

Object Lessons 2 : Wood



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1. How to use this box

The purpose of this box is to help you identify and care for objects made of wood commonly found in social history collections. It is aimed at people with little or no prior knowledge of wood and its properties, or as a refresher course for those who want to brush up their understanding of collections' identification and care. It is intended as a starting point for further exploration. Although wood is notoriously difficult to identify, we hope that by the end of this pack you feel more confident in your ability to make a viable assessment of the more common woods in your collections.

The box is designed for use as part of a programme of self-directed learning. You can use it on your own, or in a small group. You might also wish to take it into a store, as a point of comparison with other objects whilst undertaking documentation work.

It can also be used to support a one-day training seminar, facilitated by a conservator, curator or other wood expert. For guidance on how to use the box as part of a seminar, please turn to Appendix 5.

Getting started

You will need a clear, clean tabletop to lay the objects out on. The box contains 15 objects and 11 samples of different woods. Not all the most common woods are represented (for example, there are no examples of box or pear), and some woods are represented more than once. It will help if you are in a good light to examine the objects.

The resources may be read in any order, either with or without the objects. However, it is intended that the two are used together. Throughout the written resources are activities to help you confirm your identification of the objects, or to show you particular features to look at.

First unpack the objects and the set of identification labels. Examining the objects closely, take a first guess at the identification of each object, by placing a label card in front of each. You may find you know more than you think.

Once you have made a preliminary identification, you can either work through this booklet sequentially, considering your choices as you go, or you can pick one particular wood to study.

A note on the use of gloves: Ordinarily, gloves must always be worn when handling museum objects. However, SHCG is happy for the items in this box to be handled without gloves. You may prefer to wear gloves if you do not wish to get dirty.

2. Wood: basic terminology

To identify wood, it is useful to have a basic grasp both of how trees grow, and how they are cut or worked by craftspeople.

The essential materials of wood are cellulose fibres bonded with lignin, a natural plastic, along with water and trace elements. At a microscopic level, you would see many different types of cells, combining together to form the tissues which we recognise as wood. Wood can both absorb and release water long after it has been felled, which is critical to its long-term conservation.

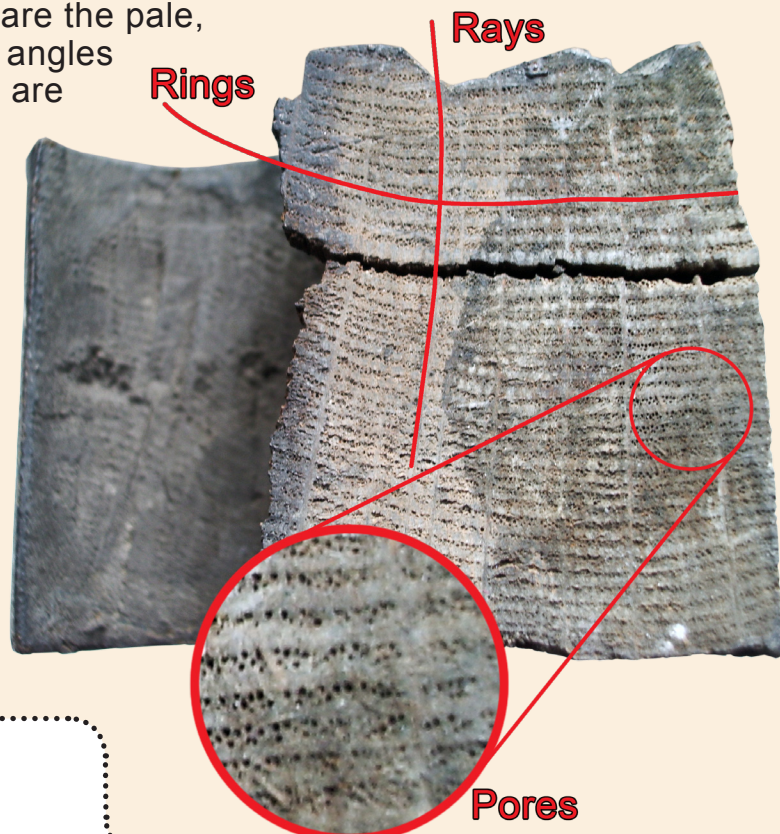
Living trees are nourished by water and nutrients (in the form of sap) which are drawn up from the tree roots by osmosis. Two types of tissue help with the transportation of sap. **Rings** of tissue growing in a circle outwards from the centre help move sap vertically upwards. **Ray cells** are storage tissues which radiate out from the centre, carrying sap horizontally in and out. In hardwoods, additional large cells or channels called **pores** also assist in moving sap upwards.

Different types of wood have different patterns and formations of rays, rings and pores. The pattern that they make on the surface of cut wood is known as the grain. An ability to recognise different types of grain pattern will help you substantially in identifying the type of wood.

Activity 1:

Find the two samples of European oak, in the box of samples. One sample has been cut across the grain, to reveal the pattern of the rings, pores and rays. The rings are the slightly wavy lines in alternating light and dark colours. The rays are the pale, straight lines cutting at right angles across the rings. The pores are the tiny white dots or holes following the lines of the rings.

Now look at the second sample from the same piece of wood. This has been cut along the grain, so the same features look quite different. The pattern of long straight lines of grain which are darker in colour to the rest of the wood is typical of oak.



As most people know, in temperate regions wood grows in annual rings. Each annual ring is made up of two types of wood, which has slightly different properties. Wood laid down early in the growing season (the **earlywood** or **springwood**) normally has larger cells, and is therefore of a lower density. Wood formed later in the year (**latewood** or **summerwood**) has smaller, more compact cells, and is denser. This can normally be seen when looking at the growth rings of an entire tree as an alternating pattern of light rings (earlywood) and narrower, darker rings (latewood).

Activity 2:

Now take the two pieces of decoratively carved moulding. The lighter coloured piece of the two has a number of even-spaced stripes: these are the annual rings. Compare the pattern of these rings with the flat end of the darker piece of moulding. The former has widely spaced rings, showing that this tree grew rapidly. The latter has rings which are closer together, typical of slower-growing trees.



Other differences in the appearance and properties of wood may result according to the part of the tree that the wood is taken from. The hardest and most durable part of the timber is from the centre of the tree, or the **heartwood**. This is where the tissue has ceased to function, with the cells undergoing a chemical change. In some woods, such as oak, elm, pine and mahogany, the heartwood is a different (darker) colour from the rest of the tree. Radiating out from the heartwood is the living tissue of the tree, which is known as the **xylem** or **sapwood**. Sapwood is less dense than heartwood, which may impact on the 'feel' of the object when you handle it.

Activity 3:

Find the chair stretcher, and compare it with the half of a mallet head. They are both made of the same type of wood, but the former feels lighter and less dense than the latter. This might be because the chair stretcher is made of sapwood, or just that the different trees from which these pieces were made grew at different rates. Compare the rays and rings on both. The rings on the mallet head are closer together, showing it grew slowly, resulting in a denser piece of wood.



2.1 Hardwoods and softwoods

Woods are categorised into hardwoods and softwoods. These terms actually relate to the tree's botanical classification and not the properties of the wood, which can cause some confusion! The definitions below are thus just basic pointers. Generally speaking, UK museums are most likely to have hardwoods in their collections. Softwoods are often commercial timbers, found in construction.

Hardwood

Hardwood tends to come from slow-growing, deciduous trees with broad leaves. The wood is usually heavy, tough, and (unsurprisingly) hard. But there are exceptions to the rule: cork oak and balsa wood are both light hardwoods; birches and willows are fast-growing hardwoods; and tropical hardwoods are not deciduous.

Hardwoods often have additional channels for transporting sap, known as vessels or **pores**. These may be visible to the naked eye, or under magnification, as tiny pinholes when the wood is cross cut.

A simple test for the hardness of a wood is to softly dig your thumbnail into it. You will only be able to leave an impression on a softwood. Obviously this is not a test to try on many museum objects, but you are welcome to test the objects in this box.

Most common hardwoods:

Alder	Box	Oak
Apple	Elm	Pear
Ash	Holly	Sycamore
Beech	Lignum vitae	Walnut
Birch	Lime	Willow

Softwood

Softwoods normally come from coniferous or needle-leaved trees, which are fast-growing, producing soft and light wood. The exception to the rule is yew, which is both slow-growing and very dense. Confusingly, some softwoods are harder than hardwoods!

Softwoods don't normally have visible pores. Rays also may be narrow or virtually invisible. Softwoods can sometimes be identified by the presence of resin, or a 'turpentine' smell, particularly when freshly cut.

Most common softwoods:

Cedar
Larch
Pine
Spruce
Yew

(NB this box does not cover all of these types of wood).

2.2 How wood is cut

How a piece of wood is cut and finished will determine much of its final appearance. You might be able to identify the wood more easily if you can also identify the type of cut.

Easiest to recognise is the **cross cut** or transverse surface. This is when the tree trunk is sliced like a Swiss roll cake. The annual growth rings clearly show as a series of concentric circles. Rays may show as lines or narrow bands.

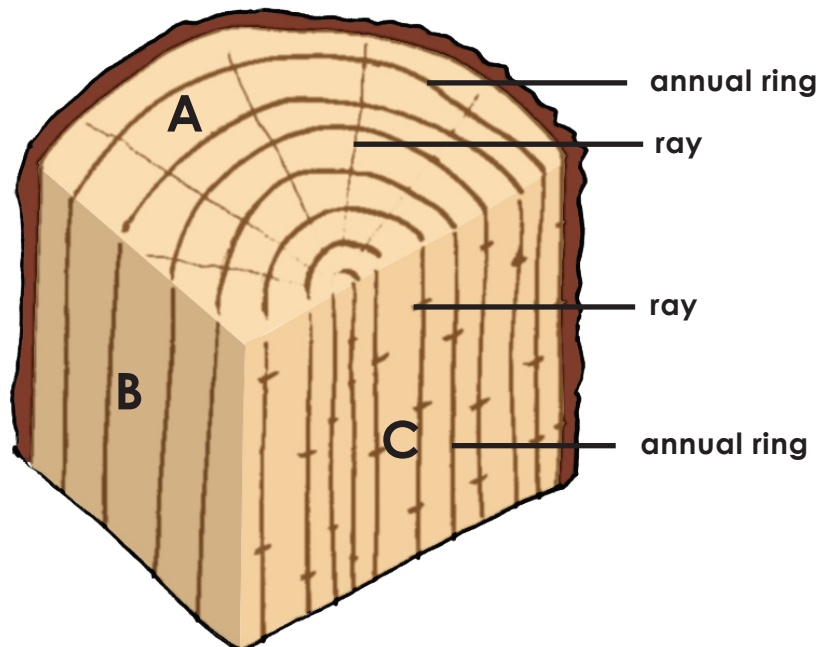
Activity:

Find the piece of pine moulding. It clearly shows the transverse surface – you can see the growth rings in a curved pattern.



A **radial cut** is when the tree is sliced lengthways along the trunk, at right angles to the centre of the growth rings. With this cut, annual rings will show as straight lines or bands. Rays may be visible as flat plates.

A **tangential cut** is one which is at right angles to the rays and tangential to the annual rings and face of the log. Rings may appear as irregular wavy stripes or patches, and the rays will be narrow. This cut is also known as a slash-grain cut.



Surface A is the cross cut.
Surface B is the tangential cut.
Surface C the radial cut.

Veneers are produced by **rotary-cutting**. This is a highly skilled technique, as it will vary to make the best use of the most interesting characteristics of the particular piece of wood to hand. Essentially, a log is rotated in a lathe and a very thin continuous strip of wood peeled off, much like unrolling a tube of wallpaper.

3. Identifying wood – easy places to start

The challenge of wood is its variability: the colour, density, texture and even the smell of a wood can differ from tree to tree – although all these aspects may equally help you to identify something. Ageing, stains, varnishes and usage can further alter the appearance. So whilst this box contains many wood samples, it is noticeable that the actual objects rarely match up exactly with them!

An experienced eye, with a good knowledge of the properties of wood, should be able to make a 'best guess' at the genus of wood (e.g. pine, oak). However, it is extremely unlikely that you will be able to identify the exact species (e.g. Scots pine, American red pine, Asiatic pine). These resources therefore concentrate on the most common genus. If you wish to look at the range of species, Terry Porter's book on *Wood Identification & Use* has been included, as this contains some good colour illustrations.

The best approach to wood is therefore to consider the **function** of the object, and what properties this may require. The following pages on individual woods concentrate on significant properties and common uses. Combine this with a consideration of:

Colour

Looking at the samples in the box will show you that colour can vary considerably, especially with the application of stains and varnishes. However, the tone should remain fairly consistent within a genus. A few woods have extremely distinctive colour characteristics e.g. rosewood can be dark purple.

- Is it whitish? **yes** → go to maple, sycamore
- Is it yellowish? **yes** → go to birch, oak, pine
- Is it reddish or pinkish? **yes** → go to beech, mahogany
- Is it brown? **yes** → go to brown oak, elm, teak, walnut

Woods can also be termed 'one-coloured' or 'two-coloured'. As the name suggests, one-coloured woods show a single, consistent colour. Two-coloured woods may show a contrasting colour between the heartwood and sapwood. This is generally only noticeable in large planks.

Grain

The grain is the visual effects produced by the rings, rays and pores on cut surfaces. It can be very distinct, or it can be scarcely visible at all.

Is the grain distinct? **yes** → go to ash, elm, maple, oak, brown oak, teak

Is the grain only partially distinct, with no or scarcely visible growth rings? **yes** → go to beech, birch, mahogany, sycamore, walnut

Woods with invisible grains include lime, pear and ebony, none of which are included in this box.

If you have a cross cut piece of wood, you can also examine the evidence of the pores. You may need to use a magnifying glass to spot these. They will show up as small circular holes.

Are there no pores? **yes** → go to pine

Do the pores form in distinct patterns, following the line of each annual ring? **yes** → go to ash, oak, brown oak, teak

Are the pores distributed throughout the growth rings? **yes** → go to beech, birch, elm, mahogany, maple, sycamore, walnut



Looking at an object in a raked light can often help reveal the features of the grain. Here, you can see pores clearly following the line of each annual ring.

Smell

Wood will smell the most when freshly cut. Items in collections are therefore unlikely to be particularly strong smelling, especially if varnished. However, interior surfaces may retain some odour.

- Does it smell earthy? **yes** → go to elm
- Does it smell resinous (turpentine)? **yes** → go to pine
- Does it smell leathery? **yes** → go to teak
- Does it smell sharp or acidic? **yes** → go to oak, brown oak
- Does it smell generally pleasant? **yes** → go to apple (applicable for other fruitwoods and lime also)

Place of production

Vernacular furniture and treen is likely to have been locally made, at least until the late 19th century. It is worth knowing, therefore, which trees grow successfully in your region. This guide is separated into native and non-native species, so you can quickly see which woods are most likely to be found in the UK.

For smarter items of furniture and high-value items, the exterior woods may well be imported, especially for fine veneers. However, the interior construction was still likely to be locally sourced. Examine the sides and backs of drawers, for example, to see if they are of a different wood.

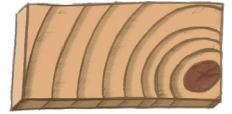
Other considerations

Other aids to identification include the appearance of the rays, the hardness and weight of the wood. For more details on combining all these methods of identification, see Edlin's *What Wood is That?*, pp43-76 (a copy is included in the box).

Native British species

4. Apple

Sample
in box



Appearance

Apple has a warm, pinkish tone. It is normally straight grained, although it can occasionally appear with a spiral or distorted grain. It usually has an even texture.

Properties

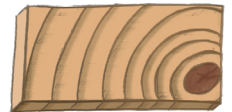
Apple is a dense, heavy and quite brittle wood. Because of this, it does not bend well. It takes stains well, and is most often found in turned or decorative objects.

Common uses

- some tool parts e.g. saw handles, masons' mallet heads
- decorative turned or carved items
- veneers

5. Ash

Sample
in box



Appearance

European ash is a pale and creamy coloured wood. It has distinct annual rings, and on cross cuts large pores should be clearly noticeable. These will follow the pattern of the rings. Ash has distinct straight grains. The heartwood is sometimes dark brown or black-streaked: this is known as olive ash, like the sample in the box.

Activity 1:

See if you can find one piece in the box that matches up to the description above. As an extra clue, ash also has a very 'rough' grain, so the object feels more coarsely textured than some of the other pieces.

Properties

Ash is very strong and yet elastic. These properties are reflected in its use for items that need to be hard-wearing but also have some 'give' on impact. It is a good wood for steam bending, and so is used in chair backs.

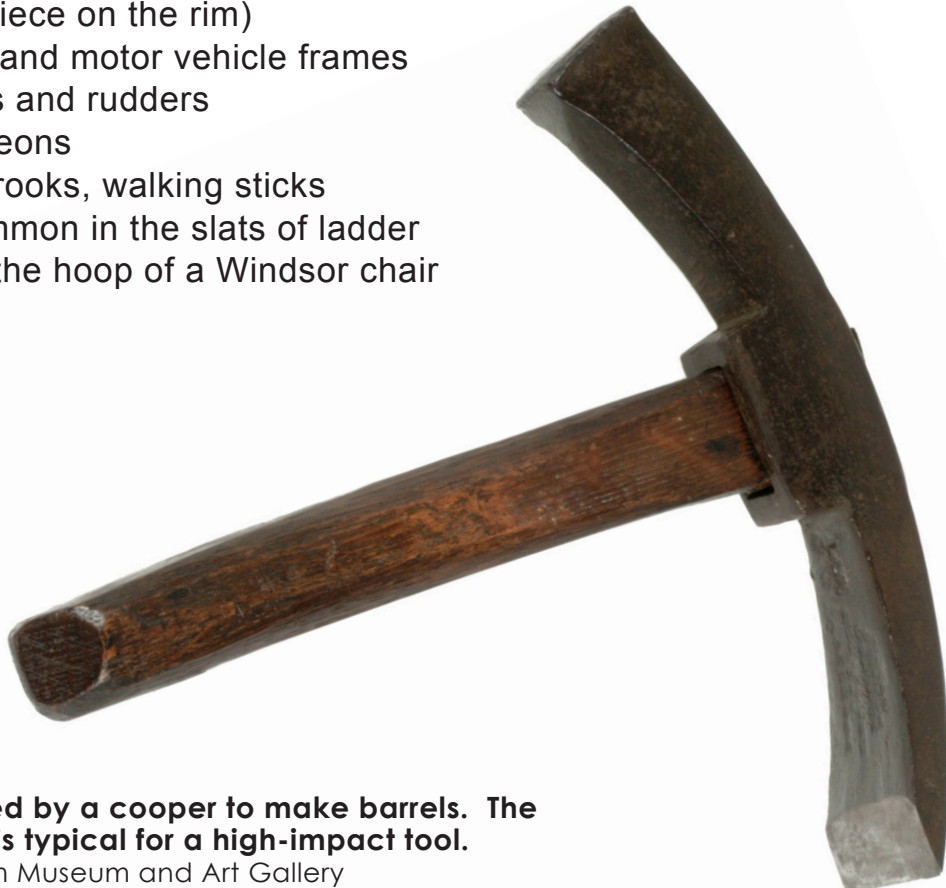
Activity 2:

Find the chair back. If the chair hadn't been dismantled, you would have a tough job identifying this as ash. It shows how stains can be used to 'blind' the grain (i.e. make it less distinct). A process of elimination can be used: the grain is too fine for oak or elm, and it lacks the speckled effect of beech. However, it is only by looking at the exposed ends of the chair back that the wood can be positively identified as ash.



Common uses

- long tool handles, and handles of tools which sustain heavy impact e.g. axes, hammers, spades, forks
- sporting equipment such as hockey and polo sticks, billiard cues, cricket stumps, tennis racquets, baseball bats, javelins
- ladder rungs
- carriage frames, wooden wheel felloes (the curved piece on the rim)
- early aircraft and motor vehicle frames
- oars, paddles and rudders
- police truncheons
- shepherd's crooks, walking sticks
- furniture: common in the slats of ladder back chairs, the hoop of a Windsor chair
- veneers

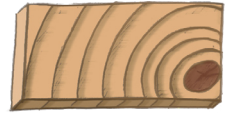


An adze used by a cooper to make barrels. The ash handle is typical for a high-impact tool.

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6. Beech

Sample
in box



There are about ten species of beech in North America, Europe and Asia. In England, it is native only in the south and midlands. This resulted in extensive furniture making trades around Buckinghamshire (especially High Wycombe).

Appearance

Beech is a pale brown hardwood. It is most simply identified by the presence of regular small flecks or specks of darker brown grains in both radial and tangential cuts. Its rings are not particularly noticeable, and its pores are fine and diffuse.

The sample of beech provided is **spalted**. This means that the tree was subject to some fungal decay, which has altered the original colour with some darker patches and irregular lines. Spalting can be used to good advantage in turning items, but it also means the wood will have lost some of its strength.

Activity 1:

Find the carpenter's plane. The short flecky grains typical of beech are clearly noticeable on the underside. The stripes on the side are rays.



Properties

Beech is hard-wearing and tough like ash, but more brittle. It is therefore less suitable for items which need to sustain impact. It is not generally suitable for outdoor use.

It takes stains well, and may be stained to look like mahogany, maple or cherry. In furniture, it is often used underneath more expensive veneers, so it might be found in chair and table legs, drawer sides and backs. It is easily worked in any direction to produce a smooth even surface. It also turns and steam bends well, and is found in many bentwood chairs.

Activity 2:

Next find the dowel which is orangey in colour. Again, short dark flecks of grain can be clearly seen, suggesting beech. As the colour is wrong for beech, this piece has obviously been stained, possibly to look more like cherry.



Common uses

- domestic treen such as bowls, spoons, plates
- kitchen utensils
- short tool handles: screwdrivers, chisels etc
- mallet heads and carpenter's planes
- darning mushrooms and lace bobbins
- simple furniture, especially turned chair legs, school desks, kitchen tables
- veneers and laminates
- plywood
- flooring



**A beech wood bowl,
turned on a pole lathe.
This traditional production
method makes the bowl
difficult to date: it could be up
to 250 year old**

© Birmingham Museum and Art Gallery

Activity 3:

Now that you have positively identified two items, see if you can find the third object made of beech in the box.

7. Birch

Birch is one of the hardiest of broad-leaved trees, with species found throughout northern climates, in Europe, Asia, North America and Canada. European birch is also known as silver birch, which is common throughout the UK.

Appearance

Birch is creamy-white to pale yellowy-brown in colour. It has a fine texture with straight grains, which can appear to be almost featureless. There is no difference in colour between the heartwood and the sapwood.

Properties

Birch is flexible and hard, but not very strong. It is easily worked, and can stain and polish well. Birch trees in Britain often rot in the centre, reducing its usefulness. Birch bark contains a lot of natural waxes which makes it waterproof: it was used amongst Native American cultures for covering canoes and wigwams.

Common uses

- domestic turned items
- cotton reels and bobbins
- broom and brush heads
- twigs used for bessoms (brooms)
- plywood
- furniture

Activity :

Find the ladle. It has a close, tight grain, and clearly has been hand-carved. The fingernail test shows it to be very hard. It is its colour, however, which most strongly suggests it is made of birch.



8. Box

Appearance

European boxwood is yellowish in colour. It is finely textured, normally with straight grains.

Properties

Box is hard, very dense and heavy. It is a strong wood, which stains and polishes well, and is well suited to carving or turning.

Common uses

- carpenter's rulers
- mallet heads
- chess pieces
- woodwind instruments
- snuff boxes, nutcrackers, pipe stoppers and other treen
- handles
- ornamental turned items
- veneers



A boxwood board and roller, used for crimping linen, 1600-1750.

© Birmingham Museum and Art Gallery

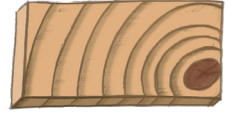


A carved apple corer and scoop, English, dated 1690. Boxwood was frequently used for these types of small, highly carved and polished items.

© Birmingham Museum and Art Gallery

9. Elm

Sample
in box



Three species of elm are most commonly found in the UK: the English elm, the Wych elm and the Dutch elm.

Appearance

Elm is warm, dark reddish-brown, with irregular grain which can sometimes take on a feathered appearance. It has prominent annual rings. It can smell earthy.

Properties

Elm is a soft, light wood which does not bend well. However, it is strong, stable and very difficult to split, which means it is useful as a base for additional pieces of wood to be hammered into (for example, the spokes of a wheel driven into the wheel hub, or the legs of a chair into the chair seat). It does not decay when immersed in water or buried deep underground, and hence it was used both for old water pipes and coffins.

European elm is particularly vulnerable to attack from a fungal disease, which is carried from tree to tree by bark-boring beetles. This caused widespread loss of elms in the UK in the 20th century, so today it is a far less common wood.

Common uses

- chairs (especially Windsor chair seats)
- troughs, cribs and mangers
- coffins
- wheel hubs
- water pipes and pumps; sea defences
- flooring
- veneers



Elm wood bowl made by George Lailey in Berkshire, 1954. Lailey was one of the last pole lathe workers to earn a living from making domestic utensils in England. He was 85 years old when he made this.

© Birmingham Museum and Art Gallery

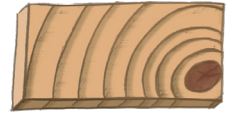


An 18th century elm water pipe, previously buried underground.

© Birmingham Museum and Art Gallery

10. Oak

Sample
in box



There are more than 600 species of oak in the world. Only two of these are native to the UK (the common or pedunculate oak, and the sessile or durmast oak). It was probably Britain's most ubiquitous tree in the past, and has been used for building for thousands of years.

Appearance

Oak is pale yellowish brown when first cut. It has both distinct rings, and distinct coarse pores which follow the line of rings.

Activity 1:

Find the piece of moulding. Look at the flat side of this piece (the reverse of the curvature of the moulding), using the magnifying glass if necessary. It very clearly shows the large coarse pores following the line of the annual rings. This is absolutely typical of oak.



When radial cut, oak can appear two-coloured, as the ring tissue will be darker than the paler rays.

Activity 2:

Find the straight, rectangular chair stretcher. Two sides clearly show the two-tone effect of the grain. The long straight grains are also typical of oak.



Oak is susceptible to fungal attack, which results in a naturally darker stain known as **brown oak**. It also frequently has epicormic growth (where dormant buds sprout along the trunk or branches). These cause distinctive knots or burrs in the timber, which can be used to great effect in veneers or decorative turned pieces.

Activity 3:

Find the small, dark brown dowel, and the half a mallet head. Compare the colour of the two pieces. The former is brown oak; the latter ordinary oak (possibly from Europe or America). Compare also the grain structure – you should be able to see that despite the difference in colour, it is very similar.



Properties

Oak is fairly hard, heavy and dense. Its exceptional strength and widespread availability made it common in all types of construction and furniture. It is good for steam bending. It takes stains well, and can be highly polished.

Oak bark is high in tannin and was used extensively for making leather. The tannin makes the wood very durable. However, it also reacts with iron to cause a stain, so decorative pieces are more likely to be fixed with wood pegs or brass screws. A distinctive feature of fresh oak is therefore its smell of tannic acid.

Activity 4:

Return to the straight-sided, rectangular chair back. Smell the end with the missing dowel: it has been sanded so the smell of tannin should be more noticeable. If not, take some sanding paper to it and see if the smell returns!



Common uses

- house frames and building
- shipbuilding
- fencing
- church pews and fittings
- barrels for maturing spirits/ wine
- coffins
- substantial furniture: chests, cupboards, tables, chairs
- veneers



A typical Windsor chair, of the type made by craftsmen around High Wycombe in Buckinghamshire from the 18th to 20th centuries.

© Birmingham Museum and Art Gallery

A 19th century oak barrel or costrel. Probably used by agricultural workers to carry their daily refreshments in – it holds about two pints.

© Birmingham Museum and Art Gallery



Activity 5:

Working from the four samples already identified as oak, and considering all the features above, see if you can identify which two other pieces in the box are also made of oak. Look at all six oak objects together, and consider how stains, polishes, ageing and dirt can all alter the appearance of an object.

11. Pine

There are around 100 species of pine in the northern hemisphere. Scots Pine is the only pine that is native to the UK. It may be referred to by timber merchants as redwood or deal.

Appearance

Pine is a pale yellowish wood. It has well defined annual rings, with the earlywood being pale yellow, and the latewood a more reddish-brown. It forms knots in distinct groups, with knot-free timber between each group. It may have a resinous smell.

Activity:

There is one object made of pine in the box, identifiable by its colour and the clearly defined annual rings. Try digging your thumbnail into one of the paler sections of wood (the earlywood) between the darker lines. It should leave a mark – a likely indication of a softwood like pine. The deep brown stripes of the latewood are also an indication of a resinous timber.

Properties

Pine is a soft, light but strong wood. It is highly adaptable, and is found extensively in basic construction. It is good for use outdoors once coated with a preservative – so is found in fencing, benches, telegraph poles and railway sleepers. It does not steam bend well.

Common uses

- building, flooring, general inexpensive joinery
- boxes and packing cases
- pit props and railway sleepers
- telegraph poles, fencing
- furniture
- chipboard and fibreboard



A rangefinder telescope with its original pine box, made in the USA around 1860.

© National Maritime Museum

This Russian games board shows how cheaper or more locally sourced woods can be used as the base for expensive veneers. The box is pine, with veneers of burr maple and mahogany. The chess pieces were carved from pearwood by Polish monks, c.1800-1850.

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12. Sycamore

The sycamore is not truly native to the UK, but was introduced in medieval times. As it is now naturalised, it has been included in the native section of this guide. English sycamore is part of the maple family, and is not closely related to American sycamore, which looks entirely different.

Appearance

Sycamore is pale yellowish-white in colour, with a silky appearance and a fine, faint grain. Its pores are diffuse and similarly fine.

American sycamore varies from a pale reddish brown to pinkish colour.

Properties

Sycamore is a light hardwood. It is resistant to splitting, and reasonably easy to carve with hand tools. It does not stain or taint other materials, and can withstand getting wet and dry repeatedly. These properties have resulted in it being used extensively for all sorts of dairy and domestic kitchen equipment, as well as in textile machinery.

Sycamore is very suitable for staining. It is sometimes coloured grey to make 'harewood', which is used in veneers and cabinet making.

Activity:

There is one object in the box which would have been used for dairy products. This suggests it could be made of sycamore. On close inspection, it has a very fine grain and a smooth texture. The dark specks and patches on it are probably caused by a fungus, which sycamore can be prone to. Lastly, it is pale coloured, but slightly 'grey' in tone – try comparing it with the colour of the ladle to see this. All of these factors add up to an identification of sycamore.

Common uses

- tableware
- dairy equipment
- butchers' blocks
- love spoons and lace bobbins
- rollers in textile machinery and mangles
- sides and backs of string instruments: e.g. violins, guitars
- inexpensive furniture
- veneers



A rare 17th century butter churn, turned from a single piece of sycamore. Sycamore is often found in kitchen and dairy items as it does not taint food.

© Birmingham Museum and Art Gallery



A sycamore knitting sheath. Its shallow, chip carved decoration is typical of individually made domestic items often given as love tokens. Probably made around Weardale, 1650-1750.

© Birmingham Museum and Art Gallery

13. Yew

Appearance

Yew heartwood is a golden orange brown. It is often irregular in appearance, with tiny knots, wavy or curly grains, or streaks of darker brown or mauve.

Properties

Yew is hard, elastic and very durable. It splits easily, and turns particularly well. It also polishes well. These features, alongside the individuality of its appearance, means it is considered highly attractive for decorative items and cabinetry.

Common uses

- furniture
- tool handles
- decorative turned items
- longbows
- veneers and marquetry



This spice container was made of yew in southern England around 1800-1850. The stack cleverly unscrews to reveal four separate compartments.

© Birmingham Museum and Art Gallery

Non-native species

14. Lignum Vitae

Lignum Vitae wood was imported from the Caribbean from the 16th century onwards.

Appearance

Lignum Vitae is very dark brown, and can look almost black. The heartwood can have a greenish-brown appearance. It contains an oil which gives it a waxy feel, or it may feel cooler to the touch than other woods.

Properties

Lignum Vitae is a dense and very strong hardwood. The high oil content lubricates it, which makes it suitable for blocks and pulleys, and other simple machine parts (e.g. in textile equipment). It also makes it water resistant, so it is found in high value decorative drinking cups. It is so heavy that even small pieces may sink in water.

Lignum Vitae is very difficult to work with hand tools, and is unsuitable for bending. It tends to be found in small, smooth, finely turned and expensive items.

Common uses

- communal drinking cups and wassail bowls
- mortars and pestles
- mallet heads
- linen smoothers
- bowling balls
- machinery parts
- axle beams



18th century sailmaker's liner, used to smooth out creases and flatten stitches in canvas sails.

©Birmingham Museum and Art Gallery



A spice mortar and pestle, 1700-1830.

© York Museums Trust
(York Castle Museum)

15. Mahogany

Mahogany is one of the most treasured furniture woods in the world, and correspondingly expensive. Different species are imported from the West Indies, Central and South America, and West Africa.

Appearance

Mahogany varies in colour from medium brown to deep red-brown and dark red. It is normally even in colour, with few marked features. The grain is slight: it can be straight, but is normally interlocked. The pores are grouped in irregular clusters. Mahogany is best identified by the warmth and richness of its tone.

Activity:

There is one object made of mahogany in the box. It shows the typical rich red colour. On two sides you can see numerous tiny, white flecks (use the magnifying glass to help you). These are the pores. Compare them with the pores in the piece of oak moulding to see the different distribution patterns between the types of wood. Look also at the closeness of the lines of grain on the unpolished section of the object. 'Tight' grain like this is typical of a hardwood like mahogany.

Properties

Although a hardwood, mahogany is quite light and soft. It is easy to work and quite stable, so it does not shrink or warp. It also stains and polishes well. These properties have made it a traditional favourite for fine furniture and decorative veneers.

Common uses

- high value furniture
- old shop fittings and museum cabinets
- veneers



A mahogany bracket clock made by Crick of London around 1830.

© National Maritime Museum

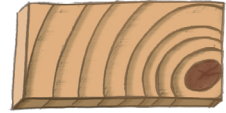


A gout stool made of mahogany, c. 1750-65. The use of mahogany and its complex construction suggests this was a commission for a wealthy sufferer!

© Birmingham Museum and Art Gallery

16. Maple

Sample
in box



There are some 150 species of maple which grow across North America, Europe and Asia.

Appearance

Maple is a pale cream or yellowish-white wood. The grain is not particularly prominent, but can be curly or wavy. The summerwood in rings is normally darker. It has a smooth, fine texture. A bird's eye maple features distinctive brownish spots on a plainer background.

Properties

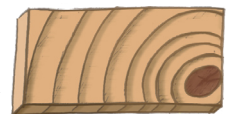
Maple is strong, smooth, and wears evenly without splintering – hence it is often found in dance hall or gym floors. It is not particularly durable out of doors, so is normally used for interiors. It is generally odourless, and so can be found in kitchen equipment.

Common uses

- furniture
- flooring
- joinery such as shelves
- kitchen utensils and food containers

17. Teak

Sample
in box



Teak is imported from south east Asia: typically south India, Thailand and Indonesia.

Appearance

Teak varies from rich golden-yellow to dark brown, with dark and light streaks. It has a dull, rough surface, and an oily feel. It has large pores, in clear rings. Teak may also have a leathery smell.

Properties

Teak is strong and naturally extremely durable. It is so heavy that fresh felled logs will sink in water. It is highly resistant to most forms of attack, whether from insects, fungus, acid, fire or rain. It is therefore used extensively in boatbuilding and heavy construction.

When left outside, teak will gradually bleach whitish grey, unless oiled.

Common uses

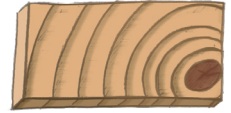
- ship decking and boatbuilding
- house building, flooring and general joinery
- bridges, docks and railways
- garden furniture
- laboratory benches



A cribbage board made by William Baddeley in 1870.
© National Maritime Museum

18. Walnut

Sample
in box



'English' walnut actually originated from the lands around Turkey. It was first introduced into Western Europe by the Romans.

Appearance

Walnut heartwood is a warm greyish-brown, often with irregular dark streaks along the outer boundaries of the annual rings. It is very fine grained, with diffuse, coarse pores.

Properties

Walnut is strong, heavy and durable. Once seasoned, it is very stable, and will not warp or shrink. This combination of stability and strength led to its use in gun stocks.

Common uses

- tableware
- decorative turned items
- gun stocks
- veneers and marquetry

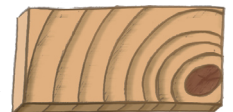


One of a pair of turned wig stands, c.1670-1700. Walnut was preferred over oak for furniture at this time, and spiral twist stems were cutting-edge design - so this was a high-fashion accessory!

© Birmingham Museum and Art Gallery

19. Zebrano or Zebrawood

Sample
in box



Zebrano is a tropical hardwood imported from West Africa.

Appearance

Zebrano has a highly distinctive appearance as suggested by its name, with dark brown stripes on a yellow background. The sapwood, however, has no stripes.

Properties

Zebrano is hard, dense, heavy and strong. It does not steam bend.

Common uses

- veneers and marquetry

20. Environmental requirements

Wood will react to changes in the moisture of the environment. **Relative Humidity** is therefore central to caring for woodwork.

Generally **50-60 % RH** is recommended for wood only objects. Below this, wood will shrink and may crack. Above this, the wood will expand. Damp environments are also more likely to attract wood-boring insects and fungal attack. A fluctuating environment will cause the greatest amount of damage, as repeated expansion and contraction will cause stresses in the wood, ultimately leading to cracks or splits. In furniture, veneers may also lift or split. The maximum recommended fluctuation in humidity recommended for wood is $\pm 5\%$ over any 24 hour period.

The ideal temperature is **18°C** with a maximum fluctuation of $\pm 5^{\circ}\text{C}$ in any 24 hour period.

When an object is made of a mixture of wood and any other material like metal, the temperature and humidity is always as for wood.

Day light can also cause damage, resulting in colour changes to the timber. Light damage is irreversible, and will get progressively worse if no action is taken. Items on display should therefore be subject to a maximum of 50 lux. Windows should also ideally be covered with UV filters. A maximum ultra-violet light level of $75\mu\text{W/lumen}$ should be achieved. Stores should be kept in the dark when not in use.

Insects and pests

Softwoods such as oak, ash and beech can be at risk of attack from insects. Signs of pest damage include exit holes and the presence of insect residue (which often looks like sawdust). This is known as **frass**. A handy guide to identifying wood-boring insect activity in the UK can be downloaded from:

http://www.safeguardeurope.com/pdf_datasheets/woodworm_guide.pdf

The highest pest risk to wooden objects in the museum is from the common furniture beetle, or woodworm (*Anobium punctatum*). The adult beetle is dark brown and 3-5mm long. Eggs laid in the wood will hatch in the spring, and the larvae will gnaw tunnels into the wood. After 2-3 years, and a period of pupation, the adult beetle will eventually emerge by chewing through the wood to the outside world, leaving a characteristic exit hole (and a pile of frass beside it!). Adults will typically emerge in the spring or early summer.

Activity:

There is a small piece of wood in the box marked with tell-tale exit holes. Look at the interior of this piece to see the damage left from the larvae and beetles. This damage is irreversible.

Other wood-boring insects, such as the death watch beetle or the house longhorn beetle, are more likely to be found in structural timbers. They can cause severe damage, so old exposed timbers like oak roof beams should be included in inspections, especially if in contact with damp walls.

Good housekeeping regimes in stores should minimise the risk of insect activity. Use insect traps and inspect them regularly. Check any window sills as insects are attracted to light. Similarly, objects on open display should be regularly dusted and inspected for pest infestations. An annual inspection of wood objects around May-June for signs of insect activity such as exit holes is also a good idea.

If evidence of recent pest activity is found, completely seal the furniture in plastic and separate it from other objects. Consult a conservator or pest expert as soon as possible.

21. Storage and Display Materials

Many wood panel products emit organic acids from the wood, and formaldehyde and acid from the adhesives. At present there is not enough evidence to decide if low levels of these acids are a significant risk to wooden objects, but as a precaution and for composite objects, display and storage materials should meet conservation standards.



Display cases and shelving

Display cases and shelving should be made of inert materials like powder coated metal, galvanised and stainless steel, glass or acrylic sheet. If wood panel products are used they must be totally sealed using an aluminium barrier foil. External air ingress should be minimised to improve the stability of the relative humidity inside the case.



Paints (for use in displays)

Paint may release harmful vapours, which can be corrosive if they build up. All painted cases etc should be allowed to off gas with the door open for a minimum of one week and preferably one month prior to installation.



Acrylic emulsion, eggshell, two part epoxy systems, and powder coating can all be used safely. Water based emulsions are most likely to pass conservation requirements but about 10% of these fail.



Oil and alkyd paints, one part epoxy systems, chlorinated rubber paints, oil modified polyurethane varnish should be avoided.



Paper & Cardboard

Acid free paper or card produced to archival quality should always be used. Packing smaller objects in acid-free boxes or plastic crates can minimise dust and exposure to light, and can help buffer humidity fluctuations.



Textiles

Large objects in store can be loosely covered using Tyvek sheeting to minimise dust and exposure to light, and help buffer humidity fluctuations.

22. Cleaning wood

As with all cleaning of museum objects, every object must be assessed individually before proceeding with treatment. Always consult a conservator first, and make sure any cleaning done is fully documented and photographed.

Often all that is necessary for wood is a light cleaning using soft brushes and a museum vacuum cleaner. If using a lint-free micro-fibre cloth, take care not to snag the material on uneven surfaces, which may be the result of veneers lifting, for example. Spray polishes, or polishes containing silicon, should always be avoided, as they may leave a residue. Similarly, French polishing is a specialist process, which should only ever be undertaken by an expert. A good quality furniture beeswax may be used if absolutely necessary: apply a small amount with a clean lint-free micro-fibre cloth, and buff off with a second clean cloth.

Appendix 1 Glossary

This is a select glossary of some of the more unusual terms used in this guide. For a fuller glossary of wood terminology, see pages 17 to 26 in Terry Porter's *Wood Identification and Use* (a copy is included in the box).

cross cut	wood which has been cut across the grain, like slicing a Swiss roll cake.
earlywood	the wood which grows in the first part of the annual ring, in spring. Normally of lower density than latewood.
epicormic	dormant buds which sprout directly from the trunk of the tree (rather than from the twig on a branch), leaving knots in the wood.
frass	a saw-dust type of residue left behind by wood-boring insects, as they make their way through the wood.
genus	a broad group of trees which are closely related. Each genus normally consists of several species.
grain	the pattern produced by the different fibres and tissue structures which make up the wood.
hardwood	wood from broad-leaved trees; normally harder than softwood.
heartwood	wood from the centre part of the tree which is no longer functioning in supporting the life of the tree. Hard and more durable than sapwood.
knot	a figuration left in wood when a branch or twig has become embedded in the trunk of the tree, with the trunk growing around it.
latewood	the wood which grows in the second part of the annual ring, in summer or autumn. Normally of higher density than earlywood, with smaller cells, and therefore darker in colour.
pore	a cell which transports sap and nutrients. Appears as a speck or tiny hole in cross-section.
radial cut	wood cut at right angles to the centre of the growth rings.
ray	a strip of cells growing radially (from the centre of the tree outwards), to transport sap.
ring	a concentric circle of wood marking one year's growth of a tree in a temperate part of the world.

sapwood	wood from the outer part of the tree, which is softer and more perishable than the heartwood.
softwood	wood from coniferous or needle-leaved trees.
spalting	fungus decay in wood, which can leave a grey-black stain, or fine irregular lines.
species	a group of individual trees all belonging to one genus, which share many of the same characteristics.
springwood	another term for earlywood.
summerwood	another term for latewood.
tangential cut	wood which is cut perpendicular to the rays, at a tangent to the rings.
xylem	another term for sapwood.

Appendix 2

Sources of further information and support

British Antique Furniture Restorers Association (BAFRA)

<http://www.bafra.org.uk/>

BAFRA is the national organisation of craftsmen engaged in furniture conservation and restoration, founded in 1979. The website includes notifications of events, a database of restorers, and a very useful forum on which members will assist with queries and identifications.

Collections Link

www.collectionslink.org.uk

Contains further guidance on Subject Specialist Networks as well as links to ICON factsheets.

firstBASE

www.shcg.org.uk/firstbase

SHCG's online database of resources relating to all types of history collections.

Furniture History Society

<http://www.furniturehistorysociety.org/>

The FHS currently has about 1,700 members worldwide. It produces an annual Journal, quarterly newsletter, as well as lectures and study visits. It also offers travel grants to assist with research into furniture.

The Institute of Conservation (ICON)

www.icon.org.uk

ICON has factsheets on caring for furniture, and runs a Furniture and Wood Group. ICON also runs an online register of conservators to help you source specialist help: <http://www.conservationregister.com>

Rural Museums Network

<http://www.ruralmuseumsnetwork.org.uk/>

An active national subject specialist network made up of numerous museums of farming and the countryside. The Network conducts research into collections, as well as holding training events and publishing a newsletter.

Safeguard Europe Ltd

http://www.safeguardeurope.com/applications/wood_preservation.php

Safeguard is a commercial company offering wood treatment services. Their website includes a downloadable guide to the identification of woodworm.

Tool and Trades History Society (TATHS)

<http://www.taths.org.uk/>

TATHS members have access to a lending library dedicated to all sorts of hand tools and trades, as well as a quarterly newsletter, publications and visits to specialist collections.

Appendix 3 Further reading

Included in this box:

What Wood is That?

Herbert L. Edlin, Viking Penguin, 1969

Domestic Utensils of Wood from the 16th to the 19th Century

Owen Evan-Thomas, Stobart Davies, reprinted 1992

Wood Identification and Use

Terry Porter, Guild of Master Craftsmen Publications, 2006

Other publications:

Treen for the Table

Jonathan Levi, Antique Collectors Club, 1998

A more up-to-date guide with good images, but only available second-hand at vast expense.

Treen and other wooden bygones

Edward H Pinto, Bell & Hyman reprint, 1985

The bible on small objects connected to domestic and working life. Still available second-hand, but very expensive. The Pinto collection is held by Birmingham Museum & Art Gallery.

The Craftsman in Wood

Edward H. Pinto, Bell & Sons, 1962

Useful for properties of different woods.

Dictionary of Wood Working Tools

R.A. Salaman, 1997 paperback edition

Relates to the Salaman collection held at St. Albans Museum. Older hardback versions are still available second-hand.

A Diderot Pictorial Encyclopaedia of Trades and Industry

Denis Diderot, Dover Publications Ltd, 1958

A reproduction of 485 plates from "Encyclopedie, ou Dictionnaire Raisonne des Sciences, des Arts, et des Metiers".

Publications available from the Furniture History Society:

Pictorial Dictionary of Marked London Furniture 1700-1840

Christopher Gilbert

A fully illustrated record of all known examples of London furniture identified by a maker's trade label or stamp.

The London Furniture Trade 1700-1870

Pat Kirkham

A survey of the organization and development of furniture making in London.

A Dictionary of Edinburgh Furniture Makers 1660-1840

Francis Bamford

A comprehensive illustrated Dictionary based on archival research together with an essay on the development of the furniture trade in Edinburgh.

Dictionary of English Furniture Makers 1600-1840

Index to the Dictionary of English Furniture Makers 1660-1840

Edited by Geoffrey Beard and Christopher Gilbert

The definitive work on furniture makers of any nationality active in England between 1660 and 1840. Makers are listed in alphabetical order with biographical details, commissions and information about signed or documented pieces. The accompanying index has nearly 35,000 entries.

If you have found other books, journals, websites or other resources that you would recommend for the study of wood, please add them to FirstBASE, SHCG's online database of reference materials. See www.shcg.org.uk/firstbase

Appendix 4

Selected Museums and Heritage sites to visit

Most open-air museums have excellent collections of vernacular furniture and various agricultural/ industrial/ craft tools. Particularly strong collections can be found at:

- Amberley Working Museum, West Sussex (includes a Bodgers' Camp, TATHS displays, wheelwrights and West Sussex Woodturners)
- Beamish North of England Open Air Museum, Co. Durham
- Black Country Living Museum, Dudley, W. Midlands
- National Museum of Rural Life, Kitchside, Scotland
- Weald and Downland Museum, Sussex
- Welsh National History Museum, St Fagans, Wales

Two outstanding **specialist collections** can also be found at:

- Birmingham Museum and Art Gallery
The internationally significant Edward Pinto collection of more than 7,000 items of treen. See <http://www.thepinto.net/> for a selection of the collection.
- Museum of St. Albans
The Salaman collection of woodworking tools, dating from 1700 to 1950.

Other collections:

- Bucks County Museum, Aylesbury - furniture making
- Cheltenham Museum and Art Gallery – Arts and Crafts furniture
- Chilton Open Air Museum, Chalfont St Giles – chair factory
- Gloucester Folk Museum – carpenter's and wheelwright's shop
- Wycombe Museum, High Wycombe – chairs and furniture making
- Geffrye Museum, London – high quality furniture
- Museum of English Rural Life, Reading – tools and vernacular furniture
- Victoria and Albert Museum, London – high quality furniture

Appendix 5

How to use this box as part of a one-day seminar

The contents of the box and the resources can be used as the basis of a wider one-day event, if you would like to deliver training to more curators in your region, or, for example, as a programme of basic collections care for volunteers and other non-curatorial staff.

The SHCG Seminars Organiser can offer advice on how to run a one-day event, and may be able to suggest contacts in your area for delivery. Below is a brief step-by-step guide of things you will need to consider. From experience, we recommend that one-day events accommodate no more than 25 people.

Content and delivery of the event:

- Consider who will deliver the day. Do you have conservation staff who would be willing to lead it? Or is there a local expert who could be bought in for a day?
- Consider whether you could add to the sample programme: are there any interesting and relevant conservation case studies or wood collections in your region? Is there an aspect of a local industry that you might wish to cover in more detail?
- Once you have identified who will deliver the day, fix a date according to their availability.
- A typical timetable might be:

10.00 Arrival and tea/coffee

10.15 Talk: the features and properties of wood

11.00 Break

11.15 Handling session: identifying items from the box

12.00 Lunch

1.00 Talk: Collections management and cleaning

2.00 Handling/ viewing session: additional items from your collections/ the local social history of woods/ particular trades/ tools

2.45 Break

3.00 Opportunity for delegates to bring own objects and discussion

3.50 Summary

4.00 Close

- Make sure that the speakers are briefed in advance on the content that you require and that they provide a handout or notes for delegates to take away.

Organisation before the event:

- Source and book a suitable size room. This will need sufficient chairs in lecture format, and space for up to four trestle tables for objects with room between them for people to gather around in small groups. You may also need to provide a data projector, screen and laptop depending on the speaker's requirements. A second space, or a clearly sectioned-off part of the room, will be needed if you intend to offer refreshments and lunch, to keep food and drink away from the objects.
- Consider accessibility issues before booking the room: will all delegates be able to use it, and get to an accessible toilet if needed?
- Cost the event. Consider the following possible expenses:
 - Room hire
 - AV equipment hire
 - Speaker's travel and lunch expenses (remember to ask them to provide a receipt). SHCG does not normally pay fees to speakers as this can make events too expensive for small museums to attend. However, a freelance expert may require some recompense for their time.
 - Refreshments and lunch for delegates. You can ask delegates to bring their own lunch if you are unable to provide this, but a tea or coffee and water is normally needed at some point!
- When you have assessed your expenses, you may have to consider charging a nominal fee for your event. Divide the total cost by the anticipated number of participants for a rough calculation of a break-even charge.

Promotion of the event:

- If you would like to promote your event to a wider audience, advertise on the SHCG website and email list. Your regional MLA may also have a news alert service.
- A sample booking form has been provided for you distribute prior to your event with any advertising. An editable version is available on the CD in this pack, for you to adapt to suit your needs. Remember to ask delegates in advance if they have any particular access requirements. Be prepared for requests for information in alternative formats.
- Once people have booked, you will need to provide them with a programme for the day and directions to your venue.



Organisation on the day:

- Provide a participant sign-in sheet and name badges.
- Provide a delegate pack, containing the programme for the day, any handouts, and evaluation sheets (download from the CD in this folder).
- You will need to nominate a person to act as convenor on the day. Their role will be:
 - To welcome and register delegates.
 - To inform delegates of housekeeping/health and safety issues of the venue.
 - To introduce the speakers and sessions.
 - To facilitate discussion sessions.
 - To collect evaluation forms at the end of the day.

Appendix 6 Sample booking form

The CD in this pack contains a version of this booking form in a word format, for you to edit to meet your needs.

**Object Lessons 2:
An Introduction to Wood**

This seminar will provide a hands-on introduction to the care and identification of wood. Drawing on handling resources provided by the Social History Curators Group, it will provide delegates with a basic understanding of how to identify and care for the wood species most commonly found in social history collections.

Venue: *(insert host venue here)*

Date: *(insert date of seminar here)*

Time: *(insert times of seminar here)*

Cost (including lunch): £*(insert cost)* SHCG Members £*(insert cost)* Non-members

LIMITED PLACES – BOOK NOW! We expect this seminar to sell out quickly.

Booking Form – Object Lessons 2: Wood

Name: _____

Workplace: _____

Address: _____

Postcode: _____ Tel: _____

Email: _____

Are you a member of SHCG? Individual Institutional No

Special dietary requirements: _____

If you have any access requirements, please give details on the reverse of this form or contact *(insert name and details of organiser here)*

I enclose a cheque for £_____ made payable to *(insert account name here)*

Or Please invoice Purchase order no _____

Please return the completed form and payment by *(insert booking deadline here)* to:
(insert name, address, and telephone number of seminar organiser here)

Appendix 7 Evaluation form

Once you have finished using the loans box, it would greatly help SHCG if you could complete this evaluation form. Your comments will be used to help us plan future learning resources. You can photocopy this form, or print a copy off from the CD in this pack.

Object Lessons 2: Wood Evaluation Form



1. Please rate the following statements:

	Strongly Agree	Agree	Neither Agree / Disagree	Disagree	Strongly Disagree
I have a better understanding of the properties of wood.					
I have increased my understanding of the common uses of different woods in social history collections.					
I have increased my understanding of the care and storage of wood collections.					
I have found new sources of information and support which might help me in the future.					
I have increased my knowledge of how to identify wood.					
I feel I will be able to document wood collections more accurately.					
Using these resources has increased my confidence about working with wood collections.					
I found the resources inspiring.					
I will use the information I have learned in the workplace.					
I feel more able to interpret wood collections in exhibitions and displays.					
I would like to get more involved in SSNs or other specialist groups interested in wood.					

2. What was the most valuable part of the Object Lessons Resources?

3. How could we have improved these resources?

4. How did you use the resources?

Self-directed learning..... Group seminar.....

Other (Please specify)

5. How long did you borrow the resources for?

6. What themes would you like us to consider for future handling resources?

7. Are you a member of SHCG?

Yes..... No.....

8. Any other comments or suggestions:

We would be grateful if you could take the time to complete this form. Please post your completed form to
Zelda Baveystock, National Museums Liverpool, William Brown Street, Liverpool L3 8EN

Acknowledgements

This pack was written by Zelda Baveystock, drawing extensively on the following publications:

Edlin, H. L. (1969) *What Wood is That? A Manual of Wood Identification*. New York: Viking Penguin Group

Porter, T. (2006) *Wood Identification and Use*. Lewes: Guild of Master Craftsman

Thanks also to Bob Elsey for his help in identifying the objects, Mark Collett for making the samples box, Karen Barker for writing chapters 20 and 21, and Allison Roohi at Northumbria University for packing the box.

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Objects supplied by: Beamish North of England Open Air Museum, Hampshire Museums & Archives Service.

For further information on the activities of SHCG, see www.shcg.org.uk



**RENAISSANCE
NORTH EAST**