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August 2019

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- ROBIN GATES GETS TO GRIPS WITH A PLETHORA OF MEASURING TOOLS
- THE MAKERS' MAKER: WE TAKE A LOOK AT ALAN PETERS' LAST PROJECT

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Welcome

As well as editing this magazine, I also work on our trade title, *Woodworking News*. Those of you who run professional furniture making and joinery companies may well receive this established journal, which has been going strong for 34 years. I recently stepped in to replace previous Editor, Neil Herbert-Smith, whose vast knowledge I still call upon very frequently (thanks, Neil). As well as putting the publication together each month, which is largely made up of press releases sent in from various industrial woodworking machinery companies, the odd feature and a wide range of adverts, I am also expected to attend relevant events as and when they come up. For example, 2018 was an important one in the woodworking calendar as this was when the biennial W Exhibition fell; 2019 saw Ligna taking place in Hannover, Germany; and in 2020, Xylexpo – a biennial exhibition of woodworking technology and components for the furniture industry – will be held in Milan, Italy.

BWF Members' Day

While this all sounds rather glamorous, sadly I don't get to hot foot it around the world attending woodworking exhibitions, but when smaller events take place within the UK, and especially if they are only a few hours' drive away, I take the opportunity to attend, learn more about the industry, meet advertisers and readers, and also work on developing new business.

One such event was the annual BWF Members' Day (the British Woodworking Federation for those of you who are unfamiliar), which was held at Hellidon Lakes in Daventry. Armed with business cards, latest copies and brand-new roller poster showcasing the magazine, my colleague and I set up our stand next to Italian woodworking giants, SCM, who were excited to tell us about their revolutionary new range of machinery, which is embracing digital trends and aiming to make the industry 'future smart'. As well as exhibiting suppliers on hand to talk to members about their product and service offerings, there was also a series of seminars running throughout the day, hosted by key note speakers, covering pertinent topics such as Consumer Rights Legislation, Tackling Skills and Training Needs, and Health & Safety. It was great to speak to *WWN* readers who said that, in their view, ours was the best publication in the industry, commenting how many employees within their companies passed it on and read it each month.

The day also turned out to be very successful in terms of networking, and we were able to generate new advertising leads and also secure a feature on timber composite beading solution supplier, Qwood. I look forward to the next similar event and becoming more knowledgeable about the industry as a whole.

Launching The Alan Peters Furniture Award 2020

Before I let you get on with reading this brand-new issue, it is with great excitement that I can finally announce the official launch of The Alan Peters Furniture Award 2020. Do not hesitate in turning to pages 26-27 to discover all the details for yourselves, and if you have any queries regarding entry requirements, etc. then please do get in touch and we'll be happy to assist you. Happy woodworking and here's to a fantastic August edition!

Enjoy!

Email tegan.foley@mytimemedia.com

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Phil Davy
Technical & Consultant Editor

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

54 RAISING THE BAR

Realising a pair of folding kitchen 'bar' chairs no longer fit the bill, Robert Couldwell takes to the workshop and goes about making a replacement set in oak

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AUGUST 2019

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PROJECTS & TURNING

38 Brain teaser
Inspired by an article in the March 1953 issue of *The Woodworker*, Peter Dunsmore puts a modern spin on this mystifying dovetail puzzle

60 Tall dark strangers
You won't recognise Dave Roberts' style at first, but the engineer's enjoying a change

75 Going potty
Phil Davy's tray is made from recycled oak which will now have a new life in his garden

86 Spinning a yarn
Perfect for the knitting enthusiast in your life, Les Thorne shares his take on a yarn bowl design in air-dried ash

TECHNICAL

30 The ascertainment of extent
Confronted by a mêlée of measuring tools, Robin Gates has a field day with squares, dividers, rules and tapes, then makes a handy depth gauge

49 Modest designs
Edward Hopkins makes a bomb-proof Wendy house

66 Woodworker's encyclopaedia – part 6
Peter Bishop looks at butt joints, capping rails and carborundum, to name but a few terms

FEATURES

20 Loitering within tent
Robin Gates is off to the beach with his bucket and spade, but not before he's built a timber-framed canvas bathing tent from the August 1930 issue of *The Woodworker*

26 The Alan Peters Furniture Award 2020
Don't miss out on the opportunity to be part of this fantastic new award, which champions UK furniture making talent while celebrating the life and work of the late Alan Peters OBE

36 The value & cost of furniture making
When it comes to selling and valuing your furniture, Anselm Fraser, Principal of The Chippendale International School of Furniture, advises you to start low, be sensible and pragmatic, but always aim higher and higher

43 Me and my workshop – Doug Tech
Join us as we take a look around the workshop of Canadian artist, craftsman and kayak fisherman, Doug Zech

44 The makers' maker: Alan Peters' last project
Andrew Lawton was lucky enough to be involved in the making of Alan Peters' last piece of furniture, and here he recalls the many happy hours spent with him at his Somerset workshop back in 2005

80 Building a giant trebuchet for *Outlaw King*
John Greeves talks to Fergus Stuart about the work the Scottish team at Carpenter Oak undertook during the construction of a medieval trebuchet

98 End-grain
Downhill all the way

REGULARS

ON TEST

16 Metabo 12V PowerMaxx Combo Set 2.7.4

18 SKIL 7242 AA Multi Sander

22 DeWalt DCN680D2-GB XR 2.0Ah brushless finish nailer kit

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PETER SEFTON FURNITURE SCHOOL OPEN DAY 2019

The Peter Sefton Furniture School in Worcestershire is having an open day on Saturday 13 July, from 10am to 3pm. The Furniture School offers a wide range of long and short woodworking and furniture making courses to small groups.

You will get the chance to meet their expert tutors, watch professional demonstrations, and pick up valuable advice.

Along with a stunning furniture exhibition of the pieces designed and made on this year's Professional Long Course, Peter Sefton will be demonstrating hand tool techniques; Tony Jones from Ashcraft Woodturning will be demonstrating woodturning techniques and Woodpeckers Ultra-Shear Turning Tools; Mark Arnott from **www.markarnottclassicalguitars.co.uk** will be demonstrating guitar making, including shaping of the soundboard strutting and neck shaping; Artisan Media will be filming at the open day, and the Peter Sefton DVD series will also be available for sale; Bob Jones will be demonstrating French polishing and traditional finishing; Wood Workers Workshop will be open with great deals on woodworking tools and products; Sean Feeney,

the school's Designer and Maker in Residence, will be talking about the School's Professional Long Course and end of year show; Chris Yates, resident routing tutor, will be demonstrating routing techniques and products; Tony Smart, past Master of The Furniture Makers' Company, will be guest speaker; and there will also be a student prize giving, which will take place with the School's sponsors: Hammer Felder, Whitmores Timber, Mundy Veneers, Fiddes, Wood Workers Workshop and Gordon Russell Museum.

Last but not least, the Wood Club UK will be running a free BBQ, and they'll be hoping for donations in return for their hard work flipping all those burgers for hungry visitors! Wood Club UK is a group of professionals and hobbyists promoting woodworking, and money raised will be used to fund their forum.

For more information about the Open Day, visit **www.peterseftonfurnitureschool.com**.

DICKIES RAMPS UP SUPPORT FOR STUDENT COMPETITORS

Dickies is sponsoring this year's SkillBuild, SkillELECTRIC, SkillPLUMB and APL Landscaping competitions, as part of its ongoing efforts to support and champion the next generation of tradespeople. Sponsorship will include clothing and safety footwear for all national final contestants, plus T-shirts for competitors at the regional qualifier stage, in which more than 1,000 students compete. Dickies will also provide clothing and footwear for judges and delivery teams at the national finals, which will take place at WorldSkills UK LIVE 2019, the UK's largest skills, apprenticeships and careers event.

"We're keen to help show the next generation that a job in the trades can be a great career and these competitions are an ideal way to do that," said James Whitaker, Marketing Director, Dickies Workwear. "Supporting the contestants at the SkillBuild UK National Final was a real highlight for Dickies in 2018 and the passion and enthusiasm they had for their trades was inspiring to see.

"Having the right workwear for the job can play a big role in helping trainee tradespeople prepare for a successful career – both in terms of comfort, practicality and safety as well as creating a professional image. We wish all contestants taking part in this year's competitions the best of luck."

The agreement follows Dickies' sponsorship of the SkillBuild UK National Final 2018. Contestants also received a hoodie, discount voucher and backpack for taking part, plus winners in all categories were handed a £50 Dickies voucher. To find out more, see **www.dickiesworkwear.com**.

DIARY – AUGUST

8–9* Woodturning
12 Pen turning
13 Tool sharpening
15 Bandsaws
21–22 Intro to the small engineering lathe
* Course held in Sittingbourne, Kent
Axminster Tools & Machinery
Unit 10 Weycroft Avenue
Axminster, Devon EX13 5PH
Tel: 08009 751 905
Web: www.axminster.co.uk

19–25 Windsor chairmaking
24–25 Dulcimer making/cigar box guitar
Greenwood Days
Ferrers Centre for Arts & Crafts
Staunton Harold, Leicestershire LE65 1RU
Tel: 01332 864 529
Web: www.greenwooddays.co.uk

10–11 Tool sharpening & maintenance
11–16 Veneering & laminating
30–2 Beginners' four-day course
Chris Tribe
The Cornmill, Railway Road, Ilkley LS29 8HT
Tel: 01943 602 836
Web: www.christribefurniturecourses.com

3–4 Sharpening & tuning hand tools
5–9 Sharpening & essential cabinetmaking hand skills
10–11 Cabinetmaking fundamentals
12–16 Making a table
19–23 French polishing & modern hand finishes
John Lloyd Fine Furniture
Bankside Farm, Ditchling Common
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10 Introduction to green woodworking
31–1 Coracle making
Weald & Downland Living Museum
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Tel: 01243 811 021
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3–4 Make a wooden hand plane
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Sykes Timber (Warwickshire)
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Web: www.sykestimber.co.uk

The Timber Mill (Cornwall)
Tel: 07966 396 419
Web: www.thetimbermill.com

The Wood Recycling Store (East Sussex)
Tel: 01273 570 500
Web: www.woodrecycling.org.uk

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

Timberman (Carmarthenshire)
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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)
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Web: www.wenbans.com

Wentwood Timber Centre (South Wales)
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Web: www.wentwoodtimbercentre.co.uk

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WOOD CONSTRUCTION COMPANY USES PROFESSIONAL POWER TOOLS FROM **BOSCH** FOR A SAFE OUTLOOK

The view over the Traunstein mountain does not bode well. Dark clouds hang over the peaks of the Upper Austrian Prealps and herald the start of a summer storm with a grumble. "The weather can turn quickly here in the mountains. During this phase of construction, the support structure must be properly secured so that the tower remains stable," explains Christian Ortner, Carpenter and Site Manager at Wiehag GmbH. For him, the sudden change in weather is one of many challenges that comes with working in this area. His construction site is the Grünberg mountain, the smaller, forest-covered brother of the rugged Traunstein, which is used as preparation for summiteers these days. Erlebnis Akademie AG, which specialises in nature-friendly treetop walkway concepts in Europe, is creating a natural experience here with new perspectives. The Salzkammergut treetop walkway, on which you can stroll 1,400m through the treetops to the viewing tower above the forest, leads you to a breath-taking view of the landscape. The construction of the tower was undertaken by Wiehag GmbH, who know their way around such projects thanks to their extraordinary wood construction feats on an international level. "With nine viewing towers, we are now experts. No two towers are the same. For me personally, this will be the third tower that I have built," says Christian.

On top of the world

There is little time left to construct the tower, which consists of 80% weather-resistant wood such as larch and Douglas fir, is 39m high, and is expected to bear the weight of up to 200,000 visitors each year. The project has been ongoing for four weeks, and the construction plan specifies that only another four weeks remain. Yet the carpenter is keeping a calm head, with regard to both the schedule and carrying out his work at such a great height. "We are a well-coordinated team when it comes to taking on such projects," he says, and provides further instructions. A heavy goods vehicle has slogged up the mountain and the material needs to be unloaded. "The giant support structures are manufactured in advance and assembled on site. We work with oversized ratchets, but we also use cordless tools. Safety is key here because you do not always have optimum stability when working at heights. Harnesses on the lifting platforms help to prevent us from falling, and cordless tools are used to protect against kickback or vibrations."

Occupational health & safety with vision

Combi drill, angle grinder, hand-held circular saw, reciprocating saw – Christian Ortner's carpentry team uses an extremely wide range of cordless tools for their woodworking. With professional power tools from Bosch, they are able to draw upon an extensive system in order to work both efficiently and safely. The spectrum ranges from solutions which immediately minimise the risk of injury to solutions that protect against long-term health risks. For example, the sensor-based KickBack Control function, which comes with the GSR 18V-60 FC Professional cordless drill/driver, offers immediate protection. If the drill becomes jammed, the integrated sensor detects the sudden blockage and switches off the motor within a fraction of a second. "When you are working at heights of 40m, there must never be any situation in which you lose control. "The recoil protection provides peace of mind," says Christian. For screwdriving and drilling work in difficult-to-reach areas, he can also be extremely flexible with the 18V cordless drill/driver. "Thanks to the FlexiClick adaptors, I can use it to screwdrive around corners and very close to edges, or I can use it as a rotary hammer," he explains.

Reaching the summit in terms of safety

The approaching storm puts the workers under more pressure. Before wind and rain reach the tower, several steel connections that absorb the forces from the support structure still need to be installed. In between, Christian constantly has to measure and re-measure. "Building the tower is precision work; its bridge is screwed in like a rising spiral. Everything has to fit together. This is the only way that the circle will be formed at the top," he says, before the lifting platform brings him back down. Once down, he changes to a GWS 18V-10 SC Professional cordless angle grinder and trims armouring iron that protrudes from the foundations.

"Optimum control also increases the protection here," he says, and goes on to talk about the braking function offered by the cordless angle grinder. "If a tool takes a long time to come to a complete stop, the risk of injury is higher. With the braking function, the cutting disc comes to a complete stop within seconds," he explains, using the GKS 18V-57 G Professional cordless hand-held circular saw to demonstrate this protective function.

The carpenters use this to trim handrails and floorboards or to cut longer workpieces precisely using a guide rail. For thicker beams, the GSA 18V-32 Professional cordless reciprocating saw is a permanent fixture for the team because it offers long-term protection thanks to active vibration damping. A counterweight constantly counteracts the inertial forces and reduces vibrations. "This means that virtually no vibrations are passed on to the body," explains Christian. Yet again, he uses the lifting platform to take him back up in order to check the connecting pieces that have just been installed, and to measure the supports again.

For more information on the products described here, see **www.bosch-professional.co.uk**.

DICKIES WORKWEAR UNVEILS LATEST CATALOGUE

Dickies has unveiled its 2019-20 catalogue, featuring a brand-new layout plus 17 new products, including a selection of shorts and T-shirts.

The catalogue is over 300 pages long – the largest ever published by Dickies – and the new design aims to make it simple for tradespeople and retailers to use. For example, footwear products are split according to safety classifications, while other sections include hi-vis, trousers and shorts, tops and outerwear for quick reference.

"Workwear is constantly evolving and tradespeople demand more from their clothing and footwear than ever before," said James Whitaker, Marketing Director, Dickies Workwear. "The new catalogue provides a greater level of technical information than previous editions, all presented in a manner that's easy to understand. This will help our customers to choose workwear that meets their requirements in terms of both safety and practicality."

New products include the Dickies GDT Premium Shorts, with practical features including a hard-wearing Cordura® pocket, plus wide belt loops and hip pockets. The catalogue is available to download now at **www.dickiesworkwear.com/uk/info/catalogue**.

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Commercial drum fans

These great value robust drum fans are ideal for commercial and industrial applications, providing a solution for fast cooling in large workshops, garages, factories and more. This range produces an excellent amount of air flow, up to 310m³ per minute, allowing large areas to be cooled quickly and efficiently, with three large fan sizes to choose from: 24in, 30in or 36in. All models feature two handles and are mounted on large rubber wheels for easy transportation. Models in this range start from £142.80.

Heavy-duty industrial drum fans

These high output heavy-duty industrial drum fans are built for long-term industrial, commercial and agricultural use. These models produce an excellent amount of air flow, up to 222m³ per minute, allowing large areas to be cooled quickly and efficiently. There are two fan sizes to choose from, ranging from a big 24in to a large 30in.

All models feature a tilt range of 300° and are mounted on large rubber wheels so the fan can be positioned easily and transported to wherever it is required.

Models in this range start from £190.80. To find out more about both ranges, see **www.machinemart.co.uk**.

A BENCH TO REMEMBER

It's a bench that's been made by many hands and is now a fitting memorial to a departed colleague. Isobel Edgar was Student Welfare Officer at the Chippendale International School of Furniture, and passed away last month. She was one of the school's longest-standing members of staff, having worked with the Chippendale team for 25 years. The redwood bench is the school's way of paying tribute to her and a permanent reminder of her contribution to the Chippendale school. It was copied from an old bench, with all the school's students and members of staff contributing a small piece. It's now situated on school grounds, on a spot that Isobel loved, offering views over the surrounding countryside, and a place that will give future students a place of quiet contemplation. The bench was made under the supervision of Deputy Principal Tom Fraser, and a sugarplum tree will be planted beside it. "Isobel was a valued member of the Chippendale school community who worked tirelessly to make our students' lives as easy as possible," said Anselm Fraser, Principal. "We know that she would love this memorial to her, and that every student and member of staff has contributed to it," he said.

To find out more about courses offered at the school, see **www.chippendaleschool.com**.

SHARPENING MADE EASY WITH THE ULTIMATE EDGE

The new Ultimate Edge sharpening system is a remarkable machine that will revolutionise sharpening your tools. It really is a tool user's dream, allowing fast repeatable sharpening on all your edge tools, which means you will spend less time sharpening and more time making. As the name suggests, it is the ultimate in sharpening machines.

However, it is much more than just a sharpening machine. The belt can be positioned horizontally allowing linishing and flat sanding jobs to be carried out. It is also an effective polishing and honing machine, utilising the unique 'Twist n Fix' multi-purpose arbor. This feature enables the almost instant change of different mops, felt wheels and profiling wheels. The ability to change these so quickly ensures the process of starting coarse and finishing with fine is always followed. Whether you are a woodworker, woodturner, restorer or carver, life will be much easier with the Ultimate Edge.

Two versions are available: a deluxe variable-speed model and a single-speed model. The deluxe machine has a 560W motor, which drives a 50mm wide belt; with forward and reverse movements, it has high torque and is quiet running. Belt tracking is quick and easy: a quarter turn of a knurled knob covers everything.

To take full advantage of the versatility of this machine, you will also need the Compound Guide Jig. This is the starting point for the majority of accessories. The jig has a solid and fully adjustable silver steel bar on which sharpening guides, accessories and some Tormek jigs can be mounted. Additionally, a Universal Sharpening Table is available; it has a large surface and is ideal for freehand lathe tool sharpening and general linishing. It locks securely to the bar of the Compound Jig and has a quadrant of angles laser-marked for easy reference.

The Honing Guide Assembly is perfect for grinding joinery chisels and plane blades, and fits onto the bar of the Compound Jig. The jaws are dovetail in shape, allowing the chisel to be firmly clamped against the body. The jaws accommodate chisels 6-66mm in width.

A single-speed version is also available. With its 375W motor, it can handle most light-duty work in the workshop, including light grinding and sharpening of lathe tools. This linisher-grinder-sharpener is perfect for metal-based hobbies.

While ideal for sharpening lathe tools, the Ultimate Edge is also excellent for rejuvenating and removing rust from old tools.

Deluxe variable-speed version – £379.96 (inc VAT)
Fixed single-speed version – £329.95 (inc VAT)

(Please note that prices may be subject to change without notice.)

For more information, please visit the Axminster Trade brand store: **www.axminster.co.uk/axminster-trade**.

NEW GORILLA CONTACT ADHESIVE CLEAR

Gorilla Contact Adhesive Clear is a wonderfully versatile, hands-on glue that dries crystal clear while being extremely versatile. It gives users ultimate control, is flexible, repositionable and can hold in seconds. Gorilla Contact Adhesive Clear bonds everything from fabric and leather, to wood and paper. This tough glue doesn't drip or run, but it does provide a permanent bond that is 100% waterproof. For hobbyists, crafters or DIYers, this product is the perfect solution.

Gorilla Contact Adhesive Clear is available in a 75g tube, with an RRP of £6.49 and can be purchased from B&Q and Homebase.

ENTROPY RESINS – NEW ONLINE STORE LAUNCHED FOR EUROPEAN CUSTOMERS

Wessex Resins and Adhesives is delighted to announce the launch of a new online store to facilitate ordering the unique range of bio-based epoxy: Entropy Resins. The EU online store has been added to the current North American website **www.entropyresins.com** and will support the existing network of distributors and retailers.

Entropy Resins are used in a variety of applications, from coating and laminating at room temperature, compression moulding, and casting and embedding, to produce water clear, UV-stable finishes. Due to their sustainability credentials, Entropy Resins are used extensively by action sport goods manufacturers for the construction of such items as surf and snowboards. The range is already a firm favourite among makers and creatives who love its usability and physical properties – stunning end results can be created with clear casting, like 'river' tables.

"The market take-up of Entropy Resins has been phenomenal in the last four months," says Ian Oliver, Managing Director, Wessex Resins and Adhesives. "We've been servicing orders from across Europe, the Middle East, Turkey, Africa and India. Manufacturers and individuals are finding all sorts of applications for Entropy Resins, from high-end sports products to jewellery. We're always delighted at the ingenious uses of the epoxy brands we manufacture (West System and Pro-Set epoxy) and Entropy Resins are proving no different. That's why we've worked with our American partners to create this website, making it as straightforward as possible to order online."

As well as the shop facility the website details applications, product information and data sheets and has lots of useful facts to help new, or professional users, to choose and order Entropy Resins.

Wessex Resins and Adhesives manufactures and supplies Entropy Resins, West System and Pro-Set epoxy from its head office in Romsey, Hampshire. All three brands are manufactured under licence from Gougeon Brothers, Inc.; see **www.epoxycraft.com**.

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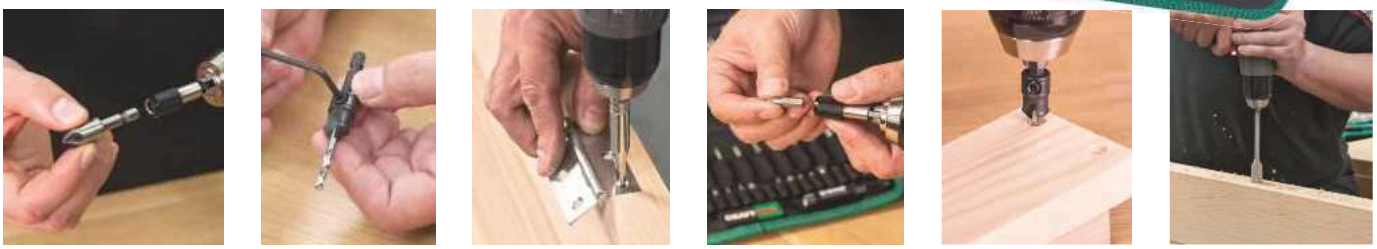
TREND CRAFT PRO QUICK RELEASE SYSTEM SETS

MANUFACTURER: Trend
D&M GUIDE PRICE: **CR/QR/SET1 (30pc)** – £37.95
CR/QR/SET2 (60pc) – £69.95 (prices inc VAT)

Covering a multitude of applications across different trade and hobby platforms, the new **Trend 60-piece Craft Pro Quick Change Bit Set** is the all-round Swiss Army accessory set at an affordable price that doesn't compromise quality. The comprehensive set is housed in a heavy-duty fabric wallet to keep everything secure and close to hand whenever needed and includes four masonry drills from 5-8mm, covering common wall plug sizes for all brick, block, tile and stone drilling work. The set caters for all your drilling, driving and countersinking needs and with the standard hex shank design, offers quick changeovers between functions for fast and efficient working practices and increased productivity.

Also available, the **Trend 30-piece Craft Pro Quick Release Bit Set** is suitable for a popular range of drills, countersinks, driver bits and bit holders, and covers a range of applications for the hobbyist and tradesman alike, and with the inclusion of 25mm and 19mm flat bits, is especially suited to lock fitting work and other associated door hanging tasks. It is supplied in a durable heavy-duty holder to keep everything securely stored and easily accessible. Full details can be found on our website.



MAKITA DRS780Z 36V LXT BRUSHLESS CIRCULAR SAW

MANUFACTURER: Makita
D&M GUIDE PRICE: £239.95 (inc VAT)

Makita, a pioneer in brushless motor technology and battery innovation, combines both in the 18V X2 LXT® (36V) Lithium-ion Brushless rear handle DRS780Z circular saw. It's powered by two 18V LXT® Lithium-ion batteries (sold separately) for maximum performance and has an electronically-controlled BL™ Brushless motor that matches torque and RPM to the application. Makita 18V X2 means freedom from the cord, even for demanding applications such as cutting sheet and dimensional lumber, which traditionally called for a corded saw.

The DRS780Z has a long list of features for efficient cutting without the cord. Users of leading corded saws will appreciate the blade-left rear-handle design. The electronically-controlled brushless motor delivers a full 5,100rpm for efficient cutting, and added features include a large 65mm cutting capacity at 90°, and an electric brake for maximum productivity. The saw has a die-cast magnesium base and blade guard with die-cast aluminium blade cover and motor housing, which combines durability with less weight (only 5.6kg with batteries – sold separately).

METABO 12V POWERMAXX COMBO SET 2.7.4

Compact, spot-on ergonomically and capable of serious drilling and screwdriving tasks between them, **Phil Davy** is a big fan of this Combo Set from Metabo

There are several professional power tool brands in the UK which aren't always as prominent as they deserve to be. Metabo are among them, but with extensive new ranges of both 12V and 18V cordless kit they're worth checking out if you're considering buying a serious drill or similar tool.

This new PowerMaxx 12V twin pack includes a drill/driver and impact driver, plus two Li-ion batteries and charger, all in a sturdy MetaLoc storage case. Either tool is available separately, with or without batteries. Unusually for a twin-tool kit, Metabo include two different batteries: a standard 2.0Ah Li-Power pack and a more advanced 4.0Ah LiHD unit, which offers higher performance. This way you have the extended run time of a larger battery, with a lower capacity unit as back-up or when space is really tight, without unnecessary extra expense. In terms of physical size the 4.0Ah battery isn't significantly larger. Both packs feature a green LED fuel display by depressing the small button alongside. With the charger provided it takes around 90 minutes to get the 4.0Ah battery fully charged, and about 45 minutes for the 2.0Ah version. A flashing LED switches to continuous green when this is reached.

Unusually for a twin-tool kit, Metabo include two different batteries: a standard 2.0Ah Li-Power pack and a more advanced 4.0Ah LiHD unit, which offers higher performance

PowerMaxx BS 12 BL Q cordless drill/driver

Metabo's PowerMaxx BS12 BL Q drill/driver is sleek, compact and fits your hand snugly when picked up. There's plenty of textured rubber for grip and with a 4.0Ah battery on board weighs just 1.1kg. To release the pack you simply push a red locking button and slide it off. Steel belt hooks are provided for both tools and can be screwed to either side of the handle. Each tool also has a magnetic bit holder, fitted in the same way.

Equipped with a brushless motor means overall distance from chuck tip to the back of the tool is just 160mm. Removing the chuck reduces this to less than 120mm. Although standing taller than Bosch's similar 12V FlexiClick drill, the Metabo is shorter from front to back.

Metabo's PowerMaxx BS12 BL Q drill/driver is sleek, compact and fits your hand snugly when picked up

The soft-grip trigger is a decent size, with standard forward/reverse button above it. With a selector slider up top, the variable speed range is from 0-500rpm and 0-1,650rpm, depending on the gear chosen. Squeezing the trigger activates a bright white LED worklight at the base of the handle.

This drill features Metabo's Quick System, meaning you can remove the chuck rapidly by grasping its red, spring-loaded collar. You don't need to take out a bit first, so you can switch between drilling or inserting screws easily. Chuck capacity is only 10mm, though you'd not expect anything bigger on a 12V tool. Three steel jaws will grip a bit down to 1.5mm diameter, so the tool is ideal for small-scale drilling tasks. That said, it easily handled large diameter flat bits when drilling into oak.

A standard magnetic hex collar is revealed with the chuck removed, enabling you to insert a Pozi bit or any accessory with a hex shank. Easy to read, a 20-way torque collar is fitted, which clicks positively at each stop as it's rotated. Maximum torque is 45Nm, depending on the material density you're driving screws into.

Metabo accessories

To increase versatility of the drill/driver you can add either an offset angle attachment or a 90° chuck adaptor. These both feature the Quick System, so mounting on the tool is dead easy. When working in confined spaces these accessories can be really handy, making certain cabinetmaking or shopfitting tasks far more convenient than using a straight, in-line tool.

To release the pack you simply push a red locking button and slide it off

Steel belt hooks are provided for both tools and can be screwed to either side of the handle

With a selector slider up top, the variable speed range is from 0-500rpm and 0-1,650rpm, depending on the gear chosen

This drill features Metabo's Quick System, meaning you can remove the chuck rapidly by grasping its red, spring-loaded collar

A standard magnetic hex collar is revealed with the chuck removed, enabling you to insert a Pozi bit or any accessory with a hex shank

Maximum torque is 45Nm, depending on the material density you're driving screws into

The offset attachment costs around £70 and offers 12 pre-set positions, selected by sliding the red Quick sleeve and rotating the end. Accepting hex bits only (it has a spring-loaded collar), enables you to insert screws tight into a corner of a cupboard or similarly tight space. Fitted the same way, the fixed 90° adaptor costs about £37 and again has 12 settings. It's equipped with a magnetic hex collar.

PowerMaxx SSD 12 BL cordless impact driver

You don't necessarily need the muscle of an 18V impact driver for many screwdriving tasks, and the PowerMaxx SSD 12 BL is a good example of this. Virtually the same size as the drill/driver, this tool has two variable speeds, from 0-1,250rpm and 0-2,500rpm. This translates to a maximum 2,000 or 4,000bpm (blows per minute), with maximum torque of 70 or 140Nm, depending on the speed selected. Hex bits fit into a standard spring-loaded holder. As with any impact driver, it's a good idea to wear ear defenders when using it for extended periods.

Rather than relying on mechanical speed and torque selection, here it's electronic. Pressing the button (adjacent to the LED worklight) changes this instantly, whether the motor is running or not. A red LED indicates when the lower speed setting has been selected.

Again, a lightweight tool almost identical in size to the drill/driver, overall weight is 1.05kg with a 4.0Ah battery fitted. So where would you use it? Building stud walls, installing outdoor decking or many projects that need heavy gauge screws where you don't want to bother with pilot holes.

The offset attachment costs around £70 and offers 12 pre-set positions, selected by sliding the red Quick sleeve and rotating the end

Fitted the same way, the fixed 90° adaptor costs about £37 and again has 12 settings

You don't necessarily need the muscle of an 18V impact driver for many screwdriving tasks, and the PowerMaxx SSD 12 BL is a good example of this

On the impact driver, hex bits fit into a standard spring-loaded holder

Conclusion

Both these Metabo tools feature brushless motors, so are compact and spot-on ergonomically. Between them they're capable of serious drilling and screwdriving tasks, whether you're involved in making furniture or on-site carpentry. Unlike some pro 12V tools, either model will stand neatly on the bench without tipping over, even with a sizeable bit fitted. I can see the BS12 BL Q drill/driver becoming a firm favourite with cabinetmakers and shopfitters, or as a reliable workshop tool. Remember there's no hammer action, though.

For jobs where you need to swap frequently between drilling and driving screws, Metabo's Quick System is fantastic. Build quality is superb, with a warranty of three years.

SPECIFICATION

PowerMaxx BS 12 BL Q cordless drill/driver
Maximum torque – soft: 18Nm
Maximum torque – hard: 45Nm
Adjustable torque: 0.5-5Nm
Drill Ø steel: 10mm
Drill Ø softwood: 25mm
No-load speed: 0-500/0-1,650rpm
Chuck capacity: 1.5-10mm
Weight (inc battery pack): 1kg

PowerMaxx SSD 12 BL cordless impact driver
Maximum no-load speed: 0-2,500rpm
Maximum impact rate: 4,000bpm
Maximum torque: 140Nm
Speed/torque levels: 2
Bit retainer: Hexagon recess ¼in (6.35mm)
Weight (inc battery pack): 1kg

Typical price: £370
Web: www.metabo.com/uk

THE VERDICT

PROS

- Build quality; compact; excellent ergonomics; 2.0Ah & 4.0Ah batteries included; M-Quick System chuck

CONS

- Not a combi drill, so no hammer action

RATING: 5 out of **5**

SKIL 7242 AA MULTI SANDER

This versatile offering from SKIL is fine for occasional sanding jobs, though don't expect to use it for hours on end, says **Phil Davy**

SKIL is another power tool name that may not be too familiar to newer woodworkers. Famous for the once ubiquitous SKIL saw, this DIY brand is now available through B&Q stores. Over the years it has changed its livery and is now a rather snappier red, certainly more eye-catching than before. As well as a new range of 20V cordless tools, they produce plenty of mains-powered products, too.

The Multi Sander concept is not new, the format available from a couple of brands in the past, including both SKIL and Black & Decker. Interchangeable bases can be swapped to suit the surface you're sanding, whether this is flat, contoured or when working tight into a corner.

Clic system

Essentially, this SKIL 4-in-1 model is an orbital tool with palm sander base. It accepts hook-and-loop-backed sanding sheets, which tend to be a fairly common size (approximately 100 × 150mm) in this style. Abrasive sheets to fit similar sanders of other brands may vary slightly in size, though if necessary you could trim them to fit the SKIL. The punched hole pattern is unlikely to match exactly, though.

SKIL's Clic system features fast, tool-free pad removal. Moving the lever sideways releases the forward delta pad, which can then be substituted for another rigid extension pad. There are three provided, each with lugs that simply click into the base. Sliding the lever back again locks the plate to the tool.

One of the extension pads uses regular (approximately 93 × 93mm) triangular sheets, while the other two are more specialised. For sanding convex profiles one pad has a flexible strap, which uses square-format sheets (approximately 54 × 54mm). The final base is a finger pad (approximately 87 × 32mm), which is ideal for sanding louvred doors or similarly restricted areas.

Although several abrasive sheets of different size are included, these are 120 grit only. A few at 80 grit would have been welcome, particularly for stripping paintwork or varnish. Only the larger delta sheets are punched for dust extraction, though. On the plus side it's fairly easy to create your own abrasives, providing you can find suitable hook-and-loop sheets. Simply use a craft knife to cut the shape needed, using the tool itself as a template.

Brushed motor

The Multi Sander has textured rubber around the top of the body to improve grip, while the on/off rocker switch is shrouded against dust.

Interchangeable bases can be swapped to suit the surface you're sanding, whether this is flat, contoured or when working tight into a corner

The Multi Sander accepts hook-and-loop-backed sanding sheets, which tend to be a fairly common size (approximately 100 × 150mm) in this style

SKIL's Clic system features fast, tool-free pad removal

Moving the lever sideways releases the forward delta pad, which can then be substituted for another rigid extension pad

There are three provided, each with lugs that simply click into the base

Sliding the lever back again locks the plate to the tool

For sanding convex profiles one pad has a flexible strap, which uses square-format sheets

The final base is a finger pad, which is ideal for sanding louvred doors or similarly restricted areas

The tool itself has textured rubber around the top of the body to improve grip, while the on/off rocker switch is shrouded against dust

It's fairly lightweight at 1.05kg, while cable length is adequate at 2.7m.

A brushed motor (rated at 160W) means the SKIL is quite noisy, and its single fixed speed of 14,500rpm means you can't reduce this to lower the sound level. Suitable ear defenders are therefore highly recommended for periods of extended sanding.

A rigid Micro-Filtration dust canister clips securely to the rear port, and with a paper filter it's arguably more efficient than a fabric dustbag. You can't actually dismantle the clear plastic box if you want to rinse the filter, though. Emptying the canister is simple enough, however. A vacuum hose adaptor is included, so hooking up an external extractor isn't a problem.

A rigid Micro-Filtration dust canister clips securely to the rear port

You can't actually dismantle the clear plastic box if you want to rinse the filter, though. Emptying the canister is simple enough, however

A vacuum hose adaptor is included, so hooking up an external extractor isn't a problem

Swapping from one pad to another is certainly convenient, with the flexible pad option particularly handy for convex sanding

The tool is light enough for extended overhead or vertical sanding, without suffering arm ache at the same time

As a DIY tool it's fine for occasional sanding jobs

In use

This is not a random orbit tool, so some swirls on the surface are inevitable when sanding. Swapping from one pad to another is certainly convenient, with the flexible pad option particularly handy for convex sanding. I found there was a tendency for the abrasive to stick as you moved this pad along a rounded edge, though this could have been the combined effect of several layers of paint. The tool is light enough for extended overhead or vertical sanding, without suffering arm ache at the same time. Its Micro-Filtration box works well enough (when using punched paper), though capacity is limited. Not a big problem, though in a workshop you're probably better off using an extractor anyway.

Conclusion

The SKIL Multi Sander is more versatile than most budget sanders, particularly if you're faced with a house renovation project or similar work. If you're keen on upcycling old furniture, this tool would be suitable for cleaning up chair and table legs, stair spindles, louvred doors and suchlike. As a DIY tool it's fine for occasional sanding jobs, though don't expect to use it for hours on end.

SPECIFICATION

Input: 160W
Sanding movements: 29,000pm
Sanding orbit Ø: 1.6mm
Turnable delta tip size: 93mm
Weight: 1.6kg
Voltage: 220-240V
Sound pressure level: 80.0dB(A)
In the box: SKIL 7242 Multi Sander; 12 × sanding sheets; turnable delta tip; 3 × special sanding attachments; Micro-Filtration dust box; Vacuum cleaner adaptor; instruction manual

Typical price: £45
Web: www.skil.com; www.diy.com

THE VERDICT

PROS
- Four sanding options; easy to swap pads

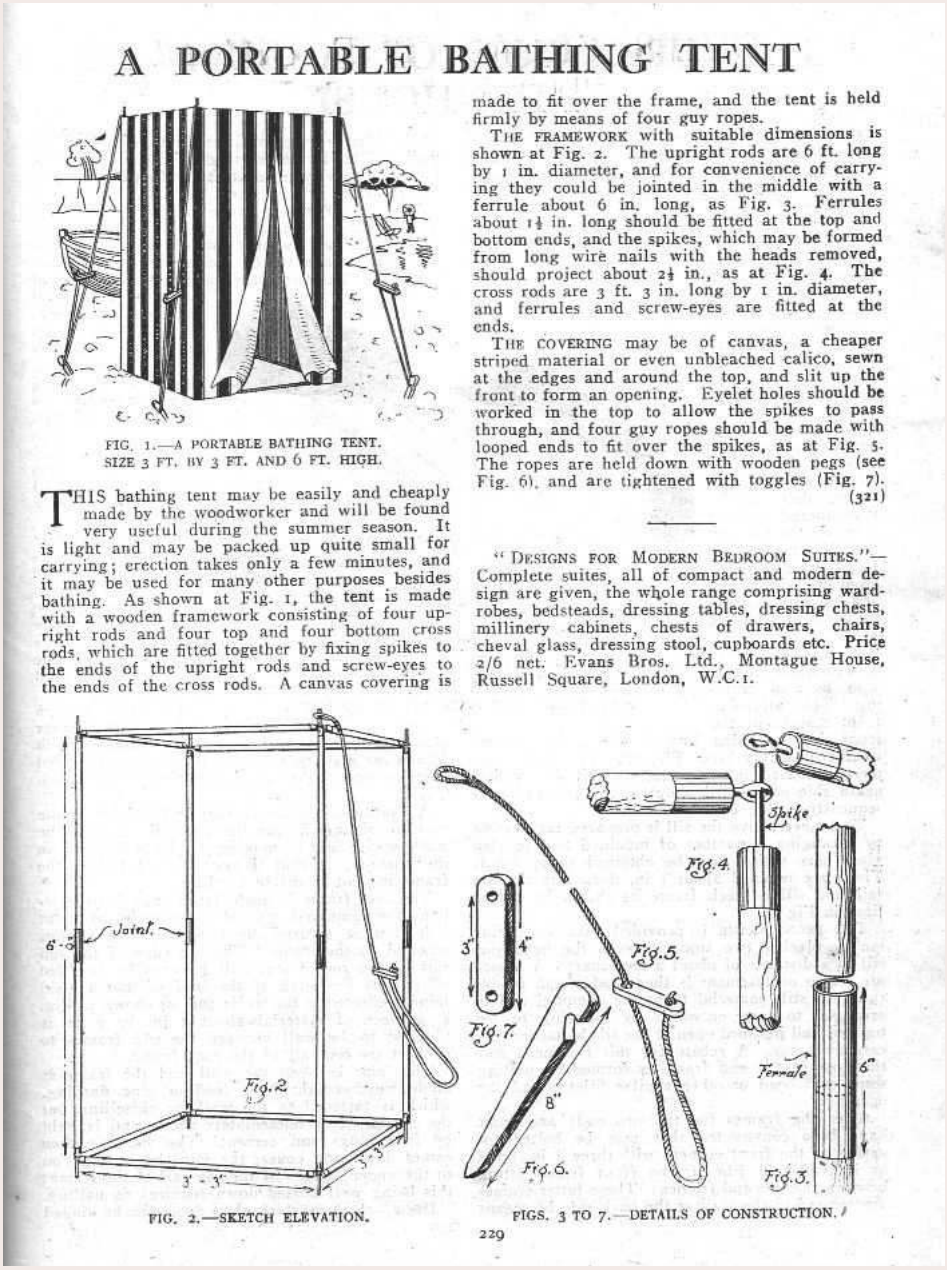
CONS
- Quite noisy; single speed

RATING: 3.5 out of **5**

Loitering within tent

Robin Gates is off to the beach with his bucket and spade, but not before he's built a timber-framed canvas bathing tent from the August 1930 issue of *The Woodworker*

Sun hat, sun cream, shades, towel, trunks, bucket, spade, latest issue of *The Woodworker* – have I forgotten anything for my trip to the beach this afternoon? Yes, the bathing tent! I'll need something safer than a slipping towel while getting changed, and not one of those pop-up plastic affairs designed for garden gnomes, later to be found in pieces littering the dunes and spilling around bins along the promenade. I'm talking about proper accommodation with standing headroom, for which we need turn to our August 1930 issue of this journal, page 229 (pages were numbered consecutively through the year in those days; each issue was about 30 pages).



A PORTABLE BATHING TENT

FIG. 1.—A PORTABLE BATHING TENT. SIZE 3 FT. BY 3 FT. AND 6 FT. HIGH.

THIS bathing tent may be easily and cheaply made by the woodworker and will be found very useful during the summer season. It is light and may be packed up quite small for carrying; erection takes only a few minutes, and it may be used for many other purposes besides bathing. As shown at Fig. 1, the tent is made with a wooden framework consisting of four upright rods and four top and four bottom cross rods, which are fitted together by fixing spikes to the ends of the upright rods and screw-eyes to the ends of the cross rods. A canvas covering is made to fit over the frame, and the tent is held firmly by means of four guy ropes.

THE FRAMEWORK with suitable dimensions is shown at Fig. 2. The upright rods are 6 ft. long by 1 in. diameter, and for convenience of carrying they could be jointed in the middle with a ferrule about 6 in. long, as Fig. 3. Ferrules about 1¼ in. long should be fitted at the top and bottom ends, and the spikes, which may be formed from long wire nails with the heads removed, should project about 2½ in., as at Fig. 4. The cross rods are 3 ft. 3 in. long by 1 in. diameter, and ferrules and screw-eyes are fitted at the ends.

THE COVERING may be of canvas, a cheaper striped material or even unbleached calico, sewn at the edges and around the top, and slit up the front to form an opening. Eyelet holes should be worked in the top to allow the spikes to pass through, and four guy ropes should be made with looped ends to fit over the spikes, as at Fig. 5. The ropes are held down with wooden pegs (see Fig. 6), and are tightened with toggles (Fig. 7). (321)

"DESIGNS FOR MODERN BEDROOM SUITES."—Complete suites, all of compact and modern design are given, the whole range comprising wardrobes, bedsteads, dressing tables, dressing chests, millinery cabinets, chests of drawers, chairs, cheval glass, dressing stool, cupboards etc. Price 2/6 net. Evans Bros. Ltd., Montague House, Russell Square, London, W.C.1.

FIG. 2.—SKETCH ELEVATION.

FIGS. 3 TO 7.—DETAILS OF CONSTRUCTION.

229

The satisfaction of a job well done

In the context of traditional wooden deck chairs and a solid clinker-built boat drawn up on the beach, this stripy four-square structure looks perfect. Just out of view, I'm sure there's a paddle-steamer coming alongside the pier, while the dulcet tones of a silver band drift down from the esplanade. We want nothing rushed, nothing simply cheap and convenient; it's quality we're after, and the satisfaction of a job well done.

For materials we're looking at around 16m of 25mm diameter wooden rod, some 9sq.m of canvas, various metal ferrules, screw eyes, spikes, perhaps 10m of three-strand line, four toggles and four pegs. Although, wooden pegs in shifting sand are unlikely to prove successful, so perhaps substitute four canvas bags to be filled with pebbles to serve as anchors. Now it occurs to me that, despite the author's assurance, it'll be 'light and may be packed up quite small' this portable bathing tent will either require a porter to assist with carrying it to the beach, or we'll have to construct a small trolley or sled for the purpose.

But it'll be worth it, because as the author also says, the tent may be used for a lot more besides bathing. As a bijou retreat from the burning midday sun, for example, a latrine at the campsite, or perhaps as a bird hide if clothed in a more subdued fabric.

Before construction begins, we might ask, would it actually make more sense to opt for modern materials? Ultra-lightweight struts, Nylon fabric, clips and line? In my opinion, no. Having seen, indeed been the cause of some near-catastrophic events involving lightweight tents, if we were to build this design to minimum weight I fear that, in any kind of a sea breeze, we'd soon discover we had a large and unwieldy box kite taking to the skies.

Getting down to business, it's fairly self-explanatory how the thing goes together. Just three points to add. First, behind the few words 'A canvas covering is made to fit over the frame', I suggest there lies a good deal of careful measuring, cutting, and heavy sewing with twine and needle. Second, for eyelets, where the spikes pass through the canvas, I'd suggest holes be sewn around to prevent tearing, otherwise fitted with metal grommets. And third, regarding the spikes themselves, hammering the suggested long nails into small diameter wooden rods could lead to the kind of side-splitting results that aren't funny. I'd either use screws in pilot holes, with heads subsequently filed off, or drill holes for dowels to be glued in place.

One more thing, perhaps as revealing about me as about tents per se – they're also great for eavesdropping. There's nothing like the thin sound-permeable wall of a tent to lull people into a false sense of confidentiality, whether sheltering behind it or merely passing by. The things I've heard!

Well, sad to say the sun's gone in and the tide's gone out now that we're finished, but they'll be back again tomorrow, and the forecast is looking even better.

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DEWALT DCN680D2-GB XR 2.0AH BRUSHLESS FINISH NAILER KIT

Jamie Smith of **Atelier Cabinet Makers** looks at the latest generation 18V XR Li-ion brushless 18Ga finish nailer from DeWalt, which offers the cutting edge in nailing technology

Ergonomic, comfortable DeWalt grip handle

The DCN680D2-GB is the latest generation 18V Li-ion brushless 18Ga nailer from DeWalt, forming part of their XR range – an ever-expanding collection of cordless power tools that run on the DeWalt 18V XR Li-ion batteries. There are over 140 different tools in the XR range, offering a huge variety of cordless options all on the same battery platform. This is great for tradesmen and hobbyists looking to buy into a cordless tool platform, as once you have a couple of batteries, you can purchase other tools as body-only versions.

What's in the box

I was sent the DCN680D2-GB for review, which is supplied in a DeWalt T-Stak VI heavy-duty kit box, along with a Multi-Volt XR charger and two 2.0Ah XR Li-ion battery packs with state of charge indicator. The nailer can also be purchased as the body-only option (DCN680N-XJ) for those already on the XR platform. The T-Stak kit box is a stackable, lightweight case, which is well built and lined with thick foam compartments, so the tool and batteries can be kept protected and all in place.

Compact & easy to use

The 18Ga nailer weighs 2.6kg and feels quite evenly balanced when fitted with a battery pack. The tool looks as though it would be more top heavy than it actually is, and with the excellent DeWalt ergonomic grip handle, is very comfortable to hold. The build of the DCN680D2-GB is incredibly durable and well suited to the job site.

This nailer has a fully mechanical operation as opposed to gas, which offers low running costs and consistent performance at low temperatures. This means that all you need are your battery packs to run the tool. I am used to using an air nailer, which means that when working on site fitting wardrobes, for example, I would have to bring my heavy, awkward air compressor from

T-Stak stackable carry case

Firing depth adjustment wheel and adjustment indication

Fully mechanical firing mechanism – this means no gas is needed

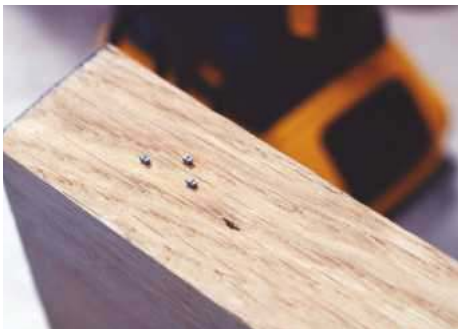
Headlights and firing mode switch

The T-Stak case provides protective organisation of the tool, batteries and charger

50mm brad nails evenly sunk into solid oak

Loading the nail magazine, which takes 15-54mm 18Ga nails

The DCN680D2-GB offers great versatility in a compact, portable design



The nail heads have been left exposed using the firing depth adjustment; this enables removal of nails for temporary applications

the workshop for fitting decorative cornices or plinths. With the DCN680D2-GB, however, which is more compact overall, I have to admit that I didn't experience any issues as a result of its smaller stature, and for a majority of uses, I found it to be a perfect replacement to lugging an air compressor upstairs.

In use

This nailer has some excellent features, including the fact it can accept 18Ga nails in lengths from 15-54mm. I fired lots of 50mm nails into solid oak and found the DCN680D2-GB to handle this with ease and excellent consistency. There is a depth adjustment that changes the depth at which the fastener is driven, and this is a useful feature especially for use in temporary applications where the nail heads can be left proud of the surface and pulled out or knocked in later. The nailer has sequential and bump firing modes, which gives the user the option of a faster firing rate when the bump fire mode is selected. In this configuration, the trigger is held compressed and the nailer fires when the contact trip is depressed. This option is best suited for the nailing of large, flat stationary surfaces. I tried firing a lot of varied size nails into different timbers and sheet material and didn't experience any nail jams. If a jam does occur in the nosepiece, the right-hand headlight will blink continuously. To un-jam is an easy, tool-free process: you simply remove the battery, engage the trigger lock off, remove the nails from the magazine and then lift the jam clear latch on the front of the nailer, which removes the bent nail. When I thought I'd experienced a jam (which didn't turn out to be the case after all), the nailer refused to fire and this is a clever dry fire lock out feature. This has to be one of my favourites as it prevents the nailer from firing before running out of fixings. With other nailers, I've found this to be a real nuisance and allows continuous firing, even though you may have ran out of fixings 15 shots or more ago. The magazine of the DCN680D2-GB, however, holds a maximum of 110 nails.

There are two headlights that clearly illuminate the fixing area, hard-wearing rubber bump pads on the nailer body as well as a large belt hook. The charger has colour light charge indicators and is compatible with other DeWalt 10.8V/14.4V/18V batteries. Switching between sequential and bump firing modes is achieved by engaging the indicator switch, which is situated at the bottom of the grip between the headlights. This switch has pictorial indicators to show multi or single nails, and allows you to see which mode you have currently selected. The nailer stands well on the battery pack, or can lay flat on its side.

FURTHER INFORMATION

To find out more about Atelier Cabinet Makers, see their website:
www.ateliercabinetmakers.com

Using the finish nailer to fix a wardrobe kicker plinth in place

Using the DCN680D2-GB to fix a wardrobe cornice

Conclusion

Overall I was very impressed with the performance of the DCN680D2-GB and would use this in my work on a regular basis. For many applications, I found it to be a great time saver and definitely easier than having to deal with a compressor. The noise level is loud and when using it, you're advised to wear ear protection, but this is to be expected with any type of nailer. I would highly recommend this tool to anyone looking for a cordless/gas-free finish nailer in the 18Ga category. It offers great versatility and portability in a compact and ergonomic footprint, and I have no hesitation in saying that in my opinion, it is one of the top competing cordless finish nailer models currently on the market.

SPECIFICATION

Weight: 2.6kg
Voltage: 18V
Nail diameter: 1.25mm (18Ga)
Magazine angle: 0°
Magazine load: Rear
Magazine capacity: 110 nails
Trigger type: Sequential & bump (up to four nails per second)
Length × width × height: 302 × 96mm × 264mm
Fault indicator: Yes

Typical prices: DCN680D2-GB kit – £533; DCN680N-XJ (body-only tool without batteries, T-Stak case or charger) – £391
Web: www.dewalt.co.uk

THE VERDICT

PROS

- Excellent nailing capabilities even with 50mm nails in solid oak; balanced ergonomic design and comfortable to use; fully mechanical – no gas needed; cordless and battery packs compatible with all other 18V XR power tools; easy tool-free clearing of any clogged nails; adjustable depth of drive; safety trigger and contact trip lock off

CONS

- May be too bulky for some applications in tight areas

RATING: 4.5 out of **5**

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This handy tool from iGaging makes machine setting and testing incredibly easy and accurate. Make precision height and depth machine setups on your router table, surface planer, spindle moulder and table saw first time, every time, without having to resort to time-consuming and frustrating trial and error.

Now available for both right- and left-handed users, just unscrew the locking pin and swap the handle side, making the Snap-Check Plus a versatile measurement gauge.

Snap-Check from iGaging also makes woodworking so much more predictable; you'll be amazed at how much time you can save setting up your equipment and testing joints.

Use it on the surface planer to set planer knives or check the offset between the infeed and outfeed tables for depth of cut, for table saw blade height or measure blade run-out to the fence. Snap Check Plus is also an ideal tool for setting your router table, either for cutter height setting or for depth of cut with the cutter forward of the fence, not to mention for checking offsets between the infeed and outfeed fences for planing or full-face profile cuts.

The Snap Check Plus has a large LCD digital display with 14mm high numbers, and precise accuracy can be achieved as millimetres are displayed in 0.01mm (100th mm) increments; decimal inches are displayed in .0005in increments and fractions in 64ths.

The spring-loaded plunger measures from minus 7mm to plus 52mm, and this unique minus feature is excellent for checking the depth of hinge recesses, grooves and the depth of drilled holes. Two threaded hardened steel flat and ball-tip anvils are easily interchanged to cover a variety of applications, while the tool's strong magnets hold it steadily in place on steel or cast-iron surfaces leaving both hands free for machine adjustments. The handy zero button features can be used either to calibrate on a flat surface or set to establish a differential measurement between two surfaces. The 68mm deep throat reach makes it one of the only tools to be able to measure spindle moulder cutter height and depth during set up. The auto off feature saves on battery life and the tool is also supplied with a spare 3V CR2032 battery.

FEATURES

- Spring-loaded plunger
- Strong magnet base
- Right- and left-handed option
- Three-way reading: inch, metric & fraction
- Multi-function measuring: router, saw, planer & spindle
- Easy to use and carry
- Large clear LCD display
- Measuring range: -7 to 52mm
- Accuracy: ±0.001in/1in
- Battery: 3V CR2032 included

For more on Wood Workers Workshop, visit **www.woodworkersworkshop.co.uk**.

HOW TO ENTER

To be in with a chance of winning 1 of 5 iGaging – Digital Height & Depth Gauge – Snap Check Plus tools, just visit **www.getwoodworking.com/competitions** and answer this simple question:

Q: Name one of the machines this tool can be used to calibrate

The winners will be randomly drawn from all correct entries. The closing date for the competition is **2 August 2019**

Only one entry per person; multiple entries will be discarded. Employees of MyTimeMedia Ltd and Wood Workers Workshop are not eligible to enter this competition

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THE ALAN PETERS FURNITURE AWARD 2020

Don't miss out on the opportunity to be part of this prestigious annual award, which champions UK furniture designing and making talent while celebrating the life and work of the late **Alan Peters OBE**

Alan Peters' 'Fan table'

This newly evolved annual award celebrates the legacy of one of Britain's most prominent furniture designer-makers of the late 20th century – Alan Peters OBE – while aiming to encourage emerging talent in the craft of furniture design and making.

Any woodworker who is a resident UK citizen over the age of 18, and who has a passion and talent for designing and making contemporary furniture, is invited to submit up to two items of furniture that echo the philosophy of Alan Peters. Judging is based on the appropriate use of wood, the quality of workmanship, functionality and originality of design. Both one-off designs and potential batch-produced designs are encouraged.

Applicants should be familiar with the work of Alan Peters prior to applying and are encouraged to read Jeremy Broun's 64-page video-integrated online e-book, which is offered free-of-charge (via the website link opposite).

The man behind the award

Alan Peters OBE (1933–2009) was one of Britain's most prominent furniture designer-makers of the latter part of the 20th century. He was apprenticed to Edward Barnsley and had a direct link to the English Arts and Crafts Movement. He was hugely influential internationally in his practice, teaching and publications. Above all, his respect and understanding of how wood behaves and the value of hand skill, yet moving tradition forward, resulted in the creation of many timeless pieces. He created affordable functional furniture, which was made to last, making an art of his craft in some of his subtle innovations.

History of the award

The original award was called 'The Alan Peters Award For Excellence' and was initiated by Jason Heap in 2010. The prize was offered to three winners, each of whom were given free exhibition space alongside the professionals at his annual furniture exhibition in Cheltenham. The award ran for eight years, and some of the past winning pieces are shown here. The judges were Jason Heap, Keith Newton and Jeremy Broun.

Anais Dancet's '10 Degrees' stackable stool – a 2012 winner of The Alan Peters Award For Excellence

Award judges

Jeremy Broun (organiser) – designer-maker and co-exhibitor with Alan Peters 1978–2002; **Andrew Lawton** – designer-maker who worked with Alan Peters and on his last commission; **Keith Newton** – early apprentice and employee of Alan Peters for 21 years.

Chris Wiseman's 'Oak Within' sideboard' – 2016 winner of The Alan Peters Award For Excellence

PRIZES OFFERED

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Winning pieces will be exhibited at Axminster's Nuneaton store and then at The Wilson Gallery (Cheltenham Art Gallery & Museum).

Award deadline is **30 May 2020**. Entries can be submitted any time up to this date. A £20 entry fee applies and a maximum of two entries can be made (£20 per entry).

The judging ceremony will be held at Axminster's Nuneaton store on 29 June 2020, and an exhibition at the store will run from 1–13 July 2020.

Following this, the pieces will then be exhibited at The Wilson Gallery – dates to be confirmed.

To download an application form and the 64-page e-book, please visit **www.woodomain.com/alanpetersaward**. The form can be found at the right of the page. Payment for entry can also be made securely via the website.

For further information, please contact either Group Editor, Tegan Foley (**tegan.foley@mytimemedia.com**), Organiser, Jeremy Broun (**jb@woodomain.com**)

Alan Peters chest with silver inlay

Alan Peters and Jeremy Broun in 2005

Alan Peters chest

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THE ASCERTAINMENT OF EXTENT

Confronted by a mêlée of measuring tools, **Robin Gates** has a field day with squares, dividers, rules and tapes, then makes a handy depth gauge

While searching for dividers I opened a drawer and plunged my hand into something like the mêlée of a medieval free-for-all, with legs and points going in all directions. I don't know how it can have got like this; some tools seem to multiply in the darkness like mushrooms. A jab from the chisel-edged pin of a marking gauge told me it was high time this chaotic assortment of measuring tools was put in some sort of order.

I've had similar moments with saws, planes and screwdrivers, feeling suddenly overwhelmed by their sheer number, and it's always tempting to follow the 'less is more' idea, sidelining rip and cross-cut saws in favour of the single panel saw, renouncing all planes but the everyday smoother, and forsaking all screwdrivers bar the one ratcheting handle and its box of fiddly interchangeable bits. The decluttering lasts just long enough to pack this spartan kit into some miserably small bag, when those tools cast aside begin throwing accusing glances, and I realise how I'd miss them, their capabilities honed down the ages by generations of intelligent hands. It's more drawers and cupboards I need, not less tools.

So this time my mind turned naturally to the many aspects of measuring, or at least those I knew about, or thought I did. What, for example, do I actually mean by 'measure?' The more I thought about it the more confused I became, until a visit to the dictionary seemed unavoidable. There I discovered measure to mean 'the ascertainment of extent by comparison with a standard'. That'll do.

Treasured squares

Countless projects begin with planing the timber square, that is with edges and faces at 90°, for which the try square has long been the traditional standard. An old tool with rosewood or ebony stock smoothed by caring hands, brass bound at the edges and fixed to the blade by fancy rivets, is a woodworking treasure – especially so if it's survived the years with a true perpendicular. This is conveniently tested on a board known to be straight of edge and flat of face (**photo 3**),

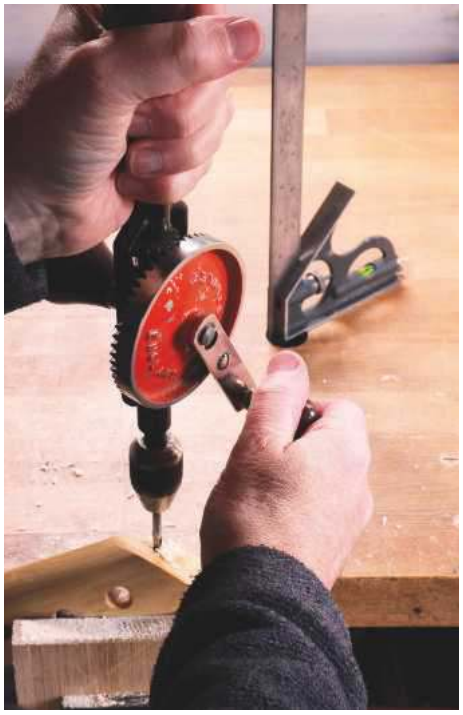
2 Sawn ends meet to make a right angle

3 Testing the truth of a try square

4 Using the protractor head of a combination set

5 Sliding bevel as a visual guide to honing

1 Mitre square with brass-plated ebony stock



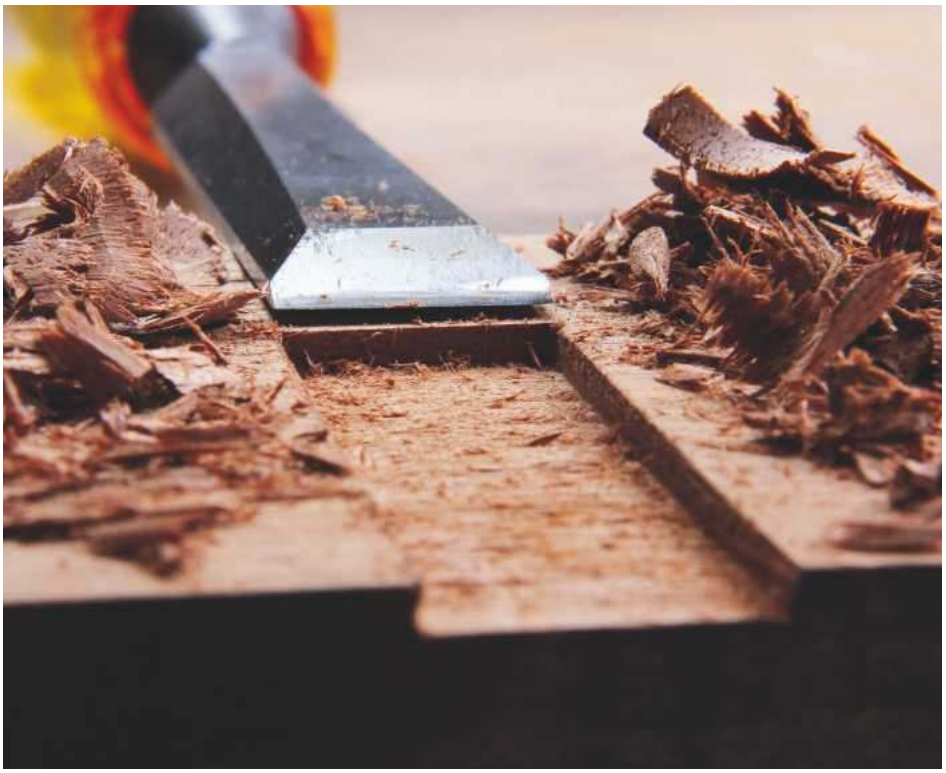
6 Vertical drilling guided by a combination square

7 The buoyant bubble indicates horizontal

8 Gravity acting on a plumb bob shows vertical

9 Scribing with the marking gauge

10 Marking a parallel guided by the 'fingers fence'



11 Dado cut to the width of the chisel

marking lines made with the stock on the left and then the right of the blade: if the two lines run parallel, all is well.

Even more treasured is the 45° mitre square, whose rakish charm challenges its owner to a devilishly demanding test of precision. While it's good to mark around a board with the try square and saw true to the continuous line, just for the practice, it's a more telling exercise to inject 45° angles into the proceedings with the mitre square (**photo 1**) and assemble a mitre joint. Whereas some square-cut joints manage to conceal tiny errors when assembled, the misalignment of a mitre joint gapes like the beak of a yawning bird, the daylight glaring through it, and the awfulness unmercifully amplified if the wood happens to be wide. My only chance of success (**photo 2**) is to proceed very slowly from the first pencil mark to the final push of the saw.

I suspect the mitre square is rarely used to mark mitred corner joints now, since a machine does the job without risk of human error, but for me it's unforgiving way provides an invaluable reminder of the need to improve. When it comes to testing the veracity of the mitre square itself, repeating the exercise of the try square should yield two lines perpendicular to each other; a blade more than one degree out is not worth the frustration, and best treated as an objet d'art for the mantelpiece.

For all other angles a protractor is a useful tool, and the most versatile is the one that's part of an engineer's combination set, able to be locked at any angle and point along its steel rule. Besides marking out (**photo 4**) it'll reveal the true bedding angle of a plane, and is good for setting up a sliding bevel as a visual guide to honing chisels (**photo 5**). Meanwhile, the machined faces of the square head that comes with the combination set make it free-standing, unlike many try squares, so I use it as a guide to the vertical when using a hand drill (**photo 6**). Add to that the built-in spirit level and scribe and this tool should be irresistible, yet its cold, hard-edged skeleton of steel bristling with tiny scales seems alien in the warm-handled company of woodworking tools.

Tools without numbers

Back to those satisfying tools unencumbered by numbers, and two stalwart examples infallible in their workings – the level (**photo 7**) and the plumb bob (**photo 8**). The level demonstrates what's horizontal and what isn't by virtue of its buoyant bubble in a curved vial, while the plumb bob, typically a shapely inverted onion dome of steel-tipped brass, hangs indisputably vertical under the influence of gravity. And how irritating these two can be when the shelf's up and the post fixed, having the cheek to offer a critical last word on a job which had seemed to be going so well.

The marking gauge not only scribes parallel to the edge or face of a board (**photo 9**) but can accurately bisect it by adjusting the stock to marks made through trial and error from opposite sides. Simpler than that, a line pencilled under the guidance of the fingers, acting as a fence, is often good enough (**photo 10**).

Just as the marking gauge measures and marks in one, so also does the chisel, and it's an under-exploited feature of the graduated set that they're effectively a set of gauges too, typically stepping off in units of 6, 12, 18 or 25mm. With the one chisel you can step out the dimensions of a small dado, for example, scribe and hammer down on the marks, then begin to excavate the waste (**photo 11**).

Having the chisel define the width of the opening is the normal way when cutting a

12 Setting the mortise gauge to the chisel

13 The chisel defines the mortise width

14 A lock mortise chisel levels the floor

15 Dividers scribe the arcs...

16 ... for the coping saw to follow

mortise, first setting the gauge to the chisel (**photo 12**) that'll be used to chip out the waste (**photo 13**). For a deep mortise it can be awkward to level the floor without bruising the carefully cut edges, but there's a special tool for that – the swan-necked lock mortise chisel – which levers from lower down the end wall and cuts at a more effective angle (**photo 14**).

Perhaps the most satisfying of scribing tools is the one I was looking for earlier – dividers. The sturdy iron winged sort, with a locking thumb screw, has the weight to pivot firmly on the spot while carrying the line just by dragging its pointed foot (**photo 15**). The tool is commonly used for scribing apertures, or where an end is to be rounded off, but if arcs are intersected you can soon create more interesting designs (**photo 16**). Where dividers go the coping saw often follows, but they're also used for laying out the curves of carved patterns, and stepping off distances.

Trammel points, a conveniently adjustable alternative to nails hammered through a batten, are for scribing larger arcs (**photo 17**). I was attracted to this chunky brass-bodied pair by the engraved details as much as their functionality, recording their owner in 1885 was one TEF Swindale of Newcastle (**photo 18**). They lock to the chamfered mahogany beam by screws bearing on tiny loose plates called keepers; it's a miracle these haven't been lost in the last 134 years. Callipers, on the other hand, near relatives of dividers, are essential to woodturners who apply their legs bent this way or that to the gauging of diameters, but they're also useful in the making of simple hollow ware with hand tools. In the example shown in **photo 19**, the bow-legged outside callipers indicate plenty of wall thickness remaining in a pot gouged from ash.

Rules of thumb

Some of the measurements which have come down through history have been inspired by parts of the human body, which are at least unlikely to be mislaid, and that tradition is nicely preserved

17 Trammel points scribe to larger radii

18 TEF Swindale, 1885, Newcastle

19 External callipers measuring wall thickness

20 In French, 'pouce' means both 'thumb' and 'inch'

21 Marking from the edge of the rule

in the French word 'pouce', which means both 'thumb' and 'inch'. Curious to investigate how my own thumb measures up, I found it is indeed approximately 1in across the knuckle (**photo 20**) and if that's not a rule of thumb, I don't know what is.

Of the numerous woodworker's rules to have come and gone down the years, surely the four-fold brass-tipped boxwood type has been the most popular. The narrow rule pocket of many an apron was designed specifically for it. It's not the most accurate of tools, being prone to warp and wear over time, but there's a technique for getting the best from it and that's to use it on edge, with graduations touching the work (**photo 21**). If used with markings uppermost, and read from an oblique angle to the target graduation, the thickness of the rule itself gives rise to a parallax error. From 45°, for example, the reading will be about ⅛in (3mm) out.

One handy feature of a scale with regular graduations is that by angling it across a board you can divide the width into a number of equal parts, avoiding fiddly measurements. Here (**photo 22**) I'm using a flexible steel tape to divide the board into five, also tipping the concave tape to bring its edge closer to the surface.

Getting back to thumbs, subconsciously I've been using my thumb nail as a rough-and-ready guide to setting the gap between a smoother's cutting edge and the backing iron (**photo 23**). That wouldn't suit everyone in this age of extravagant manicures, but since I keep my nails short they're never far from equivalent to an acceptable width of steel.

Before leaving the subject of the rigid rule, a word of warning concerning a joker in the pack. While a steel rule makes for an accurate and resilient straightedge, watch out you don't measure from an old pattern maker's contraction rule. Its scales have been adjusted to take account of the way molten metals contract on cooling during the casting process, ensuring that wooden patterns made to shape the moulds used by foundry workers would be proportionately oversize. On the example shown in **photo 24**, the 12in contraction scale marked 1 in 96 is intended for casting iron and is actually 12⅛in long, while that marked 1 in 48 is for casting steel and is 12¼in long – since molten iron and steel contract by ⅛in and ¼in, respectively, on cooling.

22 Dividing a board into equal widths

Bending the rules

The woodworker's more compact and versatile successor to the folding rule is the flexible steel rule, for which the essential feature of a concave-convex blade, self-supporting yet flexible enough to bend around tight curves (**photo 25**), was invented by Hiram Augustus Farrand of New Hampshire, USA. The blade of Farrand's Rapid Rule, patented in 1922, unwinds from a small cup, and is retained by an M-shaped axially-mounted brake.

23 Thumb nail approximates the set of an iron

24 Beware the scales of a contraction rule

25 Working with Farrand's flexible concave-convex rule

26 Safely extending the Farrand Rapid Rule

27 Stanley's delightful 'Pull-Push' rule

28 The Powerlock's 'arcuate brake member'

To release the blade you lift the tip over the lip of the cup, squeeze the ends of the brake and Hey presto! the blade extends automatically (**photo 26**). This is opposite to the modern rule, which rewinds automatically, and may have alarming consequences as I found out the first time I used it. With the brake off, the blade unfurled and shot across the shed like a javelin. I hadn't known it was designed for use independently of the retaining cup, and only afterwards turned up an instruction leaflet advising that the blade be pointed away from the user and lightly braked between finger and thumb. To reinstall the blade you push it back in while the brake is off, which is easier than it sounds.

After a successful start, Farrand's rule business was hit by the depression and in 1931 he sold the rights to his invention to Stanley. They further developed the flexible rule with a closed D-shaped case protecting the attached blade (adding 2in to an internal measurement) and a sliding terminal to ensure an accurate zero. Stanley had ditched Farrand's extending mechanism early on, reverting to 'pull-push' operation, with a black-on-white blade in a textured plated case. Understated and solid, this example from the 1950s (**photo 27**) is no larger than required to house the blade, as tactile as a pocket watch and likewise consulted with ease.

The flexible rule has put on a little weight since then as more features have been loaded onto it, the most useful being the bright yellow blade lock of Stanley's Powerlock tape (**photo 28**), which was described in their 1963 patent as an 'arcuate brake member...slidably engageable' with the front wall of the case.

Curiosity & invention

As the son of a toolmaker, I inherited a handful of micrometers, and while I'd never be parted from these superbly engineered devices I've yet to find an application for them in woodwork beyond satisfying my curiosity as to the thickness of a shaving or a saw blade (**photo 29**). The Starrett No.230 with a Vernier scale engraved on the barrel (**photo 30**) reads to an eye-straining 0.0001in (0.0025mm). Although the thickness of shavings is by no means irrelevant, since you don't want to plane off a wodge of material when a mere wisp will finish the job, generally it's the quality of the surface left behind the plane that's paramount, and in this context I reckon it's handier to develop confidence in working by eye and feel than be dependent on measuring tools.

Still, the essential screw principle of the lofty micrometer does find a place in my very down-to-earth and simply-made depth gauge (**photo 31**), albeit as a coarsely threaded wood screw. The point of the screw is filed flat so as to bear on the surface of the wood rather than dig into it. For testing the evenness of depth in certain situations, I haven't found anything better (**photo 32**).

29 Measuring saw thickness with the micrometer

30 Vernier scale of a 'ten-thousandths' micrometer

31 Simple wood screw depth gauge

32 Testing for evenness of depth

THE VALUE & COST OF FURNITURE MAKING

When it comes to selling and valuing your furniture, **Anselm Fraser**, Principal of **The Chippendale International School of Furniture**, advises you to start low, be sensible and pragmatic, but always aim higher and higher

Oscar Wilde, the 19th century playwright, expressed it perfectly. In his play, *Lady Windermere's Fan*, he wrote that a cynic is "a man who knows the price of everything and the value of nothing." Like much of Oscar Wilde's work, his comedy hides a biting truth – that we often consider moral or ethical values as being less important than financial worth. We allow greed to overrule good sense. It's an issue that is particularly pertinent for today's woodworkers, because the value that we place on a beautifully-crafted piece of furniture may be rather more than a prospective customer is prepared to pay for it. Yes, it may have taken many, many hours to make, using the finest woods, veneers and delicate inlays, but if that prospective customer is looking for a simple table or chest of drawers, then he or she may be more interested in utility value than financial value. In other words, spending days and weeks crafting the finest chest of drawers in the whole history of chests of drawers, and placing a huge price tag on it, is no guarantee of a sale.

Balance between form & function

In a world dominated by IKEA, furniture makers have to look imaginatively at the market, design and build accordingly, and – most importantly – always have a sensible price in mind. We may be craftsmen and women, but our valuations have to be pragmatic. The key concept is value. The painting hanging on our wall may only have aesthetic value, until we discover it's a Picasso, at which point it acquires huge utility value as a way of paying off the mortgage. In the same way, good furniture has both utility and aesthetic value. Our wonderful chest of drawers may be aesthetically beautiful but, if the drawers don't open properly, it lacks utility value.

That balance between form and function is at the heart of all good design, from architecture to fine woodworking. Finding that balance is the first thing that furniture designers should always do: who am I selling to, and what are the values my customer is looking for?

Rachel Faulkner and her gilded nude lady mirror

Stephen Barr with his Brexit cabinet, for which he won the 2019 Richard Demarco prize

Paul Hartman, Canada, with his Sam Maloof rocker

A matter of cost

The fact is, good design must be about both the aesthetic and the utilitarian and, if necessary, woodworkers shouldn't be afraid to compromise, if compromise brings down the cost to an acceptable level. That budget will be influenced by two things: the cost of materials and the labour costs of designing and making the piece of furniture. It's a deceptively simple bit of arithmetic: costs + your time = price. Of course, it's a little bit more complicated. Costs aren't just wood and screws; they also include everything from heating to water, local taxes to equipment. For the mathematically dyslexic (and I'm one), it's a process of determining cost and then building in a reasonable profit margin.

Make something for £10,000 and sell it for £11,800, and your gross profit is £1,800. You will also go out of business rather rapidly.

The British Woodworking Federation (OK, not representing fine furniture makers) says that, as a rule, manufacturing gross margins after direct costs should be in the region of 40-50%. Generally, improving gross profit margin should always be a clear and unambiguous business objective, but, equally, you must have realistic expectations about what customers may be prepared to pay. The problem is that many woodworkers think too highly of themselves, and charge a Rolls-Royce rate, when their customer is looking for a Fiat Uno. (All too infrequently, alas, the opposite can be true!) Also remember that Pablo Picasso only survived during his early career in Paris by burning most of his paintings to keep warm.

I always advise our students to be pragmatic, certainly until they have built a reputation. There's no point in graduating from a furniture school and thinking you are immediately a master of the woodworking universe. That takes time and, in the meantime, it's better to under-sell rather than not sell. Remember also another line from *Lady Windermere's Fan*: "We are all in the gutter, but some of us are looking at the stars."

Start low, be sensible and pragmatic, but always aim higher and higher.

FURTHER INFORMATION

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BRAIN TEASER

Inspired by an article in the March 1953 issue of *The Woodworker*, **Peter Dunsmore** puts a modern spin on this mystifying dovetail puzzle

How can you slide a dovetail key into a slot if the key is wider in the middle? That is the problem. At first glance it appears to be an impossibility and has challenged most people who see this for the first time. The immediate reaction is to look for a seam lengthways in the walnut but there is no join. The answer lies in the fact that the under side of the key is cut to a definite curve to match that shaped across the walnut. The key is then pushed into the slot at an upwards angle so the wider part of the key enters the slot lower down where the opening is wider. This isn't a new idea; I found the inspiration to make this from a post war copy of *The Woodworker* magazine that a neighbour was going to put into the recycling bin. Fortunately I was able to save it along with some other copies and thought the puzzle would make an ideal birthday present for my dad.

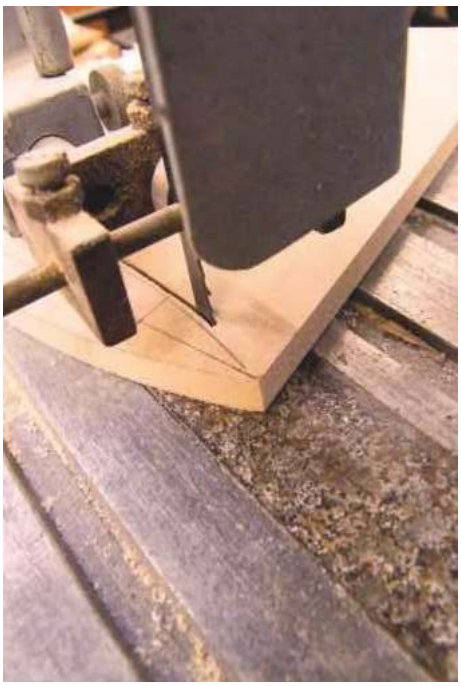
CUTTING LIST

- 150 × 76 × 25mm American walnut – 1 off
- 300 × 38 × 12.5mm Canadian maple – 1 off
- 9mm MDF for templates

Making the templates

As you can probably appreciate, in order for this to work the two pieces must be cut accurately and with care. The original article uses imperial measurements, which actually makes more sense for this project, but I converted these to metric. Although the original was made entirely with hand tools, I thought it would aid accuracy if I used a router to cut the curves. Start by cutting three curves onto 9mm MDF using a router fitted to a trammel bar (**photo 1**). Cut one to an internal radius of 213mm, a second to an external radius of 213mm, then cut a third curve to an internal radius of 121mm. Use the 213mm external radius piece to make the small elongated MDF template that sits on top of the key. After cutting roughly to size (**photo 2**), use the previously cut template to profile the edge with a bearing-guided trimmer. Use double-sided tape to secure in place while you cut the edge (**photo 3**). Make a copy of the 213mm internal radius template and cut straight edges so that when the two templates are butted together, the centre elongated template is a secure fit between the two. The result should be three pieces of MDF that fit together accurately (**photo 4**).

1 Accurate setting of the radius is important



2 Start by cutting the MDF roughly to shape

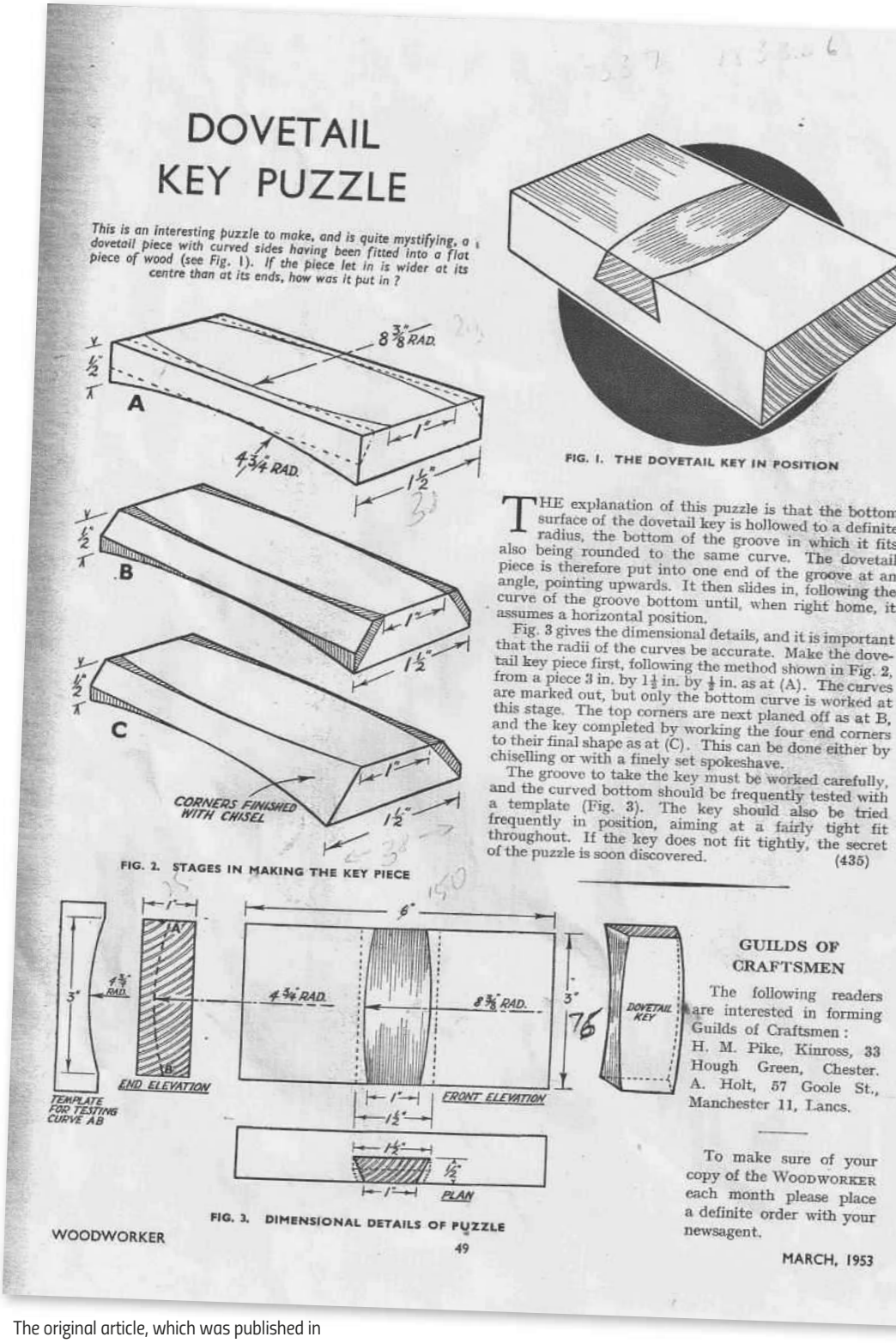
3 Use double-sided tape to secure to the template

Making the key piece

I initially made a dummy run using some scrap wood to get an idea of what was involved. For the final project, I chose two hardwoods that contrasted well in colour. The key was made using Canadian maple, a very hard creamy white colour that contrasted well with the American walnut used for the base. The key is 76mm long and the curve on the underside starts and finishes at the ends of the key. As can be seen in **photo 5**, the positioning of the template is important to achieve this. For the sake of safety, use double-sided tape to secure the maple to a piece of scrap cut to the same width and length as the maple. This will provide the extra support needed when the router is used to profile the maple (**photo 6**). Alternatively, this part could be made using a file and abrasive paper wrapped round a suitable former. Cut the maple to a length of 76mm ensuring the cuts start and end at the curves. The method I found to work well was to cut the key a little over-length and then to sand the ends smooth. A disc sander really helps here if the fence is set to 90°. The length of the key should be the same as the width of the walnut housing with the ends of the curves sitting on the edge of the wood. At this point it is worth clamping the two matching templates in place on the walnut to cut the recess for the first stage of the recess. Both should be butted tightly together and the recess cut to a depth of 6mm (**photo 7**). If all goes well, the template for the key should be a sliding fit into the recess (**photo 8**) and should fit whichever way round it is fitted in. With the template positioned in the walnut, use a sharp pencil to score two lines on the underside of the MDF where it overhangs. Now remove the template and position it on top of the maple key. It has to be positioned bang on the centreline and the maple must lie on the two pencil lines just drawn (**photo 9**). Draw a line around the MDF onto the top of the maple key and draw a straight line from the ends of the curves just drawn to the bottom outside corners of the key (**photo 10**). Although I have shown the lines drawn in pencil, I actually used a marking knife to score them, but pencil lines show better in the photos.

Opening the slot

As mentioned earlier, the secret to this puzzle is to have a curve cut into the walnut that matches the curve on the underside of the key. To begin, set a marking gauge to 12.5mm – the thickness of the maple key (**photo 11**) – and score a line on each



DOVETAIL KEY PUZZLE

This is an interesting puzzle to make, and is quite mystifying, a dovetail piece with curved sides having been fitted into a flat piece of wood (see Fig. 1). If the piece let in is wider at its centre than at its ends, how was it put in?

FIG. 2. STAGES IN MAKING THE KEY PIECE

FIG. 1. THE DOVETAIL KEY IN POSITION

THE explanation of this puzzle is that the bottom surface of the dovetail key is hollowed to a definite radius, the bottom of the groove in which it fits also being rounded to the same curve. The dovetail piece is therefore put into one end of the groove at an angle, pointing upwards. It then slides in, following the curve of the groove bottom until, when right home, it assumes a horizontal position.

Fig. 3 gives the dimensional details, and it is important that the radii of the curves be accurate. Make the dovetail key piece first, following the method shown in Fig. 2, from a piece 3 in. by 1½ in. by ½ in. as at (A). The curves are marked out, but only the bottom curve is worked at this stage. The top corners are next planed off as at B, and the key completed by working the four end corners to their final shape as at (C). This can be done either by chiselling or with a finely set spokeshave.

The groove to take the key must be worked carefully, and the curved bottom should be frequently tested with a template (Fig. 3). The key should also be tried frequently in position, aiming at a fairly tight fit throughout. If the key does not fit tightly, the secret of the puzzle is soon discovered. (435)

FIG. 3. DIMENSIONAL DETAILS OF PUZZLE

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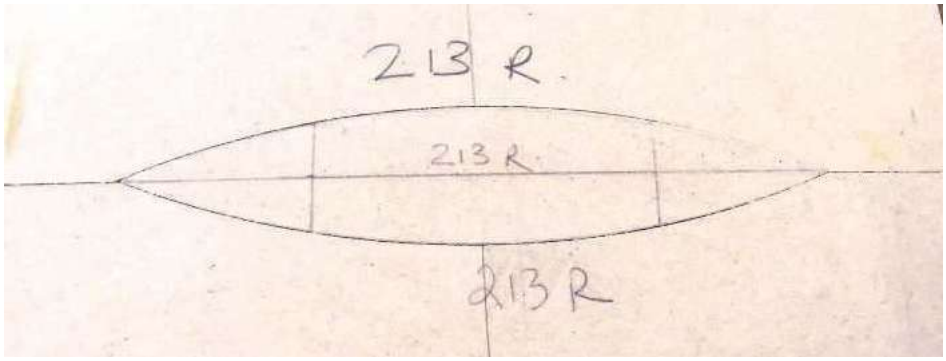
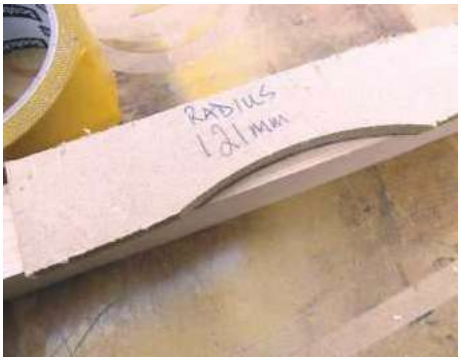
The original article, which was published in the March 1953 issue of *The Woodworker*



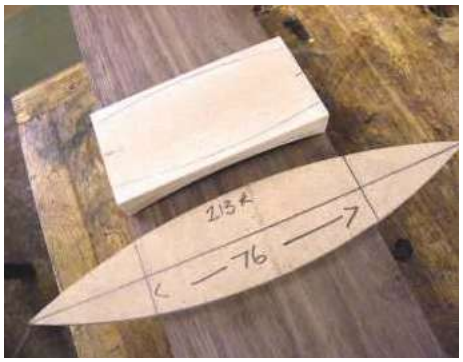
4 The three template pieces should fit together seamlessly



5 Secure the template to the edge of the maple

6 Ensure to cut the profile quickly and accurately

7 Secure the two templates to the walnut and cut the recess with a rebate cutter



8 The MDF should be a firm sliding fit into the walnut

side of the walnut. Check against the key (**photo 12**) that it is accurately cut. Use a sliding bevel and a knife to mark lines at the same angle as those marked on the end of the key in the previous stage (**photo 13**). Now you have the parameters set, the curve can be shaped. Take the template used to shape the underside of the key and use this to check the profile of the curve on the walnut (**photo 14**). The easiest way to achieve this is to use a file and remove a little at a time from each end and to keep checking against the template.

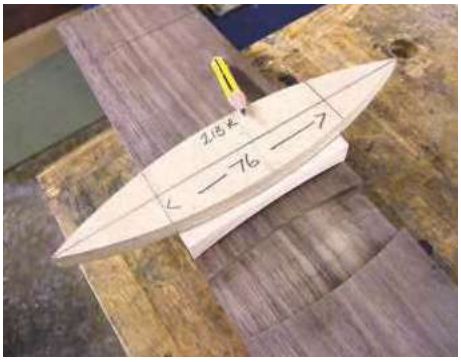
Trimming the key

The maple key needs to be finally shaped. It's a little tricky to explain but use either a sharp chisel or a finely set spokeshave to remove the wood from the lines marked on top of the maple down to the lower edges of the key. The bevel flows around and the angle varies due to the curvature on the underside but it all makes sense once you actually start cutting (**photo 15**). I found it much easier to work the bevel if the key was clamped in a vice between a couple of softeners.

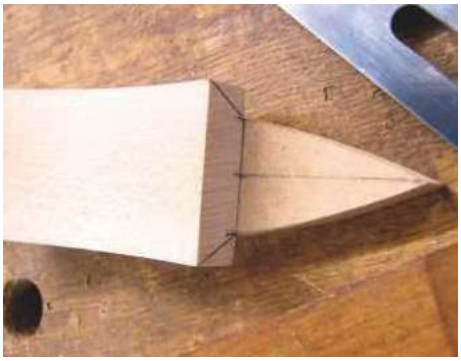
Finally smooth the bevel, if necessary, with a little abrasive paper taped to a flat strip of timber but don't get carried away. Just smooth to the lines on top of the key and to the lower edge of the key.

Continuing with the housing

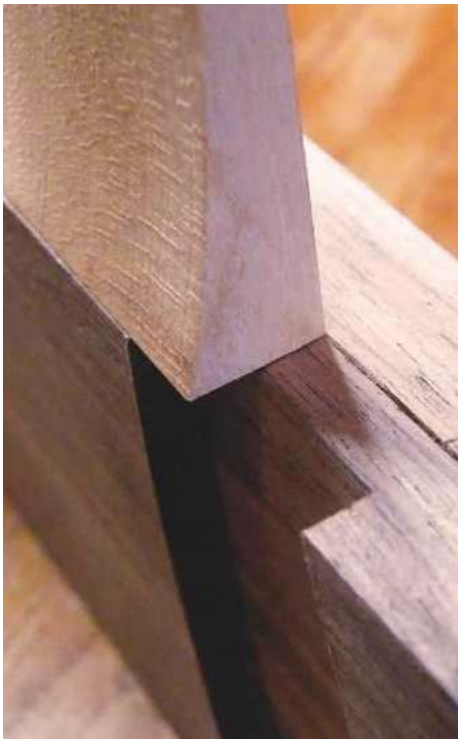
With the key completed it's time to under-cut the corresponding bevel on the housing. There's no short cut; it's just a case of paring away with a chisel (**photo 16**) and taking great care that the chisel does not cut into the top curve. It should



9 Use this same template to mark the top of the key



10 Marking out the dovetail key

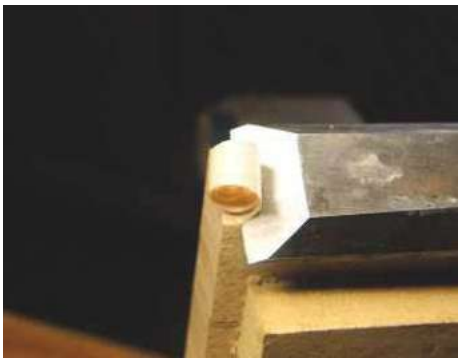


12 Checking against the end of the key

11 Use a marking gauge to set the depth of the key

13 Use a sliding bevel to set the same angle as that at the end of the key

14 Keep checking the curve



15 Now start to shape the bevel along the edge of the key

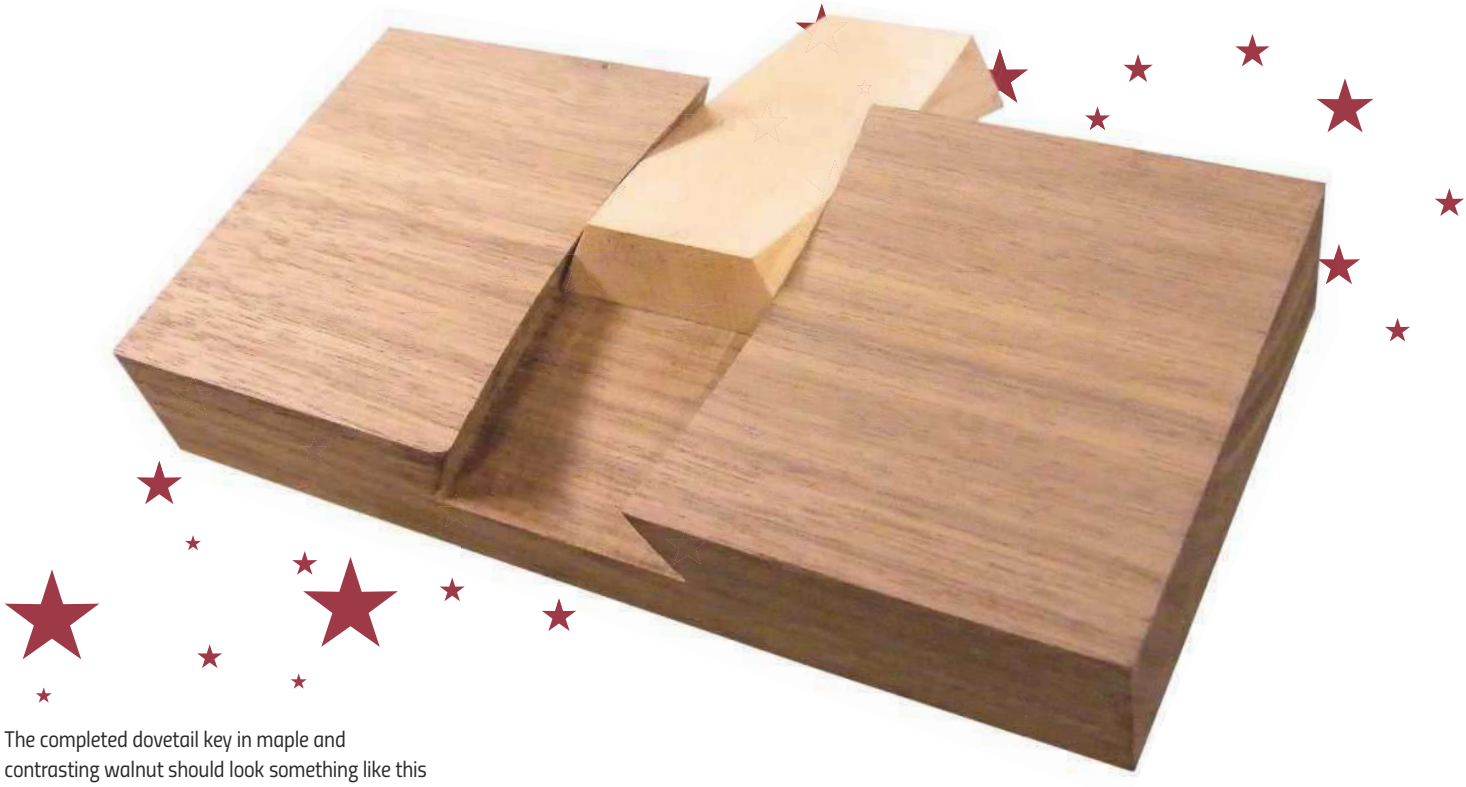
16 Repeat the process to cut a matching bevel on the walnut

finish exactly on the edge of the curve if the end result is to look as though the key is a perfect fit into the walnut. It's not easy! Just a little at a time (**photo 17**) and don't cut into the top edge. Ideally it should be a smooth bevel all the way along the curve. Keep checking by pushing the key into the opening at an upwards angle (**photo 18**) and making pencil marks at any high spots (**photo 19**). Keep persevering until the key is a sliding fit all the way along to the other side. I aimed for a tight fit as a sloppy fit will make it too easy to solve the puzzle. I managed to achieve a fit that required a firm push with the thumb to open it knowing that with use it will soon loosen up a little. Finally trim the walnut to length ensuring that the key is located centrally and sand to a smooth finish. It will take a few hours, in my case sat at the kitchen table for the trimming, but the end result is worth the effort. I didn't bother with any finish as the constant handling will just add natural oils and patina. Most people who have seen this are totally stumped by it, which was the object of the exercise. As for my dad, I might tell him how it works… eventually, but I think I'll make him suffer for a bit before I reveal the secret!

17 A little at a time…

18 Try fitting the key into the opening

19 Pencil marks are an aid to show where the high spots are



The completed dovetail key in maple and contrasting walnut should look something like this

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ME AND MY WORKSHOP

Doug Zech

Doug in his Canadian workshop

Here we take a look around the workshop of Canadian artist, craftsman and kayak fisherman, **Doug Zech**

1. What is it – and where is it?
My workshop is half of an altered garage: woodshed one one side, greenhouse on the other.

2. What's the best thing about it?
The windows open onto my wife's amazing garden. The view is inspiring!

3. And what's the worst?
The concrete pad extends too far from the wall and water leaks under it.

4. How important is it to you?
It's a vital part of my life; I'd be unable to exist without it.

5. What do you make in it?
Mostly cigar-box guitars and ukuleles, with the odd piece of furniture thrown in.

6. What is your favourite workshop tip?
Six words: test fit... Test fit... TEST FIT.

7. What's your best piece of kit?
An antique Stanley backplane my wife's grandfather gave to me.

8. If your workshop caught fire, what one thing would you rescue?
A box of random hand tools I inherited from my father.

9. What's your biggest workshop mistake?
Not test fitting.

10. What's the nicest thing you've ever made?
An upright electric bass guitar.

11. And what's the worst?
Nothing. Some pieces are more successful than others, but to make something is all I need.

12. What's the best lesson you've learned?
Broken record here: to test fit everything.

13. If you won the lottery, what would you buy for your workshop?
I'd buy a building in Venice, Italy.

NEXT MONTH
In the next issue, we look around Devon-based artist, sculptor and furniture maker Caroline Arbon's workshop. We'd love to hear about your workshops too, so do feel free to send in a photo of your beloved workspace, and please answer the same questions as shown here – just email **tegan.foley@mytimemedia.com**

Alan Peters and Andrew Lawton discuss project requirements back in 2005

THE MAKERS' MAKER

ALAN PETERS' LAST PROJECT

Andrew Lawton was lucky enough to be involved in the making of **Alan Peters**' last piece of furniture, and here he recalls the many happy hours spent with him at his Somerset workshop back in 2005

It is a privilege to have been invited by Jeremy Broun to be one of the judges for the Alan Peters Furniture Award 2020. I hope this short article gives some idea as to why many of us hold Alan and his work in such high esteem and believe that an award should be given annually in his name.

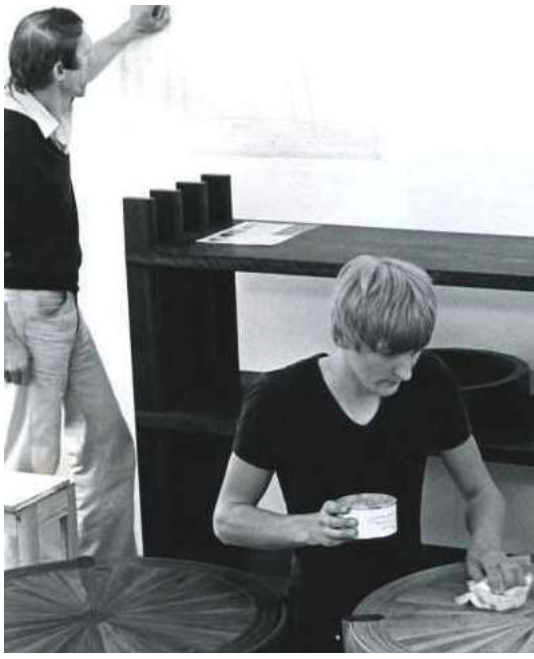
In the spring of 1982, I was invited to take part in an exhibition entitled 'Woodworkers of Excellence' at the Sun Inn, Hitchin, Hertfordshire, which was organised by the formidable Betty Norbury, wife of woodcarver Ian Norbury. I believe this was the first large exhibition that she organised and a forerunner of the widely known annual 'A Celebration of Craftsmanship & Design' exhibitions in Cheltenham, which are still going strong after all these years, now under the curatorship of Jason Heap.

One of Alan's 'Bowl' tables

An exquisite chest of drawers

I was in the early stages of my career as a designer-maker and it was quite a thrill to be showing my furniture alongside many established and well known makers; there was much fine work on display but one piece in particular stood out for me as being exceptional: a chest of drawers in English walnut with a slightly oriental appearance combined with characteristics of the 'Cotswold School' of English furniture makers – Ernest Gimson, the Barnsleys, Peter Waals and others – who took much of their inspiration from the vernacular woodwork and architecture of pre-industrial rural England. This chest of drawers was of understated yet subtly refined design, harmoniously proportioned, the timber thoughtfully chosen to create a balanced pattern of colour and grain and the exquisite workmanship throughout spoke to me as the work of a great craftsman. The maker behind the piece was Alan Peters, and no wonder his work was good: he had served a five-year apprenticeship at the Edward Barnsley Workshop, then trained as a woodwork teacher, taken a further course in interior design, before setting up his own workshop in the early 1960s.

Later that same year I saw more of Alan's work at another of Betty's shows, and this time it was 'Masterclass 82' at the Queen's Hotel, Cheltenham. On this occasion Alan was showing various pieces including one of his unmistakable 'Bowl' tables. We got chatting and I found him to be a most approachable man, or as someone else once described him: 'A modest man with plenty to be immodest about'. In subsequent years we occasionally met at exhibitions up



Alan Peters with his two apprentices: Stephen Hopper and Keith Newton

Walnut console table made by the late Alan Peters OBE

and down the country, and as well as furniture we had a shared interest in cycling and cycle racing, having both been keen time trialists as well as riding non-competitively.

Phone call out of the blue

In May 2005, out of the blue, Alan phoned me and asked if I was able to go to his workshop and help with a couple of projects. By this time – now in his early 70s – Alan had moved from Devon to a smaller workshop in Somerset and his former assistants, Stephen Hopper and fellow judge Keith Newton, were employed elsewhere. I had several commissions to be getting on with in my own workshop but luckily there were no tight deadlines to be met, and so it was that I was able to spend a few weeks down in Minehead, starting almost straight away and returning for another spell later in the summer, not quite knowing what to expect but looking forward to a bit of an adventure.

Alan may have 'downsized' but this was no double garage affair. His new workshop was spacious and well laid out, with five benches and all the machines from his old workshop sharing a former builders' merchants premises, dating from the 1960s at a guess, within a couple of minutes' walk of the seafront and within earshot of the steam locomotives on the West Somerset Light Railway. As well as having large front windows the workshop had plenty of natural light from a number of skylights. A small display area and office completed the main workshop, while out in the yard two substantial outbuildings housed Alan's stocks of timber and veneers. Alan didn't do anything by halves it seems; to set up a workshop like this when past the age when many would have retired says a lot about the man!

My first job was to complete a partly-made dining table of solid English elm. The design was Alan's contemporary take on the classic 'hayrake' style; the sort of timeless design that would look as good in a modern town house as a rustic farmhouse. The underframe was more or less complete but Alan wanted me to alter the shape of the projecting ends of the lower stretcher rail, which didn't look quite right to him. There was nothing wrong with the way it was, of course, but in Alan's eyes, wasn't quite as he wanted. Classic Alan Peters attention to every last detail! If the table had not been assembled, still a stack of components, doing the alterations would have been straightforward but reshaping on the glued-up table was a little tricky. It involved some careful work with a shoulder plane, but I eventually got it done to Alan's satisfaction.

At this stage, the future table top was still a single board of wild-grained English elm, around 2.2m long, 1,000mm wide and 75mm thick, complete with the waney edge on both sides. As is often the case with English elm, this board had warped somewhat during seasoning and was anything but flat. The obvious way of using this board, and the method I guess most makers would choose, would be to rip it into several narrower, more manageable pieces, then plane and thickness by machine, shoot the edges and glue up to make the finished width of the top. This was not Alan's way, however; he was concerned that because ripping, shooting and butt jointing a wide board inevitably removes a portion of timber, the result can be a slight mismatch of the grain. In other words, however carefully the original board was re-joined, it could destroy the appearance that, in reality, this had once been one single,

One of Alan Peters' apprentice's masters the art of tight dovetails

giant board. Incidentally, English, or common elm (not common at all today after the ravages of Dutch elm disease), has something of an unfair reputation for being unstable and not much good for furniture making other than as Windsor chair seats. True, it can and usually does warp badly during the seasoning process, but if it is carefully dried and conditioned to a moisture content of 9 or 10%, as all timber destined for use in centrally heated buildings ideally ought to be, it is in fact a fairly stable wood. Jane Cleal, of well-known makers Williams & Cleal, worked for Alan Peters at the start of her career, and told me how he would periodically dismantle the whole sawn logs of various species he had seasoning 'in stick', inspect the boards, turn them over and re-stack them. This helped to ensure that the timber dried to a consistent moisture content throughout its thickness, allowed stresses with the wood to be relieved, and eventually, after further drying in the warmth of the workshop, yield timber that was in prime condition for high quality furniture making. More than most, Alan Peters understood the creative possibilities of wood, but also its limitations, and always made provision in his designs that no matter how well seasoned, solid timber will shrink and swell in sympathy with the humidity of the air around it. Clearly, these considerations do not apply when using veneers laid on an MDF substrate, but any maker who ignores one of the fundamental characteristics of solid wood does so at his or her peril!

Alan Peters pictured by Jeremy Broun in 2005 for the making of the film documentary *The Makers' Maker*

Tackling the elm

Luckily, during my training in the late 1970s, I had been taught how to plane up a board entirely by hand. There is great merit in being able to plane and thickness a large piece of timber with a hand plane: it is a skill worth mastering for its own sake but in addition, we can learn a lot about the nature of wood and how it behaves when we work it. The best way to go about truing up a long, wide board is to plane across the grain, rather than along it, in order to remove all the high spots, so this is how I tackled this magnificent piece of elm. Armed with a No.7 try plane, with a freshly ground and sharpened blade, I started from one end, having selected the better face, gradually working my way along the board, checking by eye and with a straightedge to judge how things were progressing. English elm cuts fairly easily but rapidly blunted the iron, so I had to stop and re-sharpen frequently. It was hard going – just lifting the board onto the bench was a struggle at first (it got progressively lighter as shavings were removed) but extremely satisfying as I established a rhythm, became lost in the work, and started to see results. Eventually the board was flat, but not necessarily smooth, at which point I planed it at 45° and finally along the grain with the plane set very finely to ensure that the face was free from torn grain. Having established a reference surface – the 'face side' – I gauged all round, turned the board over and proceeded to thickness it, repeating the process on what would be the reverse side of the top.

The elm dining table that Andrew worked on with Alan

No fuss, no gimmicks

All this took a whole three days and while the remaining work on the table involved less hard physical work, two examples of Alan Peters' approach to furniture making I came across during the making of this table are worth mentioning. Although he was a great believer in hand tools and manual skills, he was no Luddite, being alert to the possibilities that machines can give to the resourceful craftsman or woman. For example, the top of the table was sanded on his large pad sander, which saved many hours of handwork and gave a wonderfully smooth, even surface. Secondly, Alan decided that the most appropriate finish for the table would be ordinary matt polyurethane, bought from the nearby branch of Travis Perkins, I recall. Many people recoil in horror at the mention of the word, but carefully thinned and applied, polyurethane provides an excellent, attractive finish – it works especially well on elm – and Alan was passionate that furniture should be as well made as possible in every respect and built to cope with long-term use, not simply to draw admiration in an exhibition or gallery. With the table now complete and the top attached to the underframe with 'buttons' to allow for seasonal movement, the final touch was to stamp one of the long top rails with the 'Alan Peters' marking punch. No fuss, no gimmicks, the name said it all. This was the last piece of furniture in which Alan was entirely involved in making and the last to carry the illustrious name. On my second visit to Alan's workshop later that year, I worked on a partly-made console table of Devon walnut, but the limited time available prevented me from completing the project. After Alan's death we brought the piece up to my workshop to finish it, and soon found a buyer, but unlike the elm dining table it cannot claim to be an authentic Peters creation and therefore does not carry the 'Alan Peters' maker's mark.

FURTHER INFORMATION

To find out more about Andrew and see further examples of his work, visit his website: **www.andrewlawton.co.uk**

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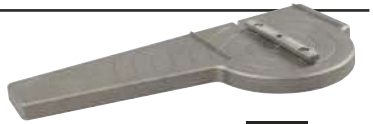

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MODEST DESIGNS

The original [Wendy house] was built for Wendy Darling in J. M. Barrie's play, *Peter Pan*, or *The Boy Who Wouldn't Grow Up*. Wendy was shot by the Lost Boy Tootles after arriving in Neverland, so Peter Pan and the Lost Boys built a small house around her where she had fallen (Wikipedia)

Edward Hopkins makes a bomb-proof Wendy house

The wheel turns. Imogen's daughter Jaya is at the age that Imogen was when she used to play with a friend in a Wendy house with curtains and a pretend cooker. These were happy times, and Imogen wants to recreate them for Jaya. Well maybe. I think she wants to recreate them for herself, and Jaya is the excuse. I think she'll be down there at the bottom of the garden with both girls, making cakes from mud, and tea with cold water in tiddly cups; taken with artificial slurping noises and murmurs of delight. When I make a play house for Jaya and Risha (which I've just agreed to do) I'd better make it big enough for Imogen too.

I don't remember the Wendy house, but it makes me think of faded plastic and Snow White kitsch. I don't want anything to do with that. 'Can I go Kevin McCloud?' I asked her. 'Yes of course!' she replied. When it came to it, the flat sedum roof, the sliding glass panels and the snappy detail evaded me. Unlike many a brave builder on *Grand Designs*, I feel the need to keep a project in perspective. It also needs to stay on budget. What is my budget? Same as always: as little as possible.

I spent the best part of £200 on the main structure, and another £75 on the planed pine floor, which I know is a bit extravagant. My tiles were free. You'll probably have to find a reclamation yard because a builders' merchants will not sell such small quantities. It took a fair number of screws and odd pieces of timber already in stock, so approximately £300 in all plus a week's work.

What worries me about a sedum roof is not the sedum. 'More expensive than Axminster carpet' I'm told, but not where I am. Sedum hitch-hiked here in pots of sempervivum from Lidl, and has now spread itself throughout the vicinity. It grows without trying. I could just make a roof from a tray lined with plastic or, much better, EPDM pond liner, which never tears or rots, and load it down with gravel. Mmm. What a weight to hang over children at play! How sturdy must the walls be? What about EPDM alone? Black. Ugh! This is a play house, not a portal to the underworld.

Catching a train

Economy doesn't mean scrimping. It mustn't mean flimsy. It means thinking about it for a bit longer before sharpening a pencil. In came curved corrugated iron, maybe the stuff they sell for pig arcs (sorry girls) or Nissan huts (sorry girls), but I don't want to lash that to the roof rack and paraglide up the M5, and I don't want to have it delivered in Bristol only assuming it would fit. And assuming we could get it through the house. What about flat corrugated iron? I like corrugated iron, but not everyone does, and I don't want to turn their garden into a shanty town. Shingles?

Go away. I'm avoiding roofing felt because it ends up tearing and looking tatty. I'm not about to build a monument that will last a hundred years, but neither do I want it to disintegrate after two.

Here began a train of thought that once I got on, I couldn't get off. Concrete roof tiles, ridge tiles too: I have stacks of them doing nothing. They are the only visible remains of a Woolaway bungalow that was demolished to make way for the one I'm living in. I like concrete roof tiles; common sense over-rides aesthetics and anyway they don't look bad. The main thing is that they interlock. On my last house I had clay pantiles. They don't interlock, they overlap. Sort of. Most of the time they were fine but in a north-east storm they leaked. I tried everything: there was nothing I could do. I still have dreams of water pouring through the roof. They are not nightmares: I seem to cope quite well, but I'm always pleased to wake up.

Concrete tiles (I probably don't have to tell you this) are heavy. Constructional timber from the yard comes as 2 by 2; 3 by 2; or 4 by 2in (50 × 50; 50 × 75; or 50 × 100mm). You could build a full-size house with 2 by 4s, so Wendy would be wildly overweight. 2 by 2s are a bit skinny considering any jointing, and material defects. 3 by 2 then. Sorted. Standard roofing battens.

1 House under way: you need space for a thing like this. The spirit level wasn't involved: construction is by measurement. The back frame (nearest to the camera) is from lighter stock and not mortise & tenoned (overkill given its position). Instead it is half housed and screwed. I still don't like screwing into end-grain, but concede that here it makes sense. Nothing is glued

2 6 by 1 (150 × 25) sawn tanalised softwood is rough stuff. It will expand and contract with the weather, but to give it its best start, I cramped before screwing. Just visible in this photo is a near-mistake. I have the side frame screwed to the back frame from the outside. When that last plank is fixed, I wouldn't be able to dismantle for transport. Duh! Now it is screwed from the inside

3 How the kitchen end comes apart, prior to assembly in my garden, prior to installation in Bristol. I think it'll all go in the van

Hefty screws and nails. Chop saw, table saw, jigsaw, mortiser and bandsaw all on stand-by. Workshop arranged to give large open space. Tape measure. Pencil. Go!

Frame up

The roof tile as a unit determines the size of the roof and, to some extent, the slope. A pitched roof of two 2 × 5 tile slopes covered a room big enough to play in, and small enough to be cosy. My initial thought was to have the walls flared outward and also clad in tile. This would make a façade shaped like a frame tent. We've had lots of good camping holidays and festivals, and this would be a positive image, at least for Imogen. The façade would have to accommodate a doorway and a window or two.

I made the roof frames, jointing them with through tenons – such a satisfactory joint, strong and rigid, keeping the frame inevitably square and true. Mortises first as always. The mortiser is a magic machine. Who'd have thought you could drill square holes? My largest chisel was not large enough, so each mortise involved four cuts (two from each face, and the workpiece flipped left to right), which was a bit tedious but produced a mortise precisely in the middle. Tenoned pieces cut to length, then shoulders of the tenons cut very slightly over, on the table saw. Cheeks sliced off on the bandsaw. Trial the bandsaw on a piece of waste first until the fit is right. Aim for a push fit not a hammered fit because it makes life easier and risks less damage.

Most tiles rest on other tiles. A bottom row cannot, so a spacer must be fitted on the roof to maintain the pitch. 25 × 50mm tanalised roofing batten was just the right size – two face down,

4 More components. I was reluctant to dismantle the roof. I had a long discussion with myself about the sense of lifting this into position, damaging my back and being unable to move for six weeks, then like an improbable weight lifter, I rotated it, lifted it above my head and walked it over three standing sides. Not difficult at all as it happened

5 Initial assembly. I could have clad it indoors, but I wanted to be sure that I could move it; and I wanted to be able to stand back from it to see it properly. Now I think the doorway might receive a drip moulding like an eyebrow. That gable end needs a little something

the bottom one edge down (**photo 1**). I cramped and nailed the frames, but I screwed the batten on. Probably in all woodwork, but especially in this spontaneous seat-of-pants method of working, I like as much as possible to be reversible.

The two roof frames rest against each other, and are held there by screwed blocks (**photos 4** & **9**). This is not the finest solution, but it is expedient. Now here's a question: if you have to cut a flat isosceles triangle from 50 × 75mm stock, how are you going to do it? What you want is a large adjustable jig running across a table saw, but what you also want is to keep your fingers. If you were making bomb-proof Wendy-houses for a living, this would be the way to go. A one-off is different. The blocks are too small to run over a surfacer, which might have even less regard for your fingers. Again, a jig could be made, but only for a roomful of Wendies. I took it slowly on the bandsaw but this wasn't smooth enough. I could have put it in a vice and planed it flat, but I didn't consider that. By my elbow was the Triton oscillating sander. I didn't ask too much of it but I sanded away the high spots with ease, drilled clearance holes for screws, and machine-gunned the blocks into place. I used to think that impact drivers were crude, but I don't anymore.

6 Wendy has a slightly aghast look: 'Oh! Really?' I was surprised too. It wasn't there last week, and now it is. I've given up on the vacant gable; I don't think it matters anymore, and anyway, I haven't had any ideas. The doorway's rounded corners (**photo 5**) had to go. I didn't see how to progress them, and they stopped any door-lining, which now, together with the window lining, pulls the eye down away from the gable towards the human detail. Actually I'm beginning to like the vacant gable. It is not pretentious like some Italian excesses. More American Colonial

7 Yes, it is part chicken coop. Sorry girls. That's just how it happened. The annex on the left is the kitchen extension. There had to be somewhere for the cooker, that was part of the brief. The fascias are fresh 4 × 1in (100 × 25mm) sawn tanalised, and I presume they will change colour but I don't mind if they don't. Serendipity called. I'd deliberately configured the roof to take two rows of five tiles. That offered a convenient width of four tiles. Three ridge tiles capped the roof. The gaps between them are bit large, but when this is installed in Bristol, I will bed the ridge in mortar and point it, so the gaps will matter less. Cutting concrete tiles is a nasty business and I was grateful not to have to do it

8 The windows could of course be fitted with Perspex or glass. I wouldn't want an opening casement for the same wind/hinges/fingers reason that I don't want a door. Fixed glazing would deny the opportunity to use the sill as a counter, so the girls couldn't play shop. And it would introduce a level of detail incompatible with what is otherwise an elemental basic building

Not going Kevin

I forgot all about Kevin. I'd go conventional. Rectilinear room with a doorway at the end and a window in the middle. A Wendy house should have style. It should have charm. Charm is an elusive design element. Rather than a tent, this was indeed an elemental house. There wasn't much to discuss about the studwork. The charm would have to come in the cladding.

On a gable end, tiles normally project, are clipped in place, and pointed with mortar. I wasn't going to get into that. Here they abut wooden parapets and their edges are hidden. The peak of the roof has to clear a semi-cylindrical ridge tile. I thought of a flouncy fall of geometry like something in Amsterdam, but the pitch of the roof wasn't high enough to make it work, and it would leave end-grain exposed. On the parapet, a piece of batten protects the end-grain as what you might call a flat cap.

The doorway received a touch of detail. I rounded the corners. There was to be no door because I had the image of a gust of wind trapping tiny fingers. Anyway, this is an outdoor, garden experience. A cave. The curves add a distinct design detail. According to my own rules I should repeat this motif somewhere else. The window frames are an obvious choice, but as I write this, I haven't decided. The windows could easily receive a sheet of Perspex, but I wasn't going to do that right now either. I had plenty to be getting on with.

For something put together in, let's say, a week (I strung it out longer than that), it has a pleasantly medieval air. The roof will leak. The walls will let in the wind, except in the rain when the softwood swells and closes the gaps. Then the rain will drive through the glass-less windows and the empty doorway. This is a fair-weather cave. It could be squeezed, flashed, caulked, glazed and hatched to make it seaworthy but that is another level of production. And gravity. I'll keep my eye on it over the years, and do what's necessary or desirable.

I said at the beginning that it was Imogen, not Jaya, who wanted a play house. Turned out it was me. I like making furniture but I like building even more. A building is furniture you live in. It affects the way you feel. It creates the way you feel. It creates you. It stays with you, as it has stayed with Imogen since she and Jessica were just a few years old. I consider it a privilege that I can do the same for Jaya and Risha. I've made a place for play, and a place for memories. I hope Kevin would approve. I don't care about Disney; this fantasy is real.

GREEN GROWS THE WILLOW (& A FEW OTHER THINGS)

A couple of months ago (*WW* June) I showed you my attempt at laying a willow ring. Just in case you thought I was heavy handed and hopeful, this is how it has responded: explosively!

Cut willow

Green willow

9 I have yet to screw the floorboards down. A central spine of 2 × 2in supports the floor middle. I anticipate setting the house on a level gravel base maybe topped with sand. Using planed pine for the floor ramped up the cost, but I didn't consider an alternative. Knees and splinters! I think maybe it should be waxed. I lost half a width in a mistake and was then tight on materials. The back floorboard (of a deeper colour) was a piece of scrap that I was using as a template. It was the perfect fit! More serendipity! I do like it when this sort of thing happens. It's like a pat on the back. It's almost like forgiveness. You can see four silver hexagonal heads on the main uprights; these are whacking great coach screws. I bought a box of them in a junk shop. Hadn't used them 'til now. Perfect!

RAISING THE BAR

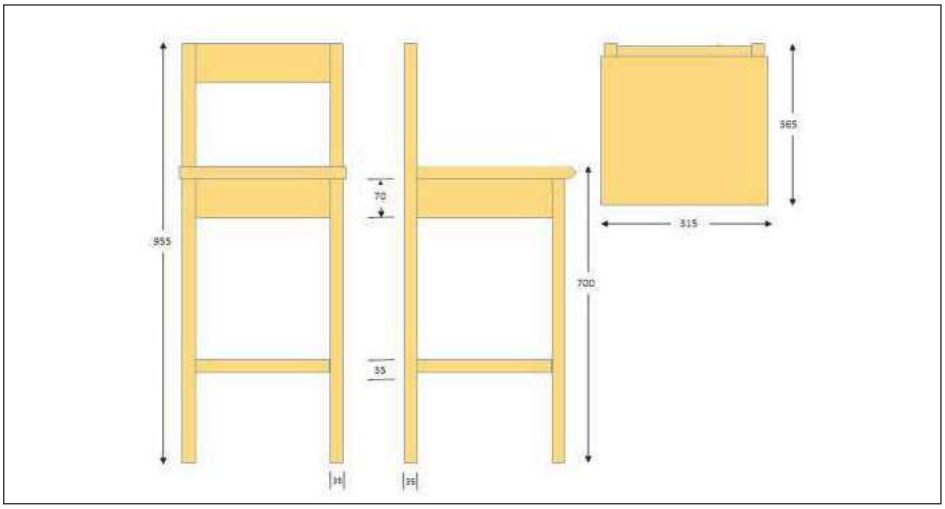


Fig.1 Oak kitchen bar chair dimensions

1 The problem – the original chairs

Realising a pair of folding kitchen 'bar' chairs no longer fit the bill, **Robert Couldwell** takes to the workshop and goes about making a replacement set in oak

In my previous articles for this magazine, I worked on the premise that an amateur with no formal training and little in the way of machinery could produce reasonable pieces of furniture. My first project was a softwood slatted vegetable drawer-unit copied slavishly from an article in *The Woodworker*, which certainly satisfied my wife (not easy) and is now in regular use in the larder.

My daughter, seeing this, asked if I could make a desk needed for her new work-from-home job. Initially thinking I would make this from softwood and MDF and providing her with a sketch which she approved, I suddenly thought I should be more ambitious and make it in oak. The result was, surprisingly, a success and featured in the April 2013 issue. It also resulted in several other commissions (unfortunately for love not money), until pressure of work gave me no time for anything but essential (DIY) woodworking.

The problem

Recently things changed and a new project was born. We've long had a pair of folding kitchen 'bar' chairs in use, but when used in our current house, the protruding metal legs were a constant source of annoyance as it was very easy to trip over them. It came to the point where my wife insisted I do something about them (**photo 1**).

2 Perfect components

CUTTING LIST

All dimensions in millimetres

Part	Quantity	Length	Width	Thickness
Rear uprights	2	955	35	35
Front uprights	2	700	35	35
Front & rear upper supports	2	245	70	25
Side upper supports	2	280	70	25
Back	1	245	70	25
Front & rear lower supports	2	245	35	35
Side supports	2	280	35	35
Seat	1	365	315	19

After some research on internet 'chair' sites, I decided on parallel legs but needed to ensure these would provide stability (people tend to lean back on chairs and I had visions of concussed visitors having fallen backwards). I therefore made a mock up with plywood and the right length legs and did 'field' tests. The outcome was to extend the distance between the front and back legs.

Shaker style

Our kitchen is Shaker style with oak worktops, so we chose oak for the stools, which might also have something to do with the fact I had an old oak breakfast bar and a long oak shelf in the back of the garage that I could recycle. I like the simplicity of Shaker design and I suppose the style of my chairs follows that form. I have invested in some machinery since I took up woodwork as a hobby including a chop saw, bandsaw, vertical panel saw, router table and biscuit and Domino jointers, as well as the usual DIY tool kit, but the one machine missing is a planer/thicknesser. This is almost essential to machine reclaimed wood and fortunately a good friend of mine has a planer and separate thicknesser, and I assisted him in machining my old wood. Perfect components for assembling the chairs were the result (**photo 2**).

Oak window sill board for the seat

The reclaimed oak was 50mm thick, which was too thick for the actual seats both visually and in terms of weight. Rather than waste valuable oak and cut and plane it down, I looked to 20mm thick board from the local supplier. It is always a nightmare selecting decent boards there and I ended up buying a more expensive oak window sill board, which was true and square with a good grain (**photo 3**). I have never believed in spoiling a ship for a ha'p'orth of tar – hopefully the chairs will become family heirlooms!

3 Oak window board for the seat

4 Marking out joints

5 Festool Domino jointer

6 Mortises cut by jointer

My woodworker friend was surprised I was attempting to make chairs, which does require the matching of a lot of angles, and I think he had visions of my ending up with unequal legs and a rocky future – o he of little faith!

Setting out the joints

Once everything was measured (at least twice) and cut to size, the first step was to mark out the location of the joints (**photo 4**). My woodworking friend assumed I would be cutting proper mortise & tenons but they leave little room for error. My Festool Domino jointer is an amazing machine for the amateur and does give some wiggle room (**photos 5, 6** & **7**).

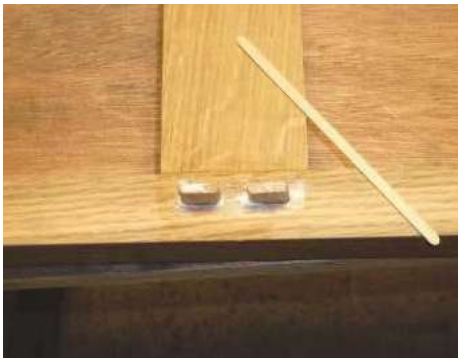
I was determined not to hurry making these chairs and to produce them one at a time. I had decided to attach the seats by screws through the 70mm cross struts to give some mechanical security and drilled and countersunk the holes before gluing. The next step was to glue the back uprights and three cross struts. I have always successfully used waterproof PVA glue and despite the availability of more sophisticated adhesive, continue to do so. Fortunately I am not short of try squares as each angle has to be checked at the same time as the back is clamped. Once dry, the same was done with the front legs and to ensure alignment, the front leg frame was clamped to the rear to check alignment before final clamping (**photo 8**).

Lots of angles

The trickiest part of the whole project was joining the front legs to the rear and ensuring all 16 angles were 90° and cross struts level with each other – not for the faint-hearted. The chair was clamped together to ensure everything lined up and adjustments made (**photo 9**). The wiggle room provided by the Domino jointers was helpful here. Once everything lined up, the final gluing took place and the chair clamped. When clamping, I always protect the piece with offcuts, which are sometimes difficult to manipulate. It occurred to me that a little double-sided tape could be used to stick the offcuts to the clamp, thus solving the problem (**photos 10** & **11**). The project now actually looked like a chair, which was comforting, leaving only the seat to be added.

Adding the seat

The window board was cut approximately to size and two pieces joined back to back, this time using a Makita biscuit jointer, which uses nice wide biscuits. Because of the bull-nose front and rear, great care had to be taken over the clamping (**photos 12** & **13**). Once the glue was dry, the seat was sanded both sides with my excellent Makita orbital sander. I have finally acquired an adaptor to attach the dust extractor, which makes such a difference both to the air quality and also the life of the backing pads as build-up of sawdust tends to affect the adhesion of the sanding sheets (**photo 14**). I have discovered Mirka sanding sheets, which are net based and allow the dust to be extracted all over and not just through eight small holes. They are also effective and long lasting (**photo 15**).

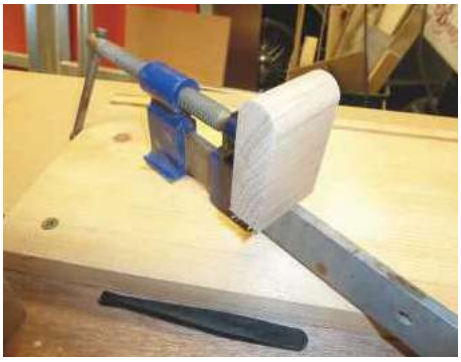


7 Domino tenons

8 The front legs are clamped to the rear to ensure alignment

9 Checking angle alignment

10 Sticking offcuts...

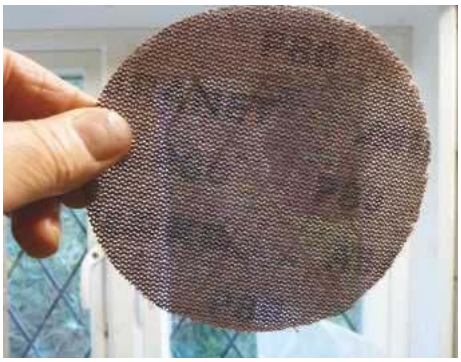


11 ... to clamps

12 The Makita biscuit jointer

13 Oak board joined

14 Sander with adaptor/extractor



15 Mirka sanding sheet

Now sanded all-round, the best side and bull-nose of the seat was chosen, taking account of grain and quality of the join. The seat was then cut to size and the cuts-outs for the rear uprights made on the bandsaw, one of my most useful machines. The seat was finally attached with 80mm screws and the stool was substantially finished and surprisingly, considering it was the first chair I have ever made, doesn't wobble (**photo 16**).

The final finish

The next decision was how to finish the chair. I am a fan of a combination of good quality Danish oil and water-based matt varnish. There is some controversy about varnishing on top of Danish oil, but it has always worked for me. I became so disenchanted with the tedium of regular re-oiling of kitchen worktops that last time I sanded them, I oiled them and added a couple of coats of matt varnish. It has worked perfectly for five years (**photo 17**).

16 Attaching legs to the seat with screws

17 Materials to finish chairs

The original instructions that came with the kitchen oak worktops recommended not sanding with anything finer than 400 grit and applying oil with wire wool. When I told the kitchen fitter he thought I was mad, but it has always worked for me. I applied three coats of oil to the chair allowing 24 hours drying between each. The chair was lightly hand-sanded with 400 grit abrasive between each coat and two coats of Ronseal water-based varnish were finally added with sanding after the first and buffing after the last (**photo 18**).

The offending folding chairs are finally redundant and will be sold on eBay. The new chairs are in place and 'she who must be obeyed is happy' – result!

18 Final varnish

19 & 20 The completed bar chairs in situ

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TALL DARK STRANGERS

You won't recognise **Dave Roberts**' style at first, but the engineer's enjoying a change

The first thing you'll notice about these candlesticks is that, though they're turned, there isn't a single curve in their profile. Almost all the work that I do for other people has bumps and curves in it, so I thought it was time to challenge myself to try something different: candlesitcks, I decided, with straight lines and nothing but.

That was all well and good, of course, but the hard part was making it look right: I drew and changed the design many times before I was happy. When I came to turn them, the design changed yet again in response to the timber and grain. But then, that's what this is all about – learning as we go.

Choosing & preparing the timber

Choosing the timber isn't difficult – you just go for what you feel is right, whether it's light or dark, home-grown or exotic. As you can see from the photos, I chose dark timbers: wenge and the darkest African paduak I've ever seen, both of which were sourced from Yandle & Sons Ltd. Finding a piece of paduak of sufficient size to make the base, however, was difficult, and the only answer was to build it up by gluing separate pieces together. To make a feature of this necessity, I interleaved the paduak with black veneer from Craft Supplies.

Starting with two pieces of timber, I planed up one side on each piece to get two flat surfaces; you can't rely on a sawn face to provide a good gluing surface. A surface planer makes this job easy, though in the past I've used a hand-held electric planer. The veneer I used was only 0.7mm thick, so I used two leaves to create a definite line between the two pieces of paduak when they were glued together. When the glue had set, I planed one surface of the paduak, then cut the whole block in half, slotted more veneer in between the two pieces, then glued and clamped them together to create a quartered effect. Once cured, I cut the paduak in half to produce two pieces large enough to make the bases.

Turning the base...

Mount the blank between centres and set the lathe to around 800rpm, which is fast enough to turn something of this size. It's never worth the risk of putting the lathe on a high speed: the timber won't thank you for it, and you won't thank the timber if it comes off and hits you! Use the spindle roughing gouge to turn the timber down to a cylinder, then use a parting tool to turn a large diameter spigot on both ends, which will each locate in the adjacent pieces of wenge.

Turning the base's taper is straightforward: keep the bevel rubbing and you'll get a good finish, and a good finish with the tools means less work with abrasives. Keep checking the diameter both ends with Vernier callipers, and use a steel rule to check the base is flat. The easiest way is to place a light behind the rule; if you can see the light it will need a little tweaking. To keep things flat when sanding, use a cork block with abrasive wrapped around it. I start with 180 grit and work up to at least 400 before stopping the lathe and

TOOLS YOU'LL NEED

- 6mm spindle roughing gouge
- 9mm parting tool & your choice of gouge
- Screw chuck
- Jacobs chuck
- 25mm Forstner bit
- 10mm drill

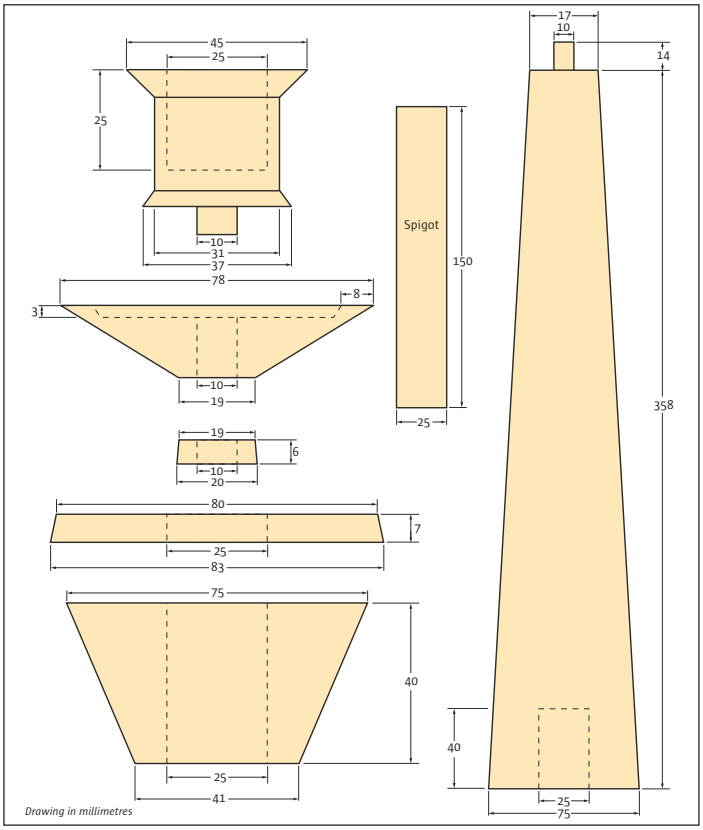


Fig.1 Candlesticks dimensions

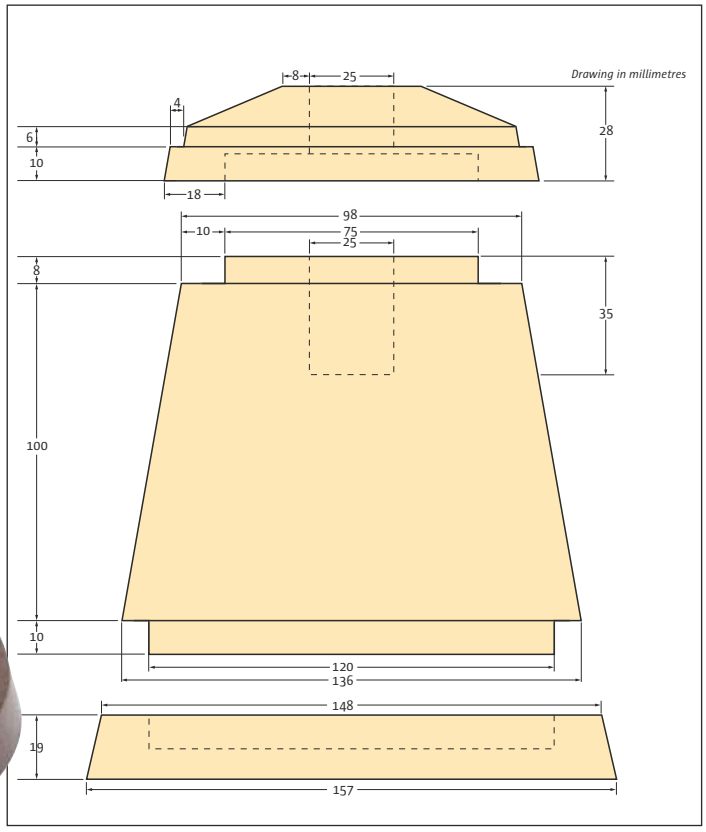


Fig.2 Candlesticks base dimensions

1 The base is made up from blocks of paduak and veneer...

2 ... which should be clamped together as tightly as possible

3 Saw the finished block in half and check them over to make sure the joints are tight

rubbing the abrasive up and down the grain to remove any sanding marks.

The next job is to wipe away any dust and seal the timber with sanding sealer, which, once dry, can be flattened with '0000' wire wool. Finally, apply a good coat of polish and buff to a sheen. If you're making a pair of candlesticks, it's far better to make both of the bases at the same time while it's all fresh in your mind.

... & wenge capping

The base is capped top and bottom with wenge discs, and providing the timber is flat on one side, you can mount it straight onto the lathe with hot glue so that you won't be left with any chuck or screw holes.

Turning wenge can be very dusty so it's advisable to use an extractor, especially when sanding. Moreover, this timber is hard and a touch brittle, and requires careful turning.

The gouge that you see me using to turn the bottom disc is a 9mm bowl gouge; I was careful to refresh the edge frequently as wenge soon takes the edge off a tool.

The next step is to turn the disc to the finished diameter then remove the tailstock and face it up. You can now turn the slight taper on the edge, using an adjustable square to transfer the angle to the next disc.

Turn the recess for the large spigot with a 6mm parting tool. You're aiming for a good push fit, remember; once you've achieved that, stop turning and don't sand it! Instead, sand the parts of the disc that will show and apply sanding sealer. Again, when dry rub it back with '0000' wire wool before applying a coat of polish – dark polish if you have it – before removing the disc from the lathe.

The cap for the top of the base is turned in the same way except that it's turned around and put onto a jam chuck – a piece of scrap wood with a spigot turned on it to fit the recess in the disc. Do the necessary turning, and then drop the speed down so that you can drill a hole for the spigot on the column.

To do this, fix a Forstner bit into a Jacobs chuck in the tailstock, then wind the tailstock in slowly and drill all the way through the disc. Sand and seal the wenge, then remove it from the jam chuck. The base is assembled with a little PVA glue on each of the capping pieces, lining up their grain with the base, and then clamping all three pieces together.

The column

The column is turned in paduak, and is made up of two main parts and two wenge rings; the spigot that fixes the column to the base is turned separately.

Starting with the long section, you need

4 Mount the block between centres; true it up then turn the large spigot on both ends

5 Turn the taper, taking light finishing cuts to achieve a good finish...

6 ... and check the taper with a steel rule

7 Hot glue the wenge disc onto a scrap piece of wood and turn the taper

8 Check the angle on the disc then transfer it to the second disc

9 Use the parting tool to turn the recess, keeping a close eye on the depth

10 With the upper base ring mounted on the jam chuck, drill a 25mm hole right through

11 Glue the top and bottom rings to the base and clamp them on

to drill a hole 25mm in diameter and 50mm deep in one end ready for the spigot that will join the column to the base. It's better to drill it now because you can guarantee that the hole will be 100% in the centre.

Fit the Forstner bit in the Jacobs chuck and mount it in the headstock. Find the centres on either end of the paduak, and mount it between the bit and the tailstock. Now hold the paduak while you turn the lathe on; remember to use a low speed of around 400rpm as drilling in this way at a high speed can be very dangerous. Gently wind the tailstock in; back the tailstock off every few turns to clear the debris.

After drilling, the best way to mount the workpiece on the lathe is via a jam chuck. This is one of my favourite chucks because it's home-made and doesn't cost anything. All you have to do is fix a scrap piece of wood onto it and turn a spigot about 30mm long. If you taper the spigot from 24mm to 26mm, it'll sit neatly into the hole on the column and turn without any problems as long as you're not heavy-handed with the spindle roughing gouge.

As you turn the taper, check it with a straight edge to make sure that it's straight; it may need a little tweaking to get it right. The final turning is the 10mm spigot on the thin end, which is for the drip tray.

Again, when sanding a long taper or cylinder, I like to use abrasive wrapped around a cork block. Moving the block slowly up and down the workpiece soon flattens the surface; lift the block occasionally to remove the dust on the abrasive. Work through the different grades of paper and finish on 400 grit before stopping the lathe and rubbing the abrasive up and down the grain to eliminate any sanding marks. Give the column a good coat of sealer and when it's dry rub back with '0000' wire wool.

FOR BEGINNERS

When using hot glue to mount workpieces such as the wenge discs in these candlesticks, start by fitting a piece of scrap wood on a faceplate or screw chuck and facing it up, using a steel rule to make sure that it's flat.

I then tend to apply one ring of glue on the scrap wood; there is no point in covering the whole thing. Stick the workpiece to the scrap wood, and then bring the tailstock up to clamp it in place; the glue will set in seconds, remember, so you won't have any time to waste. To remove the workpiece you'll need to give it a sharp blow with a rubber hammer; any glue left on the disc can then be picked off easily

The shorter, bottom section of the column is also held on a jam chuck, so drill the spigot hole on a pillar drill and then mount the workpiece on a 25mm spigot.

This piece is only a simple taper, and a 9mm gouge will soon turn it into shape; use a steel rule to check that it's flat, and then continue to sand and seal it.

The wenge rings between the two halves of the column, and between the column and the drip tray, are also turned with a jam chuck. The larger ring has a 25mm hole drilled through it, while the smaller ring has a 10mm hole. The pieces are faced up both sides and turned to the finished thicknesses and diameters. The smaller ring at the top of the column has a 10mm hole through it. This can also be turned on a jam chuck and parted off when finished.

12 Drilling the column: run the lathe on a low speed and wind the tailstock in slowly

13 The quickest way to flatten the surface is with abrasive wrapped round a cork block

14 Hold the lower part of the column on a spigot chuck; turn the taper with a 9mm gouge

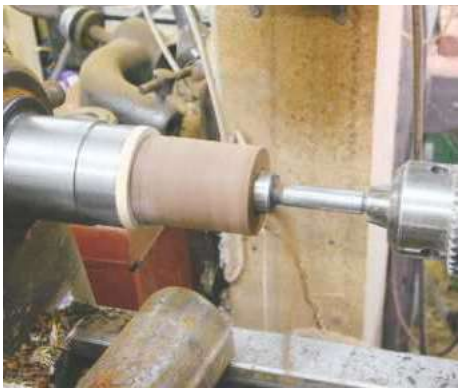
15 Jam the ring onto a jam chuck, face both sides, and then turn the taper

16 The spigot is turned between centres...

17 ... but the small ring is mounted on a jam chuck and supported with the tailstock

TIP
I used Evostik's PVA when gluing up the pieces for the base. I've used this adhesive for years now, and stand by it. You can't just slap it on, though: a thin layer has to be applied properly to each surface. Once all the surfaces have been sufficiently covered, it is advisable to put the clamps on straight away. The more you put on, and the tighter they are, the better. After 15 minutes, go back and give the clamps a further tweak, then leave them for at least 24 hours

18 Turn the recess in the drip tray with a parting tool; keep it crisp and sharp



19 The sconce is mounted on a screw chuck while you drill the hole for...

Connecting spigot

This spigot plays an important role as it holds the column to the base. It should be 25mm in diameter, 150mm long, and has to be a snug fit in both holes. I used beech for the spigot, and used Vernier callipers to ensure that it's even all over. There's no point in sanding it; a rougher finish will give a better bond.

The drip tray & sconce

The drip tray is also made from paduak, and has a 10mm hole drilled through it so that it fits over the spigot on the column and underneath the sconce. Make sure it's a tight fit on the jam chuck, then turn it to the finished diameter before taking out the centre. I found that the best tool to use is a 6mm parting tool, which removed the waste quickly and kept the bottom flat. Now you can sand and seal the top.

Turn the tray around, jam it onto the chuck and turn the bottom; bring the tailstock up for extra support if you like. Don't forget to check the taper with the steel rule before you sand and seal.

The sconce is turned in wenge with the grain vertical, and the best way to mount it is on a screw chuck. Turn it to the finished diameter and then drill the hole for the brass insert using a Forstner bit in a chuck in the tailstock; don't drill any deeper than is required to house the insert. The rest of the sconce can be turned with a parting tool. Don't forget to turn the 10mm spigot that fits into the drip tray.

Assembly

The connecting spigot in the column will only need a little glue. Put the spigot into the base first, then fit the column onto it, ensuring that the face grain on each component lines up. The last three pieces to be glued are the small collar, which slides over the spigot on top of the column, the drip tray, and then the sconce. When both candlesticks are glued and you are happy that all the face grains match, put them aside and leave them to dry.

A final thought

I generally polish each component on the lathe when I've sanded and sealed it, but the handling involved in assembly soon wears the shine away. When the glue has set, then I polish them by hand and this soon brings them back to life. With this project, I was tempted to make two pairs because I have always wanted to walk into my local hardware shop and say, "Four candles, please...!"

20 ... the brass insert; check the fit and don't drill deeper than necessary

21 Use a freshly sharpened parting tool to turn the sconce; turn slowly to ensure you don't tear the grain

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WOODWORKER'S ENCYCLOPAEDIA A-Z PART 6

In part 6 of this series, **Peter Bishop** looks at butt joints, capping rails and carborundum, to name but a few terms

A broadleaved evergreen tree from the Pacific Northwest (*Lithocarpus densiflorus*)
Photograph courtesy of **A.L. Jacobson**

I wonder if you know what the definition of a cabinetmaker is. Do too many claim to be one but really are they qualified to do so? Our topical directory continues through the Bs and just into the Cs with some explanations to go with each entry.

BSI

The BSI Group, also known as the British Standards Institution, is the national standards body of the UK. It produces technical standards on a wide range of products and services. It also provides certification and standards and services related to business. In a commercial environment, accreditation to BSI standards should provide customers and consumers with confidence to buy. Currently linked into the European system, although this may or may not change with the fallout from Brexit.

Broadleaved

Most broadleaved trees are deciduous; they drop their leaves, unlike those with needle-like leaves who usually retain theirs throughout the growing season. There are exceptions, however. Holly, a hardwood, retains its leaves, and larch, a softwood, drops its needles.

This conifer has one needle attached to the stem. The needle is flat and cannot be rolled between the fingers

Brown rot

Decay in timber due to fungal attack. This one removes the cellulose compounds and leaves a brown, soft mass.

Bullnose plane
The small, hand-held plane, with a rounded 'bull' nose, which is used for cleaning up corner joints, etc.

Veritas bullnose plane

H.Slater gunmetal bullnose plane

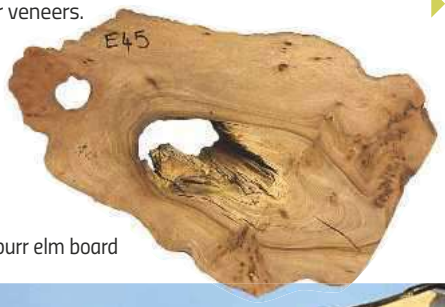
Bullnose step
This is the shaped, bottom step of a flight of stairs. The shaped section, on one or both ends, wraps around the newel post with a curve to finish it off.

Bull's eye window
The common name for a window with a round, fixed or opening. Generally used as a decorative feature. Old glass can also have bull's eyes, which are usually in the centre of the pane. This round, obscure section is created when glass is spun to create a flat section at the outer edges. The good stuff was flat and clear; the cheap stuff, from the middle, was thicker and obscure.

Burnishing the interior of a turned bowl using wood shavings

Burnishing
This is the process that can help prepare a surface for waxing. Usually on hardwoods a tool with a rounded face is rubbed on the wood surface and, through friction, helps to seal the surface before the wax is applied. Some restorers will burnish and mark corners to imitate wear.

Burl or burr
This is an abnormal, knobbly, often rounded lump growing on the outside of a tree trunk. The tree has laid extra layers of wood onto an area of its trunk that might have been damaged or affected by, say, insect attack. The extra mass is created to protect that area and is made up of densely, interwoven cells. The wood produced from a burr is prized for its character and beauty, especially for veneers.



A burr elm board

Burrs on the trunk of an old oriental plane tree on the Trinity College campus in Dublin, Ireland

Bull's eye window in castle

Bull's eye window at Hammond-Harwood House, Maryland

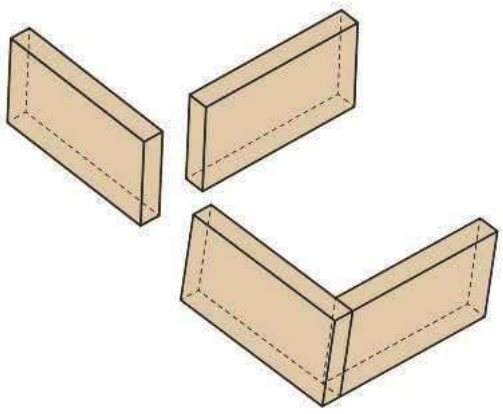
Butt
The butt is the base of a tree trunk nearest to the stump from whence it was cut.

Butt hinge
Probably the most common and simple hinge we use and one that has been around for a long time. The butt hinge comes in a wide range of sizes and materials for every conceivable job. There are variations on the theme that include 'rising' butt hinges that lift the door as it opens creating clearance; ideal if the adjacent floor is sloping upwards, and some that can have the hinge pin taken out so that one part can be demounted without taking the hinges off.

Cabinet butt hinge

Carlisle Brass double stainless steel washered butt hinge

Butt joint
A simple joint that may join end- or side-grain pieces of wood together. As long as the adjoining faces are flat, straight and square, a good joint can be made. When using this joint the more glue that can be rubbed into the touching surfaces, the better. This action enables the glue to penetrate into the wood pores, thus making a better key and joint.



Butt joint explained

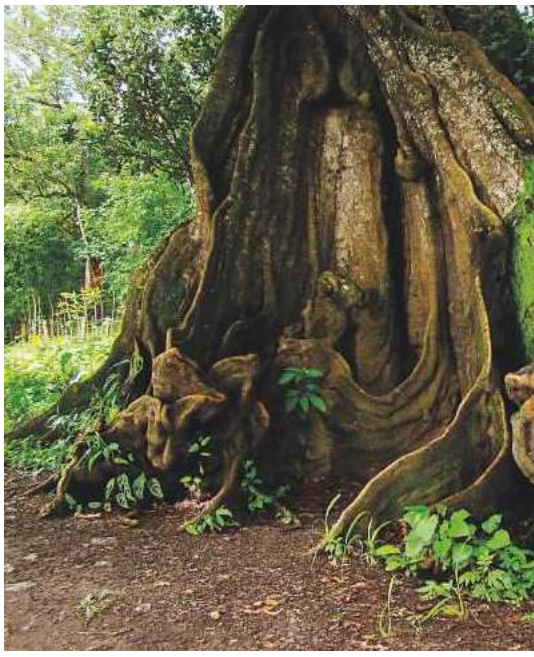
Wooden button head plug

Buttons
Buttons are traditionally made from wood but today there are a number of other options available. However, the key function of a button remains the same whatever the material might be. They are used as fixings that allow two, unglued adjoining surfaces to move under pressure. The most common example will be fixing a solid wood table top to a sub frame. Because the top is a wide, single or joined piece of wood it will want to move across the grain slightly. When fixed with buttons this movement is accommodated. If a permanent, possibly glued fix is made, the top will most likely split.

Buttress
There are two types of buttress we might come across. The first will be a mechanical structure that helps to maintain the stability of a wall. Think of a church buttress and how this is built to make sure the wall which it supports stays in place. The other buttress we might observe are those found around the bases of trees. These act in the same way; providing stability so that the tree can reach for the light and therefore grow.

Cabinetmaking
The definition of cabinetmaking is simply 'the craft of making fine furniture', and the definition of furniture is a self-contained, free-standing piece – not something that is built in. When it becomes part of the fabric of a building, that's joinery. Historically, to call yourself a cabinetmaker, you'd have been a time-served apprentice under a master craftsman. With so many changes to the way we work over the last half century, finding a master craftsman has become difficult. Too often someone with

Another example of a butt joint

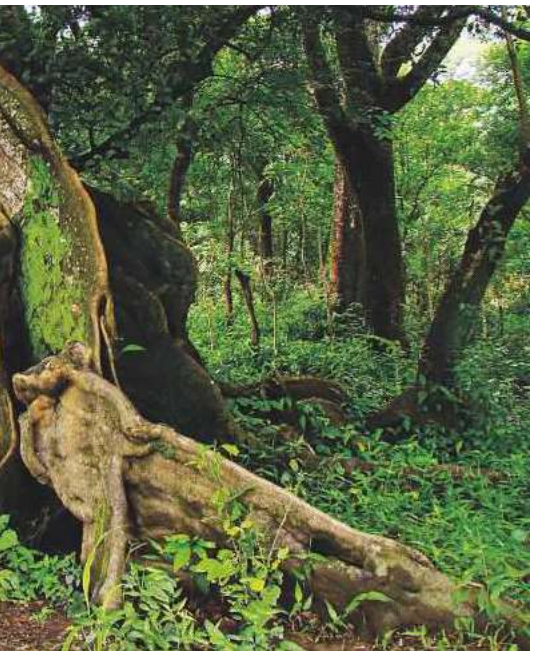


Some of the old tropical trees have trunks like flying buttresses for strength. The flying buttresses of this tree extend to the sides in swirls

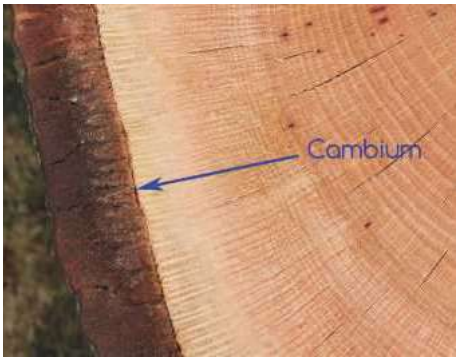
little or no idea claims to be something they are not. At the very least a college course or a number of years working with a specialist might substantiate a claim. So, if you're looking for a cabinetmaker, check out their credentials, or, if you want to become one, research the route to a qualification.

Callipers
I use callipers for a variety of jobs in the workshop. The most easily recognisable ones are the simple examples that can be used to measure internal or external dimensions. Some have sprung heads and winders for fairly accurate readings and others are more basic. The fine measuring callipers, like Vernier gauges, can measure to parts of a millimetre. I use mine to check screw sizes and also find the right sized drill bit to bore the appropriate pilot hole.

Axminster spring callipers



Forest canopy in Coromandel, New Zealand



Cambium: where all secondary growth occurs in a tree

Cambium layer

This is the cellular layer directly underneath the inner layer of bark, the bast or phloem, of a tree trunk and between that and the outer woody layers of sapwood – the xylem. It's fascinating stuff and well worth a look to see how trees grow, their structure and how that might affect the design of a project.

Vernier callipers

Canopy

In the cycle of growth all plants strive to reach the sky and sunlight. Those that make it over their competitors will benefit from the natural elements that help it become strong and survive. The tree tops are called canopies and, collectively, they can block out light, thus stunting the growth of anything below.

Capillarity

Water, among other liquids, has the amazing capacity to creep upwards above its own natural level. We become aware of this when designing joinery that faces the elements such as windows and doors. In most cases you'll see this in action on the lower, outer face of a window cill evidenced by a small groove. Although the sloping, upper surface will shed water, it could creep back in underneath; the groove prevents this if it is designed correctly.

Capping rail

A simple rail that most commonly runs along the top of a fence structure. It will most probably have two sloping, upper surfaces to help shed water and protect the panels below.

Carborundum

We'll use a carborundum stone or slip in the workshop to put the final edge on a cutting tool such as a chisel. It's a man-made product, carbide of silicon, made by heating coke with sand in a furnace. Different grades are produced that will finish our tools in stages. Used as an oilstone, with the added application of light oil or something similar, we can hone our edges on a block of carborundum, which will have a coarse face on one side and a fine, finishing face on the other.

Assorted slip and carborundum stones

Carborundum stone for sharpening

Carcass

This term is used to describe the sub structure of, for example, a piece of furniture. The inner frames, back, bottoms, etc. can be called the carcass and could use up some of the lower quality materials. The best wood should be saved for the surfaces that are seen the most.

Walnut and steel drinks cabinet carcass ready for finishing Photograph courtesy of **Heliconia Furniture**

Long hanging unit furniture carcass

NEXT MONTH

In the next issue, Peter looks at more terms from carpentry joints to chase mortise

LETTERS

★LETTER OF THE MONTH

WOODWORKER SUPER FAN

Dear Tegan,
From this month's *The Woodworker & Good Woodworking*, May issue, page 3, 'fabulous Group Editor Tegan Foley' – thank heavens for your editorship! 'fan mail', 'rock star status' – thank you! A bit wordy I know, but I always wanted to email, and you're involved with a gorgeous magazine. I've been buying it since the early '80s. I love woodworking. I completed my apprenticeship from 1969/1974 and am a furniture maker, but also do joinery, carpentry, make toys and also do repairs. I'm grateful you guys are there, but a special, huge cheers to you on this occasion, Tegan!
Best wishes, **Sammy Bogle**

Hi Sammy, thank you so much for your wonderful email. Your words really do mean a great deal! I'd love to feature this in our letters section and will also include a few photos of your work. Many thanks again and I hope you continue to enjoy the magazine for many years to come!
Best wishes, **Tegan**

One of a pair of wooden filing cabinets made for a client's office

Patio planter for furniture recycle project, Gloucester Dock

CARBIDE INSERTS & SPRAY GUNS

Two questions for you:
1. The April edition of *The Woodworker* & *Good Woodworking* had a fascinating article about alternative lathe tools called 'carbide inserts'. Like many, I only use the lathe to make accessories for other woodwork, so these tools sound ideal for me. However, the article didn't explain the title. Can I ask why they are called 'carbide inserts' and what do they insert into?
2. Some years ago, I wrote to the magazine about spray guns. I was looking for something to produce a more professional varnish finish than I can achieve with a brush, but priced at the hobby level. I was looking at the Fuji – **www.axminster.co.uk/fuji-semi-pro2-hvlp-spray-system-501285** – but am sure there are others. I was asking the magazine for an article/comparison-test, including what equipment and accessories I would need and what skills are required to achieve a decent finish, etc. The reply then was that suppliers would not loan such expensive equipment to the magazine for review. I wondered if that had changed at all? I would still be in the market for something like this but would never risk my hard-earned cash without having more confidence that I could get it to work – i.e. the kind of professional guidance that the magazine could provide. Anything you could do to help?

All the best, **John D**

Hi John, thanks for your email. Each tool has a replaceable small flat tungsten carbide cutter, held in place at the tip of the tool by a screw. When the edge gets dull (which takes a very long time), the cutter can be rotated 90° and a new, sharp edge is presented to the wood. After four turns, the cutter can be replaced at a relatively low cost. This system completely eliminates the need for sharpening. Please note you need a separate tool for each insert profile (square, round and diamond shaped). Unfortunately they are not interchangeable.

Regarding the sprayer, in my opinion the low-end electric ones won't deliver a great finish as they don't atomise or deliver as well as a pneumatic (air pressure) system. However, there are several inexpensive HVLP systems on the market, all of which will deliver great results with a little practice.

They spray high volume at a low pressure, so there is very little overspray. If you were one of my students, I would suggest a wipe-on poly finish rather than brushing or spraying. Several thin, fast-drying coats will quickly build up a very respectable finish at any gloss level, and there is no great expertise required.
Regards, **John English**

Additional response from Colin Simpson:

*Hi John, I use an airbrush with a small compressor on some of my work, not the type of spray gun you talk about in your email. The Fuji you're looking at is a HVLP (High Volume Low Pressure) spray gun and I am afraid I know very little about them. There are also airless spray guns, which are cheaper but do a different job. I've heard the following analogy: "An HVLP is a substitute for a brush. An airless is a substitute for a roller." I am assuming you want the greater accuracy that a HVLP system can offer? There are much cheaper HVLP units on the market than the Fuji. You can buy HVLP systems from around £80 but this one – **www.airsupplies.co.uk/apollo-spraymaster-1200-hvlp-spray-system** – from Apollo is in between the cheaper ones and the Fuji.*

As with most things these days, there is a considerable amount of information online, including reviews, techniques and tips. I'm sorry I can't be more helpful without doing a lot of research myself.
Best wishes, **Colin Simpson**

CANDLESTICK TURNING QUERY

Hi Tegan,
I have a few questions for Les Thorne regarding his recent candlesticks article. Could you please, if possible, pass them on and I will wait for a reply.

Step 32 shows hardboard discs in the bottom of the base: what is the purpose of these, when and how were the recesses made, and how did Les true the bottoms of the base blanks – was it before mounting on the screw chuck?

I'm asking because there appears to be a gap between steps 8 and 9, as it goes from the base blank attached to a MDF spacer to the base blank attached directly to the scroll chuck. I look forward to completing this project.
Many thanks, **Konrad Plachta**

Hi Konrad, thanks for your email. I am happy to answer your questions regarding my candlesticks article. I'm limited to the number of steps I can include (usually 35 maximum) and, as a result, sometimes have to omit certain bits of information. The base bottom was trued up while held on the screw chuck; the recess was cut first with a gouge followed by a skew used in scraping mode; this allows the jaws of the chuck to expand into the hole to allow the shaping of the top. The hardboard disc is used to fill the recess before you put the baize on the bottom, which affords you a nice flat surface. I hope this all makes sense.
Best regards, **Les Thorne**

Les Thorne's candlestick pair, featured in the February 2019 issue, offers turners a good opportunity to practise their copy turning skills

READERS' HINTS & TIPS

For the next seven 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 low-angle jack plane, worth over £250! Ideal for shooting mitres, working end-grain and initial smoothing, this must-have hand tool also features a combined feed and lateral adjustment knob for fast, accurate changes to depth of cut. To be in with a chance of winning this fantastic piece of kit, just email your top workshop hint or tip to **tegan.foley@mytimemedia.com**, and if you can, please also attach a photo illustrating your tip in action. Good luck! To find out more about Veritas tools, see **www.brimarc.com**

VARIOUS WORKSHOP TIPS

Tip 1– I needed to create some awkward shapes in aluminium and didn't fancy doing them by hand, so elected to use my angle grinder. I could have held the items in a vice and used the angle grinder freehand, but didn't feel this was the safest way, so I set out to make something to hold it in and ended up with a timber collar, which holds it securely in the vice at any angle (**photo 1**), so I can now offer the aluminium to a secure blade.

In order to achieve this I had to form the correct diameter hole to fit the angle grinder (**photo 3**), and wasn't sure how to accomplish this. Fortunately, I remembered I had a small circle jig, which, in the past, had been described in a woodworking magazine and I'd also found details in *Mastering the Router*. To make one I first had to construct the guide bush guide, then the circle cutting jig, both of which are shown in **photo 2** sitting on my well-used version of the saw bench described in the April 2018 issue. It all worked out well.

Tip 2 – Years ago, I made a router table and cupboard, but never got round to fitting an efficient device to raise and lower the router in it, so I decided to sort it out and obtained an unused car screw jack from my local car breaker. In order to make it fit under the router, I had to cut out a well and reinforce the bottom. The jack sits in the well and can be easily used to set the router bit to the correct height. This can then be set using its own lever. It didn't take long and the jack only cost £5 (their minimum charge!). All I have to do is fit a comfortable handle to turn the jack, but this isn't a priority (**photos 4-6**).

Regards, **Alan Hughes**

1 Angle grinder held in the jig and vice, ready for use

2 Circle cutting jig and guide bush guide on workbench

3 The jig with the appropriate size hole and restraining nut and bolt

4 Well in router table to hold the jack

5 The jack set in the well

6 Router in the table with the jack in position

THE LATE DON GILL

Hello Tegan,

My friend, Don Gill, passed away this morning. He had several articles published in *The Woodworker*. He was a very gifted craftsman, who made woodwind instruments. One article I still have is about how he made a small organ. He also made a model replica of a seed drill, which was on display at Reading Museum of English Rural Life, but has now been relegated to the reserve collection, like a lot of other interesting artefacts. He was also a long serving volunteer with Tools for Self Reliance.

I thought some readers might like to know this.

With regards, **Philip Davies**

Hi Philip, thanks for your email. I will include this in our letters section so people will be able to find out. It sounds like Don made many great contributions to the magazine over the years, as well as volunteering for such a worthy cause as Tools for Self Reliance. I'm sure he will be sorely missed by family, friends as well as those in the wider woodworking community.

Best wishes, **Tegan**

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!

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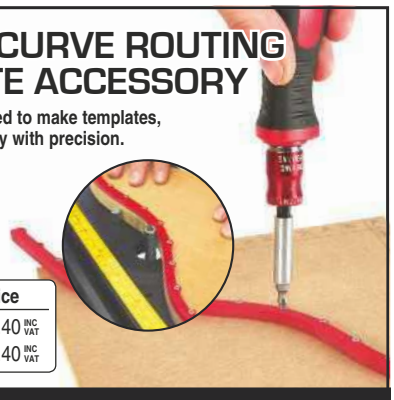

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AROUND THE HOUSE WITH PHIL DAVY

Ever wonder why you go to such lengths with certain jobs? When decorating a bedroom recently I discovered the skirting had been fitted really badly. Not only had screws not been countersunk adequately, adjoining pieces along one wall were at slightly different levels, creating a small step. To expose the screw heads meant scraping with a knife, then digging out slots with a bradawl point. Screws could then be extracted, though this didn't work every time. Where the driver bit failed to shift them I drilled holes around the head so I could use pliers to grasp the screw. Pretty frustrating…

I sometimes wonder if it's worth the time and hassle (especially on a Bank holiday), particularly when most of this skirting would be hidden by furniture. But there was the undeniable satisfaction of rectifying what had been a poor job. Now, you'd be hard pushed to tell there had ever been a problem.

OUT & ABOUT

RYOBI REVISITED

Reminiscent of a jousting tournament location or Sealed Knot re-enactment, the cluster of hyper green tents pitched on the sweeping lawns of Berkshire's Wokefield Park could mean only one thing. With the sun high in the sky, it was time for Ryobi's annual power tool extravaganza.

This is the chance for industry buyers from across Europe to check out an array of new products due to be launched over the next year or so, with plenty of innovative items to get our hands on. And hardly a corded tool in sight, apart from a pressure washer or two.

Cordless craft

With more cordless tools supported by a 18V battery platform than any other DIY brand, it's hardly surprising that virtually all Ryobi indoor products revolve around their ONE+ range. Many of the products on demo were powered by the long-awaited 3Ah High Energy battery, which you can track down in some stores now. Ryobi's outdoor products (lawnmowers, chainsaws and garden equipment) tend to be either 18V (ONE+ again) or 36V on the heavier products. Responding to the growing hobbyist market, Ryobi are expanding into cordless craft tools. For dolls' house, model makers or anyone working on smaller scale projects, their imminent ONE+ rotary tool offers plenty of potential, while the nifty new Power File is likely to win a wide range of woodworking fans. Essentially a slim, mini belt sander, this hand-held tool will also sit neatly on the bench, making it easier to use and store. With obvious applications such as sanding intricate woodwork, de-rusting metalwork, sharpening edge tools such as axes or removing paintwork, this will be a great tool for the workshop or renovation work outdoors. And run time is apparently pretty good, too.

More specifically aimed at woodworkers, I found the improved ONE+ brushless jigsaw particularly controllable on tight cuts, with tool-free bevel adjustment making it easy to set for angled sawing. Expect to see this on sale from late summer onwards. And there's a couple of new recip saws for heavier demolition work, too.

Essentially a slim, mini belt sander, the nifty new Power File will also sit neatly on the bench, making it easier to use and store

If you want the scope of air tools then their new, heavy-duty ONE+ compressor looks the business

Many of the products on demo were powered by the long-awaited 3Ah High Energy battery, which you can track down in some stores now

Massive fan

For first-fix carpentry a nail gun speeds up work considerably, with Ryobi's ONE+ AirStrike tools a popular DIY choice. But if you want the scope of air tools then their new, heavy-duty ONE+ compressor looks the business. Teamed with a suitable gun, it should be the ideal tool for fitting skirting, architrave, jig-building and quick assembly tasks around the workshop.

For those of us who like to dabble in simple electronics or wiring, there's even a cordless soldering iron on its way. Outdoor soldering at last! You may find this already in certain stores.

If future summer temperatures are going to be anything like those of 2018, keeping cool in the workshop will be a priority for many of us. Shifting serious amounts of air, Ryobi's massive ONE+ floor fan will be a welcome addition. It's not too noisy, either. You'll have to wait until 2020 for this product, though.

Shifting serious amounts of air, Ryobi's massive ONE+ floor fan will be a welcome addition

For dolls' house, model makers or anyone working on smaller scale projects, their imminent ONE+ rotary tool offers plenty of potential

The improved ONE+ brushless jigsaw is particularly controllable on tight cuts, with tool-free bevel adjustment making it easy to set for angled sawing

So, potentially a truckload of hyper green cordless tools launched in coming months, many of which we aim to feature in our test pages. They may be a DIY brand, but one or two Ryobi products are beginning to rival professional brands in terms of performance. Exciting times ahead for power tool fans!

FURTHER INFORMATION

To find out more about Ryobi Tools UK, see **https://uk.ryobitools.eu**

For those of us who like to dabble in simple electronics or wiring, there's even a cordless soldering iron on its way

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SUMMER PROJECT

OAK GARDEN TRAY

Takes: One weekend
Tools you'll need: Router, jigsaw, sander, drillstand

GOING POTTY

Phil Davy's tray is made from recycled oak which will now have a new life in his garden

During a major clear out last year I unearthed an old plans chest that had definitely seen better days. Although made from oak, it had been exposed to the elements and most of it had rotted away. Fortunately, I was able to salvage a few drawer fronts and sides, the timber displaying some lovely figure. It was limited in dimensions, and I wondered how best to use this attractive oak. The answer was this garden tray, compact enough not to take up too much space but with sufficient capacity for transferring plants to the garden or holding a few small tools.

Slats for the base mean drainage from damp plants or soil should not be a problem, though these could be fitted closer together to make a multi-purpose tray. Great for the home office or kitchen, though you may want to reduce overall size for indoor use, or adjust the divider spacings. As it is, you can just fit a 76mm-diameter plastic pot in each compartment. If you don't enjoy cutting dovetails, this project is ideal for finger jointing the corners. A dedicated finger-jointing router jig makes the technique straightforward, though if you have a decent router table, a sliding fence and sacrificial board will still make it feasible. Dividers and handle fit into housings a third the thickness of the outer tray timber. To get a snug fit it's best to rout the housings first, then thickness the divider material so this is a sliding fit. That way you're thicknessing to match the router bit diameter exactly.

Stop the housings 5mm below the top edges of the tray. The handle and dividers are cross-halved so they slot together. Use brass or copper pins to secure them to the tray sides, though pre-drill holes first.

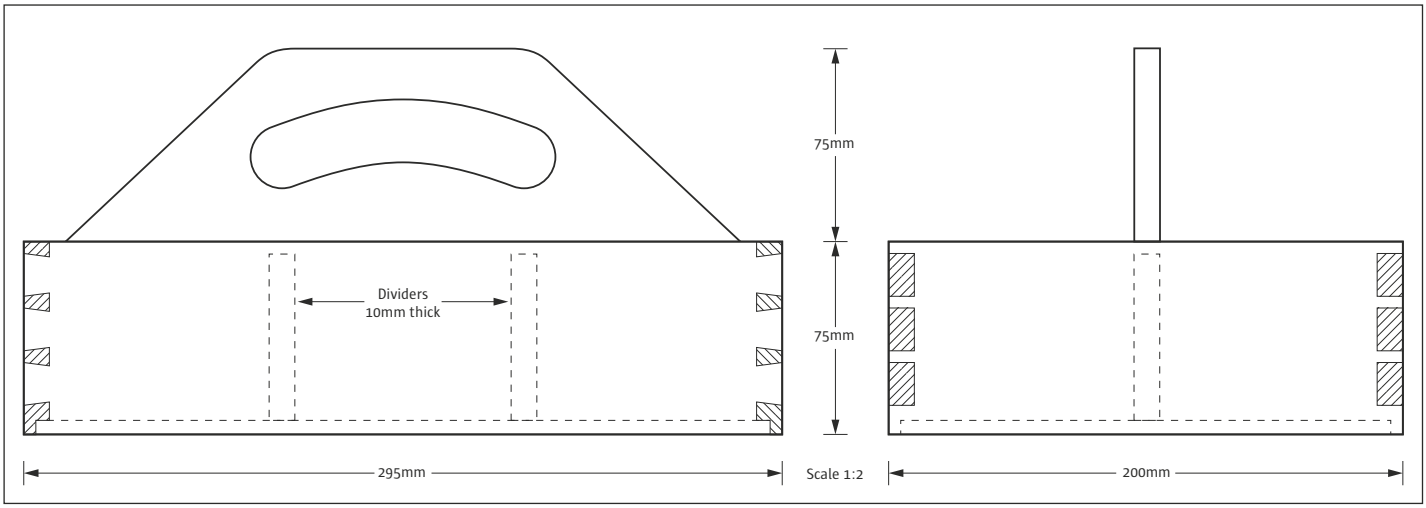


Fig.1 Garden tray dimensions

1 When recycling timber always remove old screws or nails first. If rusted, plan saw cuts to avoid defects

2 Inspect all surfaces closely for defects and cut off damaged ends. Thickness the clean timber to 10mm

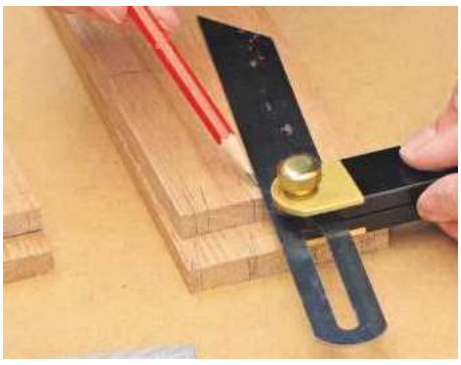
3 True up the face edge of side and end pieces with a bench plane and shooting board. Check with a straightedge

4 Trim ends square on a shooting board. Cramp pieces together, face edge down, and plane to width

5 Mark each tray component for width and cramp together. Place on a flat surface and plane to width

6 Saw sides and ends 2mm over-length for trimming joints later. Scribe shoulder lines for dovetails with a marking knife

7 Space dovetails to allow for a 5mm rebate at the lower edge. Cramp boards together and square lines across



8 Mark out tails with a sliding bevel set at an 1:8 angle (for hardwood). Alternatively, use a dovetail marker gauge

9 Set a gauge to 5mm and mark a rebate for the bottom slats. Pencil in waste to be removed between the tails

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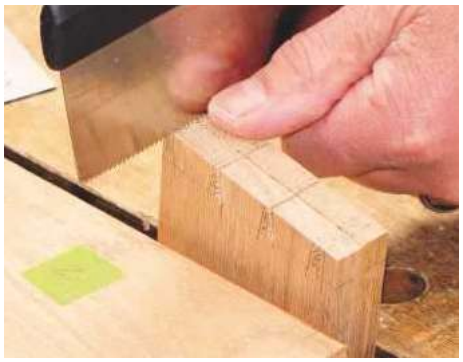


10 Secure both tail boards tightly in a vice at an angle. Cut down sides of tails with a dovetail saw

11 Remove waste between tails with a coping saw, keeping the blade teeth clear of the shoulder line

12 Cramp the square timber block along the shoulder line to keep the chisel upright when paring back between tails

13 Cramp the pin board in a vice and lay the tail piece across horizontally. Carefully mark out pins from the cut tails

14 Pencil in waste between the pins. Saw down sides of the pins to form the sockets, keeping the blade level

15 Remove any waste with a coping saw as before. Pare back to the shoulder line with a bevel-edge chisel

16 Holding the chisel at the correct angle, trim sides of the pins (sockets) as necessary. Check joints fit, and adjust

17 Create a 5mm-deep rebate along the bottom edges for the slats. Cut this on a router table to ensure accuracy

18 Cramp parts together and cut 3mm-deep housings for the dividers. Run the router against a guide batten

19 Housings are stopped 5mm below the top edges. Square rounded ends neatly with a chisel

20 Clean up inner surfaces and check for fit. Glue and cramp up the tray, checking for square

21 Once the glue has dried, trim protruding dovetails flush with a finely-set block plane

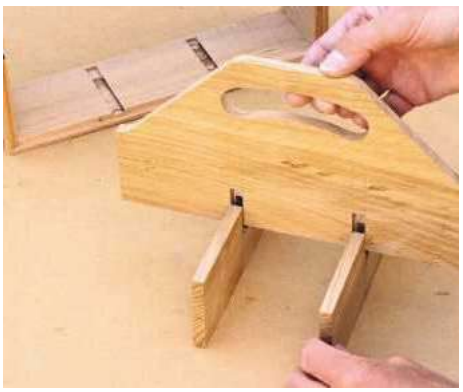
22 If required, glue boards together to achieve sufficient width for the carrying handle. Thickness when dry

23 Draw the handle cutout with a flexible curve or arched steel rule. Allow enough width for the sanding drum

24 Mark hole centres and cramp the board to some backing material. Bore ends of the cutout with a 25mm flat bit

25 Remove remaining waste between holes with a jigsaw. Use this for sawing the tapered edges of the handle

26 Clean up the cutout with a 25mm sanding drum or rasp and file. Smooth edges with abrasives



27 The handle and dividers are slotted together. Mark out halving joints and carefully cut away the waste

28 Thickness slats to 24 × 5mm and saw to length. These can be pinned or screwed into the rebates

29 Rout a small decorative chamfer along the edges of the tray and dividers. Sand with 180 grit abrasive

30 Brush on two coats of finishing oil, wiping off after a few minutes. Alternatively, add wax if intended for indoor use

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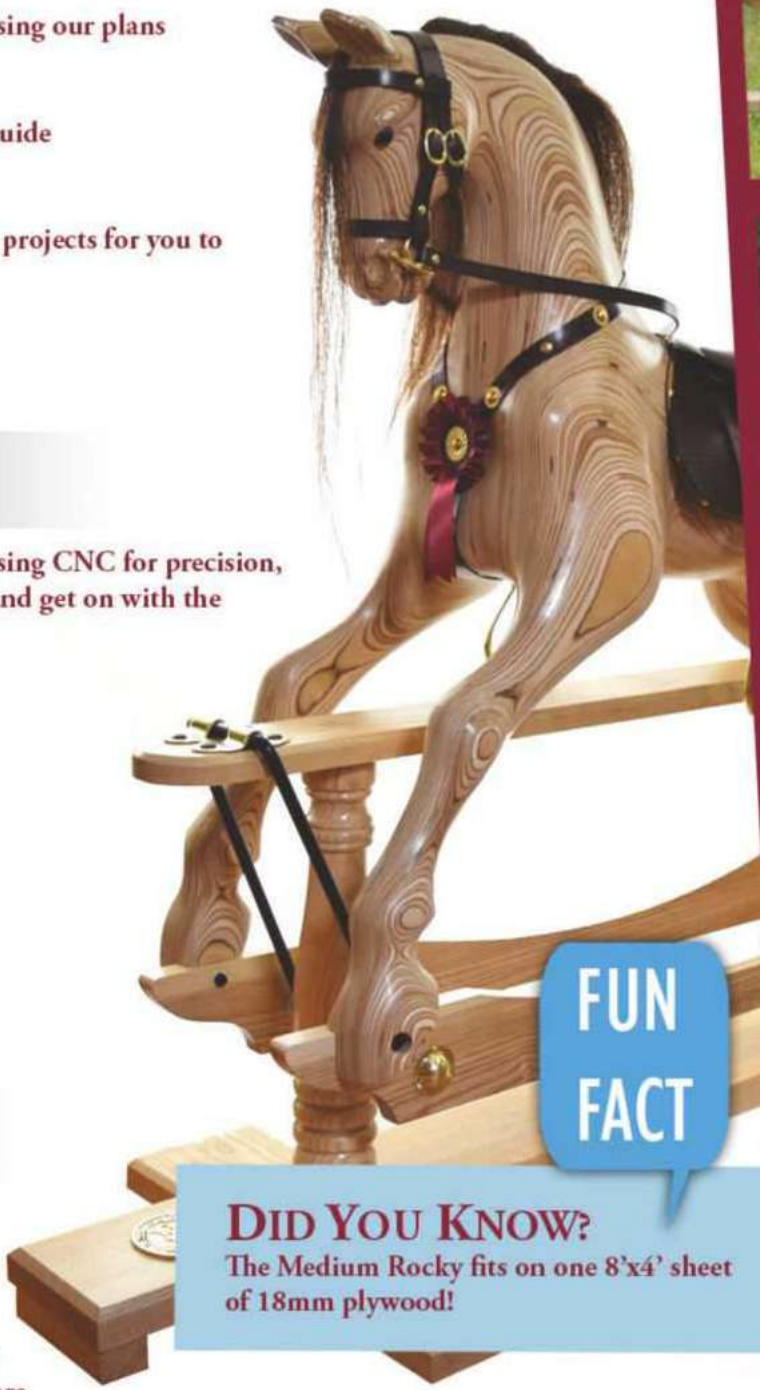

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BUILDING A GIANT TREBUCHET FOR OUTLAW KING

John Greeves talks to **Fergus Stuart** about the work the Scottish team at Carpenter Oak undertook during the construction of a medieval trebuchet

1 Warwick Castle trebuchet in action
Photographs courtesy of **Warwick Castle**

2 Warwick Castle trebuchet throwing arm, with counter weight treadmills and projectile visible

Edward I cuts the securing rope to hurl the projectile towards Stirling castle. Some of these details are not visible here and would have been added later by CGI– photograph courtesy of **Netflix**

Carpenter Oak Ltd is a UK and world renowned business that has pioneered the use of structural timber for sympathetic restoration for over 30 years as well as building new and innovative timber-framed structures. This employee-owned company has undertaken many ground-breaking commissions and continues to combine technical design with master craftsmanship and the use of exquisite materials. Its uniquely skilled teams are based in Devon, Cornwall, Wiltshire and Scotland and no task, it seems, is too big. I was fortunate to talk to Fergus Stuart, Design & Project Consultant from the Framing Yard in Loch of Lintrathen in Scotland, about an exciting project the firm has recently undertaken. He has been here since 2008, working seven years in the workshop before moving into the office to handle sales and concept design as well as being involved in project management.

3 Trebuchet re-enactment
Photographs courtesy of **Warwick Castle**

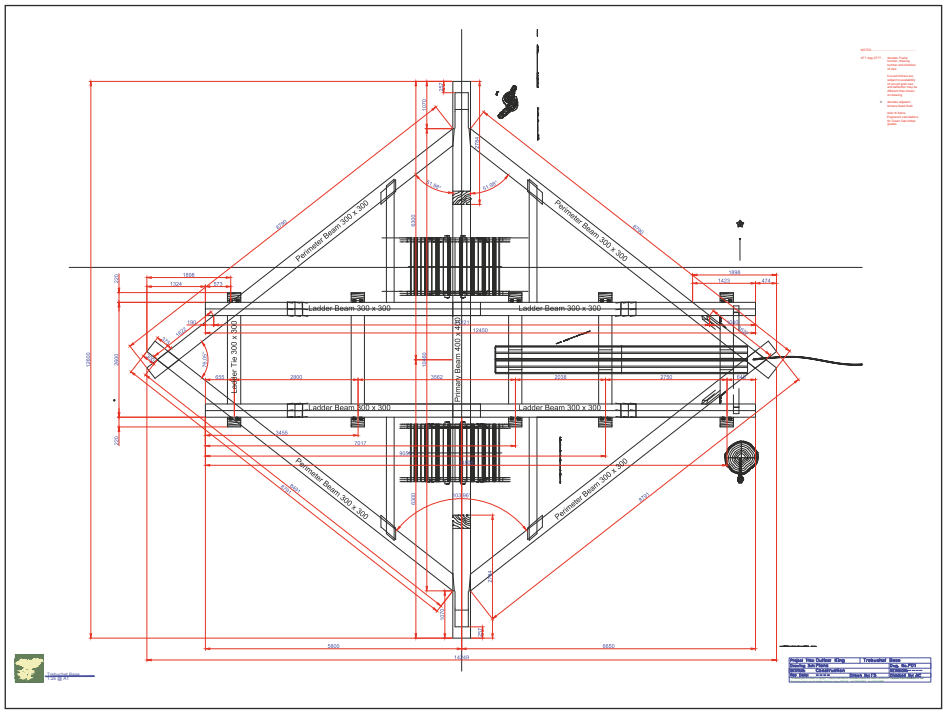
4 The mighty trebuchet at Warwick Castle with fireball

Building the world's largest working siege machine

In 2005, Carpenter Oak Ltd undertook the construction of the world's largest working siege machine as a commission for Warwick Castle at their Wiltshire yard. The trebuchet was 18m tall and made from over 300 pieces of oak, weighing in at 22 tonnes (**photo 1**). The siege machine was built with drawings from the Danish living history museum, Middelaldercentret. The research into the construction of the medieval trebuchet was initially undertaken by Dr Peter Vemming. Under his guidance, the Warwick Castle trebuchet was constructed at the Wiltshire yard. It was made largely of oak with a long throwing arm consisting of more flexible ash.

How it works: main component parts

A trebuchet works with gravity. Essentially, this siege engine owes its origins to the ancient sling and has been used by many cultures down through the ages. It basically consists of five main parts: the frame, counterweight, firing arm, sling and guide chute (**photos 1** & **2**). The firing arm and counterweight are like the long and short



5 Detailed drawings of the trebuchet base

6 Completed truncated trebuchet at reconstruction yard

7 Edward I approaches the trebuchet. Detail of firing arm and Stirling Castle to be added by CGI Photographs courtesy of **Netflix**

8 Edward cuts the securing rope to hurl the projectile towards Stirling castle. These details to be later added by CGI

9 Beginnings of the trebuchet base (half of)

10 The spine beam is scarfed together

hands of a clock, attached at a fulcrum; the long arm holds the firing sling and the short arm holds the counterweight. The trebuchet is prepared for firing by lowering the long arm and raising the short arm, usually with a winch but in the case of the Warwick trebuchet, with the use of two treadmills. When the counterweight has not been tensioned, both arms hang plumb. When the arm has been lowered and locked in place, the sling is loaded with a projectile, which is then released by the trigger causing the projectile to be hurled towards its target (**photos 3** & **4**). The Warwick-based trebuchet took eight men half an hour (four men running on the two 4m treadmills) to lift the counter weight, weighing 6 tonnes, ready for firing. In 2006, the trebuchet proved to be the most powerful of its type in existence, sending a projectile weighing 13kg 249m at a speed of 121mph. The Warwick trebuchet also literally hit the headlines when the *Telegraph* reported around this time that: "Hundreds of tourists have been evacuated from Warwick Castle after a burning cannonball fired from the world's largest working siege machine destroyed a medieval boathouse by fire." This certainly demonstrated the lethal potency of siege weaponry, even in the 21st century.

The Outlaw King trebuchet

As well as creating a new Guinness World Record for the most powerful siege engine of its type, the trebuchet also served to have a bearing on future events, as Fergus Stuart would discover. In 2017, Fergus received an unusual enquiry from Loudoun Productions Ltd, who had been set up to manage the feature length Netflix film *Outlaw King*, about building a new trebuchet for the film.

In this film, David Mackenzie (Director) retells the story of Robert the Bruce and his 14th century defiance against the English king, Edward I, which ended in a historic victory for Scotland. The film encapsulates a world full of beards, smocks, monks with tonsures, smokey bonfires, medieval feasting and battle scenes, but alas, no scene showing Robert the Bruce hiding in a cave with a co-starring spider. It was Loudoun Production's job to recreate the period with sets and props, costumes and whatever it took, so hence the offer to Fergus and his team to build a replica trebuchet for the crucial Stirling Castle siege scene. Fergus explains: "They were familiar with the Warwick Castle trebuchet and who made it." The production company had obtained full working drawings of the trebuchet, which the Scottish Yard then used in its construction. "We didn't need to translate them into 'frame drawings', which we do in a conventional project, such was the detail of their diagrams," Fergus says (**photo 5**).

Although very similar to the Warwick Castle design, the Outlaw King trebuchet differed in the fact it was only two-thirds the height of the earlier Warwick Castle reconstruction. This truncated version was 4.5m in height and built of Douglas fir rather than oak. The finish was to be 'aged', so Douglas fir was more cost effective than oak (**photo 6**). All the moving parts of the firing arm were omitted. The moving parts you see in the film, such as the firing arm hurling a burning

11 Chassis and ladder frame assembled on site

12 The ladder frame's main function is to support the two A-frames

13 The guide chute is positioned on top of the ladder

14 Trigger arm

projectile towards Sterling Castle, are all created by CGI (Computer Generated Imagery).

In the Netflix photos you see the replica Edward I called 'War Wolf', built by Fergus and his team. In the 14th century it was believed to be the largest trebuchet ever built. CGI is later used in this example to add the detail of Stirling Castle in the background (not visible here) as well as simulating the actual firing by the actor (Stephen Dillance), who plays Edward I, as he cuts the securing rope of the firing arm with his sword to release the burning projectile (**photos 7** & **8**).

Overview of the main components

The chassis (base) is a diamond base comprising of 300 × 300mm Douglas fir beams that measure 8.8m along each axis around its perimeter, which are held together with mortise & tenon joinery (**photo 9**). The perimeter beams are tenoned into the lateral spine beam and then pegged. The spine beam uses 400 × 400mm beams and has an overall length of 12.6m. This is made of two pieces, which are scarfed together (**photo 10**). On top of the chassis is a ladder frame running

15 The trigger arm is very visible on the Warwick Castle trebuchet

longitudinally. The ladder frame comprises of two beams (12.45m) running parallel to one another with intermediate crossbeams, 300 × 300mm, linking them together (**photos 11** & **12**). The ladder frame is jointed with through-tenons and wedged keys, and cogged over the perimeter beams using simple 38mm lap joints. Attached to the firing end is a guide chute (**photo 13**). A guide chute guides the sling through the frame and supports the enclosed projectile until acceleration is sufficient to hold it in the sling. At the same end a trigger arm is to be found (**photo 14**). This is primarily a small A-frame on which the firing arm bears when the trebuchet is tensioned and ready to fire. A shackle and pin holds the firing arm down to the A-frame and when released, the trebuchet fires (**photo 15**). The ladder frame's main function is to support two A-frames, which are the primary vertical structure of the trebuchet. These are mortise & tenoned into the frame ladder at the bottom and wedged and keyed to the cross member towards the truncated top (**photos 16** & **17**). A central vertical inner axle post for the treadmill is mortised & tenoned into the cross-beam of the A-frame and frame ladder. There are further axle posts on the outer sides of the treadmill, and these have a wheel height of 4.5m (**photo 18**). By comparison to other primary components, they are much smaller in section, typically speaking from about 35-200mm. Fergus explains how the A-frame, in turn, provides the support for the axles and treadmills (**photo 19**). As the film employed CGI, there wasn't any necessity for the treadmills

16 A-Frame wedged and keyed with traditional joinery

to turn. Nevertheless, the team made it so they could. The treadmills rotate on axles either side of the truncated A-frames and are held in place by an outer and inner axle post and axle blocks (**photo 20**). The outer axle posts also have supporting diagonal struts to give cross rigidity to the structure (**photo 21**).

Prior testing

Before any work was undertaken on the trebuchet, a working scale model was built by two of Carpenter Oak's travelling French carpenters from the Compagnon du Devoir (see foot note). These trainee carpenters made a 1:5 scale prototype of the trebuchet, complete with a finely-tuned counterweight, which when tested, was capable of firing a projectile 45m (**photo 22**).

"As a result of building a fully working replica model 1:5 scale, we were confident," Fergus tells

17 Wedged and keyed A-frame

18 The treadmills have a height of 4.5m

19 The treadmills rotate on axles either side of the truncated A-frames. Note the axle block

20 Axle block in construction

21 The outer axle posts also have supporting diagonal struts to give cross rigidity to the structure

22 Scale model of the trebuchet

23 Bespoke ironmongery – axle block straps

me, "that the jointing on our full-scale replica was workable and this gave us confidence in our carpentry for the full-scale trebuchet."

Full-scale construction of the trebuchet

The trebuchet is essentially built bottom-up, starting with the chassis or base, then the ladder frame, which in turn bears the two main A-frames, followed by the axle and tread wheels. According to Fergus, the trickiest part of the construction is the assembly of the axle blocks and treadmills. "The axle block is the last part of the jigsaw, which clamps the axle in place and there's no means for traditional timber joinery in this area. It's reliant on the restraining straps and that's why the hand-forged restraining straps around the axle block are critical," he says (**photo 23**).

All the ironmongery was made by the carpenter and resident blacksmith, Graham Butler, as were all the other hand-forged iron items including forged metal work for strengthening timber-to-timber joints, making a traditional hand-forged trigger arm, as well as numerous rosehead nails, which were used throughout the build (**photos 24** & **25**).

"These were used to fix secondary components, whereas all primary structural members were traditionally jointed with mortise & tenons and pegged joinery. There were some areas where there was also wedged and dovetail joinery," Fergus adds.

The full-scale replica for the Netflix production *Outlaw King* was a first for the Scottish team, the Warwick trebuchet having been built in the Wiltshire yard. The siege machine was built and delivered in eight weeks from the day of ordering the Scottish fir (**photo 26**). With the trebuchet critical to the siege scene in the film, the Scottish yard became the go-to firm at the time to deliver this unique commission. As Fergus says: "To think we were the company that got the phone call says a lot about us. It was great fun to work on and the guys really enjoyed it."

Recently, the yard had another call from a private individual who was exploring the option of a similar war machine. With all the working drawings and jointing details, Fergus is confident that whether it's for the film industry or for an individual in the future, they have the capabilities to build a 'fully engineered' trebuchet. "Having had the opportunity to refresh the skills and techniques learnt on the original Warwick Castle trebuchet 14 years ago, as a team the knowledge is here to reproduce these war machines efficiently and with confidence – we look forward to the next one!"

FURTHER INFORMATION

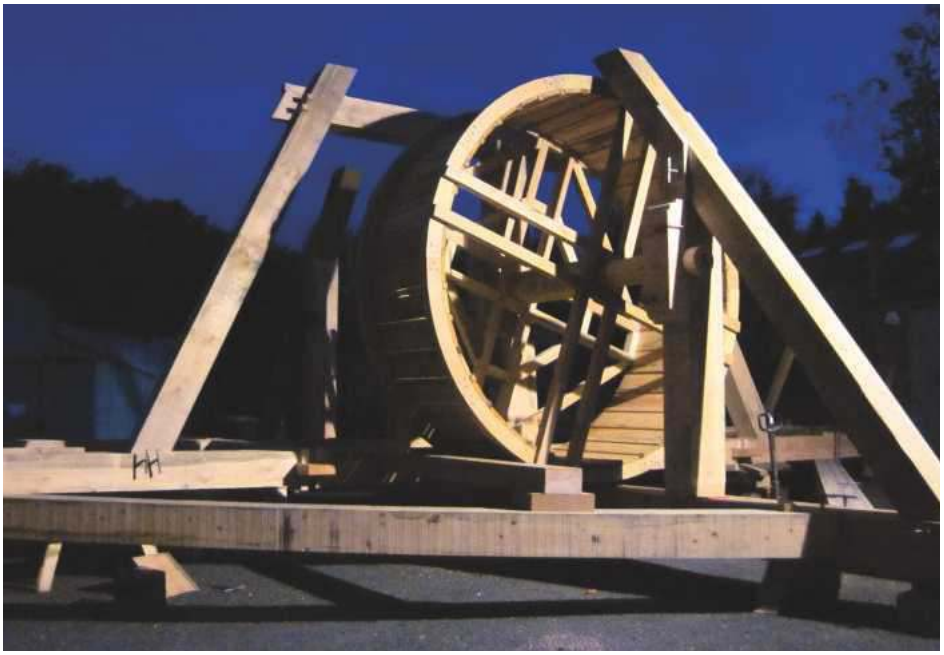
Foot note:

The Compagnons du Devoir, full name Compagnons du Devoir et du Tour de France, is a French organisation of craftsmen and artisans dating from the Middle ages. Their traditional, technical education includes taking a tour, the Tour de France, around France and doing apprenticeships with masters. For a young man or young woman today, the Compagnonnage is a traditional mentoring network through which to learn a trade while developing character by experiencing community life and travelling

Carpenter Oak Ltd – **www.carpenteroak.com**
Warwick Castle – **www.warwick-castle.com**
Netflix – **www.netflix.com/gb**

24 Hand-forged restraining straps

25 Rosehead nail



26 Pre-site assembly

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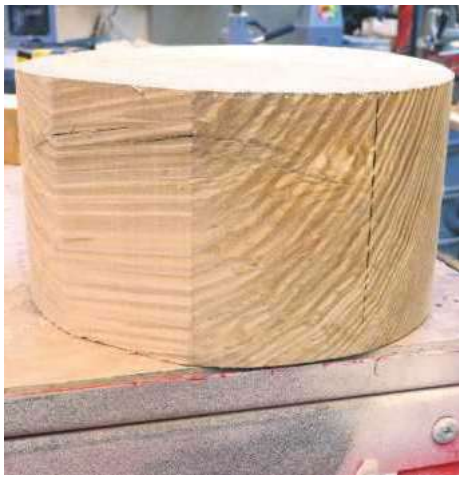
SPINNING A **YARN**

Perfect for the knitting enthusiast in your life, **Les Thorne** shares his take on a yarn bowl design in air-dried ash

In all my years of turning I hadn't come across a yarn bowl until about five years ago when my good friend and fellow production turner, Gary Rance, told me that he'd been commissioned to make some. Then about a month ago, I got a phone call from a guy who wanted to come on a course to make a yarn bowl for his daughter, so I thought it'd be a good idea to share what we learnt on that day.

Yarn bowls are often ceramic and come in a variety of sizes with the 150 × 80mm size being popular for a single ball of wool with a bigger version like the one I am making here suited to multiple balls. I researched designs online and there seemed to be many, with the slot from a simple groove to an ornate scroll. The other design feature that some of them had was a couple of drilled holes for the needles to fit in, but we decided to omit that part. For this project, you need to ensure you achieve an even wall thickness and the style of bowl also requires an undercut rim – all design features that can be added to your future fruit, salad and decorative bowls.



1 The piece of air-dried ash I'm using here measures 200 × 100mm. It does have a split, but I should be able to remove that when it comes to shaping the outside, as long as I remember to mount it on the lathe the right way round

2 This piece of plastic has definitely seen better days and is available from Craft Supplies USA; it offers the simplest way of finding the centre of a disc

3 As normal with a blank this size, I'm going to hold the bowl on a screw chuck. After drilling a hole, I like to put some paste wax in the hole so the woodworm screw cuts a good thread and holds the bowl firmly against the front of the jaws

4 Sharpening is seen to be a dark art by many woodturners, but most of the guesswork can be removed with the aid of a good quality sharpening system, such as the Tormek jigs I'm using here. In this case, I have them mounted on a dry grinder with a CBN wheel

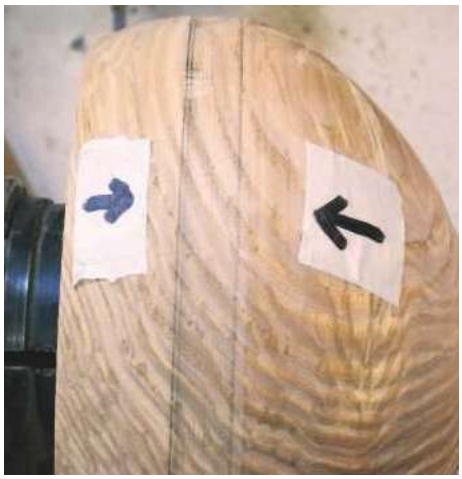
5 To ensure your tool is being presented in the best way possible, try cutting the wood manually by first rotating the blank against the cutting edge. If the tool angle is correct, you should create a nice curly shaving

6 The easiest way to mark out the diameter of the chuck spigot is to use a pair of dividers set to the diameter of the jaws: the right-hand point is used to scratch a groove that will line up with the other right-hand point

7 If you want to get the strongest and most accurate grip, the dovetail angle on the spigot is critical. I normally guess but it is fun to see how accurate I am by measuring with a protractor

8 The bowl will have a top that curves in; this shape can take some practice to master but these two lines help immensely. Keeping the flat there as long as possible means I can merge the curves together at the end

9 The perfectly formed spigot, which will be removed at the end of the project. The flat area is the base that the bowl will sit on and will be located on the top of the jaws; this will make the fixing much stronger when it comes to hollowing out the bowl



10 The two arrows indicate the direction in which the timber needs to be cut. From the small to the large diameter is the best way of cutting a side-grain blank such as this. Here you can see the flat area, which I will leave until the end

11 I am lucky to have this curved stainless steel toolrest, which allows me to cut down from the rim. The bevel of the tool is in contact with the timber's surface, which affords me the best control and finish

12 Time to remove the small, flat area with a shear cut. The long-grind bowl gouge is used almost upside down with the tool being pulled towards you; the bottom wing of the gouge will take a small, fine cut as a result

13 Instead of power sanding the outside, I'm going to use the rotary sanding tool from Hope Woodturning. As it rotates against the spinning wood, it therefore generates less sanding marks

14 After I've remounted the bowl for hollowing, I roughly mark out the slot which will be cut out on the outside of the bowl. To aid with measuring the wall thickness, I drill a series of holes as the timber will be removed later in the process

15 Next, I true up the top edge of the bowl before hollowing, using a pull cut with the wing of the tool. The top will be rounded over when I've decided how thick I want the bowl to be

16 To work with the grain, I work from the big to the small diameter making an ever increasing sized hole in the bowl. The initial hollowing is completed using a long-grind bowl gouge, and always with the bevel in contact with the surface being cut

17 Carrying out an undercut with the bowl gouge does require some practice but is pretty straightforward when you understand how a gouge works. The bevel of the tool needs to point in the direction of cut – in this case to the left

18 The traditionally sharpened gouge with a short bevel will fit into the undercut section of the bowl, affording me much more control while advancing through the cut

19 The holes give a perfect indication as to how thick the walls of the bowl are to be. If you don't work this accurately, then the slot will look odd. Using this method certainly saves a lot of measuring during the first part of the hollowing process

20 As the bowl is made deeper, it becomes increasingly difficult to keep the bevel riding on the surface of the work; this is due to the angle of the tool and the fact that the shaft will start to hit the edge of the bowl

21 Before going any further, I check the wall thickness with a pair of figure-of-eight callipers. Ensure to do this regularly. I would normally make it pretty even throughout but I'm going to leave a little weight in the base for stability

22 The solution to getting the bevel in contact with the base of the bowl is to grind a bowl gouge at around 60-65°. I have ground away the heel of the tool as it will cut with less effort

23 I am often asked about how to get the perfect bottom. The mistake I see most is the speed at which the tool is advanced to the centre. This is usually too quick, which leads to the tool being pushed away from the cut, thus leaving an unsightly bump

24 Once happy with the bowl, I round over the top using a spindle gouge. Keeping the flute closed at this point will eliminate any chance of the tool grabbing the edge and thus ruining all your hard work

25 I opted to power sand the inside, working from 120 to around 400 grit. On open-grained timber like ash, it's worth blowing out the grain with compressed air between each grit

26 There are many types of burrs and wood cutting discs available, and they mostly seem to come from the North American carving market. I like these DuraGRIT carbide cutters as they cut cleanly with very little burning, even when working end-grain

27 I ensure to support my hand on the bowl while holding the mini drill as this stops the cutter running away from you. Here the bowl is left in the chuck, but you can take it off and hold it down on a cushion if you prefer

28 The cylinder cutter is just about the right width for the top part of the slot. Small cuts are best as you encounter less vibration, which will mean less sanding

29 The bowl needs to have really smooth edges and there is no substitute for doing it carefully by hand. Starting with 180 grit, I work the abrasive back and forth so I round over the edges, meaning the yarn will not get caught up or frayed

30 Now the bowl is pretty much finished all that's left to do is to remove the spigot and polish the bowl. The easiest way to remove the spigot is to friction drive between centres. Here I'm using my vacuum chuck but without the vacuum attached

31 Using a small tool means you'll only get a small dig-in if it goes wrong; this was taught to me years ago and it's still relevant. You don't want to have a big catch at the end of the project

32 Make sure that the area on the bottom is slightly concave; this allows the bowl to sit on the outer diameter and not rock. If you are unsure how much wood you have left in the base, you can take it off the lathe and check – you should be able to remount it easily enough

33 Another pearl of wisdom passed on to me is that you need to stop one cut before it falls off. Take off as much as you dare as it means you'll have much less hand finishing to do later

34 After removing the timber, I sand the base using a 50mm sanding pad mounted in a drill press or on the lathe. Work your way through the grits as normal to leave a perfect finish

35 I thought long and hard about what type of finish I wanted to put on the piece as it needed to be durable and obviously not mark the yarn in any way. I settled on a sanding sealer and satin lacquer finish as I find that ash isn't generally suited to a high gloss patina

36 The completed yarn bowl in ash should look something like this

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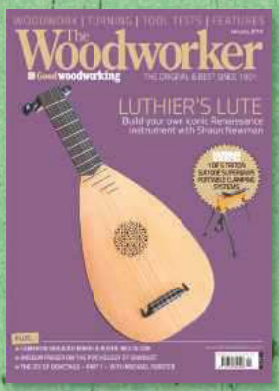

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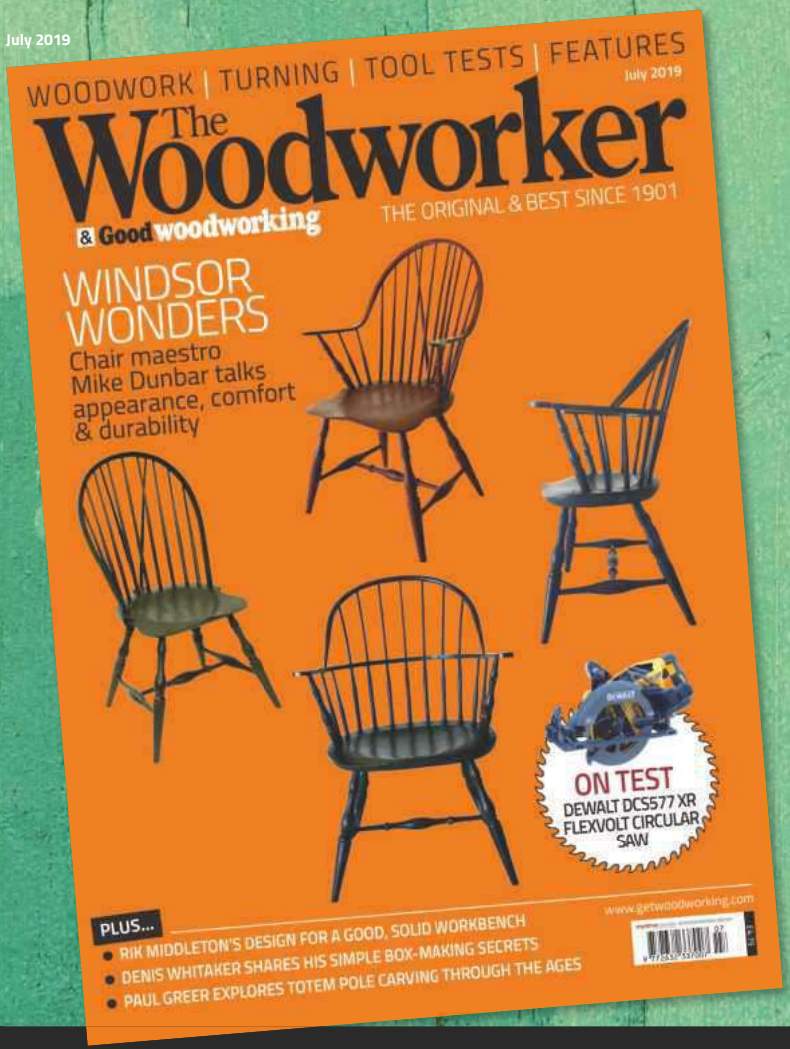

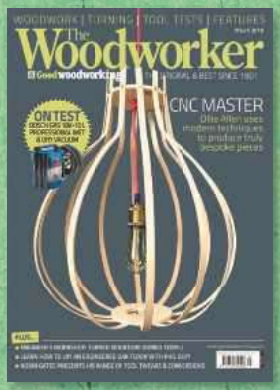

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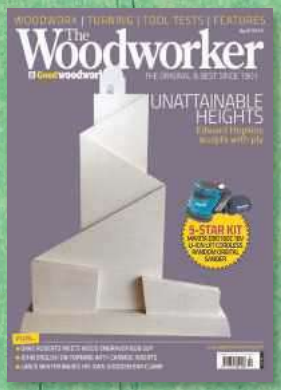

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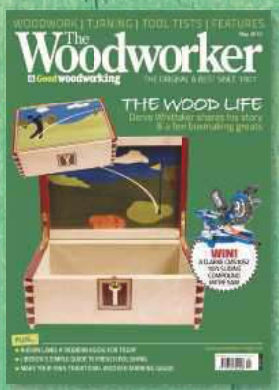

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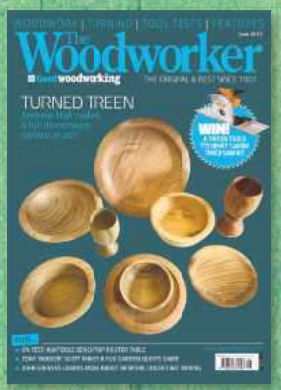

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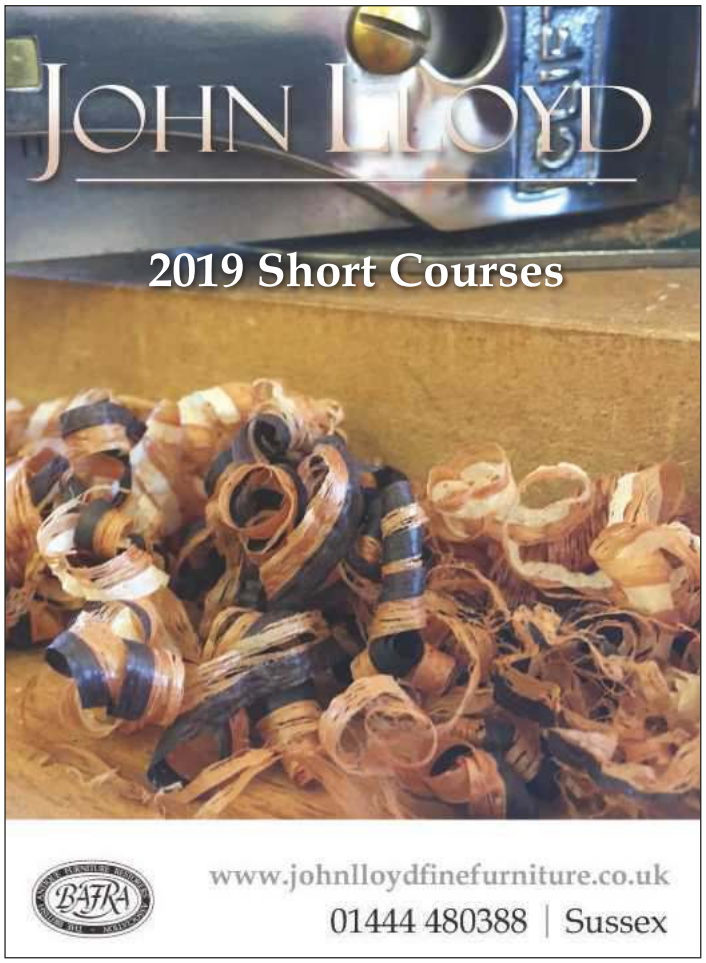

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DOWNHILL
all the way

'The Solitary Drinker' by John Butler RWA

It might be the cider. It might be me. Either way I've just pedalled a few miles up a gently inclined, reclaimed railway track (the Tarka Trail) to a charming hippie café (Yarde Orchard). They have their own orchard. They make their own cider. I think I said that. Anyway. One of the many wonderful things about this bike ride is that after the cider, it's all downhill. To the van, I mean. Where I left it. So I did. And on the way back, I smiled benignly at other trail users, and rang my bell when necessary. It can be a shock having a bike whizz up behind you from nowhere. Not that I was whizzing anywhere. I didn't go fast at all: I was making it last. As you do. A lovely afternoon. Ahead of me in the distance on a wooden bench was a man holding his head in his hands. I slowed down. I'm getting better at talking to strangers, and no one should sit with their head in their hands.

I stopped a few feet away. 'Hello!' I said (always a good opening line). He looked up. 'You look like one of the benches', I said. John Butler RWA – **www.johnbutlerwoodcarver.co.uk** – has carved life-sized figures in various groupings and postures sitting on wooden benches along the trail. One of them looks forlorn. I asked if he was OK. He was. I can't remember what I said next, but we began to chat. Soon it emerged that, as I'd suspected, he was sad (not just looking at the ground). We only talked of general things. He'd lived here all his life, a country man, once a builder and a carpenter. He wasn't much older than me. 'Do you still do a bit?' I asked. 'No. No. It's all gone. It's too fast. They get 'em up in days. They're after the money, that's all. They don't care. There's nothing I can do about it,' he went on with a hint of longing. He cared. I sensed that he had no one, or nothing left to care for. 'It's all changed'.

'What about the countryside?' I said, looking around. 'Has that changed much?' 'Birds' he said. 'Swallows. The nesting places have gone; the old buildings have gone.' I agreed. Then I accused him. It was his fault. And mine, I added fairly swiftly. Builders! I admitted to evicting birds as I restored stonework and pulled down old sheds. What could I do? What was I doing? I was contributing to the decline. So who am I to complain? What an irony that a builder wrecks more homes than he creates?

You'll have seen a kestrel hovering 50ft above the verge. The wind buffets it; it auto-corrects its fluttering wings, but keeps its head and eye immobile. If you go the other way along the Tarka Trail, you'll cross a bridge over a weir. Four times out of five there'll be a heron standing by the water, waiting, watching, as lifeless as a garden ornament. You can't care about change unless you see it; and you can't see it unless you stay still. Which is what the man was doing, I suppose. Sitting with his head in his hands.

Onwards & downwards

We had similar views, and although he rose from his bench and ambled off along the track, he came back several times to resume our duet of despair. He said he was pleased to meet me, and I said the same to him. I think we both felt better for the encounter.

On I went. Onwards and downwards. Past young families with toddlers on plastic trikes and kids in crash helmets; odd gaggles of adolescents; dog walkers striding; sprightly old couples, and less sprightly old couples – all mankind. I freewheeled past woodland peppered with flowers. Streams. Across the huge stone bridge over the wide meandering river. A gentle breeze. Then, without warning, almost making me jump, a squadron of superheroes swished past me, bent into the wind, surfing their own slipstream, chasing their personal best, and were gone. 'Ring your bell!' I yelled after them, but only in my mind – one day it will escape. By the time I might have called aloud, they'd have been too far away to hear. Or care. Otherwise they would have, wouldn't they? They probably didn't have any. Bells. Unnecessary weight, they'd say, and excessive aeronautical drag.

I coasted into the station with its very stationary painted wagons up against the buffers. Benches on the platform where no train will ever arrive. And another café (Puffing Billy). They serve cider there too. It's still a beautiful world.

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