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Chapter 2
The Cultural Heritage of Woods and Forests

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Abstract

Contrary to popular belief, our ancient woodlands in Britain and across much of Europe, are not 'wildwoods', nor even are they remnants of a 'wildwood'. These truly cultural landscapes mix nature and human history, woven together as a unique and rich tapestry of ecology and history (Rackham, 1976, 1980, 1986, 2006; Smout et al., 2005). The story of the woods is there to be 'read' if you have the time, the enthusiasm. The types of landscapes, the geology and the climate, and even to differences in industries and in manufacturing history, have placed varying demands on woods resulting in strong regional distinctiveness. This eco-cultural evolution led to woods with strong, local character depending on the ecological types of woodland present originally, and then varying uses over the centuries. From South Yorkshire's wood colliers, to the Chilterns bodgers, the tanbark merchants of Cumbria, and the clog makers of North Yorkshire, they each left a unique and indelible footprint in the landscape (Jones, 2003, 1998; Jones and Rotherham, 2012; Jones and Walker, 1997).The crafts and the evidence in the woods of former activities are a unique cultural resource, and like many such aspects of living heritage, are under imminent and on-going threat. In order to safeguard this unique heritage, essentially a living landscape, you first need to find it, and then recognise it, and then care for it (Rotherham, 2013b).

There is widespread popular and academic interest in woodlands, their history and the associated archaeology (Rackham, 1986; Rotherham et al., 2012; Muir, 205; Peterken, 1981; Hayman, 2003; Fowler, 2002; Perlin, 1989; Hare, 1998). However, there is currently very little literature that addresses the history, heritage and archaeology of woods in a coherent and holistic way. With the publication in 2008 of the Woodland Heritage Manual (Rotherham et al., 2008), there is now an accepted approach to this subject across Europe and even in the USA, and the interest in this long-neglected field is growing rapidly. The subject covers a wide range of topics from extractive industries in woods to the crafts based on the extraction or harvesting of woodland products and their processing. For centuries, these crafts were at the centre of British and European societies and cultures, and were fundamental in the creation and protection of many landscapes that we value today.

However, as technologies changed and as markets for products evolved, many of the woodland traditions and crafts were abandoned and forgotten; just a few surviving to the present day. However, the footprints of these craftsmen are indelibly etched into every 'ancient wood' across the continent. The only problem then is in recognising and understanding the evidence. Even the woodland wild flowers and their distributions reflect the one-time uses of the sites, as do the formerly 'worked' trees; even the humps and bumps of soil now present as archaeology. These woods contain uniquely rich diversities of 'features', ancient and modern, from Bronze Age carved stones, to hilltop enclosures and field systems, woodbanks and ditches, trackways, charcoal platforms, Q-pits, bell-pits, quarries, building platforms, and more (e.g. Ardron and Rotherham, 1999; Rotherham and Ardron, 2006; Rotherham, 2007a). The heritage includes archaeology 'in' the woods and archaeology 'of' the woods. The former is the mix of features protected in the landscape because in the wooded area there has been only limited gross disturbance and destruction. The latter is the heritage associated directly with woodland management and resource use.

This chapter introduces ideas and concepts of the cultural landscapes of wood and forest. It develops approaches to 'reading' the evidence of species, archaeology and other heritage. Conservation issues and concerns are also introduced.

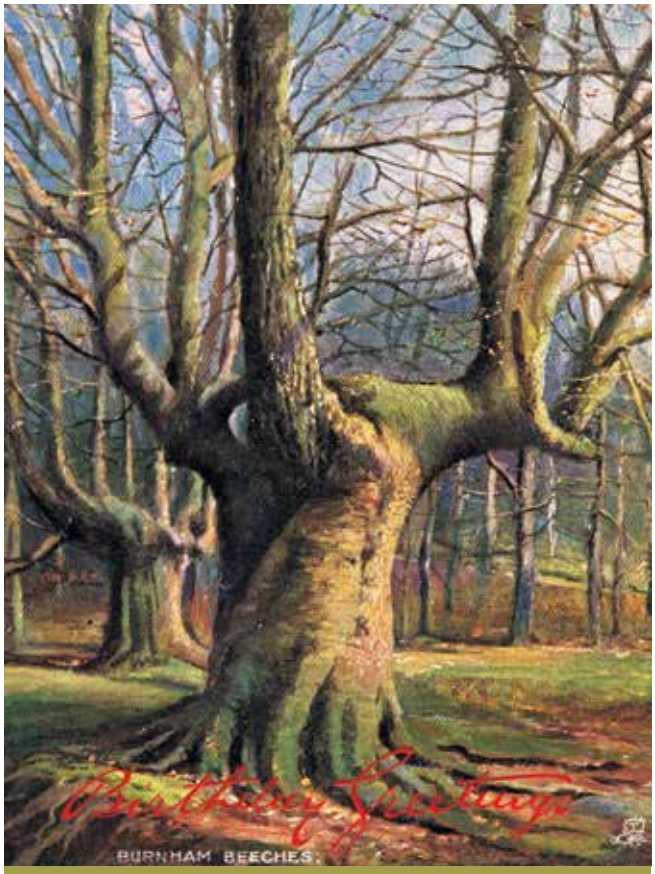
Reading the woodland landscape

Sometimes, reading these landscapes can take the researcher back over four thousand years or more of

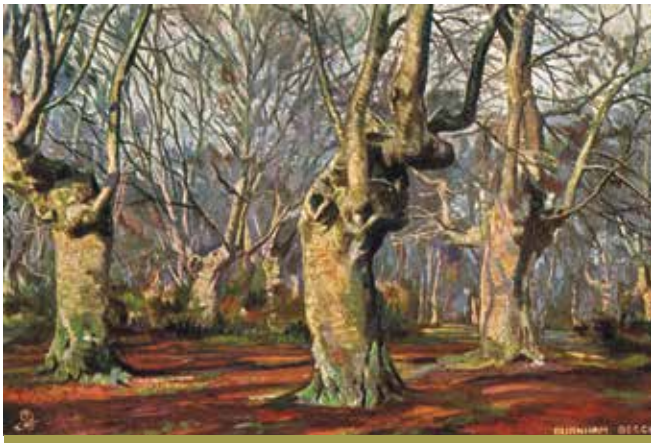
history, even in urban ancient woodland. Small-leaved limes (*Tilia cordata*) can be 3,000 years or more old (e.g. Pigott in Beswick and Rotherham, 1993). This rich diversity of human artefacts, evidence of activities and the ecology itself, can help in reconstructing an image of a local landscape and its unique history. The evidence is physically imprinted into the environment around us, but it is also in our woods and wooded landscapes are also recorded in place-names, settlement names, and field-names such as Wood End, Wood Lane, Hagg Side, Hollins End, Woodside, Endowood, Woodseats, Woodthorpe, Willowgarth, Owlerton, Owler Carr, and the like. Woodseats for example would be 'the cottages deep in the wood', Gleadless 'the woodland clearing with the red kite' and Clayroyd a 'woodland clearing with clayey soil'. From the early medieval times, woods were themselves named: Park Spring or Parkwood Springs (the park coppice wood), West Haigh Wood (the enclosed wood), Newfield Spring (the coppice wood by the new field), Ecclesall Woods (a woodland in Ecclesall parish split into several medieval 'woods'), and many others. Family names also reflect our wooded past with Underwood, Woodward, Herst, Hirst, Hurst, Hirsthouse, Heston, Frith, Frith, Wood, Turner, Collier, Greenwood, Tanner, Wood, Woodman, Woodhouse, Woodreve, Forester, Frith, Warren, Warrener, Warrender, Stubbs, Park, Parkman, Parkhouse, and Parker, being just a few examples (Rotherham, 2013b).

To walk through an ancient wooclod is to tread in the footsteps of the ghosts of those who once lived and worked in the medieval and early industrial countryside (e.g. Rotherham and Jones, 2000). The ancient wood is frequently part of a greater landscape of medieval park, of common or heath, of chase or forest (Rotherham, 2007c, 2007d). Identifying ancient coppice stools, stubbed boundary trees, or veteran pollards from a long-forgotten deer park or old hedgerow will aid an understanding on how the countryside looked and functioned in times past (Photograph 1 and 2). These wonderful ancient landscapes come to life as we unfurl the history of woodland workers and others over a thousand years or more. In many cases, there are strong regional differences and identities that persist in the woods of today. These may relate to particular industries and intensive uses such as the Derbyshire and South charcoal makers who worked so hard to fuel the early Industrial Revolution (Photograph 3). With practice, these regional identities can be recognised and identified. Fragments of ancient woods are to be found as broad 'hedgerows' along old sunken lanes and trackways in urban and countryside areas, often still with veteran trees and woodland indicator plants (Photograph 4). They are found close to rivers and streams, in green-spaces such as recreational parks and leisure grounds, golf courses, and even on modern housing estates. You just have to look (Rotherham, 2013a).

Finally, the study of woods and woodlands lends itself to the local community-based group and the local enthusiast (Rotherham et al., 2008). Importantly, almost everyone will have one or more suitable sites on their doorstep and accessible for study and enjoyment. Yet many sites remain poorly known and little understood. Studying your local patch can make a real and lasting contribution to our knowledge and understanding of these most iconic and important, but often misunderstood, landscapes. Step inside your local wood and, with practice, you can read its landscape and its ecology like the pages of a book. Ancient woodlands are remarkable repositories of history and archaeology, of the woodland and its management, but also of people and communities who have lived in that landscape perhaps back to prehistoric times. Remarkably, they have until recently been largely overlooked by archaeologists. This is not



Photograph 1: Burnham Beeches fuelwood pollards.



Photograph 2: Burnham Beeches fuelwood pollards.

Photograph 3: A Hearty Meal – Charcoal Burners, Balcombe Forest, West Sussex; 1908.

Photograph 4: Big Belly Oak, Savernake Forest, Marlborough.

always the case when there is obvious major heritage on a site such as some of the Chiltern beech woods. Here the massive prehistoric fortifications are well documented. Yet in the heart of the city of Sheffield, in Ecclesall Woods, an entire hilltop enclosure, a Romano-British field system, a medieval deer park boundary, and hundreds of charcoal hearths, lay undiscovered until about ten years ago (Rotherham, 2012; Rotherham and Avison, 1998; Rotherham and Jones, 2000).

More recently, two other more modern forms of woodland archaeology have come to light. These are the extensive but sometimes enigmatic remains of wartime and military use of the woods, from bomb craters, to trenches and gun positions. These date from the Napoleonic wars to the Cold War military activities of the 1950s and 1960s. The second type is what Paul Ardron and I have described as 'community archaeology', which is made up of the dens and play areas of children and young people. These include BMX tracks and for example, the rough shelters sometimes built for war-gaming or by itinerants. All these activities are adding to the centuries-old palimpsest of the woods.

Many woodland crafts, having survived as oral traditions down the centuries, have succumbed quickly to urbanisation and industrialisation during the early twentieth century (Rotherham, 2007a; Rotherham and Egan, 2005). This loss began in developed Western Europe but has now spread both east and south in to Mediterranean countries. Of some of these once commonplace crafts, we know very little. However, often in the 1950s, in cases such as charcoal making, the skills were rescued and recorded, from the brink of oblivion. In this way, some of the old skills and traditions have been demonstrated, recorded, passed on, and even re-kindled. Some crafts were written about in estate records and aspects of use can be elucidated from the archives. Mel Jones' archival research in South Yorkshire for example, has given a fascinating insight into the precise and particular management of sites and trees (Jones, 2009). This can be down to the exact day on which trees were cut and used, the people involved in both buying and selling, and the actual price paid. Some crafts and their products remain shrouded in mystery, and even if records were made and survive, they often use words to describe materials and amounts, which are obscure and difficult for us to decipher. These are lost crafts and skills that will never be re-created, and for which, even their products are long-since obsolete.

Today a there is a growing interest in rediscovering the old uses and the old ways. However, only a few people actually make a fulltime living from woodland crafts. The work is hard, and often requires attention on-site twenty-four hours a days, seven days a week. This is the case when a charcoal burn is on. Aside from the satisfaction of traditions maintained and jobs well done, the rewards are scant. New craftsmen make their living from the craft and education; selling both product and process (Rotherham, 2013b; Jones, 2009).

The losses affected not only the people but the woods too. As old crafts and skills died away, whilst many woods have survived, just, others have been destroyed. Frequently, especially between 1940 and 1980, sites were converted into conifer plantations, or ploughed up for agriculture. The woods that remain hold a unique archive, the footprints and ghosts of the men, women and families who lived and worked the woods for centuries. Today there are moves to re-discover old woods and remove the imposed conifers or hardwoods such as sycamore. In a few cases, there are attempts to put the craftsman or woman back into the woods as well. Yet this can only be a token gesture since the work is hard and poorly paid. In addition, for now at least, we simply do not depend on the working woods as we once did. However, there is an emerging new breed of woodland craft workers, the wood carvers, who harvest timber and work with grain. Perhaps in future decades these people can help build a spiritually and financially rewarding bridge to the woodland crafts of the past. This is a new forward-thinking approach that can join green wood turners, charcoal burners, hurdle makers, clog makers, local people and conservation managers in growing new awareness and attachment to local woods

You might think that all is well in the twenty-first

century woods, but in many countries, that is not the case. On the one hand, the woods have regenerated and are rejuvenated by abandonment and so tall trees grow where once there was a scrubby coppice. However, as the high canopy or the outgrown coppice become dense, the light is closed out and ground flora is suppressed. Consequently, the glorious mats of woodland ground flora, the bluebells, anemones and wild garlic, disappear. Furthermore, as governmental planners and others such as industrialists, turn their eyes to biofuels from the woods, an even worse and more damaging fate awaits them. It is argued that this use is in keeping with their origins as 'working' woods. However, the differences between traditional coppice management and twenty-first century biofuel harvesting are stark indeed. Today, instead of employing manpower, horses and oxen to work the modern woods, these contemporary industrialists apply a single man on a huge tracked vehicle. This individual can extract and process large timber all at once and importantly too, has no long-term relationship with the landscape in which he or she works. The impact on the ground can be devastating and landscapes, sometimes several thousand years old, and protected from major disturbance by the presence of traditional woodland, are obliterated forever in a single afternoon. The itinerant machine driver has no connection to the place or the craft, whereas the traditional woodland worker was frequently a resident of the local village. Moreover, these skills and crafts were mostly oral traditions passed down over generation with close ties to the particular craft but also sometimes to the place too.

The woodland crafts and other industries in the woods

Early peoples would always have been involved in using trees and woodland, and in a great many different ways (Rotherham, 2005, 2013b). The people involved in managing woods, grew over the centuries into specialist craftsmen and their families, often undertaking particular crafts for specific markets. Some occurred widely across Europe and for example, all across medieval Britain. Others were localised or regionally distinctive. They included charcoal burners or wood colliers, white coal makers, clog makers, bodgers, tanners, tan-bark merchants, timber merchants, firewood merchants, potash makers, basket makers, and others Photograph 5). Alongside the woodland crafts were other industries based on particular resources found where woods were located: mining for mineral coal and ironstone, digging and quarrying building stone, sand and gravel, and quarrying for rock including refractory ganister. All these activities, some on as local, small-scale operations and others industrial, left marks as scars on wooded landscapes. Whilst these crafts and industries sustained woods and employed local communities, they frequently changed the woodland ecology forever. When exploitation ended, often quite abruptly, the surviving woodland began an often-slow change in its ecology through a predictable pathway known as a 'succession'. By understanding such changes and the ecological requirements of species such as ground floor flowering plants, we can use them as 'indicators' of woodland type, history and quality (Photograph 6).

Photograph 5: Clog block makers in the woods.

Abandonment of traditional management followed by successional change, means that todays' woods look and feel very different to those in the past (Rotherham, 2005, 2011). If we were to step back into a working medieval wood or even an English coppice wood from the 1920s or 1930s, it would hardly be recognisable to our twenty-first century eyes, noses and ears. These were locally important resources managed in the same ways, and by the same families, for decades or even centuries. Working woods bustled with life and activity; people and animals working in harmony and varying with the seasons and longer management cycles. There were people working and families living in and around the woods, felling trees, cutting coppice, peeling bark, making besom brooms, constructing hurdle fencing, tending pigs, herding livestock, warrening the rabbits, watching over deer, and harvesting nuts. Other workers dug mineral coal and stone, or shallow-mined ironstone or gravel; each dependant on whereabouts in the country you were and who owned the wood. The woodland workers varied from region to region and the Chiltern beech-woods for example, were home to numbers of chair-leg manufacturers or 'bodgers'. These men supplied part-finished chair-legs cut inside the

Photograph 6: Red campion - a wild flower of woodland edge and hedgerow but not necessarily indicative of ancient woods.

working wood on pole-lathes from green coppice wood. The rough legs were then sent to factories for finishing; a bodged job is not a bad one, but simply incomplete.

Other people worked in and around the coppice wood, including the woodman, cutting timber and wood, perhaps for fuel-wood markets and for constructional work. The timber was for specific big constructional jobs, sometimes a specific tree harvested for a particular client, or regular supply to local sawmills. Cutting smaller wood inside the woodland, and bigger timbers often outside, would be sawyers working in teams. The so-called 'top-dog' stood above the timber in the sawpit, directed the big-handled, two-man saw. The 'underdog' stood in the sawpit and below the timber to pull the great saw downwards, probably getting eyefuls of sawdust. This was thirsty work and sawyers were renowned beer-drinkers. The woodward oversaw these activities on behalf of the landowner and in Britain, from the 1700s onwards, was joined by gamekeepers and others involved in the rapidly growing game management. The earlier onus was on hunting deer and small game, and key people were the parker who ran the deer park, and the warrener who dealt more with small game like rabbits and hares. By the 1800s, a significant part of this community would be gamekeepers, often employed as hired thugs to keep the commoners, now poachers and trespassers, out of what had once been their woods.

Decline and fall

From the 1800s to the 1950s, with changing society, economy and technology, woodland craftsmen declined rapidly and dramatically. In Sheffield for example, many coppice woods ended their last cutting cycle in the mid-1800s (Rotherham, 2007a). Across England, this occurred sometime between 1800 and 1950, as centuries-old traditions died. Since most of these activities were oral traditions passed down from generation to generation, as they ended they were lost. Now, with woods either changed or their function lost, were themselves vulnerable to destruction (Rotherham, 2005, 2008; Rotherham and Egan, 2005). Therefore, across Britain, from the 1800s to the 1980s, huge numbers of ancient woods were abandoned and / or grubbed up, or were re-planted with exotic tree species. Many old coppices, which were retained, were converted to 'high forests' or modern 'forestry'. This is essentially, modern European, industrial, plantation-based timber production and not to be confused with the ancient, medieval 'forests' (Rotherham, 2008).

However, whilst even if the woods survive their purpose and functions have changed, it is important to appreciate that some of the people who populated our woodlands past left defining marks still visible today. This is manifested as archaeology in the contemporary sites and can often be tracked back to specific uses and times (Rotherham, 2011). In other cases, the features are vague and indefinable in terms of a particular use of date. Remarkably, some users of the woods, for example the once almost ubiquitous tanners, left almost no obvious trace actually in the woods.

Woodlands, timber and construction

In modern-day, Western European countries, it is hard to imagine the central roles of wood and timber in earlier civilisations. Of the obvious functions, those associated with building and construction, are amongst the most obvious. Only in the 17th century did stone and brick widely supplant timber and wood as the main building materials. Timber held prime place ever since the first permanent settlements were built in Neolithic times. Even substantial buildings such as castles and parish churches were constructed of timber. Sometimes they were later rebuilt in stone, but even then, the core structures were often around great timbers. Huge numbers of trees from Britain's medieval woods still survive in timber-framed houses and barns and the dendrochronological analysis of these can be hugely informative. The builder of these medieval houses and grand buildings was a house carpenter or housewright. Unlike his equivalent today, he did not get his timber as ready-sawn or shaped planks and beams. This master craftsman went to woods (or indeed hedges), and chose his trees carefully and individually to match his requirements. This timber would, with the minimum of shaping, roughly square up to the

dimensions of the components required with large trees for beams and smaller trees for materials such as rafters. The timber used was mostly oak and sometimes elm or sweet chestnut, sawn or shaped with an axe or adze while still 'green', which made it easier to work. Metal nails were not used because the tannic acid in unseasoned oak would quickly corrode them. Instead, the craftsmen used thousands of oak pegs (sometimes called treenails).

In most cases, constructed in the house carpenter's yard or 'framing yard', timber-framed buildings were taken pre-fabricated for on-site assembly. As constructed and originally assembled, every piece of timber for the house or barn was marked to make sure each part was placed correctly for re-erection on the final site. Carefully examine timbers of old buildings, and the carpenter's marks are often visible. In England, there are two traditions of timber-framed building, the 'post-and-truss' (or box frame), and 'cruck building', the later often used for large barns and similar buildings.

Charcoal and whitecoal making in England

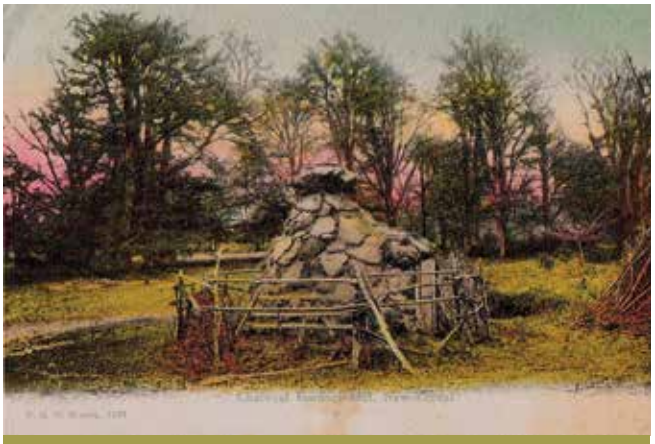
Activities that left indelible imprints on the woods that persist today if the sites survive, include charcoal and white coal manufacture (Ardron and Rotherham, 1999). As discussed earlier, some impacts of industries and crafts were more obvious than others were, and manufacture of charcoal and 'whitecoal' are especially significant. The former was very widespread and the latter was rather localised. Wood charcoal was widely manufactured but particularly close to iron smelting areas was made on an industrial scale. In regions such as the English Lake District to supply the Furness iron works, and North Derbyshire or South Yorkshire, to supply iron and steel factories, the charcoal woods were managed intensively and industrially. This had massive, long-term impacts, so whilst the woods survived because they were economically important, they were changed in character, their ecologies transformed. The impacts of these activities, in the case of charcoal, extending back over two millennia, and for whitecoal just two to three centuries around the 1500s, have left a remarkable heritage. Not only did they change the treescape by coppicing and burning the wood, but they stripped the woods of centuries-old soils and the living fabric of the vegetation too. Turf and sods were cut from the woodland floor to cover the woodmen's wigwam buildings, and they were used to cover and seal the charcoal burns themselves. Go into one of these woods today and there is no topsoil, just a few centimetres of black charcoal dust and then subsoil. Now, very gradually, after fifty to sometimes a hundred-and-fifty years after the last charcoal burns, the vegetation slowly creeps back. Some plants like bluebells recover quite quickly but others such as wood anemone or the diminutive wood melick grass take much longer.

Charcoal making for iron smelting is the oldest recorded woodland industry in many places. This is not surprising, as being essential to metal smelting and working, it took place since prehistoric times. Markets for iron-smelting charcoal gradually disappeared during the 18th century as mineral coke replaced it. Some markets remained and others expanded. Most importantly, charcoal was used in making blister steel in cementation furnaces where successive layers of bar iron inter-bedded and charcoal were heated to high temperatures for up to eight days. Another charcoal-based industry was gunpowder manufacture, using alder, willow, and alder buckthorn. Charcoal was also used in large quantities as blacking by moulders in iron foundries. Away from industrial areas, charcoal was also hugely important for cooking and heating, especially in great halls and houses and before the advent of modern chimneys. It burns predictably hot and clean. Wood fuel is variable and messy, and coal can give off unpleasant and even dangerous fumes; in open or primitive fireplaces, neither is ideal for cooking. Artists, medicinal uses, and gas masks for example, all demanded high-quality charcoal.

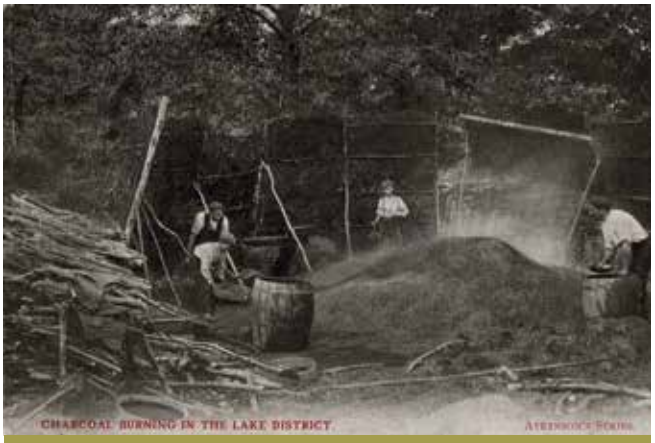
During the 'coaling' season, generally from April to November, charcoal burners or 'wood colliers', lived isolated lives, often with their families, deep in the woodlands. Their work consisted of burning carefully stacked lengths of coppice poles in the absence of enough air for complete combustion. During this controlled burning, moisture was driven off followed by volatile elements of tar and creosote. The process left behind a residue of black carbon with a little ash. Everything was saved, the ashes used as covering for subsequent burns.

Using traditional methods but with subtle variations in layout a level spot was chosen and the turf removed, or on a steep site, was dug out from the hillside. This was about fifteen feet in diameter and called the pitstead, pit, or hearth. There are different traditions of building the stack. One way, perhaps a southern tradition was to lay three short billets on the ground as a triangle and then build this up as a central flue. A northern method was to drive in a long central stake, removed when the stack was ready. The rest of the stack was built by stacking cordwood (four-foot lengths of coppice poles and branch-wood) facing inwards to form a stack looking like an upturned pudding basin, fifteen feet diameter, five feet high. This is shown in the pictures of charcoal stacks under construction and during a burn (Photograph 7 and 8). The wood was then covered by straw, grass, bracken, and turves, which in turn were covered by dust and ashes. Virtually all air was excluded and the burn could be controlled.

Red-hot charcoal and a few dry sticks were dropped down the central flue. When the stack was alight, the wood collier sealed the flue, and fire spread through the stack. It was important the burn was steady and fire did not break through to the surface allowing air in. The burner had to be in constant attendance during the burn, with hurdle fencing and sacking to protect his stack from sudden wind changes; closing gaps in the stack with bracken, turf, and soil; again, this is shown in the pictures (Rotherham, 2013b) (Photograph 7 and 8). Burning lasted anything from two to ten days depending on stack size, weather



Photograph 7: Charcoal Burners' Hut, New Forest; F.G.O. Stuart, 1123; around 1910s or early 1920s.



Photograph 8: Charcoal Burning in the Lake District; James Atkinson Publisher, Ulverston; 1904, posted Bardsea.

conditions, and wood greenness. The burn emitted clouds of white smoke, gradually turning blue and then dying away altogether. Each stage indicated to the collier how the burn was progressing. When the firing was over, the stack was uncovered with a rake to cool and the charcoal, a valuable product but liable to fragmentation, packed carefully into sacks or panniers for transportation.

The same charcoal hearths and the charcoal makers' hut sites were reused repeatedly at the end of each coppice cycle for a particular area of woodland. As shown in the photographs, the huts were conical in shape built on a framework of poles like a wigwam around a low, stone wall perimeter. This is one of the oldest and most primitive forms of building known to humanity and its survival to the twentieth century in industrial cities like Sheffield is quite remarkable. A wooden lintel was lashed into place over a gap left as a doorway into the primitive shelter. The remains of these huts in the form of a circle of stones (the remains of the low perimeter wall with a gap for the doorway), can still be found in some parts of north and west England. Each particular craft, be it wood collier, clog maker, or bark stripper had their own distinctive type of hut; each related and similar but different and distinctive.

Alongside charcoal making, was another woodland industry making fuel for metal smelting in woods in North Wales, Southern Scotland, the Yorkshire Dales, South Yorkshire, and North Derbyshire. This was more localised than charcoal manufacture and occurred mostly between the late 1500s to the mid-1700s, associated with lead smelting. Lead ore was smelted with a mix of this dried wood called 'whitecoal' or 'chop-wood' (Rotherham, 2013). In South Yorkshire, the lead was carried from Derbyshire, from the relatively poorly wooded Peak District to water-powered ore-hearths located on the fast-flowing rivers near the region's coppice woods (Jones, 2009; Rotherham and Egan, 2005). Whitecoal was small lengths of wood, dried in a kiln until all the moisture was driven out. Charcoal and whitecoal were mixed together to smelt lead, because charcoal gave too high a temperature and wood not high enough. Whitecoal might be used alone in smelting lead ore with charcoal used to re-smelt the slag.

Characteristic large depressions or craters in the ground confirm the former presence of whitecoal making in a wood. These can be anything from three to five metres in diameter and with a noticeable 'flue' at one end. The flues face downhill, varying in length and construction. These are the remains of whitecoal kilns sometimes also known as Q-pits. The name Q-pit has been given because the letter 'Q' mirrors the shape of the archaeological remains. In Sheffield, there remains a persistent rumour or myth that these are the bomb craters from the German bombers, which blitzed the city in the Second World War.

Oak bark leather tanning

Other woodland workers included tanners and bark peelers who stripped the bark off timber and coppice wood; giving rise to the surnames Tanner and Barker. This was vital, along faeces, for manufacturing leather; again essential in pre-petrochemical society. The bark peelers were separate from the charcoal burners and this can be recognised in the differing shapes and styles of their temporary buildings now reduced to archaeological remains; each is distinctive. Bark peeling for tanning was of such national importance that in 1603 there was passed 'An Act concerning Tanners, Curriers, Shoemakers and other Artificers occupying the cutting of Leather'. This act stated that '…..for as much as barke is of late become verie dear and skarce, which happeneth partlie by reason that divers persons do ingrosse and buy great quantities thereof……..', and goes on the explain in detail the regulations and controls over cutting, peeling and selling bark; it was not repealed until 1808.

Just as salt and wood were hugely important in medieval societies, tanned leather was a massively valuable and essential product. Christine Handley has researched the history of wood-bark tanning (see this volume). During the 150-year period from 1680 to 1830, the production of leather and leather goods was, by value, the second most important industry in England after textiles. It was one of the largest employers outside agriculture.

Woodlands played a major role in supplying tree bark, which before the introduction of chemical substitutes, was the main agent, in the form of a liquor, used in the preparation or 'tanning' of the animal hides. This was prior to their conversion into such everyday articles as boots, shoes, clogs, harnesses, saddles, breeches, aprons, gloves, bags, cases and bottles, and for use in industry for bellows and belting. Bookbinders were also important customers for fine leather. The tannic acid from ground bark seeps slowly through the pores of the hide, draws out the water, and coats each fibre with a preservative. The tannin content of oak bark made it the most efficient and therefore the most important tanning agent in medieval Britain. Other sources of chemical were used elsewhere around the world depending on the available tree species and their suitability.

When a compartment of woodland was coppiced the wood might be de-barked. The bark was peeled in large pieces from both the timber trees and the underwood poles. This was done by scoring a tree round its trunk at about two feet intervals, and then making a longitudinal slit along the trunk. The bark could then be levered off in large plates with a bark peeler called a spud. It was often the practice to remove as much of the bark as possible while the tree was standing, then felling it to strip the rest. The peeled bark was stacked to dry and then, as tannin is soluble in water, it was protected from rain in thatched stacks until sold to tanners. The woodland historian and archaeologist should also be on the lookout for the remains of tanneries in well-wooded areas, which contained bark mills worked with horse or waterpower, where the bark was ground up and tan-pits, through which the hides were successively passed. These tan-pits would have contained increasingly strong tannin solutions. Today, there are very few tanneries in England, which still use oak tannins for leather production.

Potash manufacture

In a pre-petrochemical age, alkali made from the ash of green plant material was hugely important. This was used in the preparation of textiles and in various dyeing processes. Potash, as it was known, was also used with other ashes for domestic soap, and was an important fertiliser. Until recently, the process of potash making was unclear, but we now know it involved two stages, which left very different evidence. There were massive stone–built kilns, open at the top and bottom, for burning leaves and other green vegetation. This produced base-rich ash taken and boiled in large metal cauldrons seated in pits cut into earthen banks. To produce caustic potash the mix was heated on a metal plate over a hot fire. Potash and ashes mixed with animal fat or tallow were used for the soap manufacture. Evidence can be seen in variable and often shallow depressions and pits, which may have been where the 'elying' took place or could be the sites of less industrial ash burning (Photograph 9).

Potash makers probably occurred quite widely but in Britain are only known in detail from Cumbria. Here the process was industrial to supply Lancashire's textile manufacturing.

Photograph 9: Potash kiln site Cumbria.

The small crafts

Less well-known but once widespread, are a number of specialist, often-outdoor woodland crafts. These have now almost disappeared because either the product is no longer required, other materials are used, or because the products now are made in factories. Such crafts included turnery, coopering, chair bodging and the manufacture of wheels, clogs, baskets, hurdles, thatch spars, rakes, besoms, hazel hoops (to put around barrels), and brush handles (Rotherham, 2013b; Jones, 2009). Numerous other activities could be added to this list.

Turners made not only wooden dishes and plates but also a wide range of kitchen and dairy implements. The few now working today are more likely to be making decorative objects and toys. Until forty years ago, turners also made wooden clothes pegs and clothes wringer rollers. Like turners, coopers also made vessels for food: dry coopers made casks to hold non-liquid goods, white coopers made articles for domestic use and wet coopers produced casks for storing liquids. The wet cooper made a whole range of specialised vessels including pails and piggins, for carrying water and milk, churns for making butter, tubs called keelers for cooling liquids, tubs called kimnels for general use, lidded kits for holding milk, and hogsheads for storing ale.

Clog makers used alder, willow, birch, sycamore and beech trees. Alder was preferred because it was water proof and easy to work. Short lengths of tree trunk were riven (split) into sole blocks by the clog-sole maker and shaped with a special tool called a stock knife.

Besom making was also a widespread local craft until the beginning of the 20th century. Besoms were indispensable for sweeping flagged cottage floors and factory floors. The besom handles made from young ash, birch or hazel poles and the brooms from bundles of twigs. The later were from birch or hazel, heather or

broom. These were tied together originally with strips of willow, riven oak or even bramble. Basket-making was also a widespread craft with great regional variation in the type of basket made, from swill baskets made of thin strips of boiled oak to fish 'kiddles', made of willow and used for trapping fish.

Many crafts occurred widely across Britain and Europe, but their occurrence varied in time and intensity. Some industries such as potash manufacture in south Cumbria, chair-leg bodging in the Chilterns and whitecoal production in or near lead mining areas were important regional specialisms (Photograph 9). These regional and local variations are reflected by documentary records and in archaeology of local woods.

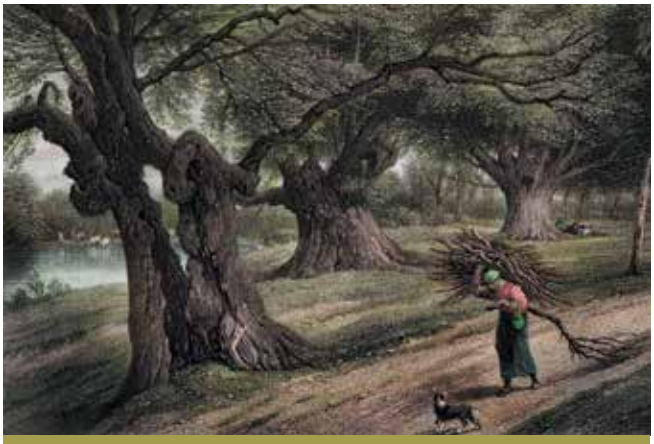
Other manufacturing and extraction of mineral and stone

Other industrial remains occur alongside industrial processes, which directly used woodland resources. Examples of these other industries include glass-making, metal smelting and working, quarrying and brick-making, found extensively in woods and on wooded heaths.

Since the Neolithic flint miners of Norfolk's Brecklands, people have quarried, mined and dug for minerals and stone. Sometimes these sites were in wooded landscapes, and in other cases, following abandonment of the post-minerals sites the woodland has re-established to cover the wounds of industrial activity. Either way our wooded landscapes are often pockmarked with anything from small stone-getting pits for local wall building, to major bell-pits for mineral coal or ironstone, to extensive survey cutting of coal and large quarries for ganister or limestone. Others sites have large gravel pits, clay sites and sandpits. Many small stone-getting or other pits and features are not easily defined or classified and you just accept them as an intriguing part of the wood's long history.

Conclusions: conservation and the future

Conservation of these eco-cultural landscape, rich in both ecology and heritage features, remains problematic (Rotherham, 1996, 2008, 2011, 2013a; Jones and Rotherham, 2012). The first challenge is in recognising sites and their characters, then secondly understanding what they are and their inherently dynamic natures (Peterken, 1990), and then thirdly implementing sensible programmes of conservation protection and management. Many of the features are unseen and if seen are misinterpreted - by ecologists, foresters and by archaeologists. There is a further problem too in that the richness of the heritage relicts the histories of individual woods and forests as working landscapes. Today however, with increasing cultural severance (Rotherham, 2008), the sites are stripped of their traditions and



Photograph 10: The Burnham Beeches by Birket Foster 1800s.

Photograph 11: Woodland and pollards.

subject to abandonment and dereliction, intensive industrial exploitation, or amenity and recreational uses. None of these produces the conditions needed by the ecology, and many activities are positively damaging to the archaeological heritage. Furthermore, much of the irreplaceable heritage is that of living trees, some in excess of a thousand years old. These once 'working trees', (coppices, pollards, shreds, stubs, and others), are now 'worked trees', 'retired veterans' and the biological processes of death, decay and rot take their tolls (Photograph 10 and 11). Yet these slowly decaying giants are eco-monuments, which allow people to touch the past and to place the future in a perspective. Addressing the vital issues of recognition and conservation remain very pressing indeed (Rotherham, 2012, 2013a).

References

Ardron, P.A. and Rotherham, I.D., 1999. Types of charcoal hearth and the impact of charcoal and whitecoal production on woodland vegetation. *Peak District Journal of Natural History and Archaeology* 1: 35-47.

Beswick, P. and Rotherham, I.D. (eds.), 1993. *Ancient Woodlands – their archaeology and ecology - a coincidence of interest*. Landscape Archaeology and Ecology, 1.

Fowler, J., 2002. *Landscapes and Lives*. The Scottish Forest through the Ages. Canongate Books, Edinburgh.

Hare, A.D.R., 1998. Woods Ancient and Modern. *Arboricultural Journal* 12(2), 177-180.

Hayman, R., 2003. *Trees, Woodlands and Western Civilization*. Hambledon and London, London.

Jones, M., 1998. *The rise, decline and extinction of spring wood management in south-west Yorkshire.* In: Watkins, C. (ed.) European Woods and Forests: Studies in Cultural History. CAB International, Oxford. 55-72.

Jones, M., 2009. *Sheffield's Woodland Heritage*. 4th Edition. Wildtrack Publishing, Sheffield.

Jones, M. and Rotherham, I.D., 2012. Managing urban ancient woodlands: a case study of Bowden Housteads Wood, Sheffield. *Arboricultural Journal*, 34(3): 215-233.

Jones, M. and Walker, P., 1997. From coppice-with-standards to high forest: the management of Ecclesall Woods 1715-1901. *Peak District Journal of Natural History and Archaeology*, Special Publication No. 1, 11-20.

Muir, R. 2005. *Ancient Trees Living Landscapes.* Tempus Publishing Ltd, Stroud, Glos.

Perlin, J., 1989. *A Forest Journey.* Harvard University Press, Massachusetts.

Peterken, G.F., 1981. *Woodland Conservation and Management.* Chapman and Hall, London.

Rackham, O., 1976/1992. *Trees and Woodland in the British Landscape.* Second edition, Dent, London.

Rackham, O., 1980/2003. *Ancient Woodland: its history, vegetation and uses in England*. London: Edward Arnold, 1980. (New, updated edition by Castlepoint Press, 2003)

Rackham, O., 1986. *The History of the Countryside*. Dent, London.

Rackham, O., 2006. *Woodlands*. Collins.

Rotherham, I.D. (ed.), 2007. *The History, Ecology and Archaeology of Medieval Parks and Parklands.* Wildtrack Publishing, Sheffield.

Rotherham, I.D., 1996. The sustainable management of urban-fringe woodlands for amenity and conservation objectives. *Aspects of Applied Biology*, 44: 33-38.

Rotherham, I.D., 2005. Fuel and Landscape – Exploitation, Environment, Crisis and Continuum. *Landscape Archaeology and Ecology* 5: 65-81.

Rotherham, I.D., 2007. The implications of perceptions and cultural knowledge loss for the management of wooded landscapes: a UK case-study. *Forest Ecology and Management* 249: 100-115.

Rotherham, I.D., 2008. *The Importance of Cultural Severance in Landscape Ecology Research*. In: Editors: Dupont, A., Jacobs, H. Landscape Ecology Research Trends, ISBN 978-1-60456-672-7, Nova Science Publishers Inc., USA, Chapter 4, 71-87.

Rotherham, I.D., 2011. *A Landscape History Approach to the Assessment of Ancient Woodlands*. In: Wallace, E.B. (ed.) Woodlands: Ecology, Management and Conservation. Nova Science Publishers Inc., USA, 161-184.

Rotherham, I.D., 2012. *Traditional Woodland Management: the Implications of Cultural Severance and Knowledge Loss*. In: Rotherham, I.D., Jones, M., Handley, C. (eds) 2012: Working and Walking in the Footsteps of Ghosts. Volume 1: the Wooded Landscape. Wildtrack Publishing, Sheffield, 223-264.

Rotherham, I.D., 2013a. *Searching for Shadows and Ghosts.* In: Rotherham, I.D., Handley, C., Agnoletti, M., Samoljik, T. (eds) 2013: Trees Beyond the Wood – an exploration of concepts of woods, forests and trees. Wildtrack Publishing, Sheffield, 1-16.

Rotherham, I.D., 2013b. A*ncient Woodland: History, Industry and Crafts.* Shire Publications, Oxford, 64 p.

Rotherham, I.D. and Ardron, P.A., 2006. The Archaeology of Woodland Landscapes: Issues for Managers based on the Case-study of Sheffield, England and four thousand years of human impact. *Arboricultural Journal,* 29 (4): 229-243.

Rotherham, I.D. and Avison, C. 1998. *Sustainable Woodlands for people and Nature? The relevance of landscape history to a vision of forest management. In: Woodland in the Landscape: Past and Future Perspectives.* Atherden, M.A. and Butlin, R.A. (eds.). The proceedings of the one-day conference at the University College of Ripon and York St John, York, UK, 194-199.

Rotherham, I.D. and Egan, D., 2005. The Economics of Fuel Wood, Charcoal and Coal: An Interpretation of Coppice Management of British Woodlands. In: Agnoletti, M., Armiero, M.,Rotherham, I.D. and Jones, M. 2000: Seeing the Woodman in the Trees – Some preliminary thoughts on Derbyshire's ancient coppice woods. P*eak District Journal of Natural History and Archaeology*, 2: 7-18.

Rotherham, I.D., Handley, C., Agnoletti, M. and Samoljik, T. (eds), 2013. *Trees Beyond the Wood – an exploration of concepts of woods, forests and trees.* Wildtrack Publishing, Sheffield, 378 p.

Rotherham, I.D. and Jones, M., 2000. *The Impact of Economic, Social and Political Factors on the*

Ecology of Small English Woodlands: a Case Study of the Ancient Woods in South Yorkshire, England. In: Forest History: International Studies in Socio-economic and Forest ecosystem change. Agnoletti, M., Anderson, S. (eds.), CAB International, Wallingford, Oxford, 397-410.

Rotherham, I.D., Jones, M. and Handley, C. (eds), 2012. *Working and Walking in the Footsteps of Ghosts. Volume 1: the Wooded Landscape.* Wildtrack Publishing, Sheffield, 264 p.

Rotherham, I.D., Jones, M., Smith, L. and Handley, C. (eds), 2008. *The Woodland Heritage Manual: A Guide to Investigating Wooded Landscapes.* Wildtrack Publishing, Sheffield.

Smout, T.C., MacDonald, A.R. and Watson F., 2005. A *History of the Native Woodlands of Scotland*, 1500-1920. Edinburgh University Press, Edinburgh.