

Issue 319 • June 2017

Good

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CIRCULAR SAW BLADES



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- Les Thorne turns a Regency era-themed string tidy
- Mike McCrory's toy lawnmower build is perfect for summer
- It's all hands on deck at The Old Vic' – Dave Roberts reports



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Welcome

Some of my favourite things from this issue

By now, you should be feeling well and truly full of the joys of Spring, busying yourself with DIY and workshop tasks and hopefully having some fun along the way, too. Yes, this is the time of year we've all been waiting for, and hopefully you'll make it count by being prolific with your projects and accomplishing things you never thought were possible before, thanks to all the amazing projects in GW and all the great techniques you've learnt along the way, obviously!

We have some more outdoor-themed projects for you to make this month, as well as two great competitions for you to enter, joined by a few other bits and bobs that will hopefully both educate and entertain you in equal measure.

All change

While I'm relishing the warmer weather that's now upon us, I must admit that I'm finding it hard to be upbeat this month as I have a sad announcement to make... yes, after many years, our very own Andy King, who has been with GW since its inception, is moving on to pastures new. He will be very much missed and he is going to leave big shoes to fill, but change has to be embraced and a massive congratulations must go to Andy for bagging himself a fantastic new job. His new role will be as Trend's Technical Editor, where he will work on testing all their new products, documenting his findings in video form, producing how-to guides and also getting involved with the media side of things as well. The great news is that we will be featuring occasional content from Trend in the form of various technical articles, so you'll still get to see Andy in the mag and be able to benefit from his expert knowledge. Andy will also be out and about at industry shows and various openings,



so you'll also be able to see more of him in the flesh! You'll be seeing more of Phil too, who'll be testing a variety of new products in Andy's absence, and there will also be kit & tool reviews from a few more of your favourite GW authors. It goes without saying that we wish Andy all the very best in his new role, and we look forward to working with Trend more closely as well.

A small woodworking world

A recent chance encounter with a GW reader, at the gym of all places, got me thinking as to how many fellow woodies may be among us as we go about our day-to-day business, and I wager that this number is higher than you might think. Upon meeting Jeff and leisurely discussing his impressive cycling trip from Land's End to John o' Groats, it soon transpired that this chap had just converted his loft into a workshop. We talked about dust extraction, and how important this is, especially when working in an enclosed area such as a loft, but it turns out he has all bases covered, which is a relief! It never ceases to amaze me what a small world we live in, and don't forget that we're always keen to hear from you, the readers, so why not get in touch and share your stories of meeting fellow woodworkers, as well as what projects you've been making recently? Did many of you attend the Yandles Spring Show? If so, what gems did you pick up? As a community, let's be sure to keep the gates of communication open and hopefully we can all inspire each other.

Enjoy!

Tegan

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Consultant Editor



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Consultant Editor

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

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THE WRECK OF THE GOLDEN MARY

After the glamour of the launch, it's all hands to the pumps at The Old Vic; Dave Roberts takes a turn around the deck



WIN!

A Senco Systainer
compressor bundle
worth over £700!
See page 44 to find
out how you can
win all the kit
tested by Andy!

Good Woodworking

June 319

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Michael McCrory's wonderful toy lawnmower project combines a variety of skills, just in time for summer

40 Growing upwards

Chris Jones shows how you can make a fantastic bespoke pallet planter for around £10

49 A holy commission

Commissioned by his local church, Peter Benson sets about designing and making a legilium – a reading desk with a slanted top that can be folded when not in use

72 It's a shoe-in

Phil Davy makes a Shaker-style bench for indoors or out, with handy storage for boots



80 String theory

Inspired by a piece of Regency era wooden treen, Les Thorne decides to turn a similar piece in walnut, mimicking the string tidy's squat mushroom shape, which he found particularly appealing

TECHNICAL



54 Workers of wood

In a new series aimed at creating a better understanding of timber, its uses and other associated areas of interest, Peter Bishop shows that no matter where you place yourself within the broad category of woodworking, it should be enjoyed in all its guises

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David Moody proves that even with limited tools, budget and space, you can still make some useful woodworking projects

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Despite combining a classic design with traditional elements, Philip Dobbins' award-winning unique console table embraces modern technology at every turn

WIN WITH IRWIN!

SEE PAGE 60 TO FIND OUT HOW YOU CAN WIN 1 OF 20 IRWIN WELDTEC CSB 165MM/24T CORDLESS CIRCULAR SAW BLADES



62 Developing woodworking skills in Uganda

Kids Club Kampala (KCK) is a brilliant example of a charity that is exploring ways of teaching woodworking to impoverished members of a slum community in Uganda, helping them to 'craft' their way out of poverty by providing them with the tools and skills they need.

Jonathan Fraser tells us more

90 End-grain

How to be a brilliant designer for £1.28

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CDP202B	450 / 16	£185.00	£222.00
CDP10B	370 / 12	£198.99	£238.79
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Team UK goes for global glory



Cameron Nutt



Conor Willmott



Angus Bruce-Gardner

The nation's elite young skilled women and men have been selected to go for gold against the rest of the world – in a litmus test for the future of our economy. Successful super-talented Team UK members have beaten off the challenge from thousands of fellow and former apprentices and students to represent the UK at the WorldSkills Finals in Abu Dhabi, from 14–19 October.

Cameron Nutt, 20, who trains at North West Regional College in Northern Ireland and works for J&R Snodgrass will represent the UK in Carpentry; Angus Bruce-Gardner, 22, who trained at Waters and Acland and who works for Silverlining will represent the UK in Cabinet Making; and Conor Willmott, 20, who trains at West Suffolk College and works at Precision Carpentry and Joinery will represent the UK in Joinery. The two-year (or more) process has seen competitors win regional heats, a national final, European finals and last month, jump the final hurdle reaching the most testing international standards at a team selection showdown. 32 talented skilled professionals will continue to undergo a rigorous regime of Olympic style training in preparation for the most intense week of competition imaginable. Skills represented range from Aircraft Maintenance and Mechanical Engineering through to Restaurant Service and Cyber Security.

WorldSkills UK, which helps young people 'Go Further, Faster', is spearheading the use of competition in the workplace, training centres, schools and colleges, to inspire the next generation and fill the skills gap. CEO Dr Neil Bentley, said: "This is a critical moment for the future of these inspirational young people – and our economy. The WorldSkills Finals in Abu Dhabi are more important than international sporting fixtures spurring on competitors to achieve the highest international standards to inspire more and more young people to get into apprenticeships and technical careers, getting them off to the best start in work and life. Our ability to produce the right number of skilled, motivated, young people is vital for productivity, competitiveness and economic growth. Skills top the agenda of so many organisations – Governments across the UK and the CBI through to the Trade Unions and education sector. Team UK represents the very future success of our economy and what they represent will help determine whether we thrive or fail post Brexit." WorldSkills UK, funded and supported by the DfE, devolved governments and commercial partners, utilises revolutionary training techniques usually associated with elite sporting teams, athletes and competitors. Performance coaches and skills experts spend hundreds of hours honing their skills and drawing upon physical, mental and holistic methodology to produce optimum achievement under the most testing 'pressure cooker' conditions.

WorldSkills Finals are held every two years when over 1,000 delegates from more than 70 countries gather for four days of competition. This year's final is seen as an important litmus test as to how well the UK will fare post Brexit with the rest of the World. Homegrown skills will become ever more

important as industry seeks to reduce reliance on workers from the EU. In 2015, at the most recent WorldSkills Finals held in São Paulo, Team UK finished overall seventh in the medal table, ahead of France and Germany, bringing home an impressive haul of medals including three gold, four silver, two bronze and 23 medallions of excellence. To find out more, see www.worldskillsuk.org, and we'll bring you more news as it happens.

Chippendale students to exhibit at Scottish parliament

Five students from the Chippendale International School of Furniture will be exhibiting their work at the Scottish parliament this summer.

The furniture school, between Haddington and Gifford, is a place of teaching excellence with students travelling thousands of miles to attend. This year's students come from the UK, USA, Austria, Australia, Poland, India, South Korea and Singapore.

The prestigious exhibition in June will be sponsored by Iain Gray MSP. The five pieces to be exhibited will be chosen at a public exhibition in Edinburgh by Professor Christopher Breward, who is a leading cultural historian.

Professor Breward is also Principal of the Edinburgh College of Art, Vice Principal for the Creative Industries and Performing Arts, and Professor of Cultural History at the University of Edinburgh.

"We are indebted to Iain Gray MSP and honoured that Professor Breward has agreed to choose five students to exhibit at the parliament," said Anselm Fraser, Principal of the Chippendale International School of Furniture. Earlier this year, the school was praised by Education Scotland for delivering "high quality learning and teaching, that equips learners well for future employment or self-employment."

To find out more about the award-winning School, visit the website: www.chippendaleschool.com.



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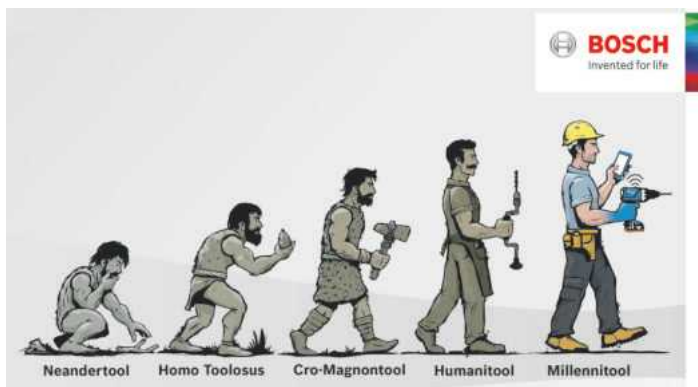
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The future of connected tools has arrived

The much-anticipated prospect of connectivity in power tools and measuring devices has become a solid reality with the arrival of several new Bosch Professional products on retailers' shelves.

These tools are connected to your phone or tablet via Bluetooth – for sending, receiving and storage of information. A small Bosch connectivity module can be bought with the tool or purchased separately and simply slotted in later. Connected tools and their users communicate via the free downloadable Bosch Toolbox app, which accesses a growing range of time and effort-saving aids.

"With these connected products, we are ushering in a whole new era in the evolution of tool use," says Steve Hillier, Marketing Director at Bosch Professional Power Tools. "In our communication materials we've had a bit of fun by illustrating that development as a progression from primitive 'Neandertool' origins through to today's 'Millennitool' age with its connected tool technology."

Key capabilities

Planned key capabilities of the Bosch connectivity system include asset management and tool location, quick tool registration and personalised settings, fault alerts, condition and usage reports, and remote control. Importantly, the system has been designed to integrate new functionalities as they evolve.

Bosch connectivity not only puts users a step ahead of their competitors today but future-proofs their businesses by equipping tools to benefit from continuing advances. The range of functions offered by the Toolbox app



HOT OFF THE PRESS

Andy King will be testing the GCL 2-50 C Laser Level & the GSB 18 V-60 combi drill in the next issue, so don't miss out on our exclusive review!

will go on expanding and, looking further ahead, the connectivity module will be easy to upgrade or replace if developments require it.

Four new tools

At present, Bosch is focusing on four new tools with connectivity:

the GSB 18 V-60 and V-85 C Professional combi drills, GSR 18 V-85 C Professional drill driver and GWS 18 V-125 SC Professional angle grinder. Each features the latest powerful, highly efficient and long-lasting brushless EC motors, along with state-of-the-art protection and control systems. KickBack Control, Precision Clutch and LED afterglow are among the functions that can be adjusted, personalised and memorised via the Toolbox app.

As an added incentive, anyone buying one of these connected power tools complete with connectivity module before 30 June can use the app to claim a versatile, stylish, ultra-modern Withings Activité Steel activity tracker, worth over £135. New connected levelling devices, the GCL 2-50 C and CG Line Lasers, are already available to buy. Along with strong green laser light and a user-friendly design, they offer remote angle adjustment as one of their key connectivity advantages.

These connected tools, and the comprehensive range that will follow them, offer a new way of working that's faster, smarter, more efficient and future-proof. Together with the Toolbox app, they will allow you to upgrade yourself as well as your equipment. Tool use is evolving, and Bosch want to make sure you're a Millennitool – not a Neandertool! For further info, see www.bosch-professional.com/upgrade. The Toolbox app can be downloaded free of charge via <http://m.bosch-professional.com/applinks.html>.

Record's BS9 bandsaw

This brand-new bandsaw from Record Power delivers exceptional performance in a compact and affordable package. Although ideal for the smaller workshop, its cutting performance far exceeds what might be expected for its price and size. A real benefit to this bandsaw is the cam-lock blade tension mechanism, a first for a machine at this level. This feature really speeds up blade change as the tension can be released and re-applied with ease.

Supplied with the Record Power bandsaw masterclass DVD, this machine would more than justify its place as the main machine in a smaller workshop or as a second bandsaw in a larger workshop for use on smaller projects and radius work. The BS9 is currently available at only £179.99 and comes with Record Power's industry-leading five-year guarantee. See www.recordpower.co.uk to find out more.



Mirka powers ahead with Abranet Ace HD range

Mirka UK is enhancing its dust-free net sanding line-up with the launch of Abranet Ace HD. This new range of abrasives has been designed to provide superior stock removal and increase the lifetime of the sanding discs, saving users both time and money.

The new grits come in P40, P60 and P80, extending the full Abranet range from P40-P1,000, suitable for use in multiple applications and market sectors.

Abranet Ace HD's open, symmetrical net structure with integrated loops in combination with ceramic grains allows for maximum cutting speed and consistent performance across a variety of surfaces and substrates. It delivers a dust-free sanding experience when used in conjunction with a Mirka sanding system such as the Mirka DEROS or CEROS for stripping old paint or lacquer, sanding composites, or sanding prior to using body filler. This new abrasive challenges the status quo of conventional coarse grit sanding by offering faster cut rates combined with a dust-free sanding solution; see www.mirka.com/uk.





Makita train up building heroes

Building Heroes is a charity formed in 2014 to deliver construction skills training courses to military veterans to enable them to find employment in the industry. Following the many military conflicts across the globe, and the recent scaling back of funding, many members of the services are being discharged. Some carry significant physical damage, and others have different problems caused by their experiences in the services, often compounded by the impact of their discharge.

Makita is supporting this worthwhile industry initiative by providing technical training within a specially designed course, originally founded at Chichester College, which has expanded to encompass Reaseheath College and Colchester Institute, to encourage the construction industry to focus on the many attributes of these troops. Disciplined and trained, ex-service personnel can give core strengths to any expanding business.

There are approximately 120,000 unemployed ex-military personnel of working age in the UK today. At the same time the UK construction industry is facing a 230,000 person skills shortage. Building Heroes aims to tackle unemployment among ex-service personnel by offering targeted skills training and supporting them into employment in the building trades.

The founders of Building Heroes approached Chichester College in West Sussex, and asked them to design a foundation course that would equip a veteran with core trade skills and a recognisable qualification that would aid employment entry to the construction industry. The Construction Faculty at Chichester College created the 'Building Heroes Property Maintenance Course' as a multi-disciplinary programme of maintenance skills covering internal and external structures, plumbing, tiling, painting and decorating, Health and Safety responsibility and business management requirements. In the final week of this course, one of Makita's technical demonstrators spends a day with the attendees to take the group through the safe and correct use of a wide variety of power tools, explaining correct procedures, advising on accessories to benefit performance, maintenance and operations.

Alison Sleat is the Programme Coordinator for Building Heroes and the charity is now reaching out to the industry for job opportunities: "The real result will be supporting these veterans to achieve their career aspirations. They are trained and highly skilled individuals but may need a little extra support to transition into the civilian workplace. Building Heroes is working with a number of businesses that recognise the skills and attributes of our veterans and are supporting us to find them employment in the building trades. We are now the training and recruitment partner for a company that is recruiting over 400 veterans in the next 18 months," says Alison. "The cohort at Reaseheath is the first to undertake the programme with guaranteed full-time employment with Heroes4Hire-Handymen on successful completion of the course; this is a fantastic opportunity. The support from industry is vital in order to grow the success of the Building Heroes programme and those who are committed to supporting our veterans."

To find out more, see www.buildingheroes.org.uk, and for more news and product info about Makita UK, see www.makita.co.uk.

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COURSE DIARY

Get ready, because our June course line-up has something that will appeal to everyone

JUNE

- 1–2 Adirondack chair*
- 5–6 & 6* Wood machining
- 5–9, 8–9* & 27–28 Beginners' woodturning
- 6–9 Introduction to the lathe & mill
- 13 Bandsaws
- 13 Introduction to gear cutting
- 13 Spindle moulding*
- 14–15 & 15–16* Bowls & platters
- 15–16 Woodcarving with Paul Gardner
- 20 Bird, bee & bat boxes
- 20 Fruit making with wooden chucks
- 21* Scrollsaws
- 23* Turning pepper mills
- 27 Introduction to Leigh Jigs
- 28* Sharpening with Tormek

* 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

- 5–8 Woodturning – hollow vessels with surface embellishment
- 8–11 An introduction to picture framing
- 9–11 Wildlife woodcarving in relief
- 9–11 Woodturning for beginners
- 16–18 Furniture upcycling workshop with Furniture Magpies
- 25 Woodcarving – a taster day

West Dean College
 West Dean, near Chichester
 West Sussex PO18 0QZ
 Tel: 01243 811 301
 Web: www.westdean.org.uk

- 3 Chair making – part II
- 10 Basic jointing weekend
- 19 Veneering and laminating
- 24 Chair making – part III

Chris Tribe, The Cornmill, Railway Road
 Ilkley, West Yorkshire LS29 8HT
 Tel: 01943 602 836
 Web: www.christribefurniturecourses.com

- 3–4 Pole-lathe turning/stool making
- 14 Build your own shaving horse
- 17 Green woodworking experience
- 18 Father's day Greenwood experience
- 24 Spoon carving
- 25 Fan bird carving
- 28–29 Build your own pole-lathe

Greenwood Days, Ferrers Centre
 Staunton Harol LE65 1RU
 Tel: 01332 864 529
 Web: www.greenwooddays.co.uk

Lamello's Marco Ress to demonstrate jointing ingenuity in Axminster stores

Marco Ress, top international demonstrator and area sales manager for Lamello, will be visiting five of the Axminster stores in early June. He will be demonstrating the wood jointing ingenuity of some of the company's products.

Brand director for Axminster Tools & Machinery, Martin Brown, said: "We are very excited about bringing an international expert on Lamello jointing systems to the UK. Although he has visited trade shows in the UK before, this will provide a rare opportunity to spend time with Marco in our 'Live Workshops' in store, which are ideal for learning and interaction."

Lamello is renowned for manufacturing a jointing system that saves both time and money with outstanding results, and is highly regarded among cabinetmakers, specialist joiners and kitchen fitters. Martin continued: "Whether you're a sole trader, small enterprise or a volume manufacturer, Marco will be able to show how you could benefit from a range of professional, precision jointing solutions with substantial improvements in production efficiency."

Marco's main focus will be on demonstrating wood joining using the Lamello P-system, which includes use of the Zeta P-2 biscuit jointer together with connectors Clamex-P, Tenso-P and Divario-P. The system can be applied to kitchen fitting, bespoke interiors and any situation that requires the joining of panels and installing worktops, cabinets, shelving and more. The P-system is fast, precise and quick to set up with the final fittings either visible or barely visible.

"With a dedicated sales and service team and stores across the UK, Axminster Tools & Machinery is able to provide technical support and advice to Lamello users," says Martin. "Marco's UK demonstrations provide an ideal opportunity to better understand Lamello and how Axminster can make these world-class solutions work best for you."

Dates & times of demonstrations

- Thursday 8 June** (10am–4pm) – Valegate Retail Park, Cardiff CF5 6EH
- Friday 9 June** (10am–4pm) – Cressex Business Park, High Wycombe HP12 3FF
- Wednesday 14 June** (10am–4pm) – Gateway 49 Trade Park, Warrington WA2 8NT
- Thursday 15 June** (10am–4pm) – Bermuda Trade Park, Nuneaton CV10 7RA
- Friday 16 June** (8am–1pm) – The Trafalgar Way, Axminster EX13 5SN

For more info, visit www.axminster.co.uk or call **0800 371 822**.



Record Quick-Adjusting Vice



IRWIN Tools combines world class innovation, the best materials and the highest manufacturing standards, to manufacture the IRWIN Record Quick-Adjusting Vice.

The Vice uses fast-release lever functionality to quickly loosen the jaws and return it to the locked position, reducing the time necessary to adjust when frequently clamping and changing materials.

Record Vices are the benchmark by which all other vices are measured, and the IRWIN Quick-Adjusting Vice is no exception. Its S.G. Ductile iron body, integrated hardened steel anvil and hardened steel jaws guarantee durability, making it an ideal choice for light, medium and even heavy users.

The vice has been developed with efficiency in mind: the swivel base with three mounting points and 120° rotation makes light work of any job, giving flexibility to move around as needed, alongside a safety stop to prevent the slide separating from the body for extra peace of mind. Understanding that every second counts for a trade professional, the self-cleaning buttress thread turns out debris when in use to prevent clogging, so there is no need to stop and start during jobs.

Available in two sizes – 100mm and 125mm – the jaw opening on the vices is 110mm and 180mm respectively, with a jaw depth of 60mm and 70mm.

To celebrate IRWIN's innovative range of products that allow tradesmen to do more on the job, IRWIN is giving end-users the chance to win some DO MORE prizes when they purchase any IRWIN product. Up until 30 June and from participating stockists, customers can be in with a chance of winning IRWIN Impact Double-Ended Bits or a DO MORE experience including rally car driving, hang gliding, tank driving and much more. For more info on the promotion, visit www.irwin-do-more.com and for more info on the IRWIN product range, see www.irwin-do-more.com/products.

NEWS IN BRIEF

With demo vans from Makita and Hitachi, in-store demonstrations from Trend, as well as representatives from Charnwood, this year's Pen Tools Summer Trade Show promises to be the biggest yet, with countless great deals to be had throughout the weekend as well as an all day BBQ and refreshments. With woodworking being at the forefront of the business, helpful staff are fully trained to assist with the correct advice for your requirements and Pen Tools carry in stock the largest range of power tools and woodworking machinery in the county. There is ample free parking and they also offer a local delivery service. Their on-site workshop is fully equipped to offer repairs and after sales on all leading makes of power tools, so why not call in and see for yourself? Taking place from 9–10 June at their premises in Hereford, see www.pentools.co.uk to find out more

Taking place from 17–18 June at Weald & Downland Living Museum in Chichester, West Sussex, the annual Wood Show is a wonderful event that celebrates wood and its many traditional uses. See a wide range of wood craft demonstrations, a working wood yard, exhibitors and displays. There will also be a range of quality trade and traditional craft stands in the events field, plus even more demonstrations, and to celebrate Father's Day, bring your dad to the Wood Show and he will enter free of charge on this special weekend. To find out more, see www.wealddown.co.uk/events/wood-show

Gayle Mill's Summer Fayre is an occasion not to be missed – enjoy a range of heritage skills demonstrations, wood and craft stalls, a grand raffle, afternoon teas and a beer festival. Admission is also free, so come and enjoy a great day out in the Dales and see the wonderful 18th-century saw mill in action – visit www.gaylemill.org.uk

Kapex KS 60 compound mitre saw



The new Kapex KS 60 is a mobile, compact and flexible sliding compound mitre saw with ergonomically placed carrying handles, a practical cord holder and a transport safety device, which makes it the perfect tool for assembly work. These benefits are combined with an extremely compact design and lightweight handling.

Thanks to the mitre angle of up to 60° on both sides and an inclination angle of up to 47° on the left and 46° on the right, the compact sliding compound mitre saw also enables excellent cutting with maximal precision and versatility in mobile use. The saw slides forwards and backwards on the two column guides, but the columns do not extend backwards during this process. This saves space – particularly in small working areas.

The new Kapex KS 60 offers numerous other clever details. These include an LED spotlight, which projects the shadow cast by the saw blade onto the point that is to be sawed on the workpiece, precisely highlighting cutting lines without distortion. Even long workpieces pose no problem: these can be easily positioned and cut on the integrated pull-out extension table. With the additional feet, the KS 60 can be raised to the height of a Systainer (size: SYS 1), therefore allowing this to be used as the support surface.

The speed can be quickly adjusted to the material that is being processed, which will remain constant during the sawing process. The angle finder enables all of the interior and exterior angles to be precisely gauged and directly transferred 1:1 to the saw's angle setting, and thereby adjusted to the bisecting line. The spindle stop is also practical and can be used to change saw blades in an instant. Various versions of the new Kapex KS 60 will be available soon; more info is available at www.festool.co.uk/kapex.

GrandFest set to return this summer

GrandFest, a one-day mini festival that celebrates the heritage skills of talented older people and presented by the Royal Voluntary Service, returns to East London again this year.

Now in its third year, GrandFest is expected to be even bigger and better than ever this summer. On Sunday 18 June, the event will unfold at various restaurants, pubs and shops around Spitalfields, with a series of masterclasses – from woodturning to crochet – hosted by various GrandMakers, all of whom are over 70. The masterclasses will be held at

different times throughout the day at venues including Geffrye Museum, Anthropologie, English Restaurant, The Ten Bells, Blixen, AGA London and Hanbury Hall, and will hopefully inspire the younger generation to discover and learn a variety of new skills.

The Royal Voluntary Service is one of the biggest volunteer organisations in the UK, and supports over 100,000 older people each month; to find out more, see <https://grandfest.royalvoluntaryservice.org.uk>.

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MACHINERY & MISCELLANEOUS

Triton Work Centre (series 2000); 235mm circular saw with tungsten-tipped blade, mini sliding extension table, bevel ripping guide, retractable wheel kit and blade height winder kit; router table (series 2000), 1,400W plunge router; 21 assorted router cutters; biscuit joiner (new series), and biscuits – all hardly used, selling everything for £1,100 – call for details **01604 411 568 (Northampton)**

Mafell LNF20 biscuit joiner – includes instruction booklet & various biscuits; £100 + postage **01724 733 170 (North Lincs)**

Kity planer/thicknesser – never used; £175 OVNO; collection only **07962 078 408 (Leicester)**

1 pair of 42in Record sash cramps – in good condition; £25. Also, four 8in G clamps; £25 **01268 777 070 (Essex)**

10in radial arm saw on stand – with chuck and grinding wheel, plus various blades; £185. Also, dado set, little used; £45 **07779 746 603 (Kent)**

Scrollsaw – MS-2 – little used, heavy cast-iron, well made; £35 – buyer collects **01732 843 286 (Kent)**

Luna W59 combination machine & Startrite 301 bandsaw – both used only for hobby work; £950 for the two – buyer to collect **01684 772 020 (Gloucestershire)**

Arcoy dovetailer & 2 cutters; £25. Rexon variable-speed scrollsaw with 16in throat; £60. Erbauer ERB210C 2,100W router, little used; £55 **01492 545 433 (Conwy)**

Record 7in quick-release vice – in very good condition; £45. Stanley No.5 Jack plane – in very good condition; £40. Stanley plough plane 13-052, with one blade; £38. Stanley No.4 1/2

smoothing plane; £37. Stanley 7 1/2 USA router plane; £37. Stanley No.6 plane; £50. Call for more details **0208 641 4238 (Surrey)**

Pax 150mm razor saw – still in original packaging, and used only once; £10 + P+P. Also, Black & Decker DN339 variable-speed bandsaw with adjustable mitre fence and two spare blades (one brand-new). Cuts 105mm high x 330mm wide. Will cut most wood/metal/plastic materials. Ideal for model making; £38 + carriage – would be best for buyer collection **07724 135 606 (Leicestershire)**

3-in-1 slick Systainer system

Carting compressors and air-powered nailguns around can be back-breaking work, but thanks to this nifty 3-in-1 system from SENCO that makes use of a series of Systainers, things just got a whole lot easier

WIN!

To get your hands on all the SENCO kit tested by Andy, worth over £700, see page 44 for more details. Good luck!



Batteries may well be the powerhouse of many a toolkit nowadays, and with nailguns now driven by such technology they offer a lot of freedom, but up against an air-driven gun the weight of a battery option can be around three or four times more – good reason, then, to consider air if you can work with the need for a compressor and hose.

All kit in one Systainer

But carting a bulky compressor around isn't ideal, so how clever of SENCO to shoehorn a 4l capacity compressor into a Systainer and stick it on its own trolley complete with additional Systainers housing three guns, a whole gamut of fixings, air hose and accessories!

Better still, all the relevant controls for the compressor, such as the air pressure regulator, tank pressure and air pressure gauges, hose connector, plus the drain valve, are all positioned on the front panel so there's no need to go inside the Systainer for normal day-to-day operations.

SENCO PCS1290 Systainer Mini Compressor

The compressor is oil-free and will supply pressure up to 8.6 bar with 90 litres per minute air displacement, which lends itself well to less demanding tools such as air nailers but won't supply air quickly enough, or have a big enough tank for spraying, for example. But this compressor has been designed to fit into the Systainer and work with the tools in the kit, and it adds that extra bit of class to the setup.

Sticking with the compressor, it runs pretty quietly against some others I've looked at in the past, and the Systainer helps deaden the sound a little as it cranks up that bit further, but it still does grate after a while, although that's the nature of the beast.

It takes about a minute to reach full tank capacity from empty and then about 10 seconds to replenish each time the pressure drops low enough to require it.

The two dial gauges quickly help set up the compressor to the correct pressure: one dial



The trolley features a small drawer for storing the hose and power cord



Each Systainer holds individual parts of the SENCO kit; this one for fixings



This Systainer houses the three guns in a fitted insert...



... and of course, the compressor itself



The front panel features the essential controls for operating the compressor



This control is the mains power switch...



... while this one regulates the output pressure



The guns all share similar attributes, such as switches for bump or sequential fire...



... as well as the depth of drive controls for setting the fixings in different materials

indicates the tank pressure with the second gauge adjusted with the regulator to set the pressure being released through the hose. This allows you to quickly and easily set up the compressor to the requirements of the tools being used. In the case of the nailguns in the kit, they all operate within a range of between 70-120psi and with each gun having its own depth of drive adjustment on board, a combination of the pressure supplied by the compressor and the guns' own depth control allows you to tweak the setup in order to get the best results.

FiP18Mg, FiP35Mg & SLS18Mg-L Systainer set

Moving on to the guns, the bases are well covered in terms of what can be fixed. At the thicker end of the wedge the FinishPro35Mg knocks in 15-gauge fixings from 32-65mm long, so it works well for second-fix applications, such as architraves and skirtings. For beading or similar work the finer 18-gauge FinishPro18Mg fires 16-50mm finer head brads, with the trio completed by the SLS18Mg. This gun fires narrow crown staples rather than brads for maximum holding power with a length range of 9.5-42mm.

The amount of fixings fired before the tank reservoir is depleted enough to kick in varies with the size and gauge of the fixings being driven along with the density of the material, but in general tests the FinishPro35Mg was booting the compressor after around five or six fixings and the 18-gauge FinishPro18Mg was around a dozen or so, meaning it will be significantly operational on more demanding jobs.

The long hose does help keep the noise at bay to a degree, however, which allows the compressor to be sited away from the work area.

Despite kicking in at short intervals, the compressor kept up with the demand when I tested the guns in sapele, both on single fire and bump modes, with each setting the fixings below the surface. All three guns have a bump fire option to allow faster fixing if needed; this is normally at the expense of accuracy, so any finer work is best done in single fire mode.

My first attempts with the stapler left the heads up, but a swift adjustment to the air supplied by the compressor allowed the extra power needed and I could tweak the depth with the gun's on-board depth adjustment facility. ➤



The stapler and 18-gauge gun both have rear-positioned rotating air exhausts



The bigger 15-gauge gun has a top-mounted rotating exhaust



All three guns feature a rotating belt hook



The Mini Compressor's Systainer has an opening for the power plug



The stapler features a bottom loading magazine...

Nail jams are part and parcel of nailgun use and the two nailers have quick-release noses to deal with this when it occurs. The stapler requires a hex wrench to remove the front for this purpose, but I've always found that staples are less prone to jams, so it's no real problem.

Each gun also has a rotating air exhaust, which fires the waste air from each actuation away from you. The FinishPro15Mg also has a small button on the top of the gun that will fire a blast of air, thus enabling you to use it as a blower to clear debris if needed.

All three guns are manufactured using magnesium alloy, making them very lightweight and easy to control and position, so despite being constrained by the hose, they are very easy to manoeuvre whether at the bench or fixing in situ.

The performance of each gun is impressive; I found all three were very capable of fixing consistently in hard and softwood alike, and very easy to get the drive depth as required, using a combination of compressor outlet pressure and the guns' own drive setting. The downside of the compressor kicking in so regularly is a trade-off of having the compressor inside the Systainer, which therefore reduces the tank capacity.

Conclusion

If you want a good set of guns but without the inconvenience of the constant compressor noise, you can of course hook up to a bigger one, but the portability is then compromised, and that's what makes this kit stand out from the crowd. You can buy the components as separates, but you can't fail to be impressed by the way it looks thanks to the swanky Systainer system. **GW**



Initial fixings were left proud and required adjustment of the outlet pressure



Adjusting this pressure along with the depth of drive yielded consistent results



... while the 18-gauge gun is loaded into the side of the magazine channel



The two nailers feature a quick-release nose toggle for nail jams



Fixings for the 15-gauge are loaded from the back of the magazine



The stapler nose has to be stripped down with a hex wrench

Specification:

PCS1290 SYSTAINER MINI COMPRESSOR

- ▶ **Tank capacity:** 4l
- ▶ **Motor:** 1hp
- ▶ **Max bar pressure:** 8.6
- ▶ **Weight:** 16.5kg

FiP18Mg, FiP35Mg & SLS18Mg-L NAILGUNS

- ▶ **Fixing capacity:** 110
- ▶ **Working pressure:** 70-120psi
- ▶ **Typical prices:** SENCO PCS1290 Systainer Mini Compressor – £349.99; FiP18Mg, FiP35Mg & SLS18Mg-L Systainer set – £449
- ▶ **Web:** www.poppers-senco.com



I tried all three guns in sapele as part of my testing, and each performed flawlessly

THE GW VERDICT

- ▶ **PROS:**
Lightweight guns; transportable system; consistent performance
- ▶ **CONS:**
Compressor kicks in frequently; quite expensive as a complete kit
- ▶ **RATING:** 4 out of 5



The lightweight nature of the nailguns makes them ideal for a whole range of applications

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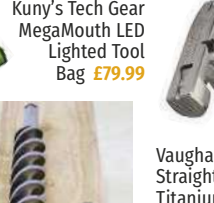
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Fast-drying finishes

These products from Howard do the job quickly and are easy to use, but ensure to work in a well-ventilated environment



and flammable, so care is needed when applying them, especially if you're working in a small workshop/workspace.

Sanding Sealer

The Sanding Sealer is available as a brush-on or aerosol application; I opted for the aerosol on my bench for speed purposes, but the brush-on type will prove to be useful for all manner of turning projects, etc.



Both sealer and lacquer require mixing prior to spraying so the cans have to be shaken for a minute or so to get things moving, but from then on it's a breeze. However, it is advisable to open a door or window in order to get a steady draught blowing through as you spray, as both types give off a strong odour during application.

With a spirit base they therefore dry quickly: a minimum of 30 minutes between coats is the recommendation, so I was able to get a couple of coats on very rapidly, cutting back with fine abrasives in between, ready for application of the lacquer.

Clear Lacquer

Moving on to the lacquer, it's a high gloss, so not the ideal finish for my bench, but I have to try these things! Spraying it on is certainly quicker and easier than brushing or wiping using cloths or other applicators, so it gets my vote here, and as with the Sanding Sealer, it's quick drying.

The recommendation of two or three coats, so allowing the 30 minutes between each, meant that I was able to get the bench back to a smart, fully sealed finish within only a few hours.

Conclusion

It's tricky to give a verdict on such simple products as sealers and clear finishes as they tend to do exactly what they say on the tin, and in this instance, they do indeed. And with that in mind, if you are on the hunt for a fast-drying sealer and lacquer, then Howard's are certainly worth a try, although, like me, you may prefer a satin option rather than a high gloss. Apart from the odd water stain that is too deep to worry about, I'm pleased to report that my bench looks spiffing once again! **GW**

Specification:

- ▶ **Brush-on Sanding Sealer:** 250ml
- ▶ **Clear Lacquer spray:** Gloss finish
- ▶ **Typical prices:** Sanding Sealer & Clear Lacquer – £7.99 each; brush-on Sanding Sealer – £7
- ▶ **Web:** www.justpuddingbasins.co.uk

Having been forced into a bench refurb thanks to a leak in my workshop roof, the arrival of these two products was very timely indeed. The sanding sealer and lacquer are toluene-free but both are still spirit-based



I had to flatten the top back as the leak in the roof had distorted my bench



A quick sand up and I was ready for action



The Sanding Sealer is applied from around 150-200mm away and coats really quickly



After cutting back between coats the lacquer is applied in the same way



Nice! Let's hope my roof doesn't leak again!

THE GW VERDICT

- ▶ **PROS:**
Fast drying; easy to apply
- ▶ **CONS:**
High odour
- ▶ **RATING:** 4 out of 5



Accuracy guaranteed

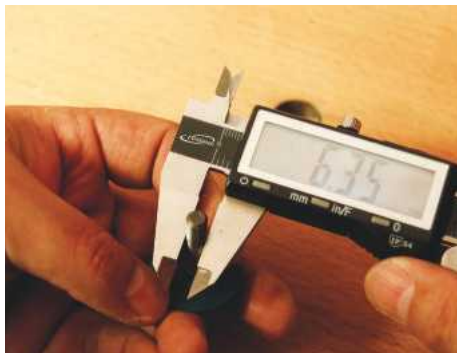
If you're a fan of old school measurements and regularly work using both systems, this handy digital calliper will do the hard work for you and ensures accuracy with each use



Eureka! A tool with imperial measurements that actually reads in true imperial! Although I own a digital calliper that works in metric and imperial, the imperial side of things reads out as a decimal fraction. Therefore $1\frac{1}{4}$ in becomes 1.25; easy enough in this instance, but when you need to find a drill that has to be a precise imperial size for a project – $\frac{9}{64}$ in for example – how do you work that out in decimal to see if you have one? There are, of course, charts available that show the conversions, but what could be better than a calliper that actually shows proper fractions?



A $\frac{1}{4}$ in shank router registering $\frac{1}{4}$ in on the calliper readout – what's not to like?!



A press of a button to toggle the readout to metric and it shows true at 6.35mm

Large digital readout

The EZ Cal has the accolade of this function so it will tick boxes for a lot of people for this reason alone, and with the large digital readout, it's very easy to see exactly where you are when checking any sizes, and it will read down to 128ths of an inch for excellent accuracy. A button on the calliper body toggles between metric, fractional imperial and also decimal fraction if you feel the need to give yourself a headache! Well, OK, you do sometimes get instructions that call for sizes in this format, so it's definitely a valid and useful function to have.

Three main functions

There are two other buttons on the body: one for zeroing the calliper for checking specific measurements from a set distance and the like, the other for switching the unit on and off. There's also an auto-off function to prevent battery drain as well, which is a useful addition.

Like other callipers the three main functions are the same: internal and external measuring jaws for checking diameters, thicknesses and so forth, and the depth measuring rod for blind holes, rebates and offsets.

Adjustments are easy to control using the thumbwheel, but I found it to be a little sloppy and loose in the way it is connected, although it works flawlessly, and any setting can be locked with the small knurled knob at the back of the body.

Conclusion

I'm still old school when it comes to imperial, and even though we worked in metric at college when I was an apprentice, I was taught imperial along with fractions at school (and back then

colour hadn't been invented, grass was still grey, etc. etc.) so although fractionally more (see what I did there) than you would pay for an entry level budget version, for me it's well worth the additional outlay.

The quality of the tool is excellent with hardened stainless steel for the measuring jaws and scales with a durable ABS-type body for the LCD readout. The tool also has an IP54 rating, so it's protected against dust and rain splashes, and also comes supplied in its own fitted storage case. **GW**

Specification:

- ▶ **Readout type:** Metric; fractional imperial; decimal imperial
- ▶ **Measurement range:** 150mm/6in
- ▶ **Typical price:** £31.79
- ▶ **Web:** www.johnsonstools.co.uk

THE GW VERDICT

- ▶ **PROS:**
Fractional readout; well constructed; large easy-to-read screen
- ▶ **CONS:**
Adjuster wheel feels loose
- ▶ **RATING:** 4.5 out of 5



Internal measurements can be taken using the internal jaws



Checking the depth of rebates, internal corners, etc. is easy with the depth post

Quick-spot sanding

Despite this orbital sander being a good performer, the vibration issues experienced while using it are worrying, which really only makes it usable for short periods

With the workshop closed up over Christmas and with other work to sort in January, I hadn't opened up for a few weeks, so going in and seeing the roof had sprung a major leak was disheartening to say the least. What made it worse was that it was directly over my bench, and had caused a far bit of damage; I felt like General Melchett when Captain Blackadder had eaten his prized pigeon 'Speckled Jim!'.

But 'every cloud' as they say... Not because the benchtop was now soaking and distorted, but because I had a new random orbital sander to try out, so the bench became the perfect test subject after I had left it to dry and flattened it back with a jack plane (after I'd fixed the roof).

Sander features

The angle grinder-style sander, along with a brush motor, does make it quite bulky to hold around the body, especially if the sander is used for vertical or similar applications where the weight has to be supported. But for work directly onto a horizontal surface, with the front grip used to apply most of the pressure, the hand that holds the body is more for control purposes. The front has two gripping options as well, either with the rubber overmoulded casing, directly over the 150mm diameter hook-and-loop pad that secures the abrasives, or with the front grip. The front handle offers a neat option for working in restricted areas as it rotates and locks in various positions around the body as well as tilting to different angles, and a simple cam lock releases the clamping action to allow the handle to reposition to the best spot to suit your needs.

The positioning of the dust extraction port is unobtrusive so it doesn't restrict access or manoeuvrability too much when connected to an extractor and it works pretty efficiently, gathering up the majority of the dust generated during my testing.

The base has a dual-action, which is operated with the side-mounted twist dial. It allows the sander to make very aggressive sanding actions, or a finer, controlled finishing sand. The manual states that switching between modes doesn't alter the orbit – this remains at 5mm – and the action is simply switched from random orbit



for the aggressive removal and a standard orbital action for the finer finish sand.

Benchtop workout

It certainly is especially efficient in the more aggressive mode and the sander is supplied with a selection of six discs: two each of 60, 120 and 240 grits, so I selected the most aggressive 60 grit first and set about sorting the benchtop out. It made very short work of cutting back the plane and water marks to clean timber on my sad looking benchtop, but I did notice a feeling of vibration back through my hands and arms when using it, which was a little disconcerting.

The sander isn't unstable, but the vibration feedback after stopping work certainly left me knowing that I had been using it, even after a short period of use.

Vibration issues

Looking at the manual, there is a range of specs including the Weighted Vibration figure of 20.503m/s² (metres per second squared). I'm no expert on the HAV (Hand Arm Vibration) specification or legislation, but if Triton is using the same triaxial measurement that the others use it would explain the vibration feedback I was experiencing. Similarly designed sanders

from other manufacturers post figures of around 5m/s², which, assuming they use the same method, on a simple reckoning is four times the amount of vibration.

However, read this against the charts that indicate safe working times for vibration levels and the 5m/s² machines can be used for eight hours per day, but a 20m/s² tool indicates a level of just under 30 minutes, and that is overall usage, not in one go.

These figures and legislation are based on an HSE directive designed to safeguard people in the trade to prevent against exposure to white finger and other vibration-related ailments. This may mean that in your own home workshop you may not need to worry about such things, but it is certainly worth taking heed of if these figures do stack up correctly.

Conclusion

This is a big negative for a sander that is well built, puts in a solid performance and features variable-speed; however, fitted with a suitable polishing pad or bonnet, it can be used for burnishing, applying waxes and polishing work – just be mindful of vibration issues. **GW**

Specification:

► **Supplied with:** Soft carry case, 6 × sanding discs & 1 spare carbon brush

► **Typical price:** £190

► **Web:** www.tritontools.com

THE GW VERDICT

- **PROS:**
Rotating front handle; twin sanding options; very efficient sanding
- **CONS:**
Vibration feedback in use
- **RATING:** 3 out of 5



A top slider allows for easy operation with either hand



The cam lever locks the handle, which can reach various angles



It can also be rotated around the body for better positioning



The sander requires standard hook-and-loop abrasive pads



My poor old bench was in need of some major TLC



After getting the top back to bare timber, I knew I'd been using this sander!



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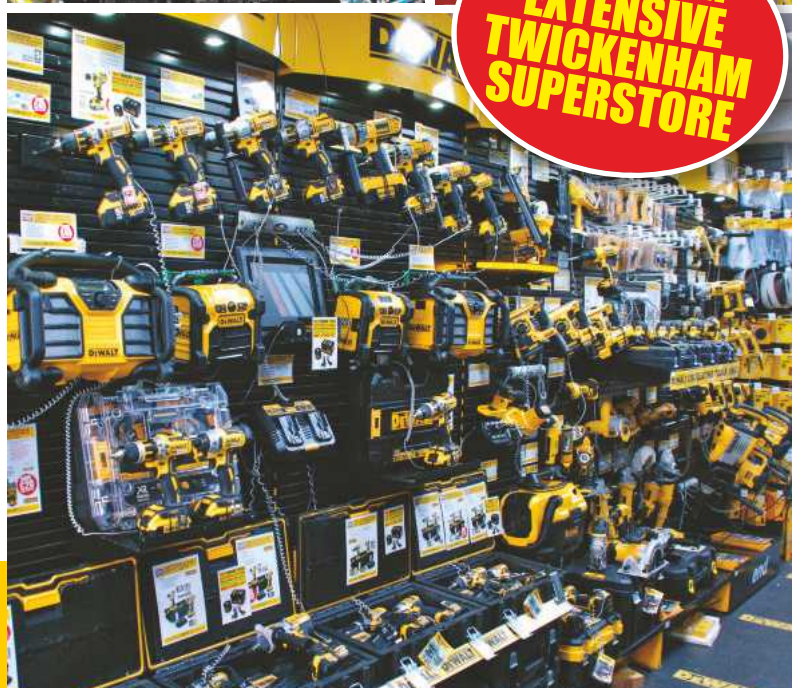
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The Wreck of The Golden Mary

After the glamour of the launch, it's all hands to the pumps at The Old Vic'; **Dave Roberts** takes a turn around the deck



Perhaps it was the late winter frosts that put me in mind of Dickens' story of travellers shipwrecked by an iceberg; or maybe it was the chilly conversation with an estate agent: "If it may be likened to a ship," I'd said of the empty house, "then it's presently without crew, rudderless and dismasted, and being drifted towards the rocks by the westerly blowing down the valley; if it's left untended, it will founder." Even so, like *The Golden Mary's* Captain Ravender, who put out his hand and said, "I take command of this ship," we, too, embarked upon our own journey in The Old Vic'. And how like a ship is an old house: the one has a keel and the other a roof, but if either are unfit to deal with the water below or the weather from above, the vessel is unlikely to fare well.

"Soffit me timbers!"

So it is, then, that as spring shows its lambs-and-daffodils face, it is exterior woodwork that appears towards the top of a long list of jobs. By rights, of course, I should be busy restoring the sash windows, but I'm not, and for two good reasons: firstly, despite my best intentions I haven't yet made the shuttering-ply blank that I'll use to cover the window openings while the sashes (and, in some cases, the frames) are removed to the workshop for repair. Secondly, while it's here, the scaffolding that has been erected for work on the chimney stacks provides the perfect opportunity to strip and repaint the gable ends, the apexes of which are nigh-on 30ft high – an uncomfortable height on a ladder if you're messing about with hot-air guns and scrapers, or have a tendency to lean back to check your work with the paintbrush...

The stability of the scaffolding also makes it easier to fit the soffit to the gable end (or rake), a job for which I prepared by cutting sections of WBP plywood to fit between the purlins (I chose 9mm ply, which is thick enough to provide substance, but will also be sufficiently pliable to conform to variations in the level of the rafter tails when I'm making the soffits for the eaves).

To scribe the soffit so that it follows the contours of the gables' stonework neatly, I used nothing more complicated than an old Helix school compass: with the ply sections offered up to the wall, the needle follows the face of the stone, and the pencil transfers its profile



ABOVE: A simple schoolroom compass can be ideal for scribing



ABOVE: One I made earlier: a plywood blank protects a window opening against the weather and takes the jeopardy out of removing casements, sashes, or entire frames and leaving the house open to the weather; a trompe l'oeil is optional



LEFT: When the winter wind blows down the valley, this purlin and gable end at least will be ready to face the weather; scribing the plywood soffit to fit the stonework keeps things neat, too



LEFT: Better than ladders: when this scaffolding's moved to the next chimney stack, I'm going to have to buy a DIY tower



ABOVE: Fresh flight holes and bore dust (frass) are the signs of wood-borers at work

to the wood. A spot of jigsaw work, and the soffit was ready to have its edges sealed (I used an oil-based, exterior varnish for this) prior to priming and painting.

Visitors' entrances

In truth, the soffits on the rake are quite straightforward; the interesting work will come on the eaves, when I want to strike a balance between weatherproofing and ventilation (the roof slates have been relaid over a non-breathable felt underlay, so allowing air to flow is vital to avoid high levels of humidity, which can encourage all sorts of rot and infestation), as well as providing some access for The Old Vic's aerial visitors.

Bats (notwithstanding their legal protection, which seems almost tyrannical in the way that it is sometimes applied) are rather engaging creatures which we're happy to host – well, in moderation, anyway. And indeed, it may be because there's a belfry nearby that a survey established that The Old Vic's lofts are home to just a handful of soprano and common pipistrelle, and whiskered bats, which roost on top of the thick stone walls. Continuing to accommodate them only requires that we leave a few 20mm gaps between the soffits and the walls by which the bats can come and go. However, I'll also be looking to incorporate nesting boxes into the soffit spaces for birds – especially if we can attract Swifts, which have suffered a serious decline in recent years – but that'll take a little thinking about.

Weevils in the ship's biscuits

In the meantime, I've just discovered fresh signs of an altogether less welcome visitor among the old fruit boxes that we brought with us for storing kindling –

woodworm, or rather the larvae of wood-boring beetles, whose emergence has left fresh flight holes and tell-tales of bore dust (frass).

The popular answer to this problem is to dose the affected timber with a water-based solution of boron, which is odourless and quickly absorbed. When applied as a surface treatment, boron won't kill woodworms that are already in the timber (or at least not until they bore out through the treated wood), but what it will do is to prevent re-infestation by killing any newly hatched larvae as they attempt to eat into the boron-impregnated outer layer of timber. The advantage of this passive mechanism is that it's only effective against wood borers, which means that flies are unaffected, and that the bats and spiders which feed on them are safe, too. It'll also be an effective way of protecting new skirting and architrave, and treating any old timber that we bring into the house. Speaking of which...

The belly of the whale

"We had inspected every timber in her," says Dickens' Captain Ravender of *The Golden Mary* before setting sail; we, on the other hand, were well underway before I made my way into the geometric forests of rafters, ridges, props and ties that frame The Old Vic's lofts. My aim was to check the condition of the purlins: I've already found that, for want of painting or protection, a couple have suffered from weathering on their ends which protrude through the walls to support the gable ends; I wanted to make sure, then, that this damage doesn't extend to the bearing surfaces where the purlins transfer the loads from the rafters to their supporting walls. Where extensive damage has occurred, repair



ABOVE: Boron Ultra 12 (which I bought from <http://diy-property-repair>) is a safe and simple water-based treatment: mixed in a ratio of 40g/litre, I applied it to the fruit boxes using a garden sprayer, but it can also be brushed on if you're treating smaller areas



ABOVE: Hand-made: a joiner's marks pair up the mortises and tenons of a king post and its struts in The Old Vic's roof



ABOVE: David Burton and oak salvaged from *HMS Victory*; the chalk marks highlight the shipwright's raze mark on a repair section made for Nelson's flagship



ABOVE: Almost finished: some brass card holders, a handle, and a few more boxes and my latest bit of workshop organisation will be done

can take the form of a straightforward, albeit massive, scarf joint; thankfully, though, that's something we're not going to have to attempt as the roof members are quite sound, and, "I cannot describe the visible relief," to borrow the good Captain's words, "which this spread through the ship."

My reassurance was compounded by delight when this exploration also turned up a couple of interesting finds besides: the first was the collection of pulleys, levers and wires that are part of The Old Vic's dilapidated bell system (unravelling which will one day make a restoration project of Gordian proportions). The other was the set of marks pairing the mortises on this king post and the tenons of its struts, the Roman numerals cut by the long-stilled hand of an unknown joiner for the guidance of the carpenters who assembled the roof. They put me very much in mind of furniture-maker David Burton, who for a while reworked the oak that had been salvaged from *HMS Victory* during her long restoration, among which he found a 'spare part' for Nelson's flagship – a ready-shaped timber marked with its location in the ship and the shipwright's name.

Ship-shape

Quarter-masterly orderliness of that kind appeals to me, partly (I suspect) because of a tendency to allow my attention to hop in a most indisciplined way between several on-going tasks and interests. Still, in mitigation,

RIGGING THE MAST

Springtime has also been the perfect time to attend to what stands as the 'mast' of the The Old Vic' – the weeping ash tree on its front lawn. The *Fraxinus excelsior* L. *Pendula*, if I've understood things correctly, is achieved by grafting a cutting from the weeping variety – all of which, it's said, can trace their line back to a single tree in Gamlingay, Cambs – onto a normal ash. Anyway, though it isn't part of the house's fabric, it's certainly part of its character: weeping ash was widely planted, apparently, during the period when the house was built, and like The Old Vic', the tree is now showing its age. Though ash is a timber notable for its strength and flexibility, we've protected the three principal boughs against excessive movement in high winds – particularly when its leaves make a sail of that weeping crown – using Cobra bracing. The system's polypropylene ropes serve as shock absorbers, allowing the boughs to flex and so avoid any atrophy of their natural strength, but providing a cushioned brake upon large or sudden movement.

In the course of paring away some of our specimen's dead wood we managed to salvage a few pieces which might make small turning blanks, which I think will call for a visit to Richard the Lathe over the river...



ABOVE: Andy the Rope at work rigging The Old Vic's weeping ash with a bracing system to protect the boughs against strong winds, especially when the crown is carrying its 'mainsail' of leaves

Dickens' Captain did say that, "the man who knows only one subject is next tiresome to the man who knows no subject. Therefore, in the course of my life I have taught myself... to have an interest in most things." Where was I? Oh, yes; orderliness – or rather home-made solutions to the disorder that followed in the wake of our house-move. I'm still trying, for example, to organise what was once The Old Vic's kitchen so that it can serve as a temporary workshop while I'm working on the doors and windows, and one of my new aids is what I'm calling The Cigar Box – a storage solution that's part sentimental and part alchemical in its transformation of some hand-me-down cigar boxes and a ply box that has followed me about all my life into the organisational gold that is a place for small but essential things. The finishing touches will be some small brass card-holders to label the boxes' contents, and a handle for the door made from a cigar tube, filled with casting resin so that it can be drilled and tapped to take short lengths of threaded rod with which to attach it.

Windsor chair repair

From cigars it's only a short segue to wine, and the chance to share this little woodworking moment spotted only recently in The Windsor Hotel, Cairo. Having been built not long after The Old Vic' as a royal bath house, the Windsor went on to become a British officers' club, and later a Swiss-themed hotel; today, it's a little enclave of an older Cairo, tucked behind modern bustle of Talat Harb Street like old furniture in an attic. The seats and settles in the Barrel Bar, for instance, were made from 19th century wine barrels sometime in the '20s, I'm told; certainly they were there when Rommel advanced on Cairo in the '40s; when Nasser overthrew the Egyptian monarchy in the '50s, and – with the occasional attention of the hotel handyman's bag of tools – they're still going strong today. Perhaps the barrels were once filled with fortified wine? **GW**



ABOVE: A different sort of Windsor chair: made from a 19th century wine barrel, it has survived British officers, Rommel, and the overthrow of the monarchy

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The grass is always greener

Michael McCrory's wonderful toy lawnmower project combines a variety of skills, just in time for summer

MATERIALS & TOOLS REQUIRED

You can use whatever kind of wood you like – you may want to substitute walnut for the sipo since it's probably easier to obtain. You could even make it using just one type of wood, but it would lose the interesting contrast

MATERIALS

- A piece of maple around 914mm long
- A piece of sipo around 914mm long
- A piece of 25mm oak dowel for the handles
- A couple of 12mm dowels for the lawnmower 'blades'
- A piece of 6mm dowel for the pins (explained later)
- A piece of sipo large enough to make two 200mm wheels
- A piece of walnut that can be cut up to make the clackers
- 3 pieces of 20mm MDF that are about 457 × 762mm to make the mould for the bent wood lamination
- Some cork to line the mould (I used 305mm cork tiles)
- Some plastic wrap to protect the mould from the glue
- Lots of glue
- Finish (mineral oil or tung oil – both work well)

TOOLS

- Table saw
- Bandsaw
- Jointer (not absolutely necessary)
- Planer
- Drum sander (not absolutely necessary)
- Drill press
- 12mm Brad point drill bit
- 16mm Brad point drill bit
- 50mm Forstner bit
- Random orbit sander
- Belt sander (not absolutely necessary)
- Router
- Flush trim router bit
- Range of abrasives
- Clamps

I made this toy lawnmower as a Christmas gift for a friend's little boy who is about to turn one year old. His dad has been a close friend for more than 20 years, so this is a really special gift for his son. It's a little early for him, but he'll be able to have fun with it in a couple of months when he's walking on his own.

There's nothing difficult about this project; even making the curved pieces of wood is not too hard, and it's fun to try if you've never done it before. I used a technique known as bent wood lamination to make the curved arms that attach to the wheels.

I made the lawnmower using some left over pieces of wood that I had available – I used maple, sipo and oak dowels. Sipo is an African wood that has similar characteristics to mahogany; it has a nice reddish brown colour that contrasts nicely with the maple. **GW**



STEPS 1A & 1B. I started by jointing the edges of the wood prior to ripping them on the table saw; this helps to ensure that you have a straight edge to use against the table saw fence



STEP 2. Next, rip the wood into strips. In my case, I wanted to glue up the wood so that the arms that attach to the wheels would have a stripe down the middle, so I glued up two strips of maple with one strip of sipo going down the middle. You'll want to aim for the overall dimensions of the glued-up strips to be about 25 × 75 × 914mm. You'll need two sets of these because there are two arms that lead up to the handle. If you don't want the stripe, you don't need to glue up the wood – just cut two pieces that measure roughly 25 × 75 × 915mm



STEP 3. Joint one of the faces to ensure that the wood is straight and flat, and then plane the other side so that it's smooth. The dimension is not too important because we'll be resawing it into thinner strips later. You just want to aim for around a 25mm thickness, but a little less than that is fine



STEP 4. Assuming you're going with the stripe down the middle like I did, glue up the wood and clamp it for a few hours. I have a 762mm vice, so I used that, and then just put small clamps on the ends



STEP 5. After the wood has been glued up, joint the face so that it's flat and straight



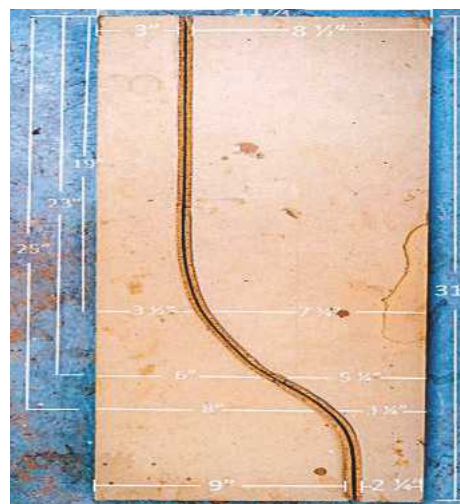
STEP 6. Now resaw the wood to produce thin strips. You will want the strips to be around 5mm or maybe even a little less so that the wood can be bent into the shape you need for the arms. I made three strips for each arm >



STEP 7. After resawing, you'll need to sand the strips so that they are smooth prior to gluing them up. If you have a drum sander, this would be an ideal time to use it. If you have a planer, it's possible to use that to smooth the strips of wood, but the strips are so thin that you'll need to glue or tape the strip to another board so that it can be run through the planer. There are several videos available on YouTube showing how to plane a thin piece of wood



STEPS 8A & 8B. Draw your curve onto a piece of MDF and then cut it out on the bandsaw. I lined the mould with cork to accommodate any imperfections. You will need three pieces of MDF stacked together to ensure the mould is wide enough for the handle. Use the first piece cut on the bandsaw as a template for the remaining two pieces of MDF. Use the bandsaw to cut out the curve on the other two pieces of MDF, and then use a router with a flush trim bit along with your template to ensure all three pieces have the same curve



STEP 9. Now glue up the three pieces of MDF so that they are stacked. The total thickness will be around 58mm. After the glue has dried, apply a layer of cork along the edge of the curve; this will provide some padding for the glue-up to compensate for the fact that your curve is probably not perfectly smooth



STEP 10. Line your mould with plastic wrap, which will ensure that the glue won't stick to the cork. Now apply glue to the three strips of wood and then insert them into the mould



STEP 11. It's a little tricky to get the mould clamped tightly because the wood will have a tendency to move around and get out of alignment. You'll need to take care that the wooden strips remain fairly well aligned. You may benefit from a helper to hold things in place and assist you with tightening the clamps. After clamping, let the glue cure overnight. Since you only have one mould, but two arms, you will need to repeat the glue-up for the other arm the next day and then clamp it overnight



STEP 12. After the glue has cured, your strips of wood will be permanently bent into the shape that you wanted so the arms will attach to the wheels. The strips will look pretty rough at this stage, but it's fairly easy to clean them up with a sander



STEP 13. I used some leftover triangular pieces of wood that I already had in my workshop. These pieces of walnut were left over from my kitchen stools project (see GW313) and were ideal for the clackers. All I needed to do was to drill a 16mm hole in one end. I used a 16mm hole so that they would fit loosely over the 12mm dowels

STEP 14. Using a bandsaw, round the end of each arm where it will attach to the wheel, then clean it up using a sander



STEP 16. Use a circle cutting jig on the bandsaw to cut out the wheels. If you've not done this before, it's pretty straightforward. All it takes is a piece of MDF with a 6mm bolt inserted through it. Place your wood on to the MDF and insert the bolt through a hole in the centre of the wood. Set this on the bandsaw table and run the MDF through the bandsaw blade until you're about half way through. At this point the bolt should be beside the blade, but 100mm away from the blade (100mm is the radius of the 200mm circle you want to cut). With the bandsaw turned on, rotate the piece of wood about the bolt to cut out the circle. You should end up with a very clean cut and an almost perfect 200mm circle. You can clean up any sawtooth marks with a sander

STEP 15. Cut the 25mm dowel into two short pieces that are about 20mm long; these will serve as the hub caps that go on to the ends of the little axles. Then use a Brad point drill bit to drill a 12mm hole about half way into the piece of dowel, so that a short piece of 12mm dowel can be inserted



STEPS 17A, 17B & 17C. You'll need to drill four 12mm holes to hold the 12mm dowels that will be used as 'blades' to hold the clackers. Optional: use a 50mm Forstner bit to drill additional decorative holes between the 12mm holes as pictured; this will help to make the wheels a little lighter, then drill a 16mm hole through the centre of the wheel; this will provide a loose fitting hole through which you can insert the little axle



STEP 18. Now do a dry run to test the fit of the dowels into the 12mm holes. If the fit is too tight, you may need to sand the dowel down a little bit. You'll need to assemble your two arms to determine how much space is available between the arms to attach the wheels; this will help you determine how long the dowels need to be. The dowels should be somewhere in the order of 255mm long



STEP 19. I drilled 6mm holes into the dowels so that I could insert little pins to keep the clackers from moving side to side. You'll need to cut short pieces of the 6mm dowel (maybe about 25mm long) so that they can extend through the 12mm dowel. You will need 10 pins in total: two for each 'blade' and one for each little axle, then sand the ends to taper them



STEP 20. Prepare for glue-up and assemble the wheels, dowels and clackers. Be sure not to forget the clackers because there will be no way to add them if you glue in the 'blades' first. You can then glue in the pins to keep the clackers separated



STEP 21. If you have a dozuki saw or some other kind of flush trim saw, you can use that. If not, you can just sand off the ends of the dowels

>

Project: Toy lawnmower

STEPS 22A & 22B. I used a 25mm dowel to serve as the handles. If you have a lathe, then you'll likely want to use that to form the handles.

I didn't have one, so I inserted the dowel into my drill press and used abrasives to shape the handles. It wasn't the most efficient way to do it, but it got the job done. Then I used my belt sander to round over the ends of the handles – they actually turned out fairly well



STEP 23. Using the bandsaw, trim the ends of the arms and round them over nicely



STEP 24. Drill a 16mm hole into the end of each arm at the point where they will meet the axle/centre of the wheel



STEP 25. Now attach the arms to the wheels by inserting the little axles through each arm, then attach the handles at the other end. I attached the handles by inserting a 12mm dowel into the end of the handle, and putting the 12mm dowel through the end of the arm. In the inset photo, you can see a close-up showing how the pins are inserted into the 12mm dowel to hold things in place



STEPS 26A, 26B & 26C. Here's the finished toy lawnmower – it's going to be a lot of fun in the summer!



FURTHER INFO

You can find out more about Mike McCrory and some of his other work by visiting his website: www.woodumakeit.com. And to see a video of the making of this project, just visit Mike's YouTube channel: www.youtube.com/woodumakeit

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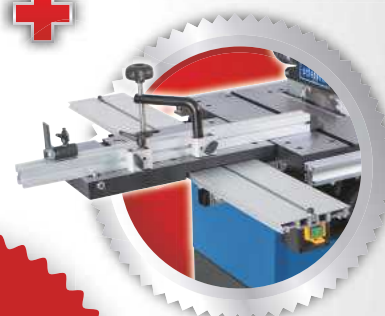


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Take square strips of wood, cut the ends with definite shapes (90°, 45°, 30°, convex, concave, etc.), bunch them together and shazzam! you have architectural forms. I've done Greek, Saxon, Islamic, Romanesque and later, when I'd addressed the pointed arch, Gothic. I made boxes, toys, puzzles and sculptures. I played with flying buttresses, and eventually reached Perpendicular. I've done castles, cathedrals, wells, fountains and mountains, but nothing modern. No skyscrapers or civic centres. No car parks.

Tom Finch is a person I admire. I've known him all his life. He is a stylish dresser, a sharp mind and (to my knowledge) a quiet man. Now he's an architect and, thank goodness, an architect who speaks out (and acts out) against all the things we both don't like about architects. He's sent me pictures of buildings that please

him: they are lean, clean, and immaculately detailed. At UCL and The Bartlett, he shone, taking a First, and gaining a Distinction. I saw his final exhibit; it looked to me like a tidy pencil drawing of a window. Alongside it were words of fawning high praise from his tutors. Anyway, enough of him. Let's get back to me.

Box with a purpose

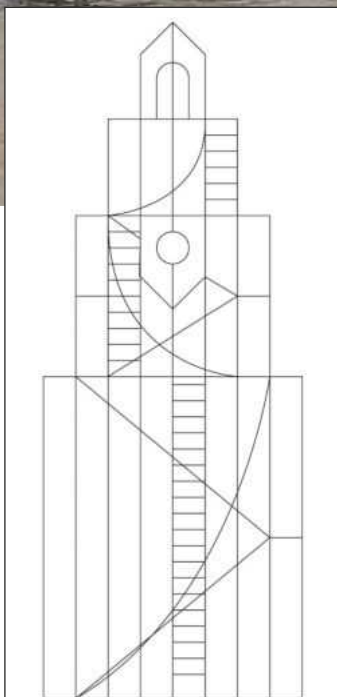
I wanted to make a gift for Tom and for Emilie (who is also an architect), but what? I don't fully grasp Tom's appreciation of minimalism. I do like minimalism. Less is much more, but I'm not as fluent as him; not as conversant. To give someone a present that they appreciate (because you gave it to them) but don't really like (because you missed the mark) is almost as bad as a card of a dog with a ball.

CHAMPAGNE TOWER

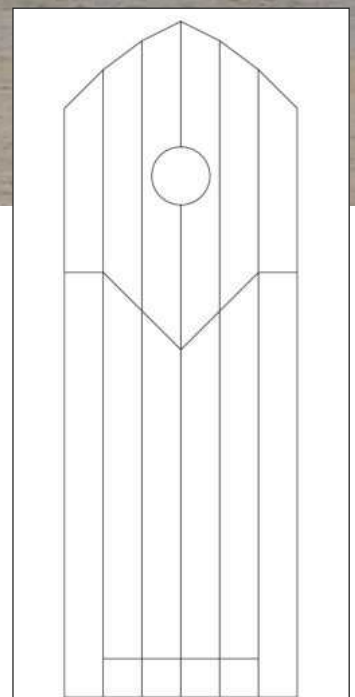
Edward Hopkins
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PIC 1. The champagne mountain. Three sides of a ziggurat drawn on one elevation. I include this because I think it is strangely beautiful. I'm not sure that a 3D version would be as interesting. I would show you the drawing of the champagne rocket as well, but it exploded shortly after take-off

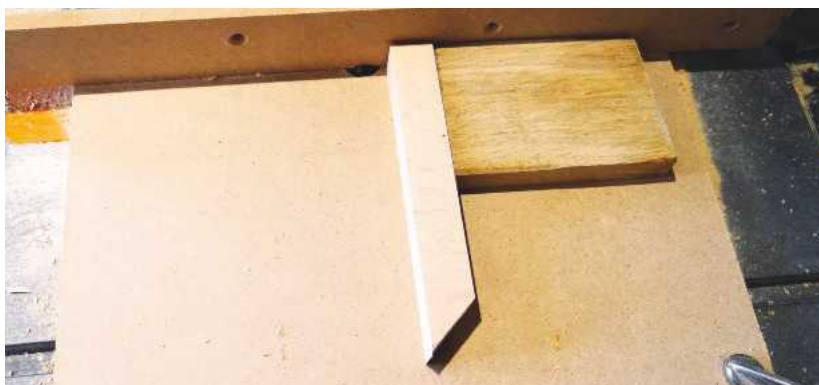


PIC 2. The champagne tower. A little fatter than it would be, but close enough to get an idea. I drew a porthole in the upper section so as to peek at the neck of the bottle, but when I'd assembled a prototype and could see it in the round, I thought this detail to be not only superfluous but positively distracting. It would have travelled through two layers of blocks and looked more like a tunnel or a giant woodworm hole. And it would have destroyed the scale of the building which, without it, could be a model of something massive





PIC 3. The cut from my chop saw, even with a fine blade, is not smooth enough, so important faces were trimmed on a guillotine. I already had a mitre trimmer when I saw this, the same model, rusty in the rain and missing its handle, at our recycling centre. I liberated it for £10. This allowed me the luxury of four angles permanently set up. A jig of any description should stay set up for the duration. Resetting only spells trouble. I removed the stop; it's useful for 45° cuts but gets in the way of 30°s



PIC 4. Strips were chamfered on all arrises using a router table. A secondary fence is necessary so that no jerk or judder is allowed. Chamfering end-grain is best done using a square block to push the workpiece. A slanting saw cut, especially at 45°, leaves a frayed edge, which gives a dodgy reading against the fence, but I found that by passing it through twice, a consistently even chamfer was achieved



PIC 6. A pair of long sides and short sides cramped up. The PVA bottle recommends leaving assemblies cramped for three to four hours. Here, three to four minutes were enough. The strips are so flat that suction keeps them together. After that, if some error has occurred, it is actually quite difficult to get them apart. I cleaned away excess glue before it set

I like boxes: we all like boxes. Boxes are the most obvious things for woodworkers to make, but how many boxes are useful these days? Things that need boxes generally come with them. Damp, moth and worm aren't the problems they used to be. What is a box with no function? Is it not the epitome of vacuity? If I were to make a box, it must have a dedicated purpose.

The thought was easy: wedding... baby... a box for a bottle of champagne! Given as a gift, the champagne would be central, with its connotations of joy and celebration. The 'packing' would be my box, which, if I made it smart, would elevate that joy and celebration. And this was no one-night stand. Once that bottle had been drunk, the box (no mere cardboard shadow) would stand, substantial, remaining on the shelf suggesting, silently, that something was missing. Tom would buy another bottle, box it, and forget about it. In this way there would always be a bottle of champagne (always an excuse, and a reason, for joy and celebration) within Tom and Emilie's reach. This, I wish them for their life together.

I took my usual circuitous route to get there. I like ziggurats. Perhaps I was a Persian, or (I'll save you the bother) an Assyrian. I like the aspiration of pyramids, pilgrimages and places like Glastonbury Tor. A bottle tapers. Its box might steeply taper... to a little building at the summit. I drew out a zig-zag climb. Then,



PIC 5. To achieve a clean cut, the workpiece must be held against a solid fence. I fitted the saw with a secondary fence standing some way out from the metal original so that the head could be swivelled round to cut at 45°, 30°, 15° and square without the cuts in the fence being so close that they'd destroy it. In this photo a little stop is added so that the 'foot' components can be chamfered identically



PIC 7. This is annoying. To ensure a good fit, the strips on the right are settled into the already glued assembly on the left, but here, and on all the assemblies, they would not mesh precisely. The zig of the zag (appearing almost vertical in this photo) won't close up. This is because the guillotine sliced fractionally off square, and two fractions make a gap. For the same reason, the zag of the zig was as snug as a bug

remembering (you have to be sharp) that a box has four sides, I drew on one side an alternative approach: the vertical thrust of ladders. On the third side I drew languid, hopelessly impractical curves defying gravity. The fourth side I left blank. Would Tom arrive by sensible strategic work; by dogged determination, or on a wing and a prayer? Or was he already there? And, more importantly, was I talking to myself? Designing a box not for Tom but for me? Stop. Eject. Load.

Ignition. Launch. What about a rocket? A champagne rocket? I could turn buttresses into fins, pediments into nose-cones, and have a porthole through which to see the neck of the bottle, its absence nudging restocking. This idea did carry me away for a while but then, I realised with a dull thud, that rockets are round. Anything square would look like a bad mediaeval dream.

Modelling modern architecture

I remembered my clients. For model modern architects I'd model modern architecture: a high-rise monument in say marble and smoked glass or, I know, beech. I had some beech waiting for a job such as this. I'd already sawn it into 1in (2.4cm or thereabouts) square strips and left them in stack under weight for quite a long time, albeit in an unheated garage. The square strips of beech would plane down so that four of them (the interior of the box) would take a bottle of champagne (diameter 3½in – not all bottles are the same, but this is standard), with just a little clearance.

The strips had to end up precisely square. Planing flat is no problem but squaring small sections requires attention. Thicknessing is then easy as long as the grain doesn't ruffle up. But even with good knives and careful handling, ripples and dips remained. I'm fortunate to have a wide belt sander, so I finished them through this. I wanted to take another pass, but was worried about the bottle fit being tight.

One end of a strip was guillotined at the required angle. The other end had to be chop-sawn with a stop set on the secondary fence (on the left side if you're >



PIC 8. Never discard offcuts of kitchen worktop: they're solid, flat, stable and impervious. I cut these up on the table saw so they were square too, and set them in a frame of heavy chipboard that I'd made for this purpose before. And always have a concrete block handy. You just never know



PIC 9. The softwood block is to maintain the nose cone in its proper place. The 16 loose blocks in the middle are to stop the sides collapsing in as they are glued. The little vertical line (top left) is where I scalloped out the four sides because over the course of the project, the beech had shrunk and the bottle became uncomfortably tight. The scallop was achieved by passing the sides over the table saw at right angles to the blade, guided, of course, by a fence



PIC 10. The final assembly was not entirely satisfactory. I want a massive iron cramping jig in three dead square axes. In its absence, a couple of concrete blocks have to do. I don't like the look of the strip one up from the bottom left-hand corner. I decided to leave this here for half an hour, which gave me the chance for some emergency sash cramping if required



PIC 11. Emergency cramping was required! As long as not too much has gone wrong, it can be remedied while the glue is still soft, but set enough to keep the well-behaved pieces in place



PIC 12. Isn't this a pretty sight? A slight discrepancy top right but that hardly matters. Emergency cramping for the sides, though. I probably won't get a First for this (sorry Tom), but I do want a smiley face sticker

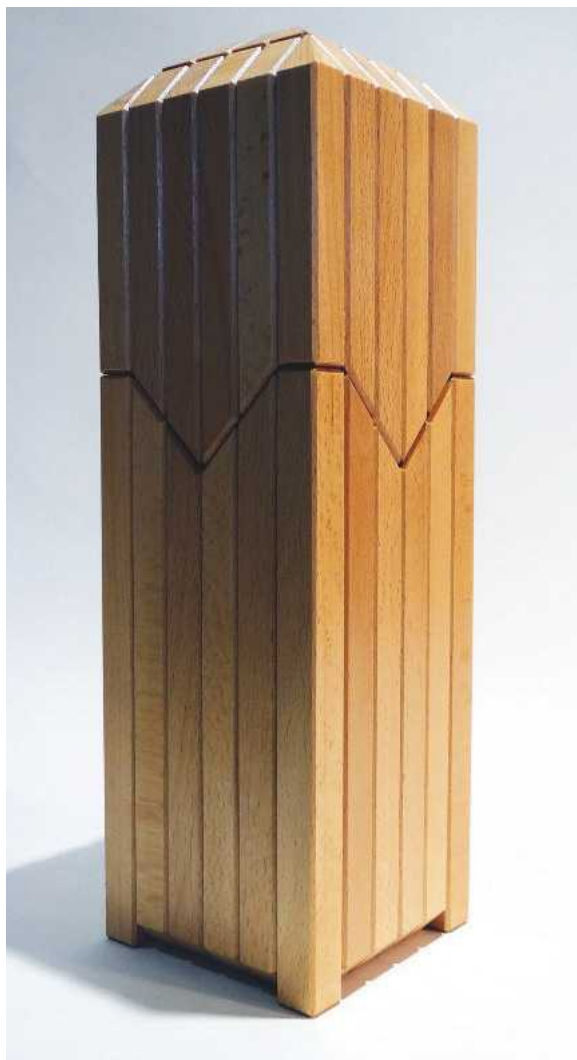
right-handed). This sawn end, however much you would like it to be, cannot easily be guillotined because (at least in my case) the device does not permit stopping. So I prioritised the cuts. The roof of this skyscraper, sorry, box, was clearly important, as were the upper faces of the box itself as the lid is removed. The under faces of the lid could therefore be left sawn. I cannot risk guillotining by eye. I'm aiming for engineering tolerances. I know I'll fall short, but now is not the time to do it.

Four towers

I made four champagne towers. The prototype was to see if the idea was viable both structurally and visually. The second showed me the need to finish the beech a little better, scraping and sanding so that no rougher wood would wax darker. The beech had shrunk over the course of the making, so it also showed me the need to scallop out the insides of Nos.3 and 4. The third went together pretty well, and so did the fourth although a couple of blocks had squigged out of position and had to be trimmed back manually (not disastrous but disappointing). I gave No.2 to Imogen for her 30th birthday (with appropriate and apparently unnecessary apologies). Tom and Emilie will receive the best, which is No.3, and I hope to finish No.4 well enough to give to Dickie (the brickie) for his 60th.

One of my weaknesses is in finishing. When I see the form a piece will take, I feel that the job is all but done. Here, though, I tried to work to Tom's immaculate

standards. Mmm. I have some reservations about the making (it is quite tricky to get it perfect), but none about the design. The joy of woodwork (for me) is in seeing an idea through from a thought to a sketch to a fact or, if you like, from one dimension to two to three. Three brings surprises. I couldn't have been sure that the box would have worked, but to my eye at least, it does. The foot, the zig-zag and the roof are variations on the one angled theme. They relate to each other, they each bring something different, and the conversation goes round and round. The chamfering throughout creates its own similarly related patterns. The tower shows unity amidst diversity. Whether or not it will find a harmonious place living with Tom and Emilie is another question, and one that is beyond me. All, however, cannot be lost: I do have reasonable taste in champagne. **GW**



PIC 13. I made no attempt to cut the top and bottom strips from the same stock. Even in the best buildings there is variation due to reflection



PIC 14. Aiming for perfection – and missing



PIC 15. The completed project, with the all-important champagne

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Growing upwards

Chris Jones shows how you can make this fantastic bespoke pallet planter for around £10



No space in your garden? Then grow upwards with this staggered planter! There is a vast collection of pallet-related projects available online, and it's easy to see why. As a waste product, pallets are often made of decent quality softwoods and are utterly versatile. With a little bit of effort, they can be turned into fantastic items. Better still, you don't need much skill to work with them.

I've wanted to make a pallet project for a while, and as I've recently moved into a flat with a small garden, I thought I'd build something to increase my planting space.

Planning

My partner wanted me to build a large planter for an awkward corner of our garden. As we're only renting and we ideally want to take our plants with us when we move, I suggested making something a little smaller but where we can grow double the amount of plants without them stealing each other's light. As you can see in **Pic.1**, the plans were carefully drawn-up, utilising our considerable art skills!

The next day, I went up to our local wine-merchant and asked them if they had any wine boxes that they wanted to get rid of. Fortunately they did, and so I made off with two large pine boxes for free.

My next stop was a garden centre, which is nearby. They had a 3m high stack of pallets. I asked for two (I realised I would only need one, but better to ask for a spare) and they kindly let

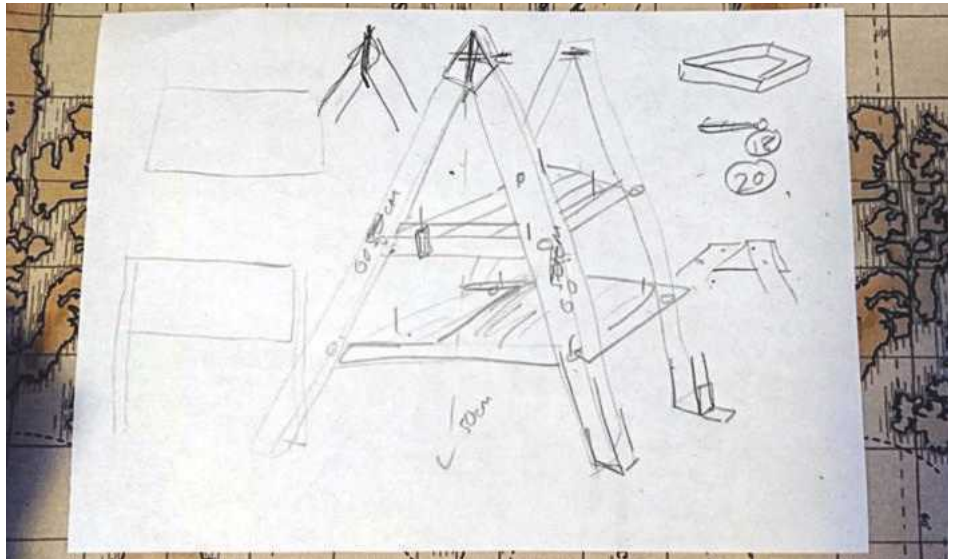
me have them for free. Up to this point, I had acquired all the materials needed for the project (excluding fixings, etc.) for free!

Before I set any plans in stone, I needed to break down the pallets into planks. I was expecting some of them to split or be unusable once taken apart, and that would give me the amount of stock I could work with.

Breaking down the pallets

Oh boy, this was fun for the first few minutes and then became a trudge. The first mistake I ran into was in my choice of pallets. The smaller pallet (with the softwood blocks) was simple to take apart, and this took around three hours. The larger one (with the particleboard blocks) was an absolute devil to take apart. So if you can, choose a traditional pallet with softwood blocks. The best method I found was to:

- Turn the pallet upside down.
- Remove the nails from the planks in the base. You can do this using a crowbar or a small wrecking-bar.
- Some nails will be below the surface of the wood, and impossible to get to using the crowbar. For these nails, lever up the plank between the block and the plank, and rock it gently. You should see a gap beginning to form between the block and the plank. Remove the crowbar, then hit the plank to close the gap. The nail heads should now stand above the plank, and you can remove them with the crowbar. Once all the planks have been removed,



PIC 1. The dimensions don't match the finished project; this is just a sketch!



PIC 2. If the pallet looks like this (i.e. particle or chipboard-esque), then put it back and source a softwood one



PIC 3. One of the pallets, once taken apart

PALLET WOOD SAFETY

For some great tips on how to determine whether or not a pallet is safe for reuse, see www.1001pallets.com/pallet-safety

hit the softwood blocks from the side with a hammer. Once you've removed the softwood blocks, the sharp ends of the nails will be uncovered. Hang the pallet over the edge of your workbench, and hammer the nails through. Flip the pallet over, and remove the nail heads with the crowbar. Hopefully, this method will allow you to end up with a lot of undamaged wood!

The last thing I did with the planks was to inspect them carefully for any imperfections. Splits, knots, and nails I couldn't extract were all marked and made visible, so I could choose the best pieces of wood for the project.

Making the V-frames

Once the planks were all marked, I could start by working out how to make the legs. I clamped a (relatively) straightedge to the end of the workbench. On the straightedge, I marked a centre-point. I did a bit of trigonometry, and decided I would need the inside apex of the triangle to be 1,000mm high. I marked the base on the straightedge (an equal distance from the centreline), and then laid two planks with the inner point resting on the two outer marks on the straightedge. I then marked the length of the hypotenuse on the inside edge of the two legs. Finally, using a straightedge perpendicular

to that of the clamped one, I could mark off the mitre at the top of the legs. Given how confusing that last paragraph was, the process actually worked, and the two legs fitted together perfectly. I cut a brace for the top section, then counter-bored, pilot-drilled and screwed the legs together. Finally, to ensure the legs sat flush on the ground, I butted the bottom of the legs against the clamped straightedge. Using a square, I measured up from the inside points of the legs and scribed a line across both pairs of legs. Using my hand saw, I cut off the pointed-ends from both pairs (clamped together) and surprisingly, they sat flush on the ground (Pic.7).

Making the top shelf

For the shelf rails, I cut one of the planks in half. The width of the plank was perfect for the rails, as the slats would be screwed into the rails on the top edge. The rails would then be screwed to the V-frames.

The shelves are 800mm wide, which is the length of the short planks from the pallets (Pic.8). This is also wide enough for a standard-length plastic trough, which is a happy coincidence!

Using the hand saw, I split three planks lengthways, to give me six slats. Obviously, if you have a table saw or bandsaw, you could

MATERIALS & TOOLS NEEDED

The simplicity of this project is reflected in what is needed to make it – basic tools only here! The cost is minimal too; most of the stock was free, and the bought parts came to £10

MATERIALS

- Two pallets (see 'breaking apart the pallets' for tips on choosing the best ones)
- Two wine boxes or wooden boxes (obviously you can make your own if you prefer)
- No.8 x 1in (4.0 x 25mm) screws
- Fence paint or exterior wood stain
- Two small general-purpose tarpaulins

TOOLS

- Tape measure
- Hammer
- Crowbar or wrecking-bar for removing nails
- Hand saw, with a 45-90° handle for quick marking
- 2 x clamps (G-clamps are fine, but Quick Clamps are much more efficient)
- A pencil and permanent marker
- Hand drill or cordless drill/driver
- Drill bits and drivers (or you can use a screwdriver)
- Abrasives and paintbrush



PIC 4. Free good wood!



PIC 5. Sawing both legs as a pair



PIC 6. The components for the planter are now starting to take shape



PIC 7. One of the completed V-frames

probably do this job in a fraction of the time, but, if you struggle to saw wood in a straight line, you'll probably be very good by the end of this project!

Once the rails and slats were all cut, I laid them out on the table, using an offcut piece of wood to give me a uniform gap between each slat. Once I was happy with how everything looked, I marked the ends of the rail. As I didn't want any sharp corners on the underside of the shelf, I marked a 45° mitre at the ends of the rails. I then clamped both rails to the table and cut off the ends. Once the rails were ready to be fixed, I counter-bored, pilot-drilled and screwed the first and last slat to the rails. By only fixing these two, I could make sure the shelf was square. To do



PIC 8. The shelves are 800mm wide, which is the length of the short planks from the pallets

this, measure diagonally across the corners: if the measurements are the same, it's square; if it's not square, tap one end to make it square. Once it is, tighten the screws and then fix the remaining slats to the rails.

To finish the top shelf, I added another piece of wood underneath, to give it a bit more stability (Pic.9). Once completed, I was confident the shelf was more than strong enough to hold a wine box filled with soil and plants. All being well, this project should last a good few years.

Making the bottom shelf

The bottom shelf is made in much the same way as the upper shelf; however, there are some important things you'll need to consider. The bottom shelf actually weighs a lot less than the top, so I used the thinner planks as slats (Pic.10), and the eagle-eyed of you will notice there are five slats on the bottom shelf



PIC 9. To finish the top shelf, I added another piece of wood underneath, for increased stability

as opposed to six on the top. The slats need to start from the inside edge of the V-frame leg. The reason for doing this is to make sure you're not hanging this shelf so far that it tips over, and to ensure the heavy weights go through the centre of the V-frame (i.e. by using the top shelf).

The bottom shelf was a bit of an experiment, but once the shelves were attached to the V-frames, I stood on the bottom shelf and it didn't tip over at all. I also added one plank at the back, which would add some strength to the structure. It doesn't move or wobble at all.

Attaching the shelves was fairly tricky. I used my trusty clamped straightedge on the table, and put the base of the V-frames against it. I then measured from the straightedge to where I wanted the top of the upper shelf to be. Measuring a few times to double-check the shelf would be level, I then screwed the shelf rail to the



PIC 10. As the bottom shelf weighs a lot less than the top, I used the thinner planks as slats



PIC 11. The underside of the bottom shelf



PIC 12. The top and bottom shelf attached to the V-frames



PIC 13. The shelves after receiving their coats of fence stain...



PIC 14. ... and the V-frames



PIC 15. The completed planter frame with the wine boxes in place



PIC 16. One of the wine boxes with the added lining, ready to be filled with soil, and the eagerly awaiting herbs

V-frame. I then put the other V-frame on the table, and screwed the shelf rail to that, too. The bottom shelf was fitted in the same way, and then the build was complete.

Weatherproofing & turning wine boxes into planters

I managed to pick up a five-litre tin of fencing stain for £5, which was perfect for the rough-sawn pallet wood. To paint the planter shelf, I broke it down into its four parts, and painted each separately. In the future, I'm just going to be painting it as a complete unit, but to give it some protection against the British weather, I thought it best to paint every inch! Prior to painting, I took a knife-edge to the facing edges of the shelves and the V-frames; this would ensure that any

splinters or sharp edges were removed. Two coats of the fence stain were applied, with a light sanding in between each of the coats.

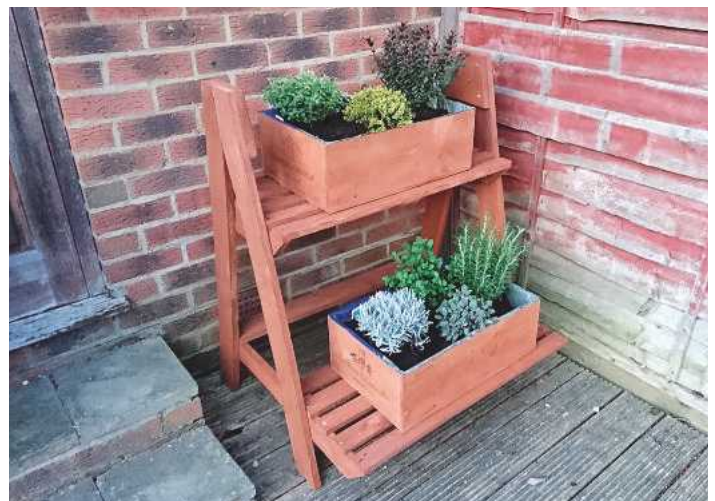
For the wine boxes, I gave these two coats of fence stain each, and they looked ready to go. However, it's better to put a lining in the box to ensure the wood doesn't get too waterlogged and rot, and to prevent the plant roots from escaping through the sides. My local supermarket came to the rescue, with a 1m-square tarpaulin for £1 each. I bought two, and stapled these into each of the wine boxes. Finally, to give the boxes some drainage, I drilled six holes into the base of each, lining up with the gaps between the slats on the shelves. To stop the soil from leaking through the holes, porous rocks were placed on top of the holes, and then over-filled with soil.

As you can see from the photos, the herbs in the planter boxes are now well-established and thanks to the British weather, well-watered and wind tested, too! The boxes drain well, and there is plenty of room either side of the boxes for storing plant pots.

The total cost of the project was £10, not including the plants. I recently spotted a very similarly designed planter in a German low-cost supermarket chain for £40, and it was smaller with less planting area and you'd still need to paint it. Moreover, from taking apart the pallets relatively carefully, I still have one pallet's worth of wood left for building something else. The best part of this project, though, is the fact it can be built by even an amateur woodworker, over the course of a weekend, for next to nothing. **GW**



PIC 17. The herbs once planted



PIC 18. The completed project with both planted up wine boxes in situ

Following Andy King's review on page 14, we're giving one lucky winner the chance to get their hands on all of the kit tested, which totals over £700!

Here's what's up for grabs:

SENCO PCS1290 Systainer Mini Compressor

The Senco PCS1290 is a small but powerful compressor embedded in a Systainer, which is fully compatible with all Systainer systems storing power tools, accessories and consumables. Embedding the compressor in a Systainer ensures it is properly protected and easy to carry, thanks to the ergonomically shaped handle. Moreover, the Mini Compressor provides 1HP of power, has a tank volume of 4l and a very low noise level. It features front panel access for hose connection as well as easy-to-read dials.

3-in-1 FiP18Mg, FiP35Mg & SLS18Mg-L Systainer set

The FinishPro18MG brad nailer, the FinishPro35Mg finish nailer and the SLS18Mg medium wire stapler are now combined together in a Systainer set. These great tools are not only ideal for use in the workshop, but are especially suited to usage on job sites. To make the transportation and storage of these tools even better, you can now place all three in a special Systainer, thus eliminating the need to carry three cases. A special insert places the tools in their own secured space, preventing them from moving around and ensuring they are well protected. You also have the option of placing some fasteners next to them if desired. Since the Systainer system is widely used, you can easily connect these to existing power tool cases.

TANOS Transport Trolley 'SYS-Roll'

Offering an easy way to transport your Systainers, this handy trolley features roll board and sack barrow function and can easily be manoeuvred up and down steps due to its extra large wheels. It also has rotating and lockable front wheels, an integrated drawer for storing small parts, the hose, plug and manuals, and there is also an adjustable safety belt included.

PRIZE BUNDLE CONTENTS

- 1 × PCS1290 Systainer Mini Compressor
- 1 × 3-in-1 Systainer set (tools included: FinishPro18MG brad nailer, FinishPro35MG finish nailer and SLS18MG medium wire stapler)
- 1 × Mini Systainer with a selection of fasteners
- 6 × coupling plugs
- 1 × trolley system with integrated drawer housing the hose, plug and manuals

HOW TO ENTER

To be in with a chance of winning the complete Senco Systainer Compressor bundle with 3-in-1 tool set and accessories, just visit www.getwoodworking.com/competitions and answer this simple question:

Question: How much is the PCS1290 Mini Compressor worth?

Once you have answered the question (clue: page 16 may well point you in the right direction), you will also need to click on the link to Senco's Facebook page (www.facebook.com/PoppersSencoUK) and like and share their dedicated post in order to enter. And if you're not selected as the overall winner, don't worry, as Senco polo shirts will be winging their way to the 10 chosen runners up. Good luck to all!

The winner and runners up will be randomly drawn from all correct entries. The closing date is 23 June 2017

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

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PACKAGE 1



‘Tweed’

Despite combining a classic design with traditional elements, **Philip Dobbins’** award-winning unique console table embraces modern technology at every turn



The ‘Tweed’ console table, made in a grey engineered veneer and outlined with a black edge detail, features four small drawers. Comprising an elegant, classic design with many traditional elements, such as precision fitted drawers and ebony corner stringing, this piece embraces modern technology at every turn. CNC machining has enabled Philip to push and evolve his original 1990s design concept, while the engineered Italian poplar veneer is a modern take on an ancient technique.

Key features

The choice of veneer and colour are the key distinguishing features of the design. To emphasise this the table’s form has been reduced to essentially two planes, with the vertical presenting a single face wrapped around the radius corners. The black edge detail defines the form. Veneer work features very strongly in Philip’s repertoire and the selection of

a concrete-grey veneer that has the visual appearance of textile, almost more than of wood, is quite an exciting development. This textile-like pattern is formed by repeatedly laminating and then slicing the veneer at different angles until the final veneer is achieved.

The table body is stack-laminated MDF and the legs are poplar, both chosen for stability. The Alpi veneer was chosen for aesthetic reasons and its low environmental impact, and drawer linings in sycamore and drawer base, were chosen for colour and contrast. The finish is matt acrylic, providing wear and fade resistance.

Curve appeal

Traditional bench skills counterbalance CNC work in the table body and legs, and drawer construction is traditional, with a precision flush fit. “The veneer work required particular attention, working around the small radius of the legs and the close fit of the drawers,” says Philip. The carcass of the table is formed by stack



"The veneer work required particular attention, working around the small radius of the legs and the close fit of the drawers"

– Philip Dobbins – designer-maker of fine hand-crafted contemporary and traditional furniture

laminating: CNC profiled layers of MDF are bonded together to form an accurate and stable core. Top and bottom surfaces are veneered before assembly; the flat sides are then veneered using traditional caul and cramp. The curved front is veneered in a vacuum press – essentially a large sealed bag containing the core and veneer. When air is removed from the bag, atmospheric pressure presses the core and veneer together while the glue sets.

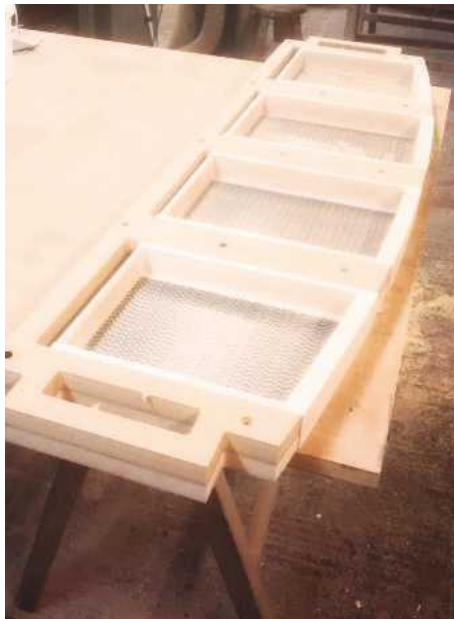
Practical usage

Created speculatively, 'Tweed' was conceived as a domestic console table, serving as an accent piece, with more specific function as a hall table, or as a table in a dining room. The addition of drawers enables a practical usage.

'Tweed' has since been sold as a bedroom piece with a matched pair of bedside tables, and Philip is hoping to recreate the table later this year. **GW**

PHILIP DOBBINS FURNITURE

Philip Dobbins creates finely crafted furniture, expressing contemporary design grounded in tradition and highlighting unique and exquisite materials. Inspired by historic and contemporary sources, Philip's work exemplifies all that is outstanding about modern furniture and demonstrates traditional skills honed over the last 40 years of practice from his base in Yorkshire. In addition to pieces produced for exhibition, Philip is also commissioned by clients, ranging from private individuals to large corporations. Commissioning work allows the client to explore wider design themes, a progressive approach to methods and materials, and the development of a special working relationship between client and craftsman. To find out more about Philip and his work, see www.dobbins.co.uk



All four drawers are pre-fitted in the table carcass before the top and bottom are bonded to the central layers of the stack laminate construction



All the layers of the stack laminate construction have been veneered on their vertical faces. The drawers are fitted before the top and bottom of the carcass are bonded to the core



The interior faces of the legs are veneered in a vacuum bag press...

AN AWARD-WINNING PIECE

Celebration of Craftsmanship and Design are delighted to be working with The Worshipful Company of Furniture Makers (WCFM) to recognise truly extraordinary design among hundreds of excellent pieces. 'Tweed' was 'Highly Commended' at last year's event, with the judges saying the following of the piece: "A beautifully restrained and sophisticated design, executed with great precision and craftsmanship."

Most recently, it was also announced that 'Tweed' is being awarded a prestigious Bespoke Guild Mark, which further attests to this piece's excellent design, choice of materials used, function, and above all, craftsmanship



Here you can see the bottom of the table being bonded to the carcass



... followed by the curved faces

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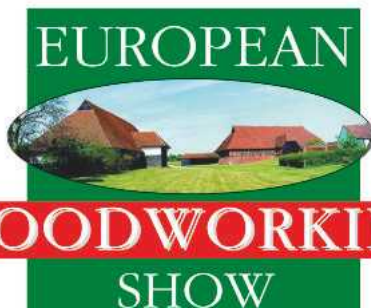


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A holy commission

Commissioned by his local church, **Peter Benson** sets about designing and making a legilium – a reading desk with a slanted top that can be folded when not in use

When the church warden discovered woodworm in the church's folding lectern, he started looking into possible replacements. "My brother could make one of those," said organist Hilary, and the idea was born. I'm not the fastest woodworker in the world: I'm still only a beginner, since I took up the craft after retiring from school teaching, but I have made progress, and I reasoned that my workshop should be able to cope with such a project. It looked straightforward, without curves, decoration or complicated joints, but it did have to be sturdy and look good, with straight lines, perfect joints, and a beautiful finish. At this stage of learning, the latter are my goals rather than my strengths!

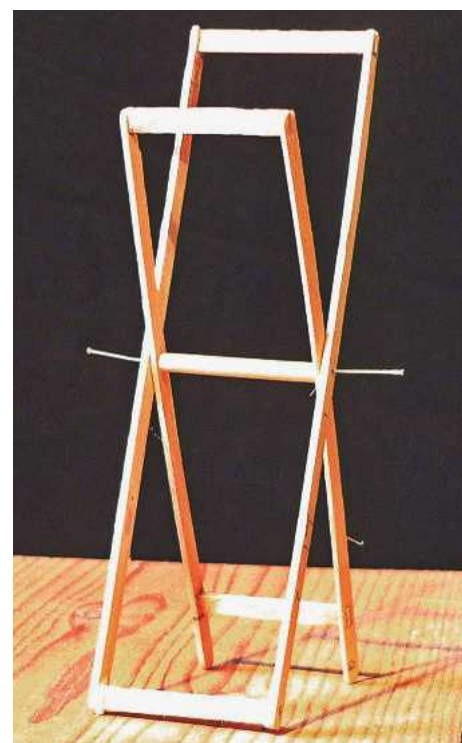
The design

Once I had studied some of the existing legiliums available, I started designing my own. The overall dimensions seemed to be pretty standard, such as height and width (1,270 × 533mm) and size of the book platform (508 × 483mm). The sizes of the timbers were also mostly similar at 32 × 38mm, but there was a split of opinion when it came to the book platform – solid wood, man-made material, or canvas. I wanted the legilium to be stable, of course, but I was particularly keen that it should fold up easily and take up minimal space when folded. Eventually, the emphasis on its sturdiness pushed me to select a platform of man-made board with a frame. Additionally, my friend Arthur donated the timber for the frame – and the perfect piece of oak-faced board.

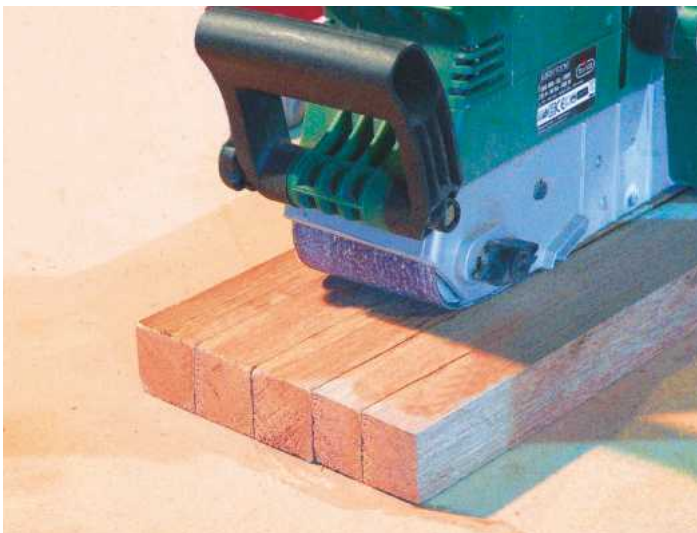
There are three parts to this design: two frames, one just smaller than the other, and the book platform, attached to the top of the larger frame, and latching

onto the top of the smaller one when the unit is opened. Evidently some hinges or pivots would be needed for the two movements – folding the two frames inside each other, and folding the platform up and down. A technique would also be needed to hold the unit open when it was in use.

An important step in my design involved a model, made of coffee stirrers (**Pic.1**). Several models were needed to get the correct relative dimensions, angles, etc. I decided to include a centre cross-piece in the smaller frame as this would help keep it all 'square', and could be used to hide the threaded rod, which runs right across the legilium, providing the pivot and holding it all together. Since the rod is threaded, it also allows the user to adjust the 'stiffness' of the joint, to control how easily the frames open and close, by loosening or tightening the nuts on its ends. Further, I imagine that the environment in a church will vary widely in temperature and humidity, so this adjustment will probably be needed, especially as the wood ages. >



PIC 1. An early model, which was made using coffee stirrers



PIC 2. Sanding the posts together



PIC 3. Rounding over arrises

Construction: the frames

The frame material was taken from two planks. The first step was to plane the plank on two sides and one edge, then I cut the components slightly oversize from the planks, allowing extra length for the tenons on the five cross-pieces (two for the larger frame and three for the inner). (Uprights = 1,270mm for the outer frame; 1,118mm for the inner one. Cross-pieces = 489mm for the larger frame and 413mm for the smaller one).

The four long sides of the frames were now planed and sanded together, to retain their similar dimensions (Pic.2), then I sanded the five cross-pieces similarly. I don't have a drum sander, which would have been ideal for such work, so I am planning to build my own – watch this space!

I also rounded over every arris (Pic.3) using a small-radius router cutter, before assembling, since this would be difficult to do once the unit was constructed.

I cut blind mortises in each piece on my slot mortiser (Pic.4), squaring up the inside corners with a small chisel. If you choose to make your own version, remember that the side pieces are 'handed', or mirror-images of each other, so the mortises must face each other in the finished unit.

The centre cross-piece (on the inner frame) is slightly wider than the others, to accommodate the 8mm threaded rod (Pic.5). Since I do not have a drill 406mm long, I split the piece along its length on the table saw, then used the router in the router table to cut a 9mm half-round slot down the facing edges of each piece, before gluing them back together to resemble the original. I then clamped it between cauls and left it overnight.

Using the mortises, I marked out the 12mm stub tenons on the ends of the five cross-pieces, then cut the tenons slightly oversize on the bandsaw, with a table extension to keep the workpiece horizontal while being cut (Pic.6). The mortises and tenons were then labelled, to ensure that they all paired up correctly into their intended places. I then trimmed each tenon to fit into its correct socket, using a sharp chisel.

At this stage the M8 threaded rod had to be

installed. Since I wanted it to cramp the middle of the inner frame, I added a 'T' nut at each end, countersinking the nuts into the ends of the tenons (Pic.7). 'T' nuts are wonderful as they take up almost zero space – the threaded portion of the nut is actually inside the wood and a 24mm counter-drill sinks the flat, circular portion into the wood: a nut without protrusion. To accomplish this 'locking' procedure, I had to flatten the spikes on the 'T' nuts, bending them level with the circular plate, so the nuts could turn without grabbing the wood, as they would usually be designed for.

Next, I assembled the inner frame (Pic.8), taking great care that every joint fitted cleanly: it is not necessary for each tenon to fit tightly into its mortise, for there has to be enough space for the glue: especially at the 'bottom' of the mortise there should be a small space to house the glue pushed in there by the tenon, but the shoulders must pull up cleanly. I then spread PVA glue on to all the mating surfaces, reassembled and cramped across the cross-pieces, using cauls to spread the pressure and protect the wood. Check for squareness by measuring the two diagonals of the frame: if it's not quite square, add an extra sash cramp on the longer diagonal and exert just enough pressure to pull the frame square.

The outer frame is assembled in the same

manner, except that it has to incorporate the inner frame (Pic.9), and especially the M8 rod, which was left sticking out of the sides of the inner frame. The ends of the rod must be housed in holes in just the right places, so I dry assembled the outer frame around the inner one, and marked exactly where the sides should be drilled to accept the rod ends. When drilling clearance holes, use a drill press if possible, to ensure the holes are truly perpendicular to the sides, since this is critical to a smooth folding process. With all drilling on this project, I allowed a bit of extra clearance, as the climate in the church can vary hugely during the year.

I then placed a couple of large washers on each end of the rod and between the frames, to keep the inner frame centred inside the outer frame. I added another washer on the outer ends of the rod, and secured these with M8 hex nuts for the moment (M8 acorn nuts will replace the hex nuts as a final touch). I cramped up the top and bottom of the frame using protective cauls, checked for square, then set aside for the glue to set.

The book platform

This design uses a 9mm-thick panel, finished with L-shaped lippings of oak and with an oak bookrest across the bottom. The platform is attached to two battens or 'bearers' with lifting



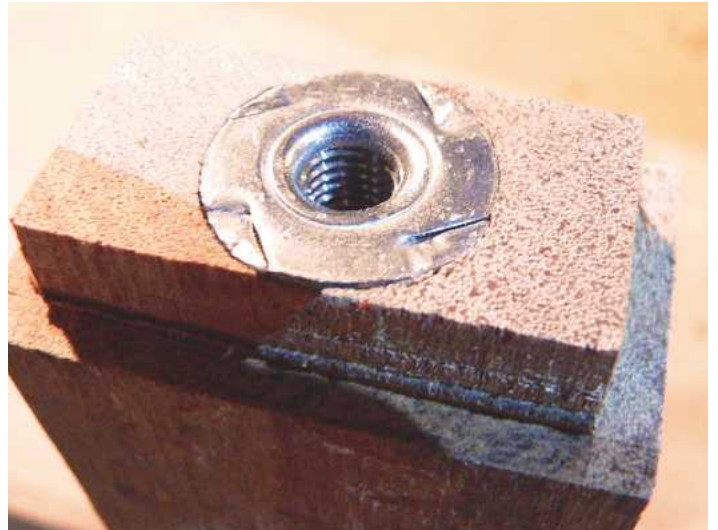
PIC 4. Cutting a mortise on the slot mortiser



PIC 5. Routing the trough for the rod



PIC 6. Cutting a tenon on the bandsaw with a guide and stop



PIC 7. 'T' nuts on the ends of the centre bar

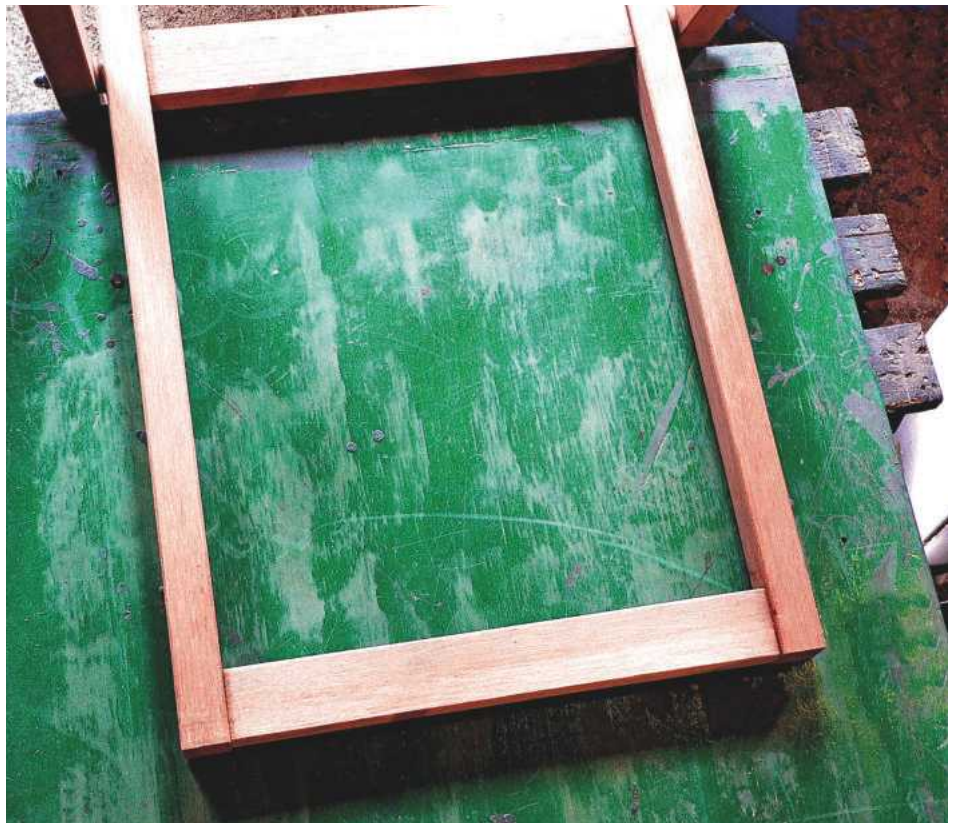
blocks, pivoting on M8 bolts mounted through the tops of the larger frame members. The rising system is so the platform sits comfortably on the tops of the uprights in use, but then swings over and down against the two frames when folded. I cut notches in the bearers to lock onto the tops of the inner frame when opened, thus keeping the unit open and stable.

The lippings are L-shaped to fit around the top three sides of the platform, for aesthetic reasons. Careful cutting of the 45° ends means that the lippings form a frame, fitting nicely around the top of the platform. I cut the lippings slightly overlength at first, then adjusted them to fit, using the disc sander (Pic.10).

I chose to attach the three lippings first, and left the unit overnight for the glue to set (Pic.11), adding the bookrest at an additional stage the next day. I don't know if it was necessary to do this in two stages, however.

The book(s) are intended to rest on the strip of oak across the bottom of the platform (Pic.12), slightly higher than the other edgings, and shaped a little at each end. Once glued in place, I added screws (Pic.15).

Each bearer is constructed using a strip of wood, tapered towards the front, glued and dowelled to the riser block, which was itself cut from the original plank leftovers, and shaped



PIC 8. Inner frame on the bench



PIC 9. The two frames assembled



PIC 10. Trimming the mitres on lippings



PIC 11. Lippings being glued to the platform – no bookrest



PIC 12. Platform with bookrest added



PIC 13. Two bearers plus the prototype



PIC 14. One bearer in place showing notches, raising block and M8 bolt

on the bandsaw (**Pic.13**). A very early mock-up of the bearer-riser is shown with the final version. It is worth noting that the grain of the riser block should run parallel to that of the bearer, so that the folded state does not show the end-grain.

The 'latching' mechanism for the platform consists of notches cut into the underside of the bearers so they engage with the tops of the inner frame when opened. 8.5mm holes were drilled in the riser blocks and the top members of the inner frame: these carry the M8 bolts, which hold the bearers and platform and allow it to pivot from open state (almost horizontal) to folded (vertical and outside the frame members). It's important that these holes should be perpendicular to the members, so the bearers can rotate smoothly on the bolts. Note also the washers included to allow for ease of movement, and to adjust the openings. The platform is bolted to the bearers using M5 countersunk bolts, with washers and hex

nuts under the bearers. I decided to leave the 10mm dowels slightly proud of the bearer surface, so they would also engage with small indents on the underside of the platform, thus providing extra linkage.

I drilled pilot holes for three screws to reinforce the attachment of the bookrest (**Pic.15**), as a belt-and-braces policy, since failure of the bookrest would surely result in serious damage to the heavy book, the reader's ankles, and sang froid. Later I cut 8mm oak plugs to fit in the counter-bored screw holes.

The platform was stained to tone with the frames, which were treated with finishing oil (**Pic.16**). As a final touch, I replaced the temporary M8 hex nuts with acorns for a tidier finish: if installed any earlier, these could have been easily scratched with all the necessary adjustments. The legilium was now complete, and as shown in **Pic.17**, the project can also be folded for storage. **GW**



PIC 15. Drilling to attach the bookrest



PIC 16. Finishing



PIC 17. Unit folded and placed against the wall

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Workers of wood

In a new series aimed at creating a better understanding of timber, its uses and other associated areas of interest, **Peter Bishop** shows that no matter where you place yourself within the broad category of woodworking, it should be enjoyed in all its guises

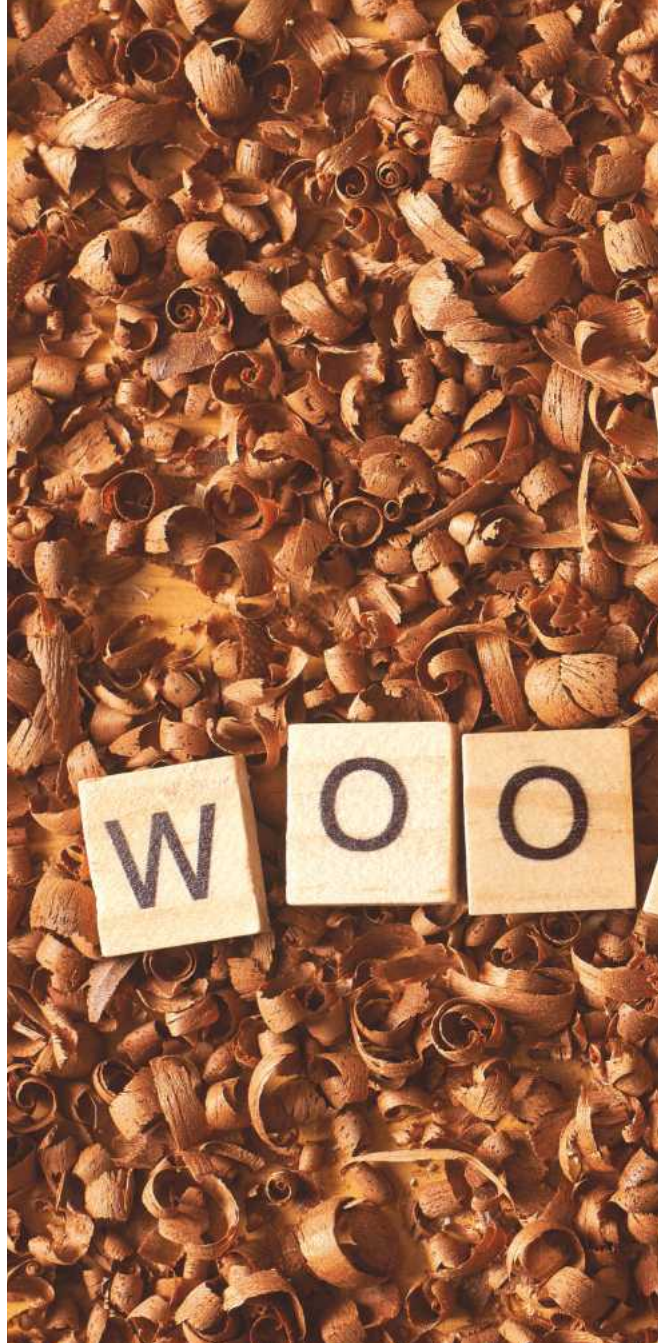
Workers of wood come in a variety of shapes and forms, and I'm not referring to the human body! To earn a living I undertake various woodworking tasks: I make furniture and write about it, for example. I have no formal qualifications as a 'cabinetmaker' and therefore do not claim to be one. I get slightly annoyed when someone calls me a carpenter, especially as it's obvious they don't know the difference between one who, say, carps, joins, or bodes. Perhaps we should not expect others to know but perhaps we ourselves should?

Of course there are those who are multi-skilled or trained but, individually, the following classifications, in no particular order, are how I see it:

Cabinetmaker

This exceptional breed of craftspeople are concerned with furniture making or 'cabinet work'. In most instances, each piece or project is a stand-alone item not directly joined to anything else. It is also considered that cabinetmaking refers to good quality work rather than something thrown together with screws and dowels! Certainly not flat-pack stuff bought from a multi-national outlet of some form. Most cabinetmakers will be able to design from scratch and build individual and unique pieces that, rightly, should command a premium price.

RIGHT: Edward Johnson's 'Drinks Cabinet – 1411' – this cabinet was awarded a prestigious Guild Mark in 2015 for its exquisite craftsmanship, considered design and innovation (Guild Mark No. 458). Beautifully crafted in walnut with scorched oak and brass detailing, the Orbis bar embodies innovation and precision craftsmanship at its best



ABOVE: Burke & Marshall's 'The Hugo' drinks cabinet. The top drawer extends to reveal a bespoke polished slate surface for preparing your favourite tipple. All dovetails are cut by hand, drawers can run on either undermounted soft close runners or their own system of fully extending handmade wooden runners. Limited to just 10, each branded and dated



Bodger

Bodgers were a dying breed but are now enjoying a bit of a revival. Originally based in coppice woods they were employed to turn, or bodge, legs and other components for chairmakers. They used a simple pole-lathe, which was easily transported from work site to work site. The phrase 'bodger' is often misused to express an opinion of low quality work. It might have been repetitive work but it was far from poor quality. The skill of the bodger was to repetitively make components that matched each other. Simple, country furniture that is now antique often displays that skill for us to see today. >



ABOVE & RIGHT: Students on Peter Wood's chairmaking courses trying their hand at traditional pole-lathe turning

Carpenter

Carpentry applies to the structural part of woodworking in buildings, ships and any heavy wooden engineering applications such as bridges and form work. Therefore a carpenter is trained to work from drawings and is able to prepare constructional woodwork, such as a roof. The joints made in carpentry are structural, their strength being the main requirement. These include such joints as bird's mouth, halving, saddle, scarfed, stepped, keyed, etc. In the trade, this activity is called 'first fix'.



ABOVE: A roof under construction



ABOVE: Two of Michael Huntley's practice scarf or bird's mouth joints, which are useful for sawing practice



ABOVE: An example of first fix joinery – courtesy of Dovetail Timber Frame



ABOVE: Modern oak windows



ABOVE: A bespoke timber-framed sash window

Joiner

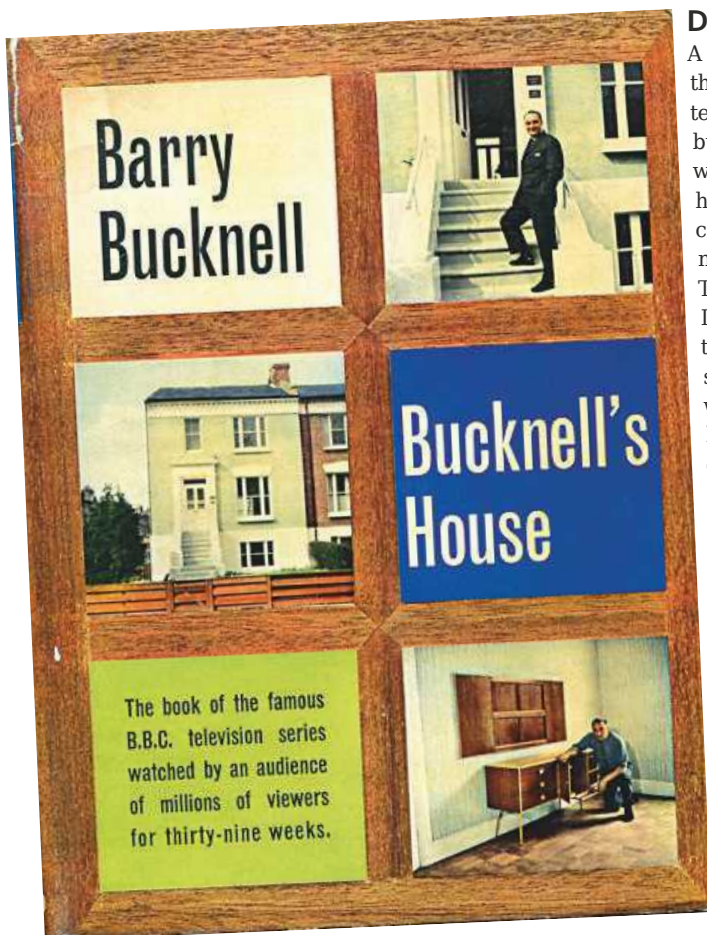
The joiner's craft is preparing the wood finishings for buildings, inside and out. These are not structural; carpenters do that, but are generally more decorative, including windows, doors and stairs. Historical definitions of a joiner are one who uses quality materials, prepares those materials accurately, and can set out, fit and fix the components that have been cleaned off ready for finishing. This end of the trade is commonly called 'second fix'.



ABOVE: Various examples of handmade doors



ABOVE: A bespoke fitted staircase



ABOVE: Barry Bucknell's popular book, *Bucknell's House*

DIYer

A breed of do-it-yourself merchants ranging from the incompetent through to the exceptional. The term applies to all aspects of household-related building, repairs and maintenance – not just woodwork. This band of merry people would not have been recognised before the middle of the last century. TV brought 'home improvements' to the nation's attention and, probably, the very first DIY TV personality was a chap called Barry Bucknell. In the 1980s a comedian called Dick Emery used to do sketches involving a DIYer. Invariably, after showing off his latest efforts to his mate, the shelves would fall down or the stairs collapse. I wonder how many times that's happened to us and whether or not we would ever actually admit to it!



ABOVE: Crooked shelves: the mark of the home DIYer!

Furniture maker

Similar to cabinetmakers but, perhaps, not as qualified or time served, the range of potential projects that can be produced by this group is vast – everything from a simple stool through to a multi-joint Windsor chair, and more. Some can be good, some bad. I've seen hand-made furniture that is as rough as a bear's backside, is covered with filler and pencil marks, and people still buy it! At the other extreme it is delicate, of beautiful proportion and style. Horses for courses, I guess. >



ABOVE: Johnson Furniture's 'Expanding Dining Table and Chairs'. This circular dining table expands from seating six people to 10. The expansion leaves are hidden in the body of the table and the top is made from six segments; rotating causes these to move apart thus revealing the expansion leaves, these then rise up from the centre and can be unfolded. The top is veneered with walnut curl in a 12-piece starburst formation. The grain matches in both the original and the expanded states



ABOVE: A lovely example of a handmade dovetailed wooden bench



19th-century industrial wooden foundry moulds



Pattern maker

Another dying breed. These craftspeople prepared wooden moulds and models from which metal castings could be made. This skilled art used wood that was easily carved but fairly close-grained, such as lime. It was likely that they could also use other materials such as clay as well. Most patterns are now computer-generated and can be transferred directly to the production line with little or no human intervention.

LEFT: A wood machinist at work

Wood machinist

This is someone who has been specifically trained to set up and use woodworking machinery to produce single or multiple sections and profiles, using everything from saws through to moulding machines. Typically a wood machinist will be able to take one or more pieces of sawn lumber, cut it to size, plane and mould it and also produce appropriate joints with, for example, mortise & tenon machines. The machinist does not, usually, put together the items; that's left to the joiner who might make the windows and doors from the profiles produced.



ABOVE: Examples of bespoke wooden mouldings

General woodworker

This is the 'catch all' that gathers us all up. Calling yourself a woodworker avoids being bracketed into one of the categories mentioned, especially if you don't measure up to or dislike being called one or t'other!

There's a whole host of other wood-related trades that did have or still have their own description. Today, when training takes place, machining, carpentry and joinery seem to be put together and cabinetmaking is dealt with as a different beast all together. Most 'woodworkers' will be multi-skilled in a wide range of applications, from turning to veneering. If, for example, you're into restoration, then you'll have to be able to not only work with the wooden components but also deal with upholstery, staining and polishing, etc.



ABOVE: An example of woodturning

Conclusion

If you like working with wood, then go on enjoying it and don't worry how people may classify you, and if you fancy adding a new skill to your repertoire, then see our courses list on page 12. Wood is such a warm and forgiving material that it should be appreciated at every opportunity. **GW**



ABOVE: Antique restoration



ABOVE: Hand polishing



ABOVE: Laying wood veneer



ABOVE: Woodworking is such a pleasing pastime, however you badge yourself!

**WIN
1 of 20**

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HOW TO ENTER

To be in with a chance of winning 1 of 20 IRWIN WeldTec CSB 165mm/24T cordless circular saw blades, just visit www.getwoodworking.com/competitions and answer this simple question:

Question: What percent stronger are the sub-micro grain carbide teeth?

The winner will be randomly drawn from all correct entries. The closing date is 23 June 2017

Only one entry per person; multiple entries will be discarded. Employees of MyTimeMedia Ltd, IRWIN and Rave Communications are not eligible to enter this competition





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Developing woodworking skills in Uganda

Kids Club Kampala (KCK) is a brilliant example of a charity that is exploring ways of teaching woodworking to impoverished members of a slum community in Uganda, helping them to 'craft' their way out of poverty by providing them with the tools and skills they need. **Jonathan Fraser** tells us more

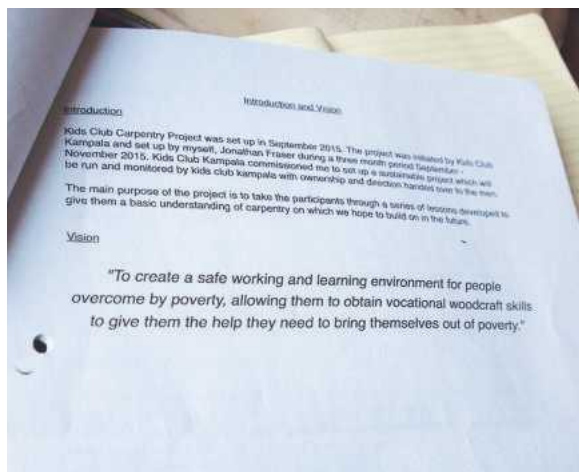
Kids Club Kampala (KCK) is a Christian organisation, which aims to bring hope and love to vulnerable children and to transform poor communities in Uganda. Founded in 2009 by Corrie Fraser and colleague Olivia Barker, the charity was set up to overcome the lack of hope and self-esteem of children living in situations of extreme poverty, and works to empower children and women from disadvantaged communities to bring about sustainable changes through different development projects. KCK work with some of the poorest and most vulnerable communities in the urban slums of Kampala, Uganda, currently reaching over 4,000 children and their families every week, with a fantastic team of over 100 local volunteers who give up their time and energy

to care for the children in their communities. Projects include children's activities, feeding programmes, clothing projects, a school sponsorship programme, women's initiatives, community development programmes, a music and dance project and a football league, a project supporting abandoned children, plus the recently introduced carpentry project.

The charity runs alongside their in-country Director, Samuel Wambayo, a local Ugandan, who received funding to build a carpentry workshop in one of the main slums in Uganda. This slum has virtually no employment with people struggling to meet the most basic of human needs, such as the provision of food, clothes and clean water. The carpentry project was developed in response to a need highlighted by some of the members of the slum community themselves. The charity already works with vulnerable children in the slums to provide access to education and providing for their basic needs. They also work with women in the slum, giving them materials and tools to make crafts and clothing. The charity buys these from the women and then reinvests the money they receive from selling them in the UK back into their groups. Some of the young men in the community asked the organisation to support them, too.

Setting up the carpentry project

Samuel Wambayo, the Ugandan Director of the charity, was approached by one of the men in the slum, who asked Samuel why the charity did not work with the men. Samuel replied that the men had never expressed an interest in working alongside the charity, and was surprised to hear the man tell him he was interested and that he had a number of friends in the slum who could



FAR LEFT: The carpentry project's mission statement



LEFT: A new student learning how to use a hand saw



ABOVE LEFT: Sandy, the workshop's new woodworking teacher

ABOVE: Getting to grips with a try square

perform basic carpentry skills. He said they wanted to set up a small workshop. Realising that this man might be pulling his leg, Samuel set him the challenge of finding 10 men who were interested, and could meet him the next day at 8am. If they would take it seriously, then they could talk further. To his surprise, he arrived the next morning and there they were at the entrance to the slum waiting for him, and that is how it all began. The organisation then began applying for funding to finance the setup of a workshop. The carpentry workshop was built in August 2015, and at the beginning of September that same year, the carpentry training lessons officially began. Although initially a very large number of men were interested in joining the project, in the end a total of 30 actually officially enrolled. Of those 30 men, 17 became regular committed members. There are five workstations and workbenches in the workshop, and a rota and training timetable was devised with each group coming to the workshop for two, three-hour carpentry training sessions per week.

I spent three months helping with the setup of this project during September and October of 2015. As a qualified Scottish carpenter currently working in Birmingham, I thought it would be beneficial to help the charity devise the training and teaching materials and kickstart running the lessons and training sessions. I was also tasked with sourcing good quality tools from the UK to bring out to the project, the like of which many of the men had never seen before.

The group members are looking to try and set up a shop where the graduate students can move to so they can sell their work and the development of their skills can be monitored over time. Currently, graduates find work themselves after completing a year's training.

The project receives orders from the local area to make furniture and receives a small income from this, which is given to the students themselves as an income. However, the project is still in need of further funding to continue to pay the current carpentry teacher, for materials and for a potential expansion to set up a shop to sell finished products. At the end of 2016, the workshop marked its first full year of existence and to celebrate, the students made a round of Elgon teak chopping boards (pictured on page 65).

The story so far

Having spent three months helping to set up the project back in 2015, I returned a year later for just >



ABOVE: Building a bench

BELOW: Learning how to make mortise & tenon joints

under three weeks. I went straight to the workshop in the slum to find out what had been happening. On the second day, I was given the privilege of seeing the first two students graduate from the project and I was able to hand over a full carpenter's toolset (made up from various overseas donations of tools to the project, thanks to those who donated) to each of them, alongside their certificates of achievement. It was great to see that a few students had worked hard and stuck with the programme. When we left the project the year before, I was unsure as to which of the students would stick out the whole year's training. I had left some rough handover documents and a project book to record and guide the project, realising that these rough guidelines would potentially be overlooked as each of the students found their own way of working. Being situated in such a volatile slum environment, we were unsure as to whether the project would take off. However, when we returned, it transpired that these guidelines had been a success and the staff and students had all worked hard to maintain the procedures for the different processes involved. Also, despite a number of attempted break-ins, not one item had been stolen or misplaced. I also met the new teacher, Sandy, who was officially employed by KCK in February 2016 and given the responsibility of continuing teaching from where we had left off.

During the months after I had left in 2015 and before Sandy had begun teaching, the students were able to utilise the workshop as a creative space to build things and develop their skills. Samuel had also run a few business skills workshops with the boys. During those few months, some of the students managed to secure orders for the small items they had learned to make, from local restaurants and residents. During my trip and upon visiting the local village to buy food, I noticed that a stall holder was using a teak chopping board to slice up some tomatoes. The board looked vaguely similar to the ones we made last year, so I asked where it came from: you guessed it, KCK Carpenters. It was great to see that some of Samuel's business enterprise training was clearly working. The new teacher, along with KCK, decided to implement a shorter class time – 10am to 1pm – instead of the current 9am to 5pm. With financial reasons being the leading factor, it actually meant that students who used the project could do so alongside trying to find money and food doing various other casual labour in the slum. The conditions and realities the people in the slum face is deeply tragic and saddening, and the stories we hear never cease to shock us. I spoke with one of the previous students earlier this week, who told me his daily routine, which consisted of waking up, looking for some tea, trying to find some money for lunch, then looking for money so his brothers and sisters could eat, and then usually going to bed hungry. The next day was just a repetition of the previous. Some days you eat, some days you don't. The circumstances are incredibly difficult.

After the students made and sold their chopping boards last year, all the money customers paid was directly handed out to each student. To put everything into perspective for a minute, if you find a way to earn £1 a day, you are doing well in the slum; this will pay for lunch for at least three days. The chopping boards sold for £25 each, which effectively gave the students a month's wages (if they find work every day) in one sale. The students bought new shoes, new phones and some also tried to save their money. When I asked one of the students where his new phone or his new shoes were, he told me that he gave all the money to his mother. This is something I will never forget and it paints a vivid picture of the raw and harsh conditions these young men are living in.



ABOVE: Children from the community watching the students as they work



ABOVE: Benches waiting for finishing touches

Myself and the other charity members obviously want the best for the students, but as a charity, Kids Club Kampala can only do so much. As the old saying goes: you can lead a horse to water, but you can't make it drink. The carpentry project is here to train and equip people with tools and skills to overcome poverty, but that is only part of the journey: they need confidence, conviction and a recognition of purpose and hope to be able to participate in what is being offered. They also need to maintain and steward this for long enough to stick with the programme until it bears fruit in their lives, which is easier said than done when you understand the struggles their daily lives present. Having two people graduate might not seem like a lot but it is a start, and it is an achievement, especially when the work does not immediately present a reward. Five new students have also enrolled in lessons; some of them even travel from another nearby slum community where Kids Club Kampala also works. Myself and the team are hoping the momentum builds and that we can work out a way to support the graduates as they try to find jobs.

Future plans – completing the circle

In the future, the charity hopes to develop phase two of the project to integrate the graduates into a place of work. At present it costs the charity roughly £500 a month to run the workshop free of charge to the community, and our overall aims is to find sponsorship for the entire cost of the project. At the moment only a handful of customers have dropped by the workshop asking for the students to make things, and as they are currently situated in a slum they cannot provide items to the immediate local market as people simply have no spare money. But in saying this, we have taken on around 13 items of furniture over the last year from the slum. When these orders come in, the teacher adapts the students' normal training schedule to accommodate them, and these items bring welcome variety.

We would love to purchase a space near a popular busy road with some more footfall, which would allow more room for students than the original workshop currently does. This extra space would also allow room to build up a stock of items, which could then be displayed outside the shop to people passing by.



ABOVE: Polishing a teak chopping board

Graduates would be able to move onto this premises and work full-time, paying rent for their bench as things picked up, then be immediately invested back into the training workshop, thus potentially creating a more sustainable model for the longevity of the training project as it serves the community in the slum. **GW**

FURTHER INFO

GW wishes the charity, and the carpentry project in particular, the very best of luck for the future. If you would like to find out more about this incredibly worthy cause, or would like to donate, please see details below.

The project is still in need of further funding to pay for teaching, materials and for a potential expansion to set up a shop to sell finished products. If you would like to support the charity (from as little as £5 per month), please visit www.give.net/kidsclubkampala, and for more info, see the website – www.kidsclubkampala.org – follow KCK on twitter [@kidsclubkampala](https://twitter.com/kidsclubkampala) or join them on Facebook: www.facebook.com/kidsclubkampala



ABOVE: A student showing off his work



ABOVE: Students with their chopping boards outside the workshop

WOODWORKING ADVENTURES

JUMPING IN at the DEEP END

PIC 1. My simple toolbox, made using nails, screw and glue

David Moody shows that even with limited tools, budget and space, you can still make some useful woodworking projects



PIC 2. The kennel is a very simple build, but effective!

"I love working with wood, but..." Perhaps you don't have space for a workshop, or you don't have the money you need to buy the tools you want, or maybe you have other reasons for not pursuing the adventure of woodworking. Been there, done that, worn the T-shirt – and burned it! What I am going to share with you isn't so much a how-to, but a why-not! Be encouraged! Be inspired!

Initial projects

In 2006 I immigrated to Phuket, Thailand. Homes here are much smaller than Australian homes, and yard space is either significantly smaller or non-existent. So, how do you set up a workshop? For a long time I didn't but I did slowly collect useful tools. I started with some basic tools that my wife had and a rip saw that I bought in the hardware store, and built my first project – a plant stand.

The wood was found dumped in the bush near our home. Anyhow, the wood was rough, and perfectly suited to this project. It was made simply by cutting halfway into the uprights, and into the shelves, and then hammering the shelves home. I even used the hammer to break off the waste from inside the joints. I think some purists will be cringing at the thought of doing this, but limited resources require odd methods! No glue, no screws, just carefully measured tight joints that lock the whole thing together, and it served us very well.

The next project was a simple one: we needed a large crucifix for an Easter play at church, so back into the bush I went and found two rough pieces of wood, which I simply bound together with rope. It worked well.

Along the way we got a dog, and she needed a kennel. It was a very simple build: just a steel frame underneath, cheap five-ply, small wood blocks to frame it up, a pair of cheap hinges and fine corrugated steel sheet for the roof, which opened for cleaning (Pic.2) – Olive loved it!

Gaining momentum

As I slowly increased my collection of tools (and continue to do so), I needed somewhere to keep them, so using some of that five-ply and some pine bar, I built a simple toolbox. Just nails, screws and glue, and everything cut with the hand saw (Pic.1).

By this time, however, I was starting to gain momentum with my tool collecting, some of which had been given as Christmas or birthday gifts. More adventurous projects became possible, such as the open wardrobe (Pic.4) (although still not finished), and the cake stand (Pic.3). I now also have a circular saw, which I used to cut the wood for the cake stand, and an oscillating tool, which proved very handy when cutting the wood for the wardrobe.

Collecting tools & knowledge

So, here's what I want to pass on: even with a small collection of tools, and the space where you park the car to work in, it is possible to enjoy a wide variety of projects. As you collect more tools and experience, you will steadily increase the scope of what you can do. There will also be many projects you can make that can be given back to your community. I have found that the more you give with the right motive, the more family and friends will take notice, and in return, might just give you the tools and materials needed to take you even further. It's a wonderful world when we have the heart to give to each other without expecting to receive in return. **GW**



PIC 3. The cake stand was one of my more ambitious woodworking projects



PIC 4. The open wardrobe – a work in progress!

NEXT MONTH

In GW320, David shows how he started building a workshop in space he doesn't have! To see more of David's work, just visit his website: <http://woodworking.david-moody.info>

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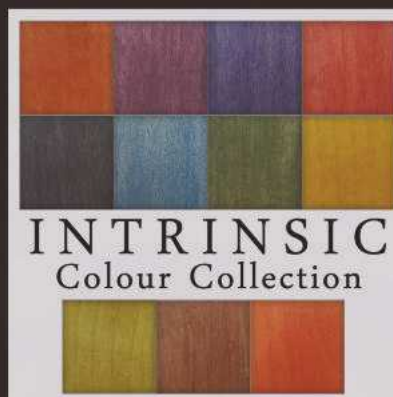
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Letters & Makers

Letter of the month

A case for metric

Dear Tegan,

I feel there are several points in Edward Hopkins' 'The Old Guard' in defence of fractional imperial measurements, which would merit closer scrutiny.

Fractional V decimal

If you were a metalworker boring a $\frac{37}{64}$ in diameter hole to close tolerances, how would you check it? Do you have a fractional micrometer? You have to convert to decimal, although in a modern workshop you would go to mm anyway; mixed units are better avoided.

Definition of the metre

This has evolved significantly over the past 300 years:

- **1790** – the length of a pendulum having a half period of one second.
- **1793** – one ten millionth part of the quarter meridian through Paris.
- **1795** – the length of a brass bar, provisionally.



⬅ Metric or imperial? The debate continues...

- **1799** – the distance between engravings on a platinum bar in pure melting ice.
- **1887** – replaced with a platinum alloy bar.
- **1960** – 1 650 763.73 wavelengths in vacuo of the radiation corresponding to transition between the levels 2p₁₀ and 5d₅ of the krypton-86 atom.
- **1983** – the length of the path travelled by light in vacuo in $\frac{1}{299\,792\,458}$ seconds. So the geographical definition was not the first and didn't last long.

Definition of the yard

Sadly no longer the length of King Henry I's arm; one imperial yard is now 0.9144m.

Finally, a test question for dyed in the wool imperial remainers: what is the piston displacement (capacity) of your car's engine? No! In cubic inches, please!

Regards, **John Bullock**

Dear John, thank you for this. You begin: "If you were a metalworker..." I'm not. I'm sure you're right; metric is far better suited to engineering.

The historic definitions you give are all 'technological' (rather than 'human'). It is interesting that so many versions have been used – as if there is no 'natural' base definition available, such as a foot is a foot (whatever your shoe size). And when you define a yard as 0.9144m, I can't help but notice which came first. Woodhenge preceded Stonehenge. Concrete, steel and glass henges (including those with wheels) are relative upstarts.

You say that a yard is 'sadly' no longer regal, and here again I agree. You betray your affection for friendly human nonsense. This was my point. I have no feelings for a krypton-86 atom. I wouldn't recognise one if I found it floating in my soup.

I think there is a philosophical point to be had. No system of measurement has a basis more valid than another – they are all ultimately arbitrary if, thereafter, consistently so. "Dyed in the wool... remainers" makes us sound like hopeless reactionaries. Being 'dyed in the wool' is, however, a mark of superior quality, and 'remaining' has an air of peace and contentment to it.

As for the engine of my van (which has a milometer, not a kilometre meter), in cubic inches, you're right: I don't have a clue, but then the engine is a product of, um, engineering. But may I ask you, how long is a cricket pitch? No! In metres, please!

Best wishes, **Edward Hopkins**

Phil Davy's magazine rack goes Caribbean

Hello Tegan,

Woodworking is my hobby. Phil Davy's magazine rack (GW317) was just what I wanted to organise the pile of magazines and books that surround my rocking chair. I made the rack from a local wood named serrette (*Brysonima spicata*), which was harvested from my smallholding in Trinidad. The 12mm pieces were obtained by splitting 36mm-thick planks on the bandsaw. The pieces were joined along the corners with biscuit joints, and the mid piece and base were loosely fitted into slots to accommodate movement. The rack finished at 500mm wide × 380mm high × 250mm deep. I used a homemade jig with the bandsaw to cut the biscuits.

I look forward to other useful and challenging projects in Good Woodworking; attached is a photo of the rack.

Regards, **David Subran**

Hello David, many thanks for sending in the photo of your magazine rack – it looks great! I love how you were able to utilise wood from your local area as well, which goes to make it even more unique. It's also fantastic to know that we have readers in the Caribbean! Thank you so much for sharing your story and for giving us an insight into woodworking in Trinidad. Do keep in touch, let us know what you make next, and we will do our best to keep similar articles coming your way!

Best wishes, **Tegan**



⬅ David's magazine rack, based on Phil Davy's recent design, was made using a local Trinidadian wood called serrette

FORUM THREAD TURNING SPALTED SILVER BIRCH

Hi, I'm really struggling at the moment with a bout of dermatitis. I've not been in my workshop for six weeks until last weekend when I spun some spalted silver birch. My face has come up like a balloon and burns like hell. Has anyone ever experienced this? I'm now on a four month waiting list to see a dermatologist. Regards, **Michael**

Hello Michael, I must say I feel quite sorry for you to be suffering with this and no hope of a quick cure. I can only imagine that the combination of fungal wood rot and the high intensity of sap, or the remains of, has done this to you. How long since the felling of the birch to you using it?

I watched a pole-lathe turner at Woodfest at the Arboretum near Cirencester a few years ago, and he covered up completely: coveralls, face mask and gloves, because of the toxic sap being emitted, of which there was plenty.

Derek

Hi Michael, there are some really nasty timbers out there, but it's sometimes the ones you take for granted that cause the most problems! Whenever I use a spalted timber or work with yew or laburnum, I always cover up: dust mask, eye protection and gloves as much as possible. I don't suffer with dermatitis but I have had tingling hands after working with yew without gloves. I hope this helps. Have you looked into buying an Airshield dust mask? **Nathan Millar**



⬅ The Trend Airshield Pro provides complete protection from dust and other harmful airborne debris



⬅ These disposable coveralls from Axminster would be a good option to explore

READERS' GALLERY sponsored by Johnson Tools

Send in photos of your recently made woodworking projects and you could be in with a chance of winning an **Alcolin wood adhesives bundle**, consisting of one each of **Alcolin Cold Glue**, **Alcolin Fast Set Glue**, **Alcolin Professional Glue** and **Alcolin Ultra Glue**. Good luck!

Doug Barratt – this month's winner!



⬆ Doug's lovely ash beaded box stands at 110mm high to the top of the finial and is 60mm diameter at its widest point

Doug's ash beaded box with blackwood finial was made as a gift for a friend. The beads were cut using an Ashley Iles' beading tool then the intersections between the beads darkened by burning with an offcut of Formica. Doug says that he prefers to use Formica as opposed to burning wires as these get extremely hot, which can be quite precarious. The inside of the box is finished with Chestnut Products' Lemon Oil, and the exterior surface is polished with carnauba wax on a buffing mop.

Brian Gardner

Kerry Dodds was kind enough to send in this photo of a rather unique saw blade clock, which was recently made by her grandfather, Brian Gardner. Brian took a disused clock, removed the mechanism, and added this onto a dull saw blade (which was destined for the bin). For the dials, he used his grandfather's dominoes, which were made about 100 years ago. To finish his creation, Brian then mounted the clock onto a piece of cherry wood. I'm sure everyone will agree that this is certainly an unusual piece, and a great use for a blunt saw blade. We just hope it's placed out of harm's way!



⬆ Brian's clock, made using a disused saw blade and 100-year-old dominoes, is very original indeed

One to watch: Tom Wilson

As a self-taught woodworker, Tom's knowledge has developed largely through experimentation. As an architect, designing with constraints in mind is a large part of his day job. As a maker, he designs things based on the constraints of his knowledge and tools, but tries to learn something new with each project. "I hope the thought process is somehow evident in the finished pieces," he says.

Toys & objects

Tom started making toys and objects more seriously when his children were born. This led to a few commissions from friends and things have continued to develop from there. "While a lot of what I make is designed for young children," Tom says, "I hope the work will go on to have personal value far beyond childhood.

Because wood is a natural material, and it develops a patina through use, it gets richer and more interesting with age and handling."

His work tends to be of a smaller scale, and while this is partly a function of the limited space in his workshop, Tom really enjoys making tactile, hand-held objects that have the reassuring weight and density of hardwood.

Sources of inspiration

The wooden animals of Kay Bojesen are a continual source of inspiration, as is the work of Enzo Mari, and the paintings and illustrations of Charley Harper. As well as creating great character in their work, there is always a clear expression of the design and making process in each object.

Tom is currently working on a range of commissions, from a pair of magpie carvings, to children's rattles, and a backgammon set. As well as bespoke commissions, he is currently redeveloping his website to take direct sales. To find out more, see www.curiostudio.co.uk, and you can also follow Tom on Instagram: [@curiostudio](https://www.instagram.com/curiostudio).



⬆ Elephant Stack in beech and walnut



⬆ Gorilla in beech and London plane, which some of you may recognise from the front cover of our newly redesigned sister publication, *The Woodworker*



⬆ Backgammon set in walnut, beech and birch with brass inlay



⬆ Animals in various hardwoods

WRITE & WIN!

We always love hearing about your projects, ideas, hints and tips, and/or like to receive feedback about *GW*'s features, so do drop us a line – you never know, you might win our great 'Letter of the Month' prize, currently a Trend Easyscribe scribing tool. Simply email tegan.foley@mytimemedia.com for a chance to enhance your marking capability with this versatile workshop aid



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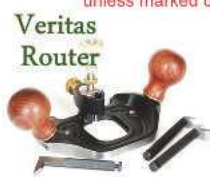
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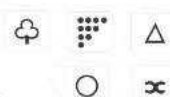


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AROUND THE HOUSE with Phil Davy



Until recently I used to consider painting a fence quite enjoyable – a chance to switch off for a while and maybe listen to the radio. When faced with reviving a row of panels a few weeks ago I'd had enough after 45 minutes, the time it had taken to paint one side of the first panel. Spraying instead of brushing would have been far quicker, though I'd had problems some years ago with overspray going across the fence and tinting a neighbour's patio doors. Still, I persevered and got the job completed, even though it was tempting to avoid applying a second coat. Never again, unless someone invents an easy-to-fit shield to fix above the fence. Then I'll consider spraying...

BOOK REVIEW: Best Workbenches

A decent, solid workbench is a fundamental requirement for cabinetmaking, joinery and furniture making. Unless there's one already in your workshop, most woodworkers dream of building the perfect bench. If you're serious about designing or building this essential workshop tool then take a closer look at these pages, mostly taken from *Fine Woodworking* magazine.

After a brief history of European and US workbenches comes a round-up of ready-made benches – there's a comparison of cast-iron vices later. Although American products, these reviews are still useful as some items are similar to those available in Britain. There's plenty of guidance on installing both front and tail vices, too.

The primary chapter contains detailed plans and explanations for constructing eight substantial benches. It's hard to choose a favourite, but I loved the birch plywood version, with no need for a planer/thicknesser to convert your timber first. Garrett Hack's traditional bench features breadboard ends, while Mike Dunbar's heavy-duty project has a knock-down base and full details on building both the huge front vice and tail vice from hardwood.

There are many clever techniques described here, from a mortising jig for using chisels accurately to torsion bar beams for bench tops. Subsequent chapters cover aids for holding workpieces, improving and tuning an existing bench and adjustable benches.

With superb illustrations and photography throughout (as we'd expect from Taunton) this is a fantastic read and worth every penny.

THE GW VERDICT

- ▶ **RATING:** 5 out of 5
- ▶ Various authors, published by **Taunton**
- ▶ **PRICE:** £14.99
- ▶ **WEB:** www.thegmcgroup.com

USEFUL KIT/PRODUCT: Striker mechanical carpenter pencil



Pressing the end cap opens the jaws at the far end, enabling a new refill to be loaded



The coloured leads are especially useful for writing on timber

Carpenters' pencils are a bit like Marmite – you either love them or hate them. Until this neat gadget came along from American company Striker, I tended to dismiss them. I've always found the thick lead far too wide for marking timber accurately and the pencils can be a pain to sharpen. And, of course, you can't store one behind your ear. Plenty of chippies would be lost without this marking tool, though.

In use

The ABS plastic Striker is rather like a traditional propelling pencil with replaceable lead inserts. Pressing the end cap opens the jaws at the far end, enabling a new refill to be loaded. These are notched on one face so the jaws can grip them. As the tip wears, you just press the cap to expose new lead and this can be sharpened by rubbing it on abrasive paper. A clip on the cap means you can store the pen in a pocket.

Supplied are three grey Dura Leads, which are actually a mix of clay and graphite. They come in a clear plastic tube to prevent breakage and Striker claim these leads will last two or three times as long as traditional pencils. Refills are available at £3.49 for a pack of five, with a choice of red, white or grey. These colours are good for marking darker hardwoods and they can also be used on concrete or metals. I think I'll soon be a convert, especially at the timber yard!

THE GW VERDICT

- ▶ **RATING:** 4 out of 5
- ▶ **PRICE:** £4.99
- ▶ **WEB:** www.strikerhandtools.com

SPRING PROJECT – BACK DOOR BENCH

TAKES: One weekend

TOOLS NEEDED: Jigsaw, circular saw, bench and block planes, biscuit joiner, sander, router, drill stand, sliding bevel

It's a shoe-in

Phil Davy makes a Shaker-style bench for indoors or out, with handy storage for boots

Somewhere to sit and remove those boots after a spot of gardening or a muddy walk with the dog is always welcome. This simple Shaker-style bench can be made any length you like and can be situated by the back door, inside a porch or even outdoors. The top is hinged to provide a small amount of storage space for gloves, socks or the dog lead, though you could simply screw this down to the framework if you can't be fussed with fitting hinges.

Legs

The legs are splayed slightly at 5°, which may not sound much but makes a noticeable difference, adding stability.

It's not essential to use biscuits for the leg joints if you don't have a joiner. The base could easily be housed into the two legs, though ideally you should cut the housings with a sliding mitre saw. It's the easiest method of cutting housings with sloping shoulders, unless you really want a challenge and choose to do this with hand tools. Alternatively, you could make a tapered jig for guiding a router at the required angle.

I used 25mm PAR softwood throughout, though MDF would be just as good if the bench is to be used indoors. Build it in hardwood if you want a really long-lasting seat – an oiled finish really making the most of timber such as oak or ash. I fitted a pair of 150mm 'T' hinges (penny end pattern) supplied by From the Anvil (www.fromtheanvil.co.uk). These lovely traditional hinges are coated in beeswax and are designed for internal use only. You could just as easily use butt hinges instead.



Treating the timber

If building this project for outdoor use, treat the bare timber with a suitable preservative such as Cuprinol Clear before painting. You'll need to make it completely weatherproof, so either make the lid in one piece or dispense with storage altogether and have a fixed top, otherwise water will find its way into the tray. I finished the bench with two coats of Cuprinol Shades (Beaumont Blue), but a clear satin varnish would look great if the timber was clean.

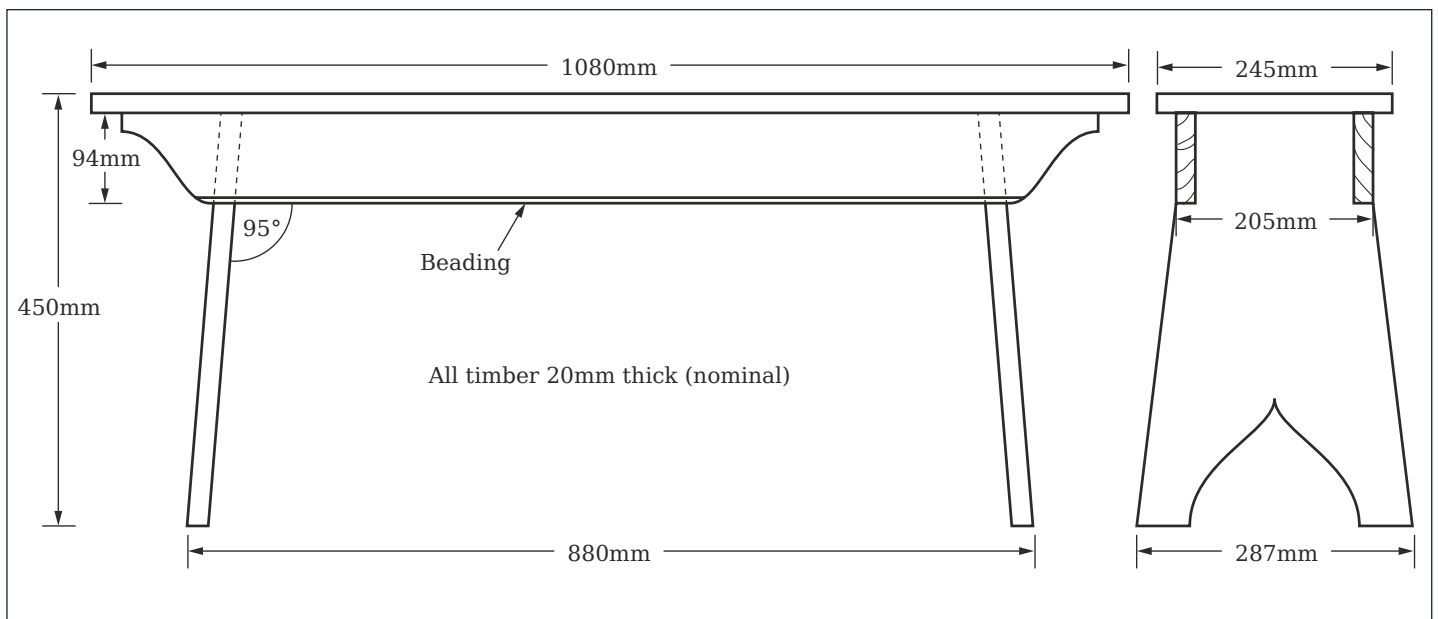


FIG 1. Back door bench



STEP 1. Glue and cramp boards together to make up the two legs. Plane the edges first if necessary



STEP 2. When the glue has dried, level the boards with a bench plane, checking with a straightedge



STEP 3. Both legs are splayed at 5°, so adjust the sliding bevel to 85° when marking out



STEP 4. Adjust the saw baseplate so that the blade is angled at 5°. Cut the legs to length



STEP 5. Cramp the legs together, secure in vice jaws and plane the ends. Check the angle with the bevel



STEP 6. Front and back rails sit on notches cut into the legs. Mark and cut these with a jigsaw or by hand



STEP 7. Clean up the sawn notches with a shoulder plane or chisel and check for square



STEP 8. The base is jointed to the legs with No.20 biscuits. Mark biscuit positions and cut the slots



STEP 9. Cut the tapers on each leg using a baton cramped as a guide fence. Cut slightly oversize



STEP 10. Cramp both legs and plane the tapers together. Do this before making the shaped cut-outs



STEP 11. Use a flexible curve or draw freehand onto cardboard to make a template for the cut-out



STEP 12. Cut the card with a craft knife. You only need a half template – simply flip on the centreline



STEP 13. Saw the outline with a jigsaw fitted with a sharp blade. Reduce pendulum action for a clean cut



STEP 14. Use a large-diameter sanding drum to tidy up as much of the cut-outs as possible



STEP 15. To get right into the apex of the curves, a combination of rasp and wide chisel does the trick



STEP 16. You can reinforce the joints between base and legs with central pocket-hole screws



STEP 17. Glue biscuits into slots and assemble the bench with PVA glue. Use cauls to spread pressure when cramping



STEP 18. Saw rails to length. Mark and cut ends to shape with the jigsaw before cleaning up on the sanding drum



STEP 19. The lower edges of both rails feature a decorative bead. Use a bearing-guided router bit for this



STEP 20. Drill and counterbore the rails, then glue and screw them into the notches at the top of both legs



STEP 21. Glue matching plugs in the holes and saw off excess when dry, then trim flush with a block plane





STEP 22. Plane legs and rails flush, working in towards the centre to prevent the timber splitting



STEP 23. Cut the fixed piece of the bench top to length and screw to the back rail. Plug as before



STEP 24. To soften the upper edges of the lid and fixed piece, rout with a bearing-guided round-over bit



STEP 25. Position hinges and carefully mark screw holes with a bradawl. Fix in place and check that the lid opens smoothly



STEP 26. Remove the hinges and sand bench with 120 and 180 grit abrasives, ready for final finishing



STEP 27. Brush on at least two coats of suitable paint or clear varnish. Replace hinges when fully dry



OUT & ABOUT

YANDLES Spring Show

With the sun high in the sky, queues at the ice cream van and stacks of timber seasoning around the yard it could only mean one thing: time for Yandles Spring Show. More than a decade since my last visit, it was encouraging to find the format has hardly changed. As one of the country's friendliest free woodworking events it's hardly surprising, I suppose.

One of the quirkiest aspects of this event is that many demos and trade stands are set up in the mill. No high-tech machinery here, just a collection of elderly industrial, yet basic, saws, planers, overhead routers and similar covered in years of sawdust and temporarily silent. After the two-day event, this area reverts to a working machine shop.

Brands in action

Among the manufacturers set up here were power tool innovators Triton, attracting a steady flow of punters keen to meet American woodworker April Wilkerson. Triton brand champion and renowned YouTube blogger, she told me that one of her upcoming projects was to build herself a new workshop. At around 2,000sq.ft, I remarked that this was twice the size of many British homes! As Texas is the second largest US state, there's probably no shortage of space.

Other brands in action here included Mirka, Trend, Kreg, Silverline, GMC Tools, Charnwood and Johnson Tools, with a handful of individual craftspeople dotted about. In the shop area there was plenty to check out from Record Power and Startrite, while scattered around the demo marquees were Draper (some neat 10.8V tools), Bessey, BriMarc and Classic Hand Tools.

Yandles guarantees an eclectic mix, with Sean Hellman one of the most skilled carvers I've come across. His exquisite birds are each created from a single piece of ash, using techniques he's devised himself over years. Also selling tools, he runs courses in deepest Devon.



Huge slabs of oak, black walnut, wenge and bubinga, to name but a few. Not cheap, but some lovely quality stock

With a couple of marquees full of talented woodworkers, you couldn't fail to miss Alan Miller's extraordinary acoustic guitars. Built in nearby Glastonbury, these instruments include sympathetic strings running diagonally across the soundboard and fan fretting.

Timber & tools

Outdoors were the usual green woodworking demos, plus a delightful rustic bench under construction from the guys at Artisan Gardening. They specialise in cleft chestnut carpentry besides landscaping and run summer workshops near Bridport.

For many visitors a trip to Yandles would not be complete without buying wood. I counted at least 15 species of hardwood in the extensive timber store, and planed boards individually priced makes selection easy. Huge slabs of oak, black walnut, wenge and bubinga, to name but a few. Not cheap, but some lovely quality stock.

No timber for me, sadly, though I settled on a couple of reject bubinga chisel handles from Ashley Iles for a couple of quid. And an ice cream, of course! **GW**



After the two-day event, this area reverts to a working machine shop



American woodworker April Wilkerson – Triton brand champion and renowned YouTube blogger



Artisan Gardening specialise in cleft chestnut carpentry besides landscaping and run summer workshops near Bridport



One of Sean Hellman's exquisite fan bird carvings



Alan Miller's extraordinary acoustic guitars include sympathetic strings running diagonally across the soundboard and fan fretting



I settled on a couple of reject bubinga chisel handles from Ashley Iles for a couple of quid



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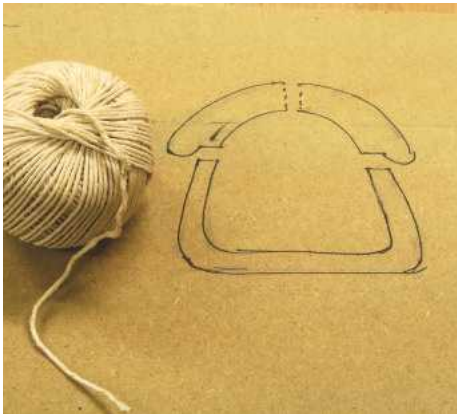


String theory

Inspired by a piece of Regency era wooden treen, **Les Thorne** decides to turn a similar piece in walnut, mimicking the string tidy's squat mushroom shape, which he found particularly appealing

As a woodturner I like looking at well crafted furniture and my favourite period is the Regency era with its fantastic lines, great use of timber, both solid and veneer, and of course the amazing craftsmen turners of the time. To that end, Mrs. Thorne and I do like to visit stately homes of the time, and we recently spent a day at Blenheim Palace near Woodstock in Oxfordshire. The day on which we visited happened to coincide with one of their antique fairs, and for sale were various items including many pieces of wooden treen. One of these items formed the inspiration for this article.

I have seen string tidies before but this one was in the shape of a squat mushroom, which I found particularly appealing, so I transferred the shape to my memory bank (I thought it would be a bit cheeky if I photographed it), and decided to recreate it for you here. I have a feeling that the original was made from apple wood as the lid had a coarse thread cut into it. I didn't have any timber large enough that was suitable for thread chasing, as it needs to be a close-grained hardwood, so I thought I would incorporate the use of magnets to secure the lid instead. **GW**



STEP 1. I never knew there were so many different types of string available. I bought this ball off eBay and then drew the project to match its size



STEP 2. Cherry and walnut are a classic combination, and I happened to have these two blanks in the wood store awaiting a deserving project. The timber is dry, which is important when you're fitting a lid onto something



STEP 3. Mount the cherry blank on a screw chuck and true up the outside using a 10mm bowl gouge. The bevel of the bowl gouge will be in contact with the wood, which gives you good control and a great finish



STEP 4. Next, true up the base using a pull cutting technique – because there is no end-grain to cut on the base, it is not so important to get the bevel of the tool rubbing



STEP 5. When using the dovetail jaws on your chuck, it's important to make sure that the spigot you cut is accurate to the diameter. Here I am using a pair of dividers to mark the required size onto the base of the string tidy



STEP 6. Once you've cut away the waste timber from the bottom, use a 10mm round skew chisel to form the dovetail. The angle needs to be approximately 15° to match the jaws. Never put too much angle on as it makes the spigot weaker



STEP 7. Now that you've gripped onto the spigot you can start to shape the lower half of the mushroom. The cherry I used was very dry, so a push cut was best and would help to avoid too much tear-out on the end-grain



STEP 8. I removed the heel from my 10mm bowl gouge to allow the tool to fit into the curve of the bowl; it also has the added bonus of decreasing the amount of 'bruising' on the surface of the timber as you make the cut



STEP 9. On a mini lathe, such as a Comet, you may find that you need to remove the tailstock to provide better access to the inside of the bowl. Always ensure you can stand at the end of the lathe when working on small machines such as these



STEP 10. The wall thickness depends on two things: the ball of string needs to fit inside and the wall has to be able to take the size of magnets that you choose to use. Make a cut with a 3mm parting tool to fix a size to work to



STEP 11. When you enter into the bowl with the gouge, it can 'skate' across the surface; this is commonly caused by a run back and can lead to a big dig in of the tool. To avoid this, fix the tool against your thumb at the start of the cut



STEP 12. An issue with the smaller lathe is the ability to get the handle of the gouge low enough during the hollowing process – you may have to adapt your technique. I have a set of tools specifically sharpened to allow me to get around the tight curves in shapes such as this one



STEP 13. This close-up of the inside of the bowl shows the gouge's required position in order for it to achieve the best cut. The flute of the tool is pointing away from me in the 2 o'clock position and the bevel is in contact with the wood



STEP 14. You need to aim for an even wall thickness so getting the depth right is therefore important. I use my shop-built depth gauge to measure the base thickness so I can maintain consistency of thickness to 8mm



STEP 15. I found it difficult to turn the inside of this shape with my normal gouge, so I decided to bring the 60° bowl gouge into play. This tool's extremely upright bevel allows it to be easily controlled in tight spaces



STEP 16. The short bevel of the tool means that to start the cut, the handle needs to be in this position. With practice, you can undercut the bowl with a gouge, or if you're struggling, you could make light cuts with a scraper



STEP 17. The Simon Hope pad is normally a little too big to fit into the curve, but the addition of the soft interface pad means it will conform to the shape without leaving scratches



STEP 18. It fits in there an absolute treat! Because the ball of string protrudes out of the top, I needed to hollow out the underside of the lid to allow for this. Don't remove the spigot until you have turned the lid, in case you need to make any adjustments



STEP 19. I didn't want any large holes in the top of the lid, so I attached it to a piece of scrap wood with hot glue. This is a brilliant way of quickly mounting wood on the lathe. I normally put five or six large blobs on a piece this size and that should hold it



STEP 20. My first few cuts are always tentative when attaching the blank with glue. This is the bottom of the lid and I am truing up the wood with a push cut using the bowl gouge



STEP 21. The measurement of the base needs to be transferred to the lid. Normally, my turned boxes have a suction fit but on side-grain like this, I like to make it bigger to allow for any movement that may occur



STEP 22. Use a gouge to remove the timber, working towards the line made by the dividers. My thumb on the tool affords me maximum control, as I don't want a dig in at this stage



STEP 23. The 10mm round skew chisel can be used to create the angled surface that will match the top of the base section. Make light cuts to avoid tearing the grain out, which often happens when you are heavy-handed with the scraper



STEP 24. Keep stopping the lathe and checking the fit. As I said earlier, it needs to be loose but not sloppy. When you are happy with the fit, the inside needs to be sanded to a fine finish



STEP 25. When I'm drilling on the lathe I like to make a centre mark with the point of the tool; this means the drill will always start in the dead centre. Ideally you need to slow the lathe down to about 500rpm – here I'm using a 4mm drill bit



STEP 26. When it's finished, prise the lid off the glue chuck with a chisel or screwdriver. The glue on this piece was so strong that I ended up breaking the spigot away from the chuck



STEP 27. I purchased these rare earth magnets online and they measure 5 x 5mm in size but are incredibly strong. Test drill a piece of scrap to make sure they are going to be a tight fit into the wood



STEP 28. Make a cardboard template to mark out the two positions of the magnets and carefully drill down to a depth that is the exact length of the magnets; they will need to sit perfectly flush with the top surface of the base and lid



STEP 29. The template will allow you to transfer the correct positions of the magnets to the inside of the lid. Repeat the drilling process and then glue the magnets in with a small amount of good quality epoxy resin



STEP 30. The glue chuck is now going to become my jam chuck for the lid. Turn a taper on the piece so that you can gauge the correct diameter and then remove small amounts until you get a snug fit into the chuck



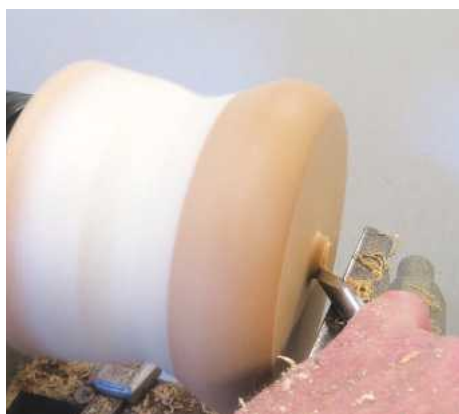
STEP 31. Use the tailstock support while you carry out the main shaping. A 10mm bowl gouge is used with a pull cutting technique. If the flute of the tool is around the 10 o'clock position, then the shavings should travel up your hand as shown here



STEP 32. To refine the curve on the lid, I moved to the 13mm signature gouge. You can use a spindle gouge on side-grain as long as the toolrest can be placed close to the work, which will minimise the amount of vibration that could occur



STEP 33. The hole in the top can be rounded over slightly so that you don't get any chafing of the string. Sand the top to a very fine finish and take care not to leave any scratches on the surface, as these stick out like a sore thumb on the walnut



STEP 34. Reverse the base onto the jam chuck to remove the spigot. Unlike the lid, I couldn't get a tight fit from friction alone so I wrapped some masking tape around the chuck, which allowed me to remove the final piece of unwanted wood



STEP 35. We woodturners love to add decorative lines to our work. Three grooves cut into the base of the piece with the corner of the skew chisel finishes it off nicely. One coat of lacquer and you are then ready to add the string



STEP 36. The completed string tidy should look something like this

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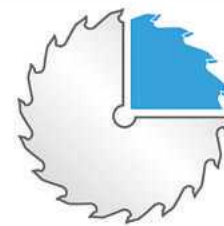
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➔ WOODWORKING ADVENTURES ➔ DAVE ROBERTS' 'WHAT THE DICKENS...'

Arrogance

How to be a brilliant designer for £1.28

What is the profile of a designer whose work is self-effacing? Isn't that a contradiction in terms? How many architects really want their buildings to blend into the landscape and not be noticed? Architects are the worst culprits. You can turn the film off, you can dig up the flowers and you can choose not to go into a gallery of modern art (where the only exhibit worth looking at is the gallery itself) but you can't avoid the hotchpotch collection of super-manifestations of super-egos that constitute the inescapable skyline of cities like London (and yes, I know the gallery was architect-designed, but you didn't have to go in there). What right does an individual have to make their view our view? But how, that individual might reply, can one fetter brilliance? Surely the poet must be allowed to rampage through the lexicon, and the chef freeze dry gizzards if s/he wants? Artists are often ahead of their time, so how can we ordinary folk be capable of understanding, let alone criticising their work?

We ordinary folk often fall for it. If we see a work of supposed genius and it doesn't move us, we think it's our fault/inadequacy/ignorance. Well, alright. Sort of. I was 15 or 16 when I first heard *Sad-Eyed Lady of The Lowlands* from Dylan's album *Blonde on Blonde* and I thought his slurred singing almost comical. How wrong I was. The difference is that I went back the next week and bought the album, which, as we all know, was to become one of the classics of all time. A real classic, that is, not a fabricated one. It's an album that is still moving, resonant, and enchanting. A fabricated classic is one that simply marks a point in history like Marcel Duchamp's 1917 urinal, which is only art because he called it 'Fountain' and, I suggest, wouldn't move anyone today unless they already wanted to go to the toilet.

Sensationalism

There is a drift in art of all types that is not satisfied with doing old things in even better ways. It must do new things, preferably shocking things, whether or not it does them well (because who will know the difference?). It is called 'Sensationalism'. I just made that up but it does have the right tone of shallow, ephemeral, and sometimes dark hedonistic frivolity. Don't get me wrong: I have nothing against hedonistic frivolity, I just don't want to revere it with the name 'art'.

Furniture makers aren't as bad as architects. Usually. That's because our work is easily put in another room or not commissioned at all. And, unlike many an 'artist', we have to perform difficult,



Silly specs: a sign of genius

accurate, technical procedures (i.e. woodworking), and so the real world inevitably impinges on our imagination. This I think is a good thing. It may even be a saving grace. But it doesn't get us off the hook entirely. It is incumbent not just on architects, but on woodworkers, dentists, accountants, vicars, hairdressers, etc. to lay out before the customer what is appropriate to the job in hand and what is not. Not to do so is a dereliction of duty. It's not caring about the client.

A sign of genius

Most customers don't know much about furniture or about woodworking. They don't know what's possible, viable or effective. So they have to be told. Nicely, of course. And sometimes more than once. And though they think they want what they thought they wanted, they must come to realise that what they really want is what I want. The fact that I've only wanted it for the last five minutes of discussion does count against me. This is why I dress up as a proper designer when I go to see them. It reassures them. It puts them in no doubt that I know what I'm doing. If you think the full regalia is a touch overpowering, just go for a pair of funky glasses. This is what many designers do. It stops them looking boring. Don't worry that they make you look stupid: they're meant to. They show an aesthetic so different to that of your customers that as long as you back it up with unintelligible arty speak, you will be assumed to be very clever indeed. Mine cost £1.28 post free from Hong Kong. Worth every penny, I reckon. Silly specs, you see, are a sign of genius. **GW**

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