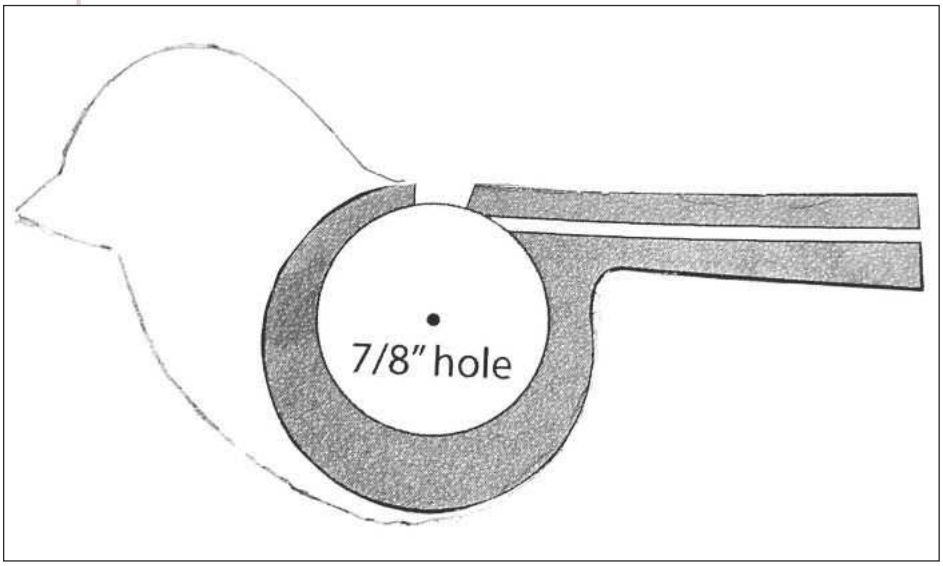


Fig.1 Bird whistle template

MATERIALS & TOOLS REQUIRED

- Three pieces of scrap wood: I used a 70mm birch offcut. One of these needs to have a thickness of 19mm, and the two side pieces should be around 3mm-thick
- Wood glue
- Steve Ramsey's free template, which can be downloaded here: **https://bit.ly/3b4bbSI**
- Power drill
- 22mm Forstner bit
- Cork ball suitable for a whistle chamber – an online search will bring up various options
- Bandsaw or scrollsaw
- Knife
- Range of abrasives
- Clamps
- Pen & pencil
- Varnish

Cut out your whistle

You're now ready to cut out your whistle design (**photo 5**), starting with the 'body', followed by the tiny opening on top, and lastly the top. You can then remove the template (**photo 6**). Next, glue the templates, or your own versions, onto the two thinner plates and cut out using a scrollsaw. These pieces should be cut slightly oversize to allow for some waste.

Gluing the pieces in place

Glue the two side pieces onto either side of the whistle body (**photo 7**), then take a suitable whistle cork ball and place it in the chamber before gluing the upper section on your whistle. Now comes the most difficult part: creating a sound. You have to be patient and keep trying, but you'll get there in the end. Mark where you need to glue the upper section, remove it, then glue it back into position (**photo 8**).

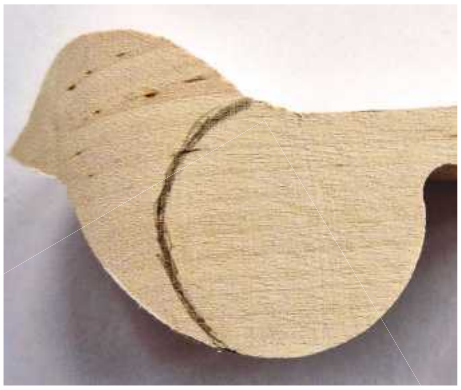
Sanding & carving

Sand the outside and mark the whistle 'body' (**photo 9**), then, start refining the bird shape, sanding the outside smooth using a range of abrasive grits (**photo 10**). Once done, apply a suitable food-safe finish to the outside, then you're ready to create your own bird song!

6 Once cut out, the template can be removed

7 The whistle components once glued up

8 The project, once constructed, viewed from above with the cork ball in place (not visible)



9 The bird design is starting to emerge

10 Using carving tools of your choice, cut around the template to reveal the bird shape

11 Once sanded and finished, the completed bird whistle should look something like this

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WW PROFILE

FLYING HIGH

For furniture maker **Sophie Moraveg-Oskooie**, the sky's the limit when it comes to creating novel designs that incorporate challenging techniques, as **Martin Pim-Keirle** discovers here

Sophie at the Furniture School: "If there's something challenging you want to do, find a way to make it happen"

One of the wonderful things about speaking to fellow woodworkers is discovering the myriad routes that have led to this profession and pastime. It sometimes seems that certain people are just destined to work with wood, and that whether it's a job or hobby, the craft will find them in the end. I'm sure many regular readers will have come to woodwork later in life, perhaps during retirement, and may wish they'd had the chance earlier on. It's refreshing, then, to talk to a young maker who has already made the career switch, and is certainly creating waves in the industry.

There are of course many ways for a woodworker to stand out from the crowd: hard work, skill, attention to detail and creativity, for example, are notable traits. In Sophie, however, we have a maker who combines all of the above with the added bonus of deciding that a jaw-dropping wooden space rocket playhouse for children was the perfect final project to kickstart her furniture making career, and I couldn't agree more with her chosen route.

A passion for making

Sophie Moraveg-Oskooie is bright, cheery, endlessly interesting, and tremendously easy to talk to. She's clearly a natural communicator, and it's easy to see why her role as a tutor at the Williams and Cleal Furniture School – **www.williamsandcleal.co.uk** – now has her delivering weekend courses unaided. She mentions that, in a post-COVID world, she'd love to run tours of the workshop for school children, noting that if she'd seen female makers creating furniture in this environment when she was in her teens, it might have brought her into the profession a lot sooner.

That subject of school is one where we find common ground. Sophie is in her early 30s, and although there's nearly 10 years between us, we both had a similar experience of 'Design & Technology' classes at school. Weeks spent creating items of only the vaguest practical value, from bent acrylic and the occasional piece of wood, certainly helped to reveal the joy of making, but alas, did little to instil any practical skills that might be used later in life.

I asked Sophie if she learned anything useful during her lessons, to which she replied: "I mean, it's hard to say isn't it.... I was quite proud of the things I made, even if they were crappy. I remember making a little train track that was like a jigsaw puzzle. I always felt really proud of the stuff I'd made, even if it was a bit shonky! I don't remember the D&T teachers discussing our options for applying the skills learned in that subject to a real world job," she says, " I just wanted to make stuff and it seems I was unaware of the requirement to complete the rest of the theory coursework! So as a result, I wasn't able to take it at A Level, which is a big regret of mine."

Being unable to study the only A level that she really cared about is something Sophie thinks likely curtailed even the vaguest thoughts of being a professional craftsperson: "That put a stop to me thinking that there was any sort of career there at all," she admits.

'Light bulb moment'

Somewhat lacking enthusiasm for the disparate subjects that she eventually opted to study, and ambivalent about University, Sophie took a year out after school, doing casual bar work, before undergoing a brief, but sadly unsuccessful, stint at Manchester Metropolitan University. Deciding that, while she didn't have a clue what she wanted to do, it definitely wasn't a course in Media Technology, she returned to Oxford after less than a month and resumed her job. She stuck at it for another five years, and it was during this time that she experienced the first inklings of her true calling.

A brief woodworking evening class spent making a simple dovetailed box undoubtedly scratched an itch, but wasn't quite enough to move her away from a steady job. Eventually the bar became Oxford's O2 Academy, as Sophie explains: "When the venue was bought out and

Sophie's brilliant 'SR1-The Rocket' playhouse – the stuff of (small children's) dreams!

The fins of the rocket are made in tulipwood, with a mirror bronze finish

It might be intended for children...

... but the standard of finish is extraordinary

expanded, I became the Assistant Bars Manager and moved up the ranks until the perks of seeing my favourite bands no longer outweighed corporate bureaucracy and 5am finishes."

Even after packing in this career, Sophie was still unsure what she should be doing:

A two-month carpentry course brought new skills and work opportunities

"I went on to work for the family as a quantity surveyor for five months," she explains: "It was a great opportunity, but ultimately not right for me. I had a light bulb moment when a friend asked what I would actually enjoy doing for a living, and I immediately thought about that woodworking class."

This 'light bulb moment' resulted in Sophie securing a loan, and enrolling on an intensive carpentry course, commuting to Kent for two months: "I didn't realise that carpentry didn't mean everything," she admits: "It's just hanging doors, fitting skirtings and all that stuff. Someone else was doing the joinery extension to the course – I didn't even know what that was! I don't regret it, though; it's really nice to be able to do all that stuff. I think if I'd just gone onto furniture making, I might have missed something. Hanging a door is a whole other world; a different way of working. I'm glad I did it, and it certainly brought me a lot of work."

With this short course under her belt, Sophie felt emboldened to strike out on her own, with her starting point being an online search for Oxford carpenters: "I literally called everyone on the first page of Google," Sophie recounts; "I actually ended up being in quite high demand, spending three months jumping between fitting windows, second-fix carpentry and working for a picture frame maker until I was offered a full-time position by Peter Street in his cabinetmaker's workshop. I've found that if you have a good work ethic, employers value this more than just skill on its own."

Sophie thinks back fondly on her time working with Peter, Oxford's own 'Cheerful Chippy': "I learned a great deal in that role," she affirms: "We were just a team of three, so I was immersed into many aspects of the business, from ordering materials to making and fitting the finished work, and I'm very appreciative of Peter for giving me the opportunity so early on."

A life-changing investment

After three years working with Peter, Sophie decided she needed to broaden her experience, so embarked on another full-time role, this time with Langstaff Ellis – another Oxford-based cabinetmaker – and it was during this stint that she decided to take the plunge and put herself through a full-time furniture making course. With this goal in mind, a colleague recommended that she quit the workshop and become self-employed in order to raise funds needed for the course more quickly. Working six days a week on all manner of carpentry jobs soon gave Sophie the cash injection she needed, and this, in spite of her van being broken into and all the power tools stolen, just a few months before studying began.

We talked a little about how Sophie came to decide on the school for her, and several names were mentioned that will be familiar to regular readers. Undoubtedly Sophie would have flourished wherever she went, but it was

Working accurately with a shape that curved in two directions required great care and precision

The rocket features clever LED lighting, inside and out

the sight of Damian Robinson's gorgeous 'Hex Cabinet' that finally made up her mind.

"Originally I was going to go to David Savage's, because I saw it in a magazine, then I went and had a look around Peter Sefton's. But it was my friend – a furniture maker – who asked if I'd heard of Williams and Cleal. I hadn't, so I had a look on their Instagram page, and a post caught my eye of a piece made by one of their students – a drinks cabinet featuring his hexagon marquetry detailing – and it was just the most amazing thing! I thought: if this is what they're producing there, that's where I want to go."

Sophie started the Williams and Cleal 40-week course in 2018, and despite worrying beforehand about the investment – £18,000 plus living expenses and materials – she soon knew she'd made the right decision: "It's unbelievable the quality and skill level you get to within just a couple of months. You start off with some set projects that have already been designed by the tutors, which means all your focus can be on following the drawings and making the piece as perfect as possible. I'm so proud of the box and table I made; they were the first pieces I was 99.9% satisfied with... but you always remember the flaws!"

When it came to choosing an appropriate final project at Williams and Cleal, I asked Sophie why she decided to create something that would have left my seven-year-old self speechless with excitement, rather than the more traditional 'fine furniture' typically expected as the end product on a course such as this one.

"I think that, because I already had some background in cabinetmaking, I felt a bit more

10 QUICK QUESTIONS with Sophie Moraveg-Oskooie

1. When and where have you been happiest?
New York City, in the summer, sipping a cocktail and watching *Looney Tunes* on a big screen in a park

2. What makes your heart beat faster?
That moment when you realise you've cut something too short

3. What do you lose sleep over?
My procrastinating

4. What do you listen to in the car?
Other than the knocking sounds that come from under the bonnet, my music on shuffle for short journeys and podcasts on long trips

5. What are you drinking?
Somerset's finest tap water

6. What is your favourite place on Earth?
The dinner table on Christmas day

7. How do you relax?
Watching YouTube videos of celebrities falling off stage

8. What is your greatest fear?
Being responsible for someone else's death

9. Tell us one thing on your bucket list
Milking a cow

10. What is the most important lesson life has taught you so far?
If there's something challenging you want to do, find a way to make it happen

99 rings make up the body of the rocket

Any surgery to the rocket body required thought, and a clever jig!

Sophie's rocket was voted into the top 10 visitors favourites at the 2019 Celebration of Craftsmanship & Design exhibition

comfortable doing something totally random and one off," she explains. "I knew that, being on the course, I may never get the chance again to be as free to design and make anything I wanted. I'd saved the money for the materials, I had the guidance of the tutors, and I just figured, why come here and not take the opportunity to do something completely out there? And I don't regret doing that."

An exercise in CNC

Like many forms of creative expression, the pleasures of working in wood are enhanced by – if not actually dependent on – the joy the end products bring to others. And there is undoubtedly something particularly special when the intended users are children, but is this a preferred target audience for Sophie? "I'd say so; it suits my immature personality," she jokes.

But there is nothing immature about the effort, skill and care that went into creating this fabulous, 1.4m high expression of childhood joy. Constructed from no less than 14 full sheets of MDF, each of the 99 CNC-cut MDF rings have rippled walnut veneer applied to the edge, and each face is stained black. The top cap is solid walnut, turned on the lathe, and the fins are made from tulipwood, shaped using some clever jigs and a great deal of hand finishing.

"It's funny," Sophie says, "I didn't want to do any CNCing or use MDF, as I was just totally against it. I wanted it to be solid wood and handmade by me. Then one of the tutors showed me a table on the Linley site that used layers to make these incredible wavy, curved shapes. I saw that, and suddenly everything I didn't want to do went out the window!"

Although she still wanted to make the entire piece by hand, Sophie quickly realised that cutting the rings herself would not only create a great deal of dust and noise in the workshop, but also represent a risk from an accuracy point of view, with some of the rings being only fractionally different in size to one another. Better, then, to entrust this aspect of the work to a CNC cutting business, which would allow her to concentrate on achieving the standard of finish she was looking for.

This position of pragmatism was undoubtedly the right one, and gave her the opportunity to learn how to prepare her design in CAD ready for CNC cutting – a skill in its own right. She sums this up neatly, commenting: "I just thought, it's still learning, and I'm not wasting my time [cutting out 99 MDF rings] on this course that's cost me a fortune!"

There was still a good deal to be done post-CNC cutting, however, with the openings and mortises for the tail fins needing to be cut – a phrase you won't often read in this magazine – not to mention the veneering of all edges, installation of lighting – inside and out – and the creation of a complete set of fitted upholstery panels. In total, the materials alone for this build cost over £3,000.

For Sophie, a big part of the project was the process of learning how to work with compound curves, as she explains: "Trying to think in 3D was tricky; I had to double-check my thinking at every stage as I was used to a world of flat sides and square edges. Taking measurements is a whole different ball game when you're working with something round that curves in two directions.

"Using the opening hoop as an example, the thickness of the main body is only 70mm, but after taking the curved shape into account, the hoop had to be made at 300mm and then shaped afterwards. The hardest part for me was working out the shapes for the upholstered panels."

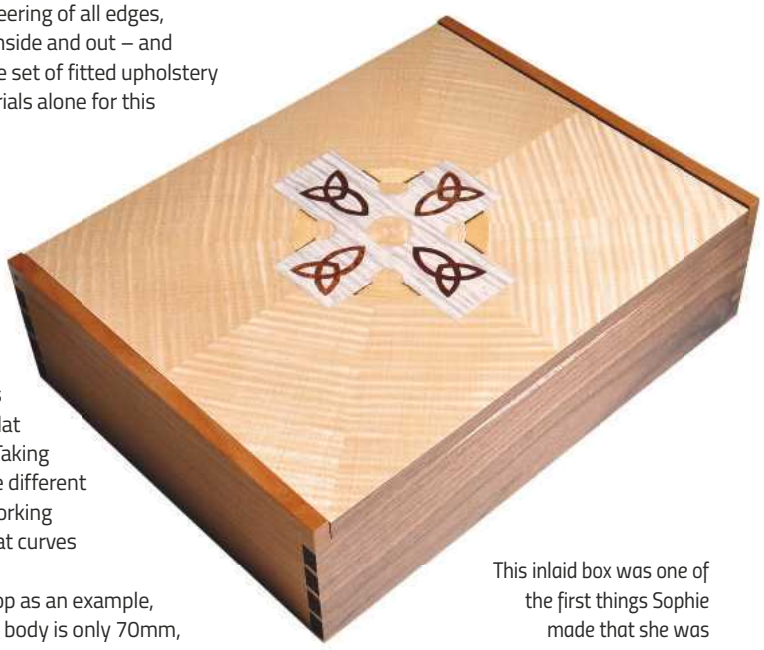
Unsurprisingly, her hard work undoubtedly paid off and the finished piece is a joy to behold. The fact it won recognition at the 2019 Celebration of Craftsmanship & Design exhibition, where it was voted into the top 10 of the Visitors' Choice Awards, strongly attests to that: "When it was displayed at the exhibition, there were a lot of kids testing it out – I became the resident childminder as parents asked if their children could stay in the rocket while they looked around the rest of the show. All the youngsters loved it and I had a few disappointed adults wishing I'd made it bigger!"

Equality in the industry

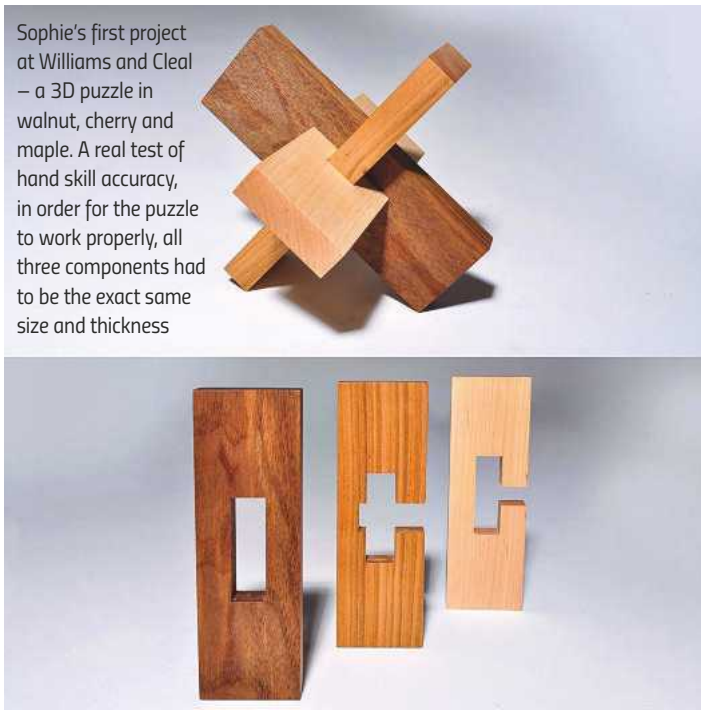
As has been mentioned here before, female makers often encounter attitudes that their male counterparts do not, as Sophie has experienced first-hand: "When I started the carpentry course, I was told that if I went and worked on site, I was going to have to work harder and be better than everyone else in order to be viewed as the same, or equal."

Certainly her stint working in general carpentry wasn't without incident, from a job interview that seemed to only depend on her demonstrating that she could lift a door, to inappropriate and patronising comments from fellow workers on site. Even at trade shows, misconceptions were rife: she recalls a particular exhibitor suggesting that she might need a friend to show her how heavy a breeze block being passed around was, rather than risk holding it herself, and that she might prefer to use his brand of glue solvent to remove her nail varnish. As she says herself: "Do I look like I wear nail varnish?!"

These kinds of stories are all too common, but as Sophie herself says, part of the problem is an under-representation of women in these industries. And here we come full circle, back



This inlaid box was one of the first things Sophie made that she was completely happy with



Sophie's first project at Williams and Cleal – a 3D puzzle in walnut, cherry and maple. A real test of hand skill accuracy, in order for the puzzle to work properly, all three components had to be the exact same size and thickness

Oak photo booth with matching printer stand – a commission for Ear Candy Oxford

to the subject of school. As you will have doubtless gathered by now, Sophie made such an impression on the tutors at Williams and Cleal that they offered her a role at the establishment, initially working in the bespoke commissions side of the business, and later transitioning to Assistant Workshop Tutor at the school, and tutor for weekend courses. And although this new role might leave a little less time for her own projects, it does have the benefit of opening up other possibilities, such as making herself more visible to young girls in school who might have the same longing to create as she did at their age. Simply showing girls and young women that it is possible; whether they want to be a 'cheerful chippy' or a fully-fledged maker of fine furniture, these are real and tangible career options and not just the domain of boys and men.

As for her current role, although she readily admits that the past year has been challenging in terms of life at the furniture school, Sophie observes that there have been some unexpected consequences. Enquiries about short courses and weekend workshops seem to have grown considerably in recent months, something she theorises could be both a reaction to a year of confinement, and the possibilities created by money saved from holidays and nights out that can no longer happen. Or perhaps people have just been reevaluating their lives in the light of the pandemic, and wondering if there might be more to life than a mundane desk job?

She also notes that her furniture maker friends seem to be getting more enquiries than usual, and wonders if this is also down to a combination of extra disposable income, and finding oneself stuck looking at the same pieces of furniture all day. It would certainly be interesting to know what proportion of new commissions are bespoke desks!

Clearly none of this makes the devastation of the past year any less serious, but if there is a slim silver lining for our fellow makers, and schools that teach our craft, and a trickle of money from those whose lives and jobs were unaffected by the pandemic down to skilled men and women like Sophie and her colleagues, that can only be a good thing.

The future's bright

For Sophie, the future looks very bright indeed. She is now fully settled in an industry she loves, working for an employer that clearly recognises her talents, and with a background of experience that should see her in gainful employment for as long as she wishes. And at just 33, there is still an awful lot of time left to learn, grow and create. We certainly expect to see Sophie and her work feature in future issues, but for now, the hardest decision facing this maker is whether to keep or sell the black walnut side table she's just finished. We think she should sell it – after all, once you've got your own rocket, what more could you possibly want or need?

One of the set projects on the Williams and Cleal course, this beautiful wenge side table perfectly encapsulates Sophie's exacting attention to detail

Sophie celebrating her recently acquired private pilot's license

FLYING HIGH

While it may not have been the career she was looking for, Sophie's stint of bar work did provide an income that allowed her to pursue another dream: flying. She admits that it wasn't cheap, but over the course of five years, she managed to get her private pilot's license, something she's rightly very proud of!

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EXOTIC OFFERINGS

Requiring a display piece for a selection of turned apples in exotic timbers, **Les Thorne** uses an old piece of spalted beech to create the perfect platter

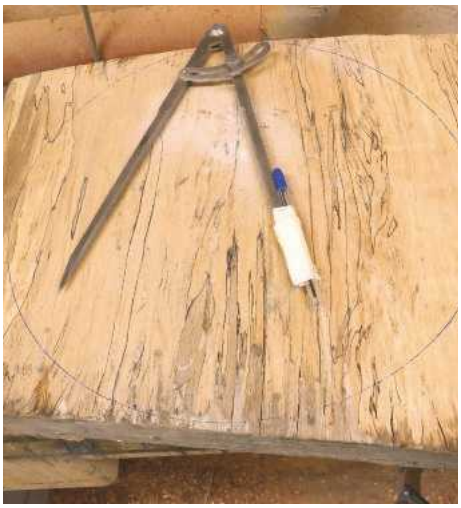
Many years ago, turning wooden apples and pears was a significant part of my business. I used to turn them for local and national retail outlets as well as making some for other professional woodturners. Many of these turners attended large craft fairs but were too busy making bowls and pots to turn, what is always, a great seller.

A few years ago, I was asked to demonstrate to a group at a private club in London and they specifically requested I bring some apples for sale. Luckily, in one of my wood stores, I still had a few prepared blanks including some really beautiful timber.

The problem I now had was what item I'd use to display them on. This predicament was caused by me lending my good friend, professional turner Gary Rance, a large display platter a few years ago, which he promptly sold (and never told me).

He then asked me to make another – good job he's one of my best friends! I'd had this piece of spalted beech for a long time and haven't done anything with it until now due to it developing a couple of small cracks, which really renders it unsaleable but perfect for a display piece. In my opinion, a shallow plate does tend to show off the contents better than a bowl.

1 My poor old electric chainsaw struggled through this piece hence the poor quality of cut, but I just about managed to get two for the price of one



2 By taping a pen to one of the arms, large dividers can be turned into a pair of compasses. I'm often asked what the best bandsaw blade size is for circles: I find a width of 10mm and 3tpi to be perfect

3 The blank was very thin so the initial holding on the lathe required some thought. Short screws through the faceplate hopefully wouldn't cause any problems, such as leaving holes in the top once I'd hollowed out the platter

4 Here you can see how badly shaped the piece was before I started. At this stage, I wasn't sure whether I would actually manage to get the desired piece from it as there were so many saw cuts into the blank

5 Turning spalted timber can be a problem due to the fungal spores, so it's imperative you take precautions by wearing a decent mask or respirator. A face shield is also important due to splits in the timber

6 This cut on the top surface with the bowl gouge will determine where the rim is going to be. The toolrest is swung around to the front to give the cutting edge optimum support

7 There was still a large, deep chainsaw cut in the underside of the platter that needed to be turned away. The black or zone lines in the wood are where different fungi make barriers against one another

8 The dividers are used to transfer the internal diameter of the chuck jaws onto the blank. If you are really limited on thickness, you could glue a piece of scrap wood on the bottom and turn your spigot on that

9 Here I'm using dovetailed chuck jaws so I needed to replicate that on my spigot. I used my skew, ground to 15° across the top, to cut the desired angle

10 A nice straight piece of timber can be used as a guide to show how flat the bottom is. Mark the high spots with a pencil so you can see them when the blank is spinning

11 One of the easiest techniques to remove small amounts of material is a scrape with a bowl gouge. The flute of the tool is pointing at 3 o'clock with the lower wing in contact with the surface of the blank

12 Once the bottom is as good as you can get it, you need to decide what to do with the rim. Half a cove is a simple but effective shape on the edge. This is cut with a bowl gouge, making sure the bevel is in contact with the surface

13 Having my brother's cabinetmaking workshop next door has many advantages and these used sanding belts come in handy for many turning projects, especially as the edges often haven't been used

14 A piece of quality 100 grit abrasive on a wooden block is perfect for flattening off any small discrepancies on the base. Once I was happy with the shape, I power sanded the rest through the grits down to 400

15 Turn the blank around and begin to hollow out the platter, starting with the rim. At this stage, leave as much stock as possible in the centre; this will stop some of the vibration that is experienced when turning thin

16 Regularly check the thickness of the piece using a pair of figure-of-eight callipers. Here I am aiming for something around 8mm; any thinner and the platter would probably fall apart

17 An option for turning thin is to support the work behind the cut with your fingers; this is a technique that should only be used if you're experienced in bowl turning, however

18 A good tool for cleaning across the bottom on the inside of the platter is the 60° bowl gouge. To sharpen, rotate it on the grinder platform

19 This tool can be presented to the surface horizontally with the flute pointing at 12 o'clock. A normal bowl gouge presented like this is likely to, at worst, catch and, at best, leave a poor finish

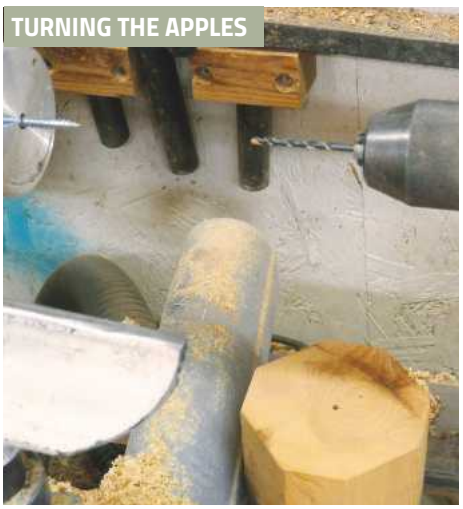
20 Any unevenness can be removed using a 75mm sanding pad with a 100 grit disc. It's important to present as much pad surface to the timber as possible; this stops you creating more problems than you solve

21 Here I'm using a vacuum chuck to hold the platter in order to remove the spigot; this could be carried out between centres with the top face up against a wooden disc

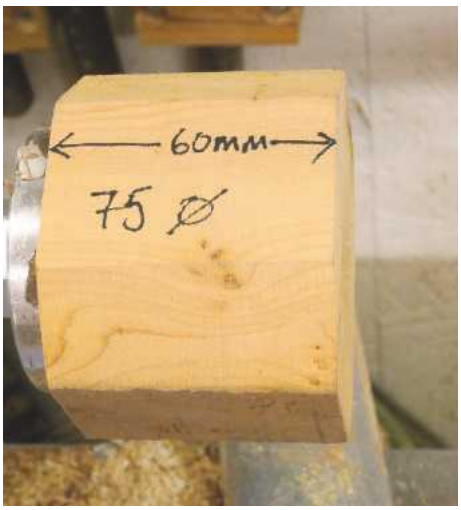
22 Even though the piece is mounted on a vacuum chuck, I keep the tailstock in place for as long as possible. If you don't have this luxury, you'll need to finish the last bit by hand

23 The little details are everything, so I turn a small button in the base. Always do this after you've sanded with the coarser abrasives otherwise you run the risk of removing all the fine details

TURNING THE APPLES



24 My set-up for turning apples couldn't be simpler: a screw chuck with a 4.5mm screw and a 3mm drill in the tailstock. Here I'm using the versatile Oneway screw chuck, but a home-made version will also do the job

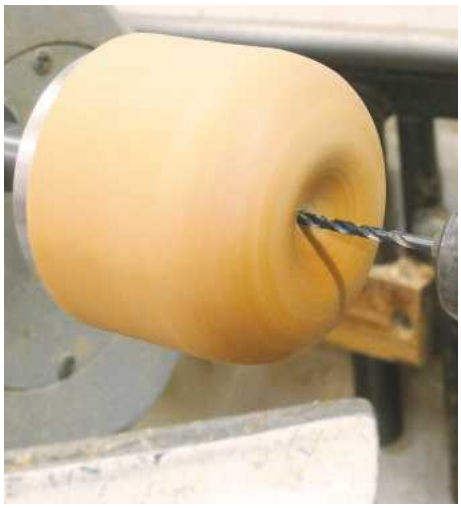


25 Often the apples are made of exotic timbers, so you want to keep waste to a minimum. Using a 60mm long blank means I can get five pieces from a 300mm length of stock

26 After making the blank round with the spindle roughing gouge, the shaping is achieved using a 13mm signature gouge. The bevel is in contact with the surface the whole way through the cut

27 You'll need to move the toolrest around the end to turn the top of the apple. The locking collar on the rest's stem allows you to move it without altering the height, which makes the process much more efficient

28 Cutting the indent in the top is difficult. Ensure to keep the point of the tool away from the wood as you can experience the tip running back, causing a dig in. The other thing to remember is that the tool must hit the centre in order to remove the last bit



29 Drill a 3mm hole in the top as accurately as possible using a drill mounted in the tailstock. If you're working with the harder exotic timbers, increase the size of the drill to put less strain on the screw

30 Once you've turned the top and sanded it, reverse the apple onto the screw in order to turn the bottom. A business card against the aluminium faceplate will stop the sanded top of the apple from getting damaged

31 It's now easy to turn the 'flower' end of the apple. I like to take this down to about 25mm diameter before cutting an indent in the end, just as I did on the stalk

32 If the apple doesn't reverse onto the screw perfectly then it will run slightly out of true; this isn't a real problem, as you can see here, but it can easily be rectified using a piece of 180 grit abrasive

33 I like a high gloss sprayed and buffed finish on my fruit and the best way to hold them for spraying is to use an old bicycle spoke inserted into the hole. The apple can then be easily rotated while applying the lacquer

34 What you choose to cover the bottom hole with is completely up to you. I like to use a clove that's glued in with CA adhesive; it does look pretty natural and the glue will harden up the otherwise soft clove

35 The stalks are made from hazel twigs that have been dried in the microwave; the bark then falls off. They are then soaked in black stain for a few days before being pushed in with a small dab of PVA glue

36 The completed spalted beech platter with a selection of turned apples, in a variety of exotic timbers, should look something like this

Robert Sorby

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ESCAPING THE CHAOS
How to design your ideal workshop

John McMahon shows how it's possible to design your ideal workshop for less than the cost of a takeaway – depending how you look at it!

There are some woodworkers who can do great work sitting at the kitchen table, using a sharp spoon and a pair of mole-grips. While I admire such craftsmen, I am not one of them. I need the right tools around me and a well-arranged workspace or I soon find myself descending into chaos, and I'm not alone: I've taught a couple of hundred students over the years and by week three every man-jack of them has worked out that they can't do good work on a wobbly bench in the corner of a messy garage. Perhaps you'd agree, and if so, keep reading…

Spending money wisely

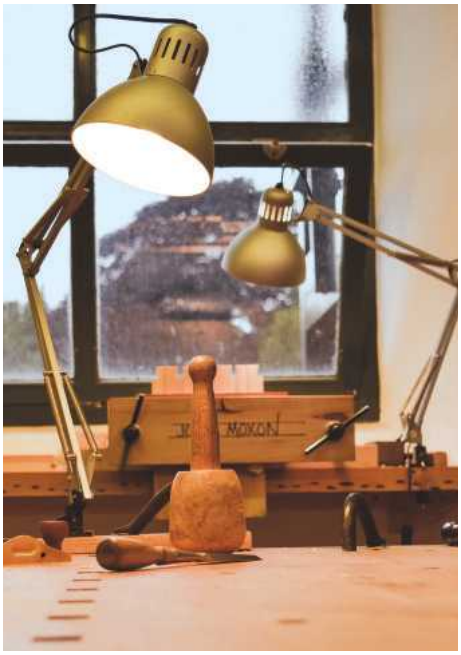
My idea here is that we build a really good workshop that's within the reach of a keen, but not yet fully equipped, woodworker. I imagine a project like this would take around three years and I've made a few basic assumptions: this is aimed at someone who's pretty serious about woodwork, with a basic toolkit, and some time and space to devote to the project.

Now we need to talk about money. I've based this build on a weekly spend of £34 over three years. That makes a total of £5,304. Can you afford it? Of course you can. The average UK family spends £68 a week on recreation and culture – surely half of that could go into a worthwhile project like this without rocking the family boat too much? Maybe 'less than the cost of a takeaway' is stretching things a bit, but it makes for a snappy title! It depends where you get your takeaway from, I suppose! OK, so let's work through this one year at a time…

YEAR 1: THE BASIC HAND TOOL WORKSHOP

Clean-up & lighting

The first job is to clear out the junk. I'm guessing most of you will be using the garage for this project, so park the car on the drive – cars are waterproof, after all – and chuck away everything you've not used in the last year. A dark workshop is your enemy, so paint walls and ceilings white, fit 'daylight' tubes/bulbs and add extra light fittings wherever you can (**photo 1**). If your workshop doesn't have a window, I suggest you fit one now (**photo 2**). Making a simple window is a really good exercise for a developing woodworker and cutting a hole in a single-skin garage wall isn't too complicated.



1 OK, what if you do most of your woodwork after work when it's dark? Simple: buy a boxful of these cheap balanced-arm lamps and place them anywhere that requires more light

2 Not just atmospheric: natural daylight makes you a better woodworker

Wooden floor

The next thing I would do is fit a wooden floor. Most people ignore me when I suggest this and regret it when their feet are frozen blocks of ice in the winter, or the first time they drop a plane on the concrete floor. Seriously, a timber floor greatly improves your workshop and needn't cost much. I would put a layer of insulation/damp-proofing down over the concrete and fit 11mm Oriented Strand Board (OSB) over that.

Workbench

The heart of any good workshop is the bench, no question; you need one in order to work comfortably and efficiently. So, the next challenge is to source a quality one without spending your total budget in one go. My go-to solution when I need more benches is to find a second-hand, ex-school one on eBay or Gumtree.

Most of these come with two good vices and you can usually pick one up for around £150 if you shop around. You'll need to beg, borrow, steal, or even hire a van to fetch it of course, and then you need to deal with the fact that the top will be full of nails. As a quick fix to get you working, screw 18mm birch plywood to the top; it's not a perfect solution, but it'll do for now. Half a day with a sander and some grey paint and you'll have a bench that looks pretty good, which would have cost a fortune new (**photo 3**).

Storage

Storage is your next priority. I like a combination of a good tool chest (**photo 4**), a tool rack on the bench and judicious use of nails in the walls. Your school-bench will probably have a cupboard underneath so that adds to your storage capacity, and I would also add some shelving at this stage.

Saw horses

To complete year one, you need a couple of saw horses and trestles (**photo 5**). IKEA make adjustable trestles that cost less than I'd pay for the timber to make them. With a sheet of MDF on top they make a layout/glue-up table, and in general use they help to keep your bench-top clear and ready for action (**photo 6**).

Spend so far

That's about it for year 1. It might not seem like a lot of ground has been covered, but if you have a family and a day job, my guess is that you could do this lot AND keep the rest of your life on track. By this stage you should have an efficient and comfortable hand tool workshop.

SPEND SO FAR

Paint	**£40**
Lighting	**£150**
Floor	**£120**
Bench	**£250**
Tool chest	**£300**
Shelves	**£150**
Trestles	**£50**
Timber, fixings and misc	**£200**
Total	**£1,260**
(Leaves £4,044 left to spend)	

YEAR 2: TOOLING UP

By now you'll have realised that the joy of planing timber by hand diminishes rapidly when you have, for example, 200ft of oak to flatten and dimension, so year two is mostly about getting your power tools and machinery up to spec.

Bandsaw versus table saw

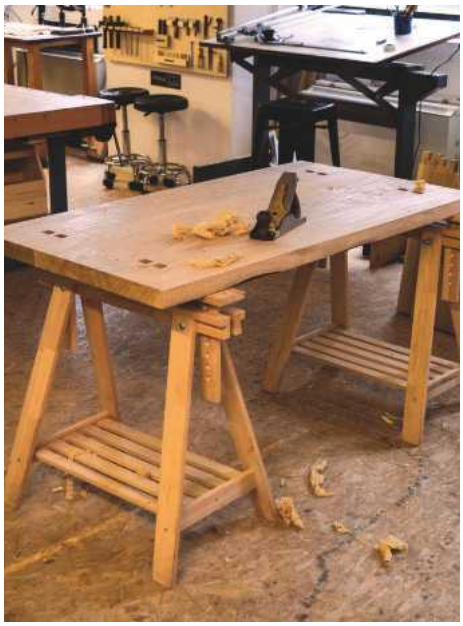
What do you need? I would prioritise a planer/thicknesser along with a portable chip extractor. Dimensioning stock is usually the most labour-intensive part of any project. You can buy prepared stuff, but this makes it difficult to select the best boards and it takes a lot of the flexibility out of your work. Crucially, the guy at the sawmill isn't going to take anything like the care you would in getting your sections just right. I'd buy a bandsaw next followed by a good mitre saw. You may have noticed that there's no table saw yet, the reason being that we've already spent around £2,500 this year and I'm trying to economise. If I had to do without anything at this stage it would be the table saw; you can rip quite quickly by hand if you have to, but even that's unnecessary if you own a decent bandsaw. Bandsaw trumps table saw because it'll do almost everything a table saw can, almost as well and then, asked nicely, a lot more, such as cutting curves, for instance. Just to nail the argument, the bandsaw is a heck of a lot safer, too. On reflection, this thinking definitely comes from the perspective of a solid-wood woodworker: if you have lots of wide sheet material to cut, then the bandsaw is not the answer and you should be looking at a good track saw instead.

Second-hand machinery

But how do you get the right stuff? Proceed with caution here, but I'd advise buying a good second-hand planer and bandsaw. Why? My experience with modern budget equipment has been a bit like supporting Newcastle United: heart-breaking. It's just not very good, which is why it's cheap. On the other hand, you can find really good second-hand equipment at a decent price. This lunchtime I looked online and was able to find a good planer and a bandsaw, both 240V and in good condition, for less than £1,000. It only took a few minutes over a cup of coffee. I mentioned caution: make sure that what you buy is fit for purpose and safe. Always ask if you can see it running before you buy and do your research. The HSE website is relatively easy to navigate and shows you what a safe woodworking machine should look like. It's a

3 An afternoon's work and a couple of hundred quid can get you a solid, workable bench

4 Build or buy a tool chest and keep the lid shut when you're not working; it'll help keep out the damp



5 Trestles add flexibility to your workshop

6 With a good saw and a couple of saw benches, hand ripping your stock doesn't have to be a pain

good idea to ask an experienced friend to go with you for a second opinion and to offer moral support. Look for ex-school or college machines, as they will have been kept right up to current safety standards and serviced regularly.

Buy new where it counts

The dust extractor and mitre saw have limited life expectancy, so don't buy these second-hand. There is a difference between a dedicated chip extractor and a dust extractor – ask for something that can handle both requirements. If you can afford it, get a sliding mitre saw with an adjustable depth stop; it means you can do some joinery with the saw as well as cross-cuts and mitres. Don't buy the cheapest, but you probably don't need the most expensive, either.

So where does it all go? You'd be hard pressed to move, let alone work, with all of this kit bolted down in a standard garage, so fortunately the answer is simple and cheap: get wheel kits for your machines and roll them out of the way when not in use.

SPEND SO FAR	
Planer/thicknesser	£650
Bandsaw	£350
Mitre saw	£400
Dust/chip extractor	£500
Transport	£200
Wheel kits	£200
Blades and tooling for machines	£200
Total	£2,500
(Leaves £1,544 left to spend)	

YEAR 3: FINE-TUNING

So with a little over £1,500 left, what's next? By now you can probably answer the question yourself. If your workshop is truly freezing, you might prioritise a wood-burner or if you just can't see what you're doing, then maybe it's time to get an electrician in and have some extra tubes fitted.

If you like tools with a plug on one end, you might start thinking about a router table, or even a lathe.

My ideals

Me, I'd buy some nice yellow pine or ash, rip the old top off the bench and do a proper job on it (**photo 7**). I'd fit a tail vice and some bench dogs, square ones, and yes, I know round ones work better, but I think square dogs are prettier. I'd also buy or make a separate stand for my sharpening rig and shooting board – both of which are in constant use and get in the way on the main bench. Next would be a bench-top mortiser and pillar drill, both good, solid second-hand pieces of kit.

I'd also get my hands on a new track saw, and although not typically found in the traditional workshop, but I admit it, I'm addicted: they do what they do so elegantly and efficiently that I wouldn't want to be without one any more. I'd probably give in at this stage and spend £400 on a nice, solid cast-iron table saw. I'm sitting here and trying to justify it and, honestly, it's as much habit as anything – the workshop just looks odd without one. They can handle wider stock and cut a shade faster and cleaner than the bandsaw, and I suppose it also means I can leave a fine blade on the bandsaw, saving it for curves and delicate stuff.

Main ingredients in place

So that's it, you have the main ingredients in place for a great workshop and many, many happy hours of woodwork ahead of you. Don't bolt anything down for the first couple of years and you'll find that with a tweak here and there, your setup will find its own harmony. So what's left? Frankly, if you're anything like me, you'll have overspent horribly by now, but then explaining why the kids can't have new shoes this year is all part of the art of fine woodworking!

SPEND SO FAR	
Timber for bench, etc.	£300
Mortiser	£250
Pillar drill	£150
Track saw	£400
Table saw	£400
Transport	£150
Tooling	£100
Misc	£200
Total	£1,950

7 Not perfect, but I love it anyway – my £40 bench with recycled pine top, 9in Parkinson's (genuinely) Perfect Vice and fickle but lovely square dogs

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BE INSPIRED, BE CREATIVE

CUSTOM CUPBOARD

Faced with an untidy, cluttered understairs area, **Dave Long** sets about designing and building his own bespoke storage solution

1 The storage problem

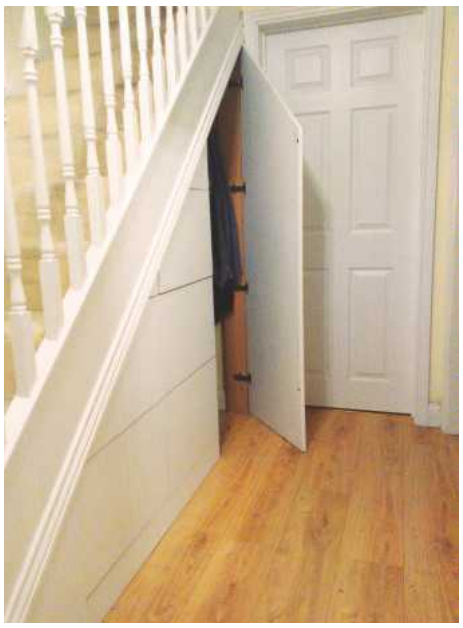
A few years ago, I revamped our kitchen, which included moving a wall and losing a hall cupboard. Ever since then I'd had on my 'list of jobs' – which never seems to end – the intention of building some understairs storage, both to hide the shoes and coats, and to also store the homeless items from the ex-cupboard.

I noticed – probably due to me searching for solutions – that Facebook had started pushing sponsored ads for modular storage, so I looked into that, but they didn't meet my requirements: by definition they are modular, but required the 'small corner' under the stairs to be lower than mine. I was told to knock out the infill that the house came with, and each drawer is a fixed width, so in my case, with a need for a cupboard at least 550m wide, that meant the remaining width was too short for three verticals of drawers and too wide for two and a door, which then meant two cupboard doors, not one. That and a 'sale' quote of £999 led to the 'make not buy' decision being explored. The total cost of materials, including the specialist Confirmat screws, drill bit and Salice high quality full extension push-to-open runners and hinges, came to almost exactly £300. The whole project took about three weekends in total.

Design/dimension constraints

The key dimensional criteria was simple: it had to have a cupboard wide enough (560mm) to store coats, vacuum cleaners, carpet shampooer, etc. and drawers tall enough to hold the normal cleaning materials, while being as deep as possible. Visually, the width of the drawer fronts needed to match the door, including gaps, while also requiring a plinth (settled on 120mm high) to stop the lower drawers from trapping feet. To fit the space in my hall, I needed the drawer fronts to be 547mm wide with a vertical height of 357mm for the lowest drawers and 351mm for the others; this gave a 3mm gap between everything on the front, as well as internal space in each drawer being 490mm wide × 295mm tall × 760mm deep – some of the drawers are angled to the left-hand side so the height is therefore much less. The other main design criteria was that the drawer runners needed to be high quality, full extension, push-to-open, under drawer mounted, as well as easy to fit, refit and adjust.

The depth under the stairs was 850mm, so after allowing for the skirting board, the carcass depth was then set to 780mm. This also allowed the drawer fronts to be recessed slightly (20mm) under the stairs and adjusted so that the plinth line visually followed that of the laminate flooring, which didn't quite follow the line of the stairs! In the end, the back of the carcass ended up being about 30mm clear of the back skirting board.



The completed understairs storage solution features a cupboard with door plus five individual drawers

Design & materials

As is my usual approach, I created a 3D design in SketchUp (**Figs.1, 2** & **3**), using separate layers for the main topics: frame, drawers, drawer fronts, runners and dimensions. The SketchUp design shows the carcass and drawers 30mm deeper than I actually built them. I'd forgotten to allow for the skirting board, but only realised this when I laid components in situ at the start, but other than that, it's accurate. Next, with the design constraints sorted and the angle of the stair pitch confirmed at 42°, using an angle app, the SketchUp design only took me a couple of hours. Key to this stage was the selection and purchase of the drawer runners, as the 'space envelope' they needed had to be designed in. I didn't need to, but I spent 10 minutes getting a reasonable representation – but accurate dimensions – of these in SketchUp.

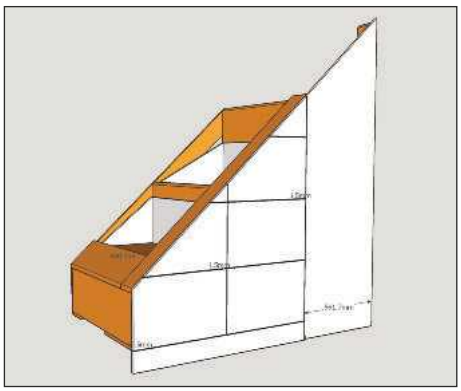


Fig.1 Drawer fronts and door

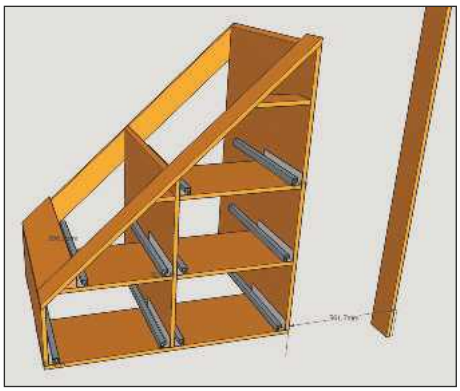


Fig.2 Frame and runner

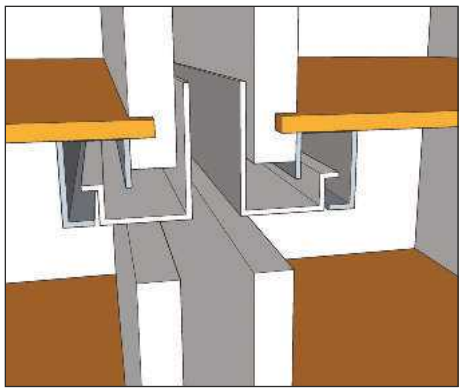


Fig.3 Drawer runner detail

WW PROJECT

FURTHER INFORMATION

Blum Hinge template
Web: **http://thewoodhaven2.co.uk/viewtopic.php?f=20&t=2214**
Salice runners & hinges
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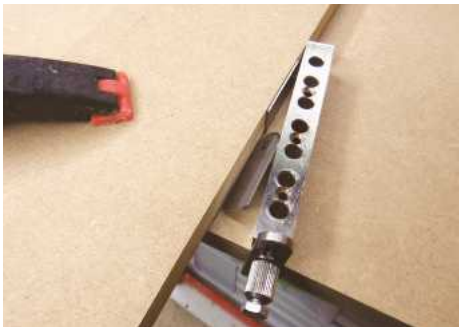
2 MDF and cutting plan

3 Cutting the angles

4 Joint Genie jig and Confirmat drill

5 Edge dowelling



6 Shims to keep the same spacing

To save the cost of a third MDF board and to reduce weight, the horizontal components of the carcass are only 340mm deep, as the fixed part of the drawer runners I selected are this length.

Each drawer front needed to overlap the carcass, but in order to keep the visual lines correct, this meant that the measurement from base to drawer front edge was different for the bottom ones, as they needed to cover 15mm of the 18mm frame, whereas the higher ones needed to cover just 6mm – the top of the lower drawer also covered 6mm, leaving a 3mm gap.

I chose Salice Futura A6557/60 600mm drawer runners with an integrated push-to-open mechanism. They fit to the underside of the drawer using A750 3D three-way front-fixing clips. 600mm was the longest I could find, yet the drawers were going to be almost 800mm deep, so the base therefore needed to be adapted to accept the drawer fitting. The Salice runners with the 3D clip fitting and adjuster are hidden and give adjustments of approximately +/-2mm up/down, in/out and left/right. They make it very easy to fit and remove drawers, but are more expensive than side runners at £23.81 per pair for the 600mm fully extending ones. The hinges for the door are also from Salice's push-to-open range, with the door held shut by corresponding Salice magnet catches – a 2mm push releases the door.

The frame is made using 18mm MDF (**photo 2**) cut at my local timber yard. The 'Optimik' sheet material program gave me the best component layout and the timber yard then cut it – 27 pieces from four sheets at no extra cost. The drawer frames were made using DIY store sourced white ContiBoard and a 6mm ply base.

Construction

Given that the timber yard had cut all the components to rectangular size, the construction mainly involved dowelling the MDF carcass – using a Joint Genie – and fixing it together with Confirmat screws – the type used in IKEA flat-pack furniture. I needed to build this in the garage then dismantle and rebuild it in the hall, as when assembled, it wouldn't fit through the front door! Confirmat screws are excellent for this type of project as they go back in tight after disassembly.

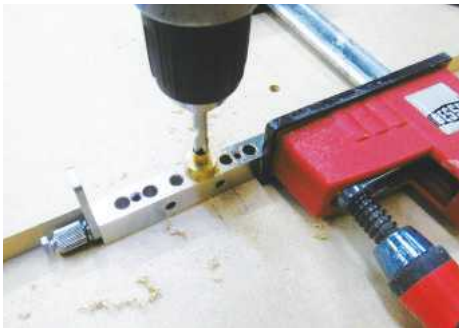
My first job was to cut the angles on the door and some of the drawer fronts (**photo 3**), then apply the first coat of paint. I edged each piece with iron-on paper edging as I've found this quicker than trying to seal the edges of MDF, and it also takes paint well. The drawer fronts and door were painted with three coats during the rest of the construction.

Carcass

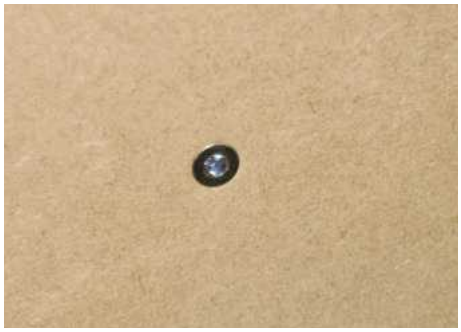
Carcass assembly is relatively straightforward. I didn't have a Domino jointer at the time of making, but did have the excellent Joint Genie, so opted to use dowels instead (**photo 4**). The Joint Genie is really accurate but it does require clear marking of components to ensure the jig is referenced off the correct face – definitely a case of think twice, drill once – and if only I'd followed that rule! The Joint Genie is centred on the MDF by use of shims, so when drilling into the MDF face, it's important to make sure the same shims are used (**photos 5-7**) when referencing against a straight edge.

Once all the carcass dowelling was complete, it was on to assembly. This is a big item so having a helper is a good idea, especially for the first few pieces. I decided to use the Confirmat drill to make the holes in the vertical components first, then assembled the horizontals to it with dowels. Once complete, I'd then drill through the hole and fixing with a Confirmat screw (**photo 8**). This was the first time I'd used them, other than when assembling flat-pack furniture. They're really solid and can be removed and refitted so they are tight.

If you don't have a Confirmat drill bit – I bought mine on eBay – the holes can be drilled using three different drill bits. Be aware that



7 Face dowelling



8 Confirmat screw in place

9 Carcass assembled

10 Runner detail

11 Fixing the hook at the back of the runner

12 Groove detail for the drawer base

13 Marking the drawer front for the Joint Genie

14 Drawer base with runner holes

15 Salice 3D adjuster

there are different widths of Confirmat screws – e.g. 6.4mm and 7mm – so ensure you have the correct sized drill bit. I used the 6.4 × 50mm version for this project.

With the carcass assembled (**photo 9**), the fixed part of the drawer runners could then be fitted. The instructions require these to be recessed from the front edge by 2mm, so a simple jig with a plastic spacer was used. The runners (**photo 10**) sit directly on the horizontal carcass components, so it was a case of using the 2mm spacer – from the front – and a hinge pilot drill followed by a 5mm drill to take the Euro screws. The runners can be fitted with either Euro screws or 3.5mm countersunk screws, but for me, in MDF, the Euro ones are so much stronger. Where runners are either side of a vertical, one 5mm drill hole can be used for both runners with the Euro screws. One of the drawers – top left – has a left-hand side that goes to a point on the drawer face, so internally, this drawer is narrower due to having to build up the vertical to take the runner – this is where SketchUp is useful as it flags up such issues at the start.

Drawers

The drawer sides are made using 16mm white ContiBoard, which is grooved to take a 6mm ply base. The back and fronts are 18mm MDF, with the front also grooved for the base.

We needed to maximise storage space, so that meant the drawers had to be as deep as possible, with the drawer sides 770mm long. The longest Salice full extension runners are designed for 600mm deep drawers and have a hook fitting into the back (**photo 11**). This meant that the drawer base needed to have a hole each side for the hook (**photo 24**). The spec stated 590mm and I knew that the base was recessed into the front by 8mm, so cut the holes at 598mm from the end of the ply base.

The Salice drawer runner instructions stated to leave at least 5mm from the top of the drawer and anything above it, which I had initially planned for in the SketchUp design. However, when I tried the first assembled drawer, I couldn't lift it up high enough to allow the runner's hook to slide underneath. I had to resize the sides and back to allow 15mm clearance for the horizontal frame component; this then provided the space required for the hook to slide along the base until it found the hole.

As mentioned in the design section, the lower drawer fronts are 9mm longer below the base than those above, due to the need to overlap the frame by 15mm. This therefore meant that the fence for the grooves – for the base – needed to change and the lower drawer front is shown on the left in **photo 12**. The sides are dowelled to the front (**photo 13**), so an offcut of ply was used to mark where the bottom of the side was on the drawer front, as this became the reference point for the Joint Genie. I must admit that this was quite an awkward process!

Once all the dowels were drilled, it was then a case of gluing, screwing and fitting the Salice runner connectors to the underside. Salice do sell a jig – I now have one – but at the time I needed it they weren't immediately available, so I just did it by measurement. The runners neatly click into place and can be released using the orange lever without tools, or even looking underneath the drawer.

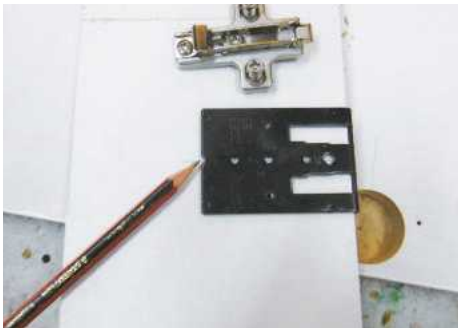
16 The frame in situ with the plinth leg

17 Drawers fitted

18 Cupboard storage

19 Marking the hinge positions

20 Not forgetting the floor clearance



21 The Blum hinge mounting plate template

22 The push-to-release catch

TIME TAKEN & COST

The project, from initial design to completion, took about three weeks, with most actual woodworking being completed over two weekends. The total cost came to exactly **£300**, which included:

- Timber – 3 × sheets of 18mm MDF and 1 × sheet of 6mm ply and ContiBoard – approximately **£115**
- Salice runners, hinges, mounting plates, catches, etc. – just under **£150**
- Confirmat screws and drill bit – **£24** (but I have plenty left as I bought 500 screws)
- Plinth legs and Euro screws – **£10**

Final assembly in situ

With the carcass and drawers built and tested in the garage, it was time to remove the Confirmat screws, take the components into the hall, and reassemble. This is when the plinth legs are fitted. When ordering these, you must ensure to buy a set that covers the height range you require – in my case I bought six that adjusted from 100-135mm, so plenty of range to get the plinth height of 120mm. Don't buy ones that are designed for a height of 150mm, and ensure to position the legs so that the plinth clips will work.

The frame was then stood up, put into position and the legs tightened so that the frame was snug to the stairs and also perfectly level. Next, the diagonal MDF was fixed through into the underside of the stairs, before the drawers were fixed and fine adjusted (**photos 16** & **17**). I then needed to measure and cut the various required triangular filler pieces, taking into account that the drawers at rest stick out 2-3mm from the frame, which is the push space required to open them. This means that the infills either need to be thicker than 18mm to align flush, or a packing wedge can be used when fitting them to the frame. The plinth was then clipped into place.

Cupboard door

The final job was to fix the cupboard door so that it would hide the coats and cleaners (**photo 18**). I used 4 × Salice 110° full overlay push-to-open hinges, not because the door was heavy, but four hinges prevent MDF's tendency to bow when it's over 1,900mm tall. Blind holes for the hinges were drilled with centres recessed in 22.5mm, giving the door frame an overlay inset of 5mm. The various measurements for the different overlays are outlined in the detailed technical information provided by Salice. With the holes now drilled, the centre positions were then transferred to the vertical post (**photo 18**). The MDF was made double thickness with offcuts as the door needed to clear the living room door's architrave. The door also required floor clearance, so the vertical MDF is 6mm lower than the bottom of the door (**photo 19**) when the positions are marked. A simple Blum hinge mounting plate template (65.5300) (**photo 21**) was used to drill the mount plate fittings – on page 87, you'll see a forum thread link where I explain how to use it. The vertical was then fitted to the internal wall and the door hung.

The hinges I used were sprung-open type, designed to work with the Salice push-to-open magnetic catches and pin. All that was required was one master catch – which has the push release – in a Salice holder (**photo 22**) and a slave catch positioned lower down. The final task was to trim the very top point of the door so that it could swing open (**photo 23**). This was trimmed so that, when closed, the point still remained. The only task left now was to fill every available drawer!

Conclusion

This article, SketchUp design and the photos, show how I made the project but if I were to do it again, I'd make the drawer boxes first then fit drawer fronts to them once installed. I chose to make the drawers complete with fronts, which added an extra degree of complexity when it came to using the Joint Genie, as the drawer front bottom is lower than the sides to hide the runners and overlap the carcass frame. Using a box design would have also allowed the drawer adjusters to be fitted with all settings at mid-point.

23 The door, once fitted

24 Detail trimmed to allow door to open

25 The completed understairs storage solution

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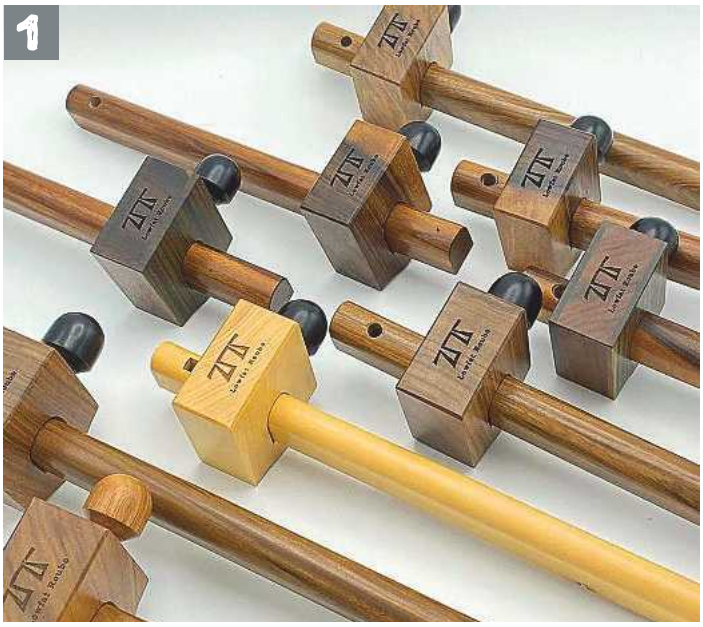

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