

WORKING WOOD BY HAND

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@QUERCUSMAGAZINE

# Quercus

Chris  
Schwarz  
Choosing  
wood for  
making  
chairs

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Find out on p30 how Dylan Iwakuni follows the felling of a pine by hand using axes of all ages, to produce beams for the building he is helping to reconstruct



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Richard Arnold takes a journey of moulding plane discovery by making a cabinet for his collection of 18th Century wooden tools

# Quercus

Despite a passion for all hand-tools, and working wood by hand, it is chairmaking that remains our notable pre-occupation. The tribute to John Brown last issue inspired a wonderful response, including a complimentary blog post from Chris Schwarz. The title of Chris Williams' book charting John's work was surely paraphrasing the maker of stick chairs' essay *Good Work*, which we publish this issue and which argues the case for self-sufficient woodworking.

Yet I know Dallas Gara's article here about the making of his Maloof-inspired rocker, using mostly power-tools, may mystify some readers who expect *Quercus* to be dedicated to working wood by hand. To that I say, as above, chairmaking design is a crucial part of *Quercus*, and let's face it John Makepeace's Millennium chair in QM01, was never made by hand. The other point I must make is that I, like other enthusiasts, took to woodworking using machines and power-tools. Only once I'd mastered some of the joint cutting and construction (and speed) of that approach did I feel confident enough to embrace handwork and its unique feel and finish, as you can discover when I learnt how to cut dovetails that way with Bill Ratcliffe recently.

Nick Gibbs, Editor

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# The Shelflife for a Moulder

To house his extensive collection of moulding planes, *Richard Arnold* puts them to use in his home

**M**any woodworkers, be they professional or amateur, often become interested in the rich history of the woodworking trades. This may come about by studying historical pieces of furniture, or maybe architectural details, or it could be that we come into contact with some vintage tools, and we become curious as to their form or function. This can often lead to what may be a dangerous addiction for 'collecting' antique and vintage tools. I freely admit that I have, over the last 40 years, found myself treading this fascinating, and often perilous road.

My main interest has always lain with the evolution of the British wooden plane throughout the 18th Century, and this has led to me amassing a fairly large collection of those used in this period by the joinery, and cabinetmaking trades. Until quite recently, my main dilemma has been how to store and display the planes. The collection was scattered between various locations, packed away in boxes, so it has become a bit of a priority to find them a fitting, and permanent home. With the blessing of my understanding wife Kate, I have converted one of our bedrooms into a sort of mini working museum to house the collection. This entailed stripping the room entirely, and it seemed fitting that all the new wooden fittings and embellishments should be in keeping with the 18th Century collection. What's more I surmised it would be fitting to use planes from the collection to carry out the work, particularly where mouldings were needed.

My first requirement was some new 6in deal skirting, finished with a taurus mould. I scoured the collection for a suitable plane, and came across an example by an obscure maker by the name of H. Freeman. Up until quite recently we knew very little about this planemaker, other than that the style of his planes would indicate a date of around the second half of the 18th Century. Having done a bit of online research, I stumbled upon a document concerning the change of ownership of a property in Stratford-upon-Avon. William Morse, a known planemaker, took over the lease from a Henry Freeman in 1770. I am almost certain this is our man. The plane was in good usable condition, but the iron needed some attention. I was a little wary as to how well this would perform as it was made (by Robert Moore



To use a moulding plane efficiently it is sometimes necessary to remove the bulk of the material with other planes. In this case the skirting mould was roughed out with a combination of plough, moving fillister, and a round plane. As well as the cabinets, Richard has been making the architraves (above right) by hand with the traditional tools of the age for his special room at home



Most of the plane collection is now safely stored in the purpose-made shelving unit

of Birmingham) some time in the middle of the 18th Century.

## Steel technology

I had very little experience of sharpening an iron of this age, and had some concerns as to how well it would hold an edge. After all, it was made a good while before the advances in steel technology had been perfected by the Sheffield edge-tool manufacturers. I polished up the back side of the iron, and touched up the bevelled edge with an assortment of slipstones, and I have to say I was delighted by how well this iron performed. I cut over 50ft

of skirting with this plane, and it was still sharp when I had finished.

At the outset, I tried a small test piece of skirting about 2ft in length, and quickly realised that I would have to rethink my technique. Although it is possible to complete the mould directly by using the plane alone, it would be extremely hard work on the plane, and user alike. So I concluded it would be better to remove the majority of the material with other planes.

Firstly, a groove was cut with a suitable width iron in a plough plane. This was followed up by cutting a rebate with a moving fillister. Finally, a small round was used to rough out the semi-circular profile. The moulding plane was then used to regularise, and finish the profile.

It might be worth mentioning now that I worked the skirting in lengths of about 8ft. This allowed me to use a method of holding the workpiece to the bench which I have come to believe was in common use in England throughout the 18th and 19th Centuries. My workbench is a traditional style often referred to as an English or Nicholson bench. They were often made to a standard size of about 10ft, but due to space constraints in our workshop, mine is only 9ft long, hence the 8ft lengths of the skirting. One end of



the workpiece is held in place by an iron toothed bench dog, which will be familiar to most woodworkers, but at the other end the plank is fixed in place with an almost forgotten 'tool', the bench knife. This is nothing more than a thin piece of steel driven into the bench, and the end-grain of the workpiece. They were traditionally made from a piece of broken table knife. Considerable sideways force is placed on the skirting when rebating and moulding, so it was important that it was held firmly at both ends. It also allows all the planing operations to be carried out entirely with no impedence, before being quickly removed from the bench.

### Making architraves

The next thing I needed was some architrave for the doorway. Architraves from the 18th Century are often made up of two separate sections, a simple thin ground, usually finished with a small bead, and a planted on-top mould, often an ovolo, or ogee mould. As luck would have it, when I purchased the aforementioned 'Freeman' torus moulding plane, it came with an ovolo moulder that had obviously been its companion for many years as it bore the same owner's marks, and was by the same maker. The same process that was

These moulding planes were made by Henry Freeman of Stratford-upon-Avon sometime before 1760. Although they are over 250 years old, they still produced an excellent finish to this redwood softwood. It is worth noticing Mr Freeman's marking-out lines still visible on the end profile (below), as well as many other owners' marks



used on the skirting was used again, by removing some of the bulk of the work with rebate, and hollow moulding planes, before finishing with the ovolo moulder.

### Finding a bead moulder

I had one stumbling block with the bead on the ground piece. I could not find a suitable 18th Century bead moulder, so had to resort to a 19th Century example. This may be a common occurrence when looking at surviving 18th Century planes. The most common types tend to be the hardest to find, and a 1/4in bead is a good example. It would be a plane that would see a lot of use in a workshop, so this would give it a reduced life expectancy as opposed to a more specialist plane.

Having completed, and fitted the skirting and architrave, I could move on to creating a whole wall of shelving to house the collection, and again the majority of the decoration consisted of simple 1/4in, and 1/8in bead details to the framing, and shelf edges, but I also wanted to create a decorative plinth base mould, and a moulded cornice for the top of the unit.

I have a particularly nice complex moulder in the collection by a London maker called John Cogdell. The plane probably dates to around the middle of his career, say about 1750. It is in excellent condition, and apart for a slight touch up of the iron, it was ready to go back to work.

This was quite a complex, and intricate mould, so I took a slightly different approach to working it. The bulk of the material was removed in a sloping bevel that was planed off very rapidly with a course set jack plane. The moulding plane was then used to form all the elements of the moulding straight from the plane.

The shelving unit, complete with its plinth were now installed, and all that remained was to make the cornice for the top. This is often called a crown mould in North America, and the plane I used to

### Holding the Older Way



Most woodworkers will recognise an angled iron bench dog (above) at one end of a board, but the bench knife (below) is nothing more than thin steel tapped into the bench and the end-grain



make the mould is interesting in that it may well have originally been produced for export to the colonies some time around 1760. The plane in question was made by another London maker, Thomas Phillipson. English cornice planes are rare, and this one is exceptional in that it is reputedly the widest English example ever found. The main stock of the plane is over 5in wide. These planes are usually fitted with a rope threaded through the front of the body, for the poor apprentice to pull on while his master guided the plane.

I had already used this plane a few times, demonstrating with it at various woodworking shows, but this was always on short lengths of timber, so it was with some trepidation that I set out to make over 12ft of cornice moulding. As with most moulding operations, this plane is not designed to do all the cutting, so a series of cuts with a plough plane, rebate planes, plus hollows and round moulding planes were used to rough out the profile, before the final shaping was produced with the cornice plane.

It is worth noting that all the timber used in this project was European redwood. This was the timber commonly used for internal painted joinery in England during the 18th and 19th Centuries, and that is what these planes would have been designed to work on. If they had been for hardwoods, they would have had higher-pitched irons. All the surfaces of the woodwork for the room were left straight from the plane with no sanding. I felt that any slight discrepancies, and slight tear-out left by the planes was in keeping with what I was trying to create.

One big advantage my predecessors would have had over me is that the quality of their timber would have been far better than the fast-grown plantation stock available today, but more important than that is the fact that their stock would have been air-dried. Kiln-dried timber is nowhere as hand-tool friendly, and has a hard brittle nature.

The collection is now safely stored in its new home, and I hope it will be something that can be utilised, and enjoyed by many people other than myself, and be a useful physical reference for anyone interested in this subject.

*Follow Richard Arnold on social media @arnold\_richard, or visit his website richarnold.co.uk. He is also a regular contributor to Bench.Talk.101.*



As with the skirting mould, the main profile of this cornice mould is roughed out with a selection of hollow and round moulding planes, and a rebate plane. The cutting edge of this iron is over 4in wide. It is little wonder a rope was provided for a second craftsman to assist in the running of this mould, with a hole across the plane near the front

# Praising Better Work

In his polemic essay, the late *John Brown* argued his case for working by hand

**M**y grandmother used to tell me that most of life's ills were caused by men chasing money. Even 50 years ago the poor old dear could not understand what all the rush was about. She had a theory that the heartbeat hadn't altered since time began, and that the pace of life should be regulated by this fact. I didn't take any notice of her at the time, but recently I've had cause to recall her words. The speed of life is out of synchronisation with the human body. If we could slow our lives down a little, think of quality before quantity, there would be more time to savour the pleasant things before we are forced to rush on to something else.

Woodworkers are not excused this malady, every bit of literature, every handbill or periodical to do with the craft is packed with advertisements for machines. A young man interested in making things out of wood can be excused for believing that machines are a fundamental necessity. Hand-tools have been relegated to the small ads section, or second-hand or antique dealers, as though they were relics of the past whose use went out with grandfather. I have been into woodwork shops where there was hardly a decent usable hand-tool in the place. A screwdriver, some plastic handled chisels and spanners, all mixed up in the same box.

The price of timber once seemed of little consequence. Now, with rainforest problems and a general scarcity, this has become a very expensive raw material. A return to the use of hand-tools, apart from being less wasteful, would add more value to this precious material. I fully appreciate the average woodworker cannot render tree trunks into planks, and handsawing huge bulks is pure sweat, so the use of a power saw is necessary. That is all that is required to lead a full and satisfying woodworking life.

Power machines are unfriendly for they are very noisy and make a lot of unpleasant dust. Craft woodworking should be a creative activity, with the practitioners as artists. Surrounded by ugly, noisy, dusty machines the woodworker does not have the environment in which to do good work.

There are two main health hazards from frequent use of machinery, that is apart from cutting off the fingers. Dust and noise. Neither of these is instantly apparent, as is an amputation, but nevertheless, they are just as dangerous. The most frightening is

nasopharyngeal, or nasal cancer, closely associated with wood dust. Although a rare disease, the incidence can be as high as breast cancer. This, of course, applies to full-time workers, but the residual chance is not insignificant amongst occasional users. Then, constant exposure to high levels of noise can damage the ears and lead to premature deafness.

Of course you can wear protective clothing and apparatus against these ills. But to mummify yourself in this way can only be to the detriment of careful work. I have seen a colour photograph in a magazine of a man using a bandsaw. He has on a rubber face mask, ear muffs and goggles. Picture if you will a cabinetmaker working on a fine piece

of oak furniture, clad in a hard hat! I am sure the sense of control of the operator is impaired by wearing all this safety equipment. Dust accumulates on the goggles, giving poor vision, and it is often a subtle change of sound that tells you a blade is about to break. Some smocks I have seen must restrict the free movement of the arms, resembling a canvas straight jacket. To work thus on machinery takes courage, and the use of such bravery has a stress effect which is cumulative.

## Adam Smith burned large

The reason for the introduction of machinery in the 19th Century was to speed up production in the factories. The words of Adam Smith were burned large into brains of the industrialists. Water,

then steam and finally electricity provided ample power, and in that great age of innovation machines were invented to cope with more and more processes. The owners cared not a jot for design or quality, unless it affected sales. Quantity was the main criterion. How can we make more profit? Unskilled people could be trained to work a single operation machine in days. The fact that these operators had no interest in their work, and did the job for what money they could get, interested no one, except people like Ruskin, CR Ashbee and William Morris.

Since WW2, it seems that these same principles have been adopted by modern woodworkers. Yet the motivation is entirely different. I have never known a craft woodworker who does the job only for money, or at least admits to this. Woodworkers pursue the craft because they love it, they enjoy working with wood, and they get great

**"I am sure the sense of control is impaired by wearing all this safety equipment. It is often a subtle change in sound that tells you when a blade is about to break."**



satisfaction from seeing a well finished piece. To a man, or woman, they try their hardest to do fine work, and to produce an artefact of delight. If this is not true, how come there have been so many well supported competitions? They all love to show their work, and are proud of it. I don't suppose there has been a time when so much effort has gone in to producing good work.

## Sums spent

Unfortunately a large part of the works on show are made by machines. And at what cost! Huge sums are spent on all these machines, saws and re-saws, lathes, planers, thicknessers, spindle moulders, mortising machines, dowelling machines and biscuit jointers, dovetail attachments, belt sanders and portable machines of all kinds. New ones every week. They come in a myriad of shapes and sizes. The daddy of them all is the router. This screaming monster, used for nearly everything, turns at so many revolutions that the poor wood doesn't stand a chance. Apart from the initial expense of this armoury, there are attachments to buy, numerous cutters for different profiles, saw blades to be bought, and few of these things can be satisfactorily sharpened by the user. The operator becomes a mechanic producing precision-engineered works. This has little to do with woodworking.

What about the extra time it takes to do a piece by hand? Well, it can take a little longer, that's true. You need to be well organised with the workshop laid out properly, and above all you must have a first class bench. The 'kitchen table' might do in a machine shop, but for hand work the bench is the very hub of success. It must be heavy, at the right height, and with good, accurate vices, positioned to cope with the kind of work you are doing. You must know your tools, what they are made of; fine adjustments and sharpening angles. Everything must be clean and sharp. Tools talk to the craftsman, and will let you know when they are right.

I doubt there's much saving in machine work over hand work for the small one-off maker. If you're an amateur it doesn't matter. The quality will be so much better. The satisfaction of the maker won't compare, and this will show itself in the finished piece. A professional will have to charge a little more. With the saving in capital cost, bank interest, and time-consuming business of setting up machines, you could be better off.

## A mania of magazines

It is difficult to know whether machine mania was led by the woodworking press, or that the papers were merely following a craftsman-led trend. I am inclined to the former opinion. It



How might John Brown have responded to images of this beautiful Brancha chair, which was made almost entirely by robots, and is now in the Victoria & Albert Museum's chair collection, in London?

looks as though the machinery manufacturers have the technical press in a vice-like grip, leaving the humble hobbyist to believe that unless he buys the machines he will be a second-class woodworking citizen. I was always led to understand that machines were there to do the tedious work, and that the craftsman's skills should actually do the making. Gradually the idea of what is tedious has been updated, for it is now possible to make complicated pieces entirely with machinery. The only handwork left to be done is to lift the wood to the machine. I am sure the manufacturers will cope with this in time.

I ask, where is the pride of the craftsman? Does he, or she, think that money is a shortcut to skill? I have seen wonderful work done by amateurs, using hand-tools. True it does take time to learn the skills

required, and much practice. It's a pity the apprenticeship system has gone, when young people were exposed for five years to good practices, working alongside skilled men.

## Wonder and joy

Pride in work, pride in a fine set of tools: I know this is now unfashionable, but there is nothing wrong with being proud of one's achievements. Some woodwork is quite tricky and needs lots of practice. The wonder and joy as each hurdle is leaped has to be experienced to be believed. The material you work with is not uniform. It is moody, it can be deceptive, sometimes hiding faults until the very last moment of finishing, and you have to start all over again. Handwork breeds patience, and Granny's words are recalled, about speed and the heartbeat.

The kind of accuracy you can achieve cannot be measured in 'thous'. It's not necessary. Closer than an eighth or a sixteenth of an inch there is a sixteenth 'full' or 'slack', and for the perfectionist we are down to a 'gnat's whisker'. I have heard of micrometers being used on tenons. Frankly, I find this ridiculous. I would not go so far as to say that there are no skills necessary to



From *Models & Constructs*, John Brown quotes the author Norman Potter: "Gimson would run his finger along the under edges of a newly-finished piece saying: 'Kindly Rex, keep your edges kindly.'" And from EF Schumacher's *Small is Beautiful*: "We are remodelling the Alhambra with a steam-shovel."

VINTAGE SCHUMACHER



## Small is Beautiful

A Study of Economics  
as if People Mattered

CREDIT PHOTOS ON FIRST PAGE AND HERE BY ROBIN GATES

working machines. It is important to be able to read and interpret complicated instructions. What you end up with is engineering skills; precision engineering in wood. I have spoken to many woodworkers on this, and I am heartened by their defensive attitude. "I have a few machines," means they have a lot, and "But I seldom use them," means they use them all the time.

Norman Potter, in his book, *Models and Constructs*, tells the story of a visit to his workshop of a Gimson-trained cabinetmaker called Rex. He told how Gimson would run his finger along the under edges of a newly-finished piece, saying: "Kindly Rex, keep your edges kindly". (I can find no specification called "kindly edges" in the standard textbooks!) I am reminded of that quotation in the front of Dr Schumacher's *Small is Beautiful*. "We are remodelling the Alhambra with a steam-shovel, and are proud of our yardage." Those are the words of Aldo Leopold.

Handmade work has soul, it has verve, a sparkle which a machine cannot reproduce. Eric Gill would never let an apprentice stonemason incorporate a mistake into the design of a carving. It must stay for all to see, or be scrapped. There is a lack of understanding to this kind of approach which inhibits the modern woodworker. The apparent 'perfection' of some machined operations has trapped the craftsman into feeling that this is the way it should be. There is no excuse for lazy people or shoddy work, hand or machine, but it is nice to think that this table, or this chair, was made by a human being.

## Furniture inspections

You often see people inspecting furniture minutely to see if all the joints are tight, or to see if there is any slackness in the dovetails, or perhaps they are looking for graving pieces to cover a mistake. This annoys me. Do these people do the same to a painting in an art gallery? A firm I know makes one-off pieces, things like Welsh dressers, and furniture in the Georgian style. The joinery is impeccable. This company has the very latest in machines. Yet it is possible to detect their work from a good distance, it is so ugly. They undoubtedly sell things, I believe they export occasional items, which will never fall to pieces, which in a way is a pity.

As one stands back to appreciate a painting, so it should be with a piece of furniture. Is it beautiful, well proportioned? Will it do the job it was designed to do? Is it strong enough for its purpose and will it last? Do I like it, can I live with it? When the customer has asked these questions only then does the price come up. If it is handmade and has life it will probably be sold. Corporately the public taste is quite good. Individually we can criticise people for spending their money on badly-designed goods, but there seems to be a balance that prevails. Successful cabinetmakers and joiners have only become so because people like what they make. They rarely advertise so the old saying about building a better mousetrap must be true. The entrepreneurs that run substantial and elaborate galleries know what they can sell for they have usually built up a following who buy what they are told. This group must rank amongst the taste makers. However, by far the greater part of craftsman-made woodwork is sold at the workshop door, then by word-of-mouth recommendations. This takes a long time to build up for there is a credibility gap. The main advantage of selling direct is that the large mark-ups for the showrooms are avoided. There is also a personal relationship with the customer.

"Wisdom demands a new orientation of science and technology towards the organic, the gentle, the non-violent, the elegant and beautiful." These again are the words of Schumacher, an economist, a breed not normally associated with such sentiments. In a spiritual way I think there is a parallel with the organic farming movement. When they first started, organic growers were ridiculed by the establishment as "mud and muck" freaks. Now, demand for their product far outstrips supply, and with farming problems as they are, I think they will have the last laugh. No one



has grasped this particular nettle. The money man, and his pet poodle, the advertising man, have woodworkers in a vice-like grip. They have created the need for all this junk, and now they fulfil the need. If that's what woodworkers want, good luck to them, but I hope they won't have the gall to talk about skill. It reminds me of painting by numbers.

## Fettling the meanest of planes

Woodworkers should look anew at their hand tools. Take the meanest, rusty plane, clean it, grind the blade and sharpen it – like a razor. Then set it up, cap iron, mouth opening, there are plenty of books to tell you how if you don't know. Now, set very fine, run it over a scrap of oak. Hear the sound it makes (you can tell a sharp plane by the sound), and feel the perfect finish. Use a sharp chisel, what a thrill.

Craftsmen in wood who agree with these sentiments should make a self-denying ordinance, that after a certain date they will give up their machines. Then they should tell everyone what they are doing, broadcast the message, print it on their headed notepaper, make a statement. Perhaps there's a need for an organisation like the Soil Association, with a 'Good Work' symbol.

If you make your furniture by hand, news will soon spread, and people will travel to see your work, and they will buy it. I have worked with machines in other people's employ. I have owned some machines myself. Years ago I examined what I was doing and went 'organic'. I haven't regretted it once. It was a renewal of my love affair with wood.

The saying that if it's any good they don't make it any more, becomes increasingly true. We must do our best to turn things round. We must educate ourselves, and our customers to realise what quality really means, quality in making, quality in design, and finally quality of life. Our children are educated to believe that success is making money, quickly if possible. The politics of recent times have encouraged us to turn greed into a religion.

What I have said here is about as fashionable as advising people to sell their car, and take a bus, or even walk. Real progress can only be spiritual progress. The calm and unhurried atmosphere in my workshop makes enough to pay the bills for a simple life, no more. God bless you, and remember, Good Work.

*John Brown wrote this essay in the 1990s, and it has previously been published in Fine Woodworking and Resurgence magazines.*

# Off-Grid on a Silver Tree

Having built himself a cabin, *David Godber* tells how he works wood without electricity

There is a romantic image that comes to peoples' minds when they hear the words 'off-grid'. It conjures images of woodsmoke and oil lamps, serenity and a slower pace, home-grown food and kitchen table singalongs. Nostalgia for times past. At least I hope that is what comes to peoples' minds when they hear that for the last 10 years I've lived on an off-grid homestead with my family in the Canadian wilderness.

The reality of the off-grid life is somewhat less rosy. First, however, let's straighten out what I mean when I say off-grid. It's a bit like calling yourself a traditional woodworker. Does that mean you make traditional woodworking projects but aren't fussy about the tools you use? Does it mean that you only use hand-tools? Do they have to be antiques? Purists will often be militant about what you use and your process. The same is true for being off-grid. Purists will shout you down for saying you're off-grid unless you grow all your own food, shear sheep for wool to clothe yourself, and generally don't have any contact with the outside world. The reality is more of a spectrum. We aren't connected to the power grid, but we do have electricity which is produced via a photovoltaic array and stored in batteries (with a generator for short winter days).

We harvest rainwater, we use a composting toilet, and we produce as much of our own food as we can. Our house runs much like a normal house except we need to be conservative with our consumption and aware of how much power and water we are using. There's nothing like running out of water in the middle of winter when the temperature is -30°C, and you're trying to fill the cistern before the filler pipe freezes solid. In the summer we're inundated with mosquitoes, and in the winter we have the challenge of clearing snow off our 8.5km of road to reach the highway.

## No unexpected outages

These challenges are very real but so are the benefits. I haven't paid an electricity bill in more than 10 years. We never suffer from unexpected power outages. I



haven't paid a water bill in 10 years either. Because our location is so remote, our property taxes are minuscule. With easy access to timber and an on-site bandsaw mill all of our lumber requirements are easily met. These savings are not insignificant, and they make it possible for me to pursue my woodworking career.

I had already begun greenwoodworking before we moved off-grid, so that transition was easy to make, and most of my tools were already human-powered. My set-up has evolved the longer we've lived on our homestead. The family initially lived in an unheated 12x12ft cabin while the house was being built. This turned into my shop/storage shed once we'd moved into the main house. Currently I work out of a 24x16ft straw-bale shop; a building method I highly recommend. It houses my pole lathe (bungee powered), shaving horse, chopping block and benches along with the usual assortment of hand-tools. It's heated in the winter by an airtight wood stove. The size is just about right for a one-man chair shop. When you're not manoeuvring sheets of plywood through a tablesaw you need a lot less space.

## Covered area

The next thing on the list is a large covered area outside where I can store logs out of the weather and sticker sawn planks while they air dry. Sometime in the near future I'd also like a little blacksmithing set-up. It seems that before too long everyone who takes up the pole lathe eventually starts blacksmithing. It's the best way to ensure you'll always have exactly the right tool on hand. The obsessive nature of turning bowls on a pole lathe demands just the right hook.

Of course the right edge is equally important. Although I still have a grinder, as a souvenir from my on-grid days, at

present my sharpening system is much more off-grid friendly. I use water stones with a diamond plate for flattening. I started out using sandpaper on glass.

## Easy system to kit out

It's a very easy system to set up and doesn't cost much to get kitted out. The paper would always tear at just the wrong time and that began to get frustrating. I will still use sandpaper wrapped around a dowel for touching up hook knives and would recommend it as a great starting place if you're just beginning your sharpening journey. I don't get too wound up about grits so simply have a coarse, medium and fine stone with a leather strop for good measure. The key is to remember to bring everything inside at night. Freezing temperatures and water stones don't mix. Having a dedicated space on my bench for sharpening has been a great step forward. Whatever system you use the key is to sharpen often and before tools get dull. This keeps your edge geometry on track and prevents marathon sharpening sessions that just discourage you from sharpening in the first place.

If you have visions of going off-grid I have some advice for you. First, make sure you're a greenwoodworker. It can all be done using only human power, and if you aren't looking to get into production work, human power may be all you ever need. With only a handful of tools you can make some pretty wonderful items ranging from spoons and bowls right up to the fanciest of chairs. For life outside the shop I suggest a trial run. Before you go cutting the main power supply to your house start by using less of everything. Only have one light on at a time. Plant a garden. Learn to sew or knit and make yourself some clothes. Carve or turn a bowl and start eating out of it with one of the spoons you made. Make a tool. I would suggest a bowsaw: easy joinery and a good use for old bandsaw blades from your on-grid days. Cut your own hair. Being off-grid is as much a state of mind as anything. When it's a choice between doing it yourself or doing without, you find that it's worth at least giving it a go. With each success comes more confidence to try the next thing. The main thing is to get started!

Follow David at [@silvertreewoodworking](https://www.instagram.com/silvertreewoodworking) or visit [silvertreewoodworking.ca](http://silvertreewoodworking.ca).





David has a 24x16ft straw-bale workshop, which houses his pole lathe and shaving horse (above), providing space for benches and chairs (right). There is a large covered area (below) to store logs out of the weather



# A Future in Village Hands

Having introduced carving classes for South Korean children, *leopalgoe* reports on their experiences

There is a new place called Youth Career Experience Centre in Yeongwol-gun, South Korea. The role of the centre is significant as local teenagers lack various experiences in career paths compared to urban children. Last year, Choi Yoon-jung, a scholar at the Yeongwol-gun Office of Education, and Lee Hyun-jung, head of the Youth Career Experience Centre, praised the vision of the Palgae Gongjakso (my work studio) and asked for educational content for future carpenters.

I signed up for the 'Dream Road' site for youth careers and planned and registered a Wood Carving experience program for teenagers. As soon as I registered, Choi Nam-hee, a teacher at Naeseong Elementary School in Yeongwol-eup, applied for the carpentry experience of 15 students in the 6th Grade, 15 students in the class, and 30 students in the class. For safety and effective classes, it could have been divided into small classes, but due to various circumstances in schools and workshops, the classes were held simultaneously.

A few years ago, I gave a Wood Carving class for about 20 people as part of training for office workers. At that time, I gave an hour-long lecture on theory and the basics of carving, and I provided an effective experience of wood carving for beginners over the next two hours. However, compared with teaching adults, working with a class of 30 elementary school students unsure of their judgement and control using sharp tools required extra consideration of the student-teacher ratio.

However, I wanted to accept the educational philosophy of Choi Nam-hee, who applied for the carpentry experience, and who said: "I am sure that the challenging carpentry experience will help create a future for local teenagers who are less well catered for compared to their peers in large cities."

The Palgae Gongjakso must find solutions tailored to local characteristics for local youth. High-tech education systems in large cities, such as virtual and distance learning, cannot be brought to mountain villages in Gangwon Province. Instead, we believe that inspirational teachers such as Choi Nam-hee, scholarships from the education office, and Yeongwol-gun Youth Career Experience Centre offer a viable alternative with differentiated and specialised career education. We believe



Bright and healthy children can build and furnish houses of the future with their own hands, led by reliable adults



that we should start from the simple life of the countryside of Yeongwol where we live with beautiful nature. In particular, I am sure that there is a viable solution in the lo-tech and traditional handicraft technology inherent in natural local life.

It should be the adults in the area who will lead the future for children, as in any region, who will have to give birth to them, care for them and help them. I carefully asked adults who attend the regular class at the workshop for help in local youth career education. Thankfully, everyone agreed on the reality of local teenagers, understood the responsibilities of adults, and decided to participate.

In line with the non-face-to-face era, we planned to supplement the class contents prepared with videos, teach Wood Carving's basic theory and precautions for safety through video, and then proceed with the woodcarving experience. However, we have long considered and prepared for the number of cases in which students can handle sharp carving knives that they have never handled before, and whether safe and enjoyable woodcarving education is possible without injury. Five local carpenters who participated in the class as regular Wood Carving classes were happy to give their time as assistant instructors. A total of six students took turns in charge of preparing for woodcarving before classes began.

## Final carving class

Finally, we finished the jam knife carving class of two and a half hours from 9:30am to 12:00am. Contrary to expectations, all the children concentrated calmly as time went by. As carving knives in children's hands began working the fresh wood the quiet of the classroom gave way to the sounds of making. Instead of interfering too much, we decided to help as required but see how



"Six students took turns in charge of preparing for woodcarving classes."



Preparations were made for students to handle sharp carving knives that they have never handled before, so that safe and enjoyable woodcarving education is possible without injury



children managed carving as much as possible by themselves. We have completed a useful woodcarving experience program by completing each project. All the assistant teachers in the regular class at the Palgae Institute were even more proud than the children. Perhaps we all feel that the future is a little brighter for the children of our region to experience. In Yeongwol, there are bright and healthy children who will build and furnish the house of the future with their own hands, and led by reliable adults.

You can follow sculptor leepalgoe on IG @leepalgoe or visit blog. [naver.com/leepalgoe](http://naver.com/leepalgoe) to see his amazing Kuksa work.



The classes were supported by adults who understood the needs of support for the courses with children

## Letters from Readers

Comments and thoughts about recent *Quercus* issues



In QM11 Robin Gates uses plate glass from scales to flatten and hone plane soles and bevels

### Granite or late glass for flattening

I've been a subscriber to *Quercus* since the first issue, and the magazine is, well, a wonderful deep dive into all things woody and spectacular craftsmanship and artistry in wood. I've been woodworking on and off for more than 50 years, and the magazine has inspired me to find books and acquire more tools in preparation for finishing work later this year. I enjoyed your notes about upcycling a glass surface from a set of bathroom scales.

A year or so ago I needed a large flat surface to flatten the print bed of a 3D printer – probably as far away from wood as you can get – but there was an ulterior motive to use it as the flattening surface for honing and sharpening all my woodworking tools, some of which are of eBay origin. From years of working in engineering I considered granite, which is routinely used for large surface plates, a material which can be made optically flat and stays that way. Plate glass has often been suggested in engineering circles as something which comes flat and stays that way, but it's a lot more delicate than my idea. I went to my local monumental mason and bought a 400x500mm slab of granite. It cost me about £40, and is just perfect for the job. It is very heavy, so doesn't move, and in this part of the world, it's the flattest object around.

Once again, thank you for the inspiration in artisan craftsmanship of anything to do with wood!

Roger Whitely

### Unromantic and quirky

The latest issue of *Quercus* is an important one. The tribute pays tribute to John Brown and it fills a lot of interesting details. Most importantly, it is an unromantic account, much like Chris Williams' outstanding book, *Good Work*. As JB's life recedes into the past, I have watched a lot of mythology get built up around his name, his words and his work. In addition to the John Brown tribute, the issue is filled with a lot of practical hand-tool information. Some of it quirky, some of it fun. One of the things like about *Quercus* is the variety of points of view, both geographically and skill-wise.

Christopher Schwarz, in his *Lost Art Press* blogsite

## A Cabinet Saved by Roubo

Still in the early stages of building her dramatic cabinet, *Barbara Roberts* designs and makes the stand

In the previous issue of *Quercus Magazine* I wrote about designing a cabinet on a stand. I've progressed slowly so this has become an ongoing project. So far I have designed the cabinet, made a full-size cardboard mock-up and stand for the cabinet. Next I'll make the actual piece. Building the carcass should be pretty straightforward but the difficult things will be a carved face on the door and carved ears on the sides and weird mechanical functions inside the cabinet. But for now, let's discuss the stand quickly. There were a couple of things that I learned making it and I'd like to share the lessons with you.

I cut the full-size mock-up into a template. I had one template for the front and back leg face and one for the front leg side and one for the back leg side. Turning a template upside down created a perfect mirror image for the legs on the other side. I made a silly mistake using a felt-tip pen on wood. Sure, it was well visible on dark wood but it was very difficult to remove and at one point I used alcohol to wipe dust off a leg and to see the grain and I ended up smearing the whole leg with the ink. Someone on Instagram said he had a good experience using white board dry erase markers on wood.

This was the first time for me working with curvy furniture legs so to get going I made a practice piece. I tried saving material by cutting a piece from the left side of a plank and gluing it on the right side. This way I was able to make the leg wider than the thickness of the plank. This method is generally used with curved legs. However, I wasn't happy with the outcome. The curves on these legs are so shallow that I couldn't hide the glue line completely and it was obvious that I wouldn't be able to match the grain pattern enough to hide the fact that I was trying to skimp on the material. I ended up using lumber so big that I could make a foot out of one piece. The amount of waste compared to a two-piece leg was ridiculous but the result is much nicer.

I have a nice stack of woodworking literature but I wasn't able to find suitable joinery for the front leg and horizontal piece. I drew many different joints but none of them seemed to tackle the problems with perpendicular grain and continuous curve. I asked for advice on Instagram and a fellow woodworker showed me drawings from the famous *L'Art du Menuisier* by Andre J. Roubo (yes, the Roubo). This joinery was widely used in curvy 18th



Century fine furniture. The idea is to avoid very short grain on the horizontal piece. It would be difficult to cut the leg accurately to that shape so I glued the 45° angle piece on the leg. It would have been easier to glue the piece in place before cutting the curves but I forgot to do it.

As a side note, I didn't have a big enough saw so I made my own. Bowsaws are easy to make using a bandsaw blade. I carved the frame to make it look nicer. I especially like the feather-shaped toggle.

After rough-cutting the legs, the next step was to shape them to their final design. I was worried about keeping the legs absolutely symmetrical but I found that if I had the legs on the bench, I could see the errors using a pair of winding sticks. For final shaping I used coarse sandpaper on a long piece of wood. It really helped me to shape the legs symmetrically and keep the faces flat and parallel.

I've struggled for a long time with mortise-and-tenon joinery but for the first time everything went smoothly. As it turns out, practice does make perfect. One thing I still need to work on is fitting drawers. I forgot to orient the grain on the sides so that I can plane the drawer sides from front to back. One side was ruined by nasty tear-out and after I had planed it smooth and the other side to equal thickness, the drawer was already too narrow and became firewood. According to brain studies, people learn best when they make and correct mistakes. I would prefer to do everything right the first time but that is probably a futile hope. In case I'm not showing enough, you will see the completed cabinet in the next issue of QM.

Follow Barbara on @barbiewoodshop.





The bowsaw is made from a bandsaw blade with a feather-shaped toggle



The first drawer ended up too narrow for the opening so became firewood



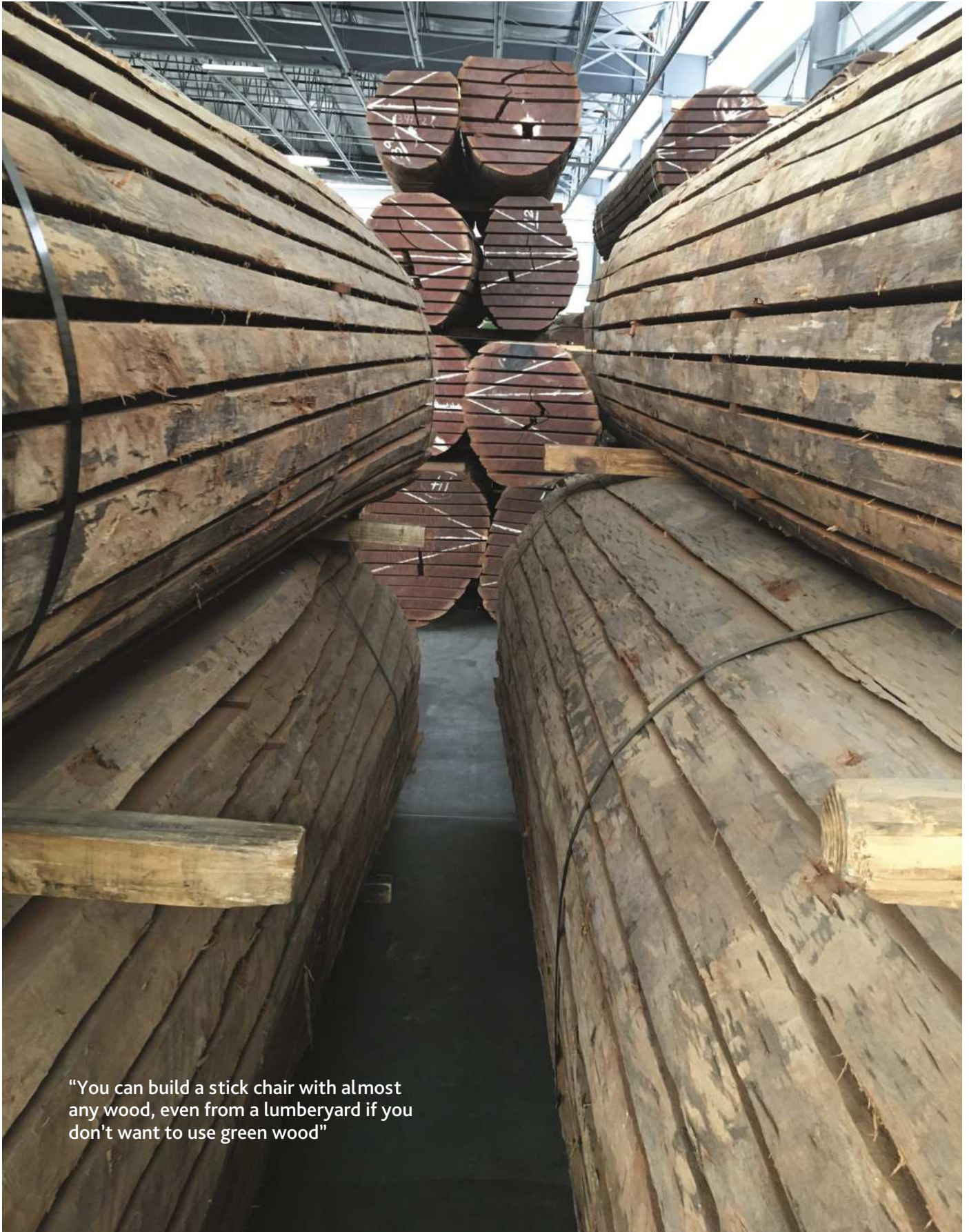
The curves on the legs are so shallow that it is hard to hide a glue line if you choose to make them from two pieces



"I could see the errors using a pair of winding sticks"

Using winding sticks on the bench helped with checking the legs are symmetrical (right)





"You can build a stick chair with almost any wood, even from a lumberyard if you don't want to use green wood"

# Choosing Wood for Chairs

In an extract from his new stick chair bible, *Chris Schwarz* has Yeahs & Nays when choosing wood

Most chairmakers are ridiculously worried about the wood they use in their chairs. Is it strong enough? Is it dry/wet enough? Is the grain straight enough? Can I get the parts I need from this chunk on my workbench? But aside from those narrow concerns, there is a lot of flexibility when it comes to the wood you use to make a chair. The wood can be:

- Almost any species
- Air-dried, kiln-dried or vacuum-dried
- A softwood or hardwood
- Sawn or riven
- Ring-porous, semi-diffuse-porous or diffuse-porous
- From the lumberyard, the log yard or your backyard.

Put another way, almost any wood can be used in a chair as long as it is strong enough, dry enough and the right size. What follows is how to evaluate your stock in terms of its strength, moisture and size – without turning you into an intern at the Forest Products Laboratory.

## Strength

Every stick of wood is a bundle of wood fibers. If the fibers run continuously from one end of the stick to the other, it will take far more abuse than a stick with some of the fibers running across the width of the board (sometimes called “short grain”).

You can create one of these super-strong sticks using a few methods. You can rive the wood – like firewood – so it splits along its long fibers. You can saw it out by following the direction of the fibers with your saw blade. Or you can use a combination of these two methods.

Neither method is magic. As long as the fibers run straight through the stick, you have done your job.

The other aspect of strength derives from the species of wood. A strong species, such as white oak, can be extraordinarily tough when it is only 1/2in diameter and its fibers run continuously from one end to the other. A similar stick of cherry or walnut might have to be 3/4in diameter (or larger) to possess equal strength.

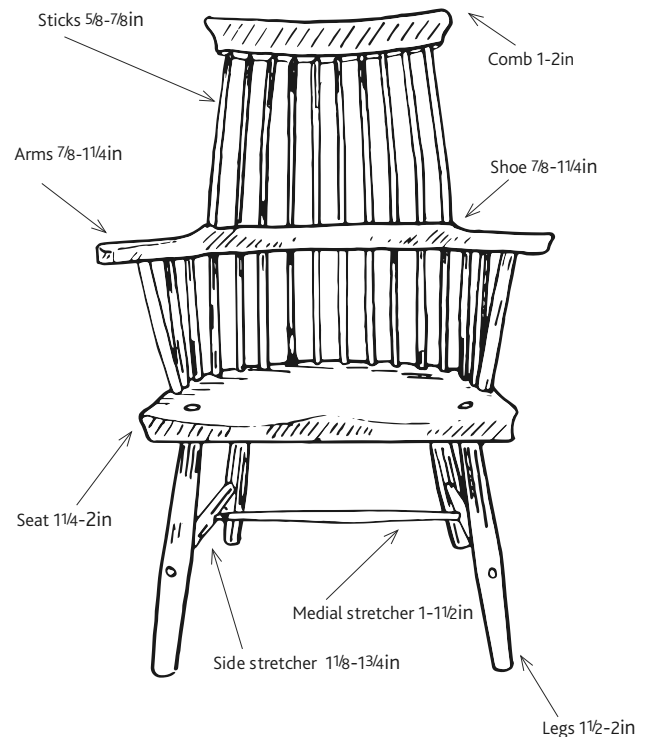
While it sounds like I am about to offer a chart, graph or equation to determine the optimal-sized chair part, I'm not. Instead, I'm going to suggest you find a sledgehammer.

You can easily test a sample chair part by propping it up on two blocks of wood, one on either end of the stick. Hold the stick in place with one hand and strike the stick with a small sledgehammer (2lbs or 3lbs will do). If the stick survives the strike, the part is strong enough. If it snaps, you should increase the bulk of the stick or find one with straighter grain.

Why isn't there a Holy Chart of Diameters and Species with recommendations for chairmaking? Because wood is so variable. For example: slow-growth and fast-growth oak can be radically different when it comes to strength. (Slow-growth oak is far more porous and easily snapped.) How the tree grew, how it was dried and how straight you cut it all play a part in how strong a stick is. But one way to resolve all the variables is to hit a sample stick with the sledge.

The idea for this test came from fellow chairmaker Chris Williams, who was looking for a way to test wood for brashness, a defect where the wood is so brittle it can be snapped like a corn chip. It is a method that the USDA Forest Products Laboratory

Common diameters and thicknesses



has used to test brittle woods. How hard should you hit the stick? Like you are striking a nail. Should you use a surviving stick in the chair after you hit it? It's your call, but I usually use them.

## Another option

If you don't want to pummel your sticks, here's a different way to evaluate the parts of your chair. It starts with this idea: You can increase the strength of a piece of wood in two ways:

1. Make the grain dead straight.
2. Increase the thickness and/or diameter of the part by 1/8in.

Why 1/8in? Two reasons. Eighths are a pretty standard interval when changing the thickness of your parts. Is 5/8in too thin? Try 3/4in. Also, using eighths helps to illustrate how the strength of wood increases or decreases.

It's easy to assume that if you make a chair part one-eighth thicker, then it would also be one-eighth stronger – that there's a 1:1 relationship. But that's not how wood works. When you measure wood's strength via its breaking point (such as its “modulus of rupture” or its “shear strength”) then the strength can increase by the square of its thickness. In other words, small changes to the diameter of a chair part cause large changes to its overall strength.

The people who sit on chairs exert a complex series of forces



Chris resisted owning a moisture meter for years. It pays for itself the first time you find a problem using this tool

on its components. Some forces are directed at the floor. Other forces strain the chair's back. Or the forces thrust the chair's arms outward when the sitter pushes themselves out of the seat. Abuse can also come from outside the chair. Evil children might stand on the stretchers. Chairs can be used as weapons. Or they can be victims.

What makes this all the more complicated is that wood is not a homogeneous and extruded substance. Every stick is different, depending on the species, how the tree grew, its moisture content and how straight is its grain.

It would be easy to say that the engineering is too complex to be practical for the workshop. But here's a crack at explaining it a little deeper.

One of the important measures of strength is the wood's "modulus of rupture". Imagine a stick that is supported at either end above your benchtop (and is at 12% moisture content). Then a force presses down on the stick at its centrepont. The "modulus of rupture" is the amount of force-pounds per square inch required to break the stick.

There is a commonly published formula that allows you to calculate the force needed to break a stick of given dimensions and species. You can look up the formula if you like (it's also in an appendix at the back of this book).

To demonstrate how the formula works, let's pretend we have an ideal 12in-long stick of wood that we want to use in a chair. If you double the width and thickness of a stick, its strength increases by eight-fold. Small increases in thickness and width increase the stick's strength significantly.

Which parts of a chair are governed by the modulus of rupture?

- In a chair with stretchers, the legs are subject to this sort of force at times. Kicking the chair's leg might break it.
- The stretchers of a chair are definitely subject to the modulus of rupture. People put their feet on the medial stretcher and – snap – game over. Kids like to stand on a chair's side stretchers, also a modulus of rupture problem (and a historical source of yelling).
- Also, consider the sticks between the arm and the seat. Whacking these sticks could cause them to break.
- Then there is the case where the thin back sticks of the chair are framed by stout posts, plus the arm (or the seat) and the crest. Dramatic forces against back sticks can cause snapping.

The other common indignity suffered by chair components is

"shear force". In a chair, this happens when the component is secured at only one end. For example: A leg without stretchers. Or a back stick that isn't surrounded or protected by stout posts. Kick that leg or yank that back stick and you will apply shear forces to the poor part.

Shear forces can be devastating. A leg can snap. Back sticks can break. I have even heard of an entire (expensive) chair collapsing under the weight of a sitter due (primarily) to shear forces. The legs broke free from the seat. Sticks above the seat snapped like the twigs that they once were.

Let's look at some shear-force numbers (assume that all of these numbers apply to a perfect stick at 12% moisture content with dead-straight grain). Doubling the diameter of a stick will increase its strength by four-fold when dealing with shear forces.

[If you want to explore these ideas in detail, I've included the above formulas and important raw data on common chair woods in an appendix at the end of the book. I encourage you to dig into these formulas when you start designing your own chairs. Or when you use an unfamiliar species. The formulas are pretty simple (even for a former newspaper journalist).]

But if you just want some hard-won advice on strength, here it is: if you are concerned about the strength of a component, increase its diameter (or thickness and width) by 1/8in. That small change will increase the strength significantly.

Or fetch the sledgehammer.

## Moisture

Wood for chairmaking can be wettish or dry. What's important is that you know how wet or dry it is as you build the chair. If you put a wet leg into a dry seat, the leg will fall out in a few weeks. If you put a dry stretcher into a wet leg, you can create an almost-indestructible joint that can last 100 years without glue.

If dealing with moisture content freaks you out, you also can use chair components that all have the same moisture content and create tight mechanical joints that will outlast you.

There are lots of ways to make a good chair. There are books devoted to managing moisture content in your wood. Here are the approaches I have taken in my lifetime:

- Buy kiln-dried wood from a reputable source. Or buy Whatever Lumber and let it all sit around for a year. Then it's likely fine.
- Buy a moisture meter and check the wood against pieces of the same species that have been sitting around the shop for a year.
- Trust your gut.

I recommend the first two methods for beginners. Yet, I must say that after a few years you will be able to pick up a stick and know if it's either dry or too wet. Wettish wood feels heavier and cooler to the touch than dry wood. Eventually you will go to a lumberyard, pick up a board and say: "Nope. Too wet."

Side note; you'll also be weirded out by wood that is too lightweight. This stuff is even more dangerous than wood that is too wet. Wood that feels too lightweight is likely brash (brittle) or punky (rotted) and entirely unsuited to chairmaking. Brash wood can be caused by how the tree grew. If it has wide bands of porous springwood and narrow bands of fibrous summerwood, there is a better chance the stick will be brittle and brash, according to the US Department of Agriculture.

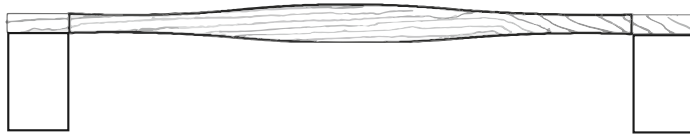
Other factors can cause wood to be brash. In young trees, the sapwood is tough; in older trees, the sapwood can be weaker or even brash. If the tree was a softwood and grew on a hill there is a good chance it will have developed compression wood on the downhill side, and that also can be brash.

Let's get back to moisture content. If you have the money, buy a moisture meter. They aren't terribly expensive, and they are a great way to explore the wood in your shop and get a feel (literally) for how wet or dry each stick is.

# Modulus of Rupture and Shear Force

Testing wood for strength helps ensure parts of chairs will last, whether they are tipped back or stood on by children

The 'Modulus of Rupture' is the amount of force-pounds per square inch required to break the stick



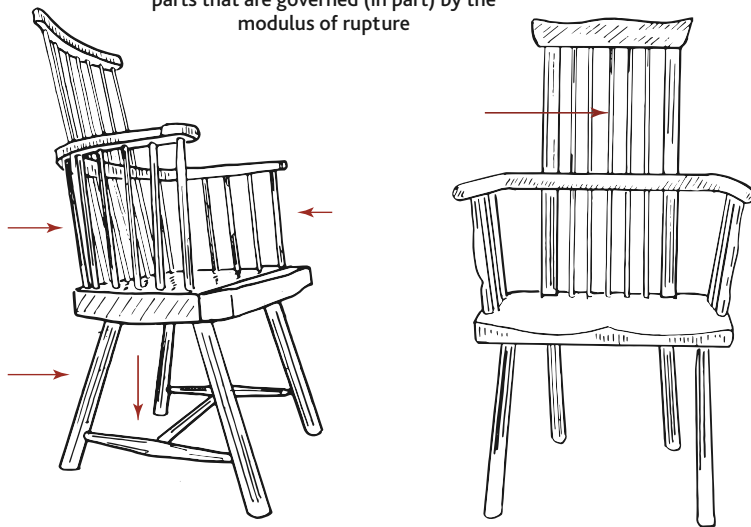
When Chris makes a chair he has a few extra sticks and hits them with a sledge (above). "I recommend it," he says. Much can be learnt about wood breaking, and how some species (like ash) seem indestructible



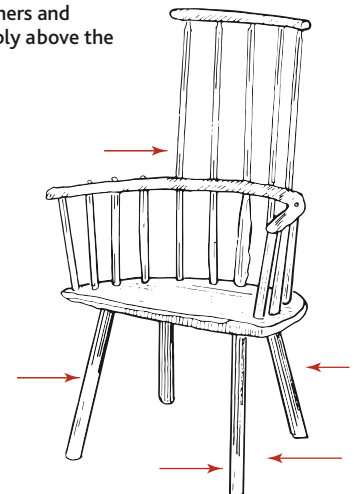
Two victims of the sledge test. Short-grain walnut (above) and brash cherry (below)



The red arrows show the forces on chair parts that are governed (in part) by the modulus of rupture



Shear forces affect legs without stretchers and arguably above the arms

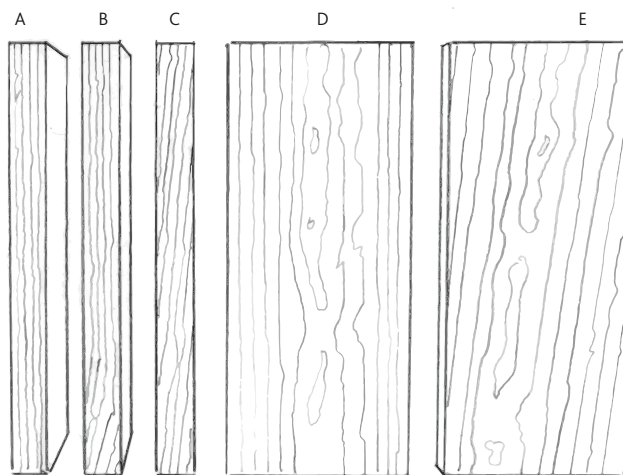


**Two sticks, one disaster**

Short grain (below stick) is doomed to snap



You can harvest straight sticks from a board by sawing them out. First mark a line parallel with the grain lines. Cut to the line with a bandsaw and you can then rip straight sticks to the fence

**Learning to read the grain**

Spotting straight, angled & curved grain is essential. (A) Dead-straight edge-grain; (B) Straight edge-grain curving at one end; (C) Angled grain - Avoid; (D) Straight face-grain (note lack of cathedrals); (E) Angled face-grain

What's a good target for the moisture content of wood? It's not a particular number. Instead, you want to determine the equilibrium point for your stock – where it is neither expelling water or sucking up water from the air. This sounds pretty abstract. Here's a real-world example to help explain things.

Let's say I'm collecting wood for a chair, and I find some oak that registers at 7% MC, which is at equilibrium with scraps of oak that have been sitting around in my shop for a long time. Then I find some more oak that registers at 11% MC.

If possible, I'll use the wetter wood for the chair's seat, arms or crest rail. That way as that wood dries, it will shrink around the tenons of the sticks/legs and tighten the joints.

OK, what if I have some stock that comes in too dry? Sometimes this happens during the change in seasons, when the wood has been in a climate-controlled place that is bone dry. If I get some oak that is 3% or 4% MC, I use that for the chair's sticks. It will expand as it heads toward equilibrium (7% MC in our example). As its tenons swell, they'll tighten in their mortises.

If all this sounds like more than you want to deal with, just let your wood sit around for a year or so. It will all be at equilibrium, and you don't have to think much about moisture.

**The sizes of the parts**

Chairs can look like a complex combination of parts that have widely variable shapes and sizes. While that's true with many highly technical modern chairs, most vernacular chairs are a pretty simple collection of parts of fairly standard thicknesses.

No matter where I buy my wood – from a sawyer in the forest or an inner-city lumberyard – it is typically cut to a number of standard thicknesses that have been commonly used for hundreds of years. As a result, most chair parts fall into the same sort of thicknesses that a cabinetmaker is comfortable with: 4/4 (which is 1in thick in the rough and pronounced “four-quarter”), 5/4 (11/4in in the rough) and 8/4 (2in). The parts might end up tapered, curved or carved. But in the end, they aren't all that different from the materials you use to make a box. Let's start at the floor and work our way up.

Legs are generally made from 8/4 material, which is sawn roughly at the mill at 2in thick. So, a 2x2in leg is possible (but not probable. And probably too chunky, visually). So, you'll often see legs that are 13/4in square or 15/8in square. Sometimes legs can be as slender as 11/2in square. These legs can be tapered, turned, octagonal or cigar-shaped. The shape doesn't matter too much

when it comes to strength. What matters is the legs start with 8/4 stock, and that once the legs are less than 15/8in square you should be a bit worried about their strength.

Stretchers can be made from 8/4 stock, which is ideal when they bulge dramatically in the center of their length. Or they can be as thin as 5/4 (11/4in finished) for a more spartan, straight-line look. The seat is also made from 8/4 stock, so it's common to see seats that are 13/4in thick down to 15/8in. Thinner seats are possible if you reinforce the joinery areas with battens (a Germanic construction).

The sticks of a chair, sometimes called ‘spindles’ when they are turned, typically start life as 4/4 stock (or they are sawn out of 8/4 stock). Typical chairs will use 3/4in diameter sticks that taper to 5/8in tenons at either end. Chairs that look delicate might use sticks that begin at 5/8in in diameter but taper to as thin as 1/4in in diameter. Skinny sticks demand arrow-straight grain.

Some chairs have ‘posts’ – thicker sticks that hold up the front of the arms or frame the backrest. Posts are 1in up to 13/8in in diameter and can taper or be curved.

The arms of a chair are typically made from 4/4 or 5/4 stuff. If the arms have a ‘doubler’ or ‘shoe’ (which thickens the arm at the back) it can be 4/4, 5/4 or even thicker – really anything goes once you start looking at historical examples.

The crest or comb can be made in many ways. It can be a simple flat 4/4 board. You can bend 4/4 material to make a curved comb. Or you can cut a curved comb from solid 8/4 material.

**Picking wood**

Once you get a handle on the strength, moisture and general size of a chair's parts, you are ready to go to the lumberyard, mill or woodlot. There you need to sort through the boards to find the ones that are ideal for chair parts.

In general, boards that have curved, irregular or wavy grain can be used for seats, arms and the comb/backrest. Really, almost any stock can be used for these chair parts. But for legs, stretchers and sticks you need boards with arrow-straight grain. It is easy to become neurotic (and perhaps paralysed) when seeking dead-straight grain for legs, stretchers and sticks. The goal is to find the straightest stuff possible. But if the wood's not perfect, remember that you can make it 1/8in thicker than planned.

How do you get straight grain? If you've read books about making Windsor chairs, you know that many makers split out the



In straight-grained boards it takes little effort to split your parts from kiln-dried stock. "I usually wear gloves when riving," Chris notes

legs, stretchers and sticks from green wood. And if you have the trees and space to do this, I wish you godspeed.

If, however, you don't have access to green wood, or you live in town and can't transform your front yard into a work yard, read on.

The search for straight grain begins at the lumberyard or sawmill. When I build cabinets, I pay attention to the broad faces of the boards. When building chairs, however, I barely look at the boards' faces. Instead, I peer at the narrow edges of the boards. The grain on the board's edge must be dead straight and not run out for about 80% of the board for me to even consider buying it.

When you start looking at the edges of boards, you'll notice a pattern. On many boards, the grain runs arrow-straight along most of the edge. Then it curves – sometimes dramatically – for the last 12in or so. This curved section is either from the bottom of the tree, where the fibers spread out to form the tree's root system. Or it's from the top of the main trunk, where the tree spreads out its branches or splits into two trunks. Sometimes I'll use this curved-grain stuff for a seat, arms or comb, but never for legs, stretchers or sticks.

After I find a board with a long run of dead-straight edge grain, I'll pull it from the pile and look at its broad faces. If the grain is nearly straight on the face as well (and free from fatal defects), then the board is a keeper. If, however, the grain on the face is angled, I can still use it, but I won't get as many parts from the board as from an ideal board.

With a pile of boards, I head home and mark out the parts for the chair. After crosscutting the stock, I'll decide if I am going to rip the legs, stretchers and sticks from the boards with a saw or rive them out with a froe.

### Riving dry stock

Years ago, I started riving my chair parts from kiln-dried wood. No one told me this wasn't normal, so it didn't seem weird at all. It began when a customer requested a stick chair in walnut, and he insisted that all the parts (except the seat) be rived. I managed to find two decent-looking walnut logs from a local tree service and rolled them into my driveway.

When I split the first log, I discovered the tree had been sitting on the ground for a long time; the wood was quite dry. I thought this was bad news and panicked a little. I had just left my job at *Popular Woodworking* magazine, money was tight and I needed to somehow make these two logs into a chair – no matter what. So I split both logs up. One of the logs had wavy grain, which became firewood. The other log was dead straight and split out nicely.

In addition to splitting dry stock, I also did a naughty thing. At first, I couldn't get my froe to split the dry walnut. I put down my wooden maul and picked up a small metal sledge (about 21/2lbs). I looked at the sledge and remembered the admonitions about how you should never drive a froe (or set a holdfast) with a metal hammer. Then I thought, "Hmmm. I hit nails all day with a hammer. And blacksmiths hit metal ..." Before I could finish the thought, I clanked the froe with the sledge (yes officer, I was wearing safety glasses). After two or three strikes, the wood split.

I've been doing this for eight years now, fairly regularly. The back of my froe is a little mushroomed, but it still works just fine. Someday I might grind away the mushrooming. (Gosh, that's an odd sentence.)

After splitting out the dry walnut logs, I built the chair, delivered it and got paid (whew). Intrigued, I tried splitting some kiln-dried scraps in my wood rack. It worked (of course it worked – grain is grain). And that desperate accident opened a new world for me.

The riving process is simple. Stand the board on end on the workbench or on the floor. If the grain is angled across the face of the board, first rive off a wedge of grain so you can see how the grain is running.

Once you can see how the grain is traveling through the board, mark out the chair part you want on the end-grain. I do this with



Riving follows the grain (above). The grain on the board's edge is straight, but angled on its face. Wood for arms might be salvaged. But you can split kiln-dried stock to produce ideal chair parts (right)



a magic marker. I usually make my leg blanks so they're square in cross-section. So if the stock is 2in thick, I'll try to rive it 2in wide. Stretchers are rived to 1 1/4in. Sticks at 1in or so.

Then it's just a matter of riving off a part, marking the next part and riving that one. Repeat until you run out of wood. After you have your parts rived out, you can square them up using handplanes or machines.

If you are unsure if this riving technique is for you, buy a cheap hacking knife at the hardware store (the knives are used to bust up old putty around windows). Use the hacking knife and a hammer to split out some small pieces of 3/4in oak. The exercise will teach you to read the grain in a board – both the face-grain and edge-grain.

As you practise, first try placing the blade of the hacking knife across the annular rings. Then split off a piece with the knife blade parallel to the annular rings. Compare the surfaces of the different kinds of splits. This exercise is the fastest (and cheapest) way to learn how wood splits.

### Sawing straight stock

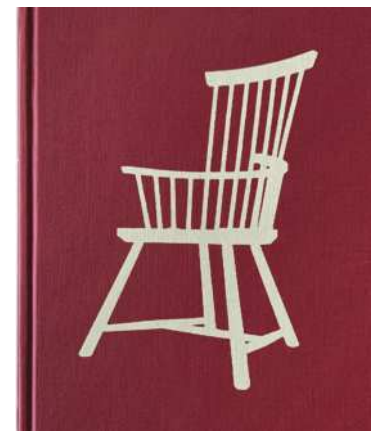
Some people aren't interested in splitting stock. That's OK. With a bandsaw or handsaw, you can saw out straight pieces from a board, even if the grain is angled through the face of the board. Here's how: On the face of the board, align your yardstick parallel to the angled grain and mark a line in magic marker. Saw the board along that line.

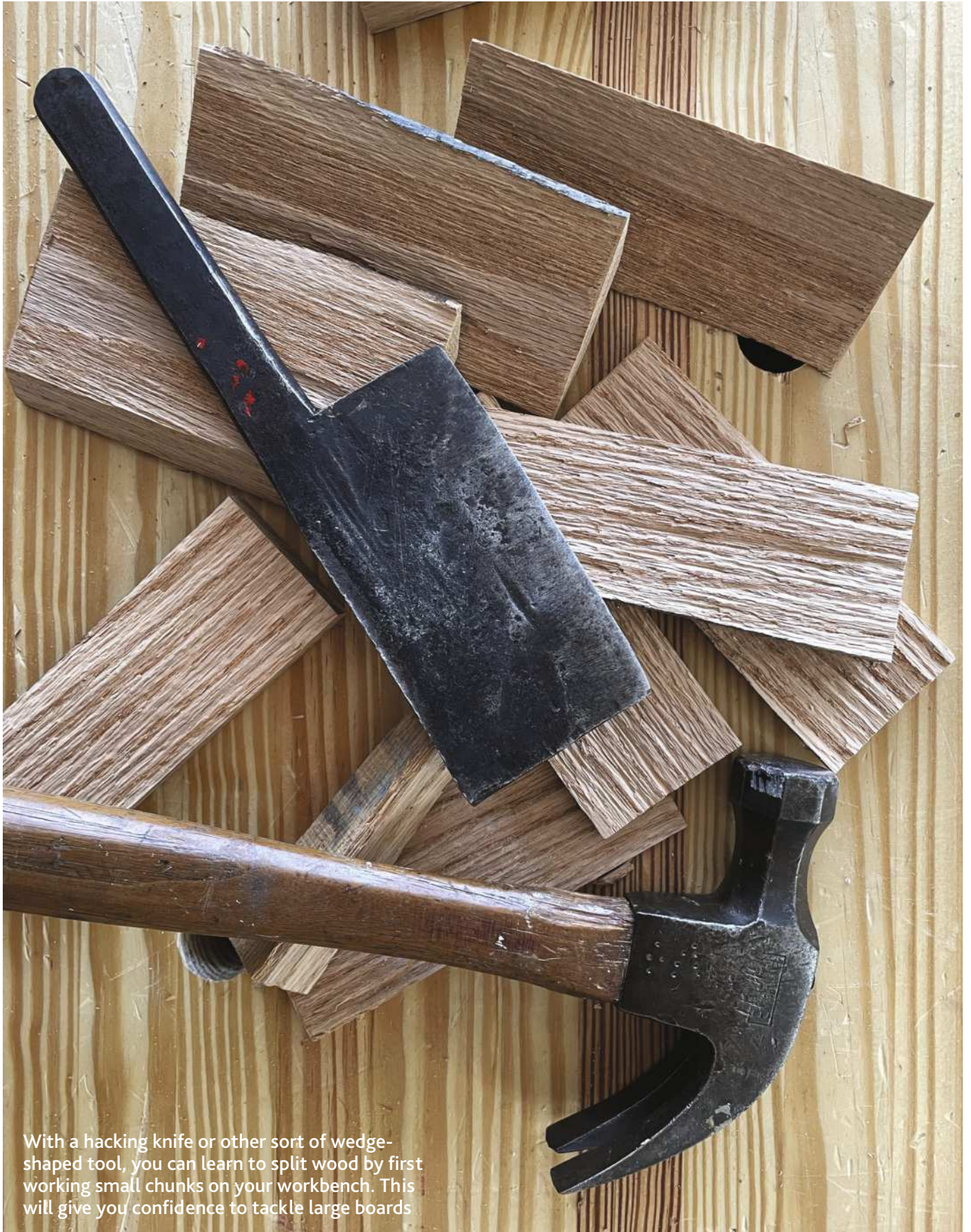
Now saw or rive the rest of the parts from the board, using that angled line to guide the process.

When we prepare wood for classes, we bring the tablesaw into the equation. We'll use the bandsaw to straighten the grain on a board. Then we'll joint that edge and rip the rest of the straight parts on the tablesaw. If I'm unsure how the grain is running – sometimes it's hard to see it in rough stock – quickly riving off an edge with a froe points me in the right direction.

No matter what method I use to extract the parts from a board, they then need to be squared up at the bench or by machines. After you square them, the next step is to turn them into octagons. And then bring them to their final shape.

The Stick Chair Book by Christopher Schwarz is 632pp, hardback, published by Lost Art Press & costs \$49 in the USA & Canada, and £45 in the UK.





With a hacking knife or other sort of wedge-shaped tool, you can learn to split wood by first working small chunks on your workbench. This will give you confidence to tackle large boards

# Prepare to Succeed

Getting ready for yet another glue-up is best done, writes *Derek Jones*, as you would with a home birth

It's hard to give new advice about gluing up, not because so much has been written about it already, but because the important bits are things we know but choose to forget when we need them most. Preparing for a successful glue-up is like preparing for a home birth; hot water, towels and a few crucial pieces of kit. On a practical level you want to make sure you have the clamping equipment you need close to hand.

If that means sash clamps, you might want to set the heads to the size you need before you go live. Have a supply of blocks on standby as well. You might need to place them between the head of the clamp and your workpiece to avoid marking your work. A good idea here is to have them all made from the same material and to the same thickness.

Plywood is a good choice as you can position it either way round without it deforming like thin strips of solid wood have a habit of doing. Soft material like rubber and cork on their own aren't always a good idea for blocks as they compress rather than distribute clamping force. Apply them to one side of your blocks however and you have the best of both worlds. Just be careful not to place them where there is likely to be a lot of excess glue squeezing out as they're likely to disintegrate when you remove them later.

Clear Perspex can be a really useful material to have around in the workshop especially when it comes to carrying out repairs where small parts are concerned. Sometimes you never really know if the piece has moved slightly as you applied clamping pressure until the glue has set. Having a window on the repair as it comes together means you can maintain 'eyes on' and be confident of a successful outcome.

Curved surfaces are some of the most awkward for applying pressure, and again this is better suited to repair and restoration than new work. Sandbags make excellent cauls when you are trying to lay veneer onto a curved substrate. For a convex surface place the bag onto the repair and use strap clamps to apply pressure. For a concave surface place a block of wood or other firm object over the bag and apply pressure with clamps. Some clingfilm between the repair and the bag will prevent the two from sticking together.

If you're working with hide glue you can warm them up in the microwave before use



Clinching down the body of a cheap glue brush (above) helps holding the bristles in place. The bristles on these brushes are far too long (right) and need a good haircut before they're any good



to give you a little extra open time before the glue starts to gel. While we're on the subject of hide glue it's worth knowing that even the liquid hide glues that flow from the bottle at room temperature benefit from being warmed slightly before use. The easiest way is to stand the bottle in hot water for a few minutes while you prepare everything else. Warming the glue lowers the viscosity (makes it thinner) so it flows easier and increases open time.

## Relocating the ensemble

Although it's great to have a separate assembly bench where you can put things together and leave them there, it's more likely that you will be using your main bench for this, which poses an altogether different problem; how to relocate your ensemble when it's cloaked in clamps. What I'm about to suggest is partly commonsense but mostly a serendipitous outcome thanks to a healthy obsession with symmetry and uniformity. In some cases it's not inconceivable to introduce unwelcome stresses into an assembly due

to the weight of the clamps in relation to the scale of the work. The worst-case scenario is that you can force the workpiece out of shape or square as the glue cures. To combat this I try and use the same size and type of clamps for as much of the glue-up as possible. I'll also have them pointing in the same direction because this helps with two things, a row of identical length stilts to stand the workpiece on and one side that's presumably easier to access when it comes to mopping up excess glue.

I also find that thinking about how the clamps are going to be used slows me down and makes me more methodical in the process. Never a bad thing. The design of some clamps means they don't always deliver equal pressure in a straight line at every point on the clamp head face so it's worth getting to know how your clamps work before you set about using them. In most cases the centre of the clamp head is where you'll get consistent pressure so aim to have this area directly over the centre of the join. Positioning your clamps



"I try to use the same size and type of clamp for as much of the glue-up as possible so it's easier to access when it comes to mopping up excess glue"

with an even space between them and the surface of the workpiece will also help. When gluing up panels you can place the clamps either side of the board to avoid introducing a cup. Any bias to pull in one direction is being cancelled out.

There's one piece of equipment that's become indispensable to my gluing-up routine: a small brush. These are pennies to buy in bulk and the quality shows. The bristles are too long and they start to shed almost immediately you begin using them. To avoid this happening just use a pair of pliers or grips to clench around the neck of the handle before you use them and give them a hair cut. Keep them rinsed out and you will have dozens of glue-ups ahead. And when they're past their sell-by date you can recycle them with your regular household items; the handles are tin.

When it comes to preparing joinery prior to a glue-up there are a few things you can do to help smooth things along such as relieving the inside corner edges to the sockets on your dovetails and chamfering around the top edges of through tenons.

This helps with location when you've committed to an assembly making the parts come together easily. It also helps to reduce the risk of material breaking away from the show face of the joint socket as the tenon or dovetail pin pushes through to the other side.

### Assembly routines

In almost every class I teach there's one piece of instruction that runs through every stage of a build from the initial layout of boards (before they become components) to the final assembly with glue; that's the use of identifying marks. Whatever system you use, whether it's numbers, letters, stickers or symbols you must have complete and utter faith in it when you reach for the glue. If not, you'll be spinning and flipping boards in mid-air trying to remember which way round they went and the minute things start to feel a bit tight you'll start to question the entire assembly and that's not good.

To avoid it happening and to make gluing-up large pieces a lot easier consider

partly assembling the joints dry and then adding glue. This works particularly well on dovetailed casework or where through tenons are used as you only need a few mm to engage for the structure to hold itself together. It's then just a simple case of applying glue to all the surfaces you can see. Don't worry about the bits you can't see as they will get a sufficient amount of glue when the joint finally comes together.

Despite the forces involved in assembling what we hope are all tight joints, gluing up should really be quite a gentle process. After thousands of glue-ups I've learned to spot when I'm getting a little stressed and in that state I'm more likely to react as opposed to respond. The most important thing to do is to keep a clear head. Be ruthless in your preparation so that when the time comes, you're ready. In the words of the legendary basketball coach John Wooden, who also gave me the inspiration and title of this piece, always apply "significant time to fundamentals".

Follow Derek on Instagram @lowfatroubo.

# SHARPENING & FETTLING Honed

## Spurring a Bit into Action

Following a hunch, *Henrie van Rooij* restores, sharpens and uses batwing bits for a brace

For a while now, I have been fascinated by those brace drilling bits which look a bit like flat bits which you can use in your power drill. Flat bits are handy if you need to make holes quickly. They are relatively cheap too. No, the bits I am thinking about are in my best guess from before the Industrial Revolution. My hunch is that they are at least partly handmade. I inherited a couple from my Swiss father-in-law, some years ago. They looked old and archaic. Still, when I studied their shape it was obvious how they were supposed to work. At the time I never thought I would have time or interest to use them for real. This changed when I started my small retirement workshop with the idea to concentrate on hand-tools. Recently I could buy a good handful of those 'flat' bits, very cheaply from eBay. Now I have a nice collection.

When I wanted to find out more, I found it difficult to unearth much information. The Internet is quiet about them. And not even the blogs of Paul Sellers, whom I greatly admire, taught me anything about these particular bits. (Incidentally, Paul's blog says some very useful things about the more common spiral-shaped auger bits for use in a brace.) All I could find out is that some people call them 'batwing centre-point bits'. I hope that someone knows a proper name for them.

When we study the bit in detail, we can see several functions in one simple piece



of steel. The centre point enters the wood first. This defines the exact location for the hole. Then there is the pointy bit on the side with the curved 'batwing', which is the spur. This has the task of severing the wood fibres on the perimeter of the hole. The cutting edge enters the wood last, and lifts the waste out of the hole. The width of the cutting blade tends to be a bit less than the spur is away from the centre. This also helps prevent accidental breaking away of wood fibres close to the edge of the hole, as is the case with the spur. All in all, this is another beautiful example of 'form follows function'.

Right, I thought, let's see how well they work. What that meant, was the beginning of another learning process. The bit I started with was suitably rough-looking, but otherwise in good physical shape. Before

fettling, an attempt was made to drill a 1/8in hole in a piece of not very hard scrap. The fibres were quite torn, and the sides of the hole were very ragged. And it was hard work to make any progress. There were no proper shavings, just crumbled wood dust.

It was time to bring out my file box. Before I started, I considered that there is only a finite amount of filing possible without changing the shape of the bit too much. And therefore it was important to work tactfully, in order not to remove more metal than necessary. After scrubbing some rust away with a wire brush, a fine flat file was used to clean up the underside of the cutting edge. Take care not to change the angle, so that the cutting edge can bite into the wood like it should. Then the inside of the cutting edge was carefully filed clean. It is important to keep the cutting edge nice and

sharp. Lean on the file in such a way that as low as possible an angle is achieved, without changing the existing angle. All these surfaces can be refined later with a fine diamond card.

### A sharper centre point

More delicate is the centre point. All these bits, as far as I can see, have centre points with flat surfaces and sharp edges. Now I don't think this is an accident of the making process. Most likely those sharp edges are there to help sever the wood fibres, so that the point can penetrate more easily. With a small and fine file, like a Swiss needle file or saw file, the point can be cleaned up with really sharp edges between the facets.

The most delicate part to sharpen is the spur. On the one hand the tip has to be really sharp. On the other hand we must make sure that it remains long enough to reach the wood surface before the cutting edge, so that it can score all around, to end up with a beautiful clean-edged hole. This is also likely to reduce friction, and make the work a bit less hard to do. Again, with that same fine needle file clean up the outside of the spur, keeping the angle so that the tip is just slightly furthest away from the centre. In the pictures it is visible how that spur points ever so slightly outwards. The inside can then be done. The cutting point of that spur should touch the wood so that the trailing part is slightly deeper in the wood than the leading edge, and as far away

## Henrie van Rooij, England



An unsharpened and fettled bit makes a very jagged hole (above). Sharpened, fettled and minimal clean-up (above right) The 7/8in bit after a scrub with a softish wire brush (left) before sharpening and cleaning



A 21/8in brute and the 7/8in bit together (above). That big bit is quite

a challenge for your biceps. You need a brace with a long swing. A beautiful start at the beginning of an easy and clean hole (left) before drilling smoothly with such beautiful shavings (right). Compare the difference with the hole drilled top left



from the centre as possible. In Germany there is a beautiful expression for this kind of delicate work: 'Fingerspitzen gefuehl'. You make use of the fine sensitivity in your fingertips. Take your time, and all will be well.

### Spurred into action

Now, with the sharpened bit in the brace, it can be tried out. Start the hole by very gently sweeping the spur all around the surface. If this is done right we get a beautifully clean circumference. Another benefit of the spur touching the wood the same depth all around, is that the bit should be pretty much square to the wood in all directions.

The cutting edge now produces actual shavings, and it has become much easier to drill a hole. I had expected that the cutting edge drawing itself under the waste would help to pull the bit into the

wood. This was not the case. I suspect that this is because of the pressure needed to push the centre point and spur into the wood fibres. I find that these bits can be of real practical use, as long as the holes needed are not too deep. A more modern spiral auger will produce much straighter holes. Later, I tried a much larger bit of 21/8in diameter. As expected, this was very hard work. I realise I must have mislaid, somewhere along the way, my youthful brawn.

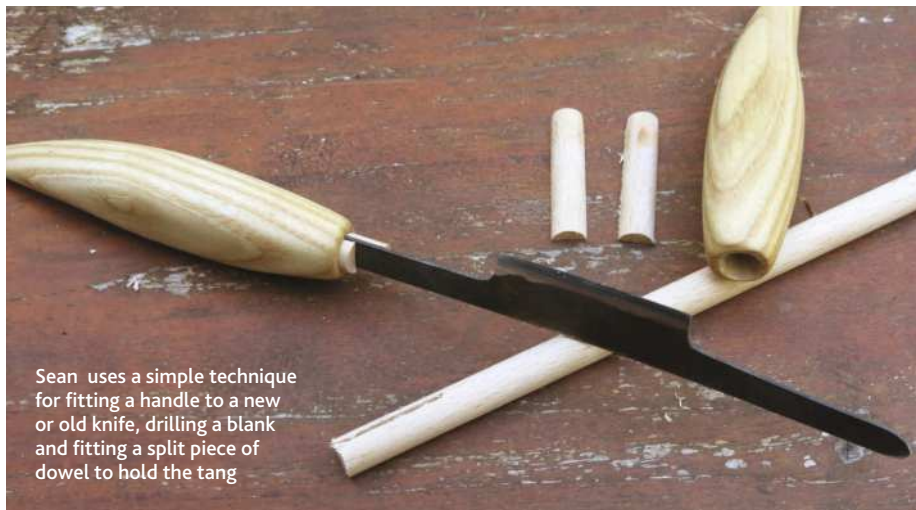
But then a hole this size is not easy to do by hand with whatever type of bit. Maybe I should look for a brace with longer swing for more leverage. Or it should be used with one of those breast drills as described in *Woodworking in Estonia*, recently translated and published by the Lost Art Press. I hardly ever need a hole that size, so the Estonian breast drill will have to wait.



Henrie inherited this fully-functioning brace from his Swiss father-in-law. The square-tapered socket works well, but the fixing screw had to be replaced. At the top handle is an engraved crown, and the name Coulaux

## Handling a Knife

Sean Hellman fits handles to the tangs of a MaChris knife and a double-handled push-knife



Sean uses a simple technique for fitting a handle to a new or old knife, drilling a blank and fitting a split piece of dowel to hold the tang



A tang is the part of a tool that is fitted into the handle. A full-tang tool has handle pieces attached either side of the tang. A partial-tang knife or tool has a tang that is inserted into a handle. Most of the time we buy tools with a handle, but it is increasingly common to buy a quality blade on its own. We might also make our own tool blades or have a damaged handle on an existing tool. There are different techniques to rehandle knives but I have found the method described here gives me guaranteed results every time.

If you are replacing a handle or making a new one, then the first thing to do is to protect the blade with electrical tape. The best way to remove an old handle is to split it off with an old chisel, and then scrape any glue off. Using a heat gun can help soften the glue.

When making a handle, start by squaring the wood with all faces at right angles to each other. This way you will find it easier to drill a hole parallel to the sides of the handle, as well as marking the handle shape out symmetrically. Before



Drill a hole the length and width of the tang (top), using squares to guide the bit. If the tang flares towards the blade file to widen the top of the hole (left). Check the fit of the tang (above) before shaping the handle

proceeding, do make sure that the handle is really dry, otherwise it may split in the future. Drill a hole into the end of the handle to the required depth. The diameter should be as tight as possible to fit the tang snugly. This process is best done on a pillar drill with the wooden handle blank held in a drill vice. Failing this, then use some set squares or other vertical aids to help you drill the hole in line with the handle. I drill the hole before shaping the handle so I can correct any misalignment during shaping.

The handle needs a hole the same diameter as the width of the tang, and needs to be the same depth, or a tad longer, as the length of the tang. Measure

the width of the tang at its widest point. The MaChris knife in the picture has a great tang but it flares near the blade, so for this last 6mm or so I just enlarged the hole with a square file. I would never grind this transitional part of the blade off as it is a structural part of the knife. Do not, however, be afraid of grinding with a bench grinder any other part of the tang to even it up, for example, if the end of the tang is the widest point. Shape the handle using the tools you have to hand. I also smooth the handle to the required finish, but I do not usually apply any oil yet. As a drilled hole is round, and the tang is usually rectangular in section, use dowels cut length-wise to fill the gaps. I have a



It is important to tape the handle before assembly to protect it from squeeze-out. Taping the blade (below) protects the edge and fingers



selection of dowels in my workshop or can turn some on my pole lathe. For the MaChris knife, Jon Mac, who designed it with Chris Grant, gave me a small piece of oak from *HMS Victory* which he in turn was given by Ralph Hentall. I whittled this into a dowel. With the pushknife I used 10mm diameter dowel which I cut length-wise.

## Dowel that fits

I made the pushknife for fan bird carving, with the tangs exactly 10mm wide. It is important to do a dry run to make sure everything fits. The dowel must be cut to the right length as it will be difficult to cut after it has been glued.

Wrap everything up in tape, to protect the handles and blade. Any epoxy resin glue will do. Mix up enough for the task in hand. Using a thin stick, put plenty into the hole and make sure it is smeared all around. Coat the dowels all over and insert these into the hole. Put a thin layer of glue on the tang and insert.

Everything should slide in and a small amount of glue should ooze out. The dowels may need pushing back into place. Make sure everything is in place and wipe off any excess glue and leave to dry in an upright position so glue cannot run out. The temptation is to try your new tool out, but wait until the glue has fully cured, and always refer to the instructions that come with the glue.

Take the tape off and clean up, scrape any glue off, apply oil, or put whatever finish you want onto the handle. The tool is now ready to use. Be careful, and take extra care with new tools as accidental cuts to the hands are more likely.

*Sean Hellman is author of Sharp, a bible of sharpening, available for £25+p&p from seanhellman.com.*

## Peter Hindle, 1938-2021

*Timothy Hindle remembers his father, pioneer of rounders*



Peter Hindle shaping the crest rail for a chair

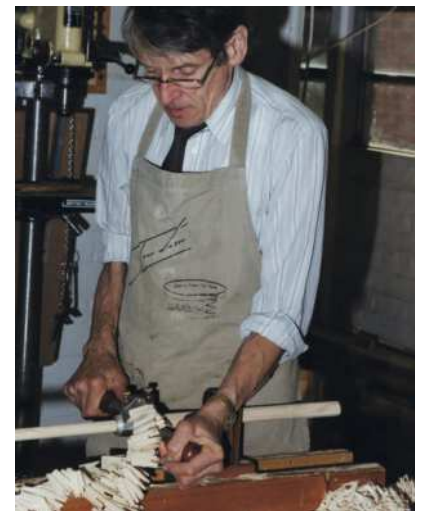
Peter Hindle was born in 1938, brought up in Huddersfield and taught woodwork by his father Sidney. He qualified as a teacher and taught woodwork in a Yorkshire Dales secondary school in the 1960s and '70s. In 1975 he went on a secondment to do rural crafts at Worcester College of Higher Education. At this time, he met Fred Lambert who introduced him to the process of making the rounding plane which Peter would later develop as the Ashem Crafts Rounder.

He took a job at a new school in Hagley where he headed up the DT Department at Haybridge High School from its start in 1976 until 1993. He brought the rounding planes and chairmaking skills into use by the students there.

After leaving teaching Peter put his energy into the Ashem Crafts business with Patricia his wife for 25 years. He produced the rounding tools, made chairs, and ran chairmaking courses all over the country, mainly in Worcestershire, Gloucestershire, Wiltshire and Sussex. Many people will have made a chair or a Windsor on one of these courses using the rounding tools. From the late 1990s he ran courses in the United States. He got into making Shaker furniture and visited the Shaker Village in Kentucky many times over the years. At some point he became more of a tool manufacturer, producing the range

of rounding tools that were sold all round the world

He kept working in the workshop at home in Hallow, Worcester until 2019 by which time dementia had become too much. Peter passed away in July 2021 aged 83, sadly followed a few months later by his wife Patricia (76) who was a constant support to Peter in his craft making. There is still a tremendous interest in the Ashem rotary planes. The website and email are still monitored. Perhaps his son Philip will be able to restart the manufacture of the tools in the future. Watch this space?



Peter working with one of his rounders at Malvern Hills College

# Lessons in Milling Love

To learn how his beams are milled, *Dylan Iwakuni* visits a carpenter who fells, hews and adzes by hand

I run my my hands across the wavy, smooth textures on the old log beams, visualising how the carpenters must have skilfully hewn the surface. Spending the past year working on a 93-years-old traditional Japanese house has let me observe up close the work left by the carpenters so long ago.

The distinctive marks of the axe and adze on the beams had always fascinated me. As a person who works on old structures, I felt I needed to experience and understand the process of milling wood traditionally with hand-tools, eventually becoming capable of leaving behind such a finish.

I'd heard rumours that a carpenter living in a nearby town was a master on using hand-tools, especially the axe and adze, so we asked him if he could teach us about milling wood the traditional way. Gathering my carpentry co-workers, we arranged to spend a day learning and experiencing.

Amemiya-san (@jomon.carpenter) worked as a Miya Daiku (Shrine carpenter) on cultural heritage sites, where he was fascinated by the craftsmanship from the past. He'd developed a strong desire to work entirely with hand-tools and has constructed several buildings that way, milling the wood with saws and axes. For the past decade, he has gone further and has been fascinated with stone axes, currently working on an 11.5m-long dug-out canoe.

## Sake and rice

A short ritual is held first to thank the tree and pray for a safe journey, with an offering of sake, salt and rice. In the past, working in the mountains meant offerings could not always be provided. It was common to place the axe in front of the tree instead. On the head of the axe are three engraved lines

representing sake, salt and rice. We took turns with the axe, using ones from various periods and feeling the difference. The stone axe is the most difficult to master, requiring a steady aim and removing only a little material at a time. The iron age axe was agile, making it easier to control. However, one needs to be careful as the blade is wedged in the handle. The last and most recent axe was slightly heavy but allowed a powerful, effective cut. It took longer than expected as some people seemed to have enjoyed the stone axe a bit too much.

In the past, once the tree was felled, it was roughly hewn with the axe and the sides made flat. Removing the bark sped up the drying process and made it lighter to transport. After it had dried, the sawyers or carpenters would re-mill the material to the desired dimensions.

Watching Amemiya-san use the axe was mesmerising, the powerful, rhythmic movements leaving behind an even, wavy texture. His accurate, consistent cuts were skills we could only admire, and the finished surface could not be compared to our first attempts, leaving us with a clear goal.

"With these tasks, you can't make a schedule and have to enjoy the process," Amemiya-san remarked as he took a quick break. In our efficient and fast-paced modern society, it's unfortunately common to see old structures being bulldozed down without a second thought, quickly replaced by factory-produced generic houses. But by experiencing the time and effort invested by people of the past, one appreciates and respects the materials all the more. It makes one realise what we now consider readily available and take for granted has not always been the case.

Follow @dylaniwakuni on IG.



The distinctive marks (above) left by hand-tools can be seen on the beams of traditional houses. Looking up at them makes one marvel at the skills of the carpenters of the past, who only had hand tools to work on such sizeable materials



Axes are one of the oldest tools used by humans. Here are examples from ages past (above): Stone Age (nearest), Iron Age (in the middle), and a more recent version. After trying the stone axe and switching back to steel, we all had the same reaction: "Wow, steel axes cut so well." It was an eye-opener to experience first-hand how tools had evolved

"This Matsu (pine)  
tree took two hours  
to fell, all of us taking  
turns with the axe"





### Rituals for Civilisation

On most Japanese axes, there are lines engraved on the head (left). On one side are three lines, representing sake, salt and rice, the offerings used for rituals. On the other side are four lines, representing the four spirits of nature - earth, water, fire, wind - a charm for protection. Trying out the stone axe felt like we had slipped back in time, impressing upon me how far civilisation had come. But at the same time, impressed at the skills and perseverance of the craftsman of the past. The stone axe (right) requires a wider cutting angle, as seen on the left side cut



### Felling from both Sides for Direction of Fall

The tree is chopped from both sides, one cut above the other (left). In this case, we wanted the tree to fall towards the right. It is crucial that the cut is level and perpendicular towards the intended direction of fall. It's like folding a piece of paper clean in half, the crease running straight across (below)





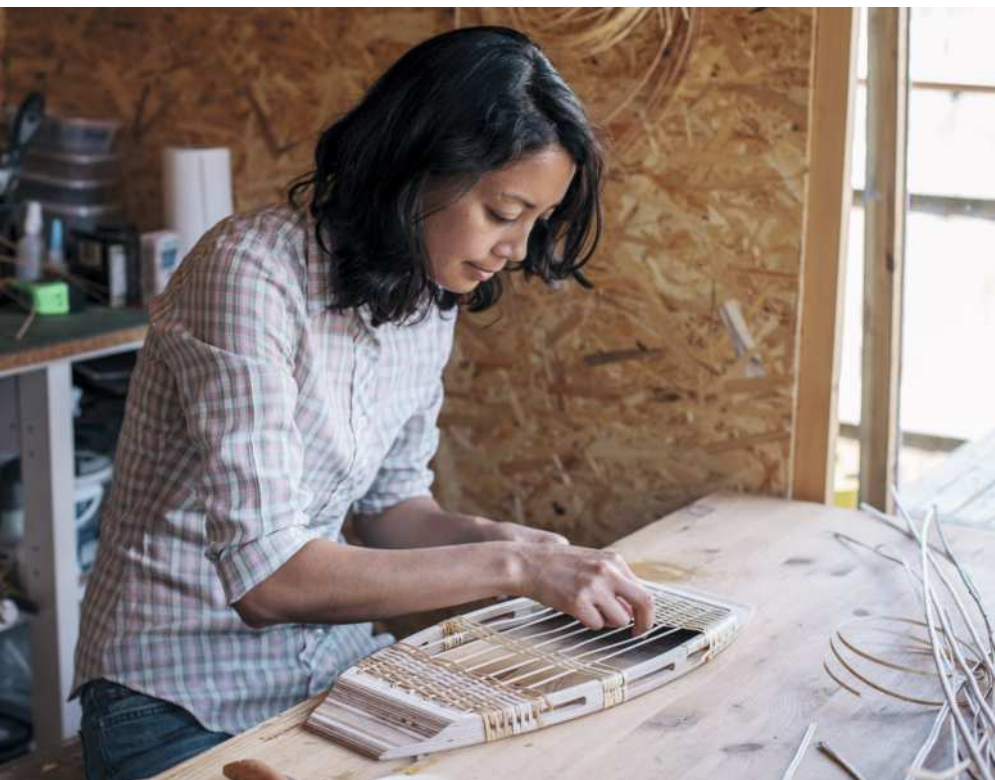
### Hewing and Adzing

During the hewing process (above), Amemiya-san would take frequent breaks. "Taking a break feels extremely satisfying," he says. "It's the feeling of having used your entire body. A feeling you can't achieve when using power-tools." Even relief depth cuts (above right) are made with the axe before the surface is hewn at a diagonal angle. Watching Amemiya-san work was mesmerising, setting a standard to achieve. The adze (right, called "Chouuna" in Japanese) further flattens the surface, and is especially useful on parts where joineries have to be marked and cut. The adze is usually used once the material has dried. The profile of the adze's cutting edge drastically changes the texture: with a straight edge (below left) and rounded edge (below right). Sometimes textures are purposefully created with the adze



# World-Wide Weaving

American architect, *Monica Cass* recalls how she became an ambassador for an endangered craft



The grant from the Heritage Crafts Association has given Monica (left) the funds to train and employ an apprentice, Melissa, who has now produced all their woven skein seats this year

**M**y background is in architecture and woodworking. I have a master's degree in architecture from Tulane University in New Orleans, but apprenticed in a custom furniture-making workshop during my five years of study there. I was displaced after Hurricane Katrina hit in 2005 and eventually found my way over to the United Kingdom, Norwich, specifically to work in lighting and exhibition consulting for a Washington, DC-based architectural firm. It was exciting work: we created the lighting scheme for the Shard in London, created the exhibition design for the Sainsbury Centre's many exhibitions and climbed around a lot of ceilings, often suspended hundreds of feet above the floor. But it was intense and I often worked 60-hour weeks while raising two young children.

My husband Simon is a highly-skilled joiner, but had been working in contract drafting field with the high-end interiors and superyacht industry. He had designed some stools for family and friends over 15 years ago, inspired by the bridges of Robert Maillart, which consisted of a simple splayed-leg wooden frame

and woven seats in either Danish cord or split cane. After Simon was laid off unexpectedly, we decided to drop everything and invest in a small workshop to start making these stools again.

Simon primarily focused on the woodworking side, with me assisting, while I focused on the materials and seating. The weavers we had used 15 years ago had since passed away and we struggled to find a new one that could match the style of traditional one.

I researched (mostly through trial and error) the Basketmaker's Association directory and tried every seat weaver between Norwich and London until we found Ken Trayler, a grandfather and handyman with over 40 years weaving experience. The environmental factor was also important to us, so all wood was locally-sourced oak and we didn't want to use split cane as it generally comes from the Far East and we could not determine its exact provenance.

## Weaving manuals

Again, I used research from old seat weaving manuals and the Basketmaker's

Association and found out about split willow skein seating, which predated split cane seating in the UK. I got in touch with Bunty Ball (from the HCA) who had since retired, but invited me down for a day of free tuition and discussion about making and using willow skein.

With both Ken on the edge of retirement and Bunty fully-retired-but-willing-to-pass-on skills, I realised I would have to learn the crafts of willow skein seating (and traditional Danish cord seating) myself if there were any hope of bringing these weaving skills into our stool designs longer-term. I purchased/made my own tools and a few years later we were selling stools with the willow skein seat option and trays with a woven willow bottom. Then, through one of their members, the Heritage Crafts Association (HCA) found out about us reviving a Red Listed Heritage Craft, and awarded us a grant to teach our own apprentice, Melissa, who works for us and has created all the willow skein for any of our skined seat orders this year.

Follow @mmmcass on Instagram or visit [par-avion.co](http://par-avion.co).



"I realised I would have  
the crafts of skein and  
Danish cord seating"

# Maloof's Route to Hand

Geophysicist *Dallas Gara* takes a long chairmaking journey, with an ambition to work by hand

Sam Maloof was one of America's best-known and most highly-awarded craftsmen of contemporary woodwork. He had a unique style that was comprised of beautiful wood, soft-flowing curves and unique cutting-edge joinery. Often, he would leave the joinery exposed because it was so pleasing to the eye. To me he was the ultimate woodworker.

I personally loved all of Sam's work, but his rocking chairs always stood out to me. The curves that flowed from one piece to the next. The elegant lines and exceptional wood choices. My favorite of Sam's was a Ziricote rocker, absolutely stunning. In a YouTube video called 'Handmade in America, 1983', Sam exclaimed that the chairs are the hardest item to make, but for him it seemed effortless.

In 2015, I was a beginner woodworker and I was interested in refining my skills. I had always desired to make a rocking chair, simply just to have one in my home, but mostly because just looking at it, it was not obvious to me how it was made and how all the joinery was constructed. What made it rest at that exact angle? A puzzle I truly wanted to solve.

I researched woodworking courses offered in Canada and I found one offered by Paul Lemiski at Canadian Woodworks in Ontario. For this course a person travels to his shop and builds a rocker alongside him in 10 days. The course was \$4600, plus food and lodging. It was a lot of money for something that was a very 'minor' hobby at the time. But it just so happened that the course was making a Sam Maloof inspired rocker. This was the course for me; I knew I had to do it, so I signed up.

## Travels to a chair

I flew from Alberta, 3200km to Ontario, rented a car and drove to a small farm just outside of a town called Erin. It was down a gravel road just off the main highway. The farm was surrounded by giant oak trees. A few donkeys in a pen and chickens running around searching for bugs. The shop was an unassuming Quonset but inside was the ultimate woodworking shop filled with giant machinery, walls full of templates, stacks of wood and partially finished projects.

The 10 days were comprised of following the instruction manual of a fellow named Hal Taylor. A name I had never heard before, but many years later, I could call a friend. Each day I would head into the shop early before anyone else was in there; dead quiet, the smell of wood and epoxy, light creeping in through the windows illuminating the pieces we had worked on the day before. It was a dream. I couldn't believe I was there.

The course flew by so fast. I learned so much and probably forgot even more. Full disclosure, before this course I had never used a jointer, a router table or a handplane. It was truly overwhelming. But I had never felt so inspired in my life.

I came back from Ontario with my very own Maloof-inspired rocking chair, a crash course in fine woodworking, a digital file of templates and a book; a digital copy of Hal Taylor's 'Rocking Chair University'. I spent almost a year preparing to start my own solo-rocker building effort. I made the jigs that Hal had detailed in his manual. I cut out all the paper templates and glued them to ¼in birch and carefully cut them out. A front and back leg shape. A shape for the crest rail and the arms. A shape for the seat with pre-positioned drill depth holes. There was a bent lamination form for the back braces and rockers. There was design for a wooden



Dallas Gara, the budding chairmaker. A bridal joint connecting the front leg to the rear-leg stringer (above right). This joint was created using a custom jig with a router and refined with a new Veritas handplane. The joint needs to be a nice tight fit and angled perfectly so the stringer intersects the rabbit joint at the rear leg correctly. Once this joint is glued, the top is trimmed with a handsaw and a handplane and ready to accept the rocker arm

jig that holds the front leg and the adder leg block together for fastening. Details on making a special raised sled for cutting Maloof joints and so much more.

## A new router table

I had to buy all new tools. I needed a router table and a Kutzall donut to raise the bit for routing curved pieces. I needed a new hand-held router so I purchased a Festool EQ1400. I also needed sanders so I purchased a Festool R090 and R0150 Rotex sanders. I needed a spindle sander and a bandsaw. I needed a new tablesaw and I needed some Kutzall shaping wheels. And yes, I bought a jointer. Amazing what flat wood can do for your projects.

Once I had all of these tools it was time to get building. I work full-time as a geophysicist so I didn't have a lot of time to woodwork, but I spent the next year making four Hal Taylor rockers. During that time, I realised a lot about Hal Taylor. He was not just a rocking chair maker, he was a 'rocking chair engineer'. He spent a lot of time designing various elements of a rocker that were truly ingenious. All detailed in his digital book that also contained hyperlinks to videos where he would explain even more.

Hal Taylor's design was based on Sam Maloof's rocker design. He had originally seen one of Sam's rockers in *Fine Woodworking Magazine*, Winter edition, 1975. In this issue Sam had provided information on the seat dimensions and a side profile picture. Hal had also seen a rocker of his in the Renwick Gallery in Washington DC. From these few pieces of knowledge Hal began making a rocker of his own.

Hal's rockers are described as 'inspired by Sam Maloof'. I feel this is true but he did make some very notable changes. Hal

The completed curly walnut rocking chair with curly maple back braces. This design is inspired by Sam Maloof and Hal Taylor but Dallas also made some very significant changes to make it unique, like the long sweeping back leg with the bridal joint meeting the front leg, and the forward-mounted leg and thin convex arms that create an endless loop all the way to the back of the rockers



created flexible back braces that would contour to a person's body when they sat. He also used extra material on the front rear leg joints to make the stock thicker and therefore more material to create a larger transition between the legs and the seat. This made for a smoother more curved joint interface. He also made a coopered crest rail that would create a long grain to long-grain joint on the rear leg and allowed for a larger crest rail curve. The increased curve allows for the back braces to fit to a person's back more naturally and creates a very comfort-able fit. Hal also reengineered the Maloof joint. Sam's early joints were  $\frac{1}{4}$ in x  $\frac{1}{4}$ in. Hal made his joint  $\frac{1}{2}$ in x  $\frac{1}{2}$ in which make for a more robust joint. The router bits required to create these joints are made by Whiteside, a  $\frac{1}{2}$ in x  $1\frac{1}{2}$ in rabbit bit and a  $\frac{3}{4}$ in round-over bit.

### Generous manual

Hal Taylor is generous with his work. He has created a step-by-step manual for people to follow to build their own rockers. He has shared his knowledge and shared his time. I know I would not be where I am today without his help.

Out of respect for Hal I do my best to create unique rockers. I have done my best to create my own shapes and design my own joints. This process, however, has furthered my respect for him. So many elements of his rockers are perfect in my opinion; the height of the seat, the rocker curvature, the angle that the chair rested at, etc... Each time I play with these dimensions, the chairs just don't feel right. So even though my chairs might look different, there are key dimensions of the chair I try to never change. Dennis Hays cited a similar sentiment in the short film 'Sam Maloof, My Last Days' that Sam just got so many basic principles right, that they couldn't be changed, and I agree.

The pictures in this article define some of the changes I made to the original Hal Taylor design I started with. There isn't a lot more that can be done that hasn't been. Especially when you have Sam Maloof and Hal Taylor in the mix. But I like to play with joinery. The featured rocker has a Maloof Rear Joint and a joint I created in the front. This joint is formed with a custom-made jig, a router, a  $\frac{3}{4}$ in brass collar and a  $\frac{1}{2}$ in straight bit. It's my take on a 'Stopped T' bridle joint. The seat is the tenon portion of the joint and using a dado blade the front leg is the mortise. The top of the front leg connects to the rear leg with a true bridle joint. It extends back to a custom-angled notch in the seat and down to the rocker. The arms follow a sweeping line from the rocker, across the front leg and to the front of the arm where it extends back to the rear leg with a butt joint. I now make this butt joint a rabbit joint, which takes many hours to get perfect.

I use the bent lamination forms to create the rocker and the back braces. I cut out  $\frac{5}{32}$ in strips on the tablesaw and then clean them up on the drum sander to  $\frac{1}{8}$ in: three for each back brace and 10 for each rocker. I make my rockers a bit thicker than Hal's because I position my legs further apart due to larger angles in the leg curves. I like the added rigidity for the rockers.

I then create the crest rail. Hal Taylor uses six 8in angle blocks to create a 'coopered' crest rail. This preserves the 2in thickness and inherently estimates the desired curve upon glue-up. The rear leg joint is long-grain to long-grain. The grain is a little less consistent because of the multiple pieces used. Sam Maloof used a long-grain board to span the gap which looks really nice but then you have long-grain glued to end-grain. You also need a really thick piece of wood, maybe  $10/4$  to make the desired curve. So I like the way Sam's crest rail looks but Hal's design is a little more practical. I have experimented with both and still use both, my decision depends on the wood I have available.

If I am using Hal's method, I cut out six blocks that are 8in tall, 4.5in wide and 2in thick. The edges of the inside joints are cut at  $4.5^\circ$  on the tablesaw. The two outside edges are left at  $90^\circ$  or  $0^\circ$  because they attach to the inside of the leg top.

The blocks are glued together and clamped using 'pinch-dogs'.



Dallas got the beautiful curly walnut from a local store called Woodcache in Calgary, Alberta, Canada. "As I progress in my woodworking journey," he writes, "wood supply & selection are becoming more and more important."

Regular clamps do not work because the angled edges of the blocks are almost impossible to clamp using traditional F-style clamps; the aluminum U-shaped objects called pinch-dogs are traditionally used by upholsterers. The tips of the 'U' are tapered to squeeze two objects together as you hammer them into a material like wood.

Once the six blocks are glued together the newly created crest-rail is curved and is cut to a thickness of about 1.25in. Using the same tablesaw jig used to cut the  $6^\circ$  leg angle, the edges of the crest rail are cut to match the leg angle. You find the centre of the crest-rail and slowly trim off the edges until the crest rail fits perfect in between the legs at a predetermined height above the seat. Once all of these parts are jointed together, I begin shaping. I used grinders with Kutzall wheels, Liogier rasps and small sanding tubes from Canadian Tire. I use my Festool Sanders going over every square inch with 40 through 400 grit papers making sure each joint is perfectly smooth and each piece of the rocker doesn't have any unnecessary material left on it. I like the chair to look smooth and light; delicate but sturdy. The sanding and shaping process can take up to 20 hours.

When all the scrapes and swirls are removed from the wood, I finish it with Maloof Oil: one-third Tung oil, boiled linseed oil and General Finishes Arm-R-Seal poly. I wipe a thorough coat on the chair and back braces, let it sit for 15 minutes and wipe off until my blue shop towels are dry. A few hours later I will go back and wipe it again. If time allows it, the chair will sit for a few weeks. I will sand it with a 600 grit soft pad and apply another coat. If I feel it needs it, I will give it a third coat. I install the flexible back braces with wax on the tops and bottom tips to stop creaking when they flex, and the chair is done.

In the same fashion that I walked into the shop in Erin Ontario, I feel the same way about hand-tools; I need to learn. I have begun to appreciate the 'power' of hand-tools. I love to shape with a rasp. A nice hand plane can flatten a spot that no power-tool can reach. I will say though, I will never give up my Kutzall wheels, they are just too good! But I look forward to broadening my horizons and finding new ways to work and new designs to create.

Follow Dallas Gara on Instagram @garawood.



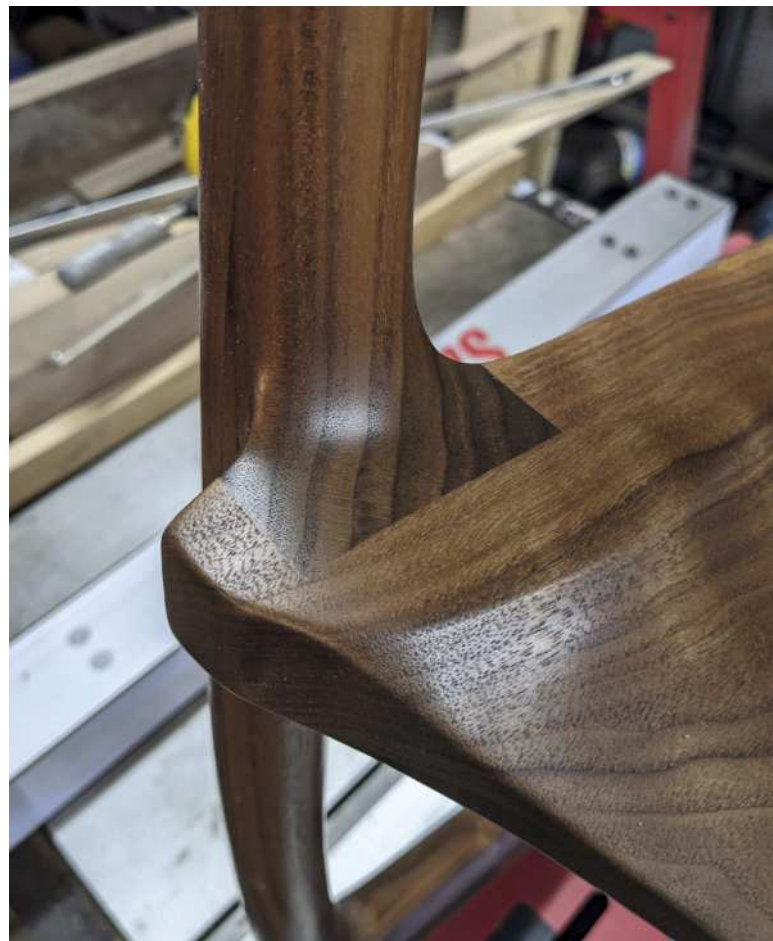
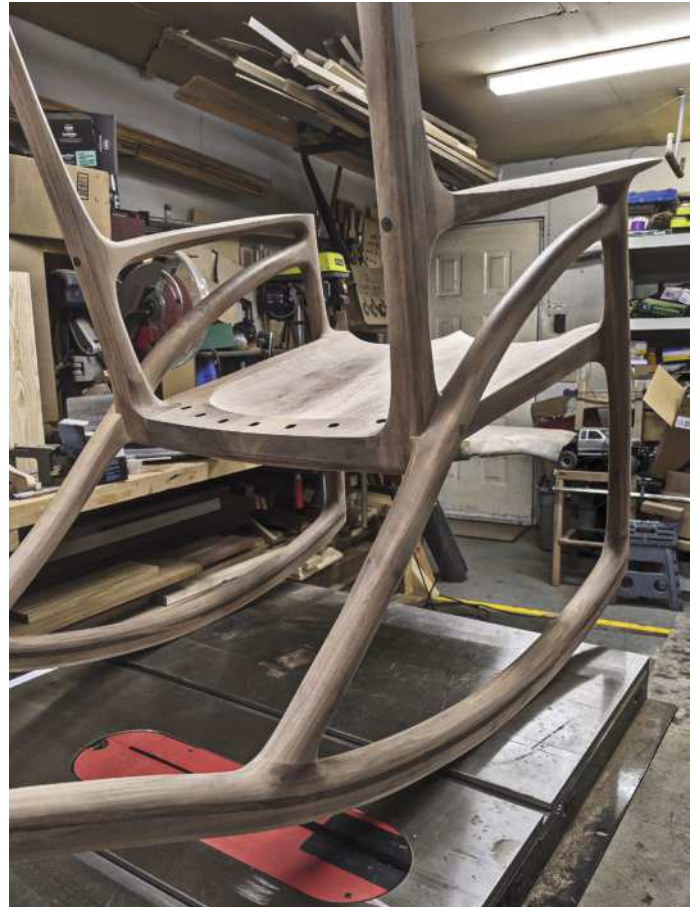
### Assembling the Maloof-inspired chair

Dry fitting the rear leg stringer to the front leg bridal joint and the seat rabbit (above). All of the angles have to be perfect so the joints line up naturally and fit tight. Dallas uses a router and a jig to form the basis of the joint and hand-tools to refine them, fitting repeatedly until they fit perfectly. One of his favourite tools to refine a rabbit joint is the Veritas router plane from Lee Valley Tools.

Just after adhering the rockers with epoxy, and a bit of rasp work to clean up the joints, the chair is coming to life (right). He held his breathe setting the rocker on a SawStop table top, acting as a reference surface to test the smoothness of the rock. From behind you can see how the rear leg elegantly flows from the front leg to the rocker creating two triangles which are geometrically very strong. A lot more rasp work and sanding to go, but the majority of the construction is now complete.

This is the front leg joint of the chair best described as a 'stop-bridal' joint (below right). The traditional Maloof style joint requires that the front leg be set back from the front of the seat to hide the joinery, but you also need 1/2in of space to carve off the rabbit joint on the front of the leg. This pushes the leg back from the front of the seat even further. "I wanted the leg as close to the front of that seat as possible to enhance the flow of the curve." This joint allowed for this concept. "For me this is an evolving joint that I continually experiment with."

The joint where the back leg stringer meets the rocker (below). All the weight of the chair is in this joint. It is key to have a flush face for an optimal epoxy surface. Hidden inside this 1.75x1.75in rounded leg is a 1/2in maple dowel tapped to allow a #10 3.5in screw to pass through to secure the joint. The screw is not Dallas's first choice, but due to the design this is an extremely difficult joint to clamp and the screw closes the joint perfectly





"Dishing the interiors with a regular carpentry gouge was proving too slow and awkward"

# Tools from Scrap

Keen to conserve hard-won materials, *Robin Gates* reworks the steel of scrap tools

**T**oolmaking has shaped human history for two million years, so it's no wonder the urge to make tools runs deep in our psyche. Of all the things I find littering the landscape perhaps that's why nothing touches me like a lost or thrown-away hand-tool. As an inveterate scavenger of windfall wood I often return home with a piece of tree or discarded furniture, but it's a red letter day when I find an old tool orphaned in the undergrowth.

My hand-tool finds stand in the memory like waypoints on a mysterious journey. What began 40 years ago with carpenters' pincers found on the Sussex Downs was joined most recently by a Sorby chisel picked from the gutter on Leominster bypass. These were lost tools only requiring cleaning or sharpening, but what really gets me thinking is a tool that's been discarded because it's worn out or because it's broken.

You don't need a degree in metallurgy to appreciate the wastage of throwing away old tools. The environmental impact of fossil-fuelled machinery tearing metal ores from the earth and steelworks smoking on the horizon are obvious, while ships and trucks are lugging their cargoes around the globe twenty-four-seven. If there's a chance of reworking a blunt or damaged blade into something useful this is a better fate for its hard-won steel than consigning so much human effort and resources to landfill or the scrapyards.

Admittedly my knowledge of tool steels is limited to basic sharpening of secondhand blades, the finer points of forging and tempering are grey (or should that be light straw, perhaps blue) areas, not to mention the bamboozling modern alloys we poor woodworkers are expected to grasp. But if experience is worth anything, I've found the common tool steels used here were sufficiently workable and functional without further treatment. I daresay that fiery fun of annealing and hardening will follow in due course, in fact I've already test-run the Max Sievert blow torch in preparation, but I'll save that for when my significant other is standing by with the fire extinguisher.

So this is a story of very basic toolmaking – or should I say tool reworking – that began with digging our back garden on the Isle of Wight in 1999, an afternoon which took an archaeological turn when my spade hit gold – or at least I thought so.



The broken-down beast (above) dug from the garden. Hacksawing the initial bevel was slow work (left), and filing a back bevel (below) to ease the blade's exit



It was a rusty old wrecking bar with one prong of the claw broken off, an absolute beast of a find.

## Adze hoc

As a recent convert to greenwoodworking I'd been loathe to buy new tools in case it proved a five-minute wonder, but when this wrecking bar came to the surface my eye for economy immediately saw an ad hoc solution to the problem of the bowl adze. Thus far I'd found the most challenging aspect of woodenware was the hollowing process. My everyday axe and chisels coped with rough shaping of exteriors but dishing the interiors with a regular carpentry gouge was proving slow and awkward. Curved scrapers could finish a hollow but what I needed was something sharp and shapely to cut away the bulk of the waste. An evening with tool catalogues looking for a proper bowl adze had left me downhearted; you know how it is, you

begin by looking at the cheapest, you're drawn ever upwards by quality and price, then the whole idea crashes and burns. If I were to develop the skills to keep going with greenwoodwork then all well and good, otherwise my over-indulgence in such a specialised tool could prove expensive.

Anyway buying new would deny the ironic twist and fun I'd have in turning this ugly destroyer into a creative tool. Clearing the bench of sensitive woodwork tools likely to be offended by such a brute, I prepared for some elementary metalwork.

First I completed its emasculation by removing the remains of its claw with a hacksaw, then made a perpendicular saw cut to establish the blade's bevel, tapering down to the cutting edge. Compared to ripping through softwood with my 5-point Spear & Jackson the progress through steel with a fine-toothed hacksaw blade was a test of patience, but I got there

eventually, next hollowing the sawn surface with a half-round file to produce a subtle sweep. As someone who gets their figures-of-eight in a tangle while sharpening a bog standard bench gouge I can tell you that honing an unwieldy wrecking bar on the coarse and fine oil stones proved no small challenge.

My first swings with the adze planted the tool in the wood like a fisherman's anchor in the seabed, and I had to lever it out. Filing a modest outside bevel assisted with exiting the cutting edge from the cut, and shortening the tool to 15in (38cm) improved its balance. Swung with a less ambitious angle of attack the coarse chips were soon falling with satisfying rhythm. My first concave surface in the shaping of a cherry log dish left a good deal of finishing for the scraper, but considering the brutal origins of this adze it behaved with surprising delicacy. Where the ferocious claw had been I now saw the beak of a friendly eider duck, and gave the creature eyes.

### Made from scratch

Of my small fleet of vintage moulding planes the ½in (12mm) side bead is a favourite. Consisting of a half round separated from the adjoining level surface by a quirk, the side bead moulding is commonly worked on the overlap of double doors, also for disguising the join in matchboarding, creating interesting shape and shadow around an otherwise plain gap. But the long straight stock of a moulding plane is useless for short or curved work – a scratch, effectively a mini-moulding tool, is required. The profiled cutter of the scratch tool is mounted in a slim wooden stock that's shaped with a cutaway acting as a fence. With the fence against the edge of the wood, the scratch is worked back and forth literally scratching its profile into the surface.

Saw plate is a convenient source of flat steel for scratch cutters, and in this age of the 'disposable' tool that's not hard to find. Even so I was surprised when my year of litter-picking along the riverbank turned up a hand saw. In the grim days of February its yellow handle greeted me through the leafless vegetation like a lop-sided smiley face, although my excitement was short-lived: it was an exhausted Stanley Fatmax, heavily rusted and caked in mud, doubtless abandoned years before during riverbank maintenance. Its dull and broken induction-hardened teeth had exceeded their 'twice as long' lifetime yonks ago and barely scratched the surface of a green log. But if the steel plate were de-toothed and de-rusted there was a good chance it would scratch a simple side bead.

My first step was to cut the saw plate into small pieces. Although relatively thin



Shaping the side bead profile with a round file (above) having snipped a rusty Stanley Fatmax with Gilbow metal shears (right) and gloved hands. The cutter is sandwiched with cut-away L-shaped cheeks (below)



the steel was surprisingly tough, boding well for making scratch cutters but making for a difficult job with the Gilbow tin snips. Even wearing leather gardening gloves I could almost hear the bones in my right hand cracking under pressure. I'd advise wearing safety glasses if you do this because if a piece of springy saw plate shears off unexpectedly it can fly across the workshop like Batman's batarang.

Next I submerged the severed pieces in

white vinegar for two days to remove rust, followed by rubbing with WD40-soaked wet-and-dry abrasive. After filing the teeth down to a straight edge I shaped the required profile using a round file.

For the stock I planed up a small piece of reclaimed oak, sawing a rectangular cutaway to make the pair of L-shaped cheeks which sandwich the cutter and act as the fence. Having adjusted the position of the cutter, the whole arrangement was tightened by brass screws and their protruding points were filed flush. Chamfering the edges of the cutaway allowed the tool to be leaned slightly in the direction of scratching, and also to negotiate curves. Sealed with a finishing coat of Danish oil, this scratch was ready for work.

Using a scratch tool is as simple as scribing with a marking gauge. It's important to keep the fence up to the edge, especially while the quirk is establishing, and also to stop occasionally to clear the build-up of tiny shavings, but in no time the reworked steel of this mini-moulding tool will scratch a side bead that



Sawing the shank with the Eclipse No.670 Junior hacksaw (left), then hollow grinding the tip on the hand-cranked Black Knight grinder (above) to produce a dedicated broad-tipped screwdriver for plane iron screws (right)



compares favourably with one made by a full-size plane.

## Dedicated driver

Typical evidence of unfair wear and tear on an old wooden plane is the mangled slot of its back iron screw. The first owner is unlikely to be at fault since the 'bench plane iron turnscrew' was a common piece of kit in the wooden plane's heyday. More likely is that subsequent owners dismantling the double iron for sharpening have used a weedy modern screwdriver not up to the job. The tip has twisted out of position and deformed the slot, possibly also stabbing the worker's hand as it skidded out of control. Some old screws have grown so ragged you'll need Mole grips to get them out. If there's sufficient depth of metal remaining in the head you may be able to save a damaged screw by sawing a deeper slot, but you'll need a decent slotting saw for that.

The surest way of avoiding further damage is to use a dedicated screwdriver with its tip dimensioned to fill the slot from end to end, side to side and top to bottom.

When an original tool had proved hard to come by I had considered buying a broad-tipped 'chipbreaker screwdriver' designed for more recent planes but was saved from that expense by a lucky find at the local tip. My inquisitive gaze had met the curvy handle of a Footprint cabinet screwdriver poking up among old tins of paint. Evidently deemed no longer fit for purpose of levering paint tin lids, let alone turning screws, it nonetheless begged to be found a role and I had just the thing in mind.

The shank of a cabinet screwdriver is round from just behind the tip up to an inch or two from the handle where it becomes broad and flat, with the makings of a tip to fit a backing iron screw. I'd think twice about doing this with a truly antique tool, but for a common-or-garden Footprint with its shank already bent as a bendy drinking straw I felt no compunction in applying the hacksaw at the point where round becomes flat.

For the sawing and filing of small parts like this and the scratch tool cutter my Record Imp table vice has been a godsend. The Eclipse No 670 Junior hacksaw is

another inexpensive wonder tool, with turned beech-handle far easier on old hands than its wire-framed cousin the 14J. The shanectomy completed, I worked a bastard file across the tip then cranked up the Black Knight grinder to hollow-grind the faces, fine tuning the thickness to a perfect fit. To determine thickness no fancy measuring tools are needed, just the back iron screw itself used as a go/no-go gauge. Hollow grinding results in vertical faces matching the slot's side walls, and less likely to be forced from the slot under torque. I removed the coarsest of the grinding marks with emery cloth, leaving surfaces slightly rough to improve grip.

How many deformed old cabinet screwdrivers lie forgotten in the workshop shadows, I wonder, just waiting for the hand-tool woodworker to return them to useful work. Many will have been sidelined when slotted screws were ousted by the crosshead. Search one out if you can, make the tricky business of disassembling an old woody's double-iron a more secure operation, and save some hard-won tool steel from the ignominy of obsolescence.

# DIGITAL & PRINTED Reviews

## Over The Wireless

In proving good posts never die, *Shrenik Savla-Shah* extols the lasting brilliance of Kieran Binnie's blog

**K**ieran Binnie's blog, *Over the Wireless*, begins in August 2013, where he shows the process of making a beautiful guitar. His fine craftsmanship is evident in every step of the way. The blog posts then follow through the years with a variety of projects and tool reviews, bringing his experiences to life with his eloquent writing skills and photography.

An early blog post from June 2014 catches my eye, where a series of perfect angled cuts are pictured, entitled: 'Night of 100 Cuts'. Early in his journey he reminds us of the importance of practice and muscle memory. I see far too often people jumping through into cutting joints without practising the simple task of sawing, just as I have done myself.

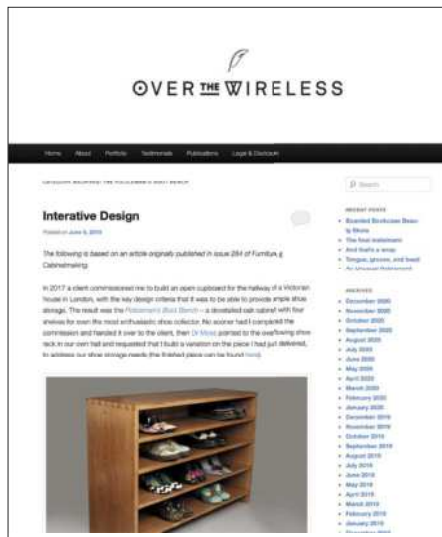
Another blog post that stands out to me is about sticking boards. The simplest of workbenches can be made to perform all the tasks required, and Kieran shows just this. No fancy tail-vice, no fancy work-holding. Just a few screws driven into a board below that hold your workpiece in place. I could do with one of those!

It's impossible for me to tell you all the amazing snippets of information you can capture from reading this wonderful blog in such few words. Full of answers to questions you haven't thought of yet, covering a range of subjects.

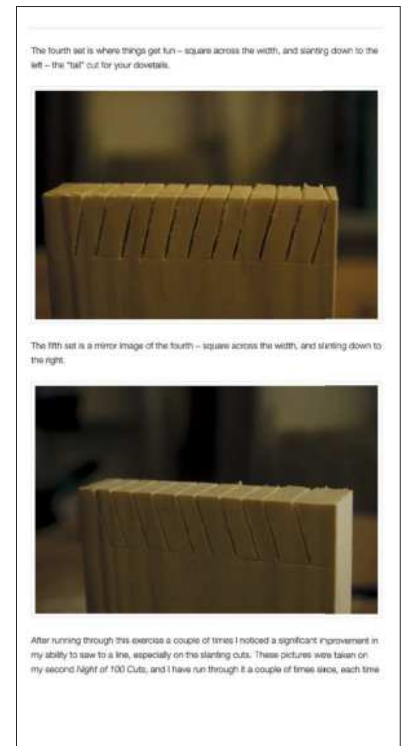
If I were to try really hard to pick out a weakness (I really am struggling here), I would find that although the blog is broken down into categories, they are somewhat unrefined. This makes it slightly more challenging to navigate and find the resources that you might want. This can be resolved by a simple search using the bar at the top.

Sadly, this blog was always a work in progress, as Kieran mentioned in 2017, and he has left us hanging. A year on from his sudden passing, I sit here pondering what he might have shared with us next. His memory lives on at Pathcarvers with the Kieran Binnie Memorial Fund for Craft.

Follow *Shrenik @s.savla.shah* on Instagram.  
To access the Kieran Binnie Memorial Fund for Craft visit [pathcarvers.co.uk](http://pathcarvers.co.uk) where you will find details on the Home page.



Kieran Binnie's blog began in August 2013, and though his posts prematurely ended in 2021, there is still so much to learn from the many posts he made. Typical of his style are those encouraging woodworkers to build muscle memory (below) and using a piece of ply and a handful of screws to hold your workpiece in place (below left)



# Handwork

Doug Stowe's new book *The Wisdom of our Hands*

**N**ext issue we will be publishing an extract from Doug Stowe's new book *The Wisdom of Our Hands*, so I don't want to spoil the surprise, except to reaffirm the author's commitment to contentment. You'll have seen chapters in *Quercus* from his previous books, notably on teaching children, but this is a more serious analysis of the same pursuit. "Deep engagement with the hands as they are crafting," Doug writes to open the chapter, *Learning by Hand* (which you will be reading in QM13), "has an effect on your sense of well-being that should not be ignored."

There is a touch of Bill Coperthwaite about Doug's work, but with more practical details and clearer focus, as illustrated by his reminder of how hands are used as tools. You may choose to pre-empt our extract and buy the book now. You won't regret it.

*The Wisdom of Our Hands* is published by Linden Publishing. It costs \$16.95, has 174pp and is also available in e-book formats.

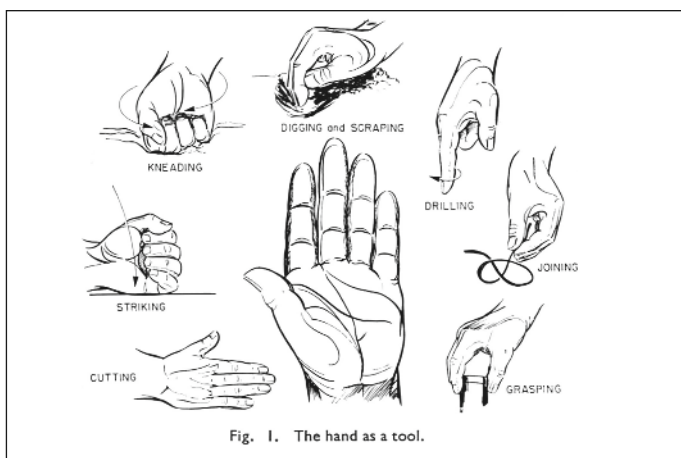
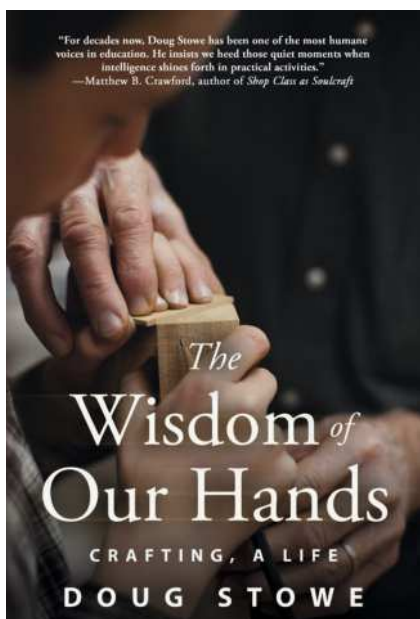


Fig. 1. The hand as a tool.

## Whittling with Barn

Nick Gibbs on making projects for head, heart & hands

**T**here is so much written these days about carving spoons that it's a breath of fresh air to delve into Barn's book *Whittling*. It's easy, though, to consider this as a casual, playful activity, yet in this case the title is something of a misnomer. You'd be forgiven for misjudging this book by its cover, because beneath it are some fabulous projects, full of purpose and ambition.

My instinct was to turn immediately to the chapter on making chopsticks. I love these, have lost mine in a recent move, and was expecting Barn to point me towards straight sticks in the woodland, to debark and test with a bowl of fast-food noodles. Not at all. "Chopsticks are a fascinating tool," Barn writes, "and also a fantastic project to test your whittling skills. They are much harder to make than one might initially think." Perhaps that's because Barn shows how to making impressive, straight sticks in batches of four or six, matched by being made from one piece of straight wood. "It is likely that one or more will be no good," he adds, "however rejects may be useful for kindling."

Anyone who is fortunate enough to have met Barn the Spoon will recognise his dry wit and friendly demeanour that spills off the pages of *Whittling*. Coincidentally I am off on one of Barn's courses to learn how to make an axe block. If it's anything like his book, and I'm sure it will be, the day will work steadily through the tools and techniques, with Barn encouraging us all to take our own journey with valuable guidance. I am hoping it will give me a platform on which to make projects from his book.

Another of the projects I'm aiming to make from Barn's book is the soap dish, which is well designed (so water flows away), and essential in many a bathroom, kitchen or loo, but I'm pleasantly surprised to find it in a book about whittling. Perhaps this is in part because the title doesn't just refer to the making of 'things', but to a journey, as the cover suggests, of reconnecting head, heart & hands.

*Whittling by Barn the Spoon* is published by Conscious Living; is hardback; just smaller than A5; 150pp; £12.99 in the UK, \$18 in the US, and \$23 in Canada.



# Any Sweeter Planes?

Searching for good-value tools, *Rex Krueger* considers the semi-premium handplane

**I** help new woodworkers get started, which means helping them find affordable tools. No tool frustrates beginners more than the handplane. If you need an affordable plane, the options are limited. Many of us are told to find vintage planes by Stanley, Record and other trusted companies. There was a time when buying and restoring these antiques guaranteed a cheap and functioning tool, but many of us live in places where vintage tools are not available. Even if we can find antique tools, prices have leapt up in the last decade, leaving many of these tools out of reach and sending new woodworkers to sites like Amazon and AliExpress in search of a modern alternative.

Lots of new woodworkers buy Stanley's modern Sweetheart planes. Stanley enjoys a strong reputation and they sell both a No.4 smoother and a Low-Angle Jack Plane. When these planes were first introduced they cost around £100, far less than planes from premium makers like Lie-Nielsen and Clifton. They didn't perform like tools from top-flight makers, but they were much better than most budget tools on the market. Stanley's Sweetheart planes quickly gained a following among beginning woodworkers, especially the 'hybrid' crowd of enthusiasts who mill their stock with machines and then surface it by hand. For these craftspeople, the Sweetheart planes offered out-of-the-box performance, solid construction, and tight machining at a reasonable price.

I've used both the No.4 Smoother and the Low-Angle Jack for years and there's a lot to say about their performance, durability, and shortcomings. Tangled supply chains and post-COVID material shortages have driven up the cost of imported goods and these Asian-manufactured planes are no exception. Depending on where you buy from, you might now pay £140 for the Low-Angle Jack. This is a big price jump for a tool that hasn't changed since it was introduced. It's time to reconsider these tools and see if they still bring strong value for the beginner.

## Almost premium

Both of Stanley's Sweetheart planes look good out of the box. The smoother and the jack feature crisp machining, nicely-finished wood, and reassuring heft. Nothing feels cheap or lightweight. Both tools have blades made from A2 steel, which is harder and tougher than plain high-carbon steel.



Rex Krueger has been testing the Stanley Sweetheart handplanes, amongst other things, deciding which he prefers

The No.4 is a useful tool. It often works straight out of the box and comes with the blade flattened and sharpened. The Norris-style adjuster is effective, and the adjustable mouth makes the plane adaptable to many tasks. The Sweetheart No.4 also makes a good shooting plane. The side of the body is shaped in a comfortable swoop that fits the hand without blistering and the adjustable mouth is handy for end-grain cutting. For a beginner on a budget, this could be your only plane and it would get you through several projects.

The Low-Angle Jack is an impressive tool when the price is right. The low-angle, bevel-up design means there's no cap-iron to mess with and no frog to adjust. The Norris adjuster is shorter and more comfortably placed on this plane than the No.4 and it works well. It is a versatile tool that easily tackles flattening and straightening tasks. I most often use mine like a short jointer, especially for smaller projects. The plane is a tolerable smoother, but its long sole means you'll struggle to get into hollows and spend more time smoothing than you would with a shorter plane. Many people buy the Low-Angle Jack to use on the shooting board, and here it excels. The plane has excellent mass, an adjustable mouth, and good ergonomics. The low-angle blade is especially good at slicing through tough end-grain cuts. Although it's a stretch to call the Low-Angle Jack "the only plane you need", it is capable of many tasks and offers good value.

## Time will tell

I've used both planes for several years and work at the bench has revealed problems with each of them. The No.4 smoother is a capable tool, but it suffers from poor ergonomics and several bad design choices. The tool is too heavy and it's poorly balanced, with most of the weight ahead of the tote. In between strokes, you'll find your wrist straining to hold it steady and this extra weight encourages over-gripping. The tall, upright tote is better suited to a four-finger grip than the more traditional and ergonomic pistol-grip. The No.4 has a well-engineered Norris-type adjuster





The Sweetheart No.4 (right) is well built, but the tote is big and clumsy. The planes each have an adjustable mouth that can be closed to a hair's breadth (above) or opened like a barn door.



"The Sweetheart No.4 also makes a good shooting plane. The side of the plane is shaped in a comfortable swoop."



"The Low-Angle Jack makes a good jointer, especially for shorter boards."

that controls both depth and lateral adjustment. This adjuster is effective and reasonably free of backlash, but it sticks up quite high and your finger is likely to tap the side of the control, sending the iron out of square. Stanley combatted this problem by including a locking screw, which holds your lateral position after you set it. It's a thoughtful touch, but it shouldn't be necessary. The adjuster should be shorter and placed where the user is less likely to nudge it accidentally. Many other companies use a similar design, and none of the ones that I've tried need a locking screw.

Like the Sweetheart No.4, the Low-Angle Jack suffers from excess weight and poor balance. If you've never used a good vintage Stanley No.5 you won't know the difference, but the Low-Angle Jack puts a lot of strain on the wrist and one-handed operations are nearly impossible. Other jack planes (both standard and low-angle) usually position the tote closer to the centre of the tool where the considerable weight is distributed more evenly. Compared to a Bailey-pattern jack, the Sweetheart Low-Angle plane handles like a tank and you'll find yourself driving it through the wood rather than gliding over it like you would with a lighter and more nimble plane.

Overall, both tools are durable, functional, and well manufactured. They both work and they both offer solid value when the price is right... and there's the rub.

### Mind the gap

For years, Stanley has enjoyed a comfortable position in the hand tool market because very few makers offered tools that were this good and this cheap. The Sweetheart line was perfectly positioned for woodworkers too cash-strapped (or just too stingy) to spring for truly premium tools. This might all be about to change. As inflation and tangled supply lines drive up the price of imported tools, the Sweetheart models are more expensive or are simply unavailable.

In this uncertain moment, even the frugal woodworker might well consider a pricier, premium option. The Canadian maker Veritas offers a whole line of planes in both low and standard angle. Although they are significantly more expensive, you're unlikely to buy one and then want to upgrade it down the road. As Paul Sellers reminds us, we should seek out "life-time tools" whenever we can. For the casual woodworker, the Stanley Sweetheart planes might satisfy for years (and of the two the Low-Angle Jack is my favourite), but the dedicated craftsman will almost certainly leave them behind and buy something better. When that happens, you haven't saved any money.

*Rex Krueger is a writer, teacher, and furniture builder living in Cleveland, OH. His woodworking videos can be seen on YouTube. His most recent book is Everyday Woodworking: A Beginner's Guide to Woodcraft With 12 Hand-Tools.*



It's easy to accidentally hit the No.4's adjuster, throwing off the lateral adjustment (above). The adjusters on both the vintage Norris (on left) and vintage Stanley (on right) won't get knocked off line by a mistake



The Stanley's A2 blades are super-hard, and oilstones might not be up to the task. Diamonds are recommended (above)



Out of the plane, the Norris-style adjuster (above) is compact and well made. The Low-Angle Jack (right) is well machined from quality components



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# Marking Time with Bill

Hand-tool newbie, *Nick Gibbs* spends three days with Bill Ratcliffe learning how to cut dovetails

Elsewhere this issue a finger is pointed my way in a posthumous polemic by a chairmaker of old, lambasting woodworking magazines for their passion for power. He argues that editors, by association, have been complicit in a techno-culture that inspires the worship of machines. He questions whether the media have been a cause or a consequence of woodworkers (and hobbyists in particular) having come to rely upon power-tools and machinery, at the price of hand skills. As an editor I have certainly been guilty in the past of that approach, but must contest that there are any number of ways to cut a tenon. I am unashamedly untrained and unqualified as a woodworker, without even an 'O' Level in Woodwork to my name, having depended on routers, sanders and planers in making the replica golf holes I produce as a small, part-time business. So it was with some trepidation that I asked our new contributor, Bill Ratcliffe, if he'd mind helping me cut my first dovetails by hand.

I looked at the joints I'd cut in the past on a router table, and wondered how such accuracy might be achieved with a saw and a chisel, and why. But as Robert Browning suggested, a man's reach should exceed his grasp, and in November I grabbed the opportunity to spend a day or two with Bill in his Cambridgeshire workshop, where he runs courses and as Craven Conservation restores antique furniture. I'd only met him in September, on my way north to Scotland, sandwiched between a talk I was giving in March, Cambridgeshire and a long-held ambition to enjoy a Mr Whippy on Skegness Beach, since missing a rugby 'tour' to Skeggie from Nottingham

University, where I studied Geography. Actually I gave up hopes of being a geographer after a year, when I realised that map-reading was the only skill I required. I can recall to this day, slouching in a lecture theatre, almost prostrate, being informed, mathematically speaking, when the top of a glacier break free of a mountain. "I don't need to know this," I told myself, and went straight to the Prof's office and resigned.

## Three-day diploma

Despite some qualms, that was never to be the case with Bill. He had kindly extended a one-day dovetailing diploma into a three-day degree, with much to learn. Academically speaking, I've never studied well without a purpose. At school I was mystified by language lessons, getting by perfectly well with English and rarely travelling abroad. I only 'attacked' French with any gusto having bought *Living Woods Magazine's* Le Shack in Normandy, and even then was kicked out of Night School when I suggested we Brits start driving on the right if the French give up defining objects by gender. So to welcome the full extent of Bill's tuition I arrived with a project in mind, and some French cherry boards, which I hoped to make into a jewellery box for my eldest daughter, and also as a multi-purpose caddy for a Lie-Nielsen Block Plane, to widen the scope for entrants to



our Young Woodworker of the Year Award.

Sensibly Bill started me with a simple trial he sets all students. Some have been visiting frequently, but supposedly they all started with the same exercise. The challenge is to cut a single joint, with one tail and a pair of pins. According to Bill I did well, and in fact all those times I'd cut such joints with a Gifkins Dovetail Jig for router tables, stood me in good stead. Bill's tuition also clarified how aligning the pin piece, resting on the tail has such an impact on the tightness of the joint. He showed me how to undercut between the pins a fraction to ease the assembly, how much easier it is to remove the

bulk of the waste with a New Concept fretsaw, and that it is essential to have a fine pencil.

## Choosing a pencil

Bill swears by a Pentel GraphGear 1000, which has a clever clasp that instantly retracts the lead and the point as protection. This is ideal for working at the bench, but expensive for working on site as in my case it is so likely to get lost. And anyway I don't need such a fine marker for carpentry work around the house. For that I have for many years used a Festool carpenter's pencil, like the traditional red and black ones, but in this case with an elliptical body. It has the bonus of a Festool logo, which impresses some power-tool fans, but mine is down to the nub now, and they can't be found these days. Instead I discovered Festool make a Pica Dry Longlife Automatic Pencil, with a sharpener. I have always lusted after a clutch pencil like that, so bought one online (prices range £10-£15). It is certainly a thing of beauty, but is in two parts, with an outer





The two-part Festool Pica (top); Pentel GraphGear (middle); and Hiboom (bottom) with cap sharpener

sheath comprising a clip and a sharpener. Now you can call me forgetful if you like, but I am bound to lose one half, each being useless without the other, though I suppose one could do the sharpening with a chisel or knife.

### Initial pencil search

Fortunately my initial search that drew me to the Pica also suggested a Hiboom Carpenters Pencil, of very much the same design except it is in one part and the sharpener is part of a screw-top cap, which is also a lid for new leads. It costs twice that of the Festool model, but has all the same qualities but none of the weaknesses. It has the added value of being produced in a variety of colours, with a variety of coloured leads. Mine came with three black spares, and three yellow spares, and the lead feels slightly harder than the Pica's.

I digress. Neither of these compares with Bill's Pentel, which proved to be essential for marking up accurate dovetail joints. After three amazing days of challenging advice and

practice, and some treats with our tea, I left with a glued up box to be assembled with a base and a glass top at home. I couldn't believe the tightness of the joints using the fish glue Bill favours.

I have bought some since then, and want to use it, but I haven't yet found a bottle warmer for babies' milk that Bill recommends for softening the fish glue, which isn't as smelly as you might expect, with a far nicer aroma than hide glues, and easier to use. I learnt the value of accurate marking up with Bill, but also how cutting and cutting and cutting improves accuracy and eventually means you hardly need a chisel for tight, quick joints. For that and for the experience of sharing a workshop with Bill Ratcliffe I am deeply grateful, and wish I could visit more often.

By the way, for a chat face-to-face, come to Weird & Wonderful Wood (see ad) from 14-15th May, where you will also find Classic Hand Tools.

Follow @cravenconservation or visit [cravenconservation.co.uk](http://cravenconservation.co.uk).



### Bill Ratcliffe's Value of Marking Out Habits

MY APPROACH to teaching woodworking or restoration in general is to break the processes down to the small details and then practise, so the small details become habit. Nick and I looked at techniques, tool selection but really it is about the approach and being focused, then settling on a favoured set of tools, including marking out tools for consistent results. Then we'd occasionally try a new tool and see if it improves either your joints or your enjoyment of woodworking, then decide if it makes it into your kit. I see too many people who just keep changing tools, sucked in by the latest gizmo hoping it will make them better. The main thing that makes you better is practise.

People would never expect to speak fluent French after one lesson or become a pro golfer after one session, but we often get frustrated at woodworking skills not being instant; we must practise and that is why it is called a craft.

One of the key areas of focus I had to keep reinforcing with Nick was about making fine adjustments to fit a joint. I often see woodworkers go into what I call 'whittling mode' and I apologise to those who are skilled at that craft. I see their minds drift. The joint does not fit so they start randomly removing wood. My mantra is that 'every push of the chisel should be made with a purpose'. Often getting quickly to the perceived glory stage task of wielding the shiny dovetail saw is at the expense of accurate and clear marking out. Take enjoyment from looking at a set of tails marked out accurately, waste marked clearly and clean gauge lines.

The pencil is mightier than the saw. If you mark out fine joints with a big fat rectangular carpenters' pencil, then well done. I prefer a technical drawing pencil as it is consistent, and the lead does not get fatter and blunter as I work. Many use a regular well-sharpened pencil, but they use the same type every time. Find what works for you and you will adjust to it. By the way, Nick is the only student to bring Zombie eyeballs, grapes and Christmas cake for lunch.

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# A Double Dutch Entry

Aiming to inspire Young Woodworker of the Year entrants, *Megan Fitzpatrick* stretches the rules

As some readers may have noticed, we've been asking well-known woodworkers around the world to help us inspire entrants aged 16-19 for our Young Woodworker of the Year competition. The latest volunteer is Megan Fitzpatrick, who recently became full-time Editor at Lost Art Press. We asked her to follow the guidelines that the box must be able to fit a Lie-Nielsen No.102 block plane, which Megan calls an apron plane.

The box itself must fit within a shoebox to make delivery to *Quercus* simple and cost-effective for those entries selected for the shortlist. Entries are by email initially, with a handful of photos of the piece and a brief summary, and must arrive by 31st December 2022. From those a shortlist of 10 will be chosen, and those entrants will send their box to *Quercus*, delivery paid by us to make it fair. A panel of judges will then choose the winner, who will be awarded £500 and a Lie-Nielsen No.102 plane, personally engraved by Jenny Bower. The judges will be evaluating the use of materials, the finish, the quality of techniques, that it's fit for purpose, but most of all its distinctive design. So we were enthused by Megan's interpretation of the criteria. She'd be right up there with a chance to win if only she hadn't just turned 21, only a year or so too mature.

## The go-to block plane

"The No.102 is my go-to block plane," Megan wrote in her Lost Art Press blog (2nd April 2022, [blog.lostartpress.com](https://blog.lostartpress.com)). "It fits comfortably in my small hand, so I was happy to come up with a box... though I broke the rules a bit by building one that holds two No.102s. If only I'd bought a white bronze No.102 when Lie-Nielsen did a limited run. How cute would it have looked in a tiny tool chest atop its iron brother?!"

"For the most part, this little chest is built exactly like a full-size one. There are dovetails in the bottom; cut nails to secure the backboards, bottom lip and front; dados to capture the shelf that divides the compartments; battens and a lock through a catch to hold the fall front in place; a raised panel on the fall front and lid, with a fingernail moulding on the lid (I guess it's a pinky moulding); rot strips; lid battens keep the top flat; and a hinged lid. Oh, and General Finishes 'Blue Moon' paint.

"I chose sugar pine with the tightest grain I could find, and surfaced it to 1/4in –



aka the size of the blade in my small router plane – so I could use that tool to remove the waste in the dado that holds the shelf in place. The other bits are walnut. I skipped putting nails through the side into the shelf (as is typical on some full-size DTCs), because I didn't trust myself to get the necessary tiny pilot holes perfectly centered, and didn't want to risk splitting the sides with a lot of work already done.



For that same reason, I glued on the lid battens, rot strips and strip underneath the slot for the catch. So in this case, the lid battens won't keep the lid panel flat. They would properly be screwed or clinch-nailed to the lid panel. I'm not too worried about the lid cupping, as it's only 31/2in wide. Hinging the lid was the most difficult part; holding those screws in place required tweezers and a lot of squinting!"

## Sticking to the rules

The tiny Dutch tool chest is 61/4in long, 23/4in deep, and 53/4in tall. "I don't know its scale," Megan adds, "or if the parts scale properly to a full-sized DTC. I just did my best to make it look 'right', based on it fitting the plane, per the requirements. Or in this case, two planes.

"I have to confess that yes, I'm writing a book about Dutch tools chests, and as long as I don't expire, it will be out this year... if for no other reason than chagrin at dragging my feet for so long."

*There is a short video in the same blog post from 2nd April 2022 on [blog.lostartpress.com](https://blog.lostartpress.com) showing the inside of Megan's charming entry. Many thanks to her. You can follow Megan on Instagram @1snugthejoiner. For further details of the Young Woodworker of the Year award visit [quercusmagazine.com](https://quercusmagazine.com) or email [info@quercusmagazine.com](mailto:info@quercusmagazine.com). Do please pass on details to anyone who might enter, or anyone who has students, children, grandchildren or other potential entrants.*



The Dutch Tool Chest is built in almost the same way as a full-size version, about which you'll be able to read once Megan has completed her book



The box may not be exactly how Megan was instructed, but that makes it distinctive



The hinges were particularly difficult to fit, with such tiny screws



"For the most part this little chest is built exactly like a full-size one. I chose sugar pine for its tight grain"

# The Case Against Reamers

Debating joint options, Swiss chairmaker *Ozan Demirtas* reveals why he favours simplicity and skill



Ozan drilling leg mortises

**H**ow horrified are you by the thought of drilling a chair leg at the wrong angle? I was terrified. No wonder, then, that the first chairmaking tools I got were a reamer and a tenon cutter. To any budding chairmaker, Christopher Schwarz's voice is gospel. If he says a reamer will save your mis-drilled leg mortise then that is all the comfort you need to add it to your cart. Promises abound, a controlled way to finely adjust the mortise? Yes please. A joint that gets tighter with time? A cheap and simple tool that can even be used without a lathe? Yes, yes and yes! It sells itself.

However, when making Welsh stick chairs, you might start encountering problems. With higher leg angles, and in the absence of stretchers, this joint can work itself loose. Yes, even a tightly fitting one made with well-dried wood and fresh hide glue (Pic.1). Conical assemblies tend to be precisely fitting and resistant to axial loads – think of a lathe's tailstock – and yet they are quite more vulnerable to transverse loads. These racking forces, as we might call them, are the daily life of any chair leg and even more so for our beloved Welsh ones.

If you are absolutely set on using your reamer, there is a safer path: keep your angles more conservative and always make stretchers. This way the undercarriage will be stiffer and the transverse load reduced.

If however, you are not wanting to have any design shackle, there is a better option. The cylindrical tenon is the way to go. It is intrinsically more resistant to transverse loads and, when well made, as resistant to axial loads as a conical assembly. So, we're back at the start, the crippling fear to mis-drill. It's true, a cylindrical mortise means one shot to get it right. Yes, you could plug it and go again but who wants that? No, this we need to get right from the first try. I will show one good way to do this.

## Eyes on square, ears on bevel

My preferred method of drilling leg mortises is to work with a spotter. First, I mark with an awl the position of the leg and set up a sightline. On the sightline, I set a square and a sliding bevel (Pic.2). I now need to keep track of all these elements while drilling. A spotter makes this easier, faster and more accurate.

The spotter, my wife, sits next to me and tells me any adjustments I need to make in order to stay parallel to the sliding bevel (Pic.3). This way I am free to focus on keeping the drill, the square and the sightline co-planar and avoid any side-to-side movement.

You can do this by yourself but having to constantly move your body to check one thing after the other takes more time, creates some inaccuracies and



A sliding bevel and square are set along the sightline (Pic.2)



Work of the Swiss Chairmaker

second-guessing. The key to working efficiently and accurately with a spotter is clear communication. Keep it simple. The spotter should only have a three-word vocabulary: "Forward. Backward. Good". There is no need for anything more. The driller will be instinctively close to the desired angle. If they don't go forward or backward enough you just repeat the command until they do and then confirm by saying "Good". Communicating with long sentences only muddies the water. As the driller, your vocabulary is even smaller. Simply ask "Good?" when uncertain.

At first, this might seem somewhat stiff but communicating with full sentences takes some focus away from the drilling. "Go a liiittle further," "Wait, come back juuust a bit," "Yeah now you're good" all take some brainpower to process for no added benefit.

Again, focus. Keep it simple. Eyes on the square and ears on the bevel. With wider leg angles (>35°) and bigger augers it helps to bevel the underside of the seat first. Otherwise the spurs of the auger will touch the seat before the lead screw has a chance to sink in, which can cause the auger to wander.

I bought a 450mm auger to see if a longer reference surface would make the drilling process easier and more accurate. It did. However, benefits are negligible. In use, very slight variations in angle are



With a concave-sole spokeshave you can taper the tenon shoulder (Pic.4). A leg joint on a stick chair can loosen (below, Pic.1)



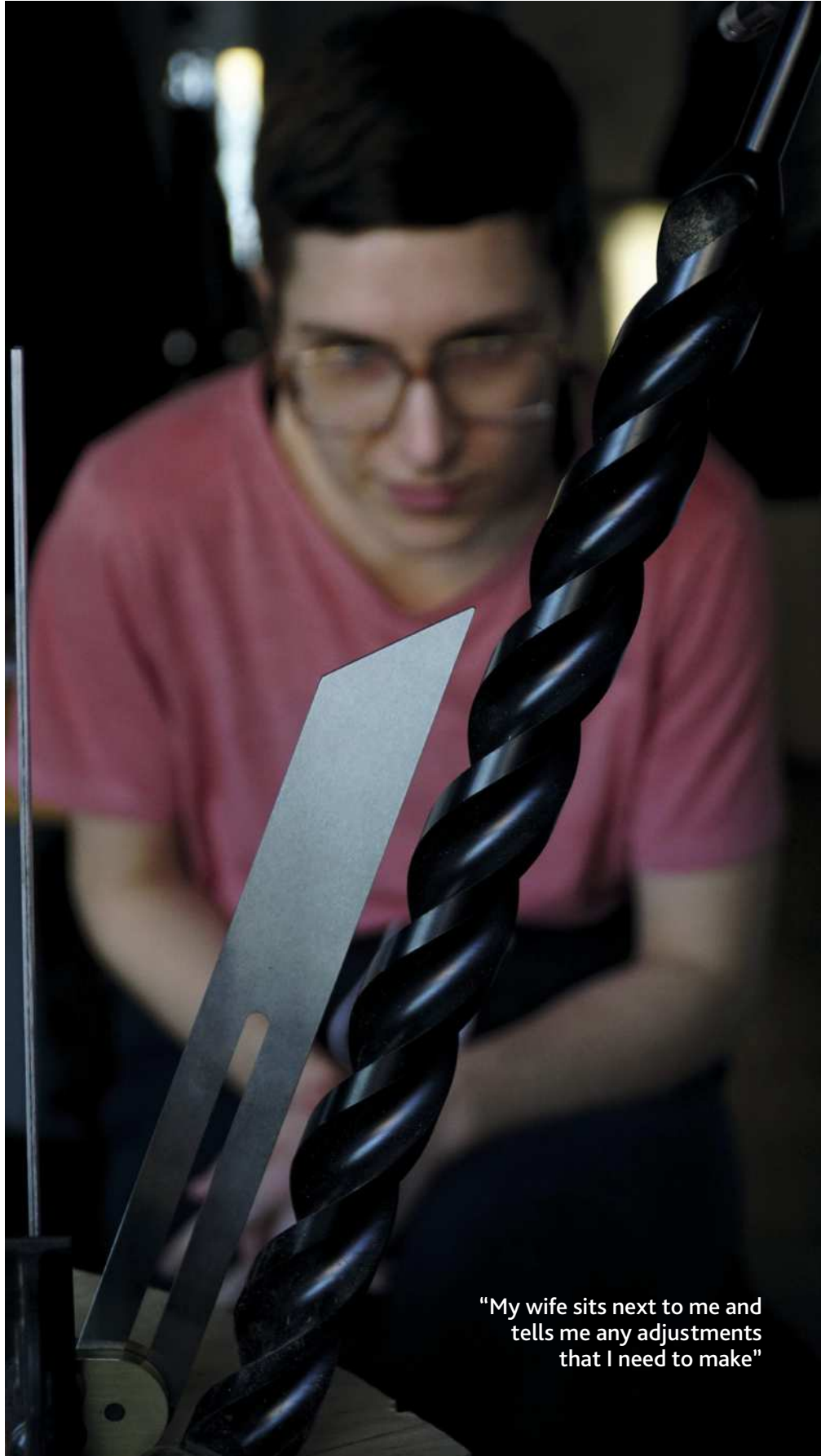
never noticed in a chair and using a short auger is plenty accurate. If you already have one, use it. If not, I don't think it warrants the purchase.

### A soft shoulder

When fitting the leg into its mortise I recommend using a small concave-soled spokeshave, at least for the final part. This allows us to make a tapering soft shoulder (Pic.4), which will be compressed against the wall at the bottom of the mortise, and along with the wedge from the top, should limit the axial movement of the leg.

Any woodworking will, at some point, put you in a spot where you either get it right or wrong. With no more possibilities to correct the mistake if you make it. So why use a reamer? Why delay this moment by a single step? Why spend as much, if not more, time and energy on another learning curve and make all the associated mistakes? I have ruined the angles of good mortises, mis-sharpened my reamer, burned a drill, made oval mortises and more... You could follow the same path and complicate matters further by adding mirrors and sliding bevels and laser-levels to a simple process. Or, make cylindrical tenons. One less tool, one less step and a small show of skill.

Follow Ozan Demirtas on Instagram  
@swisschairmaker.



"My wife sits next to me and tells me any adjustments that I need to make"

## Shouldering Decisions

Recalling a chat at a show, *John Lloyd* discusses shoulder planes and which type to choose



I was asked if I ever use a shoulder plane, and if so, when I would use it? I was tempted to reply with a rather curt: “Of course I do, doesn’t every woodworker?” and, “Among other things I use it to trim shoulders. I would have thought the clue was in the name!” But I didn’t choose this Grumpy Old Woodworker option because the person asking the question was the editor of an excellent woodworking magazine for which I used to enjoy writing regularly, and because it reminded me of a conversation I had with a couple of highly-esteemed woodworkers in the Classic Hand Tools marquee at a show in Gloucestershire, England one August. The gist of the chat with Garrett Hack and David

Charlesworth was that Garrett was enthusing about the Clifton 410 which he said he used, of course for trimming shoulders, but also for many other trimming and shaping tasks. Then David dropped the bombshell that he never uses a shoulder plane to trim shoulders.

In David’s case I’m sure this decision was made, as you might expect from a man who is known for his precise approach to ‘engineering in wood’, in the interests of control. He just prefers to pare with a big chisel, probably with a long handle, arguing that the relatively narrow tenons that tend to be used in furniture-making don’t lend themselves well to shoulder planes. In any case the short end of the

shoulder will be trimmed with a chisel so why not use a chisel for the whole operation?

### Paring approach

This paring approach does have some merit of course, it ensures that there is no break-out at the end of a shoulder, a distinct possibility when using a shoulder plane for this task. Garrett seemed rather bemused by the shock revelation. Surely a well-tuned, finely-set shoulder plane would be quicker, less fuss and more precise than waving a big chisel around? A subsequent discussion with Garrett confirmed his commitment to the shoulder plane. His 410 and other shoulder planes are used often and are much loved, and he maintained that break-

out needn’t be an issue when planing right across a shoulder if the plane is set up right, but his final comment that, “they’re a bit tricky to sharpen and set up”, is perhaps the key to the successful use of the shoulder plane and might be the reason why many woodworkers avoid using them.

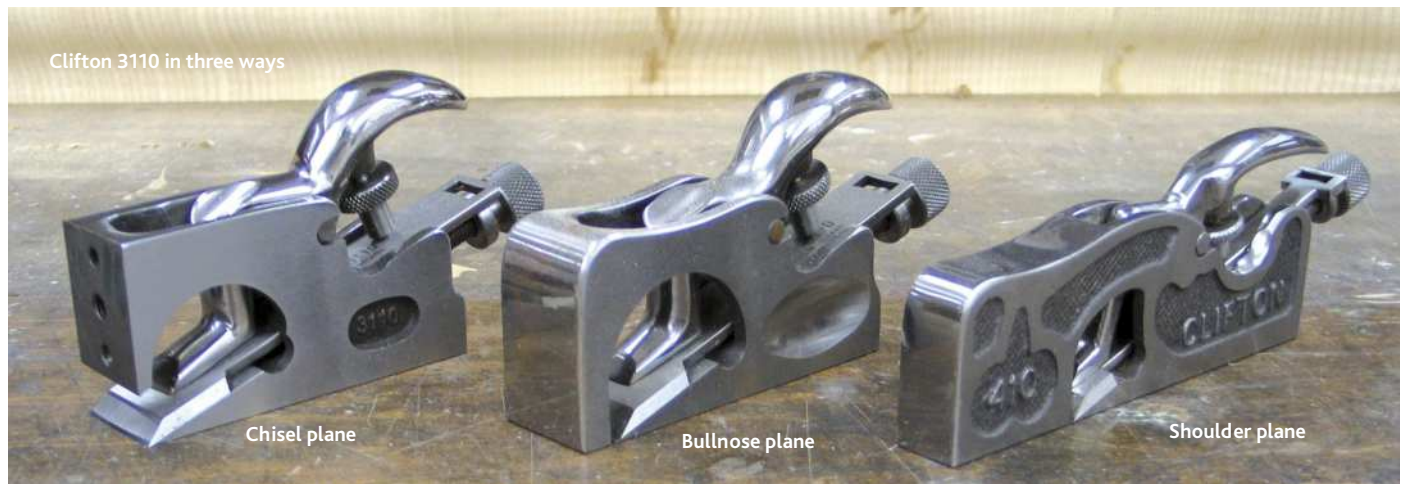
From my point of view, when I was training, the shoulder plane was one of only four planes that we had in our toolkit. We were encouraged to use hand-tools wherever possible, and this versatile, nimble, little plane (in my case the rather poorly made Stanley 92), was in pretty regular use. It could do things and get into places where other planes didn’t stand a chance: tenon cheeks and shoulders, rebates,

## Choosing a Shoulder Plane

John's first shoulder plane (below) was a rather ordinary Stanley 92, bought from Thanet Tools in about 1990. He had just started training at Bruce Luckhurst's and a shoulder plane was on the tool list. An alternative is a shoulder plane that can also be converted into a bullnose plane or a chisel plane, as is the case for the Clifton 3110 (right)



The Clifton 3110 set up as a bullnose, but can also be a chisel plane



mouldings, grooves. But it was, as Garrett said, always a bit tricky to sharpen and set up.

## Shoulder plane types

Shoulder planes are sometimes referred to as 'shoulder rebate planes', not in an effort to confuse, but perhaps to give the idea that they might actually be good at doing more than one thing. They come in all sorts of different shapes and sizes, from the Veritas Large Shoulder Plane, a strapping 32mm wide, 210mm long, weighing in at a hefty 1.7kg, to the diminutive, Preston-based Clifton 400, 11mm wide, 83mm long and a sylphlike 160g. Differently-sized planes are ideally used for different sizes of shoulders and rebates, although most cabinetmaking

requires a plane at the smaller end of the scale, probably referred to as 'medium' or 'small' by a planemaker.

For many years I just had my trusty, but rather diminutive 92, but at the last count I now have five and that's without having a 'large', which would have very limited use, unless I branch out into making hulking great workbenches or refectory tables with cleated ends.

Then there's the bull-nose version of the shoulder plane which looks a bit like a bulldog, all chunky and flat-nosed, which is rather at odds with the fact that this is a plane that's for getting into those tight spots that an ordinary shoulder plane cannot reach. And finally the chisel plane, not really a shoulder plane, but some

shoulder planes can become a 'chisel plane' by removing their nose section, as can my old Stanley 92, and so can the ever-so clever Clifton 3110.

The 3110 is all three planes mentioned above, in one. I will generally give any tool that is trying to be more than one thing a very wide berth, and I'm very sure that many quests to come up with tools that are multi-talented have been littered with spectacular failures. To pull off this 3-in-1 plane trick requires a very high level of engineering prowess, each component must fit precisely and accurately or this plane would be destined to just be an expensive paperweight. But Clifton have created a spectacular success, and this plane which, on the face of it,

looks a bit on the lumpy side, is impeccably behaved in all of its three guises and changing from one mode to another is simple and quick.

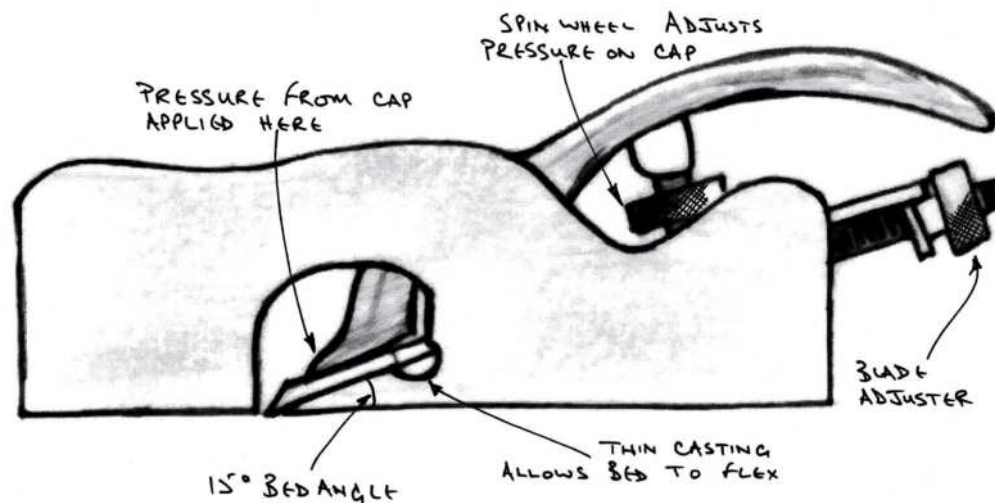
## Bullnose or chisel

If a bullnose plane will even get almost into a blind corner and a chisel plane will get right into the same blind corner, surely there's no contest in the choice of plane, the chisel plane must win because it can do the whole job. If only life were that simple. The thing about a chisel plane is that because there is nothing in front of the blade it can become a little unpredictable and it has a tendency to dig into the wood, whereas the bullnose has a little area of support just ahead of the blade, which prevents

## Bullnose or Chisel?

The chisel plane (below left) can get into corners the bullnose plane (below right) cannot reach. The trouble is that because the bullnose has nothing to the front it can be unpredictable and has a tendency to dig into the wood. David Charlesworth once told John that he prefers to use a paring chisel rather than a shoulder plane, much to John and Garrett Hack's consternation. Asked which he'd choose between a bullnose and a chisel plane, John says that he'd prefer the bullnose because it is a bit more reliable, and anyway the last fragments can be removed with a chisel, as David does. According to John the chisel plane is also trickier to adjust, and a test run on a piece of scrap is a good idea.

Parts of a shoulder plane



A Clifton 3110 as a chisel plane (left) and a bullnose (right)

those impromptu nose-dives. Adjusting the blade of a chisel plane is another of those slightly tricky things to get just right. A test cut on a scrap is a good plan.

If I could have either a bullnose or a chisel plane, I would go for the bullnose. A bullnose will get very close to the corner more reliably than the chisel plane and the last little bit is relatively easy to pare back with a nice sharp chisel. But then of course if I had a Clifton 3110 I would have the best of all toolmaking worlds in just one plane.

## Shoulder plane setting

The key to any plane working effectively and efficiently is to

set the plane up correctly. It is not a time-consuming operation to tune a shoulder plane because it's relatively small. The first, and most important, issue is the flatness of the sole.

This is a particular problem for a shoulder plane because the part of the casting that the blade sits on is pretty flimsy and will flex when the cap is tightened, in effect making the sole curved. Not so much on cast iron planes like the Clifton because this material is stiffer than the more commonly used malleable iron, but it's still an issue. Fit the blade (retracted a bit), tension it with its cap or wedge, and give it a rub on a nice thick piece of glass with some 240 wet & dry paper

lubricated with a little white spirit. Rub until the scratches from the paper extend over the whole sole.

Sharpening a shoulder plane is critical in two respects. It's a bevel-up plane, so the bevel angle has a dramatic effect on the way the plane works, and the lateral adjustment on a shoulder plane is limited so skewing the end of the blade while sharpening will prevent the plane from being set up correctly. The shoulders of a tenon are end-grain, so a low cutting angle is beneficial. The bed angle of most shoulder planes will be 15°, so keeping the bevel angle of the blade to 25° will achieve a cutting angle of 40°.

Meticulously flatten the back of the blade and sharpen it taking care not to induce a skew. Fit it to the plane and adjust it with a very fine even projection by sighting along the sole. Now check the mouth opening and if it's adjustable set the mouth to a gap which a shaving can just squeeze through. The fact that the mouth is adjustable is now of no use to you because when it's finely set you'll never change it.

*John Lloyd runs short and long courses in Sussex, England. For details visit [johnlloydfinefurniture.co.uk](http://johnlloydfinefurniture.co.uk) or follow @john\_lloyd\_fine\_furniture.*

## Setting Up

It's not as slow setting up a shoulder plane as some woodworkers might think. One issue is that the blade sits on a thin bit of casting, which can be flimsy and flex, so it is important to work on the sole with the blade in place. Sharpening is important as the bevel on a bevel-up iron needs to be right and skewing the edge also affects the way the plane works. A low angle helps working on the end-grain of a tenon, so with a bed of about  $15^\circ$ , the bevel should be at about  $25^\circ$  for a  $40^\circ$  cutting angle.



Make sure the the mouth opening is fine and even (left). You can see here where the plating on John's old 92 has been ground away for a short length where the sole flexes. It is best to flatten the sole with the blade fitted (above) but retracted



Set the blade with a fine, even projection



Mark the edge of the blade with a felt tip pen as a reminder of which side of the blade you need to grind back when sharpening (left). There is only a tiny amount of lateral adjustment on a shoulder plane, so the blade has to be ground very accurately. The blade must stick out evenly, and there is very little tolerance. Also ensure the blade is flat across its width (above)

# The Spofford Solution

In search of the simple brace, *Robin Gates* is gripped by a clamshell socket

The body language of one machine operator can look much like another as the button is pushed, the wood positioned and the machine does the work. We may not even be able to see the operator's expression hidden behind regulation face mask, ear defenders and goggles, but slumping body language often suggests boredom and impatience. By contrast, hand tools developed down the centuries, each to be worked in a particular way, have an almost yin-yang complementary relationship with the human body that cultivates alertness and engagement.

Hand-tools have left such strong imprints on our subconscious that, even if the tool were removed from the picture we would soon guess what the worker is doing, and perhaps even how they feel about it. Planing, hammering, chiselling, sawing – none of these actions would be hard to guess if mimed.

But to my eye the most recognisable and evocative body language is that mesmerically mobile yet stationary stance adopted by a worker busy with the brace and bit. That look of controlled power and concentration associated with swinging the bit-brace is unmistakable. Of course you can use the brace safely in all sorts of odd positions – that's a major advantage of hand-tools – but what I'm picturing is that pose so typical of the chairmaker standing over the tool watching every shaving as it spirals from the hole, seeing in their mind's eye the progress of the bit through the wood, and wary of going too far.

Typically one hand clasps the pad applying downward pressure, the pad itself may be steadied against the forehead, and the driving arm grips the



revolving handle of the crank circling the work like a buzzard wheeling above its prey.

Thirty years ago I didn't need a new brace, or thought I didn't, having inherited Dad's ex-Army Stanley, a simple and sturdy tool uncomplicated by the ubiquitous ratchet. Turn clock-wise to bore the hole, anti-clockwise to exit; what could be more straightforward. But when I moved into an old house requiring cables to be threaded through a succession of floor joists the advantage of a ratcheting brace became obvious. Working in a small space where full sweep of the cranked handle is impossible, you can pump the handle back and forth to effect a full rotation of the bit.

## Rock-solid worker

The last leg of my daily commute in those days took me past a bric-a-brac store which occasionally had old



The Spofford's toolmaker John Fray was born in Cornwall, 1833

tools in the window, so I popped inside for a rummage and found just what I needed, a Millers Falls No.422. In its heyday the Millers Falls factory in Greenfield, Massachusetts was turning out countless thousands of braces in dozens of different models, each suited to a particular purpose or pocket. My 10-inch sweep model is among the most common but remains a rock-solid worker even after 100 years, with pawls ticking between teeth of the ratchet like a Swiss watch.

Fast forward a quarter century and I definitely had no

need of another bit-brace; what the Millers Falls couldn't do simply didn't need doing. But when I found myself deep in the musty basement of a Midlands bric-a-brac shop the rummaging instinct and fate took a hand. Something gleaming from a box of mouldering books caught my eye, as if one old tome bore a leather spine with silver tooling. Like a detectorist investigating a promising beep I dug in, and out came a Spofford brace. That bookishly gleaming spine had been the Spofford's rich cocobolo handle with tell-tale pewter bands catching the light. Hypnotised by the sheer beauty of this tool I sensed that my brace needs required immediate updating, thence to travel home with my purse £20 lighter and shopping bag 1lb (460g) heavier.

Restored to its natural environment of the workbench, the Spofford brace gave up more of its story. Although the



## Ratchet & Jaws

The Barber chuck shell (left) conceals spring-mounted 'alligator' jaws. The selector ring, toothed wheel and pawl of the reversible ratchet (right). Pewter rings secure the halves of a Spofford's sweep handle (below)



Spofford's 'clamshell' socket (above) excels with square-shanked bits. Using the ratcheting Millers Falls No.422 in a tight spot (right)



tool doesn't bear a physical stamp of its eponymous inventor Nelson Spofford of Haverhill, Massachusetts, the 'clamshell' socket of his 'new and improved mode of fastening bits in braces' noted in US Patent 25984 of 1859 is instantly recognisable.

## Grooved inner faces

The business end of the tool is forged into a flattened fork with grooved inner faces that are tightened on the square shank of the bit by a large thumbscrew. In the mid-19th Century the size and taper of square-shanked bits varied widely, so a particular make of bit would fit relatively few makes of brace – a smart ploy for manufacturers, perhaps, but often a problem for joiners. Spofford's elegant solution of the 'clamshell' socket enabled almost any bit of the day to fit.

History seems not to have recorded if Spofford made more

than a prototype, but the man who saw the potential of his invention was toolmaker John S Fray of Bridgeport, Connecticut and it's his company name which is stamped on the frame. My brace also bears the model No 108 denoting its 8in diameter sweep.

Interestingly, Fray was a migrant Cornishman who'd begun his working life at the Bickford Fuse Works in Camborne, making the jute-bound waterproof fuses invented by William Bickford to improve the safety of miners engaged in the perilous work of blasting below ground. The explosive charges were inserted in the rock using hand drills, something in Fray's background which may have drawn him to Spofford's invention. Fray certainly didn't skimp on quality with the new brace, using cocobolo for the pad and sweep handle, nickel plating on the frame, and

that unusual detail of pewter bands holding the halves of the barrel-shaped sweep handle together. Fray & Co produced a range of Spofford braces up to 17in, with the greater torque developed by that top-of-range tool doubtless suiting ship builders and timber framers working with big bits and tough timbers. Even so, swinging a brace of that size would surely approach the ergonomic limit of functionality for any worker. Returning to our 8in model, ideally suited to the lighter tasks of boring small diameter holes for chair spindles and stretchers, the simplicity and quick-change facility of Spofford's rugged 'clamshell' socket makes the more familiar Barber-type chuck of the Millers Falls No.422 seem unnecessarily complicated with its threaded collar tightening around spring-mounted jaws housed in a slotted shaft. If you happen to lose that spring

the chuck will be a source of endless frustration.

After John Fray died in 1916 the now considerable tool-making business was sold to the all-consuming Stanley Rule and Level Company who continued making the Spofford brace until WW2. By that time the advantages of the ratcheting brace with a sophisticated, versatile chuck were overwhelming.

However much the design has been tweaked down the years, the essence of the brace has remained unchanged since at least the Tudor age. A wooden brace or wimble is among hand tools recovered from the wreck of Henry VIII's flagship *Mary Rose*, which sank off Spithead in 1545, and it's a fair guess the ship's carpenter would recognise its cranked shape, drill bit and rotating pad echoed in a Spofford, Millers Falls or any other brace made in the last 500 years.

## Enhancing a Workbench

Canadian woodworker, *Charles Mak*, shares shop-built holding devices

Using proper holding devices and methods can lead to greater accuracy and efficiency. With a nod towards traditional woodworking, I've three improvements for a typical workbench. The first upgrade is to modify your existing bench hook into a two-way bench hook so it can be used with a Western saw or a Japanese saw. Essentially, it is just a bench hook with two dowels instead of a cleat. Start by removing the cleat, then drill two holes in the fixture that match both the distance and the diameter of any two existing dog holes in your workbench. Lastly, glue two dowel rods into the bench hook, which will serve a dual function as a cleat and as an anchor. To use the bench hook with a pull-stroke saw, place the bench hook in position with its dowels inserted into the dog holes, butting the pegs against the bench for a Western push-stroke saw.

To plane thin work by hand, many woodworkers use a bench dog, bench stop, or planing stop (usually metal), as a holding device. I made my bench dogs out of wood, and I also fashioned a few of what I call low-profile dogs for handling small, thin workpieces, as thin as 3mm thick, using nothing more than thin plastic nailed to the top.

The last enhancement is to add a knob-style tail vice to the bench. A premium model is expensive, but here is how to add an affordable tail vice to your workbench.

Mine is fashioned from a toolmaker's vice that can be had for £30 to £40. First, remove the jaw and mount the vice upside down in the corner (or recess) of the bench that has been pre-cut to size. Make a wooden block to act as a jaw to travel in the channel of the vice. Finally, drill some dog holes in the bench, aligning with the centre of the tail vice. With the jaw in place, crank the knob to push a workpiece tightly against the bench dog. Even the most experienced among us can benefit from good workholding methods.

*Charles Mak has recently written and had published Woodworking Tips & Tricks, for hand-tools and power-tools and machines. It is 132pp, about A5 and published by Algrove Publishing.*



Extra cards, pre-drilled to fit, can be added or removed to suit the work's thickness



One of the jaws is made low-profile to handle thinner materials against a bench dog (above). You can now enjoy the use of a tail vice without breaking the bank (left)



A bubble level (above) taped to the brace aids in drilling plumb holes. If the bench does not have any holes, drill two to match the dowels on the bench hook (right). The two-way fixture can be made new or modified from an existing one, with dowels holding the jig for pull sawing



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Megan Fitzpatrick with her Dutch Tool Chest 'entry' for the Quercus Young Woodworker of the Year competition, sponsored by Lie-Nielsen