AUTUMN 2020 QM02
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WORKING WOOD BY HAND

Quercus

Splay No More
Robin Gates Makes a Straight-Leg Sawbench

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Mitsuru Hochi on weaving with paper

Drew Langsner
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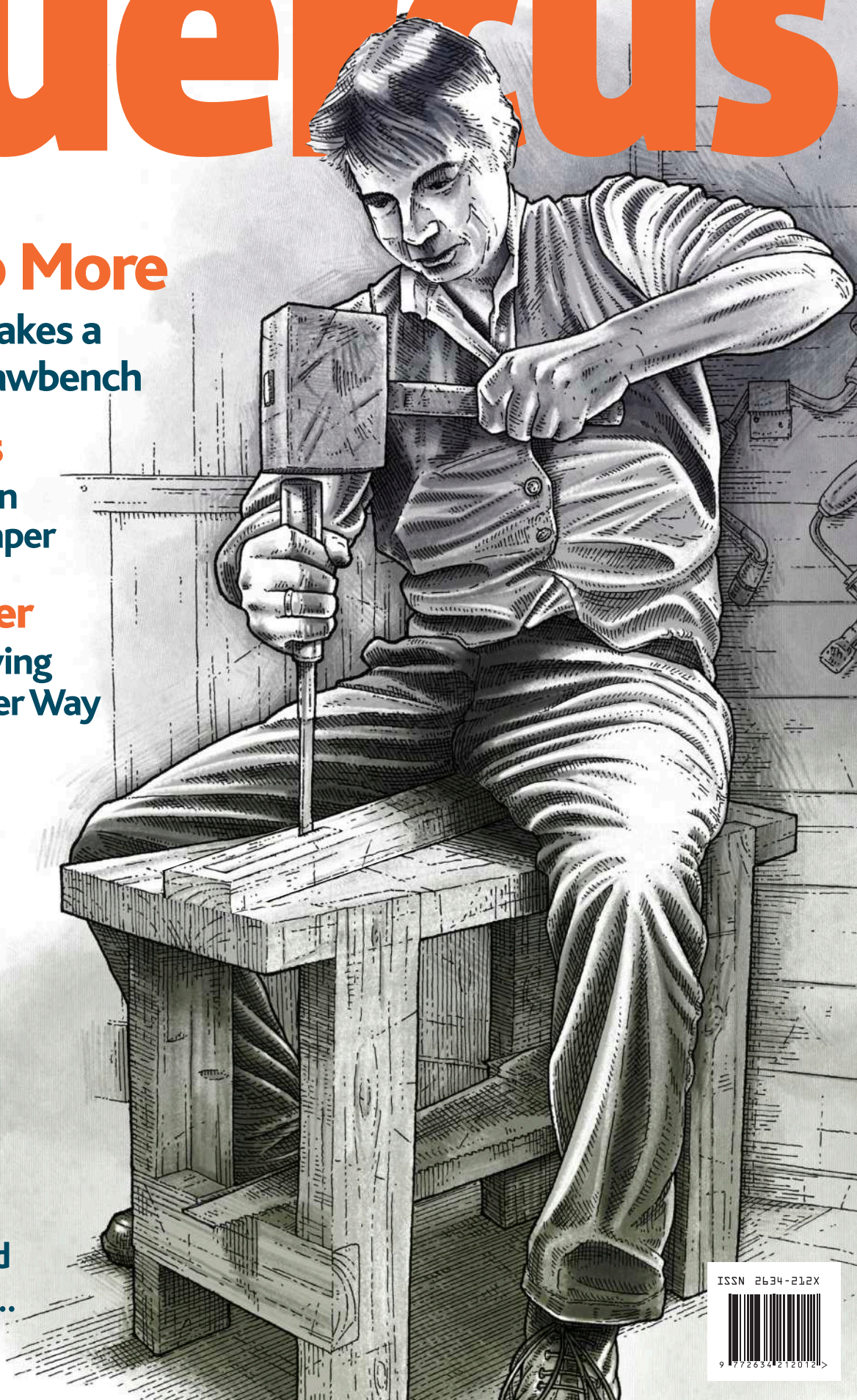

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WORKING WOOD BY HAND
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Don't say we aren't aiming to embrace women woodworkers, as some corrrespondents have complained since QM01. The greenwood bowl on the left is turned on a pole-lathe by Flo Hamer. Elsewhere we feature distinctive basketry by Sandra Kehoe from the USA (left). Mary May, the author of a recent book *How to Carve the Acanthus Leaf*, explains how critical grain direction is for anyone working wood by hand. Mary will be showing how to sharpen carving tools next issue, and as ever we request contributions from other women.

Responding to requests for longer features in this issue Doug Stowe (author of *The Guide to Woodworking for Kids*) offers ideas for priming a new generation of woodworkers with basic hand-tool skills. Inspired by a current exhibition in Oxford, we make an extensive study of wood engraving and roles played by specialist tools and in particular boxwood. Bill Carter makes an oilstone box (made from boxwood), and reveals his famous sharpening tip.

Also meet Klaus Skrudland, Norway's fast-learning chairmaker, and Dominic Pearce, the Cornish Woodsmith who adds a distinctive style and colour to his greenwood bowls and utensils. Then there is Brian Shugarue of BJS Planes and Windsor Workshop's James Mursell who shares his thoughts on bevel angles for spokeshaves.

By way of gratitude, we must in particular thank my friend Jane McCall for introducing us to illustrator Lee John Phillips, who is well known for his Shed Project. Lee went to great lengths to understand and create the style we want. In this case it is of Robin Gates (who has saved us this issue) astride the straight-legged sawbench he has designed specially for this issue.

Nick Gibbs, Editor

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To Splay or to Splay Not?

Robin Gates lets rip on sawbench design then builds one with vertical legs

It was the shock when a favourite ripsaw stubbed its toe on the floor recently. I realised that the quality of my sawing suffers the longer the saw. Given a dainty brass-backed gents' saw I'd prepare as carefully as for an Atlantic crossing, scribing and securing the work to eliminate every pitfall before committing its baby teeth to the voyage into wood. Pick up an arm's length of ravenous ripsaw, on the other hand, and I'd be plunging ahead as recklessly as if raking autumn leaves. The results spoke for themselves: dovetails smart as a row of soldiers, planks ripped as if by *Tyranosaurus rex*.

Thankfully the saw remained straight and the teeth survived, but I paused to consider how I might avoid this clumsy accident in the future. It seems the root cause of my big-saw woes lay not with sawing straight so much as simply holding the work. Struggling to steady the wood on a kitchen stool or upturned crate undermined all else.

Results were improving dramatically when I made a pair of bench hooks specifically for using tenon saws and the like. This style is much narrower than most woodworkers would expect, only about 2½in wide. They are also a bit longer. The hooks are like elongated Zs, cut from a single piece of timber, *about* 1½in thick. This follows a drawing I found in the very first volume of The Woodworker from 1902, but there's a fun video of Roy Underhill making a pair on YouTube.

Sawing on a reliably firm base has lifted my fear of the work shifting under the saw, leading to a more relaxed grip and improved accuracy

It's well worth watching as Roy shows how the hooks are angled by a few degrees so that the workpiece can be held more securely. This design of bench hooks can be spaced conveniently to support long stuff, whether for cutting a piece from one end or somewhere in the middle. Still, cross-cutting with a tenon saw at standard bench height is less than ideal, and ripping on bench hooks is a non-starter. What I needed was a dedicated knee-high sawing platform, something sturdy enough for the cut and thrust of a big blade with coarse teeth – ideally a mini-bench.

To splay or not to splay?

While searching for ideas I found a lot of trestle-type sawhorses, typically with a narrow top, legs splayed at around 10^0 and a 'ripping notch' at one end. The splayed leg design seems to have originated for the purpose of stacking two or more, which you'd need if sawing long or wide timber, although some had negated that advantage by adding a tool tray.

From my perspective the splaying appears redundant if not actually a hindrance. Aside from the fact that I intended building only one, not a stack, splayed legs clearly get in the way of the saw, to the extent that you have to move the work further from the edge to avoid hitting them, thus starving it of support. While sawing thin material the overhang would also lead to flexing and vibration. This effectively reduces the lower limit on width of timber you can rip, unless you're careful to saw either in front of or between the legs. No, splayed legs would put unnecessary hurdles in my path. A plain four-square structure with vertical legs was what I needed, allowing me to rip close to the edge while concentrating solely on sawing to the line.

Other advantages would spring from the vertical legs design. For the same footprint as splayed legs I'd have around three times the work surface, increased mass (always a bonus where stability counts) and the thing would stow compactly against the shed wall. Pushed aside, the splayed leg variety not only wastes space between itself and the shed wall but stands there with its feet sticking out, waiting to trip the unwary (which is me most of the time). It's surprising how often a G-cramp is the answer to a work-holding problem. With vertical legs fitted flush to the edge of a sawbench I'd be able to clamp work to them to likewise stand vertical; I'm not sure what use I'd have for clamping work leaning at 10^0.

I decided against a ripping notch because most of my ripping would be done at a long edge, and keeping a square end seemed more sensible for the full support it would give to cross-cutting, and attaching G-cramps. And a tool tray seems a waste of space, only likely to accumulate junk. Instead I'd make the central stretcher wide enough to rest a saw out of harm's way.

Having made my case for vertical legs it was time to settle some dimensions. According to the Office for National Statistics, at 69.75in (177cm) I'm a giant of a fellow – well, 0.75in (19mm) above the national average, which is relevant insofar as height

The bench is versatile and makes a sturdy base for mortising

overall influences our comfortable knee-height for sawing. The other consideration is having sufficient height for our longest saw not to hit the floor (ahem : been there). Experimenting with my ripsaw and our biggest bread board resting on a stack of books settled the Goldilocks height (not too tall, not too short) for me at 19.7in (50cm). If you draw vertically from the feet of a splayed sawhorse, you get around 12in (30cm) width, which is sufficient to support broad work without further assistance whether for ripping or cross-cutting. To judge length, I sat as if for bashing out a mortise and found 30in (75cm) gave ample elbow room with the pig sticker and mallet.

When finally I got around to making a cutting list it went against the grain that I didn't have suitable recycled timber. I would have to buy new, with my only timber source within walking distance B&Q. There you can have anything so long as it's 'general purpose softwood' otherwise known as Norwegian Spruce – essentially the kiln-dried timber of over-sized Christmas trees, flat-sawn, full of knots and with its pockets full of sticky resin. On the plus side, however, if others cared to build this sawbench they'd be likely to find similar timber at their local branch without breaking the bank. Half an hour's scrutiny of the racks whittled my choice down to a couple of 2.4m lengths of 47x100mm at around £6 per piece. Both were reasonably clear of defects but with one piece wieghing suspiciously less than the other.

Putting aside all thoughts of sawing for the time being, this difference in weight had piqued my curiosity, to the extent that I fetched the bathroom scales downstairs and investigated. One weighed 5.2kg, the other 6.5kg – that's a difference of 25% between two pieces picked off the same timber rack. Examination of the end-grain revealed the lighter piece had 16 growth rings across the 47mm thickness (average ring width 2.94mm) while the heavier piece had 47 growth rings (average ring width 1mm).

Clearly the lighter piece had grown much faster than the other, and probably under different conditions, with a greater proportion of early wood and proportionately less of the dense lignin-heavy late wood. In some situations this might be expected to have a bearing on their relative strengths and suitabilities, but for my purposes it didn't matter. I decided to use the heavier piece for the top of the sawbench and the lighter one for the legs, partly because the lighter piece was cupped and would have to be flattened.

For the three stretchers, two short and one long to prevent racking, I found a 1.8m piece of 34x96mm 'planed smooth whitewood' marked down to £3. Although I envisaged this sawbench as a mini-Roubo workbench I wasn't tempted to experiment with the old French master's challenging hybrid of sliding dovetail and tenon joining legs to top. Simplicity was my guide as much as sturdiness. I'd use a halved T-joint where the top would benefit from bedding down on the shoulder of a rebate in the top of each leg, and plain T-joints for the stretchers. My bench isn't big enough to plane these stock sizes of rough-sawn timber, and the shed itself is barely wide enough to turn them in the air without creating havoc among the spider webs, so having landed them safely on the bench hooks I immediately sawed them close to final lengths.

Determined to make an early start with mending my ragged hand saw style I scribed precisely around the work with a chisel and surgically removed a sliver to locate the saw. By sawing part-way through from every side the saw effectively created its own jig, meanwhile eliminating the possibility of splintered edges to the kerf when it finally broke through.

This was the first outing for my restored Double Century panel saw, a sleek and curvy model which Spear & Jackson launched in 1960 to mark the firm's bicentenary. Its foxy streamlined

Flattening cupped faces with the Record 51/2 jack plane

handle marked a bold departure from the fancy shapes S&J and other saw makers had used before, and is derided as ugly by some old saw aficionados, but it holds pleasant childhood memories for me. In the 1960s when I accompanied Dad to the timber and tool merchants in Chichester these were very much the saws to have, and I'd gaze longingly at them placed high where meddlesome fingers could not reach. A lifetime later I dismantled the wreck of this saw bought impulsively on eBay, scarphed new pieces into the damaged rosewood handle, derusted the saw plate, then filed and set its teeth. On the first cut or two the kerf seemed too wide, but given a rub down with the oilstone on each side to subdue the set it lived up fully to my expectations, going on to make a total of 88 cross-cuts in the making of this bench (many being in the waste material of joints, prior to using the chisel).

With timber at a manageable length it was now easier to plane the curved faces of the cupped piece flat, and likewise prepare the three pieces of heavier slow-grown timber which I'd join to make the top. I used a Record 5½ jack plane for that, an excellent tool but at 2.7kg (5lb 13oz) a bit on the heavy side for me; when I face a lengthy spell of planing I prefer my lighter (and longer) Marples wooden jack.

Working in a small space and with limited facilities encourages forward thinking. Anticipating that it would be awkward to saw notches for the legs once the top had been assembled I crossed that bridge early, setting the notches back 3in (75mm) from the ends. A half dozen cross-cuts in the waste of each notch made subsequent chiselling easier. Next I sawed the leg halvings to make the complementary parts of each joint, and did likewise for the stretchers, then fine-tuned all the faying surfaces with chisel, block plane or shoulder plane.

The E-Type plough plane

I'd practised making loose-tongue joints before using the diminutive Record 043 plough plane, joining narrow widths of recycled timber to make boards of a more useful size, and for this larger job I was excited to be using the 043's correspondingly larger stablemate – the Record 044C.

When launched in 1970 the styling of the 044C viewed alongside its contemporaries was something like that of an

Efficient aims

When designing or building a sawbench consider what will work best for you in your own place of work, paying regard to floor space and the type of work you do. In a small shed aim for efficiency and versatility. Vertical legs and square ends make for simple joinery while also allowing clamps or a table vice to be attached in useful positions. If you may want to carry the sawbench to work elsewhere avoid making it too heavy to lift safely, too awkward to carry or too big for the boot of a car.

Cross-cutting the waste (right) before knocking it out with a chisel and paring to the line (above) reduces the risk of an uncontrolled split running too far. Boards for the top were joined by loose tongues and Cascamite, a powdered resin adhesive mixed with water. Joints were pulled together by joiners' dogs hammered into endgrain (left), the ropes being largely redundant. The Record 044C used to plough grooves (below) is a 1970s classic

E-Type Jaguar pulling up beside Model T Fords. Record planes up to this point had mostly followed the established Stanley templates, jumping into the market as Stanley patents expired, but the 044C seems to have sprung from a clean sheet of paper. Its elegantly convex body is reminiscent of a sports car's long bonnet, while the raked black plastic pistol grip angles force from the engine of the hand down onto the cutter.

Design classic

The 044C is a design classic, and has engineering to match, featuring sensitive screw adjustment for the cutter and a novel depth stop mechanism which uses a tapered screw to expand a nylon sleeve. Too bad that the 044C arrived just as power routers were being hailed as the new do-everything machines and hand-powered ploughs written off as obsolete. But what's this – a slower, planet-friendly philosophy returning to mainstream woodwork, with hand tools gaining in popularity? Well it's good news for would-be plough-planers because late-model Record ploughs have been sitting virtually unused in their boxes for nigh-on half a century and can be bought at bargain prices. If you're up on plough planes, it will not have escaped your notice that today's small Veritas plough bears a striking similarity with the Record 044C.

Getting stuck in with a spell of plough planing is surely one of the unsung delights of hand tool woodwork, zipping along the groove with a sound like slicing apples, the shavings pouring forth in Dolly Parton curls. You just have to take care not to let one of those Dolly Partons get stuck between your fence and timber or she'll throw the cutter right off course.

I planed up the loose tongues from straight-grained batten, using a grooved template to test their thickness, then glued the top together using Cascamite – again guided largely by sentiment because I recall Dad using this waterproof adhesive to build sailing dinghies. A toothbrush proved handy to push the glue where needed, while the tongues locating in grooves made for quick and easy assembly.

Joiners' dogs

Unfortunately my sash cramps had gone astray during a house move but that didn't matter because a handful of joiners' dogs performed superbly in their place. Shaped like staples with pointed legs, tapered on one side only, they're hammered into the end grain and pull the joints together. The cords I pulled tight around the assembly were not really needed. Last thing before shutting the shed door that day was to wipe away the excess Cascamite with a damp rag because this gloop sets like glass and is a devil to remove once solid.

Subsequently I planed top and bottom surfaces flat, adding legs and stretchers over a couple of days because of the clamps shortage. Day two of the glue-up was notably cooler, reflected in a significantly longer pot life for the Cascamite, and also more relaxed as a consequence. End grain of legs and stretchers was planed flush with adjacent surfaces, corners eased with glass paper to prevent splintering, and the whole thing sealed with an experimental mixture of equal parts black wax shoe polish, liquid paraffin and boiled linseed oil. The role of the shoe polish was to tone down the brightness of the spruce.

This little sawbench has transformed my experience of using hand saws, and for only £15 spent on timber. Sawing on a reliably firm base has lifted my fear of the work shifting under the saw, leading to a more relaxed grip and improved accuracy. Of course I still make elementary errors like cutting a thing too short despite measuring twice (how often does the second measurement merely repeat the error of the first?), in which case the bench serves as a good place to sit and think – or occasionally just sit.

Test fitting the legs before assembling the top (above) and flattening the top with a Marples jack plane (below)

Sandra Kehoe

The American basket maker looks back at a life with willow

A couple of years ago my mother mentioned a basket class at a local community center. I was intrigued that people still made baskets so I took the class and fell instantly in love. Basket making felt very natural to me. After learning the techniques I realised that for my whole childhood I had worked on projects that involved weaving. I had always been a weaver but at last I could put a name to it. Weaving and basketry involve many repetitive movements that are calming and almost meditative. And who doesn't love baskets. They hold and represent all cultures around the Globe. There is something instinctual in creating a tangible item with your own hands that can be both beautiful and functional.

Here in the USA we don't have a formal basketry school so I have taken many private classes and workshops at conferences across the USA and Canada. I have worked with many basket makers from around the world and I do some private studies from books I've found.

The first baskets I made were small and made with rattan. I quickly found a community of willow basket makers and started my focus on this medium. I still occassionally try different styles and materials because I love every type of basketry. I mostly use willow and willow bark. I just recently purchased land in New York State to start growing my own willow because we do not have any major willow suppliers here in the USA.

The coiling kit (above left) I purchased from @craftschooloz. Ruth is the basket maker who provided me with the kit and instructions to make a coiled basket. Since we do not have many schools for basketry, purchasing online tutorials and kits are a great way to continue my education. Ruth sent me this kit all the way from Australia. It is wonderful to learn and connect with other makers from around the world.

I'm not a maker of miniature basket although there are many that make and collect miniature baskets. This (below) was the first I did because I had little scraps of willow bark to work with. It was just a fun way to keep my hands busy for a few minutes.

I am based in New Jersey and I teach workshops all around the Northeast USA. It's my hope in the future to hold workshops at my willow farm in upstate New York.

Details Visit Sandra on Instagram at @sandra.kehoe.5

Dylan Iwakuni, Japan

Letting the Wood Design

Lockdown turns out to be an opportunity for *Dylan Iwakuni* to make his own table

Throughout the years, I have always been eager to create something entirely by myself, from designing and making and experimenting the way I want, without the pressures or limits of work. When the world came to a standstill, I found myself at my parents' house in Germany with unexpected time on my hands. Spare time was hard to come by these past few years, working full-time as a carpenter in Japan. Not wanting to miss this opportunity, I decided to get to work.

Once you decide on something, it's amazing how at times things can fall your way. A few friends were generous enought to send me some tools and materials to use in the meantime. When a neighbour saw me working with my makeshift workbench, he kindly lent me his workbench. Surprisingly, I had assembled the basic tools and had a decent workspace set up.

I had planned to make a table. Furniture was not something I had much experience of but decided to give it a try, tapping into my experience as a carpenter. In Japan, there's an old saying that when building a house, "One should not buy a tree, but instead should buy a mountain". This implies the most suitable material should be selected and used in the most suitable place. Furthermore, it suggests using material from the local area is the best for the wood as it is accustomed to the surrounding climate.

Always on the lookout, I came across discarded piles of fallen trees and branches in the neighbouring forest. Sorting through the piles, I picked out several mostly straight branches to use as the legs for the table. Needing a table top, I picked up a straight grained oak slab from the local hardware store.

Once I had the materials, I got to designing. I wanted the materials to design the table, giving it the most natural feel. One thing I was told early on in my apprenticeship was "Only one of this material exists in the world". Observing the form and appearance of the material from different angles, I let the shape of the materials form the design in my head.

Reading the wood and using it in the most natural way as possible is a

principle we follow. When using wood vertically, it should be oriented so it's standing the same way as it was when it was a tree (this applies for milled wood too). Allowing it to stand the proper way lets the material be stronger and longer lasting. For the legs, I wanted to use the wood as it naturally was. Irregular materials can be difficult to work with. A reference line is marked down the length of the material and all measurements and lines are marked from this reference line. Essentially you are creating straight lines on uneven surfaces.

For the joinery, I first drew out a drawn-to-scale plan. This let me observe the proportions, allowed me to pick out specific measurements from the drawing, and helped visualise the steps involved in making the joints.

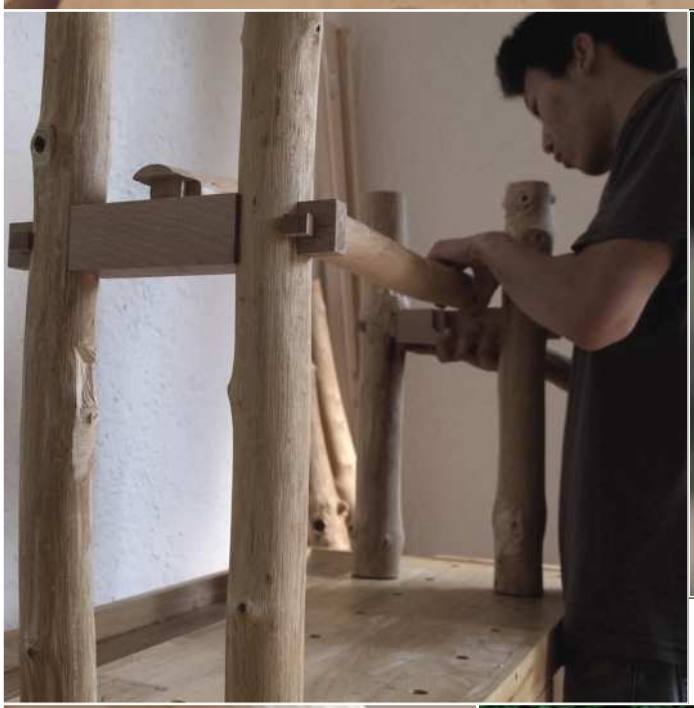
To join the legs together, I decided to go with a wedged through tenon. This allows the joinery to be tightened over time and if necessary, can be easily taken apart. For the stretcher, to join both sides of the legs together, I decided to go with a tapered dovetail joinery used in traditional Japanese carpentry for connecting big beams. As this joinery is hidden when assembled, it gives a clean look. But, without any wedges or pins to pull it, it relies entirely on a precise dovetail for a tight fit. A fun challenge. The top surface was finished with the Kanna (Japanese hand plane). The Kanna slices thin layers of wood, revealing the beautiful grain underneath. To make the wide surface of the slab smooth, with the overlapping of the blades mostly invisible, I slightly cambered the corners of the blade on the sharpening stone. When planing the surface, I planed down the sides a touch more, making the surface across the width have a slight convex.

Lastly, the table top was simply placed on top of the legs, allowing it to be used facing either side up. Over time if it proves necessary, a joint can be added to lock the table top to the legs.

This was the first work which I felt was truly "my own work". From obtaining the materials, designing and building it, it was done entirely myself, the way I wanted to.

I've spent the last several years working with my hands and making things out of wood. But I had the benefit of just having to work on designs I was handed. Up until now, my sole focus was on getting the task done as precisely and quickly as possible. I was always focused on the small details, making sure a joint fits perfectly, getting rid of any gaps, ensuring the surface is smooth. My contribution was a piece of the overall process. I never gave much consideration for the bigger overall picture, or the design. This time, it was a different experience. Instead of being held on time and achieving a certain standard, I was able to focus entirely on creativity and challenging myself. Most importantly for me, I was able to see how far my current skills and knowledge allow me to create the way I envisioned. This has given me a new sense of confidence and brought me a step closer to what I aim for. To have the skills, knowledge and creativity to be able to read natural materials, no matter the shape or condition, understand the surroundings, visualise and express the organic beauty of nature. The ability to fully utilise my gift as a human being.

Using the Kanna to finish the top (left). The tool is pulled towards you. Not being able to use a jig means frequent checking is important to avoid chiseling too much when it comes to paring the mortise



The completed wedged through tenon (above) and assembling the rails of the table (left). The tapered dovetail (below left) dropping into place for the centre rail

Derek Jones, UK

Thread Cutting

Derek Jones explores the history of mechanical fixes in making threaded parts

Wooden threads were used extensively throughout the 18th Century to assemble things like candle stands, whatnots and tables, to simplify the making process. The earliest example I've come across where wooden threads were used as knock-down fasteners was on a French armoire from the late 18th Century, but they also became useful for Campaign furniture. On all other examples of 18th Century furniture I've seen the screw thread was an integral part of another component and not a separate fixing.

For cutting external threads in wood by hand the best method is to use a thread box. Old versions turn up in flea markets and at auction now and then but invariably without the tool to cut the mating internal thread. Contemporary versions are available in sizes ranging from ½in to 1½in and in two pitch sizes: 8 crests per inch for the small diameter and 6 for the larger. This is generally recorded as 8p and 6p respectively. The tools cost between £55 and £70.

The cutting element in these tools is a small v-groove cutter with bevels ground on the two outside edges. The cutter is held in place at a fixed pitch but requires setting to depth. The modern version of these tools has a metal section of pre-cut internal thread on the exit side of the tool that governs the feed rate to achieve a consistent pitch. The idea is to set your cutter so that it creates an external thread on your dowel that mates smoothly with the internal thread of the metal outfeed one; a simple task made harder by the need to accomplish this in a single pass. A second pass invariably does more harm than good. Setting the cutter to do this is fiddly beyond belief, there's no fine adjust here, so once set you kind of want to leave it that way.

When I first started experimenting with thread boxes I spent a ridiculous amount of time sharpening the cutters. I soon gave up. Replacement cutters are around £10 and in my opinion worth every penny. I'm not above honing the edge on a fine stone to extend the life a little but a re-grind is out of the question. At least not without a jig.

I usually cut my threads so that they bind firm after about two full rotations.

Cutting the thread on a bench vice screw (left). Inside the traditional style box thread cutter (above). You need to remove the lower plate with the lead hole to access the V-tool. The large metal threading tools have two cutters (below)

The choice of timber suitable for cutting threads is really limited to fine straight grain and preferably hard wood. Maple, mahogany, pear, beech and walnut are all good. Remember that any short section of long-grain is inherently weak along the grain, so if the crests are allowed to come to a sharp point they would be very fragile. End-grain is very hard wearing.

Timber choice

Harder woods like box, ebony and rosewoods can chew up cutters in no time as the amount of material to be removed in a single pass is just too much for the tooling to handle. An excellent alternative is lemon wood (Castelo boxwood from Paraguay). Popular with luthiers I'm told, it has a very similar grain and colour to box just not quite as hard.

I've heard it mentioned that the use of oil on the dowel or blank helps achieve a smoother cut and prolongs the life of the cutter. I know of one bench maker who soaked his bench vise screw blanks in a vat of linseed oil for days before cutting a thread. My attempts at this either caused the blank to swell to the point of not fitting the lead hole on the tool or allowing the sticky chips to build up inside the tool and prevent it from working.

The larger sizes of more expensive boxes have two cutters so the final depth can be achieved in one pass by setting the first cutter to cut a shallow channel and the second to complete the job.

Less precise than a tap and die set but equally as effective is to use a regular nut and bolt to cut the thread. In truth there's more compression of fibres going on than cutting but it works. My favourite application for this is to chuck a pencil in a cordless drill and run it through an M8 nut. Drill a corresponding hole, about 6.5mm, in the mating component and run it through with a length of threaded bar and you have a pencil gauge with a built-in fine adjust.

Greenwood Bowls

Flo Hamer tells us how she came to be a bowl turner

Flo Hamer's passion for turning bowls on a pole-lathe all started in university digs. It seems unlikely, but that's the effect spooncarving is having upon society these days. "I was at Falmouth University studying Renewable Energy Engineering," Flo tells us. "One of my flatmates started carving spoons, so there was everyone else getting legless, and we were having a wholesome experience. We had no idea what we were doing, but then we heard about SpoonFest, but couldn't believe it might be real. By messing about with bits of timber I discovered a world of wood."

Flo started working as a volunteer as a carpenter in building on ecobuilds. She got work experience as a timber framer with Geoffrey Hart, who happened to have a spare ticket to SpoonFest. "Then there was the Bowl Gathering at Brookhouse Woods with Will Sinclair two years ago. I didn't know anything about bowls, and now I am hooked. I went home and built a lathe. Now I have started doing a bit of chairmaking, and I have turned a few cups."

Living in Herefordshire, she has found her raw materials through tree surgeons. "Of course, you need larger diameter pieces for bowls. Cherry is my favourite at the moment, but that will change. It is a nice way of letting it happen."

Along the way Flo has also built a Tiny House on a flatbed chassis, which she is now planning to move to another location. Such is the flexible life of a greenwoodworker. "Before building the house I did some work on sites and have been invited to do an apprenticeship with a timber framing company."

Asked how she rates making bowls she said: "There is something magical about it, and I found there are a lot more women than I expected."

Follow Flo on Instagram at @flohamer.

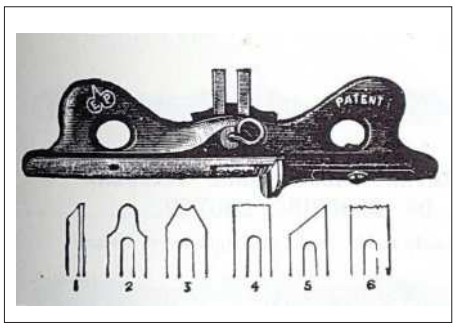
Flo Hamer (right) has built a pole lathe for herself, having been turning for couple of years. She has also built a Tiny House on a flatbed chassis

The Better Profiles

Ethan Sincox profiles cutters for his favourite original Preston Beading Tool

In my first article (QM01), I mentioned my Preston 1393S beading tool and beading tool collection. I've been collecting them for about 15 years now; it is the only type of woodworking tool I collect (my Stearns & Colt eccentric clamps do not count, obviously, as you can never have too many clamps). My entire collection consists of less than 20 tools; that includes every manufactured beading tool I've been able to track down, one I've not been able to figure out who made it, and a few user-made tools. I have a couple of tools that are similar in form or function, like quirk routers and string routers, but are not considered to be part of the collection.

As mentioned before, my favourite beading tool is the Preston 1393S. As with a number of great tools in my possession, I acquired it through Patrick Leach's Monthly Tool List. Like the Stanley countersink and depth gauge, this was one of those tools I found just scrolling through his list and, once I saw it, I wanted to know more about it. The Preston 1393S, officially called Preston's Patent Reeding, Rabbeting and Moulding Tool in the Preston catalogue from May 1909, is one of the smallest commercially made beading tools. It is made from cast iron, protected with a japanned finish, as most Preston tools are, and measures 5 1/8in (130mm) long, 1 3/8in (35mm) tall, and 5/8in (16mm) thick. Precision machine work makes it such that even with a cutter installed, there are just two small openings across the sole, which reduces the amount of shavings that might clog it up. Its appearance reminds me of the human pelvis, which might seem a bit odd, but the designers who worked at the Preston shop in the late 1800s sure knew what they were doing. It is one of the more comfortable and user-friendly beading tools; what's more, its shape intuitively leads you to use it properly, with your thumbs settling into a pair of indents and the first fingers of each hand wrapping around the top.



The 1909 Preston Catalog showing the 1393S and its six original cutters: 1. cutting gauge/ grooving tool; 2. round; 3. hollow; 4. rebate; 5. chamfer; and 6. complex moulding

Before you can use the 1393S, you must set the cutter and fence. To begin, take a sharp cutter and set it into the tool at the desired distance from the fence and body. The desired distance is whatever you have determined to be the height and width of the profile you want to cut. Secure the wood to your bench so that the edge you want to profile is either dead flush with the front of your bench or overhangs by just a bit. If you set the edge flush, you can use the front face of your bench as a fence. If your timber is too thin/narrow/short to easily secure directly on your bench, you will probably have to build a sticking board. A sticking board is traditionally used to hold your work as you create a profile with hollows and rounds or other moulding planes and usually consists of a base, a backer board to prevent lateral movement, and board stops (often just flat screws set proud of the base).

With the cutter and fence in place and the wood secured, you can begin scraping the profile. Pinch the tool between thumb and finger on both sides, set the fence to the edge of the board, and lightly rest the cutter on the surface of the wood. Since everything is set into place, you must manually adjust the depth of cut by tilting the tool forward (when pushing) or backwards (when pulling). Begin making slow, light passes, just barely allowing the cutter to engage in the wood. Much like a card scraper, you should see tiny shavings coming off the wood, not sawdust. If you see sawdust, then you need to sharpen the cutter. As the profile takes shape, reduce the tilt of the plane until, finally, the beading tool is upright. At this point, you should be burnishing the profile.

Beading tools can be quite useful with the right cutters. All contemporary beaders come with a small number of simple profiles: a few sizes of beads, maybe one or two reeds (which is just several beads in a row), a few rounds, and a blank. But we only need look at the original Preston 1909 catalogue entry to see greater possibilities have already been considered. The 1393S came with six cutters when brand new:

The author touches up a bead cutter with a chainsaw file (left). Files can be used to create your own profiles (above). The original Preston 1393S with the original No.6 cutter and an example of the profile it cuts (right)

It only took the author (right, scraping a bead profile) a few minutes with two files to make this profile for a modern beading tool (above)

a cutting gauge & grooving tool, a round, a hollow, a square profile that might be used for rebates, a 45^0 angle profile for chamfering purposes, and a small but elegant profile for making moulding. Of the half dozen 1393S beaders I've seen over the years, the only cutter that came with them was the moulding profile.

Unfortunately, none of the contemporary beading tools comes with a profile of any interest. This is their biggest downfall. But you can very easily make your own beading tool blades with just a few inexpensive tools – steel for the cutter and files for shaping the profiles. The cutters can be made from spring steel, such as bandsaw blades, metal crate banding, or saw plate from an old handsaw. One way to get such metal without opening someone else's freight or cutting up an old panther head would be to contact one of the contemporary saw makers in business today. You could ask if they have any scraps of spring steel they might send you instead of tossing them into the bin. And if they have a proper cutting press, they might even size them up for you for just a nominal expense.

For shaping a profile into a cutter blank, I prefer chainsaw files and saw files because they work so well on spring steel. After shopping around, I found two different brands of chainsaw files with slightly different sizes, so have a total of four different diameters ($\frac{1}{8}$in, $\frac{5}{32}$in, $\frac{3}{16}$in & $\frac{7}{32}$in) to give me a wider variety of sizes. Saw files should allow you to create nice straight lines with crisp corners and they come in several sizes as well.

By way of example, it took me about 10 minutes to make a cutter with a profile similar to one of the original profiles (profile No.6) that came with the Preston 1393S. First, I used a black marker (alternatively you could use layout fluid or something similar) and traced the profile with an awl. I used the $\frac{7}{32}$in chainsaw file for the three curved sections and a 7in slim taper saw file for the two V-shaped sections, working steadily and checking my progress regularly to make sure I stuck to the profile lines. A quick test in some scrap wood produced a nice, crisp moulding. It also showed me I should make more shallow profiles if I ever want to demonstrate that in front of a class without getting knackered.

Teaching a Better Way

Joe Bray travels worldwide calling for better teaching of hand skills

To be awarded the opportunity to 'Travel to Learn' is such an incredible one. Accomplishing a Churchill Fellowship has been a long-term personal goal, and it allowed me to visit some of the most impressive institutions that offer furniture education in Europe and the USA. I am passionate about making, particularly in the field of furniture design and craft. Over the past 20 years I have observed both the demise of undergraduate level craft programmes in the UK and the significant reduction in children learning craft in schools. Overall, there's been a substantial reduction in the opportunities to learn furniture making at all levels. At the same time the furniture industry reports a skills gap and aging population, while craft skills are in high demand. I set out to explore how furniture education outside the UK supports students in becoming highly-employable craftspeople, or prepares them to enter self-employment on graduation. What can we learn to help plug the gaps?

I was disappointed to find that in the majority of places I visited the story was the same as for the UK. This has reinforced my desire to influence change in this stage of a young person's development — to increase opportunities to access woodworking, leading to an interest in furniture, as well as the many broad educational benefits making brings.

My teaching experience has given me a clear understanding that training to be a craftsperson requires a deep understanding of tools and how materials behave when the two connect. I believe that central to this understanding is practice and experimentation - the importance of having a bench of your own and to collate a personal toolkit is of paramount importance. To own tools and understand how to care for them, to improve them, to make them sharp and to produce high quality work with them is part of the process. It follows that building your own toolbox and carefully positioning the tools inside is part of the journey - I think you can definitely learn something about a craftsperson from their toolbox. At Capellagården, Oland, Sweden, I saw lots of toolboxes lovingly crafted yet entirely functional and being used daily. The school was described to

me by Master Craftsman Mattias Nilo as a 'creative monastery' where there is an idealistic approach to learning craft skills. He told me that the pedagogic approach is learning by hand – drawing by hand, processing timber by hand and using only basic machinery. I witnessed some of the most impressive hand-working of my trip by those students who were making their Gesall or 'journeyman' piece.

In Sweden I visited three incredible schools – all following a different approach whilst fundamental hand-skills were at the core of their practice. Of all the countries I visited, the woodworking delivered in Swedish schools was impressive yet, like all of the others, once children reached the age of formal examinations the curriculum focused on what are typically described as academic subjects. I believe that young people deserve access to both the hand-tool and the digital, and that they should be given the opportunity to understand them equally.

Perhaps Ireland was the only country I visited that still has making culturally embedded into its education system where Construction is integrated in the secondary school leavers certificate. Located in the rugged yet beautiful region of Connemara is the impressive specialist furniture school Letterfrack. Whether they sign up for a teacher training, design or manufacturing programme all students enjoy a common first year. At its core is an approach that begins with learning hand-skills, free from the additional challenge of design. I believe the best designers are those grounded in craft, understanding how materials behave, their strengths and weaknesses. But for me training school teachers in this way is the clever bit. These young men and women then go out into classrooms across the country passing on their knowledge and ultimately pointing them back to Letterfrack.

The workbench is a fundamental requirement in learning to use hand-skills and I strongly believe that being allocated a space of your own is essential. The freedom to explore, the opportunity to practise and self-motivation are critical. Unfortunately in a formal education system that often compares space utilisation between learning crafts in workshops and many other students being taught a hundred at a time in a lecture theatre, the opportunities to have your own bench are in decline (perhaps total freefall). Learning to sharpen, care for and use a bevel edged chisel or a bench-plane requires a different approach. Students need their own tools and a bench that they can come back to daily to repeat a technique that has been demonstrated not just explained. Cabinet-making students at Malmstens, Stockholm, Sweden, are afforded a luxurious personal space. Each student has a bench, toolbox, trolley (with tool drawer), four trestles of different heights and a storage space. This gives the space physically and metaphorically for their students to produce excellent work.

I travelled for seven weeks in total and enjoyed every minute - it certainly wasn't a holiday. My experiences reinforced some of my values and ideals and opened my eyes to many more. I made many recommendations in my report and in my new role as Head of Wood School at the Sylva Foundation I hope that I can put them all into practice.

I believe that we should provide inspirational opportunities for young people to experience making, to engage them and demonstrate the potential of working with their hands.

Joe Bray is head of the Sylva Foundation Wood School, sylva.org.uk.

Creative Handwork

Accepting the bias, *Kevin Inkster* of Arbortech, asks if power-carving is handwork

Asked by the editor to a definition of handwork, I would like to start with my premise that all humans are creative and that to be human is to be creative. This idea is contrary to the popular belief that some people are gifted, talented or somehow predisposed to be able to produce works of art and the rest of humanity are not.

The worldwide Intellectual Property System clearly supports my premise by bestowing copyright protection to the author or creator of any work of art, photograph, scribble, musing or written thought. People who do not consider themselves creative should consider the fact that life itself is a creative process, that moment by moment one is creating the story of their life. The next word they utter, or the very next action is yet to be created. The point that I would like to make is that the only difference between a so called creative person and a non-creative person is that the creative person actually does something creative. The creative person actually has the courage to try something.

I am not saying that everyone can immediately produce something of great beauty or value because, for a start, the merit of much art is purely subjective. Skill on the other hand should not be confused with creativity and is developed simply by trying something often enough. And skill is not even necessary for great art. My mind is immediately drawn to the much treasured dinner plates that our children illustrated in primary school and I'm sure any parent can point to wonderful works of art that their children produced before succumbing to the "grown up" view that only some art is worthy. The process of creativity is without doubt one of the most pleasant, satisfying and life enhancing activities that a human can participate in. While some creativity can be a mostly mental process, I personally find most satisfaction in processes that involve hand work.

In my case I became involved in woodworking, first making furniture and chairs and then in freehand sculpting when I discovered the joy of powercarving with my first ever woodcarver blade. It was only when combining freehand sculpting with furniture that I started to make a decent living out of woodwork because they were now considered one-off works of art.

Kevin Inkster (left) is founder of Arbortech and admits he is biased, but asks if power-carving is a form of handwork. The replica of Mt Everest (above) was carved with a Proxxon angle grinder, an Arbortech Mini Woodcarver, a Wecheer Engraver and a Kutzall burr

I must point out, that though I am now known for the various power-carving tools I have developed, I fully appreciate the contemplative nature of using hand-tools and relish any opportunity to use them. My favourite tool is a Leatherman multi-tool and I can't tell you how many times I've used it to carve, whittle, saw or repair some object. Power carving tools allowed me to explore much larger projects of almost any shape with a similarly rewarding experience to that which I get when using a wood lathe. I am certain that Michelangelo would have used similar tools if they were available.

I can point to so many examples of people discovering their creativity right here at Arbortech where staff are encouraged (at my insistence) to produce a piece every year for the Arbortech staff woodworking competitions. Many accountants, marketing managers, production workers, etc. all protested that they were not creative and quickly discovered the joy and enthusiasm that is now part of their lives.

The most important thing is creativity itself. I call on everyone to embrace their creativity by actually trying something, be it drawing, painting, carving, sculpting, sewing, cooking, gardening, whatever. The activity itself will teach you and your skills will develop. If music is your interest and you haven't tried an instrument, I recommend trying a Ukulele. They are cheap, easy to learn to play and a deep understanding of music will develop the more you play it.

The more we explore our creativity, the more we will discover our true nature.

See some of the pieces produced by Arbortech staff at youtube.com/watch?v=XyASsQzh6AM.

On the Beach

Dominic Pearce on living his dream working in a large Cornish workshop

I was born into a Cornish family living in Somerset. My father is a conservation joiner and my grandfather taught woodcraft and metalwork at a local school from the 1960s-80s. I studied product design and environmental science at college but soon opted for a more hands-on career as a carpenter for a conservation company called St Blaise. All holidays when growing up were spent visiting family in Cornwall and I moved down full-time in 2006 with my partner. We have two girls.

I turned my first bowl aged 19. I'm now 35, and have kept turning on and off over the years whilst working as a self-employed carpenter in Cornwall. When my Grandfather Mervyn Pearce died in 2017 I felt I needed to make the most of my life and decided to pursue my craft rather than work on building sites all my life. "If you're not living your dream, you'll end up living someone else's for them!"

This is when I started the Cornish Woodsmith Instagram account and discovered there were other people who shared my passion for woodenware. The timing seemed to be right, as previous attempts at selling my work 10-plus years ago hadn't really gone anywhere but now there seemed to be a market.

The new wood culture had been born and I was just discovering it. I've spent the last few years revelling in this new-found inspiration, experimenting and establishing my own style which in turn is inspired by the landscape around me, wooded valleys and turquoise waters tempered by nature's own input - I work with fresh green wood and encourage it to warp and move when drying. The organic textures which evolve interact with the textures left by my hand-tools and create a kind of symbiosis that I couldn't achieve alone.

PHOTO: ADAYINTHELIFEOFA.CO.UK

It's like the tree having its say in the design process. Events which shaped the trees life - wind direction, sunlight, minerals in the ground, interactions with animals and weather are played out again in the way the wood moves and dries into its new form. I use milk paint made from casein and natural pigments to accentuate these aspects which are a crucial part of my work. I have found Miss Mustard Seeds paints to be best as they are the most reliable and have the most solid colour. I am mixing up shades and tones all the time, so they are never quite the same, but they are all inspired by the sea.

Having established the direction I wanted to take my work and finding a market through the Instagram community, I finally made the decision to quit my job and go full-time making in January this year. The first job was building a workshop which after years of working out of vans and under tarps feels like the most opulent luxury although it is basically two sheds connected by a covered outdoor work area. It is lovely to work in as it doesn't feel too enclosed and still maintains a strong connection to the outdoors. Previously I had a grotty little shed, with a tarp between that and a Sprinter van. My tools were all over the place. The workshop may still be mildly chaotic but it has made everything possible.

There is a corner for my old Union Graduate lathe and a couple of chainsaws but other than that it is mostly filled with old hand-tools, many of them passed down through my family for generations and others made by people I know, making it feel like I am always surrounded by old friends. The first thing I pick up each morning is usually an axe or froe and an apple wood mallet for splitting out blanks for the days work.

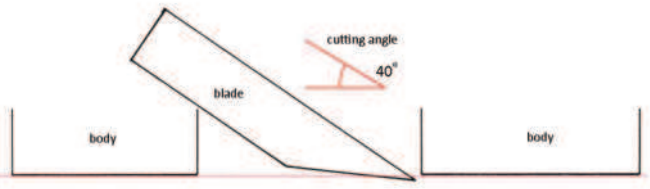
I enjoy making items which demand several processes to complete the job such as jugs or mugs which are roughed out with an axe then turned on the lathe before being finished with knives and finally painted. Having plenty of processes keeps the work fresh and avoids overworking a certain part of my body or mind. It also keeps the feeling that I'm on a perpetual holiday alive. Recently I have been setting myself targets to make 10 things a day for a week. In the past I have been working to commission, but am now learning to say no, and building up a stock, and working in batches of a sort. Having a stock means that you have more freedom to experiment when you get a creative tug trying something new.

I've got to comment on the incredible green woodworking community that continuously blows me away with its openness and generosity in sharing knowledge and skills, I believe this aspect of the community is the reason that the new wood culture is flouishing and continues to grow so positively, elevating the craft as connections are made, boundaries are pushed and we (re)discover our collective potential.

Details Follow Dominic on Instagram @cornishwoodsmith.

THE CORNISH WOODSMITH
Stacked bowls (above) in alder sustainably harvested from Cotton Wood in North Cornwall. Textured mug and cup turned and then carved (right). Warped beech bowl and spoon with fluted cup (below), cherry, ash and walnut cooking spoons (below left) and jugs just trying to find their way to the beach (left), away from the workshop (top left)

01

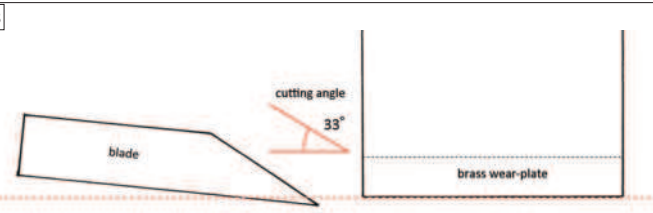


Metal spokeshave: blade at approx. 40°; flat sole; concave cuts impossible.

02

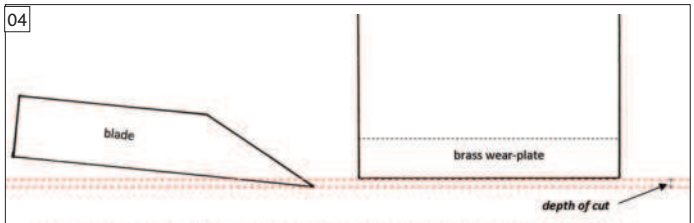
Metal Spokeshave: concave cuts almost impossible

03



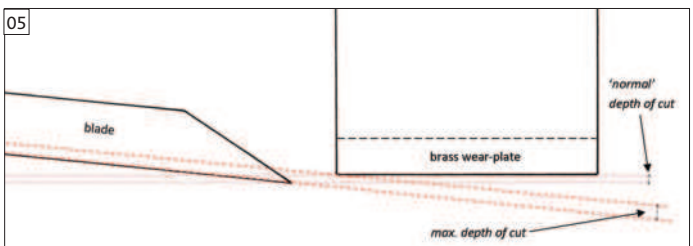
Low-angle (wooden) spokeshave: blade at approx. 33° to wear-plate

04



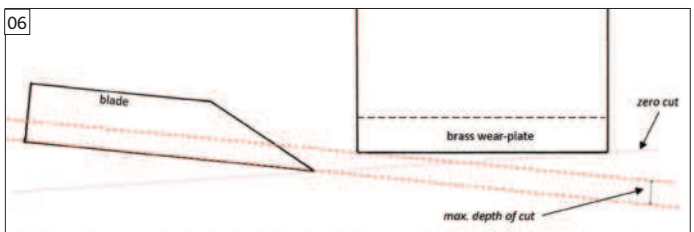
Conventional cutting (low-angle): tool running on wear-plate and depth of cut set by adjusting the height of the blade

05



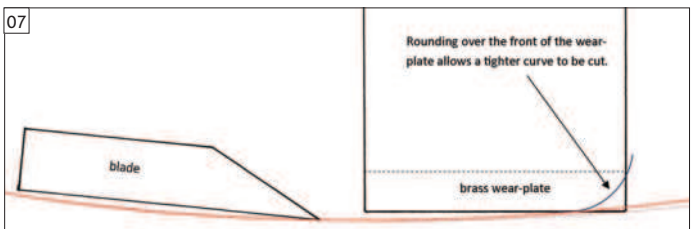
Depth of cut can be maximised by rotating the tool to run on the base of the blade and the back of wear-plate

06



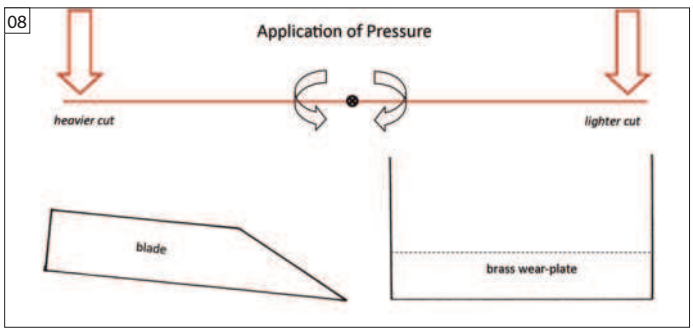
Maximum range of cutting depth achieved by setting blade for a deep cut and running on front of wear-plate for a zero/fine cut and rotating tool to run on the blade for maximum cutting depth.

07

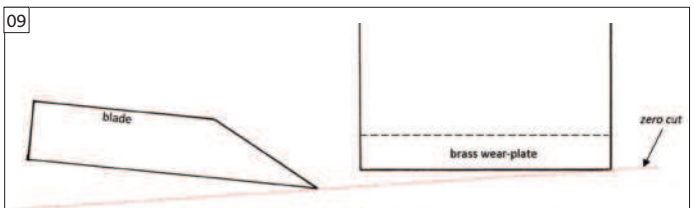


Shallow concave cuts can be made with a low-angle wooden spokeshave due to the angle between the base of the blade and the wear-plate. Making the wear-plate narrower will allow a tighter curve to be cut.

08



09



The thinnest cuts are achieved by running the front of the wear-plate on the work piece and trailing the blade behind. Virtually all the pressure is on the front of the tool.

The Closer Shave

Toolmaker and chairmaker, *James Mursell*, studies the importance of blade angles

As a Windsor chairmaker I use a spokeshave more than any other tool. I have three: two straight shaves, larger and smaller, and the specialist curved shave called a travisher for hollowing wood. My introduction to spokeshaves came at school where we had traditional wooden shaves with the blades held in place by friction. When they were sharp and set correctly they were great, but being old the tangs often slipped in the body leading to suddenly thicker or finer shaving. This is not an endearing feature in any tool!

Having spoken to many people at shows, I am amazed at how many still have their grandfather's tools, including spokeshaves, but only rarely use them because of the same problems that I suffered at school. This is a great shame as they are remarkably versatile tools for shaping wood.

The first spokeshave that I bought was an inexpensive metal shave. It worked after a fashion, but was not a pleasure to use. Years after purchasing it, I read some of David Charlesworth's articles that explained all that should be done to make this type of shave function satisfactorily. In my opinion, tools should work 'out of the box' and this didn't. I am sure that similar experiences have put off so many potential spokeshave users.

I began to make my own spokeshaves over 15 years ago when I was unable to buy tools of the quality that I wanted. After steadily improving on my first designs, I am now selling them around the world to other fans of wooden shaves!

Spokeshaves are either low-angled, and usually wooden-bodied, or metal, with a higher-angle. A fine example of the metal shave is the Lie-Neilsen Boggs spokeshave. It is a beautifully-made tool with a bronze body and blade set at 40°. The blade is made of high-quality steel which holds a fine edge. The throat, or gap between the blade and the nose of the tool, is very narrow in order to produce fine shavings and a perfect finish, even on difficult woods. The sole of the tool, in front of and behind the blade is absolutely flat (a curved version is also sold). A few years ago I had a long conversation with Brian Boggs about our respective tools and we decided that we had designed them for quite different purposes. His tool is designed for finishing cuts, particularly on challenging woods, while tools are for removing wood quickly while leaving an excellent finish for most purposes – particularly on straight-grained wood.

The flat sole of the metal shave means that it is designed as a plane with handles to either side. The only circumstances in which this tool will work are when the surface being shaved is flat or convex. Concave cuts are almost impossible to make as the blade cannot touch the surface, being held away from the wood by the front and back of the sole (01 & 02).

The alternative version with the curved sole is fine for concave work, but this tool is not ideal for straight or convex work. Two expensive tools are required!

The other limitation is the size of shaving that can be taken. If the purpose of the tool is solely to produce a fine surface on wood that has already been shaped, then this is the tool for you; but if you wish to shape the wood to any extent first, then there is a problem – one just cannot remove enough wood quickly enough. This of course is the opinion of a professional chairmaker who operates in a world where time equals money! But even if you have all the time in the world, it can be frustrating to be limited by the tools that you use.

When James Mursell uses a wooden spokeshave he has his thumbs very close to the blade and holds the tool very lightly

Low-angled wooden shaves (03) are quite different from their metal cousins. The clearest distinction is in the geometry of their design. Unlike the metal shave, there is nothing behind the blade to interfere with the workpiece. As on the metal spokeshave, the blade is set bevel-up and the base of the blade is set at an angle to the wear-plate (6° in my shaves), and the resulting cutting angle, between the blade and wear-plate is around 33°, compared with the higher 40° of the metal shave.

The bodies of these tools are also radically different, usually being made of wood (Veritas makes a metal low-angle spokeshave). As a result they are warm to the touch and

many consider them to be more comfortable to use. The less expensive metal shaves are designed to be pushed only, while wooden shaves are comfortable when used in either direction.

My spokeshaves have a solid wooden surface directly behind the blades (it does not project below the bottom of the blade and therefore doesn't interfere with concave cuts) and this allows the fingers or thumbs, depending on whether it is being pulled or pushed, to be directly behind the cutting edge. Apart from being comfortable, this minimises any tendency for the tool to rotate in the hand as it is being used. These tools are for removing wood! On straight-grained wood and end-grain they will leave an excellent surface, however if you are mainly working with wild-grained woods, such as curly maple, then the fine-throated Boggs shave would give you better results.

Positioning the blade

The position in which the blade is set, relative to the wear-plate, is the first means of setting the depth of cut of a spokeshave. However it is not the only method and I will describe later other techniques for varying the depth of cut, particularly with wooden shaves. Anyone using a low-angled spokeshave for the first time may have trouble with the blade digging into the wood, especially if the blade is set coarsely, as I tend to prefer. However once you get the knack of maintaining contact between the wear-plate and the workpiece all problems evaporate!

Conventional cutting with both metal and wooden spokeshaves requires good contact between the whole surface of the wear-plate and the wood being shaved (04). In this situation the set on the blade sets the depth of cut. For cutting end-grain, for example, you set the blade finely and use this approach, pushing hard down on the wear-plate to achieve a good contact and long continuous shavings.

Wooden spokeshaves really come into their own when one escapes this conventional mode of working. Unfortunately few people use them enough to develop the knack and appreciate the flexibility that they provide.

I favour a coarse setting on my shaves not because I am always taking heavy cuts, but rather so that I can take the greatest range of cuts, from very fine to coarse, without ever having to reset the tool. To achieve a very fine cut, as I use to finish a shaved spindle in a Windsor chair, the contact with the wood is only at the very front of the wear-plate (09). The blade skims over the wood taking the lightest possible cuts. When working in this manner, concentrate entirely on maintaining a very light contact at the front of the tool and let the blade follow on behind. If you try to push or pull the blade it will begin to dig in and take more than planned.

I frequently demonstrate this technique using just two fingertips to hold the tool. This is not a realistic way of handling the tool, but it serves to illustrate just how lightly one should hold it. In order to take a slightly deeper cut when working in this way, add a little more pressure on the back of the tool so that the edge engages more with the wood (08). With a little more pressure you are back to the conventional cutting technique where the wood is in full contact with the wear-plate (03).

However this is not the end of the flexibility. Continue to apply more pressure to the back of the tool and eventually the sole of the blade will be running on the wood, with the wear-plate up in the air and only touching the wood at the very back (06). At this point you will be taking the maximum thickness of cut that is possible with that blade setting.

Although a little extreme, this is a really useful technique when wood needs to be removed quickly. I use it, for example, when shaving spindles from green wood and when shaping seats along the grain in softer timber, such as tulipwood (*Liriodendron tulipifera*).

James will reverse a spokeshave to size tenons for chairmaking

I have always emphasized that a spokeshave should be gripped with the fingertips directly in front of and behind the blade. Only this grip will provide the sensitivity of feel that is necessary to set the wear-plate rubbing on either the front (minimum cut) or back (maximum cut) and anywhere in between. Most people, new to wooden spokeshaves, grip the handles firmly with their fists. This usually leads to the tool running on the sole of the blade rather than on the wear-plate and taking an unexpectedly thick and uncontrollable cut. Control only comes when the tool is rotated forward onto the wear-plate. Rotating a tool with your fists is nothing like as controllable as applying pressure with the fingers (which are in the ideal position) directly to the wear-plate (front) or blade (back) to control the cut and this is the reason that I emphasize the finger-tip grip so continuously.

Obviously you need to keep the blade sharp. Also it helps to skew the blade across the direction of travel. This lowers the angle of the blade, giving a slicing cut and producing a better finish on harder woods. Skewing also reduces the thickness of cut, giving yet another method for changing the cutting depth without changing the setting of the blade.

Another option is to set the blade so that the edge of the blade is not parallel to the wear-plate. This means that there is a continuous range of cutting depths from fine to coarse across the blade. If a tool is used like this for even a short time one gets used to the variation and can take advantage of it depending on how much wood needs to be removed at that particular point. The reason that this technique is used mainly in wooden shaves is that the blades tend to be much longer. With the relatively narrow blade of a metal shave only a small variation in set can be handled. A much higher proportion of the blade is used at any one time and judging which part of the blade to use is more difficult. Setting a metal shave is more like setting a plane.

Spokeshaves can do so much more than just round over an edge or create a bevel. They can create very complex shapes that would be virtually impossible with a machine. So next time you design a piece why not shape the wood exactly the way that you want, rather than to the best shape that you can achieve with a machine?

I will leave you with one last thought: spokehaves and rasps as a combination are absolutely unbeatable for shaping wood.

Details James Mursell's tools are available from thewindsorworkshop.co.uk.

Grasping the Metal

In shaping his ladle, *Drew Langsner* illustrates 10 ways to hold a knife with control

For knifework on spoons and ladles I mostly use a knife with a small blade (about 2in long by 3/8in in width) but having another knife with a longer blade is useful for working a few specialised areas. Most knifework is done while sitting, and as with hewing, knifework begins with safety considerations. I used to hear that 'a sharp tool is a safe tool'. But this old saying isn't really correct. A sharp carving knife will cut flesh much more easily than a dull one. When you grip and use a knife it is always necessary to have an understanding of the full action to be undertaken and to know that the knife will safely stop moving before there is risk of getting cut.

In some cases the knife will finish a cut moving harmlessly outwards and away from your body. In other moves your hand or a part of your arm will come to a stop against your torso before the knife can get out of control.

Sloyd knives are simple single-bladed things, generally flat and pointed, but some are curved for spoon carving. The word sloyd is derived from the Swedish word slöjd, which means skilled or crafty. Educational Sloyd was a form of teaching based on handicrafts, helping to build a child's character through handwork. Otto Salomon started a school for sloyd teachers in Nääs, Sweden in 1865, which survived active till the 1960s.

There are two other general rules for using a carving knife. Knives cut wood much more efficiently when used with a slicing action or when held at a skew angle. Cutting at right angles to the edge is much more difficult. Also, you must always cut with the grain, as if rubbing the fur on a cat the right way. Tear-outs are caused by cutting against the 'nap'.

The carving knife is used with a variety of 'grasps.' A vocabulary of grasps is necessary because the carving will require cutting at all possible angles relative to the wood fibre. The blade can emerge between your thumb and first finger with the edge directed away from or towards yourself. There are also grasps with the knife reversed (dagger style), so that the blade emerges between the little finger and base of your palm. Again, the edge can face inwards or outwards. In addition, there are some knife grasps where the thumb or first finger of the non-grasping hand is pressed against the back of the blade to give extra pressure and control to the cut. For most grasps the knife is moved across a firmly-held (stationary) workpiece. In some specialty grasps the workpiece is rotated away from the knife which rotates in the opposite direction.

The first knifework on the ladle I hewed last issue is trimming the rim of the bowl. (The entire spoon is created relative to this plane.) This should be flat, or slightly curved upwards towards the stem. You will find that cutting through the various quadrants of grain direction leads to varying challenges in holding the knife and the spoon. Sometimes this is easy and straightforward, but there is usually a difficult section if you are not ambidextrous. For trimming some sections of the rim I support the end of the handle against my sternum, and use the long-bladed knife to cut across to the opposite side of the rim. Inspect your work by examining the spoon profile from eye level. When the rim is dressed I usually do some further hollowing of the bowl. You can do this with curved spoon-carving knives or a paring gouge. Once again you will find that carving requires cutting from all directions, and rotating the spoon in different holding positions.

To remove wood from the outside of the bowl you hold the knife so the blade is facing away from you. Have the blade at a skew angle to the wood then use your elbow or shoulder for power

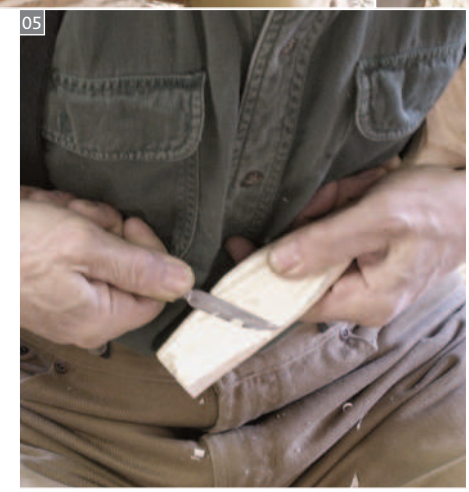
Spoon-carving knives are made in pairs known as 'lefts' and 'rights'. If you are right-handed the 'right' knife will be used with the blade edge facing your body (cutting towards yourself). The 'left' knife will be used with the edge facing away from your body (cutting away from yourself). Because it's easier to cut towards yourself you would probably use the 'right' knife 3/4 of the time, but the 'left' will be very much appreciated in those places where there isn't a good position to cut with the 'right'.

I generally carve over the entire spoon in several passes, working from rough form to a final, refined shape. I will often


02


03


04


05

Trimming the rim of the bowl (02) can be tricky if you are not ambidextrous. Drew uses a long-bladed knife to cut the 'far' side of the rim. Notice how he has the handle tucked into his sternum. Spoon carving knives (03) are supplied as 'lefts' and 'rights' so you can always work with the grain, towards or away from you. When working towards his body (04), his forearm and hand will stop the knife from doing an injury. When carving the tablets (05) Drew cuts with a scissors action, working away from his body, the ladle in the crook of his elbow. How you hold the workpiece is as important as the holding of the knife. When it comes to the end of the handle (06), work towards the centre with a slicing action achieved by rotating your wrist while the thumb acts as a pivot


06

re-work the rim and take more out of the bowl as I see how the rest of the spoon takes shape. I tend to work by beginning at the bowl, then moving on to the stem and handle. But I go back and forth as the form develops. I usually put off any detail work on the end of the handle (the finial) until I'm almost finished with the spoon.

Exterior of the bowl

The leading portion of the exterior of the bowl is straight forward knifework. To remove wood quickly in this area where there are no complicated curves you can hold onto the spoon handle and support the bowl on your thigh just above your knee. Hold the knife with the blade extending between your thumb and first finger, and with the blade edge facing away. (Something like holding a hammer.) Cock your wrist towards your body, so that the knife engages the wood at a skew angle. For a medium cut extend your arm. For a more aggressive cut straighten your arm before engaging the cut and then push downwards from your shoulder. When using these power grasps the knife should exit the cut and go forward into space. Adjust your body position so that it's impossible to run the knife towards your thigh.

Another useful cut for work on the bowl and many other parts of the spoon is sometimes called a 'scissors' grasp. This grasp takes some practice, but it's very effective, safe and useful once you get the knack. Hold the knife with the blade extending from your thumb and first finger, but this time position the edge directed towards yourself. Then close your elbow and rotate your fist up and outwards so that your knuckles are supported by your chest. Now the blade edge faces away from you. Hold the spoon with your other hand in the same manner. Adjust the position of both hands until the knife blade engages the spoon in the proper place. To execute the cut rotate both of your arms backwards, rolling your knuckles across your rib cage. (Maybe something like a chicken flapping its wings!) This takes some getting used to, but you will find that this grasp is very good for control and power applied simultaneously.

After shaping the bowl I move along to the transition into the stem. This is where the cross section becomes a diamond orientated 45 degrees to the original plan and profile views. Re-draw the upper and lower center-lines if they have been carved away. Also, draw the arris that defines the two side facets. This arris line originates at about 2/3rd back on the rim of the bowl, curves gently downwards to the middle of the stem, and then forms a long up-swept S-curve terminating at the end of the handle. You should also sketch in the flat tablet shapes on the top and bottom of the handle. Note that the upper handle tablet is positioned aft from the lower handle tablet.

Carve the lower part of the stem beginning at the bowl working towards the center line. By working from both sides you will form facets that connect at a bottom ridge. Often the fibre direction reverses relative to the concave shape in this area. You will need to carve from two directions; from the bowl and from the wider end of the handle. This is an area where it might be helpful to get a little more control and power by pushing with your thumb on the back of the blade with your spoon holding hand. Carving the upper part of the stem is similar except that the neck joining the bowl and stem is cut at a tighter radius. Leave a small, almost flat triangular area just behind the


07


08


09


10

To use a paring gouge (07) with a hand-held spoon grasp the gouge blade with the cutting end emerging between your little finger and base of your palm. Hold the spoon between your fingers and the palm of your other hand. Extend your thumb across the bowl to the base of the palm of your gouge-holding hand. Use the gouge to scoop fine, long shavings cutting from the rim towards the bottom of the bowl. Your thumb is a pivot point that also limits the distance that the gouge can be moved in a single stroke. This is a rotating action that originates in your forearm. Avoid creating an island in the center of the bowl which will be needed to be removed later. For aggressive cutting (08), hold the knife with the blade away from you, then cock your wrist so that the blades at an angle to the cut. For medium cuts you can flex your elbow to make the cut, but for harder work you keep the elbow straight and push down with your shoulder. Make sure your knife can't hit your thigh on exit. For shallow cuts (09) to the exertior Drew uses a scissors cut, then Drew works away from his body (10), using his thumb to guide and push the blade

bowl. When carving the stem take extra care to maintain both adequate depth and width. Beginning spoon carvers often take away too much wood at the base of the stem. Think engineering here; you want a deep diamond sectioned beam to support the bowl. The tablets that make up the upper and lower surfaces of the handle require careful viewing and evaluation as work progresses. Both tablets are saddle shapes. In length they take long concave curves. But in section they are slightly convex. The arris that winds along the sides of the stem continues approximately along the center of the handle sides. Note also that the upper tablet continues at an upwards slope, but it's not nearly as steeply angled as the stem section. The end section of the handles thickens in depth. This looks good, but also feels right. In use, the lower part curves downwards over your first finger while the upper part curves upwards to hook slightly behind your thumb. This same curve is common on many classical designs for silver and pewter spoons.

To carve the tablets you can make good use of the grasps that were described in the section on carving the bowl exterior. In another useful grasp you support either end of the spoon against your sternum. Hold the knife like the scissors grasp, but this time don't rotate the blade outwards. Pull the knife towards your torso. The safety element is the fact that your forearm comes to a stop long before the knife gets anywhere near your body. This is one grasp where you may wish to be wearing a good leather apron, or something similar to protect your sternum from the concentrated pressure.

As you develop the shape remember to stop often to examine your work. Evaluate. Look for symmetry, straightness, balance, etc... Recreating the centreline is sometimes useful. I often redraw the arris along the stem and handle sides.

When the overall spoon is looking good you can begin to think about how to end the handle. For this spoon I came up with a design that utilis es a slight reverse curve on the final side section of the handle tablets. This is actually a little tricky to carve. The reverse curve means that you need to carve from two directions. Also, this shape is visually prominent. Symmetry is important here, along with the necessity of developing pleasing proportions.

With the reverse curves I decided that a decorative finial wasn't necessary. Trim the end of the handle by carving a simple convex shape that emphasizes the facets created by the carving knife. This is endgrain carving. As usual, start cutting away at the arris. Work your way towards the center. Use a slicing action to make a clean cut. For this grasp hold the knife like you did when pulling towards your sternum. Brace your thumb on the opposite side of the handle end, located safely below the endgrain area that you are carving. To get the slicing action rotate your wrist upwards. Your thumb is the pivot. The knife engages the wood by slicing from the tip towards the hilt.

Cutting Edge of Minds

Doug Stowe introduces his campaign to encourage handwork for a new generation

I started the Wisdom of the Hands program at the Clear Spring School in Eureka, Arkansas, in 2001. At that time, woodshops in schools all across the USA were being discontinued with the thought that as a 'service economy' in an 'information age', woodworking was no longer relevant to our children's education. Policy makers and educators alike insisted all students were to go to college, by golly! The trades were considered a dead end. Manufacturing was a no-growth industry. And the idea that woodshop was relevant and valuable to our children's futures or their lives was no longer held dear at any level of American education. "How could that be?" I wondered. After working in my own small woodshop for more than 20 years, I knew that woodworking was indeed relevant to every aspect of human culture. In the woodshop I used mathematics, reading, writing, science, history, engineering, and design. As the son of a kindergarten teacher, I had long been interested in various theories of education. I felt that woodworking could stand at the centre of a multidisciplinary approach to education, and deserved to be tested in a new light.

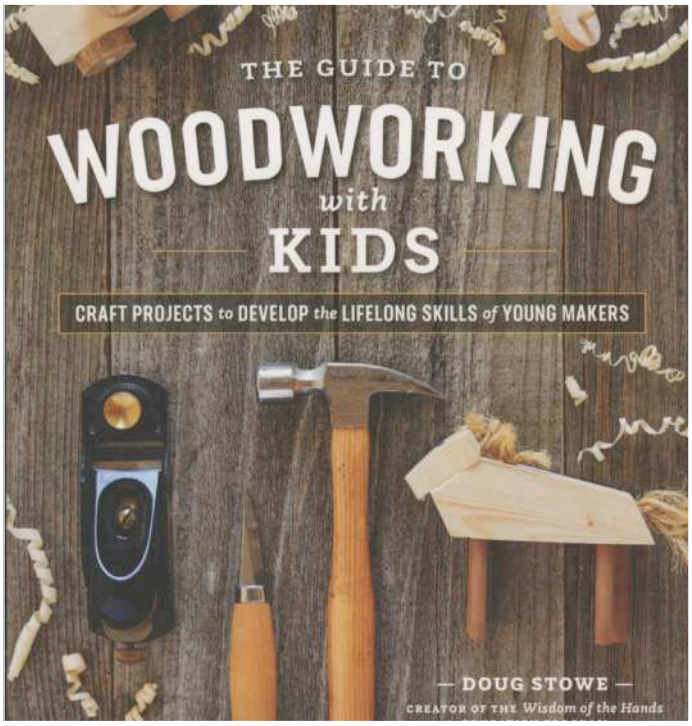
Years ago I restored an antique Ford including all the mechanics, the remaking of top bows, bodywork, paint, and even sewing the upholstery. I had literally taken the car down to bare bones, and rebuilt it from the frame up. The man who had helped by providing shop space and guidance asked one day when I was home from college, "Why are you studying to be a lawyer, when your brains are in your hands?"

I had no good answer at the time. But the question lingered. In school I made a sharp turn from political science, and began the study of ceramics. I moved to Arkansas as a professional potter and then became a woodworker.

My friend's observation was never far from my thoughts. Through years of projects I became an observer of the relationship between my hands and my brain, and new questions formed. If my brains are in my hands, is that not true for others as well? If that is true, even for some students, why aren't hands at the centre of education? Of course the brain is in the head and the hands are at the ends of the arms, but the brain and hands comprise a learning system where each is so integral to the efforts of the other that to view them as separate is illogical.

As a new teacher in 2001 at the Clear Spring School, with the task of exploring the role of woodworking in education, I began building a program for high school students based in part on those I'd seen in the past, but also attempting to build parallel links to the students' core classroom studies. It was a challenge. Parents, students, and teachers needed convincing of the value of woodworking. Could woodworking truly enhance more "intellectual" pursuits? Staff members were reluctant to admit that woodworking could be more than a vocational program, and integration into the body of the curriculum would take time.

In the fall of that same year while on my way to a woodworking educator's conference on the East Coast, I called at the world famous North Bennet Street School in Boston. There, I explained my concept of the importance of hands-on learning, that doing real things by hand created both character and intelligence.



Jed Zapadka is a five-year-old from Coventry, Connecticutt, beaming here (right) as he displays the stepstool he built with his grandfather, and is featured in Doug Stowe's new book (above)

They directed me to a nearly forgotten educational philosophy that had been important in the history of their school, called "Educational Sloyd," and that inspired me to research deeply into the history of the manual arts movement. That research led me to write articles in woodworking magazines, and helped to awaken my interest in manual arts education and particularly in Educational Sloyd. For me, and my program at the Clear Spring School, it led to expanding the program from high school only to offer regular woodworking for all students in grades from kiindergarten to 12th grade.

This book is, in part, about that journey, but it's also intended as a road map and help guide for others wanting to bring woodworking and other forms of hands-on learning back into American schools and homes. In 2006 I launched a Wisdom of the Hands blog to share the evolving philosophy I've used in the Clear Spring School woodshop, and to share projects with readers from around the world.

Through the years, I've been asked countless times for a curriculum based on *Wisdom of the Hands* or some means through which others could start similar programs in their own schools. I have no set curriculum to offer. What I hope to do is to inspire confidence, and offer a philosophy and a strategy for building a program of your own.This book is organized to be useful to the teacher, parent, or grandparent interested in

Jed Zapadka is a five-year-old from Coventry, Connecticut, beaming here (right) as he displays the stepstool he built with his grandfather

helping children develop skills of hand and mind. It is based in large part upon the learning principles taught in Educational Sloyd, first developed in Scandinavia during the 19th century. Those principles include a basic, but incredibly important concept: Start with the interests of the child. I'll talk a bit more about Sloyd in "Applying the Theory of Educational Sloyd" in the next section.

That brings us back to the Wisdom of the Hands. We learn more deeply and to greater lasting effect when we learn hands-on. Students have a strong inclination to do real things that may be of service to their families and communities.

One remaining point is that woodworking is an absolutely delightful thing to do with kids. They love it, at all ages. And there is no greater gift we can give ourselves than to be a part of a child's growth of skill, character, creativity, and intelligence.

Educational Sloyd

The principles of Educational Sloyd came originally from Adolph Diesterweg, an educator in 19th century Germany. They were useful to his friend, Friedrich Froebel, inventor of kindergarten and early childhood education. Froebel's kindergarten, in turn, provided the model for education throughout Finland. Uno Cygnaeus, founder of the Finnish Folk Schools, established Educational Sloyd as a way to extend kindergarten learning methods involving play and creativity, into the upper grades. Educational Sloyd was, in turn, refined as an educational system by Otto Salomon and his many students at Nääs in Sweden. It was there that adult students from around the world learned the secret of effective education, and it spread to the U.S. and many other countries in the 1880s.

The word Sloyd (or slöjd) meant "skilled" or "handy," and while some manual-arts training was launched purely to promote the skills needed for developing industry, Sloyd was derived from Friedrich Froebel's strategy of learning through play. Its purpose was to develop skill and creative capacity in the child, integrate the child as a productive member of society, and lead the child into meaningful participation in family, community and nation.

In Sweden, Otto Salomon developed a school for teaching teachers to teach Sloyd, and his school was responsible for sharing the method throughout the world. In his book, The *Theory of Educational Sloyd*, written in the late 1800s and translated into English, Salomon outlined the basic principles of education, upon which my own teaching is based. These principles were first described by Diesterweg as:

1. Start with the interests of the child.
2. Move from the known to the unknown.
3. From the easy to the more difficult.
4. From the simple to the complex and
5. From the concrete to the abstract.

In addition, Salomon recognized the ineffectiveness of classroom teaching, and proposed that individualized instruction offered significant advantages. This was very controversial at the time, as it would be today.

I use these principles to guide instruction in the Clear Spring School woodshop. I also offer the suggestion that the same principles offer profound benefits in all subject areas, in all schools and at all levels of instruction from pre-kindergarten through college.

So what does it mean to, "Start with the interests of the child?" Right off the bat, children love to be introduced to new tools that allow them to manipulate their environments, and allow them to see their own ideas brought into tactile form. So, woodworking is an activity that quickly captures the interests of the child.

Then, it offers greater opportunity when it can be used to fulfill a special connection related to a child's interests outside

the classroom. For example, when one of my students had a particular interest in trains (and as many of my students have since), making trains fully engaged their interests and captured their attention for significant growth.

The knife is a classic example of moving from the known to the unknown. By the time Swedish children reached school age they had already learned to use the knife safely and without cutting themselves. Basic whittling would be a thing they had already explored and so knife work provided the foundation for further tool use.

Then, by using the knife and offering the students projects that expanded upon their previously acquired whittling skills, students were prompted to go from the known to the unknown. After that, it was a logical step for them to go from the very easy, to the use of the same tool in a more difficult and challenging way.It was relatively easy for a teacher to build upon what a student knew. As more tools are added to the process and more demanding projects are offered, the child's growth from the simple to the complex naturally takes place.

While much of schooling at that time was overly abstract, much of it remains so to this day as students are confined to desks, looking at representation of things in books or on screens rather than in "real life." To move from the concrete to the abstract required the teacher to present models to spark the students' creative imagination and to provide targets for their development of skill, just as I do in the Clear Spring Woodshop today. Salomon's proposal concerning the ineffectiveness of classroom instruction is one that still bears true. In the woodshop at the Clear Spring School, I begin a project by describing and demonstrating the process of building something, but what I demonstrate will not become truly clear to my students without first taking time to give personal instruction to each child. That is a lesson from the woodshop that should be accepted and understood in all classes, and schools and at all levels and subject areas of instruction.

Enhancing Stimulation

The role (and the power) of the senses is to confirm the reality, relevance and importance of learning. The chart seen here is taken from the book *Growing Up Gifted*, by Barbara Clark (Pearson, 2013). It illustrates the effects of environmental stimulation and how it strengthens the brain at the cellular level. A stronger brain, in turn, enhances a child's ability to learn and create. Recent research tells us that the children from rich parents perform better in education. That should come

Learning through play

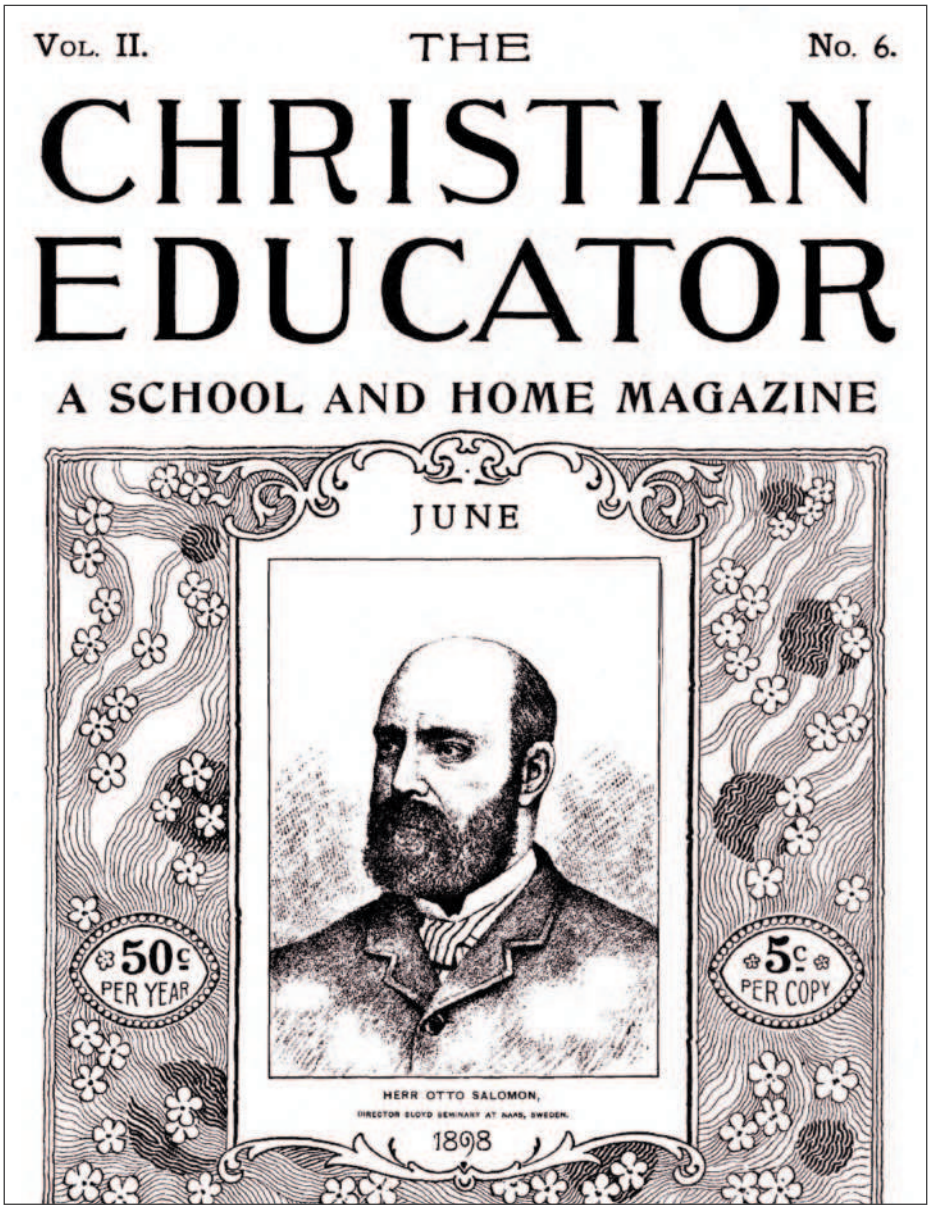
Some manual arts training was developed with the purpose of improving skills and a child's creative capacity, to integrate the child as member of society, with a productive and meaningful participation in the family, community and even the nation. Otto Salomon developed a school for teaching teachers to teach Sloyd, and his school was responsible for sharing the method throughout the World. In his book, The *Theory of Educational Sloyd*, written in the late 1800s and translated into English, Salomon, focused on the simple, and how it can be made more complex with time.

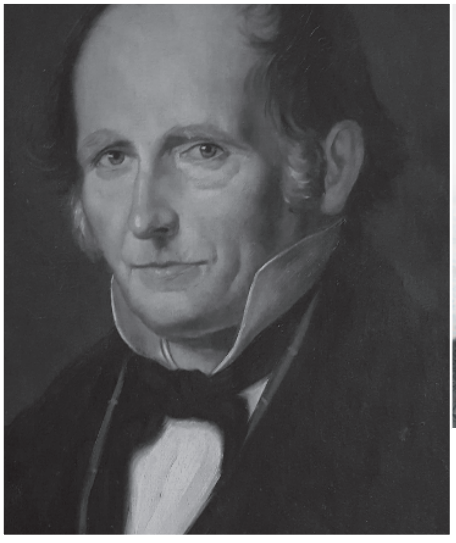
Woodworking develops skills to bring the abilities into a school, so that children can understand societal norms for amusement and to act as the foundation for economic employment. It clarifies the value of all that surrounds us and provides a collaborative framework in which we can work together in learning about ourselves.

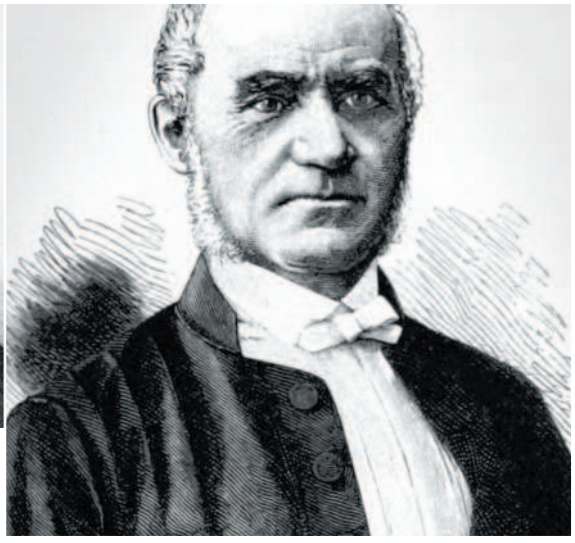
By making schooling artificial, it becomes trivial. By making it a means through which children may serve family and community through the craft of useful beauty, in a William Morris kind of way, it is by no means trivial or abstract.

Recent research tells us that the children from rich parents perform better in education. Their lives are often more deeply infused with experiences that are designed by their parents to offer a sense of mastery over the world that surrounds them.

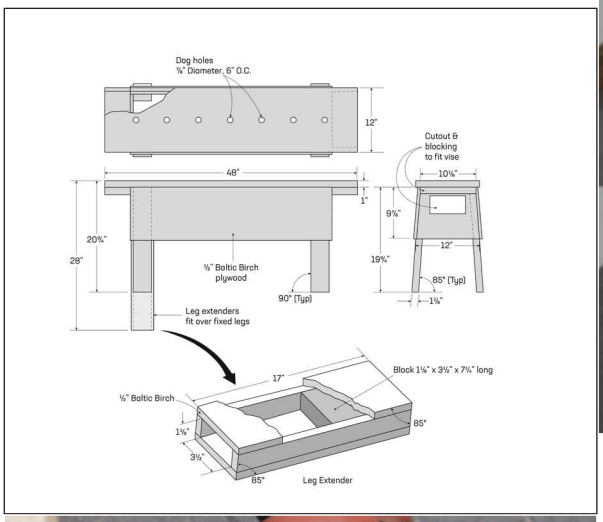
Education has traditionally had three purposes. One was to prepare a child for economic success. Another was to force the child into compliance with society, while the third was a way of encouraging the child to get along with others in communities.



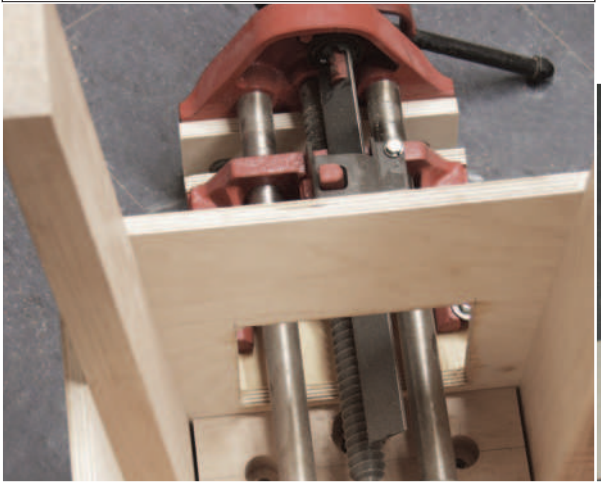




Adolph Diesterweg, 1790-1866 (left); Friedrich Froebel, 1782-1852 (above); and Uno Cygnaeus, 1810-1888 (right)



Benches at Clear Spring School are designed to raise the height of the workbench for the height of larger children. A vise at each end allows the bench to be used by two students at a time. Blocking (left) is necessary on the underside for the vice to sit flush with the benchtop. Note the cutout in the end of the bench frame for the mechanism to move through it



as no surprise. Their lives are often more deeply infused with experiences that are designed by their parents to offer a sense of mastery over the world that surrounds them.

Education has traditionally had three purposes. One was to prepare the child for economic success. Another was to force the child into compliance with societal norms. The third was to prepare the child (and, later, the adult) to get along with others within communities; to grow as human beings in understanding of self. To focus on doing all three is a tall order, particularly if you've created a contrived system of learning virtually devoid of real, meaningful work.

Woodworking is a great way to bring the senses (all of them) into school. It develops skills that can become a source of both amusement and the foundation for economic employment. It helps the child to understand societal norms and the value of all that surrounds us, and it provides a collaborative framework in which we work together in learning about ourselves.

By making schooling artificial, it becomes trivial. By making it a means through which children may serve family and community through the crafting of useful beauty, it is by no means trivial or abstract.

The Child as Craftsman

David Henry Feldman, a specialist in the study of gifted and talented children wrote an award-winning 1977 essay "*The Child as Craftsman*." He suggested the necessity of woodworking and other forms of artistry in development for each child. Feldman notes that all children have innate inclinations to seek excellence in some field of endeavour through which they can set themselves apart from their peers and earn the pride and recognition that entails. Those opportunities, with the loss of woodworking and the arts in school, have become few and far between. Woodworking has long been suggested as being for those children destined for employment in the trades and manufacturing, but not for those who go on to work toward a college degree. The truth, however, is that every child, regardless of their career destination, can benefit when their hands are productively employed in creating useful and beautiful work. Feldman noted that, "...the main purpose of education [should be] to provide conditions under which each child will identify and find satisfaction through a chosen field or fields of work."

That field of expression might be different for each child. Work might be in music, athletics, or any other form of craftsmanship, including painting, theatre, woodworking, and other arts through which their unbridled interests in learning will inevitably be aroused. My own experience teaching at the Clear Spring School tells me that all children love woodworking and the creative environment that the woodshop provides. In the woodshop, children are able to make useful beauty while learning about themselves. Where schools do not provide this kind of direct learning, parents and grandparents must step in to fill the gap.

The Guide to Woodworking with Kids is published by Blue Hills Press and costs £17.99.

Make and Use a Square

Squares are tools with which students can evaluate and improve their work. Square ends on stock make the parts of a box fit. Square edges allow boards to nest tightly side by side for gluing or assembly. While some of my youngest students don't care if their cuts are square, an exercise in planing stock or squaring the ends of the stock invites the student to observe more closely the results of their efforts. In the process, it may help them to problem-solve or even anticipate problems before they are hatched.

In the Clear Spring School woodshop we use wood-bodied squares that I make myself. The advantage of a wood-bodied square is that it is lightweight, inexpensive and easy to replace. Unlike a metal square, it is unlikely to be damaged by the occasional fall from the workbench. The making of them is easy.

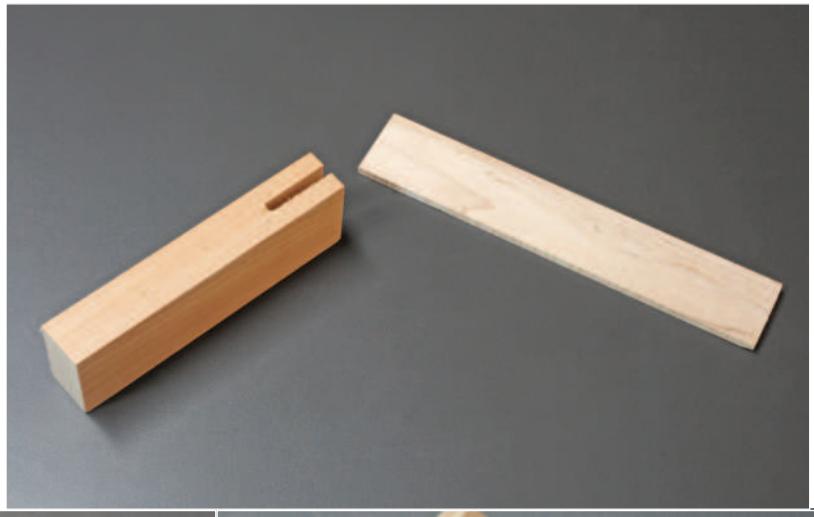
I plane stock to make the blade a thickness of 1/8 in., and then insert it into a saw kerf formed in the end of thicker stock. Provided the end of the stock is square and it passes in a vertical manner across the blade, the depth of the cut will be uniform and the blade of the square will automatically be "square."

Glue the blade of the square into the kerf. Before the glue dries, use a steel-bodied square (or any other object known to be perfectly square) to adjust the wooden blade to make certain it's square.

To use the square, the thicker leg is held tightly to the stock while you observe the relationship of the blade to the end or edge. To check an end cut, hold the square tightly to the side and end, and look for visible gaps. Hold it up to the light and if no light passes between the blade and the end of the stock, the end is square.

The same applies when checking the edge of planed stock. Look for gaps. If the body and blade both fit tight to the stock with no gaps, the edge of the stock is planed square. One of the lessons from the square is that if you want to make a square cut, use a square when marking the line for the saw to follow. Box making in particular requires square cuts.

The two parts of the square are easy to make, and can be assembled by the students for their own use and to take home in their toolboxes

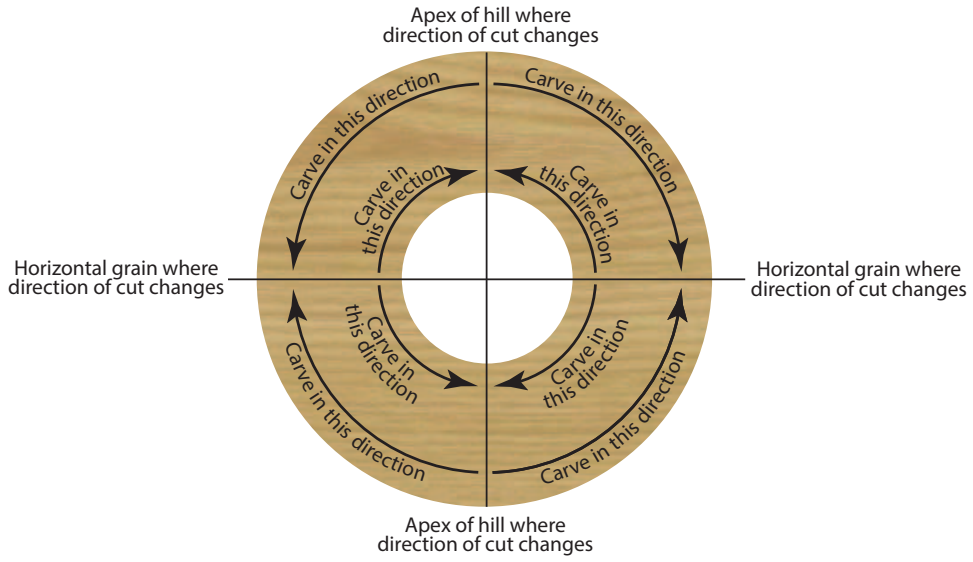


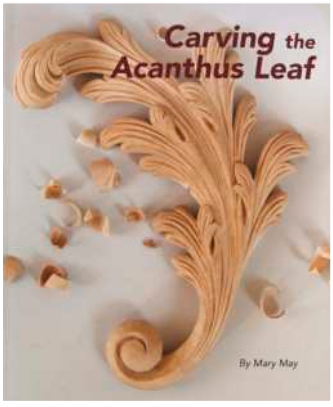
The square is useful when planing wood to make certain that the edge is kept square to the face (above). The students are enouraged to hold the square tightly against the wood so that it can be used on the edge for planing and the end to square up the ends of a workpiece (right)

Direction of the Hills

Woodcarver *Mary May* explains how vital it is to understand grain direction

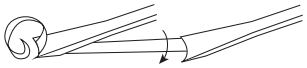
Fig.1 Mary May's donut can be used for woodcarving practice





Carving the Acanthus Leaf is published by Lost Art Press. As next issue's review will show, the book explores designs from across the world

Fig.2 The slicing cut



Have you ever stroked a cat in the wrong direction – against the fur? You're lucky if it didn't bite you, but you probably got its attention! Wood can react the same way if you carve against the grain. One of the greatest challenges in woodcarving is 'reading' grain direction and understanding the correct direction to make cuts. As a carving teacher, this is also one of the most difficult things to explain. As a new carver, you will discover quickly that there are definite right and wrong directions to carve. Carving in the correct grain direction prevents pieces of wood from breaking and helps make cleaner, more efficient cuts.

One of the first lessons I learned that helped me quickly understand grain direction was the 'donut' exercise. It might seem basic, but it is an ideal lesson to help understand the safest and most efficient directions for carving in relation to wood grain.

In the donut illustration above, the grain is positioned horizontal. To round over the outside edge of the donut, carve in the direction of the outer arrows. Start at the high and low points, called the apex or, as I like to say, the 'top of the hill, and carve away from these points. Carving in the opposite direction of the arrows would cause the gouge to cut into or 'against' the grain. Much like your hand against the direction of the cat's fur, the gouge would dive into the grain. This can cause a sudden and deeper cut than intended and can also tear or split the wood. Notice the direction of the cuts for shaping the inside of the donut is opposite to the outside – in case the concept wasn't already challenging!

The 'real world' of carving can certainly be more complex than that of a simple donut, but this is a good place to start. It is surprising how often I mentally refer back to the 'donut' exercise as I work through the challenges of grain direction on more detailed carving projects. Remember: basswood and butternut are great beginner woods and the grain is very tolerant. Your gouge may not catch when you cut against the grain of these woods. Harder woods such as walnut or mahogany are not as forgiving.

In clean, straight-grained wood, the method described above works quite well. However, the unpredictable nature of wood can sometimes present a few surprises. Quite often, the best way to discover grain direction is to start carving, and watch and feel what happens. If you feel the wood fighting you or the gouge tears the wood, simply turn the tool around and try carving in the other direction. After spending more time carving, you will begin to develop an instinctive understanding of the grain direction and it will become more noticeable when the wood 'speaks' or on occasion 'yells'. Sometimes a broken or chipped piece of wood teaches the best lesson not easily forgotten, and a little glue or a 'redesign opportunity' may be necessary.

Slicing cut

One of the most essential and often misunderstood techniques

in carving is making a subtle slicing movement as the gouge moves forward through the wood. This helps to make clean, controlled cuts; merely pushing the gouge through the wood by force is difficult to control.

When you cut a slice of freshly baked bread, you know that simply pressing the knife into the bread (no matter how sharp) will crush and compress the bread; however drawing the blade across bread makes a clean and easy slice. It is the same with carving, but instead of a sawing motion, you want this slice to be one subtle, natural movement of the wrist that allows you to use the full radius of the gouge's curvature as it moves through the cut (Fig.2).

For this explanation, let's use your right hand as the leading or dominant hand holding the gouge handle. Imagine turning a doorknob in a clockwise direction. Now place the gouge in your hand and make the same motion while moving your hand forward. This exaggerated gesture is a magnification of this subtle slicing cut. If the handle were in your left hand, you would make the same motion in a counter-clockwise twist.

Bottom of the hill cuts

One of the most challenging areas to create a clean cut is what I refer to as the 'bottom of the hill'. The easiest way to describe this is imagine carving the concave surface inside a bowl shape. Cuts are made 'downhill' from both sides and meet at the bottom of the bowl.

It is difficult to make a clean cut at the 'bottom of the hill' because this is where the grain changes. The result is often a 'fuzzy' area.

Before carving deeper and deeper in an attempt to clean this area out, stop! Using a gouge that is slightly more curved than the shape of the 'hole' (so that the corners of the gouge will not dig under the wood), make a gentle, shallow slicing cut across the grain. This means the direction of your cut is perpendicular to the direction of the grain. This technique is used in nearly every carving and will be important to understand when carving the undersides of the acanthus leaves.

Wood selection

Basswood and butternut are ideal woods to use for learning beginners' woodcarving techniques. They are relatively soft and their grain tends to be more forgiving than harder woods. After learning the basics, I recommend working in mahogany, walnut, cherry or even oak to experience the 'real world' of carving. These woods are typically used for furniture making and can be more challenging simply because more effort and control is needed to push the gouges through the wood.

The crisp and refined details these woods offer are worth the extra effort. For most of the projects in my book I have used basswood, as the contrast between the light colour of the wood and shadows photographs well. Other woods I used for demonstrations in this book are butternut and walnut.

Klaus Skrudland

In conversation with the bearded Norwegian who loves to make Welsh stick chairs

Klaus Skrudland lives in the fjord-side city of Sandnes on the south west coast of Norway. It sounds like a picture-postcard place, but Klaus considers it an ordinary Norwegian city with the usual shopping mall and the junkies at the railway station. "There are nice beaches though, but my wife never wants to come with me there because she hates sand in her shoes.

"I've lived here all my life. I'm married to Marie and I've got three kids. Two boys at 3 and 7 years and a girl in the middle who's 5. My day job is being an intensive care nurse and I work at the ICU at the regional hospital."

***QM* How did you get into woodworking?**
KS I am in every possible way new to this. Don't let the beard fool you. I started hand-tool woodworking in 2016, completed my first dovetailed box in 2017 and my first chair in 2018. I started woodworking at a late age, just having turned 30. Although my Dad showed me as a young boy how to whittle and taught me to enjoy making and repairing stuff, I didn't utilize any of it until I was an adult. After renovating two houses in my early thirties, I was intrigued by the magic of power tools and made some simple and in retrospect crude pieces of outdoor furniture. From there I took the common route through power tools to hand-tools. I spent entire evenings watching Paul Sellers hand planing and my wife soon thought I had snapped. It was as if Netflix had never existed.

***QM* What did you make in the beginning?**
KS My aim was always to start making chairs. Even when I was in love with power-tools. I once bought plans for a plywood chair and intended to make it using an orbital sander, a router and a nail gun. Thank God that never happened.

My love of chairs comes from my parents, I think. I grew up in a modest household with no particular luxury, but my parents always made a point of buying hand-made furniture or quality stuff made by craftspeople. Although they at times were economically challenged, so to speak, they always made room for art, furniture, records and books in the family budget.

After a very short while, small woodworking projects didn't satisfy my appetite. I made nice stuff that I was happy with, but a Shaker serving tray just wasn't a chair no matter from what angle I looked at it.

***QM* What's so important about chairs?**
KS To me, a chair is the ultimate object, both within art and fine furniture, to be made by hand. A chair is also a very intimate piece of furniture to me – something that I communicate with from start to finish, from making it to sitting in it to getting up from it.

***QM* How did you get to choose which chairs to make?**
KS Making a chair with hand-tools seemed almost impossible. I didn't know where to start and I thought that if I ever managed to make one, it would be my greatest achievement to date. So I started by studying a load of chairs, both modern and vernacular, and read absolutely everything I came across, both in books and online. I read a lot of stuff I didn't even understand, just to get used to the nomenclature and the terminology. I even bought a record because it had a nice chair on the sleeve. The music was crap.

"I started hand-tool woodworking in 2016, and made my first chair in 2018. The chair is the ultimate object in art and in furniture"

Then one day in 2017 I found out about a book by John Brown that intrigued me. Namely the famous green, little monograph named *Welsh Stick Chairs*. Unfortunately it wasn't available anywhere. I did once find one used copy being sold at Amazon for over US$400. That was an insane price to me, but made me want to read the book even more. I saw some of the black and white photos from the book and there was just something about this figure and his chairs that almost hypnotized me. I couldn't let it go. I wanted more. Shortly after, Lost Art Press reprinted the book. Reading that book was a game changer for me.

***QM* When di you start making Welsh stick chairs?**
KS At the time I was also fascinated by Windsor chairs, both English and American styles. Some of them were nice, but they didn't sing to me. There were too many turnings and bulging

parts, and they all looked like they were made at the same factory. They were so uniform. They didn't have any personality. John Brown had a totally different approach and hit me in all the right places. He provided no plans, no templates, no distinct instructions. He just did it his way and shared his personal philosophies around it. That hit me in all the right places.

To me it's with chairs as it is with music and other art. I want it to both kick me in the groin and embrace me with a hug. I might sound like an S&M enthusiast, but I can assure you these are metaphors. I need to feel some resistance in art, and also in chairs. Something that pushes me back and makes me use my energy to move forward with it. As said, some of the Windsor chairs were beautiful, but they never had the guts to fight me. They were nice, but toothless to me.

The Welsh heritage stick chairs on the other hand, boasted their strong personalities at a first glance. This took my heart by storm. When searching for John Brown, I quickly also found Chris Williams. When I first saw one of Chris Williams' chairs that were in the Welsh tradition, I was struck with awe. Something just clicked in me. The chairs looked honest, strong and powerful and sometimes primitive, yet they would be elegant, soulful and graceful at the same time.

***QM* You were hooked?**

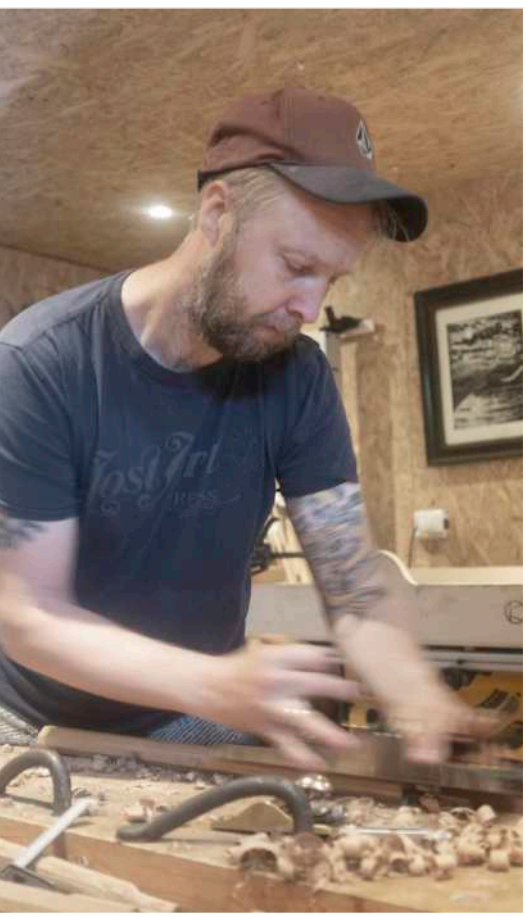
KS From that day on I sat for hours and hours just searching the Internet for Welsh stick chairs. I couldn't believe what I saw. There were so many of them and they had been around for so long, yet I didn't know anyone who owned one, had made one or even seen one. Some of them were primitive and even crude, and that often made them even more beautiful.

I felt that I could see in them the people who had made them, how they had lived, what their feelings were and how they had put their personalities into the chairs. This was a revelation to me. There is one quote from JB in particular that was a huge catalyst for me: "Each chair should be a blank canvas." This quote liberated my thinking and my woodworking. It says a lot about the Welsh chair tradition, too. It made me feel that I could be more personal and creative in my chairmaking, and I didn't need either templates or fixed plans. With this understanding, I was able to connect with both the process and the end result in a deep, personal way. It made me feel free and at home at the same time.

***QM* Where did that freedom lead?**

KS From then on, there was no turning back. I had to make a chair and I knew already then that I would never stop making them. I set out by searching for teachers and I found a class by, again, Chris Schwarz, in Germany in 2018. He taught me how to make a staked high stool, which included some basic chairmaking techniques that set me off in the right direction and cleared some of the worst obstacles. In that class, I also met Rudy Everts (@underhatchet on Instagram), who is now a good friend. He and I write the Chair Chats at the Lost Art Press blog. In the evenings during that class, Rudy, Chris and I went out for beers and talked non-stop about chairs. Apart from our mutual love of them, I think we all felt a connection on a personal level, and right there and then we started a friendship that I still appreciate.

From then on I taught myself how to make stick chairs in my own workshop. It's become an inseparable, integral part of



Klaus octagonises a tapers his chair legs with a jack plane on his workbench (left). The short sticks (above) are mortised through the steam-bent armbow and wedged from the top

me that defines me as a person. Those two particular things - discovering JB's book and later on taking that class with Chris, and meeting Rudy - changed the trajectory of my life.

***QM* What about the materials you use?**
KS My chairs the way I make them today, are quite traditional. I use mostly air-dried local elm that I've got stacked in my back yard. Sometimes also ash and maple, and often oak for legs and sticks.

I normally use a large jointer and a planer-thicknesser for the initial work. This is available to me through a communal workshop nearby my house. The rest of the work is done in my own workshop, where I've also got a bandsaw that I use for ripping and dimensioning stock for chair parts. Other than that I do the work with hand-tools and the occasional battery-powered drill. Last year I also started incorporating steam bending with my chairmaking, which has helped me gain a much lighter and in my eyes more elegant, yet stronger construction.

***QM* But does steam bending still give you freedom?**
KS In the spirit of John Brown and his Welsh comrades, every chair I make is unique. It could never be different. I would easily get bored and it would feel wrong to make a chair based on other people's templates. And most of all, I wouldn't feel connected. To me there is an obvious spiritual side of chairmaking. Chris Williams talks about philosophical chairmaking in his recent book, *Good Work*, and it's a delight to hear a prominent chairmaker like him talk about this.

I've got a tremendous respect for the heritage of these chairs and I know very well that this philosophy stuff is something that the old wheelwrights and village carpenters probably had no time nor need to think about. They would perhaps even frown upon it and say that a chair is a chair is a chair. They just needed to make something to sit on by the hearth or the wood stove. I'll probably never know. Perhaps the Shakers would nod affirmingly, though.

***QM* So a chair is more than something just to sit on?**
KS I'm not a village carpenter or a bodger. To me, chairmaking is something I do for myself. I make chairs not because I need them, but because I love to make them. They enrich my life.

Chairmaking is all about inspiration for me. It's about tapping into creative forces that exist in the Universe. These forces have existed forever and are eternal. They make the trees grow and people experience love. They are the same forces that make us feel better when we listen to or play music.

I also believe that these forces are the same that we tap into and feel guided by when we talk about intuition, improvisation and creativity. When I make chairs, I feel a closeness to the source of these forces that I get nowhere else. Perhaps only through music. It provides for me a state of calmness and meaningfulness that I achieve nowhere else.

People would call this state of mind a lot of things. Some would make 50 chairs and never even offer this a thought at all. I don't mind that. It is however important to me. I'm tempted to call it spiritual chairmaking. John talked about 'The Chairmaker Above' in his book when he explained how he marked each chair with the Celtic cross. I'm not sure what he meant by this, but at least he suggested there are more dimensions to chairmaking than the ones we see immediately upon inspecting a chair.

The long sticks are mortised through the comb (above) and wedged from the top with black walnut wedges. This eight-stick lounge chair is one of Klaus's latest. It has a compact back and longer legs with less splay, for a more modern look

Lumbering Champions

Mike Abbott looks back at the birth of the ubiquitous modern shaving horse

When I was a child in the 1950s I played in the woodlands around our house. I built dens, I dammed the stream to sail stick-boats and I carved walking sticks. It was not until I was in my 20s and studying arboriculture that I started to discover the skills of the traditional woodland craftsman. I met people cleaving oak logs to make fencing stakes. I found people carving spoons out of freshly cut branches from sycamore trees. I also read a book called *Woodland Crafts in Britain* by Herbert Edlin and discovered old photos of chair bodgers turning stacks of chair legs in the Chiltern beechwoods. But by now I was living in the 1970s and everything was being made out of plastic and steel, while wood was definitely a thing of the past. It seemed as if the old ways would never return. Even Bob Dylan seemed to have forsaken his folk roots and turned electric. Looking back though, I can see that this was the start of a turning point. Man's headlong charge towards total domination of the natural world was starting to falter.

The 1973 oil crisis made us realise for the first time, that natural resources were not infinite. A few enlightened pioneers argued that we would have to make greater use of renewable resources. It took me until 1985 to take the seemingly insane step of turning my hobby into a career and start running courses in traditional woodland crafts. I played on the nostalgia angle and I made great play of the word 'bodger' and how the term for a skilled craft had been maligned into meaning a slipshod tradesman.

Fortunately, I seemed to be in tune with the slowly accelerating green movement and in the early years the bulk of the clientele attending my courses were devout, bearded greenies wearing sandals and eating brown rice (just like myself). They still make up the majority of my customers and don't get me wrong, I love preaching to the converted. However, as time has gone on, I have noticed ever more disillusioned jobbing carpenters taking an interest. Retired schoolteachers, dentists fed up to the back teeth with their jobs, IT consultants and a whole range of 'normal' people from mainstream society.

In 2007 I ran a couple of days personal tuition for an artist keen on teaching green woodwork in schools. She had made a shaving horse based on some pictures she found on the internet and wanted me to help her improve it. For 20 years I have always started this project with a 4ft length of log, about a foot in diameter. Not the sort of thing that most people have lying around the shed. When I saw Gillian's attempt out of scrawny bits of softwood my initial reaction was to use it for kindling wood and to start all over again. But then my recent experience in building the workshop floated into my mind and I ran with her design. The end result is 'Champion the Lumber Horse', made out of two 16ft lengths of 4x2in sawn softwood, belted together with Turbo coachscrews. It requires £20 worth of materials available from most timberyards and can be assembled in a couple of hours by anybody with a decent cordless drill (although a handful of 4in nails would also do the trick).

Don't get me wrong. I have not forsaken the use of traditional techniques in general. It is just that I am less puritanical. We have still built some beautiful oak-framed buildings with woven hazel/willow/daub walls and shingle roofs. We still cleave all the ash logs for our chairs and we still shave the components using traditional drawknives. Cleaving and shaving are remarkably efficient ways to convert wood as long as the wood is still relatively fresh. They are also such enjoyable and satisfying processes enabling the woodworker to escape the noise and dust of machinery while saving on electricity and timber and getting healthy exercise. What could be better?

In my early days people used to say "It's time you got into the 20th Century". My flippant response was that I'm bypassing the 20th Century and looking towards the 21st Century. Well now it seems I was not far off the mark. Now that mainstream society is starting to come to grips with green issues, it seems appropriate for those involved in the green movement to selectively embrace some of the good things that the modern world has to offer.

Mike Abbott celebrates the birth of Champion the Lumber Horse outside his workshop and at shows (left)

Ploughing Wooden Ways

Joiner *Richard Arnold* explains how a wooden plane changed his life

It's strange how something as humble as a wooden plane can change the course of your life, but that's exactly what happened to me. Back in the 1970s, at the tender age of 16, I found myself leaving school with no clear idea of what I wanted to do with my life. A chance meeting my mother had with an old school friend led to me starting an apprenticeship as a joiner with a small local building firm. By coincidence this happened to be where my grandfather spent most of his working life, also as a joiner. Unfortunately he had died a few years earlier, but thankfully he did leave me the legacy of his tool chest complete with most of its original contents.

In a 1970s joiner's shop nearly all the tools in that chest were already obsolete, so it was a while before I took any interest in them. A young man with a wage in his pocket had plenty of other distractions! As time went by, curiosity got the better of me, and I started to question what all these strange wooden planes and tools lurking in the chest may have been used for. One item in particular confused me. It appeared to be a heavily-moulded stock of wood with two wooden arms fixed at right angles. These were capped at their ends with shaped brass ferrules. Much as I tried, I could not for the life of me work out what possible use this strange object would have had for a joiner.

While I was examining some of the other planes I had a eureka moment. The stock on a rather chunky plane with brass fittings had two apertures cut through its body, and I noticed that the profile of the holes matched the stems on the mystery tool. Bringing the two together, I had my first encounter with a classic British wooden plough plane. I think we may all have pivotal points in our life, and I can honestly say that this was probably one of the most important ones in mine. I was hooked. I had to know what that unusual plane was for, and how it was used, and learn about the other tools in the chest.

Up to that point my chosen profession had been just a means to make money, but once I started to experiment with long-forgotten hand tools my attitude changed. Woodworking became a way of life. I inherited the plough plane from my grandfather, but he was not its first owner. The first name to appear on the plane is that of G Shelton. I have spent many hours trying to track down this elusive man, but to no avail. My grandfather fought in the trenches in the First World War, and was fortunate to survive a two-year stint at the Somme. With the ending of hostilities he came home, and entered an apprenticeship as a joiner. At some time during his training, he purchased the tools and chest that I eventually inherited. I am sure that all the tools and chest once belonged to Mr Shelton. I would guess they date from around 1880-90. My theory is that perhaps Shelton also went to war, but unfortunately never returned; perhaps his widow sold the tools to my grandfather.

Coincidently Shelton is a common name in the area of Rutland where my grandfather was an apprentice. The plough is stamped with the maker's mark of William Kaye of Nottingham, but they may have just been the retailer, rather than the actual maker. Although it is the most common type of plough design, known as a wedged-stem plough plane, it is extremely well crafted. Over the years I have tried all manner of plough

Richard likes to work with tradional hand-tools

designs, but I feel that this style is hard to beat. They tend to be more compact and user-friendly than some more exotic ploughs.

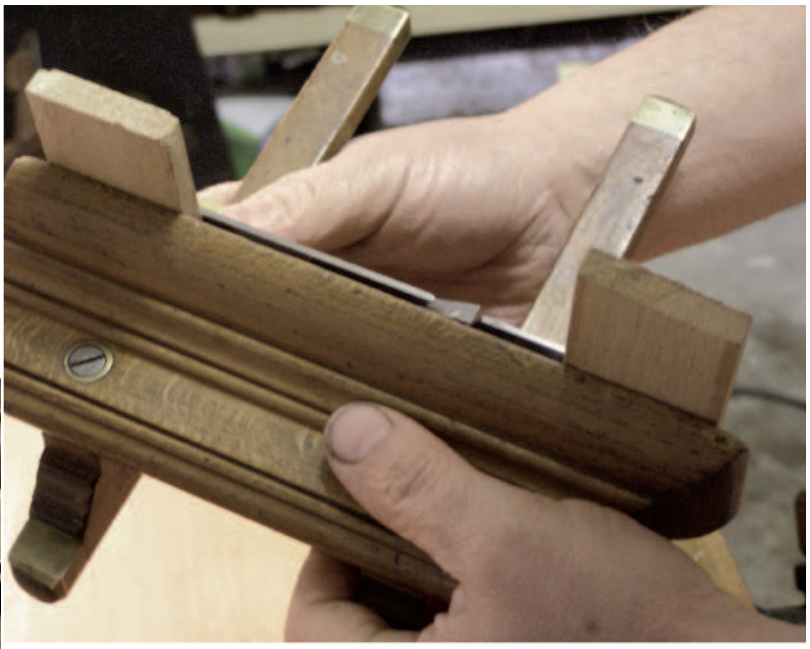
The primary function of the plough plane is to cut grooves of various widths, at any desired distance from a face edge. Most ploughs are found with a set of interchangeable irons of various widths, usually numbered one to eight. Setting the iron and fence on a plough may at first seem a little tricky, but with practice it gets easier, and in reality should take no longer than fitting a cutter, and setting the fence on an electric router. The fence on a wedge-stemmed plough is secured in place by two small captive wedges that run through the stock of the body. One often finds that these wedges have been either lost, replaced, or have been pounded into oblivion, but it is a fairly simple job to make new ones from some sort of hardwood. Boxwood is the first choice.

It is interesting to note that on some early ploughs, there are no wedges at all, the fence being held by friction alone. Due to their position, laying close to the side of the stems, I find it difficult to tap them into place with a mallet so I use a small hammer. I know this sounds a bit risky, but it only takes a very gentle tap to lock, or release the wedge. The ends of the stems are protected with brass ferrules, but under no circumstance would I recommend using a hammer to strike these while adjusting the fence. I always use a wooden or hide mallet. The same goes for the main cutter wedge.

Most ploughs are fitted with an adjustable stop to control the depth of the groove. This example has an additional locking nut in the side of the stock, but in reality, I haven't found any disadvantage on ploughs without this feature. It may seem surprising how many British wooden ploughs have survived, but there are still thousands of them out there. One reason might be that thrifty joiners carried on using old and worn ploughs even when they obtained a new one. With eight different irons to

Adjusting plough planes

There are three main elements to adjusting a plough, firstly the fence must be made parallel to the steel skate and at the desired distance from the edge of the workpiece. Small slips of wood help to make this easier (right). Depth of cut is determined with a wooden rule (below). Finally the iron must be set by advancing it with taps from a small hammer. Depending on the width of cutter, a fairly hefty shaving can be taken with a plough iron. Due to the heavy taper of the blades it is better to remove the iron and start again if the iron is set too rank as it is difficult to back it off by tapping the heel of the plane as one would do with a normal plane.



On some ploughs the brass depth stop can be locked off by nipping up the slot screw on the side of the body. Hold the plane inverted while setting the fence parallel to the skate. Small slips of wood of the correct width (above) can help to make this easier. Once the setting is correct the fence is held solid by gently tapping the stem wedges tight with a plane hammer. To hold a plough plane (below) use one hand on the rear stem and the other at the front on the fence

choose from it would be sensible to leave the old plough set up for a regular process carried out in the workshop.

Some people may argue that old plough planes should be retired, and saved for historical reasons. In the case of 18th Century, or important examples, I would agree, but in regards to all those 19th and 20th Century planes out there, I feel that if they are carefully maintained, and cared for, they can give good service to many generations to come. To merely conserve, and examine a tool is a good thing, but to actually learn how to use, and experience it, is so much more rewarding. So next time you are at a car boot sale, or checking out the on-line auction sites, if you see a plough why not give it a try. Maybe like me it will open up a whole new world of woodworking for you.

The plough plane of Richard's grandfather Cecil Incles (above) is seen on the window sill above the staircase string

How to use a plough plane

While the primary function of the plough is to produce grooves at any set distance from a face edge, the width of the groove is governed by the width of iron selected. Most irons are numbered 1 to 8, 1 being the narrowest. The sets that I have examined seem to have the same widths, the No.1 being 1/8in wide, and the No.8 being 9/16in, the others going up in 1/16in increments, other than the No.6 which one would expect to be 7/16in, but is in fact 15/32in. This puzzles me because as a joiner I cannot think of a common process where a 15/32in groove is used, but a 7/16in would be useful.

A lot of ploughs that find their way into the market don't have any irons with them, but this should not put you off as most 19th and 20th Century ploughs will accept irons from another plane. The irons themselves crop up regularly on the second-hand market, and the most useful sizes are probably the numbers 3, 5, and 7, being the 1/4in, 3/8in, and 1/2in widths. The sides of the irons are always slightly bevelled back to prevent binding in the sides of the groove. The blade has a narrow V-sectioned groove worked down its centre which locates it onto a corresponding tongue on the plough's metal skate.

When setting an iron in any form of wooden-wedged plane, I follow a simple process. Place the sole of the plane (in this case the metal skate of the plough), onto a wooden surface, then slide the blade into the plane until it touches the wooden surface. Now gently tap the wedge home to lock the iron in place. It is now a matter of taking some trial cuts in a piece of scrap wood, and slowly advancing the cut of the iron by tapping it forward with a small hammer. How much you do this will greatly depend on the material you are working with, but in general a plough can cope with taking a good shaving. You don't want to be producing dust!

If you feel you have put too much set on the plough, it's probably best to remove the iron and start again. This may all sound a bit fiddly, but trust me once you have done this a few times it will become second nature to you. Remember, it doesn't take a lot of force to get the wedge to hold the iron in place so don't be heavy-handed with the mallet. One reason for this is that to release the iron you need to tap the heel of the plane while holding the wedge with your other hand and this can be tricky if you have driven the wedge in too tightly. Plough irons are heavily-tapered in their length, so if you are struggling to release the blade it's possible to knock it forward down through the throat to some extent to loosen it due to the taper.

Once the iron is set the next thing to do is set the fence. I have always found this the trickiest part of setting up a plough plane, and usually do it by a combination of measuring with a steel rule, and a bit of trial and error, but writing this article has made me think there should be an easier way of doing this. I hope the following method will make this procedure a little less taxing! First decide on the position of the groove on the workpiece, then take a measurement from the face side to the centre of the groove. From this take away half the thickness of your plough plane's skate (usually 1/32in) and cut two small scraps of wood to this dimension. These can now be placed between the fence and skate of the plough to give the correct parallel spacing for the fence. The wedge stems can now be tapped home gently with a small hammer to hold the fence in position. If you intend to use a plough regularly, it's a good idea to keep test pieces that you have cut before so you can set the plough to these, which speeds up the process. All that is left to do is set the depth stop. I do this by simply placing a rule on the base of the depth stop and measure to the cutting edge of the blade.

The wedge-stemmed, unhandled plough plane we have been discussing was possibly developed somewhere around the middle of the 17th Century, and is a very British design, as Continental ploughs followed a different design with the stems being fixed permanently to the stock, with a much bigger full height fence. These early ploughs are quite simple compared to the later 19th Century examples. They lack the refinements of brass ferrules to the ends of the stems, and usually have a simple wooden depth stop. Originally the stems of the fence relied on pure friction to hold them in place, but it soon became common practice to fit the small wedges to hold them fast.

The last quarter of the 18th Century saw a lot of developments in the plough plane. Adjustable brass depth stops started to appear and eventually the brass ferrules to protect the ends of the stems. At some time around this period a new type of plough with threaded screw stems appeared. These planes crop up quite often on the second-hand market, and make good tools. They are easier to set than the common wedged variety, but expect to pay a premium as they are always more expensive. One disadvantage is that the threaded stems are prone to damage, so check that the fence will lock up firmly before committing yourself to a purchase.

A much rarer plough that you may come across is the bridle plough. On this plane the stems are fixed permanently to the stock of the plane, and the fence is held by a clamping system made of wood, or in later examples, metal. This allows it to slide along the fixed stems, and is locked in place by a thumb screw. These planes are usually snapped up by the collectors, and this is probably where they belong as I have found from experience that they are virtually impossible to use due to the stems moving over time, and as they are permanently fixed, it is impossible to bring the fence parallel to the body due to this movement. Hopefully, whatever plough you find will give you an insight into how tradesmen worked before the onset of the spindle moulder, and router, and like me you will view old wooden planes, and other tools, not just as historical, or just for the collectors, but as useful and enjoyable tools to use in the modern workshop.

Details Visit rarnoldvintagetools.com for more information.

More about plough planes

Grooves are often made to be the same width as mortises in much joinery and furniture, and if this is the case, and you have formed your mortises already, you can use the mortise to set the plough's fence.
If the timber you are working has irregular or difficult grain, I would recommend defining the edges of the groove with a mortise gauge before using the plough.

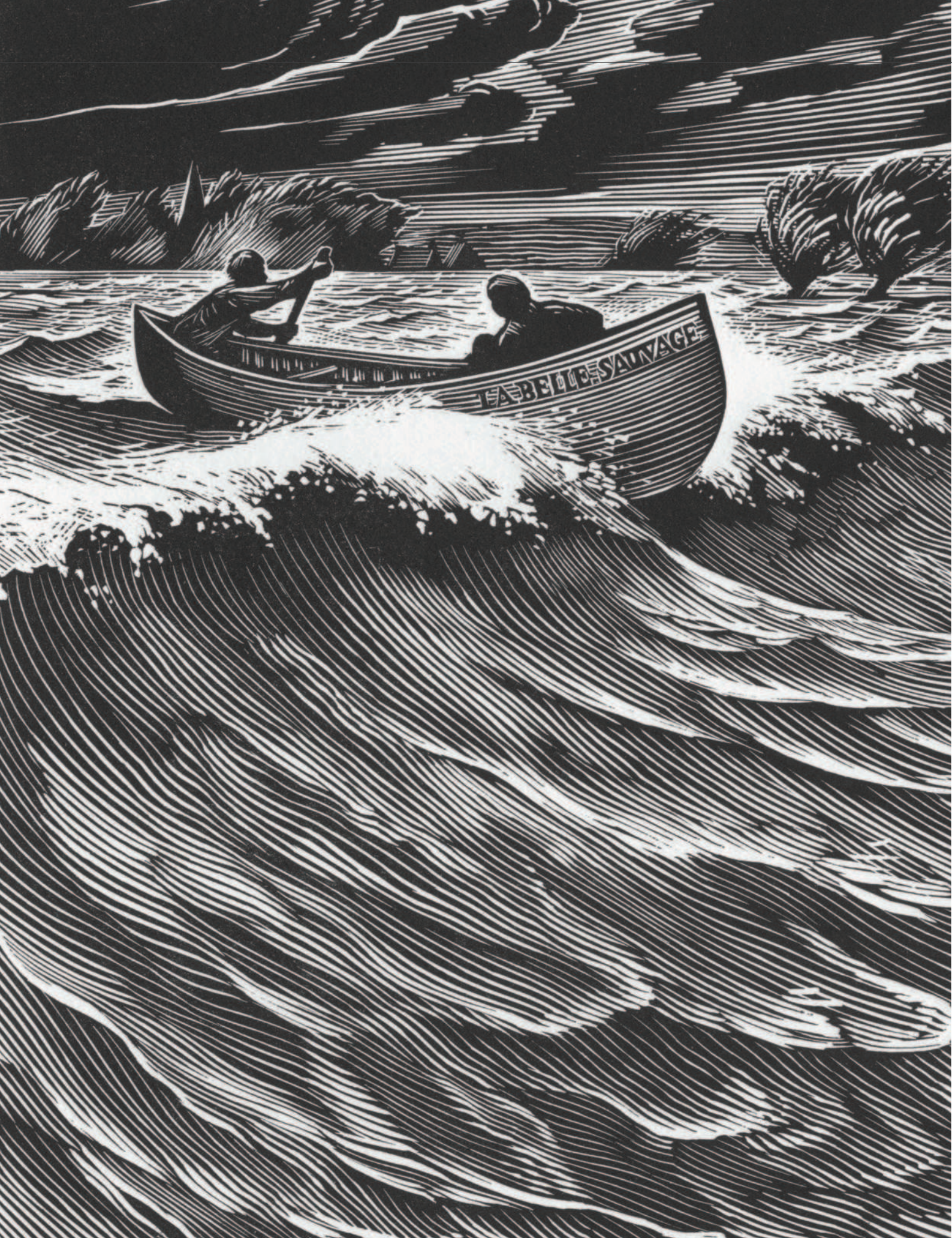
When starting to cut the groove, it is a good idea to start at the front of the workpiece, and then work back until the whole groove is defined. Unhandled ploughs may seem a little tricky to hold, but I have never found them to be any less useful than the scarcer handled variety, and as the majority of ploughs that one is likely to find are of the unhandled type, I can only assume that tradesmen of old didn't have problems with them either.

The right-hand fingers fall nicely around the projecting rear stem, while the thumb sits around the heel of the plane. The left-hand fingers curl under the front of the fence, while the thumb sits on top of the front stem. This gives a firm, but comfortable grip on the plane.

One can often see patches of wear in the patina of tools which give us clues as to how the tradesmen held them.

With the cutter removed and the fence drawn back (above) you can see the depth plate. Setting the depth stop (left) on a plough with a screw adjuster

Three generations of plough plane (above), from an early model circa 1710 by Robert Wooding of London (above left), with a simple wooden depth stop. The screw-stemmed plough (above centre) by John Green of York is circa 1790, while the bridle plough (above right) is circa 1800


LA BELLE SAUVAGE

Boxwood Arts & Crafts

A current exhibition of wood engravings puts boxwood centre stage

Scene Through Wood celebrates one of the most astonishingly skilful and richly creative forms of visual art. Curated by Anne Desmet RA, currently the only engraver elected to the Royal Academy of Arts, the exhibition at the Ashmolean Museum in Oxford marks 100 years since the founding of the Society of Wood Engravers in 1920. It includes 120 works from the Ashmolean's outstanding collection of many thousands of prints, plus loans from private collections by leading artist-engravers from the 1790s right up to the present. They range over Romanticism, modernism and abstraction, to extraordinary photo-realistic works that defy belief. The exhibition demonstrates the versatility of the medium which has been used to depict the whole 'theatre of life', from work and play, war and hardship, designs for industry and typography, to natural landscapes and dazzling scenes of inner cities. Included are well-known names such as William Blake, Samuel Palmer, M. C. Escher and Peter Blake; and many women artists including Gertrude Hermes RA, Gwen Raverat and Edwina Ellis whose outstanding works deserve to be better known.

Wood engraving, as opposed to the broader technique of wood-cutting, involves detailed drawing with tools on end-grain hardwood blocks, traditionally boxwood. It is one of the few art practices to have originated in England. The technique was developed by Thomas Bewick (1753–1828) in Newcastle in the late-18th Century. Having been an apprentice metal engraver, he taught himself to draw and then started to experiment with wood, producing images of immense detail and subtle tonal effects. His hugely successful books on natural history were lauded by William Wordsworth, Charlotte Brontë, John Ruskin and George III. Bewick has influenced virtually every artist-engraver that came after him, most immediately 'The Ancients' – the literary/philosophical group that gathered around William Blake (1757–1827) in the 1820s.

By the mid-19th Century, wood engraving had become a means for making images for mass-circulation media. Journals including *Punch* and the *Illustrated London News* in the UK, and *Harper's Weekly* in New York, hired teams of wood engravers to provide illustrations. As speedy production was important, blocks were engraved in sections by numerous artisans, then re-joined for printing. The technical skill and aesthetic quality of many such engravings are astounding and the images would have seemed miraculous to readers who had rarely seen the world reproduced with such accuracy and realism.

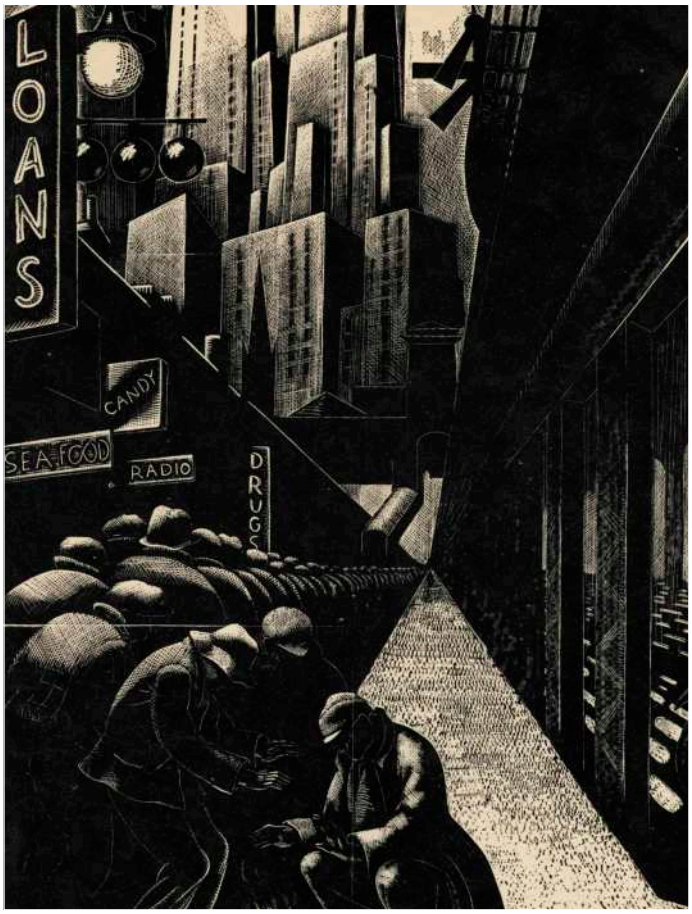
The founding of the Society of Wood Engravers in 1920 was, in part, motivated by a desire to distinguish wood engraving as an independent art form, not just a service of the printing industry. 'In the 1920s wood engraving,' wrote George Mackley in his classic book *Wood Engraving* first printed in 1948 by Hazel, Watson & Viney, 'emerged from the state of stagnation and neglect into which it had fallen in the 19th Century as a result of losing its aesthetic vitality. It was retrieved by some discerning men and women, who, seeing it possibilities, adopted it as their medium, revitalised it and restored it to a high position among the arts, adding to the achievement of the inter-war years some very notable work. During those years the number of its practitioners has rapidly increased, and a growing public interest has led to a wider demand for their work, not only in the form of collectors' prints, but also in the more widely distributed form of book illustrations. Engraved illustrations have brought the art to the notice of large numbers of people, creating in some a consumer's interest in the work, and in others a desire to practise it for themselves. To both these groups this book is addressed, in the hope that it may intensify the enjoyment of the one and give assistance to the other.'

La Belle Sauvage **(left) by Chris Wormell was commissioned for Philip Pullman's *The Book of Dust* Trilogy, and is on show at the Ashmolean Museum's Scene Through Wood exhibition in Oxford till November. Bill Carter made a boxwood smoother recently and ended up bevellin**

A nucleus of six artists met in London on 27 March 1920, led by Lucien Pissarro (1863–1944), son of the Impressionist painter Camille Pissarro. They invited additional members which eventually numbered 10 including Eric Gill (1882–1940), Gwen Raverat (1885–1957) and John Nash RA [not the architect, but brother of the other well known wood engraver Paul Nash] (1893–1977). Their initial aim was simply to hold exhibitions devoted solely to wood engraving. Much of the Society's early visual language is strikingly progressive. We find bold lines and deceptively simple designs that will resonate with graphic novel fans. One beautiful example by Clare Leighton (1898–1989), Bread Line (1932), demonstrates a sympathy for the grinding poverty people experienced in the Great Depression.

'As a medium, wood engraving has much to commend it,'

Wood engraver Chris Wormell (right) created *Le Belle Sauvage* (previous page), picked as our favourite engraving at Scene Through Wood, the exhibition at the Ashmolean Museum in Oxford. The free exhibition runs till November, and you can book tickets for Young Rembrandt at the same time, also free. A significant 20th Century engraving is Clare Leighton's Bread Line (right)



PHOTOS:

writes Mackley. 'It can be practised with few materials, none of them costly. It is possible to engrave satisfactory blocks using no more than two or three tools, and to print them with such simple apparatus as a rubber-covered roller and a spoon. The scope of the work can of course be widened by the acquisition and use of more tools and more elaborate equipment, but these can be collected gradually as the need for them arises. Some engravers will find that it never arises, and that their work is so conceived that it can be executed successfully with no more than the bare minimum of tools and other apparatus.'

Our own familiarity with wood engraving is probably greater than we realise. Intricate designs flit through our consciousness in postage stamps, logos and heraldic crests. In the drop-down box in e-documents you can select from hundreds, if not thousands, of fonts including the eponymous 'Gill Sans' and 'Perpetua' designed by the artist and engraver Eric Gill. Anyone travelling on the Northern Line via Charing Cross tube station will see David Gentleman's (b. 1930) engravings (1978), a tableau of the 13th-Century workmen who erected the original Charing Cross. The prints were scaled up to 20 times their size to create the metre-wide sections of the murals that extend down the platforms.

There is every chance that commuters passing through the station will have carried copies of Philip Pullman's world-wide best-seller, *The Book of Dust* (2017). The front cover and 26 illustrations in the hardback edition are dramatic wood engravings by Chris Wormell. They mirror the out-of-time quality and rich textures that characterise Pullman's writing.

Friends of woodworkers might assume the hardness of boxwood as a material for engraving would make it a difficult timber to work. In fact very much the opposite is often said to be the case. Yes the grain is mad, and there are so many knots, so planing with tearout is next to impossible unless you are very experienced and have a finely set plane with a tight mouth. It's hard but also creamy taking a beautiful crisp edge, with all the character of yew, and loved by turners and by spoon carvers. According to *The Good Wood Bible* [sometimes named *The Wood Handbook*, but in both cases written by N.F. Gibbs] 'you will not find many 15cm-wide boards of European boxwood (*Buxus sempervirens*), nor panels constructed from boxwood strips.' Of course, box is often used for handles of carving tools as box is so comforting to hold, and the wavy grain makes it all the tougher for chisel handles.

"Many people will know my love-affair with boxwood for spoon carving," says Jane Mickelborough, who is well known for many types of carved spoon, but especially for hinged spoons in the Breton style since she has recently written and had published the wonderful illustrated *Make a Folding Spoon*. "Box is super hard and dense, it takes a wonderful finish and allows minute chip-carving, but it definitely has its drawbacks when making hinged spoons. Essentially, it's not very elastic, which makes it very unforgiving, and super easy to crack. The wood will crack at the bottom of a hinge mortice if there is any outward pressure on the mortice sides. This pressure can be caused by a slightly tapered tenon, or a hinge pin that is not exactly perpendicular

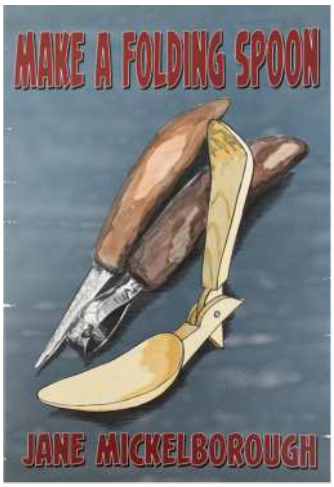
Bill's Oilstone Box

I made the boxwood oilstone box to take an 8x2x1in stone. I drew lines across the lid at roughly 1/2in centres, first using saw cuts and then finishing the flutes with the blunt chisel technique. I chiselled out the lid and the base of the box to take the stone plus some upright end-grain pieces of wood at either end so that I could use the full length of the stone when sharpening. In this instance I used boxwood end-grain bits but any wood would be suitable. I finished off the recessed base and lid with a wooden router, making a very flat base for the stone to rest on. The finished box is 12x3x2in. I keep all my oilstones flat using a diamond impregnated Tormek block otherwise used for truing up the Tormek grinding wheel.

A Granny's tooth (below) was used to level the base of the oilstone box

Bill reverts to his trusted tip of grinding a chisel 'blunt' to act as a scraper he pushes. He's used this to define the ridges for the lid of his oilstone holder

across the hinge. There are lots of examples of cracks like this in the old Breton spoons in various museums. “However despite its tendency to crack while being worked in small pieces, box is extremely difficult to rive successfully. I discovered that the force required to split a substantial piece of fresh green boxwood seems to generate micro-fissures throughout the wood, that have a nasty habit of showing up only in the finished spoon. So I’ve now resorted to using a bandsaw to prepare spoon blanks. I also use a paroir, which is a French clog makers’ version of the stock knife, rather than an axe when rough-shaping spoons, for the same reason.



You can buy a copy of Jane Mickelborough’s fabulous illustrated book, *Make a Folding Spoon* at her website, chatquilit.com for 12 Euros + postage

“Although it is such a hard wood, box is really nice to carve if you can get it while it is still green. I believe most of the old spoons were carved green, as it’s possible to see that the wood has moved as the spoon has dried, after having been carved. Finishing cuts on dry wood however, are very difficult and most old spoons have been scraped smooth using a glass or metal scraper. Again, it’s possible to see the characteristic marks from these tools. Once dry, there is no better wood for doing very fine and detailed chip carving. Some of the old breton spoons have inlays of pewter or hard sealing wax. Box is the only wood I have found that will reliably take an inlay of coloured wax without letting colour bleed into the grain. I’m still experimenting with pewter inlay, but this is regularly used to strengthen and decorate the traditional musical instruments *bombarde* and *biniou* played here in Brittany, which are, again, often made of box wood. Box wood takes on a wonderful patina with age and regular use. Eventually it darkens and becomes as smooth as polished bone.

“Box grows very slowly, especially up in northern France. Today it is almost impossible to find pieces that have grown fast and straight enough for spoon carving, and I’m informed that wood this size is now protected. (Incidentally, this may actually be one of the reasons why spoons were made as folders. You only need a short piece of wide and straight wood for the bowl, while the handle can be cut from a much smaller bit of wood). Wood from smaller, trimmed box bushes is very twisty, with lots of knots and bark inclusions which are a nightmare.

“Traditionally in Brittany, branches of box were used on palm Sunday instead of palm leaves. They were blessed in church, and then taken home to be hung up to protect the household for the following year. Other pieces were placed into the talus, or banks, surrounding the fields and may well have taken root and grown there. Boxwood was very highly prized in Brittany.

“The oldest dated breton spoon in a French museum is 365 years old and comes from around Quimper in Finistère. It is made of boxwood and it has an inscription “COZ 1654” along the front of the handle. Coz is breton for “grandfather” and would have served to identify this spoon in the family porte-cuillères or spoon rack that hung above the table. Everyone had their own spoon that was stored thus between meals to keep it away from dirt and rodents.”

In his book *Wood Engraving* George Mackley confirms boxwood’s reputation as ideal for engraving. ‘Boxwood is by far the most suitable material for engraving. Pear and holly can be used, but these are softer and cut less evenly, so that they are better used for designs depending upon broad oppositions of light and dark than for those depending upon delicacy of line or texture.’ The author also agrees that boxwood is only available in small dimensions. ‘The engraver will find that when he buys a small block it will be in one piece, but when he buys a larger one it will be made up of a number of small pieces carefully joined together. The joints are usually strengthened by tongues of hardwood, or in the very largest blocks the pieces may be held together by bolts. After the joints have been prepared and glued together, the surface of the block is planed. This work is done by hand, and when it is remembered that a variation of as little as the thickness of a sheet of paper will show in the print, it will be realised how accurate the planing must be. The planing finished, the plane marks are scraped out with a steel scraper and the surface is then finished with very fine glasspaper.’

Back in Oxford you’ll find the work of Chris Wormell, whose La Belle Sauvage graces the pages of *Quercus*, and whose engraving is done in a small room at the top of his London home, just as George Mackley writes ‘Engraving has the further advantage of being an art which does not require a special place for its practice. A block can be engraved in any ordinary room in which a firm table can be placed in a good light near a window. The work is accompanied by no mess, no smell and no noise, and there is nothing in it that makes the room untenable for other purposes - except possibly the muttering of the engraver when a tool slips!’

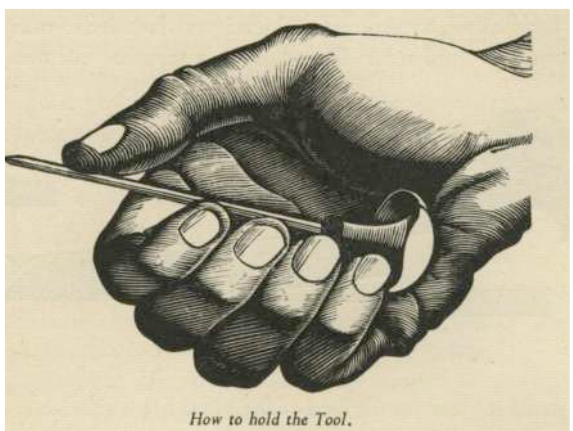
Chris Wormell’s tools are either old or are, these days, bought from Intaglio Printmakers in London. You’ll salivate when you visit their pages on the Web. But we’ve got ahead of our story. Chris was drawn to wood engraving as a teenager by the works of Thomas Bewick, who revolutionised wood engraving in the 18th Century. He was the first engraver/artist to explore the

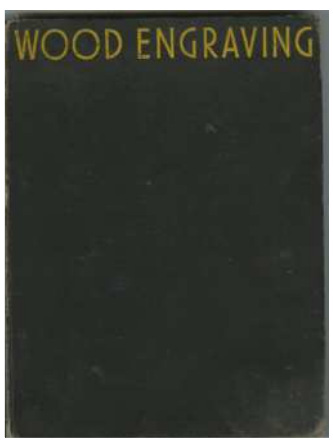
Intaglio Engraving Tools

If you want to start wood engraving there would appear to be no better place to visit than Intaglio Printmaker. They sell blocks (below) and as you will see across the page any number of beautiful tools that would have Bill Carter and others salivate. 'We have a small enthusiastic team of practising painter printmakers,' they say. 'We initiated an Artist in Residence scheme 10 years ago and pride ourselves in being actively involved in printmaking and have constant interaction with the country's leading printmakers.' Obviously they do mail order, but also have a shop in Central London where you can get expert advice and an opportunity to sample and test products first hand. Woodworkers are bound to be fascinated by the Burin Sharpener (right). For more details visit intaglioprintmaker.com

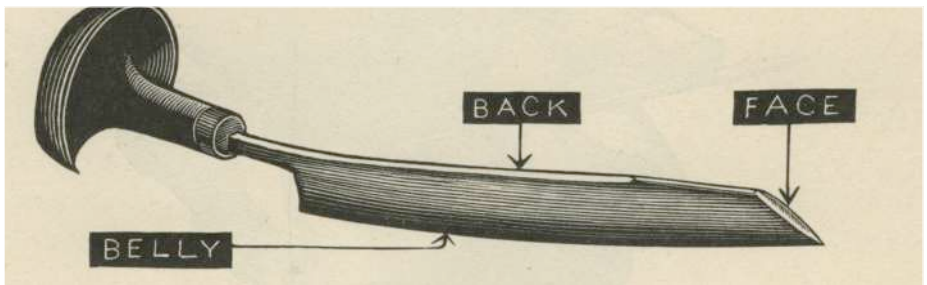
You can buy a copy boxwood blocks from Intaglio and numerous styles and sizes of engraving tools

The Burin Sharpener available at Intaglio Printmaker





If you are lucky enough to find a copy, George Mackley's Wood Engraving would be a great introduction to wood engraving



opportunities of printing from end-grain. When he went to London as an apprentice, illustrations were printed from the face of a board, a technique that is now labelled as woodcuts. The trouble was, or is, the grain crumbles and won't take as much detail as end-grain. Bewick was working as an apprentice illustrating mathematics booklets which called for diagrams for geometry. Bewick learnt that tools for steel engraving would be perfect for end-grain, and he realised the potential of printing lots more detail and more colours.

Bewick was a bird-lover and used his new skills, techniques and tools to produce *The History of British Birds*, which you'll find Jane Eyre reading in the first chapter of Charlotte Bronte's novel, with avian metaphors sweeping across the pages, depicting the eponymous Jane as a dove and a skylark, and Mr Rochester as an eagle and cormorant. At the time of *British Birds*' publication in the late 18th Century, Bewick had moved back to Newcastle where he trained a flock of apprentice wood engravers who flew to London, and transformed printing, making books like Bewick's cheaper to publish and so available to ordinary people, as it has remained for centuries since then.

Though he'd been inspired in the same way as Jane Eyre, Chris Wormell's fascination as a teenager waned. Art colleges weren't interested in wood engraving when he was leaving school in the 1970s, but he loved painting. Earning a living as a wood engraver was unattainable, so instead he struggled as a painter for eight or nine years. That all changed when he went to the Victoria & Albert Museum in London and saw some tiny engraved landscapes by the British artist, Reynolds Stone. He was a master of lettering. Open a British passport and you'll find the Royal Crest that was engraved by Stone.

Inspired by Stone's naive quality, Chris Wormell taught himself to engrave on the end-grain of boxwood. "Luckily," he says now, "in the early 1980s there was a turn to a more crafty look to publishing." He's been busy ever since. Chris has never actually received any training as a wood engraver. In each case he starts by doing a sketch, especially when it comes to working for a commission. He prepares the block by painting it with a grey gouche paint, very thin and not to wet, otherwise it can soak into the boxwood and affect the dynamics. Chris then takes a tracing of the sketch with an HB pencil, and rubs this onto the grey surface of the block. Some artists go straight onto a blackened block, but Chris prefers grey because you can still see the lines from the tracing paper while getting a sense of texturing.

He then starts engraving, working from left to right, perpetually exchanging one tool for another from the many sitting on the bench. In reality Chris works at a normal table, with the block raised on a large book. "Many engravers rest the block on a leather sandbag," he says, reiterating that as with some spooncarving cuts, you should be keeping the tool steady and only be moving the block on the assumption that it is easier to hold the tool steady than the block.

Chris became so busy, and the genre proliferated, that at one point he was nervous that the supply of boxwood might end. He has always been supplied with his blocks (each of which are generally 1in tall, referred to as 'type high'), rather than make them himself, but once panicked and bought £1000 worth of box in case of emergencies. It seasoned in his loft for a few years, ready for his sister Josephine to make him blocks. "She was trained as a violin maker at the London College of Furniture." The boxwood drought never occurred and since then Wormell has been supplied by Chris Daunt, who is a specialist in making boxwood printing blocks, and who buys his boxwood from Huw Crompton. Boxwood grows best on chalk escarpments in SE England and Gloucestershire. In particular Huw supplies the woodwind market, with box blanks turned and drilled for an instrument with the timber green, and then left to season.

Phil Edwards of Philly Planes says that he sometimes uses boxwood as a fillet to strength the mouth. "You'd be very lucky enough to find box large enough for many planes," he says but has chosen box for a few pieces, including this chamfer plane

Huw Crompton (above, and left above) sources his box from woodlands, mainly on chalk escarpments and buys and sells by weight. He plants (left) as well as harvests boxwood

Subscribe Now Says Lost Art Press Founder

As a lifelong journalist, blogged Chris Schwarz ex-editor of *Popular Woodworking* and founder of Lost Art Press, I've struggled to come to terms with newspapers and magazines. They must exist in order to promote a free society. But it seems irresponsible to squander so many resources on something that might be glanced at for a week, a day or an hour. Despite this, however, Lucy and I still get our city's (very conservative) newspaper on our doorstep every day, plus *The* (liberal) *New York Times* on Sundays. Old habits die hard.

When Nick Gibbs' new venture (*Quercus Magazine*) showed up in the mail I was torn. Nick and I go a long way back. There's respect, jealousy, bad blood and all the other emotions that come where you bleed ink from one arm and sap from the other. There have always been too many woodworking publications out there for the market to support. So everyone struggles. Do we need one more? If the first issue of *Quercus* is any indication, the answer is yes.

All the following statements are compliments. It is a bit sloppy but is readable, lovable and enthusiastic. It doesn't give a crap about corporate this or that. The paper it is printed on is woefully thin – it wrinkles when you breathe heavily upon it – but Nick chose the paper for exactly that purpose. (It is recycled and inexpensive to mail out.)

The articles are short and written mostly by enthusiasts who have more energy and passion than style. The experience level of the authors runs the gamut, from dead-nuts beginner to people who deserve a royal nod (Bill Carter and Richard Arnold in particular). I really enjoyed Derek Jones' short article on the psychology of sawing, Barn the Spoon's recollections of working as a pedlar ('peddler' in the US) and James Mursell's thoughts on chair angles and what they communicate. Oh, and Rudy Everts (from our Chair Chats) and his miniature carved chairs are featured inside the front cover. Thanks for wearing pants this time, buddy.

Most of all *Quercus* is deeply personal. Nick has always blurred the line between editor and confessor in his magazines (*Living Woods* and *British Woodworking* in particular).

And so you laugh with approval when you see the wood-burning stove Nick's made from a filing cabinet as you wonder why the hell Nick is showing this wackiness in a woodworking magazine. If you sign up for a magazine by Nick, you'll get a lot of Nick in every issue.

Most of all, I hope the guy has the energy and focus to keep it going. After a life-changing bicycle accident several years ago, Nick had to start life from scratch. And as a long-time follower of his work, I've been impressed by his perseverance. Cross your fingers for a second issue, and encourage Nick to keep going on Instagram.

Chris Schwarz, Lost Art Press

Please note that we are aiming to donate Quercus profits to Headway, the charity for anyone suffering from a damaged brain. NG

Subscribe Now Say Quercus Readers!

Rare gem

This is a fantastic magazine.Have you a March copy that I can buy?
Gillian Bathe
Sadly the clue is in the issue number, QM01. If you can find a March issue don't lose it. Lock it up for a rainy day. NG

Better choice

I found the first issue of *Quercus* a really good read with every article fascinating and useful.
Richard Cooper

Machinist praise

I am a dedicated user of machinery but I did enjoy the new magazine. Not as glossy as some but fully in keeping with the ethos of the times and 'back to basics' which I would associate with the 'no machinery' concept.
Graham Ikin
Our mission statement is Working Wood By Hand (Mostly). NG

Magic timing

Your timing with *Quercus* is magic and I look forward to next issues.
Andrew Whitaker

So pleased

I am so pleased that *Quercus* has arrived, and will be signing up now for QM02 and subsequent issues.
Nic Goodwin

Cannot fault

You appear to have an aim that no one can fault.
Matthew Plester

Rushing a Paper Chase

Chairmaker *Mitsuru Hochi* reveals the difference between rushing & paper weaving

Made from black walnut with an oil finish, the rocker and footstool (above) have seats woven with paper slit tape. Mitsuru selects two dyed slit tapes and weaves them (left). Each length is 2.3m long. To add the next length you shift the two slit tapes by about 20cm, twist while covering the seam of one slit tape with another one. By repeating this, you can continue to make string of a similar state the is forever connected

WorksHOCHI is located in the mountain town of Shiojiri, Shinshu, in Nagano Prefecture at the centre of Japan. There Mitsuru Hochi and his business build bespoke furniture of all sorts from cabinets to chairs. “Furniture is a tool for daily life,” he says. “First of all, I would like to make furniture that is functional, yet has the shape and appeal of wood so that it can be used for a long time in my life.”

Chairs and stools are at the core of what HOCHI produces. “The history of chairs in Japan is still short compared with Europe,” he says, “so I would like to continue my work while searching for Japanese chairs.” He seats his chairs with rush (known as igusa in Japan) as you would find in Europe, but has turned to his own style of weaving string. Instead of using the coils of string you can find anywhere in the world, Mitsuru has

developed his own technique. “When I learnt how to rush from a craftsman I already knew of paper string made from Japanese paper. I was interested in this healthy and ecological product.” His supplier is a manufacturer of sandals (washi-zouri) made from Japanese paper string. Mitsuru now sources the material before it is converted into string. Known as slit tape, the machined paper is about 12.5cm wide and cut to 2.3m long, which Mitsuru wrinkles and then twists two lengths into string about 60cm long. He repeats twisting and weaving. Rather than knotting as happens with rush, to connect the string, you shift the two slit tapes by about 20cm, then twist while covering the seam of one slit tape with another one. “It’s not as easy as using paper string but you can weave it firmly tensioned.” Twisting paper is more difficult than rushing because it is difficult to adjust the force depending on the humidity. “Twisting is easy when the humidity is high, but it is difficult to twist when it is dry when you have to work with a stronger twist. Weaving with paper takes longer than rushing because the wrinkles have to be made in a proper manner, and the slit tape has to be prepared when it comes to dyeing with persimmon astringent.”

Originally Mitsuru studied product design and worked designing office furniture. When he retired from the design office Mitsuru entered a technical school of woodworking to learn the technology of furniture production with wood. “Depending on the wishes of the user, we will propose something that is comfortable to use while being in harmony with the space.”

Follow Mitsuru on Instagram @mitsuru_hochi.

Mitsuru uses Japanese slit tape about 12.5cm wide (above). The slit tape is cut into 2.3m lengths, using a bobbin tool because it is convenient. The tape is wrinkled (right) to make twisting into string easier

Having been wrinkled the tape is dyed with persimmon astringent (above). Each block is made up of 10 slit tapes. After that mordant is added to change the colour. The mordant can be sodium carbonate, titanium liquid or wood iron acetate liquid. Afterwards the tape is dried (left) outdoors and the colour will improve when exposed to sunlight and oxygen. When it dries the slit tape will be wrinkled, ready to be twisted into string for weaving

Twisting the slit tape into string (above). This slit tape is an unbleached one without persimmon dyeing

Weaving the triangular floor chair (above right), pulling the 'string' tight. The underside of a slit tape seat (below) is much tidier than a rushed chair because there are no knots. At the end, it looks like a ribbon when two slit tapes are tied at the centre and the twist is unfolded and spread

Rushing with igusa

The rush (igusa) Mitsuru uses is the material (01, below) used for tatami mats. The igusa is softened first by being steamed with hot water. The igusa is much finer than in Europe, and 15 or 16 pieces are gathered (02) and twisted as you go. The underside is tidied (03) by pushing the knots inside the seat

Low chair made from maple with igusa seat

Grinding by Hand

Sparked by nostalgia, *Robin Gates* buys a hand-cranked grinder

It's odd how memories laid down by our senses can transport us to situations which may be a world away from where we are now. Usually it is a piece of music, a scent, or perhaps the flavour of a long-forgotten food that does the trick. Recently I was surprised to be transported in this way by a hand-cranked grinding wheel.

It was the particular rattle of the wooden handle and rhythmic whine of the gears which took me back to my Dad's workshop in the 1960s, where I stood marvelling at him working at the lathe with what Thomas Hardy called 'the secondary intelligence of the hands and arms.' While he concentrated on turning thousandths of an inch I played with an old grinding wheel in the shadows of the bench light. When there was no one else about my brother and I competed to see who could turn it the fastest.

In the years since then I'd experimented briefly with a powered bench grinder and hadn't liked it, feeling intimidated by the sheer speed of the thing, not to mention the redundancy of two wheels spinning when only one was in use. There were no accidents but I always feared I'd do something daft and find myself in the path of a merciless knife-throwing machine. As a hobbyist with only the occasional edge to grind I can afford the extra minutes it takes to do the job by hand, using a tool whose movement – albeit geared up – reflects my own.

Buying old tools on eBay can be fraught with disappointment but I was lucky with this Black Knight A-70 which cost just £9.49 including p&p from Manchester. It was made by the Carborundum Company of Niagara Falls, USA sometime after 1911 (the patent date Oct 11 1911 is cast into the body) and had survived the years in good condition. The Carborundum Company is interesting for being founded by the chemist Edward Acheson who earlier in his career worked with Thomas Edison on the development of the incandescent lightbulb.

It was Acheson who coined the name 'carborundum' for silicon carbide, the first man-made abrasive, after patenting its manufacture by fusing clay and carbon in an electric furnace. The material has proved invaluable for precision-grinding metal tools and components. Acheson is now counted among the most significant innovators of the industrial age.

The sparks fly downwards (above). Swarf stuck to the wheel may go in any direction. The maker's plate (left). Silicon carbide developed by Edward Acheson's Carborundum Company was the first synthetic abrasive

Happily the old grinder was complete (including the essential tool rest) and mechanically it appeared to be in good working order but I couldn't resist the urge to dismantle it, nonetheless. This is an easy operation, first requiring removal of the carborundum wheel by gripping it with a rag and loosening the securing nut. The wheel is clamped to its axle by a pair of dished washers and the axle itself is driven by a large gear wheel – bronze, I think – connected directly to the cranked handle. The gear teeth are not cut straight but are skewed, perhaps designed for smoother running.

In any case there was little grime to clean away and minimal wear, suggesting that previous owners had applied a modicum of oil to the lubrication ports from time to time.

The one minor problem was that the wheel itself had worn unevenly, and my search for a replacement has yet to bear fruit; this model takes a 4in diameter wheel and the smallest made today (for powered grinders) seems to be 6in (which would fit its larger sister, the C-70.). Never mind, the whole hand-grinding experience is a learning curve and adapting my technique to the requirements of a worn wheel has added only one extra consideration to developing the knack of cranking with one hand and manoeuvring the tool with the other.

Grinding a wide blade on a narrow wheel calls for a degree of lateral movement, so that the whole width of the blade traverses the cutting apex of the wheel; this wheel demands just a little more movement. Over time I expect to wear down the less worn side of the wheel so as to level it out across its width. Time will tell.

I have yet to investigate using a wheel dresser, a serrated device which revives a clogged surface by exposing fresh, sharp

Grinding back to a straight edge with the chipped gouge (see over) at 90° to the wheel. Eye protection must be worn even when using a hand grinder, but here the tool is not contacting the wheel

grains at the surface, but the wheel is cutting well thus far.

A problem associated with all grinders, not just this one, is that swarf is flung into space. With the grinder fixed to an edge by its integral clamp, the normal direction of rotation of the wheel, generated by cranking the handle clockwise, is towards the operator so that if swarf is not intercepted it will be propelled into your clothing and around your feet. I devised a simple swarf catcher using a 13x5in plywood offcut which slots between the clamp and the surface and has a 5x2½in cut-out to fit around the wheel. After only a minute or so of grinding this really proved its worth.

New wheel

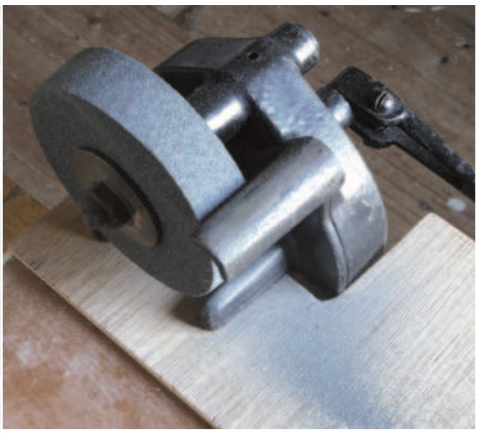
While looking for a new wheel I came across someone new to grinding who had been cranking anti-clockwise, thereby sending the swarf on a parabolic trajectory up the workshop wall and window instead of onto the floor. Fortunately no one had been standing by the window watching them work!

That said, some swarf does fly upwards even when turning the wheel in the normal direction and latterly I have taken to wearing safety specs [which one should always do with any grinding, Ed]. Tiny fragments of metal can become stuck to the wheel and instead of being flung out below the blade they may fly out on any point of the circle, possibly into the operator's face, and with some force as the wheel turns surprisingly fast. I timed my normal cranking speed at almost exactly one revolution per second which, when geared up, delivers 11½ revolutions of the grinding wheel. That's 690rpm or around a quarter the speed of a powered bench grinder.

Some people suggest dipping the blade in water to prevent the steel losing its temper but you would have to grind fairly long and hard without a break for this to be a problem. Although the swarf emerges red-hot I find the blade acts as its own heat sink and barely gets warm. The edge is touched against the wheel for only a second or two between each inspection of progress.

A distinctive feature of the grinding wheel is the hollow bevel it imparts to the blade, which makes honing a little quicker because there is less surface area in contact with the oilstone. The important thing, however, is that a coarse grinding wheel can quickly restore a tool to work, as I found with an old cast steel gouge which had suffered a chipped edge in the melee of tools and timber on my bench.

I had delayed regrinding the edge because I couldn't see how the gentle convex of the original bevel could be restored using a wheel which ground a hollow, but eventually decided to do some experimental grinding.



A plywood swarf-catcher (above) clamped beneath the wheel contains the mess and prevents damaging the wheel. Removing the grinding wheel and side plate (left) gives access to the main drive wheel

The chipped gouge (above left) and after grinding (above) is then honed for carving (left)

Presenting the blade in line with the wheel's radius I first ground away the damage to produce a blunt, perpendicular edge. Then, by working the outside of the gouge smoothly up and down and side-to-side over the cutting apex of the wheel, I produced an approximate if striated bevel. From there I moved to the coarse side of an oilstone, then the fine side, with a rolling, meandering motion rounding and smoothing away the hollows left by the grinder. Finally I tilted the edge a few degrees on a very fine natural stone and honed a secondary bevel. While the resulting edge might not win a beauty competition, within half an hour of taking this gouge to the grinding wheel I was cutting a piece of cherry wood with acceptable results. For the professional seeking consistent high-quality results I daresay a powered water-cooled grinder fitted with jigs to hold the blades at precise angles is the way to go, but for the amateur in this hobby for the joy of the journey I reckon an old hand-cranked grinder could turn out to be a lot of fun.

Further details and photos of the hand grinder and gouge repair can be found at quercusmagazine.com/hand-grinder.

Total Eclipse of the Hone

Rob Stoakley reports on the classic Eclipse style of honing guide

It is a truth universally acknowledged, that a craftsman in possession of a good blade, must be in want of a honing guide. Or not, as the case may be; like them or loathe them, the ubiquitous honing guide in its many guises is an almost indispensible part of the woodworker's armoury.

Sharpening a blade to a workable edge (as opposed to a 'razor' edge which is quite another thing) capable of taking off a gossamer thin is fairly straight forward but can be fraught with problems. The honing guide, used correctly will overcome almost all of the difficulties encountered.

Many will say that the honing guide is unnecessary and that all sharpening should be done 'freehand'. This is a fair point. Freehand sharpening is undoubtedly quicker but it does take some time to master the 'muscle memory'. Furthermore any slight errors are magnified over time so that eventually the blade bears no resemblance to a correctly honed edge. The only recourse is to then grind the primary bevel (usually 25^0) back to a true and square edge.

All honing guides offer is 'repeatability'. Being able to present the blade to the honing medium time after time at exactly the same angle. It does take a little time to set the blade into the guide but it's no more than seconds and a 'true', sharp blade far outweighs the so-called time benefit of freehand sharpening.

The angle being honed isn't critical either. It's usually 30^0 (say) but it's not crucial if it's 29^0, 31^0 or even 32^0 so long as the angle can be accurately repeated each time.

Some guides require the user to make a 'setting jig' which is no more than three small pieces of ply glued together and uncannily resembles a miniature bench hook. The 'downstand' hooks over the edge of the bench whilst the horizontal measurement to the upstand is the distance the blade protrudes from the honing guide. Provided the protrusion distance is the same each time, an identical angle will be honed.

One such guide is the original and highly successful Eclipse now much copied by many current manufacturers.

The original Eclipse (above), a Draper version of the Eclipse (left) and the Lie-Nielsen honing guide (below)

It was one of the original honing guides and although a ruler can be used to set the protrusion distance, a 'setting gauge' makes it easier to achieve every time.

The 'Eclipse' is a decend guide and one that many woodworkers use when starting. It's economical and works well for reasonably wide, rectangular section blades, however the grooves designed to grip bevel edge chisels leave a lot to be desired, especially if the chisels are quite 'thick' along their edges. The result is that the chisel isn't gripped accurately which leads to a poorly honed edge.

The Eclipse is provided with a narrow honing wheel, which means that it's relatively easy to obtain a camber on a plane iron by using selective finger pressure to the left and then right as the honing progresses. But, it's also too easy to obtain a cambered blade on a chisel edge which is definitely not required!

The Lie-Nielsen guide introduced a few years ago is based on the 'Eclipse' model but has been manufactured to a far higher standard with the commensurate price hike. It's designed to hold L-N chisels and plane blades as well as other makes with a similar profile(s).

I tested one some time ago when they were first released in the UK and I was very impressed with the quality of manufacture, as is to be expected with all L-N equipment. However, I've used Japanese chisels for many years and the thick, short blades were almost impossible to fit into the L-N guide.

Preparing an Axe Head

In the second stage of his axe renovation, *Sean Hellman* sharpens the head

Having cleaned up an old axe head, (instructions as given in the previous issue), it's time to sharpen the edge. Ideally, this is carried out with the head still attached to the handle, so that you can use the sharpened axe to make yourself a new handle!

The first stage of sharpening is to 'joint' the edge. This is an abrasive process that takes out any nicks from the edge, and gives you a chance to create the profile that you want, working along the length of the tool. It also makes the sharpening process easier, and more controlled. The axe in this photo has a gentle curve. Sometimes, after jointing, the edge might be 3mm wide. Jointing is only undertaken when the edge has been damaged or the edge profile needs modifying. It is not carried out every time the axe is sharpened. Power-tools are most useful for the purpose. Then, the bevel is ground in. For this, I use a bench grinder, or an angle grinder with sanding discs, or a belt sander. Most axes can also be filed by hand.

The type of bevel, or 'grind' depends on the use for which the axe is intended. Having a longer, shallower bevel on one side enables you to hold the axe more upright, to match handedness. For my carving axe, I prefer a grind with a slightly longer, shallower bevel on the left side, and a shorter, more obtuse bevel on the right. This is for the right-handed user; reverse this if you are a left-handed axe user. If you are uncertain what to do, just grind an equal bevel on both sides. When grinding, do not let the steel get so hot you can't hold the edge. Cool it in water.

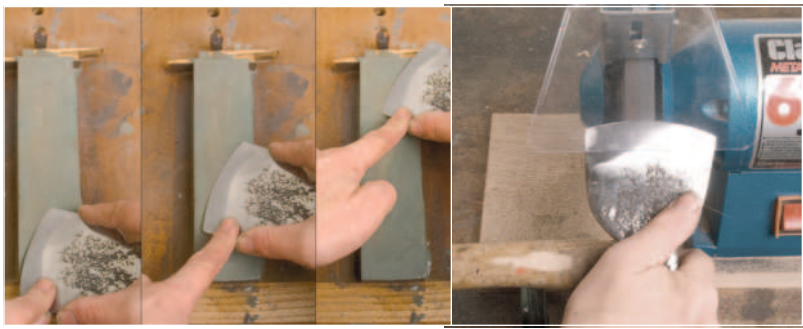
For this Kent pattern axe, I have ground a primary bevel of around 20^0-25^0. Then, a secondary bevel of 5^0 each side, making the included angle of between 30^0-35^0. Grinding bevels makes the jointed edge narrower. If in the process of grinding the bevel, too much is ground away so that light no longer reflects from the jointed edge, the profile will be changed at that point. Grind too far through, and the profile will have a dip at that point, so it is important that a constantly but decreasing width of the jointed edge remains visible as you work. Keep checking it is visible, but work on any wide points you might have missed. I like a convex bevel on my axes, as this helps the axe to slice deep into the wood.

After grinding, abrade the secondary bevels with bench stones. Hold the axe at a 15^0-18^0 angle, and abrade. Repeat on the other side, until the jointed edge is no longer visible, and a burr can be felt at the edge. Then, remove this burr with finer abrasives. When this sharp edge is achieved, the shoulder of the secondary bevels can be blended into the primary bevels. Finish on a fine abrasive stone. A leather strop, or buffing wheel can then be used to strop the edge if desired. Axes don't have to be as 'hair shaving' sharp as carving knives, because they move more aggressively through the material they are cutting.

Sean Hellman is a greenwoodworker and author. You can contact him on 07841 924428 or visit www.seanhellman.com, or craftylittlepress.co.uk, to find out more.

Sean will be fitting a new handle to the head next issue, but for now he joints the edge profile with a diamond stone (above right). Notice the steeper angle on the left side of the blade (above). Grind the main (shorter, right) bevel until the edge you can see is pretty narrow

Forming the long bevel on an abrasive belt (right) once the profile is finalised you can check the burr with a thumb nail. The burr should catch the nail



Once you have ground enough away safely on a wheel (above right) or belt, start honing on a stone (above), with a 240 grit waterstone first. When the blunt edge has been ground away and meets the bevel on the other side, a sharp edge is formed. Using a coarse stone (240 grit) will make a burr (like a wire edge) to check with a thumb nail (above). Continue till there is a burr along the entire edge. Finish the bevels on a 3000 grit whetstone

Hand to Eye Honing

In honing by eye, *Scott Wynn* argues one learns more about woodworking generally

While I think there is a good argument that sharpening without a jig is faster, the main reason for doing it is that it's a fundamental skill that is the basis of so many others that you will be using in woodworking, hand-tool or not.

With a sharpening jig much of your energy is not focused at the actual blade edge. Half your energy goes to the roller, half goes to the bevel, and very little goes directly to the edge of the blade, which is where all your energy should be going. You can position your hands so that more of your energy, your pressure, goes to the blade edge, but still a considerable amount is diverted into keeping the roller on the stone. The roller becomes a kind of blindfold, obscuring your interaction with the edge to be sharpened. It keeps you from learning the feel of the bevel sitting flat on the stone as you stroke it. You don't learn to focus your attention on the edge while keeping the bevel flat to the stone, nor do you rock or lean to produce maximum results at that cutting edge.

Without a jig you learn to make each motion pay off. That is, you come to understand that the edge is not scrubbed back and forth across the stone but rather stroked with direct intention each time it is moved. There is clear focus of effort, pressure and attention at the cutting edge itself, not the bevel. While the bevel does remain flat, not rocking on the stone, it is the edge of that bevel that is being sharpened and must be zeroed into with both your attention and your body mechanics. Functionally, this also means that sharpening is faster. I can usually get through my first two stones in about the time it would take me to jig up and I can use the whole stone rather than half as required by most jigs.

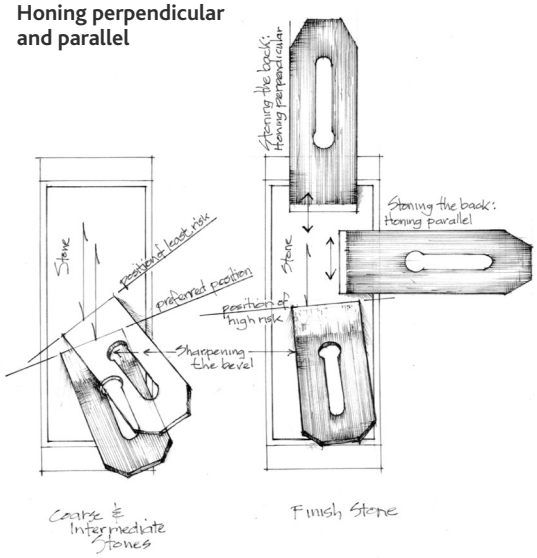
Attention to other tasks

Learning this attention, and how to keep it each time, makes it easier to understand other tasks as well. Sawing is not a tiring repetition of frantic arm motion but a snooker stroke of the cue straight and inline, no flailing elbow no wavering hand, a series of individual strokes. Each advances the cut on the shoulder of the scribe line and to the maximum amount the wood and the cut of the saw will allow. That clearing waste for a dovetail or mortise with a chisel is a series of distinct, clean, and precise cuts of exactly the same amount to the line. The waste is cleanly excavated the first time to its final shape (though perhaps not its final size).

That each stroke of the plane is individual, dependent on the grain of the wood at that particular place, the angle of attack, your speed and body position, the diminishing sharpness of the blade, and your increasing fatigue. Understanding this, and eventually, with mindful practice internalizing this on each stroke of the plane, the chisel, or the saw produces optimal results, and the work proceeds quickly. Learn to sharpen with the attention of the mind and body focused to your fingertips, because in the end this will be how you will be doing woodworking. It does take an investment of time, but woodworking is just one big learning curve. The challenge is one of its appeals. You can take a shortcut, but it will catch you up later. Time invested here will serve you throughout your further woodworking endeavours.

When sharpening without a jig, a slight rounding of the blade is acceptable (if not altogether unavoidable). In fact, you can make this work to your advantage by using a 'position of greater risk' on your final stone. When sharpening without a jig holding the position on the bevel is most easily done when the blade is around about 45⁰ to the length of the stone.

Honing perpendicular and parallel



Rotation

If you rotate your position to closer to 90⁰ on the final stone not only will your blade be sharper but the slight instability that results from this position will 'bolster' the edge. This is at the suggestion of Toshio Odate.

Likewise, finish honing the back of the blade perpendicular to the edge rather than parallel will result in a longer lasting edge. I first saw this in a video by the traditionally-trained Chinese craftsman Zefeng Zhang who said that by doing this (and I paraphrase): "If you can plane eight boards by honing parallel to the edge, you'll be able to plane 10 boards by honing perpendicular to the edge". I've tried it, and I think he's got something there.

I also like his thinking, that of a craftsman trying to make a living.

Listen: your blade will make different sounds depending on which part of it is making the most contact with the stone. Learn what they are. Turn off the podcast. Learn to use light. It's one of the most useful diagnostic tools. It can tell you whether a surface is flat, rolled, how rolled, straight, an edge sharp or how close a chipbreaker is set. Be aware of, and utilize the wear on your stones to help maintain blade shapes. While extending the time between stone flattening may not actually reduce the overall amount of time spent flattening, it might shorten time spent sharpening, and also sometimes you just don't want to break your work rhythm.

Brian Shugarue

We explore the career of a Canadian plane-maker in Melbourne

Brian moved from Canada to Melbourne, Australia in 2008. "I was a journeyman cabinetmaker back in Canada. In my first year of my apprenticeship my instructor had a wooden smoothing plane that he had made. I was struck by how well it worked and how he had shaped it so it would fit his hand perfectly. He was nice enough to give me some tips to allow me to make my first wooden plane. I continued to make and use my wooden smoothers as a hobby."

When Brian moved to Australia he immediately started work with a cabinetmaking company. He also set up a shop at home to further pursue his passion for planemakiing. "I was very inspired by the work of Bill Carter and Konrad Sauer and I really wanted to try making infill planes."

Brian did just that and enjoyed building and honing his skills making infill planes during evenings and weekends. For many years infill plane making was a hobby, but in 2018 Brian made the decision to produce infill planes full-time. "When I started I had no previous metal working experience but realised that other infill plane makers came from woodworking backgrounds as well. The infill planes were a big improvement on my wooden bodied smoothers. I specialise in small smoothing planes and the materials that make up an infill plane give a small plane a nice weight and also make it more stable than wooden-bodied planes."

The body of an infill plane is constructed by dovetailing metal sides and a sole to create the plane body. Then the plane body is 'infilled' with a heavy, stable exotic timber. He constructs each part, one at a time, which allows for very tight tolerances. This produces a tool which performs with a very solid feel.

Brian Shugarue was a cabinemaker by trade but is now a full-time toolmaker, with an 18-month waiting list for his planes

All of Brian's creations are his own designs. He crafts his planes one at a time on a commission basis. "I just love making something special and one of a kind for a client," says Brian. "I love showcasing beautiful Australian timbers. There are so many dense and stable Australian species that are excellent for infill material. They are also sustainably harvested."

When he first came to Australia Brian invested in a lot of timber and money into sourcing and stocking a range of Australian timbers. This is now paying off as he has an ample supply of dry and stable infill timber to select from.

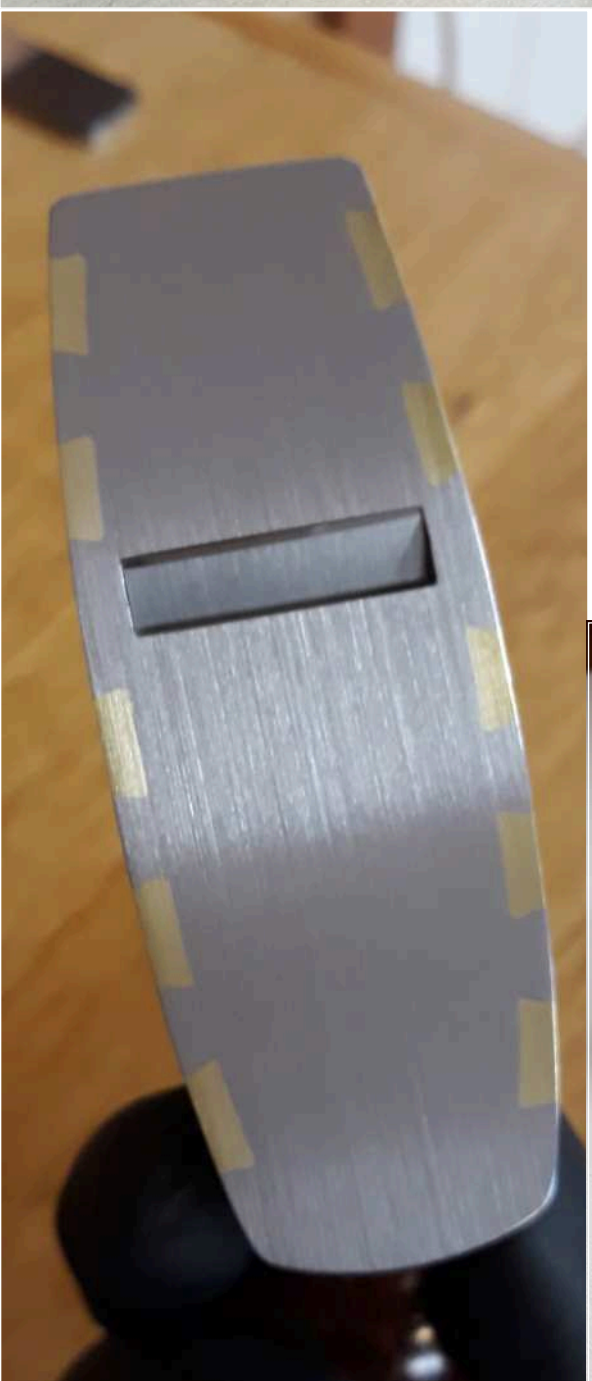
Brian matches his infill woods with many special metals such as brass, guilding metal, bronze, Mokume and Damascus steel. "It is part of the creative process. I love coming up with different combinations of metal and wood that compliment each other. Damascus steel and ebony is such a beautiful combination." Damascus steel is an extremely challenging material for plane-making; as the material needs to be acid-etched to bring out the pattern in the steel. Mokume is another special material that he loves to work with. It is a mixed metal laminate that produces a distinct pattern. The Mokume he uses is a combination of copper, brass and nickel silver. "Aesthetic details are very important," Brian says, "however, making a perfectly functioning tool is the most important factor when I am designing a hand plane.

"A smoothing plane must be comfortable to use and be able to produce an amazing polished surface on even the most difficult timbers. This is why I show lots of working videos in my Instagram feed. This is also why most of my commissions come from woodworking shows. It is important to demonstrate the tool's performance and get them in people's hands. That is the best way to sell." Brian also enjoys collaborating with clients to create new designs. He recently has developed a Japanese kanna-inspired infill plane, which was a special request from a client. "I really enjoy the challenge of developing new designs."

Brian continues to develop new products such as his custom Plane Adjusting Hammers. He also sells sharpening kits and teaches one on one sharpening courses, both online and in his private workshop.

You can follow Brian on his Instagram feed @bjsplanes to see videos and more.

Brian's infill planes are usually small smoothers (above) by he also makes squirrel tail planes (right) in this case made from Naval brass, steel and gidgee burl wood



BJS Planes

Clockwise from above left

Low Slung Smoother.: brass copper and nickel silver mokume sides; steel sole and hooked needlework infil wood.

LSS-35 Infill Plane: mokume; steel and hooked needlework, with matching custom plane adjusting mallet.

Squirrel Tail Infill Plane: naval brass, steel and gidgee burl infill wood.

Low Slung Smoothing Plane: Damascus steel sides; tool steel sole & ebony infill wood.

Curved sole Squirrel Tail Infill Plane: dovetails in brass & steel.

Squirrel Tail Infill Plane (far left): beautiful Australian ringed gidgee infill wood