Edition 6 / Winter 2017

The Full CIRCLE

£5

The journal of The Association of Scottish Hardwood Sawmillers

Comann Sàbhadairean Fiodha Chruaidh

Featuring...

WHOLE TREE ARCHITECTURE
Written by Gail Halvorsen

JOURNEY TO BEING A FURNITURE MAKER
Written by Rob Elliot

YARD VISIT TO CROMARTIE TIMBER
Written by Nick Wormald

ASHS

Forestry Commission Scotland
Coimisean na Coilltearachd Alba

Scottish Furniture Makers Association

The Full CIRCLE

The journal of The Association of Scottish Hardwood Sawmillers

The 6th edition of the Full Circle has a suite of articles focused on timber structures, as well as the usual yard visits and news pages. We start with a fascinating article by Geoff Freeman discussing the regeneration of timber as a structural material. Although a huge subject it is a comfortable and gently educating read. Gail Halvorsen a relatively new associate member of ASHS, talks about a recent project using whole tree Architecture for a nursery in Midlothian, highlighting a potential market in grading and assessing roundwoods in Scotland. Working from an old barn in Glenisla in Angus Justin Rose produces fantastic Post and beam framed structures offering an insight into this ancient craft which has enjoyed a revival over the last thirty or so years. Robert Lawrence also a new associate member, shares his experience and views on total life carbon zero building, developed during the construction of his Douglas Fir clad timber frame house in Johnshaven, near Montrose. Our regular yard visit spotlights Cromartie Timber, now a family concern with sons Wayne and Jordan coming home to help Nick expand and a develop a much needed sawmill by Achterneed in Stathpeffer. Rob Elliot, a seasoned pro in furniture making, gives an entertaining account of his journey to becoming a furniture maker. In contrast Aaron Sterrit is just beginning his journey finding his path starts in the woods where he selects oak logs to cleave green before turning it into a practical and beautiful piece of furniture. Colin Semple offers us some reassurance that marketing our businesses isn't all about expensive advertising, something I am sure we can all relate to. For those with small woodlands, Eamonn Wall offers his experience and outlines everything you will need to know on how to produce quality timber stands for the future. Of course we also have news of what's been happening with ASHS, SFMA, SWWL and FCS with the usual dates for your diary.

So read on and enjoy...

The Full Circle will be taking a break until a new production editor is found to take it forward from here. A description of what the job entails can be found on the ASHS website www.ashs.co.uk / ashs members and board, scroll down the page to Full Circle Production Manager. If you think you would like to take on the role get in touch with the Nick, the ashs coordinator and register your interest.

All the best, Steve McLean
Full Circle Production Editor

www.ashs.co.uk

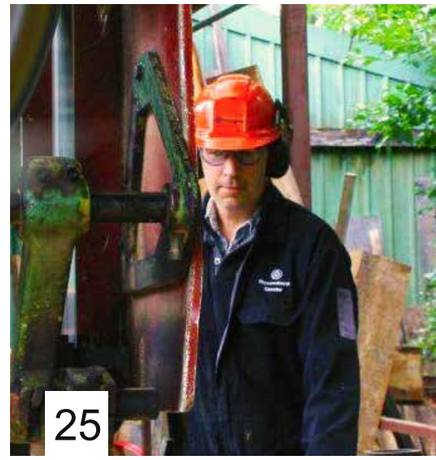
PRODUCTION EDITOR
Steve Mclean

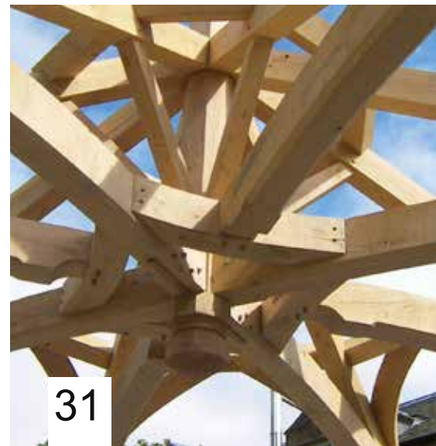
COORDINATOR & EDITOR
Nick Marshall

DESIGNER
Stephanie Christie

Contents

4 ASHS NEWS & MEETINGS
6 SCOTTISH FURNITURE MAKERS ASSOCIATION
8 SCOTTISH WORKING WOODS NEWS
9 REGENERATION OF TIMBER USED AS A PRIMARY STRUCTRURAL MATERIAL
14 HALVORSEN ARCHITECTS - ROUNDWOOD PROJECT
16 JOURNEY TO BEING A FURNITURE MAKER
18 PRUNING BROADLEAVES
20 LOCAL WOODLAND BUISNESSES
22 CLEAVING TO CREATE FURNITURE IN THE 21ST CENTURY
24 CROMARTIE TIMBER LTD
26 THE CRAB HOUSE
29 STUNNING ADDITION TO POPULAR TRAIL IN DUNKELD
30 YARD VISIT TO J ROSE CARPENTRY
34 MARKETING YOUR BUISNESS
36 FCS - SPECIALIST TIMBER SALES EVENT





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ASHS NEWS & MEETINGS

Meetings

The second ASHS meeting of the year was hosted by Malcolm Mack on the 12th May, at his yard in Cousland, Midlothian. The meeting was well attended by both full and associate members and it was good to see some new faces. After a coffee Malcolm gave us a tour of his yard, discussing the new solar kiln project site along the way. This was followed by a demonstration of the recently acquired CNC machine which produced a finished finger board for climbers in a relatively short space of time, showing its true potential. After soup and sandwiches a lively meeting attended by all, dealt with the ASHS business of the day. This was followed by a discussion on the request from the Cabinet secretary's office to visit Scottish Wood's yard on the 14th June. The conclusions of this discussion along with the online member's debate helped form ASHS formal response, with suggestions on how to help improve the timber industry in Scotland. On the 3rd of July Derek Nelson, Nick, Maggie and Jim held a meeting at Scottish Wood to discuss the outcome of the visit along with ASHS requirements for the coming financial year. The AGM was held on the 29th September at Abbey Timber taking place after the secondary processing workshop hosted by Willie Dobie. After a fantastic spread of home made soup, bread and cakes, we were given a run down on the new forestry commission secondary processing grant scheme by Derek Nelson and Leigh Mcivor before dealing with the ASHS business of the day.

Cabinet Secretary Visit

Earlier this year Fergus Ewing, Cabinet Secretary for the Rural Economy in Scotland, met with ASHS at the Scottish Wood yard near Oakley, Fife. He was enthusiastic about the hardwood sector in Scotland, and showed real interest in its potential for growth and development into the future.

One very useful off-shoot from this visit (for both Members and Associates of ASHS) was his support for the idea of financial help for small Scottish timber using businesses towards the purchase cost of secondary timber processing equipment (planers, routers, saws, edgers etc).

Forestry Commission Scotland followed this up by joining us at the ASHS training seminar for Secondary Processing at the Abbey Timber yard near Duns on September 29th. Here Leigh McIvor of FCS gave us all a very detailed and helpful presentation on how best to access this support; once again showing the level of support ASHS has enjoyed from the Forestry Commission over its (almost) 20 years.

We hope to hear outcomes for those who submitted applications before the end of the year. Furthermore, during the visit, Fergus Ewing expressed interest in meeting members of the Scottish Furniture Makers Association, and in seeing more examples of adding value to Scottish timber. This is due to happen in the near future at the premises of Angus & Mack near Edinburgh (Malcolm Mac, member of both ASHS and SFMA, was also at the Oakley visit)

Further outcomes from this visit….. watch this space!

Membership

The new 'Go Cardless' payment system is now fully established with all members bar two, now signed up to it. New members must now join online, automatically setting them up on the system. ASHS membership is still showing a steady growth, now standing at 32 Full, 56 associate and 3 retired members as well as 9 subscribers to the Full Circle.

Work program 2017 – 2018

The ASHS work program for 2017-18 is continuing as planned with the next sawmilling workshop run by Keith Threadgall being held in March/April 2018, at Novar Estates, near Evanton, just North of Inverness. The final details will be emailed and posted on the facebook page as soon as they are confirmed. It is also confirmed that after discussions with Jim and Maggie Birley, the Forestry Commission have commissioned a u-tube video, using Scottish Woods yard, on log grading. This will be presented by Gavin Munro and be available to view via the ashs website when complete. It is anticipated that this could be the start of a series of videos on forestry and sawmilling subjects. Watch this space!

Solar Kiln Project

The SRDP funding applied for by Malcolm Mack to build the solar kiln and associated works was finally confirmed in May. This has allowed the base for the container to be prepared and the concrete to be laid. Ulrich had also set up a scale model at the site to begin gathering information to help inform the final set up of the solar collection design to suit the site. It is anticipated that the main kiln will be fully operational by early Spring 2018, ready for its first full season of drying. Keith Threadgall has offered to cut the first batch of timber to go into the kiln free of charge, any additional help on the day would be appreciated. An email will be sent out nearer the time. Although the final operational kiln will be the property of Malcolm, ASHS will be organising visits for its members over the next couple of years. A booklet will also be prepared based on the information gathered, which will be available to members when completed.

The Full Circle

There has been much debate over the past six months on where the future of the Full Circle lies! Most questions from all the groups involved, ultimately boil down to running costs, with suggestions like making it purely an online journal, reducing its print quality, producing one a year etc. The reality is that as it stands, it would be completely self funding if all 500 copies currently printed per issue were fully subscribed along with 4 pages of adds at £400 page. This would include paying a production fee. So the question, as I see it, is not how do we cut it down? But how do we grow it? I am sure the debate will continue to a positive conclusion in due course.

I would personally like to extend a warm thanks to the ASHS board and everyone who contributed their time and effort to the first six journals. Sadly this will be my last one, stepping aside to concentrate on my own business, making way for some new blood and fresh ideas to take it forward. The journal will therefore be on hold until we find someone to take on the role.

Members Survey

"The annual ASHS members survey is being prepared for circulation to sawmilling members very soon. We expect to report the results in the next issue of FC. We are also planning to carry out a wider survey of sawmills and small-scale wood businesses in 2018. This will include ASHS associate members and other businesses across Scotland. It will help build up a picture of the scale and nature of the small-scale wood-based sector in the country."

Committee

At the recent AGM, Steve McLean, Graeme Murray and Patrick Baxter stepped down from the board and were thanked for their help building ASHS over the years. Jim Birley took over as Chairman, a position he has agreed to take on for one year with Keith Threadgall now vice chairman. William Dobie and Jordan Wormald joined the board for the first time. Although not able to attend the AGM, Maggie Mitchell from Faulkland Estates has also agreed to join the board and this will be ratified at the next meeting. Full details of the board and how it works can now be found on the ASHS website under ASHS board and professional support team.

Forest Policy group

The Forest Policy Group was set up almost a decade ago to provide a "third point of view", different from the main groups that have for some time dominated debates over forestry policy - big industry on one side and conservationists on the other. It comprises mainly forest managers and sawmillers who work to deliver a smaller scale and greener but still economic and productive type of forestry than is common in the UK today.

The FPG organised a major conference in Dunkeld on November 2016 which brought together many of the groups involved in this sector - small sawmills, furniture makers, tree nurseries, community woodlands, wild harvesters and others - and encouraged them to see themselves as part of a larger movement that delivers jobs, timber, food, a healthy environment and a strong rural economy. Following the conference, Forestry Commission Scotland provided funding for a report into the size and diversity of the sector and its needs and support (downloadable from www.forestpolicygroup.org). The report found that there are several hundred businesses in this sector, although full figures are not available. Indeed most forestry-related businesses in Scotland are small or medium-sized. There are some successful support networks but much still to do. This important report will be particularly helpful in focussing government in its efforts to bring the sector together.

Members / Directors

JIM BIRLEY
Scottish Wood (Chairman & Acting Treasurer)

KEITH THREADGALL
Keith Threadgall Mobile Sawmilling (Vice Chairman)

MALCOLM MACK
Angus & Mack (Director)

JOHN FERGUSON
Moyne Sawmill (Director)

JORDAN WORMALD
Cromartie Timber (Director)

WILLIAM DOBIE
Abbey Timber (Director)

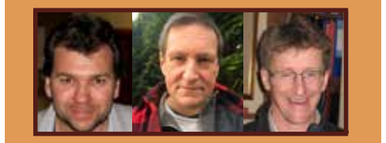
MAGGIE MITCHELL
Faukland Estates (Director TBR)

DIARY (2018)

January 19th
ASHS meeting - Venue TBC

March 30th - 31st
Sawmilling workshop - Novar Estates, near Evanton

March 30th – 31st
ASHS meeting - after Sawmilling workshop



Written by,

Steve Mclean, Nick Marshall & Jim Birley

SCOTTISH FURNITURE MAKERS ASSOCIATION

Let me introduce myself, my name is Anna Nichols, I am an independent furniture designer and maker based in Edinburgh.

I am currently Acting Chair of the Scottish Furniture Makers Association (SFMA). Euan MacKinnon our current Chair has had to stand down for personal reasons. We will be holding an AGM on November 3rd to decide the next year's committee membership, and future Chair (a 2 year appointment).

The members of SFMA are professional craftsmen and women from across Scotland. It is run by volunteers and aims to promote via collaboration the finest in craftsmanship and design through the work of its members. The SFMA holds a major exhibition each year and members regularly participate in other events around the country.

This year's SFMA Annual Show will be in Edinburgh, at a new venue, a gallery in Leith on 67 Commercial Street at Custom Lane Gallery, Custom Wharf.

The show will run from 4th November to 12th November. Currently 19 members of the SFMA will be present to exhibit examples of their latest furniture. Members confirmed as exhibiting are Janie Morris, Anna Nichols, Chris Scotland, Angus Richardson, Digby Morrow, Adrian McCurdy, Max McCance, Michaela Huber, George Potter, Phil Motion, Daniel Lacey, Joachim King, Stephen Finch, Gavin Robertson, Alan Dalgety, Angus Ross, Jonathan Rose, Ross Samson, and Simon Whatley

Another show to keep an eye out for where SFMA members are exhibiting is The Crafters at Springwood Park, Kelso 18th/19th November.

This year's committee has been working towards introducing a new SFMA Learning Resources programme. This will involve offering the members free professional workshop sessions. These workshops will be to help members with their businesses in all areas. Some of the topics we have lined up already are: Branding and Marketing, Photography and a CNC demonstration. This programme will be starting in the New Year!!

Scottish Furniture Makers Association

www.facebook.com/sfma3

twitter.com/sfma_furniture

Explore the work of our designer-makers from across Scotland online and at the following exhibitions:

SFMA Annual Exhibition 2017

November 4th - 12th ~ Admission Free
Mon-Fri 9am-5pm ~ Sat 10am-5pm
Sun 11am-4pm

Custom Lane, Custom Wharf, 67 Commercial Street
Leith, Edinburgh, EH6 6LH

The Crafters Art & Design Fair

November 18th - 19th
Sat & Sun 10am-5pm

Springwood Park, Kelso TD5 8LS

*See **www.sfma.org.uk** for more details…*

The SFMA committee has been working closely with ASHS this year. This has involved a member from ASHS board attending SFMA committee meetings. In return we have a representative from SFMA committee attending ASHS meetings. We hope this will lead to future closer collaborations to mutual benefit.

SFMA, along with ASHS, have also been asked to attend a meeting with Fergus Ewing MSP Cabinet Secretary for the Rural Economy & Connectivity in late November. This meeting is to discuss future opportunities for small designer/maker businesses for secondary processing and production. The meeting follows on from Mr. Ewing's visit to Scottish Wood to discuss ASHS views on how to improve the Scottish Timber Industry. The meeting in November will be taking place at Angus and Mack workshop so that Mr. Ewing can see production from tree to product including CNC machining.

SFMA have a lot of other plans for the coming year yet to be finalised. To keep up to date with SFMA see the news and events link on our website www.scottishfurnituremakers.org.uk or our Facebook page.

Written by,
Anna L. Nichols

THE SCOTTISH WORKING WOODS LABEL

The Scottish Working Woods product label is gathering momentum...

There are now 23 suppliers registered to use the label, small businesses in Scotland producing furniture, joinery components, sawn wood, sculptures, crafts and sculptures and even firewood. We have recently been joined by the Scottish Basketmakers' Circle and hope to have basketmakers using the label for products grown and made in Scotland.

Local. Ethical. Sustainable.

There is a growing realisation that small businesses in Scotland grow, collect and produce a lot of unexpected things. Did you know, for instance, that there are more than twenty people growing basket willows for sale? Or that hazel coppice is undergoing a revival? Traditional products are being revived and innovative products developed.

This is an exciting time for small-scale woodland industries in Scotland and the Scottish Working Woods label will play its part in boosting their development.

With more furniture makers recognising the marketing possibilities offered by the SWWL, Angus Robertson has now joined the board representing the SFMA. He will help contribute to its continued development with ideas and be a point of contact for any SFMA members looking to join over the next couple of years.

Written by,
Nick Marshall
ASHS Coordinator

The current SWWL Chairman, Patrick Baxter and ASHS representative Steve McLean will be stepping down at the AGM in October, and we are very grateful to them for all their work and contribution to the development of the SWWL over the last 2 years. Jim Birley has agreed to take on the role of ASHS rep for the next couple of years continuing the momentum.

If you would like to get involved please email the secretary: nick@scottishworkingwoods.org.uk"

- Musicians Olive Ash Cabinet
Dovetail Scotland

Elm Cheval Mirror - Rob Elliot Furniture

Holly & Elm Vanity Unit - Dovetail Scotland

REGENERATION OF TIMBER USED AS A PRIMARY STRUCTURAL MATERIAL

Reversing the Decline at the end of the Twentieth Century

During the past hundred years, plantation timber has become an industry and is now making an impact. This is also true around the world and softwood is now internationally available at a relatively low price. This situation is likely to remain for some time as it is one product that does not require a great deal of capital to produce. You need land and rainfall and the developing world has many places with that combination.

Virgin forests are available to provide more volume, but sustainability must be maintained by re-planting and avoiding ground damage. Timber is becoming a very competitive material in the resource-starved world. As China expands its industries it soaks up raw materials particularly steel, coke and cement. This is presenting an opportunity for timber but, do we have the skills and capacity to engineer the product to do the jobs steel and concrete have been doing for the last one hundred years? The general consensus is 'not at present' but possibly, given another ten years.

While this situation develops, the world's population is ever expanding – creating pollution and assisting global warming. Environmental damage is accelerating and is caused largely by energy production - the basic necessity of modern man. Steel and concrete both require large quantities of energy to manufacture. Timber requires none- and some uses make it a carbon captor.

Timber and timber engineering has had a tough time but it now has the best opportunity for a hundred years. Infrastructure requirements are established and perhaps shaped by what steel and concrete could do. Innovative Timber Engineers are required to invent ways of making their product into a substitute. They need to make big strong structural elements from small weak pieces of fibre by laminating, bracing, reconstituting and with every move, they save a bit of the planet. I would have expected more smart young Engineers to take up this challenge but, unfortunately, the industry is not there yet to offer them a decent career. The challenge is to accelerate the process and make Timber Engineering as important as it was one hundred and fifty years ago.

Present Day

For the last forty years, we have lived with the promise of developing a timber engineering industry in the UK. We have been saturated by initiatives, forums, centres of excellence and examples of innovation - but no industry. Timber engineering is still not properly off the ground in the UK. There is but one faculty in just one university, in the whole of the UK. It has only been established for 14 years and is fast drifting into becoming a centre for wood science because the Engineering students are not coming forward.

THE CENTRE FOR TIMBER ENGINEERING

There are a few tiny research facilities around the UK and very little specialist teaching of this form of engineering. At Masters level, there is a fair bit of interest but too many places are taken up by European students who return home with their knowledge and experience - their talent is lost to the UK. There are some large international consultants producing excellent designs but this will not result in a regeneration of timber structures. The future for producing talented Timber Engineers looks grim but some opportunities are appearing.

Steel has increased in price over the last year and is predicted to rise for the next few years in spite of Brexit. This is partly because of the cost of ore and coke but mostly because China has created a supply and demand shortage. Cement is one of the biggest pollutants in industry because of the heat energy used in its manufacture, rendering it an unpopular material with the modern 'green' approach to construction. There is also a 'China' factor. Legislation is increasingly demanding sustainability and the reduction of carbon deposits in the atmosphere. Timber can step into the breach to comply with this, but we need the specialist Engineers to innovate the solutions.

One way forward in this time of opportunity, and while there is a lack of specially trained Engineers, is to encourage existing designers to design in timber. This could be achieved by adopting the steel and concrete industries' tactics of the 1960s and 1970s by producing design guides. This will help generate a catching-up process, but sustained and concerted innovation is needed if timber is to do the job of steel and concrete. This will require some real specialists and well-funded research centres. Good examples of large timber structures like bridges, towers and large buildings will increase the public confidence in timber and encourage them

to buy a timber framed house. Unfortunately many home owners regard timber as a material which will rot and result in a poor investment. Recent figures showed that only 10% of new houses in England are timber framed but in Scotland it is 60%, where advantage is taken of the speed of construction. This is a potential growth area which, sadly, has taken a severe blow with the recent 'credit crunch'. On the other hand, the 'credit crunch' has caused the price of timber to drop and more bright young people are apparently considering Engineering as a career, instead of investment banking.

Over the last twenty five years the Forestry Commission Engineers have been trying to use more timber for structures. During the 1950s and 1960s about one thousand bridges were built in UK forests from steel and concrete - which was inconsistent for an organisation trading on sustainability.

For that reason, some timber bridges were introduced. The dilemma was that from 1950 to 1980 lorry sizes doubled, so stronger bridge materials seemed necessary and timber was weaker. The challenge would be to engineer timber to produce strong structural sections which could compete with steel and concrete. During this time many composite engineered materials were developed from timber. Before explaining the pros and cons of specialist composites, perhaps some information on structural timber would be useful.

TIMBER AS A CONSTRUCTION MATERIAL

Why use Timber?

We need factory production-line manufacture to utilise the smaller trees which modern plantation forestry produces. We need to develop jointing systems which design out timber's poor capacity for local bearing and shear. At the same time we must remember to keep structures dry and avoid rot. We must exploit timber's strengths and composite it with other materials to overcome its weaknesses.

TIMBER'S STRENGTHS

- It is easy to work and fix to
- It has very high strength to weight properties
- It is very adaptable for use as a composite
- The public likes the look and feel of timber
- New design codes permit realistic calculations
- Plantation trees are readily available at low cost

TIMBER'S WEAKNESSES

- Strong joints are expensive
- It rots if it stays wet for a few weeks
- It is not favoured by Structural Engineers

It is not regarded as a primary structural material by the public but the cost, availability, sustainability and ease of use means we must learn more about how to use it to our best advantage.

Species used for Structural Timber

Timber is the only renewable structural resource available to man. It is carbon neutral because at the end of its useful life the CO2 which it puts into the atmosphere is equal to the quantity that it removed while growing.

There has been resistance from modern Engineers to the use of timber, partly because of their general lack of understanding of species, properties of strength and durability, and of the construction details necessary for sound construction. Timber frame housing has flourished over recent years but some poor workmanship and detailing has led to a number of premature failures. This has generated new resistance to the use of timber for permanent structures. However, the use of timber for major high profile structures like bridges could help renew confidence.

There are three groups of trees – softwood, temperate hardwood and tropical hardwood.

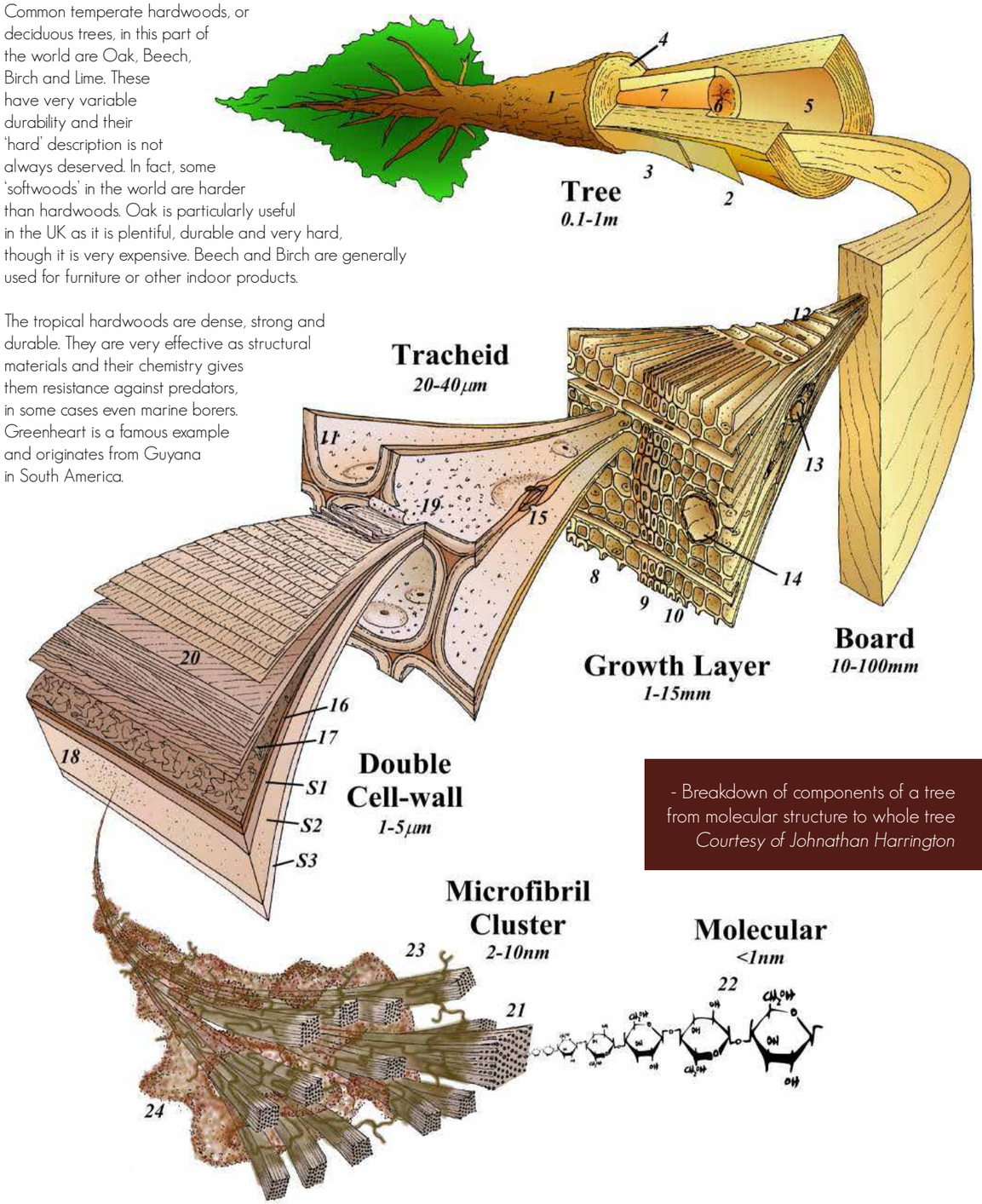
Within these groups there are a number of species in each with different properties. The softwoods generally come from temperate zones and the species which are readily available in the UK are Pine, Spruce, Larch and Douglas Fir. Within these species there are a number of particular tree types. The type which has been planted in the UK over the last eighty years, due to its toleration of the low winter temperatures in Scotland, together with its ability to thrive in the acidic soil resulting from deforestation, is

Sitka Spruce. This is very good for paper and pulp but weak as a structural timber, partly because of the rate of growth. The average rate of growth in the UK is approximately forty years to maturity.

Scots Pine is very useful, reasonably abundant and very good at taking up preservative treatment. Larch is more durable in its natural state and takes up less preservative treatment. Douglas Fir is a fine structural timber with good resistance to decay.

Common temperate hardwoods, or deciduous trees, in this part of the world are Oak, Beech, Birch and Lime. These have very variable durability and their 'hard' description is not always deserved. In fact, some 'softwoods' in the world are harder than hardwoods. Oak is particularly useful in the UK as it is plentiful, durable and very hard, though it is very expensive. Beech and Birch are generally used for furniture or other indoor products.

The tropical hardwoods are dense, strong and durable. They are very effective as structural materials and their chemistry gives them resistance against predators, in some cases even marine borers. Greenheart is a famous example and originates from Guyana in South America.



- Breakdown of components of a tree from molecular structure to whole tree
Courtesy of Johnathan Harrington

In colonial times, this was harvested and used in many UK Victorian maritime piers. The Author built a new pier three years ago using Greenheart which, although it had already given one hundred years' service in Helensburgh pier, was still in perfect condition. These hardwoods however are difficult to work, produce toxic splinters and are difficult to obtain from truly sustainable sources. Their natural habitat tends to be in politically sensitive areas, so their use is best discouraged in preference of plantation softwood.

Plantation softwood is available from most countries in the world so the cost should remain competitive for some time to come. International competition should ensure control of the price, in contrast to that of oil and gas which are only available in a few locations and where the price is controlled politically. This is one very good reason to develop the use of timber for structural applications, even if it is not the strongest, most durable material.

Properties of Structural Timbers

Timber is not a homogenous material like steel, which has the same properties in all directions. Timber is orthotropic, which means it has different properties in different directions. This is because it is formed from a group of parallel vertical tubes which convey water to the extremities, where sunlight converts it to food through photosynthesis. These tubes form what we call the 'grain' and vary in diameter, depending on growth rate. Along the grain they provide substantial stress resistance but at right angles to the tubes the timber is easily compressed, especially in softwood species.

A perfect piece of timber is very strong. Scots Pine can achieve 46N/mm2 [3] in bending stress before breaking, but natural defects like knots, slope of grain, microfibril angle, compression wood etc. mean that a safe stress would only be one tenth of the ultimate.

Fresh timber is made up of about 50% water by volume and considerably more by weight. Most of this water is lost over time after the tree is cut down. Usually it is kiln dried nowadays, to accelerate that process until it has reached the in-service moisture content (MC) which is 16% - 18% for protected external timbers. Even after optimum MC is reached there are seasonable shrinkages, dependent on humidity. Softwood shrinkage is less than temperate hardwoods, making it is very satisfactory for Stress Laminated Timber (SLT) bridges.

Durability of Timber

This is a description given to the resistance to fungal or insect attack. In this part of the world insect borers are only a problem near seawater and fungus only grows if there is sufficient moisture. Some timbers have natural toxins which resist organic attack while others are very vulnerable. Timber can be impregnated with chemicals to help the resistance to decay. Hardwoods are generally more durable but this is very variable e.g., whilst home grown oak is reasonably resistant, tropical Greenheart is almost totally resistant. Softwoods are all susceptible to decay though Larch, while resistant, still benefits from chemical treatment. Scots Pine requires treatment and absorbs it well, whereas Douglas Fir, although moderately resistant, will still be treated.

Treatment of timber is a very emotive environmental subject because the best treatments, designed to kill carbon based insects and fungus, are also toxic to humans. The most superior is Creosote, followed by Copper Chromium Arsenic (CCA) and then Copper Chromium Phosphate (CCP). Organic preservatives can leach out so have a poor performance, externally. Creosote and CCA were legislated out of use in the UK in June 2004 but derogations were introduced for a number of professional uses, like railway sleepers and bridge decks. However, in practice, these treatments have not been available for bridges due to the low demand, so specifications have to accept the available weaker treatments. With modern pressure/vacuum treatment processes, the chemical only penetrates a few millimetres so all cuts and holes have to be made before treatment. It is always good practice to protect timber from prolonged wetting therefore, to ensure this, good detailing is essential for timber bridges especially since treatment yards willing to use the more toxic treatments for commercial structures are difficult to find.

There are some new treatments coming to the market for softwoods which may well become cost effective in the near future if timber finds favour as a structural material and the markets grow. The most likely to succeed, in my opinion, are acetylation and other similar forms of extreme heat treatment. Acetylation is an expensive treatment using acetic acid and heat and is now available in the UK marketed under the trade name 'Accoya'. The advantage of this treatment is that the chemical is all the way through the cross section and when on site, if timber is cut it is still fully protected at the cut. Timber treated this way is mostly available only in smaller sections and large orders are necessary for economy. Timber window manufacture may use this process. One large bridge has been built using it in the Netherlands and others are following.

- Accoya Bridge in Netherlands

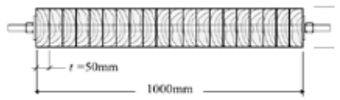
Another interesting development is microwaving or extreme heating where the chemical composition of the timber is amorphised into an inert compound. The heating actually causes the cellulose and lignin in the timber to combine chemically. Again this treatment is homogeneous.

Stress Lamination of Timber for Bridges

The future will depend on innovation and the use of readily available plantation softwood. One interesting form of construction which was the subject of a PhD thesis by the author is stress lamination.

Stress lamination is different from the known glued lamination which requires strict quality control and results in high quality expensive products. A vertically stress laminated element is formed by drilling holes in the wide face of sawn timbers at centres of between 300mm and 900mm. These timbers are laid side by side on their narrow edge, stressing bars are passed through the holes and then stressed to between 100kN and 200kN tension.

- Typical cross section of SLT deck



The friction between the faces, induced by mechanical stressing, permits transfer of load from one laminate to the next. This converts the whole into a solid load-bearing orthotropic deck with the ability to transfer load laterally and longitudinally. The natural variability and defects found in timber are responsible for the reduced allowable stresses in whole timber.

- Dismantling a Stress Laminated Bridge

However, when vertically laminated the defects and natural variability are dispersed and the efficiency of the system is greatly enhanced. This form of construction utilises a low cost sustainable material with the minimum input of quality control and production energy. The resultant life cycle carbon footprint is very low compared with other bridge construction materials.

- 20m span test bridge at Glentress during construction

This form of construction is a good example of innovative, sustainable construction and should be inspiration to the next generation of timber engineers. Low quality softwood can be used to make large structures.

Conclusion

In 2010 Norway hosted an international conference on Timber Bridges (ICTB2010) which was attended by most of the prominent timber engineers in the world. The proceedings are available on https://www.vegvesen.no/attachment/161045/binary/304244. This shows what can be done and the UK needs to do some catching up. This paper is intended to be an introduction to the subject to show that the UK abandoned timber 100 years ago but it can be used as a primary structural material as it is other countries.

Written by,

Dr Geoff Freedman

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- Far Moor Bridge

www.trada.co.uk/case-studies/far-moor-bridge-far-moor-near-selside-yorkshire/

HARVORSEN ARCHITECTS – Roundwood project

If I had known how difficult this project was going to be, would I have still done it in the way I did? - absolutely!

Genesis (J&T) Ltd., owner of a successful pre-school nursery chain in Midlothian asked me to design an extension to their Dalkeith branch. They chose my practice, Halvorsen Architects, having seen a timber treehouse we designed and built with a local P7 class.

Genesis is run by an innovative and energetic family of Greek descent who I find easy to engage with due to our mutual love of the outdoors and aspirations for the children. Genesis have won many awards for sustainable learning and outdoor activities. They asked for a dining room, craft room and performing arts room. The first phase - the dining room and craft room - is now complete.

Halvorsen Architects tries to design 'honest' buildings that reveal their structure, and so for these young children I wanted the structure to be not only obvious but also fun. I had seen some branched whole tree constructions in American publications, most notably some of the astonishing structures designed by the Wisconsin-based Whole Trees Architecture and Structures and wanted to design something similar here. The client embraced the concept immediately and I set to work, blissfully unaware of the problems ahead.

The main obstacle I faced, was that unlike in America, British buildings do not use 'natural' whole trees and they are not even recognised in design standards used by British engineers. There is no regulation governing their use and and there is a distinct shortage of people qualified to visually grade living whole trees for structural use.

I then embarked on an extensive search which was initially something of a wild goose chase. It involved following leads from experts in, amongst other fields, academia, the Forestry Commission and saw mill owners, up and down the land. The difficulty was finding anyone in the UK who was able to grade living trees with their branch structures still intact. The trouble, I discovered, is that there is no "course" on grading live trees. Plenty of saw mill owners and engineers were capable of grading round pole, but no-one seemed to know of anyone in Scotland who was able to do what I wanted. My big breakthrough came when I tracked down James Coulson who has taught timber grading for over 40 years and set up TFT Woodexperts Limited, North Yorkshire, in 1991 to teach both Wood Science and Timber Technology. Over many years of experience in timber grading, and assessing "roundwood" in forests - combined with a very detailed understanding of the nature of wood, through Wood Science - Jim has developed a methodology for "assessing" the likely equivalent Strength Grade for trees; with of course a sufficient margin for safety.

He put me in touch with one of his ex students, Iain Thew of Structural and Civil Consultants, based in Northallerton, but then based in York. Iain was trained by Jim and the two seem to be the only people in the UK able to grade live trees. Iain has a Masters in Structural Engineering and Architecture and it is his unusual - if not unique - combination of Wood Science, grading and engineering that has enabled him to adapt - with Jim's help - the abilities of grading rectangular timber sections into grading (or more accurately, assessing and estimating) the structural abilities of tree trunks.

I then discovered that the UK hardwood grading rules, BS 5756, only cover a very limited number of tree species – oak and chestnut – while larch is the only UK grown species that can be visually graded to the strength class C24. We were lucky enough to have some natural, branched beech growing in one of my clients nursery grounds that needed to be felled, which we had hoped to use but because they are not covered by the UK regulations we will have to use them internally in the performing arts room for non-structural partitions.

Then the fun part came - sourcing the trees. I contacted several ASHS members and the first to respond positively was Willie Dobie, owner and managing director of Abbey Timber. On a glorious sunny day, I set off with Willie around his beautiful woods on a bank overlooking Whiteadder Water near Abbey St Bathans, about a 45-minute drive away in the Scottish Borders. We narrowed our search to forked oak trees that could be used as posts and straight larch that could be used as roof beams for the nursery extension. We were looking for lengths of 3.5 metres for the branched oaks and up to 6.7 metres for the larch, and we wanted 18 in total. Willie was delighted as I was going to be making use of trees that were otherwise redundant due to their bends and branches and nearing the end of their life.

Once the trees had been identified, qualified grader Iain Thew joined us for another glorious day in Spring, armed with a long measuring stick, a tape measure and a pink spray can. He assessed the growing trees and identified which ones had the right load- bearing capacity. This was done visually by assessing the position of the branches – and therefore the knots – and carefully measuring limbs and trunks. A couple were deemed to be too thin but the remainder were approved and given the official pink spray of approval.

The trees were driven to Leslie Winthrop's builder's yard in Dewartown, Midlothian and tooled with oversized tongue and groove joints. The entire structure was placed upside down in the workshop with the oak columns hanging from the gantry to check that all the joints fitted. Getting the trees to the site was not easy as all the materials had to be manhandled up and over scaffolding straddling a single story building, as the back garden of the original Georgian house could not be accessed any other way. It took eight men to carry each tree up the ramp and then lowered them by winch onto the site. They weighed up to half a tonne each.

The next stage was to erect the whole trees and secure them to the concrete slab with mild steel bolts to a connection plate. The tongued and grooved connections were reinforced with steel pins.

I also had some fun with smaller, forked parts of the oaks. Two of these were used for the intermediary supports required in a long feature window at low level for the children while one massive one was used to support the pizza oven.

The trees currently still have their bark and lichen on. Some of the larch beams that had been sitting in the yard for a while have started to shed their bark but most of it is likely to stay on for a while. Again, this was relished by the client. Once all the bark comes off, we intend to get a woodworker to carve some nature-related features such as a tree creeper with its footprints spiralling up the trunk.

As an architect I am trained to think in three dimensions and to envisage what my designs on paper will look like once built. The concern that I had with this project was the massive size of the structural members, particularly the beams. Ranging from 260mm to 370mm diameter in a 3 metre high room, they were so much larger than any conventional timber beams that I have dealt with before. I was concerned they would be too 'heavy' for and overwhelm the space, especially given the dark colour of the bark. I have been pleasantly surprised that, even before the bark has dropped off, and as my builder, Leslie Winthrop, testified they actually sit very comfortably within the space.

Having spoken to many people involved with trees along my journey I have been surprised at how little knowledge there is of the strength of living and, especially, forked trees. In fact it seems that this building may be the first in the UK to use "natural" or "forked/branched" trees. Dan Ridley-Ellis, head of the Centre for Wood Science and Technology, Edinburgh Napier University said "globally we do not understand how to grade round wood as well as we should, making better use of its intrinsic strength, particularly for forked timbers".

The second phase of the building - a performing arts room - is due to start in July. This will also use a whole tree structure and include a roof garden and a small outdoor amphitheatre.

It has been a real pleasure and very satisfying to follow the journey of the trees from woodland source to in-situ column and beam, less than 40 miles away. So far the response has been extremely positive - the children and staff love the raw trees.

The last time I visited site horntails, or wood wasps, had made their nests in the oak trees, along with several other species of insect. Rather than be alarmed at their new, uninvited guests, the staff have embraced the chance to study wildlife indoors and set their under fives a project on these mean-looking but quite harmless beasts!

Written by,

Gail Halvorsen

JOURNEY TO BEING A FURNITURE MAKER

Some years ago I had a lad working for me during his summer breaks from the Furniture Design and Manufacture course he was attending in High Wycombe. One of the tutors there had informed my friend's class what they could expect in regard to their future as furniture makers after completing the course. He described that there is a hierarchy; Artists are at the top, (with Conceptual Artists the absolute pinnacle), Designers are in the middle, and Makers are at the bottom. Now, over the years, the opinions I have entertained about artists have been many and varied – though I am more consistent in my view of conceptual artists – and, while I admire the talent shown by many, I have never been inclined to doff the cap or tug the forelock (not having a forelock makes this tricky anyway). I have though met and talked with a good number of furniture designer/makers and, almost without exception; these are individuals with a well-developed practical intelligence. If you ask one of them to make something for you, they may well not have made such a thing before and not have the first idea how to go about it, but they are certainly not going to let you know that; they will go away and figure it out, then come back with a solution to create the piece you want!

The paths to becoming a furniture maker are legion, but may reasonably be divided into three camps; college trained, apprenticed, and self-taught. Each of these, I'm sure, will have its strengths and weaknesses, and only the people who have travelled these routes can speak with any authority on what those are. Broadly though; if you go to college, you will learn a lot of useful stuff, waste a lot of time, and hope to come away with ability and a qualification. If you become an apprentice, you will learn a lot of useful stuff, sweep a lot of floors, make tea for your betters, be the butt of many very old practical jokes, and gradually you will hope to emerge as a respected member of the workplace. If on the other hand you teach yourself to make furniture, you will sweat blood, bleed blood, mess things up, lose some money, make stupid decisions, buy kit you will never use, feel hopeless, learn to blag with a straight face, and maybe, just maybe, hang on long enough to come through all that and develop your own techniques and style of furniture. Then you will have a business. I am self-taught.

Furniture making started for me as it has for many others – with redundancy. After the First World War, my grandfather, Pringle Elliot, was de-mobbed, and set up as a fencer in partnership with his friend Jock Parkhill, creating the firm of Parkhill & Elliot. Over the decades the business grew, and in the late 1950's bought a sawmill in Selkirk from the retiring Alfie Yellowlees. The mill had been in existence since the 1850's and when my grandfather – and also by now my father, Walter – took it on, still ran on a huge, vertical, single piston steam engine, driving two overhead shafts, which powered all the machines by means of flat belts coming down to free-running wheels. When a machine was needed, a lever was pulled to move the appropriate flat belt from the free wheel onto the drive wheel. The more machines you ran at the same time, the faster the boilerman shovelled coal, slabs, and sawdust into the boiler. (Actually, to get the pressure up, he had to start work a couple of hours before everyone else, but being cold was never one of his problems).

To wander back from my tangent: I left school on Thursday May 29th 1980 and started working for Parkhill & Elliot on Monday June 2nd - sorted! Only, it wasn't sorted. The early 80's brought a number of challenges to sawmills. The farmers' fencing grants were slashed, so the Parkhill & Elliot fencing squad had less work, and demand for stobs, rails and posts dropped hugely. In winter, the mill relied on orders for hardwood chocks for the mines. Mrs Thatcher set about the miners and then the mines were gone, and so was the final regular paying work for our sawmill.

On September 18th 1987 the sawmill closed down, and soon after, with no gainful employment, I happened across a Charles Rennie Macintosh exhibition in Edinburgh, which got me thinking, 'I fancy trying that!' After making three CRM pieces to get my hand in, I switched to making coffee tables from slabs of burry elm; and then I made a rocking chair, then various other pieces to build up my portfolio. I should at this point say that I had no almost no tools, customers, or money, and the only way to carry on was by working most of the time as a self-employed fencer. But, as anyone can attest who has spent days on a hilltop with driving sleet coming uphill, while battering a posthole into whinstone with piercer and spade, the novelty wears off. Fencing gave me the money to sustain and develop my furniture business, though of course, it also meant that I was out fencing instead of making furniture. It took eight years working like this for my furniture business to reach a point of making me a living, whereupon I gradually phased the fencing side out – but I have kept my tools just in case!

So, there you have it: the journey to being a furniture maker. Of course, becoming one is only the beginning, remaining one presents many 'opportunities for growth', but after thirty years I find things to be generally fairly settled, though I am sure timber is heavier than it used to be...

As for my young friend on the furniture design course; he had a brief career turning 'toys' on his lathe for an 'adult' shop in Edinburgh from Scottish hardwoods (yes, I know), before moving on to successfully renovate houses in France and Glasgow.

Written by,

Rob Elliot

PRUNING BROADLEAVES

Woodland Consultant Eamonn Wall has been planting and pruning broadleaved trees for over 25 years. Here he summarises his advice on how best to prune.

Why Prune?

From a forestry point of view, the aim of growing trees is usually to produce timber as the primary objective. When growing broadleaved trees the aim is usually to maximise the quality of the timber being grown by producing a straight bole without any branches and with minimum 6m length. Branches create knots, therefore reduce the quality of the timber.

From an arboricultural perspective pruning is very important to encourage good tree form and in particular to promote one leading shoot. Many trees are inclined to fork and create two (or more) leading shoots which eventually often burst apart. Formative pruning helps form a tree with one leading shoot, which is also necessary for the production of quality timber and a balanced tree.

A woodland containing pruned trees looks so much better and inspiring compared to an unpruned wood. It keeps woods open and makes them more enticing for visitors. However when creating tree belts to hide industrial buildings we refrain from pruning as the greater concentration of branches enhances the screening benefits of the wood in this specific situation.

A good reason to prune is the simple enjoyment it brings being very rewarding work. To prune a wood and then walk back through it seeing the great improvement is a joy to many.

Aim of Pruning

The first aim of pruning is to encourage one strong straight leading shoot followed by the removal of side branches to create a clean stem or bole.

Once you have got all your trees growing with single stems, the next aim is to then start removing the side branches. It is important to remove the side branches when they are still alive as this allows the tree to cover over the pruning wound with bark as soon as possible whilst minimising the impact of the branch knot in the timber of the tree. If the branches being pruned are dead then the knot within the timber will also be dead and may downgrade the value of the timber. It will also compromise the tree's ability to bark over (or occlude) the pruning wound.

When to Prune?

We usually find that we start pruning in year three or four and then again in years five or six, and seven and eight. It really depends on how well the trees are growing and the species that has been planted. Over time the amount of pruning required by the crop reduces.

In the early years we refer to the pruning as formative pruning and once the pruning is higher up the bole, only removing side branches, we refer to this as high pruning.

How to Prune?

It is certainly easier and quicker to prune off smaller branches than larger ones. Smaller pruning wounds also heal much quicker, reducing the possibility of decay or entry of unwanted tree pests or diseases. So it is best to start early.

Formative pruning is best carried out using loppers, which is a fast and easy way to single leading shoots and remove small side branches. However if the pruning has been delayed some branches may be too large for the loppers and a small pruning saw can be used on the odd occasion as required. A small foldable pruning saw is ideal for this work.

There are many variations of loppers available, some with telescopic arms. Weight is important if you are going to be pruning for several hours. There are two types of blades: 'side by side' where one blade passes by the other, and the type we prefer, the 'anvil' where one blade meets the other. The advantage of the anvil arrangement is that you do not get carried away trying to cut through branches too large which easily happens with side by side blades causing the blades to get stuck or bent by a branch.

As the trees become larger, the branches to be removed obviously get larger too and a point comes when the lopper is being used less and the pruning saw more. When this happens it is best to switch to a larger pruning saw which has a larger pruning blade (eg 350mm) than the folding saw (eg 150mm). A longer blade is much quicker to use and can be kept in a sheath or protective pouch attached to your waist belt. As the pruning proceeds the branches to be pruned are higher up the tree and a high or long handled pruner will then be required, perhaps one with an extendable handle. Pruning with loppers and hand saws will reach about 2.5m up the tree, whilst a high pruner will add another 2.5m.

For all pruning it is important to cut the branch off as close as you can get to the bole of the tree without cutting through the ridge or raised bark that often exists at the joint of the branch and the main bole of the tree. This is known as the branch bark ridge and is more obvious in some species than others. It is also important not to leave branch stubs (or small lengths of branch) which will decay back into the main bole downgrading the quality of the timber. By pruning close to the main bole it allows the tree to bark over (occlude) the pruning wound as soon as possible.

Pruning too many branches in one go is also not a good idea as it reduces the leaf cover of the tree, slowing its growth. For the leaves are the producers of food for the tree converted from the sun's energy rays. Therefore it is important not to get too carried away and prune off too many branches. Always ensure that the crown or area of branches covers one third of the height of the tree.

What Species to Prune?

In a mixed stand of trees we usually prune the oak, beech, cherry, sycamore and (until recently) the ash. Birch is almost self pruning, as its side branches die off very quickly. Alder can be pruned but take a lot of work to do so. Lime has a more heavily branching habit and require much pruning to keep them growing as a single bole.

Ash dieback is a sad affair and it now seems pointless to put effort into pruning them if they are going to die. It is such a shame as ash were always one of the faster and straighter growing trees in a mixed stand, and also one of the easiest to prune too. They usually required just one or two prunes to single out twin leaders, where the central bud had been damaged or broken causing the two side buds to form into two leading shoots. We rarely prune rowan or willow. Pruning of conifers is not so common, apart from the singling of double leaders.

Pruning Intensity

Over the life of a woodland crop of trees many of them will be removed by thinning. So in many ways it does not seem sensible to prune all the trees. However, when the trees are very young it is hard to know which ones will make it to the final crop. So in order to provide the best crop from which to promote the best ones to grow on, it is important to carry out formative pruning of all the timber trees. Though not all trees will require formative pruning all trees will require side branch pruning, and once this carries on up the tree as high pruning you are starting to invest a lot of time. For this reason we then restrict high pruning to the better trees.

We also find that before high pruning creates a 6m branch free bole, thinning has taken place thus removing the poorer stems whilst promoting the better ones. Sometimes good stems will be thinned out to give space to promote other good stems. This of course reduces the number of trees requiring pruning. A well growing mixed broadleaved woodland could well be thinned three times and pruned four or five times by age 20.

High pruning is usually carried out in lifts, perhaps removing 1m to 2m worth of side branches from the bole in one go or lift. It is vital to keep tools sharp, to wear gloves and a hard hat when high pruning. Also disinfect tools to reduce the risk of spreading any tree diseases.

Time of the Year to Prune?

It is generally considered that, apart from just before coming into leaf and just before leaf fall, trees can be pruned all year round. Cherry should only be pruned in July to reduce risk of infection from silver leaf disease.

Winter is usually considered the best time to prune as the trees are leafless and it is easier to spot which branches need removal. Additionally, the ground vegetation is down so it is easier to move about the wood, and winter is often a generally nicer time in the woods with few insects to annoy you.

My top tip for formative pruning is to always look up into the crown as the best thing you can do for a tree is to single twin leading shoots. It is easy for the pruner to remove side branches and forget to look up.

Happy pruning!

Written by,

Eamonn Wall

LOCAL WOODLAND BUSINESSES

Since I last wrote about the local woodland-related businesses sector in the Full Circle Issue No 3, there have been some significant developments.

First some definitions - small businesses are those which have fewer than 50 employees and a turnover less than £10M (1). They comprise 99% of all businesses in the EU (1). Woodland-related businesses include sawmills, furniture makers, willow growers, tree nurseries, woodland owners, contractors, timber house builders, firewood suppliers and many more - well over a thousand businesses across Scotland.

In October 2016, the Forest Policy Group organised a conference on "Getting Value from Local Woods Conference" which brought together people from many parts of the sector, including a large number of community woods, who as woodland owners often also supply firewood, mill timber and offer contracting services, demonstrating the integration of local woodland businesses in one organisation. The conference showed how much the different types of businesses have in common and can benefit from knowing about and doing business with each other. Many participants described it as ground-breaking and unique and hoped to see more collaboration come from it.

Following on from this, the Forest Policy Group has produced a report on the extent and significance of our sector (2), which will no doubt lead to discussions about what needs to be done to help the sector and, hopefully, action.

Our own Scottish Working Woods label is part of this story, providing a label guaranteeing products from small Scottish businesses sourcing their raw materials locally. Although it was started by ASHS and SFMA, it aims to cover the whole range of small, local woodland-related businesses across Scotland, recently bringing in coppice growers and basket makers and encouraging other parts of the sector to join.

What is an SME?

Small and medium-sized enterprises (SMEs) are defined in the EU recommendation 2003/361 (1).

The main factors determining whether an enterprise is an SME are:

1. Staff headcount and 2. Either turnover or balance sheet total.

COMPANY CATEGORY	STAFF HEADCOUNT	TURNOVER OR BALANCE SHEET TOTAL	
Medium-sized	< 250	≤ €50m	≤ €43m
Small	< 50	≤ €10m	≤ €10m
Micro	< 10	≤ €2m	≤ €2m

These ceilings apply to the figures for individual firms only. A firm that is part of larger group may need to include staff headcount/turnover/balance sheet data from that group too.

(1) http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32003H0361
(2) http://www.forestpolicygroup.org/blog/value-from-supporting-local-forestry-businesses-a-scoping-study/

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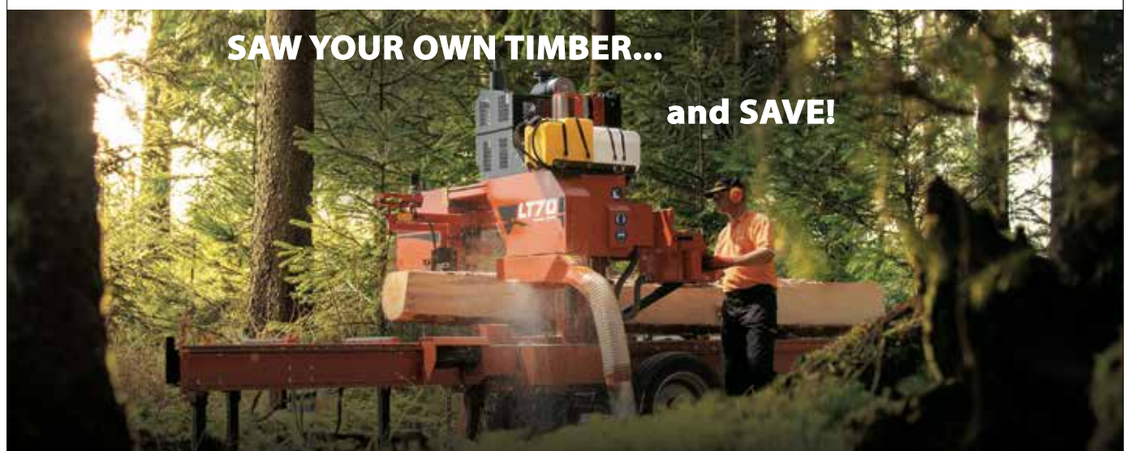

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AARON STERRITT WOODWORK

Cleaving to create furniture in the 21st century

Twelve years ago I completed a two-year degree in Furniture Crafts at the University of Cumbria in Carlisle. As many readers will know, two years is not long to learn the basics of crafting furniture so the focus of the course was to encourage students to find their own aesthetic and style. It was therefore very experimental; we had a large workshop full of modern machinery and were always encouraged to make life simpler for ourselves and use quicker modern jointing techniques as the technology was there to use. This allowed everyone on the course to produce bold interesting work within the two years.

After completing the course I moved back up north to the Highlands and set about trying to earn a living as a furniture maker. The romantic craftsman dream in my head got a bit of a shock! How can I continue making without the big modern workshop? My style, just as everyone else's on the course, was born out of the environment it was created in, and mine especially created a lot of dust that without some seriously good extraction was not good for the health.

I set about slowly building up a collection of tools and worked out of an old barn. I found that trying to produce furniture in the same way as I did at university was a constant battle. I had no heat, no big machinery, no dust extraction etc. As everyone does you find a way of making do with what you have, and I found ways of producing work without the big fancy workshop. I supplemented my furniture earnings with work as a fencer, tree work and ski patrol on Cairngorm Mountain in the winter. I also began looking for other ways to be just as creative with the material but work with it differently, so instead of starting with a sawn timber board I began in some instances to use green woodworking techniques.

The discovery of cleaving timber was a revelation for me! I'm slightly cautious of my enthusiasm for cleaving here as I'm aware sawmilling is what we're all about. For the majority of situations milled timber is the way to go but I really hope one day that there will be enough folk using cleft timber that there will be a demand for sawmills to sell shorter butts for cleaving purposes, oak being the obvious choice as it holds its moisture very well in the round.

I couldn't believe how easy it was to split the wood into beautiful unique shapes when I started using this technique. Previously to create, say, a stool leg, I would cut a square section from a board and shape with various sanders to get the aesthetic I was after, which seems utterly ridiculous thinking back. I now use a sledge hammer, metal wedge, hatchet and drawknife and the end result is far more pleasing to the eye, far stronger in strength as no cells have been sawn through and best of all, I haven't spent a fortune on machinery and haven't breathed in a molecule of dust!
At this stage you may be thinking; ah but it'll take longer and there'll be lots of waste and he'll be sweating buckets, and isn't it a bit backward? My answer to that is: the reason that cleaving still exists and is used by makers today is because it is one of the easiest and most economical ways to break timber down into workable pieces with hardly any waste. It ticks all the boxes, and I still can't get my head around the fact that it is also a very enjoyable process. It's an absolute no brainer and I now use the technique wherever it makes sense to do so. I keep a large stock of cleft material in various thicknesses and lengths which has been kiln dried, so when a commission comes through the cleft wood is at the same drying stage as my sawn boards. The downside of this is I end up working the wood dry using techniques evolved for green wood. However, I have found as I'm sure plenty of others have, that a nice sharp tool solves the problem just fine.

Over the last few years by working with wood in this way, I have learnt that what I have as a product is much truer to the nature of the material. Not only is every piece of furniture unique, every component has a different curve or twist. The cleft pieces largely create the form rather than the maker. The job of the maker is therefore to carefully select and assemble the pieces together in a way that works visually. This is the tricky part.

Green woodworking techniques have also opened my eyes to the potential of sharing this with others through teaching and running courses. Whereas before I always shied away from the idea because of health and safety and expensive workshop insurance, now I can much more easily run a course. I recently ran two very successful stool making courses in a pop-up woodland workshop and as I write this am putting together a range of courses for the public starting in spring 2018. Furniture making can be an isolating job at times so it's great to be able to share knowledge and experience in this way; it's good for the practice as a whole and for the maker. This spring I moved workshop to Logie Steading near Forres, along the coast from Inverness. It's still early days but it's looking positive for the future of the business.

Written by,

Aaron Sterritt

Aaron Sterritt Woodwork

CROMARTIE TIMBER LTD

I started my career as a trainee Forester with the British Aluminium Company in Spean Bridge at the youthful age of 17. After years of diverse forestry work from the Nursery to felling and extraction, training was also taking place at the B.A Sawmill, working on a Yankee 42" and an old wooden rack bench.

Unfortunately for me before the completion of the City and Guilds Forestry course the B.A Estate changed hands and the sawmill closed down. I moved to Dochfour Estate near Inverness and took on the position of Head sawmiller, again with an old Yankee 42" and an old wooden rack bench. After three years a move to J G D Munro's in Dingwall,where the state of the art Stenner Carriage Mill with electronic set works and metric sizing was mind boggling! That was the long journey to Production Manager at a busy high production sawmill.

I decided to get out of the timber 'rut' before I turned fifty but an opportunity arose at Cromartie Timber; a very different environment to what I'd been used to. A slower pace, more "hands on" and customer orientated.

In those days Cromartie was known for quality boat skin Larch, Hardwoods for boat building and furniture making. Boat building has changed over the years and our production changed with it.

My two sons Jordan (Dan) and Wayne had long gone to make their own way in the world. The younger one with a career in the motor industry. Through cars, buses, trucks and breakdown recovery in all fourteen years of extensive training to attain a high level of Technician award and culminating in the position of an MOT tester, all useful knowledge to have but he needed more adventure and keen to broaden horizons further. Wayne ventured to Cornwall as a butcher but he soon found himself working with a large food processing plant as a storeman,team leader and on site Fork lift Instructor.

Both boys came to join Cromartie Timber in 2015, each bringing their own skill set and knowledge. Fresh thoughts and ideas as the timber industry is constantly evolving.

We recently heard the volume of timber required by BSW in Fort William and thinking what they process in an hour could keep us going for a month! We will never be as big as them but we're slowly expanding Cromartie Timber.

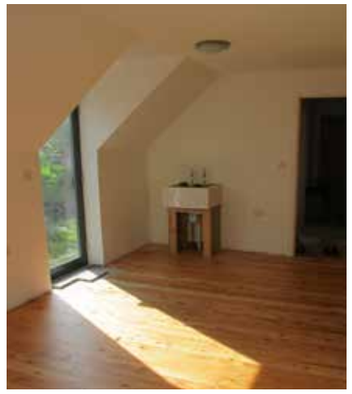
With the help from the Forestry Commission grant scheme and the SRDP, we purchased a Logosol HD36 Narrow Bandmill. This will allow us to process smaller diameter logs quicker than the original machine, Forestor 150 which is a bit slow and cumbersome.

Following our Health and Safety policy, we replaced our cyclone with a new sawdust handling system which conveniently bags the dust. Local liveries find this very handy.

Our Cladding boards are produced on our Stenner wide band re saw which gives a brilliant finish. Each board is carefully selected to maintain our standard... We're picky!

We run a five head moulder for our flooring and decking production. Our hope is to add new cutting heads to expand our cladding capabilities, as some of our customers suggested. We produce Larch Decking on site which is sought after by home owners to contractors, we supply one of the area's most prestigious home builders.
Our Kiln, unfortunately electrically powered (perhaps one day solar powered) has a 15m3 capacity. This is usually busy on our flooring production which cuts back our ability to dry Hardwoods but we hope to rectify this in the not too distant future.

Social media seems to be taking over the way people live and think about things. It's become a part of everyday life. Cromartie Timber has had a web page present for a good few years now (www.cromartietimber.co.uk) but to keep up with the times we produced a Facebook page @cromartietimber. This has been fantastic in bringing in new customers, orders and opening communication lines between other small companies/ organisations. A must to any small business. 'Drop us a like' as they say. Having a social media presence has widened our world by taking in enquiries and orders from all over the UK.



As part of our work to become better known, with a greater recognition within the industry we looked at joining Scottish Working Woods. We met all the criteria; in social, economic and environmental standards. Our timber comes, mostly from local estates or farms, often rescuing pieces from the firewood merchant, and we can usually tell our customers where their timber grew. They love that! So Cromartie Timber are now new and proud members of Scottish Working Woods and doing our best to educate others in the wonders of homegrown timbers.

We cut our timber to order and I think our customers appreciate that as their wood is cut 'for them' not taken from a pile or mass produced. As a specialised mill, customer specified sizes generally isn't a problem for us. Both the Stenner and the Forestor have the capacity to accommodate 20ft in Length with close to -+ 1mm true, good enough for most building projects. We cater for most needs, from the hobbyist to a thousand cladding boards for a major contractor.

We are a small unit with the aim to succeed into the un-certain future of running a small processing plant. We would like to thank our customers past, present and future for their steady support.

All the best

Nick, Dan and Wayne

THE CRAB HOUSE

The Crab House is made from Scottish Douglas Fir. There is no concrete beyond the foundations, she's all wooden and we built her between 2011 & 2013. The main structure is a cavity system and was manufactured using CNC technology and erected as a shell by Rayne Construction Ltd. I fitted out the house and built both glass 'claws'.

The Crab House is my interpretation of a 'total-Life carbon zero building,' but has it reached that status? Probably not.

When we designed the Crab House, my Wife Charlotte wanted the internal layout to be of her own, the house should work to our way of life, not the other way around. We both wanted the house itself to BE art, highly efficient, functional, responsible, cheap to run and where ever possible, design it to make us feel good.

We're not architects but property in general has been our living and I have always been interested in architecture. It was important to me that the Crab House should not be limited by the doctrine of 'modern' architecture, but should instead look back to an earlier ethos of aesthetic style first. It appears we're not alone in this thinking. Judging by the number of public who seek us out and by those who stand at the gate to take photographs, ordinary people love it. During the tourist season, small crowds gather to look on, it does seem to please. The overwhelming sentiment of these strangers is that they see an entirely natural, uplifting art form and harmony between the Crab House and its environment, something I think, almost impossible to achieve without wood.

I know what you're thinking; 'it's alright if you have the money'. Well, in fact, it was no more expensive to build an arty house in timber than it would have been to build a boxy one in concrete block and steel. The Crab House is about 175m^2 and cost £240,000 finished including the land. It's worth noting that the plot on which it is built is second rate. The Crab House is not a dream house it is a realistically attainable one. Nevertheless, my friend and neighbour coined it 'timber triumphalism', he was pulling my leg at the time, but my friend obviously knows me too well because, I rather like the term.

Our mantra has been; Science, Art and Living. The Crab House relies on very simple and reliable science, there are two fundamentally important factors. Firstly, the structure is solar aligned and we exploit the Sun's parabola every moment the Sun shines and from which we derive both heat and light. On Scotland's East Coast, surprisingly, the Sun is present a great deal of the time.

Secondly, the Crab House has no thermal mass, it is intentionally a light weight structure. This means that when the Sun shines, it only has to heat the air trapped inside the living space and crucially not the fabric of the building. Air conducts the Sun's heat rapidly and so the temperature in the room rises rapidly. The effect is rather like your garden green house. In our case, and depending on conditions, it takes only 20 minutes to 1 hour of sunshine for the Living space temperature to rise to 25ºC. Unlike your garden greenhouse, the Crab House is basically airtight and so the temperature gain takes a very long time to dissipate.

In my experience, a light weight structure is so much better suited to our Scottish Climate. Whilst the Sun is present a great deal of the time, it is rarely out for long periods of time and so our two fundamentals above, are designed to cope and exploit the conditions without the need of any mechanical devise. In other words, free heat and light.

So, what's it like to live in?

The living space is on the first floor and the bedrooms and bathrooms are on the ground. We maintain a Mediterranean climate year-round in the living space with a temperature between 25ºC and 32ºC and it is bathed in natural light and sunshine. And no, it doesn't over heat but you do get an extremely dry hot heat that warms your very bones, even when it is sub-zero outside. The bedrooms stay between 18ºCand 20ºC.

Unlike the much-publicised short comings of Passive Haus, we have never suffered any condensation or mould. I think this has a lot do with the fact that the house is wooden.

I'll get to the point of why I'm telling you all this shall I?

The Scottish Ministers commissioned a report published in 2007 called 'A low carbon Building Standards Strategy for Scotland'. The report is commonly known as the Sullivan Report which was updated in 2013.

The Sullivan report recommends that new buildings should be 'net zero carbon' by 2016/17 later extended to 2019. The net zero carbon only relates to space and water heating, lighting and ventilation.

However, what is more interesting from a forestry perspective, is that the Sullivan Report also recommends 'Total-Life zero carbon buildings' should be achieved by 2030. This means that new buildings should be responsible for net zero carbon emissions over their entire life, including construction (the embodied energy of building materials), use, maintenance and finally demolition.

I am not an expert but based on my experience, to get to a total life zero carbon building you need a whole lot of timber. The Sullivan report does state that a 'fabric first' approach is best and then adds that 'layering' and 'allowable solutions' may be added. These terms seem to relate to environmental schemes which affect the common good rather than specifically the buildings to which the Building Warrant refers. On first reading, this sounded a rather lazy way to solve the problem but I'm suggesting 'layering' could be an opportunity for Scottish Timber.

The Crab House is my interpretation of a 'total-life carbon zero building' but whether it is or not I'm not clever enough to work out. The National Calculation Methodologies are, (again in my experience) insufficiently sophisticated. When we applied for our Building Warrant, the Methodologies discouraged the use of electric water and space heating probably because the assumptions were based on out of date electric technology.

I applied the following simple logic; The Crab House's primary source of heating is the Sun, 100% emissions free. When there is insufficient sun, we have a more than adequate 3kw wood burner in the living space. We have a very modern hot water tank and electric immersion heater for hot water. As a backup heat source, there are also three '21st Century' electric heaters on the ground floor and two 500watt bathroom heaters. The 21st Century heaters are 100% efficient, have zero emissions and are fully controllable. Crucially they can be turned off for months or even years at a time seemingly without detrimental effect. In very cold conditions we do use them to raise the bedroom temperature from an ambient 18º to 20º.

My point being that to reach the zero-carbon target, our system gives off no harmful emissions, requires no maintenance (except sweeping the chimney) or annual servicing and no storage of filthy oil or highly flamible LPG.

According to the BBC news, during May 2017, Scottish wind turbines alone produced enough electricity to supply 95% of Scottish homes. PV panels during May additionally produced enough electricity for over 100% of Scottish homes.

Also, although the Methodologies make an allowance for solar gain, as I have explained, the effectiveness of solar gain is dependent on the performance of the rest of the structure. In my experience solar gain has a wide spectrum of effectiveness, our system being at the most effective end of that spectrum.

I've not found an accurate method of calculating the CO2 sink inside our Douglas Fir, or how (or even if it's allowable), to offset it against the CO2 created by the concrete foundations.

When deciding if an all timber building meets the classification of Total -Life Zero Carbon, the calculations are, I assume, made on the hypothetical final date of demolition. If it is further assumed that the timber fabric has been allowed to simply decay as a derelict structure, (and not reused), and thus the CO2 sink allowed to disperse into the atmosphere, then there is no relevant off set, against the concrete foundations.

However, I hope the process will take account of the life expectancy of a structure. There are many examples of British timber framed dwellings that are still in use over 500 years after they were first built. In the case of the Crab House, it has been built to last. It is perfectly reasonable to assume, the Crab House is capable of lasting as long as those of the 16th Century, (subject to cladding replacement), and it will provide its occupiers with the majority of their heat and light courtesy of the Sun, free of charge and free of emissions throughout that period. We're talking a substantial financial saving and one hell of a carbon emissions saving too. It is my believe that by building a structure that is aesthetically pleasing, responsible and built to last, then you build a legacy.

I'm advocating that when calculating the carbon emissions of a legacy building, the calculations should, perhaps include a recognition of the fact that no replacement structures will be necessary for at least 500 years and for the legacy recognition to be an allowable solution to off set against the initial concrete foundations.

That is basically my case for Total-Life carbon zero, or will be when mains electricity generation is more renewable. The Crab House methodology is intended to bring the 'Eco home' into the mainstream and suitable for ordinary people as opposed the elite that charchertrise Eco home owners to date. The Crab House methodology is realistic, practical, reliable and there is no requirement to factor in the heavy cost of replacing PV panels, boilers or wind turbines every 15 to 20 years which quite apart from the financial issue, is a significant (manufacturing) emissions saving too.

From The Whole House book, (CAT).

Timber is the only renewable structural building material, Timber has a low embodied energy compared with other structural building materials. Because growing trees absorb carbon dioxide, harvested timber can be seen as a carbon sink, locking up the CO2 which the tree has absorbed, until it is burnt or rots away. One kilogram of dry timber contains about 50% carbon, which binds in 1.8kg of CO2. If the forests that are harvested are then replanted, timber becomes a carbon-neutral material. The growing tree will take up as much CO2 as the harvested one will eventually release. In general, it is easier to achieve higher insulation values, and therefore lower energy use, with a timber construction than with a masonry one. It is difficult to increase the cavity depth in a masonry wall substantially, without extra-long ties or additional structural support. As the Building Regulations call for higher standards of energy efficiency, so contractors and developers are turning to timber frame construction to minimise extra works and cost.

Now, if Scotland's construction industry gears up their timber content by 2030 (Brexit may or may not change everything), can Scotland's woodlands take every advantage possible from the potential higher demand. My guess is that 2030 is too ambitious. The Sullivan Report also suggests the rather quaintly named compromise of 'nearly zero carbon buildings' as more achievable. I doubt there will be many all timber new houses, but the solid timber content must surely rise.

My contribution to Scotland's forestry future is to suggest that all Scottish timber sold for construction should be recognised not only for its own inherent CO2 sink and replanting management plan, but automatically be given an additional 'layered' overage justified because of the obvious upstream environmental benefits for rural Scotland.

Ideally, perhaps there could be an industry accepted clever software that would accurately calculate the carbon sink by entering volume, species, miles traveled, processing and layered environmental overage. Architects and designers could then be presented with a credible certificate for using Scottish timber over imported alternatives. I imagine the distinct commercial advantage I suggest would be contrary to European law, but do we care about that anymore?

In conclusion, it seems to me that the devolution of forestry, zero-life carbon construction, Brexit and the enthusiasm in Scottish Forestry are all coming into alignment.

Finally, I'm sorry to sound so cocky, there is a downside, the Crab House is hardly maintenance free! I'm also well aware that the Crab House is not the ultimate in Eco design. I hope that others will find it a useful springboard from which to design and build better.

For centuries art and ornamentation has been used in architecture, I'm on a one-man crusade to reintroduce it.

Written by,

Robert Lawrence

WOODLAND HERITAGE

for the future of British woods

STUNNING ADDITION TO POPULAR TRAIL IN DUNKELD UNVEILED

A memorial bench with a twist has been unveiled on the banks of the River Tay at Dunkeld to remember Sydney Draper, a former forester to the World Bank who died in July 2015 aged 90.

The new bench in the grounds of Dunkeld House Hotel was commissioned by Woodland Heritage to commemorate Mr Draper, a long-standing supporter of the charity. It has been carefully crafted to appear as though it is twisted and made of several different sections of timber, whereas it has actually been crafted from a single piece of native oak by local artist Nigel Ross.

Mr Ross's creations may be found throughout the UK, from London's Canary Wharf to the Ness Islands in Inverness.

It was through Mr Draper's generous support of Woodland Heritage that the charity was able to support the renovation of Dunkeld's 'Big Tree Trail' in partnership with the National Tree Collections of Scotland and the Perth & Kinross Countryside Trust. Woodland Heritage Trustees felt it was a fitting memorial to Mr Draper to commission the new piece by Nigel Ross to sit on the banks of the Tay at Dunkeld.

Tom Christian, a Trustee of Woodland Heritage, said:

"Sydney loved Dunkeld and returned here on his 90th birthday to plant a commemorative tree. Environmental education was very important to him, which is why he made his generous gift to help support the costs of a new tree trail here at Dunkeld, to tell visitors the amazing stories of the trees around us, the landscape they sit in, and how vital trees and healthy forests are to life on earth. We are enormously grateful to Sydney, and to Dunkeld House Hotel and Land Rover Experience Scotland for their help in making this fitting memorial possible".

"Without trees there would be no life on earth, as we know it."

- Sydney Draper

Visitors to Dunkeld will now be able to sit and rest a while, courtesy of Sydney Draper, as they enjoy the idyllic riverside walks by the Tay.

Woodland Heritage was established as a charity in 1994 by two cabinet makers keen to 'put something back'. A membership-based organisation, the charity supports the resilient management of woodlands, the development of the timber supply chain, the furthering of knowledge and skills within the forestry and timber sectors as well as within the general public, and the tackling of threats to the future supply of high quality UK timber. As well as running the popular 'From Woodland to Workshop' courses and a Field Weekend each year, Woodland Heritage produces an annual Journal. A current priority for the charity is supporting research into Acute Oak Decline.

www.woodlandheritage.org.uk

YARD VISIT TO J ROSE CARPENTRY

In 2008 I started trading as J. Rose Carpentry (JRC), entering into a life of self-employment for the first time. I've only now, after 8 years, completely recovered from the shock! The complexities of the management side of running a business are, as many of you will know, never really apparent until you take the plunge.

Luckily I was supported by my previous 15 years experience as an employed "green oak timber framer" (as it is now generally called), which meant that I could deal with the design and production side of the process more confidently . So now I am getting close to having been in the business a quarter-century, and I'm beginning to feel that I must have mastered the basics!

In that time I've been lucky enough to have worked on a wide variety of structures, from Stirling Castle Great Hall roof in the early days to recreating and adding to the Japanese Garden structures at Cowden Castle, and using every conceivable technique and timber available. And now, to my great satisfaction, I am getting the chance to pass on to others some of what I have learned, in my workshop in Glenisla, in Angus (although my employees at said workshop might rather call it "bossing people around"!)

Anyway I think that the ups and downs of running a business are not going to be as interesting to the readership of this magazine as some general talk about big bits of wood, so let me tell you about the wood from our perspective.

For starters; what exactly do we do at J. Rose Carpentry?

We design and build structures large and small out of mainly green timbers, although we do use some air dry and kilned wood, mostly for the ancillary works associated with the main frame.

We use mostly oak, which is why the style of building has become popularly known as "oak framing", but also douglas fir and larch are often used, and occasionally other woods. Over the years I've built frames using chestnut (sweet), ash, pine, cherry, birch, madeira greenheart, and even sitka spruce. The variation in their qualities sometimes requiring some considerable head scratching!

We source as much of this wood as possible locally, or at least from within Scotland especially through Scottish Wood. Unfortunately this is not always possible, which is mostly due to issues of large volume, short lead-times and sometimes price, though often reduced haulage costs are enough to offset this. This issue of timber sourcing by green oak framing companies is too big a subject to deal with here, but might it make a good article for another edition of the full circle?

On occasion, by engaging the services of Keith Threadgall and his wonderful Woodmiser, we mill the clients own timber, or timber we source ourselves from near our workshop. Sometimes, if we need the odd piece mid-project, and if I'm feeling strong enough, I mill it myself with a Stihl 660, either on an Alaskan frame or using a Logosol timber jig. This is slow of course but is very convenient when the need arises. I haven't yet had the heart to subject any employees to this particular joy, but as it's sometimes a necessity, the day is coming...

One of the beauties of traditional timber framing methods, "square-rule", "double cut", "mapping" and particularly "scribe-rule" which we mostly practice in our workshop, is that they allow easy and efficient utilisation of curved trees which would otherwise be destined for the fire-wood pile, and so add to the value of woodlands. Even the most well managed of woodlands with lovely straight trunks have bendy bits in them somewhere, and it's good to be able to use them, their individual curves often being considered and factored in at the design stage. The Traditional scribe rule-method also accommodates, with relative ease, any timbers that were intended to be straight, but which spring and twist off the saw, are unsquare and/or are imperfectly milled. Long periods of time between milling and framing, with the movement which takes place, are not necessarily a problem either.

As far as the joinery used to create these structures is concerned, it's mostly traditional mortice and tenons, scarfs and lap joints of numerous types, fixed with drawn (tapering) wooden pegs and wedges. We don't use much glue or steel for most of our frame designs. The design of the joints themselves is based on traditional practice but depends really on the designer having a sufficient understanding of shrinkage issues, grain orientation and timber strength values amongst other things. Some common failure modes identified by joint-busting researchers or conservators and restorers of old buildings can be a complete surprise when first encountered, even to those who think they know something about the subject.

In addition to the manufacture of the structures themselves we do glazing onto the frames, cladding, shingling, more conventional joinery and various other stuff which crops up from time to time, but we try always to concentrate mostly on what we know best and can produce at the best value, which is large traditionally jointed structures in green timber.

How is it done?

There are many ways to build a structural frame out of wood, but the method we choose, like most framers in this country, involves a mixture of traditional methods and modern equipment. Our Glenisla workshop and its contents illustrate the balance well:

Start with the fact that its most valuable assets to us are its flat smooth floor (a fairly large area), and its excellent natural light. This is because one of the pillars of scribe-rule is the chalking out of a basic drawing of the frame you are building onto the floor, and then the laying of the timbers over it, levelled and ready for scribing the joinery. Using this method reduces mistakes associated with measuring, speeds up layout of frames, automatically checks for design inaccuracies, and allows the development of unfeasibly complex roof geometry while making its transfer to bent twisted timbers a relatively easy matter.

The workshop does not contain any static machinery although we do use a portable site table saw and a tiny planer-thicknesser by Elu. Our most important power tools are all hand-held as most of the timbers we work on are just too big to present to a machine, you really have to take the machine to the wood instead. Big circular saws, chain morticers and drills are the basic workhorses, with chainsaws, beam planers, and routers also seeing regular use. Thankfully it is still necessary to spend a good proportion of our time using hand tools, which we all enjoy. Some things are just quickest done by hand. All the classic carpenters tools are required; chisels, saws, planes, adzes, draw-knives etc. etc. and so there is a mix of traditional and modern amongst the cutting tools.

To me the tools that most epitomise the traditional timber framer as opposed to other woodworkers are the plumb-bob and the dividers, which are used amongst other things to scribe the joinery. To explain this we need to start from the fact that traditional framers do not rely on preparation of the timber, creating fair reference faces which then make for accurate marking out by way of squares etc, like joiners or furniture makers. We instead work, as I've said already, with distorted timbers, thus saving time and energy on planing. Remember the timbers are big. So by laying out the timbers that are waiting to be jointed together in a frame, one over the other, all nice and level and in the right relationship to each other, we can then use gravity (the plumb bob) as our square, and vertical measurement (the dividers) to transfer the required information up or down between the pieces.

The result is that the shoulders of tenons are often not at all square to the body of the post or stud, and the mortices seem to be all over the place, but when the frame goes together the joints are fag paper tight and the faces flush (or so one hopes....)

The scribe-rule method of laying out and marking the timbers in preparation for cutting has been practiced throughout northern Europe for at least 800 years, probably longer, although our predecessors will have mixed this with other methods when it seemed more convenient, just as we do. Traditional scribe-rule still remains the core of our operation, but we now have the benefit of using some modern equipment to do it which has changed things quite a bit. The tool which springs to mind as having most revolutionised scribe-rule for me is the laser-level, which is used a lot in our workshop. It has speeded up production and increased accuracy drammatically. We use little cross-line levels by Leica which cost just 120 quid. Such a big difference for such a small outlay!

Other notable game changers amongst our modern equipment are a hydraulic lifting table (runs on hard castors so the smooth floor scores once again), forklift, mobile crane on site (hired in obviously), site lighting and a good quality powered sharpening system.

We use the scribe-rule method to produce a very wide variety of buildings and other structures, sometimes extremely complex with mind boggling designs. We can do this with poor quality timber (obviously the strength specification must be met) but still retain the structural integrity which comes from good quality accurate joinery. And we are able to achieve this with the minimal equipment alluded to above because we train and learn, over many years, the difficult skill of traditional framing.

So what's with all this "traditional" nonsense?

In case the use of the word 'traditional' is beginning to sound boringly repetitive, here's why I keep using it: We live in a society which tends to teach us that "development" always produces a better result than what came before. The modern outlook is that technology and automation lead to greater efficiencies, better quality, greater strength etc. in everything we make, and that this is better for society in general. In some cases though this does not seem to be the true, and one of them is green oak framing.

I'm not saying this because I think the results look nicer, or because of some conceived nobility of handywork or anything (although there is value in these opinions as well), but because I simply find that using the old method is actually, on balance, a better way to keep competitive and still produce the best most sustainable product. But let's have a look at the modern competition.

What we call "mill rule" involves straightening and squaring the timber by planing, before framing begins, to create a perfect piece which is then relatively easy to mark up for cutting. Usually big four sided planers are used for this which are expensive and take a lot of space. The pinnacle of this type of practice is the Hundegger K2 a CNC machine of vast proportions which can cut 90% of the joinery in a frame very fast! (there are already 2 of these in England). We however don't own even a big static planer and are not likely to because of the big financial outlay, the need for more space and the (admittedly small) added embodied energy of the resultant wood. But in any case, since for us this method is not any quicker or better overall than the traditional method, we don't use it.

Another modern method of framing commonly called "timber engineering", which involves the use of steel connectors, typically steel flitches with numerous bolts or steel pins to secure them, seems to me to be more of a problem. It is favoured by some designers because the frames can be more easily understood by non-specialist engineers, and because the style has acquired a following amongst architects for aesthetic reasons.

Whilst this method can also be stronger than traditional joinery if well detailed to allow for shrinkage etc. I would argue that in many except the most extreme cases, where the boundaries of size and minimalist design are really being pushed, it is not really necessary. More often than not the strength requirements of these timber-engineering frames can be met by using traditional joinery even without changing the design, but where this is impossible the addition of new all-timber design elements such as bracing or tieing elements, checked by specialist engineers if necessary, can meet those requirements. No need for the steel at all!

That said, I've built quite a few of these over the years, and we do undertake projects of this type at JRC, but we don't encourage them for a couple of reasons:

Firstly, because they are almost always more expensive than the alternative (not what most people expect to hear!). Stainless steel fabrication is expensive and the cutting of the joinery takes longer than traditional joints, even with the very best of equipment for the job like slot cutters and mag drills.

Secondly, and most importantly to my mind, because the embodied energy of the completed frame is increased massively by the addition of the steel. In a typical scenario I calculated recently the frame jointed with flitch plates (to a typical specification for these kind of structures) had 25 times the embodied energy of the same frame jointed traditionally. Yes that's 2500%! This does not seem to me to be the way to treat a material which many people see as a green alternative! Bear in mind also that with energy-in-use figures going steadily down in our progressively better insulated newbuilds, the relative importance of embodied energy is always going up. At passive house level embodied energy accounts for a high percentage of the carbon bill of the building. (If you want to see the calculations they are laid out on my website at https://www.jrosecarpentry.co.uk/embodied-energy.php)

Overall I like to think of traditional timber framing as one of the most ecologically sustainable ways of building large structures. Indeed using local timber is well known, especially amongst The Full Circle readers, to be good for the environment and society generally, but if it's green, untreated, joined together with minimal or no steel, and as durable as oak, it's pretty hard to beat.

All this is not to say that the modern methods in the examples above don't have their place, obviously each has its own particular merits, otherwise they would not exist. Indeed in some cases conditions require them.

But we at JRC just prefer to stay small and lightweight, constantly studying and practicing our craft so that we can stay ahead of the game, and that way to continue being able to utilise almost exclusively one of the most sustainable products we know, green timber, to produce strong and durable buildings.

As far as the future is concerned, I would like to push the scribe-rule system even further into new areas. In this vein more Japanese inspired buildings are on the way which will be both fun and challenging at the same time. It would also be nice to spend more time in the woods selecting specific trees for projects, so maybe a static mill to cut slabs and big curves for our own use might be on the way. I will need advice and training on this first though, so next time there's a course on I may see some of you there.

Written by,
Justin Rose
www.jrosecarpentry.co.uk

MARKETING YOUR BUSINESS

Where does the work come from?

Marketing is a pretty imprecise science and as a small business it is often hard to strike a balance between putting effort into securing new commissions and doing the work that delivers income. This article is describes my experiences in trying to market my business making furniture to commission. I'm not claiming to be any sort of expert - I have learned a few things while others continue to confound me.

My business is relatively new, I started in June 2013. At this time I had a backlog of commissions and needed to make additional pieces to build a portfolio so I was very focused on making. This kept me very busy for about six months but what followed was a slowly dawning realisation that I didn't know where the next job was coming from - I should have been thinking about this all along.

I did seek help from a Business Gateway advisor and even pulled together a marketing strategy. I was initially sceptical about this but it did force me to face some difficult questions including 'who am I targeting?' and 'what is it I am selling?'. The second one sounded like a daft question, but I realised that delivering a commissioned piece is as much about working with the client on the idea as delivering the product; it is the experience of being involved with the design as well.

So, what have I done to get noticed?

Website seemed like a good starting point - we are told that every business needs one, but what exactly is it doing? My original website was very much set up to talk about what I was working on - not just a blog but that was a big element. Over time, I realised that this wasn't what I needed. My website really had to be an online portfolio - people see my work, take a card and want to see more. This led to a major redesign of the website. I have also put some effort into search engine optimisation but am unconvinced this has ever been of benefit. While SEO may be vital in some industries I'm not convinced people Google 'Furniture Maker'. In fact, I think the only results from becoming more visible is a daily flow of SPAM email asking me to import products!

Social media is another 'must do'. I have a presence on Facebook, Twitter, Instagram, Pinterest, Google + and LinkedIn. My main learning has been that it is hard to do justice across that many platforms. Facebook is now my main platform. It is hard to say what sort of return I get from this. It definitely is a good way to keep in touch with existing customers and their friends - I have had a couple of commissions from posts that have triggered a thought about a new project. I did experiment with paid for promotion on Facebook. Although the figures are impressive (£16 to reach 5,000 people!) it is hard to say that this has generated any new business. I know how I regard adverts and suspect most users of social media just regard these as spam. It is, however, a relatively cheap and easy way to reach people so I will continue experimenting with this.

I do still put some effort into the other platforms. It is hard to know what return this gives, but it can't be a bad thing if it makes people aware of what you are doing and are talking about it. I am trying to focus more on the visual platforms (mainly Instagram and Pinterest).

On a more conventional front, I had the benefit of being featured in local and national newspapers as I set up business. This seemed like a great opportunity but I don't think it generated anything useful. Similarly, I have had limited experience of paid for print advertising. I think it is hard for a small business to have an impact through this route and it is very expensive.

Getting even more low-tech, I invested in a roadside sign advertising the workshop a couple of years ago. This has definitely generated a huge amount of work. I am lucky to be in a location where I seem to get the right sort of passing traffic. Having a workshop that is always open could be distracting - I am not trying to open a shop but I have found that a few visitors a week looking at work in progress does generate new commissions (even if some of them turn up when you are in the midst of gluing something up!).

Similarly, participating in exhibitions and holding open workshop weekends does lead to work and possibly some immediate sales.

In summary;

- I have a couple of things that work, a few things that I won't repeat and others such as social media that seem good to do but are very hard to quantify.
- I haven't found spending more money to be helpful but it does take time.
- I think there isn't a hard and fast answer, but I think doing lots of different things on a frequent basis is working. I reckon people often see work in several different places and the more they see, the more interested they get so it isn't reasonable to say 'I've had no work from that source'.

Written by,
Colin Semple
www.colinsemple.com

SPECILIST TIMBER SALES EVENT

In recognition of the growing demand for specialist logs which fall out with the requirements of Forest Enterprise Scotland's high volume industrial scale customers. A new dedicated annual Specialist Timber sale event will commence on the 9th of November 2017 using Forest Enterprise's ESales electronic bidding platform. Some customers might already be familiar with ESales which currently has five fixed sale dates, ESales is located on a webpage on the Forestry Commissions national website covering Scotland, Wales and England.

The reasoning behind the Specialist Sales Event stems mainly from feedback received by specialist timber customers who have commentated on time the spent looking for suitable timber on Forest Enterprise Scotland's regular ESales system. Similarly hosting the Specialist Sales Event offers FES staff a clear destination for timber parcels which might not reach their true market value by not reaching the right customer base.

The answer has been to establish a dedicated stand alone annual sale event where parcels of timber from across the National Forest Estate will be presented to a growing array of specialist customers in Scotland and further afield. The "Specialist Timber" sale event will function in a similar way the Forest Enterprise Scotland main sale events by inviting prospective customers to register and then bid for parcels of interest with the highest bidder securing the parcel. In recent times, there has been a notable increase in large diameter softwoods which once labelled "niche", have come into regular demand by a wide range of customers. Part of the demand for softwoods has come from architectural inspired housing design that has seen a demand for exterior cladding and exposed structural timber. In terms of hardwoods, requirements for Scottish oak, elm and other hardwood species has also increased due to the appreciation of end purchasers for character timber which in many cases can be traced to a particular forest or region. A further market which continues to grow in demand is for hardwood firewood and is becoming ever more available as productive broadleaf management becomes increasingly into play as crops planted in the 1980's come into thinning in an increasing volume and frequency.

Forestry Commission Scotland
Coimisean na Coilltearachd Alba

The Specialist Timber sale will focus on hardwood sawlogs, hardwood firewood and large diameter softwood species such as Douglas Fir, Western Red Cedar and European Larch subject to availability. Varying volumes of timber will sold either as roadside logs or standing which should give customers a number of purchase options to follow depending on the nature and scale of their business. It is planned that the Specialist Timber Sale will evolve into an established sales platform for marketing a broad range of timber products with individual sale lots volumes starting from 25 tonnes upwards to allow small business an opportunity to purchase timber from Forest Enterprise Scotland. Over recent years of marketing specialist timber in small volumes to a specific customer base has yielded premium prices in some cases in excess of £100 per tonne which has purely been attributed to matching the right product and customer.

As a precurser to our December Specialist Sale, a parcel of standing oak thinnings at Paddockmuir near Errol was advertised on ESales in September 2017 as a "Spot Sale" or "one off" event which resulted in a successful bid for the 375 tonnes of standing timber.

- Reed beds and river Tay framed by trees at Paddockmuir

- Roadside oak logs from a previous sale

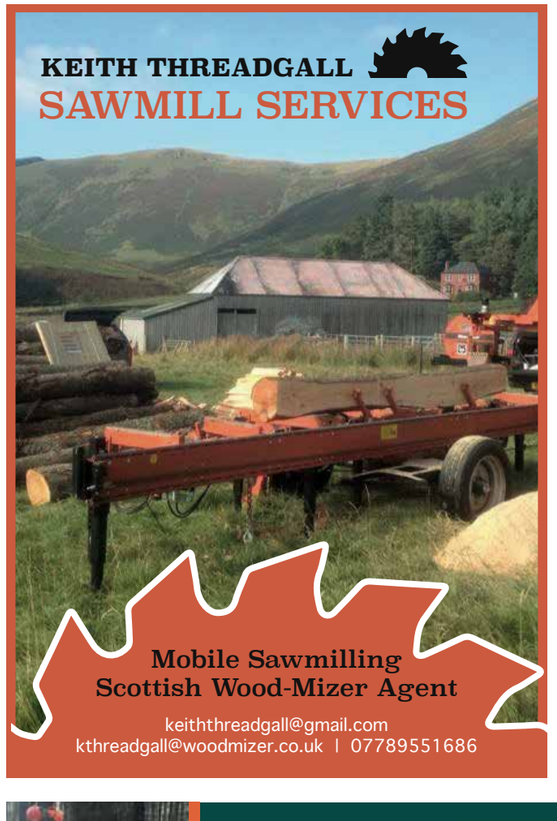
Work is expected to take place at Paddockmuir during the coming months and will produce a meaningful amount of small diameter sawlogs and firewood. The 12 hectares of oak, ash and sycamore at Paddockmuir is typical of many broadleaved woodlands on the National Forest Esate are quite often small and isolated from other woodland blocks. Paddockmuir was last thinned 12 years ago and this current thinning marks a continuation of silvicultual improvement in this small but scenic woodland located on the banks of the river Tay.

In my role as Niche Marketing and Hardwood Development Advisor, a challenge for in advance of December is to make specialist timber customers aware of the coming Specialist Timber Sale and how to submit bids using the online customer registration process. This will entail visiting a broad range of customers and sending e-mails to a diverse range of businesses coupled with writing further trade journal articles to reach not just a Scottish audience but to the UK and beyond.

Written by,

Douglas Halliday

FCS Forest Enterprise Scotland Niche Marketing Officer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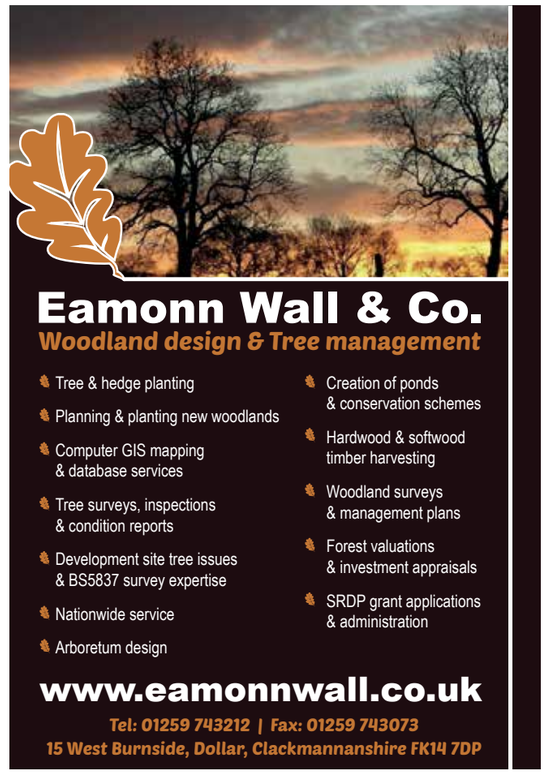
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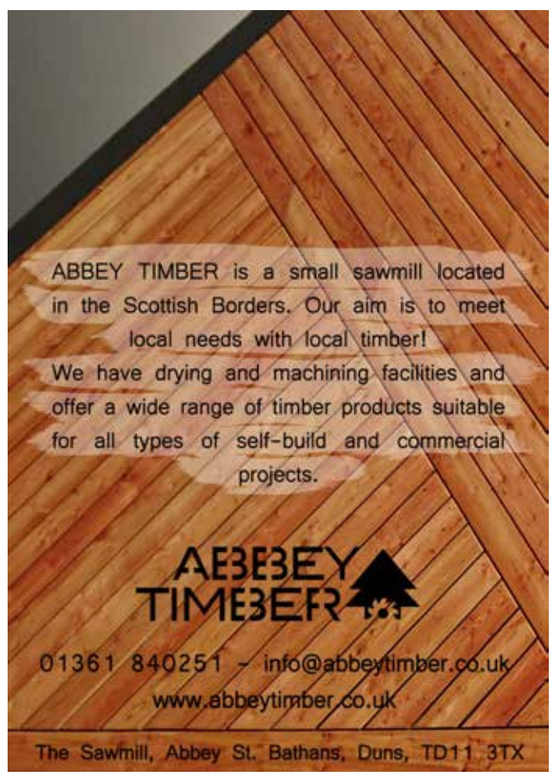
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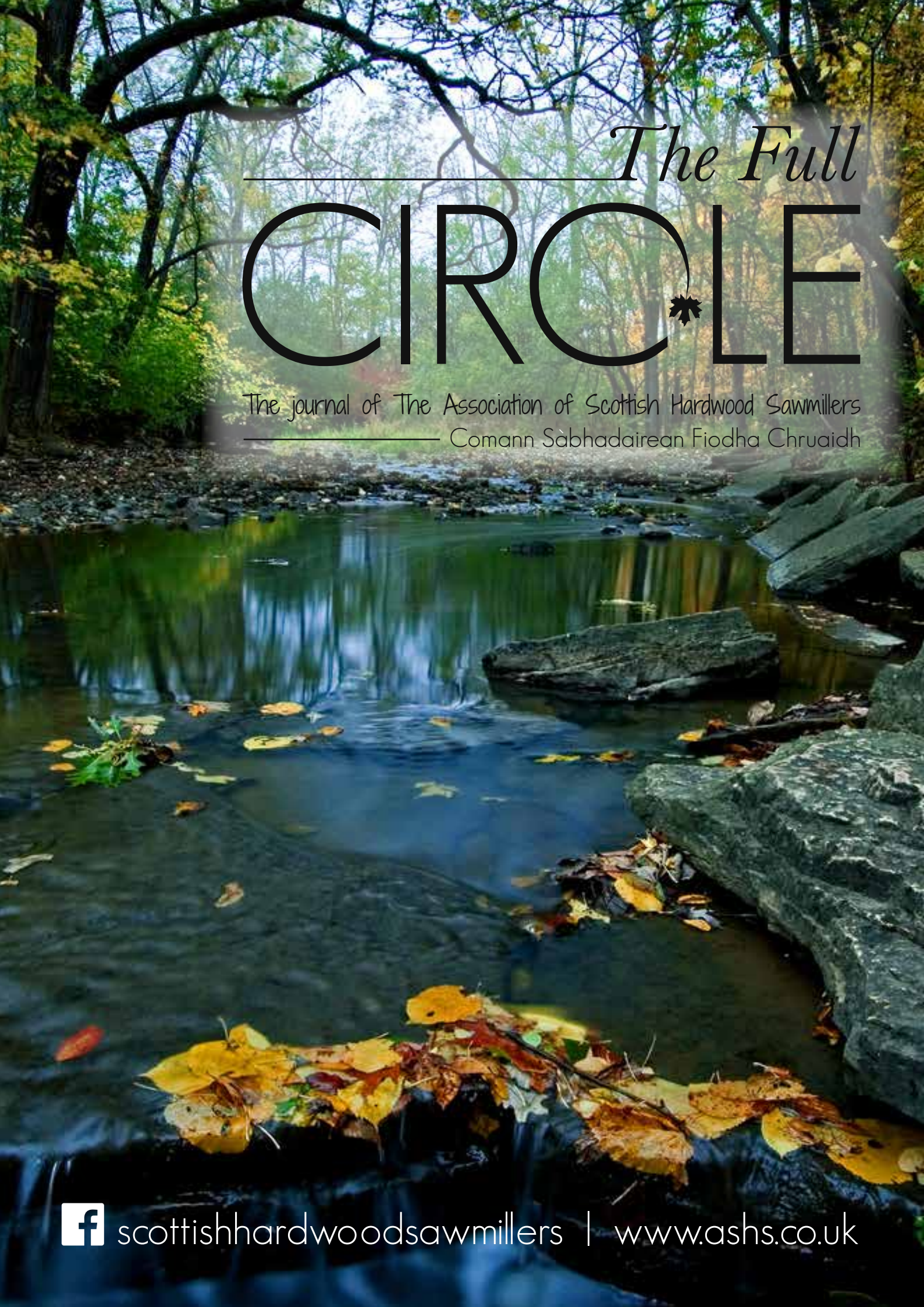

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