



Forestry Commission Scotland
Coimisean na Coilltearachd Alba



Trees and the Scottish Enlightenment

A learning resource for teachers
of Curriculum for Excellence P6/7 S1/2

Front cover image *Diana's Grove* courtesy of and © Blair Castle.




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John Murray, 4th Duke of Atholl and his family.

Trees and the Scottish Enlightenment

An introduction to the Enlightenment and the beginnings of modern forestry

This resource has been written as an introduction to the Enlightenment and the beginnings of modern forestry; and as a introductory and supporting resource for *Trees, People and Country Estate*.

Trees, People and the Country Estate contains a more in-depth look at the subject and where reference is made to it you will see this symbol .

http://www.foresteducation.org/images/uploads/TPCE_web_final.pdf



Introduction

Scotland is the home of modern Forestry. Forests here are managed now very differently to how woodlands were managed in the past. This resource tells the story of how Scottish forestry developed during a particular historical time period, known as the Enlightenment and in a particular sort of place, the Scottish Country Estate.

The Enlightenment happened throughout Europe, especially in England, Holland, France and Germany but Scotland played an important part despite being smaller, poorer and, at times, at civil war. It wasn't a single event, rather it was a complicated series of developments that happened over a long time, starting in the seventeenth century (1600s) and continuing through into the nineteenth century (1800s).

This is an outline of the story of the Enlightenment and the beginnings of modern forestry and is intended as a brief introduction to a complex subject, which is complemented by the more detailed stories told in *Trees, People and the Country Estate* by Christopher C. Lee and Jacqueline Lee. Links to this resource are given through this text and are highlighted like this:

Reference. p.00

There are copious notes, quotes, images and dates in the full resource, which may not be directly referred to in this introduction but are worth looking at for more depth on the subject. Quotes and images from the time are particularly helpful in giving a flavour of life at the time. Guidance notes for teachers and suggested activities are also mostly in the full resource, although some other activities are also suggested at the end of this introduction.

This outline avoids dates on the whole. The dates of some significant events are given in the Timeline and the full resource gives dates throughout.

Some sources of information, mostly from websites, are given in this outline and the tree stories. Institutions like the National Museums of Scotland, the Scottish National Galleries, the Forestry Commission and Royal Botanic Garden Edinburgh all have good websites with far more information than can be given here. There are also many books on the subject and a few references are given to them. More detailed sources, including original documents are cited in *Trees, People and the Country Estate*.

History is about stories. Without a narrative it becomes a series of facts and half-truths and it can be very difficult to understand how things that happened in the past have an impact today, let alone remember any of those facts. But a storyteller needs to be selective. Not everything can be included and one thing does not necessarily lead to another, although saying so may make a good story. Remember that: we need stories to help us learn but they are never the whole story. Four stories are told by the trees themselves in *Tree Stories*. Their stories show different aspects of the story of forestry and the Scottish Enlightenment and may form a good introduction to the subject, as well as stories to come back to as you work through the material here.



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1. How this resource fits into the Curriculum for Excellence

1.1 Development of The Four Capacities in this resource

1. Developing Successful Learners

The Resource will challenge children to learn how to use information from different sources and use evidence to help them develop critical thinking skills; our suggested activities are designed to do this. The suggested activities will also reinforce literacy and numeracy skills.

2. Developing Confident Individuals

The development of cultural identity, a sense of who they are and where they belong comes through an understanding of the history, heritage and culture. Those who undertake this project will realise the importance of Scotland in the wider world of the time and how much of what we enjoy in Scotland today was given form during the Scottish Enlightenment.

3. Developing Responsible Citizens

It is often through looking at examples of human behaviour in the past that young people can understand the context of current issues, particularly with reference to the importance of trees to our environment and health and wellbeing.

By understanding what has gone before, pupils can compare and contrast facts enabling them to form values and understand values of others.

The Resource will also enable pupils to develop a sense of stewardship towards the landscape in which they live and understand the importance of woods and forests around them.

4. Developing Effective Contributors

With this resource pupils will develop their investigative, creative and critical thinking skills as their knowledge and understanding expands of how Scotland's wooded and designed landscape has developed and affected the Scotland that they live in today.

1.2 Social Study Areas

The resource fits into the following social study areas:

People in the Past

- People in societies.
- People and events in the past.

People in Place

- People and landscapes.



The resource is aimed at developing investigative, creative and critical thinking skills of your pupils while helping them to understand how modern Scotland has its roots in the Enlightenment.

It has been designed to help you with your classroom work and can be used in conjunction with a variety of topics including:

The Jacobites

- The resource highlights how the defeat of the Jacobites at Culloden paved the way for landowners to develop their estates.

Slavery

- Within the resource the section on merchant landowners demonstrates the continued importance of slavery to the Scottish economy.

The New Town of Edinburgh

The Agricultural Revolution

- The Scottish Enlightenment and the scientific discoveries that are associated with it help maintain the momentum of this movement which dovetails into the Age on Improvement.

The Industrial Revolution

- Bonawe Ironworks is a good example of the importance of forests and woodlands in the process of iron smelting.

Our Scotland

- Where we have come from? Where we are going?

Scotland at the time of Burns

- Burns work is part of the Scottish Enlightenment and Burns socialised with the men who were making these changes to their estates.

A Local Study

- It can also be used as a stand alone topic in its own right.

1.3 Cross-curricular Scope

As a topic in its own right this area of study has great scope across the curriculum:

History

- The Scottish Enlightenment and its effect on the wider Scotland.

Geography

- The physical topography of Scotland.
- Land use.

Maths

- The design and symmetry of the country estate.
- The architecture of the time with its emphasis on symmetry.

Science

- the use of charcoal in the smelting process.
- the benefits of growing trees for the environment.

Art

- Design and making of the country estate.
- Paintings of the wooded landscape of the period.

English/Literature

- Writers and poets of the time e.g. Robert Burns and Sir Walter Scott.

Music

- songs of the period relating to the countryside.

Citizenship

- landowners links to slavery.



1.4 Skills developed through activities

The following skills, as set out in *Social Studies: Principles and Practice* by Education Scotland, will be developed in the activities suggested by this resource:

- Observing, describing and recording.
- Comparing and contrasting to draw valid conclusions.
- Exploring and evaluating different types of sources and evidence.
- Development of curiosity and problem solving skills and capacity to take initiatives.
- Interacting with others and developing an awareness of self and others.
- Planning and reviewing investigation strategies.
- Developing the capacity for critical thinking through accessing, analysing and using information from a wide variety of sources.
- Discussion and informed debate.
- Developing reasoned and justified points of view.
- Developing and using maps in a variety of contexts.
- Developing and applying skills in interpreting and displaying graphical representation of information.
- Developing an awareness of sequence and chronology.
- Presentation skills – oral, written, multimedia.

http://www.educationscotland.gov.uk/Images/social_studies_principles_practice_tcm4-540397.doc

Active learning will be promoted throughout the resource as a key element in the pupils' learning strategy. Wherever possible, suggestions will be made for outdoor learning and visits to museums and other heritage sites.

1.5 Experience and Outcomes

In line with the recommendations of The Curriculum for Excellence, the pupils will be able to:

- Develop their understanding of the history, heritage and culture of Scotland, and an appreciation of their local and national heritage within the world.
- Broaden their understanding of the world by learning about human activities and achievements in the past and present.
- Develop their understanding of their own values, beliefs and cultures and those of others.
- Explore and evaluate different types of sources and evidence.
- Learn how to locate, explore and link periods, people and events in time and place.
- Learn how to locate, explore and link features and places locally and further afield.
- Establish firm foundations for lifelong learning and for further specialised study and careers.



2. Timeline

2.1 Trees and the Scottish Enlightenment

THE ENLIGHTENMENT PERIOD	YEAR	EVENT
	1503	Great Hall of Stirling Castle built
	1512	Launch of the ship, the Great Michael
	1580-1600	Pont Maps drawn
	1603	Union of the Crowns
	1638	Cedar of Lebanon first planted in Britain
	1670	Founding of Edinburgh Botanic Garden (RBGE)
	1683	John Reid's <i>Scots Gard'ner</i> published
	1707	Union of Parliaments
	1723	Founding of The Honourable Society for Improvement in the Knowledge of Agriculture
	1738	'Parent Larches' planted on Atholl estates
	1745-1746	Final Jacobite Rebellion
	1747-1755	Roy Maps drawn
	1783	Founding of the Royal Society of Edinburgh
	1790	Archibald Menzies voyages to NW America
	1791-1792	First <i>Statistical Account of Scotland</i> published by Sir John Sinclair
	1810	Walter Scott's <i>Lady of the Lake</i> published
	1827	Douglas fir seed arrives in Britain with David Douglas
	1834	David Douglas dies in Hawaii
	1919	Forestry Commission founded

3. What was the Age of Enlightenment?

The Enlightenment was all about ideas. You might think of history being about facts and dates but ideas are just as important. Many ideas from the Enlightenment are still with us. You could say they are fundamental to our current way of life.

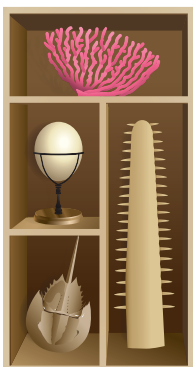
Ideas take time to develop and they don't just come out of nowhere, although they may sometimes seem as if they do. Because it was about ideas, which is the subject matter of philosophy, philosophers were very important, especially at the start of the Enlightenment. But they were not the only people involved. Poets, painters, writers, scientists, explorers, economists, historians and many ordinary people all played their part and many of them were Scottish.

3.1 Enlightenment ideas

Enlightenment means bringing light and it refers to the way previously unknown things, including things that were even thought to be unknowable, could be explained using new ways of thinking. These ways of thinking were difficult to understand for most people, and many people did not understand or accept them. Eventually though, they became widely accepted and today they underlie many important areas of life, especially education, science, technology and the arts. However, they are not the only ways of thinking about the world. Religious thinking is probably the biggest challenge to Enlightenment ideas.

Philosophers helped to start the Age of Enlightenment in the middle of the seventeenth century (1600s). Men like Rene Descartes and Baruch Spinoza thought that all things could be explained by natural forces, and if they could not be explained it was because we couldn't see them properly and not because they were caused by supernatural events. Although they believed in God they did not believe that God was able to cause individual events or that the Bible was the source of all knowledge. They thought that everything occurred for a reason that could be explained, at least in theory, without the need for a god to cause it or the Bible to explain it. This was immensely influential and is the basis of modern science. The scientific method developed during the Enlightenment influenced by the idea that everything could be explained if it was investigated properly.

Other philosophers, like the Frenchman Voltaire, thought people should be free to think for themselves. The Enlightenment is also known as The Age of Reason because it led to the idea that one way of thinking, reasoning, is more helpful to the individual seeking a better life for themselves and others than relying on fixed ideas from other people dictated by institutions such as the church or government. Enlightenment ideas encouraged people to think for themselves and make their own decisions rather than just accept the ideas of others. This way of thinking was revolutionary. It was a challenging to the authority of the church and state, especially because, like now with the internet, it was taken up by people from all levels of society.



Spinoza was a lens grinder as well as a philosopher and this practical side of his work was reflected throughout the Enlightenment. Ideas were important but so were new ways of investigating the world. Glass lenses were new tools that could be used for investigating many things of vastly different scales. At one end of the size spectrum they were used in the newly developed microscopes to look at tiny things that could not be seen without the help

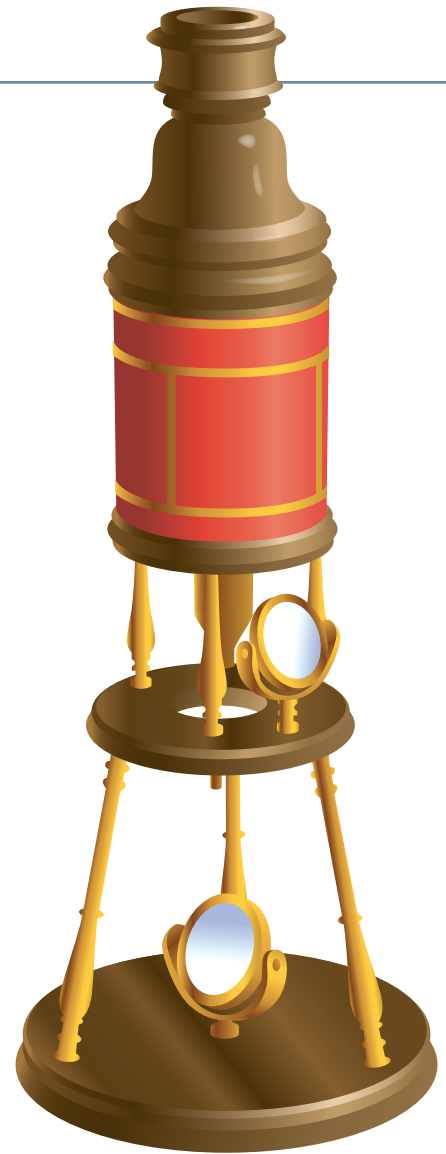
of a lens and at the other end of the scale they were used in telescopes to look far into space at stellar objects that had never previously been imagined let alone seen. And once things could be seen new ideas would come, including more ideas about how things could be used for practical purposes, such as forestry and agriculture. The practical use of newly observed phenomena was an important part of Enlightenment thinking.

3.2 The Age of Reason

Reason is an important concept that developed during the Enlightenment. If someone says that you are behaving rationally you probably think that they are calling you sensible, just in a rather fancy way. But it is more complicated, or at least more specific, than that. A rational action is the result of reasoned thinking. If one thing, or a series of things, is true then it is rational to behave in a particular way. Another useful word is logic. Logic is the study of reasoning and is an important field in philosophy.

3.3 Important Enlightenment Ideas

Consider some of the radical concepts of the Enlightenment.



Tools such as microscopes allowed close observation and analysis of the world as never before.

Everything is explainable within the laws of nature. God is not a cause of observable events.

People should think for themselves and be free to do so.

Thinking rationally is the best way to make decisions.

Enlightenment ideas can be applied to practical problems and lead to improvements in people's lives.

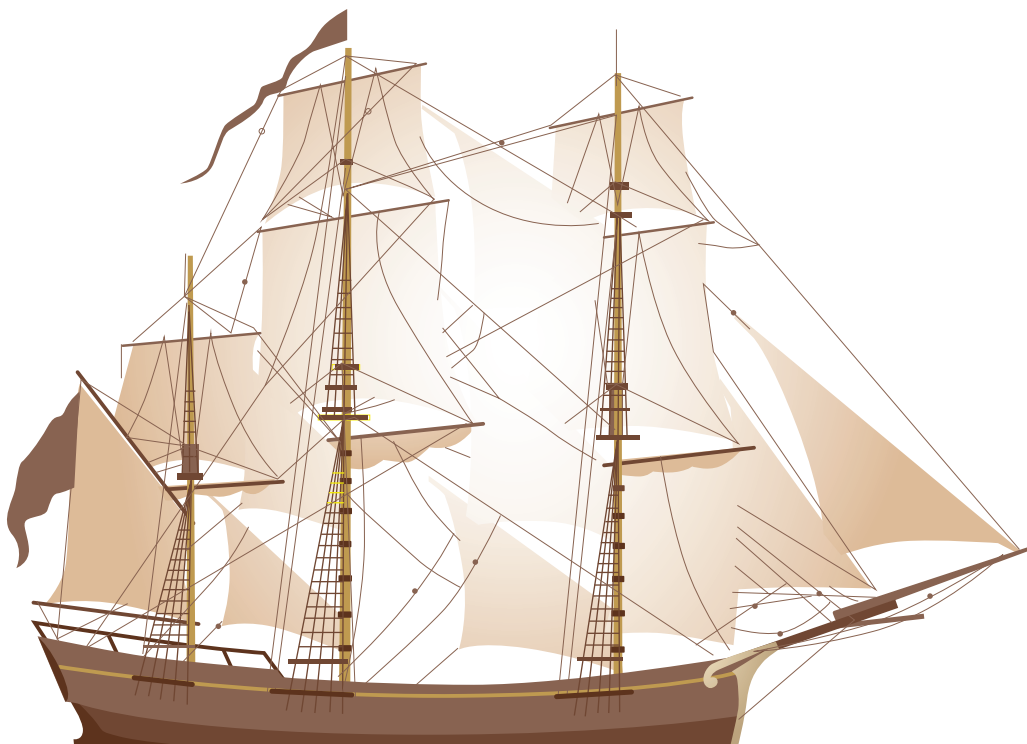


4. Scotland and the Age of Enlightenment

Although the ideas that triggered the Enlightenment came from elsewhere, in later years, especially in the late 1700s, Scottish thinkers like David Hume and Adam Smith were leading figures and were influential across Europe. Many other Scots, including the poet Robert Burns, made their mark outside of their own tiny country. Their influence is still felt today. It was a time and place of great intellectual debate and discovery yet Scotland was still a poor, small nation.

4.1 Scotland after 1700

In 1700 Scotland was very poor. It had lost its own court when the Union of Crowns in 1603 moved the Scottish king and his court from Edinburgh to the richer, bigger, and more powerful, London. There had been terrible 'killing times' during the religious upheavals of the Covenanters and the country was on the verge of starvation as disastrous harvest followed disastrous harvest.



Trade and the slave economy powered Scotland's 18th century economic boom.

It was also more or less divided in two. The Highlands were very different to the Lowlands. Language, climate, geography, culture and history all differed between the Highlands and Lowlands. The two regions clashed violently in the Jacobite rebellions that ended at Culloden in 1746. After Charles Edward Stuart, 'Bonnie Prince Charlie', was defeated the traditional Highland way of life changed for ever, including the old ways of managing land and woodland.

One of the most important changes in the whole of Scotland at this time was in social structure. A super-rich elite developed who owned land and wanted to practise the new ideas developed during the Enlightenment on their property. Before the 1700s, money wasn't particularly important. Social status came from family, behaviour and a relatively fixed place in tightly-knit communities. Most necessary things could be made in the home or bartered for from neighbours or travelling pedlars. But this all changed during the Enlightenment as money came to dominate people's lives.

By the end of the Enlightenment period, in the middle of the nineteenth century, Glasgow was one of the richest cities in the world, full of industry and imposing buildings, and Scotland was a nation of global importance. The new money showed itself in the countryside too. Large country estates dotted the landscape, with splendid houses set in elegant grounds and surrounded by beautiful trees from faraway places. But away from these carefully planned settings the country was becoming empty of people and the old ways of living with the woods was disappearing or already gone. Bare hillsides that had not seen trees for centuries, if ever, were slowly disappearing under a patchy blanket of conifer trees that originally came from America or Europe.

A detailed account of the causes of the Scottish Enlightenment and why it was different to other parts of Europe is given in the Resource:

 **Contributing causes of the Scottish Enlightenment p.14**

 **What was different about the Enlightenment in Scotland compared to the rest of Europe? p.16**

4.2 Money

Money might seem a long way from the high flown ideals of the Enlightenment but without it the development of modern forestry and the country estate could not have happened. Many of the changes that happened during the Enlightenment were connected to money. Science and technological advances allowed huge advances in agriculture and also led to the development of industry. New money spilled out of the newly profitable fields and factories as industries and improved technologies emerged. Water and, later, steam powered engines produced novel products quickly and on a previously unknown scale.



The 4th Duke of Atholl was a typical enlightened tree planter.

© Blair Castle



Merchants relied on advertising like this to fill their required workforces.

Settlers in the New World were starting to create the nations of the United States and Canada and their growth created new markets for the products of these industries. And cheaply produced raw materials became available from overseas. The Caribbean was a great source of raw materials such as cotton, tobacco and sugar. These crops required a lot of labour, and the labour often came from slaves. Many Scottish landowners made their money from property in the Caribbean, and it was slavery that made it profitable.

What and who exactly was paying for all the new trees? p.85

Men who made money from this new trade and industry often spent their money on buying country estates in Scotland. They were the:

New Merchant Landowners. p. 78

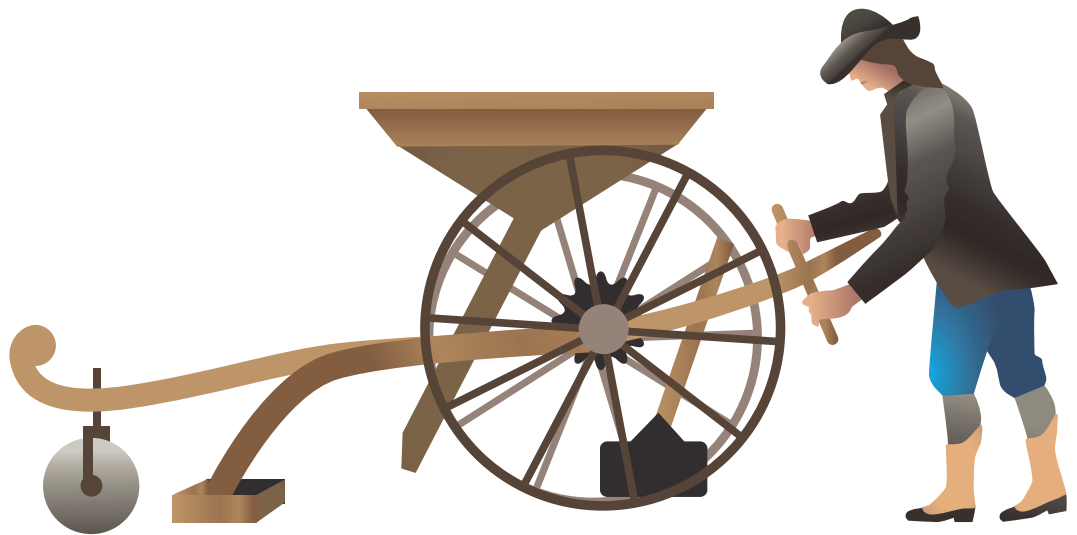
They wanted to break with the old-fashioned ways and apply their wealth and new knowledge to creating an improved countryside that showed off their sophistication and their money. The country estate was an aspiration for the super-rich of the time, the new generation of aristocrats. It developed in a very specific way that reflected Enlightenment ideas but was dependent on money, and lots of it. There is more on this in the resource under the heading:

What has all of this got to do with the Scottish landscape particularly Woodlands and Forests? p.17

Money and ideas were closely linked in the Enlightenment. Theories about how money acted in society and how it worked in relation to labour and goods is the subject of economics. One of the most important economists was Adam Smith, a Scot from Kirkcaldy. He wrote *The Wealth of Nations*. His ideas are still influential and some people think he was one of the most important Scots ever.



Slavery was at the heart of the Tobacco Lords' prosperity.

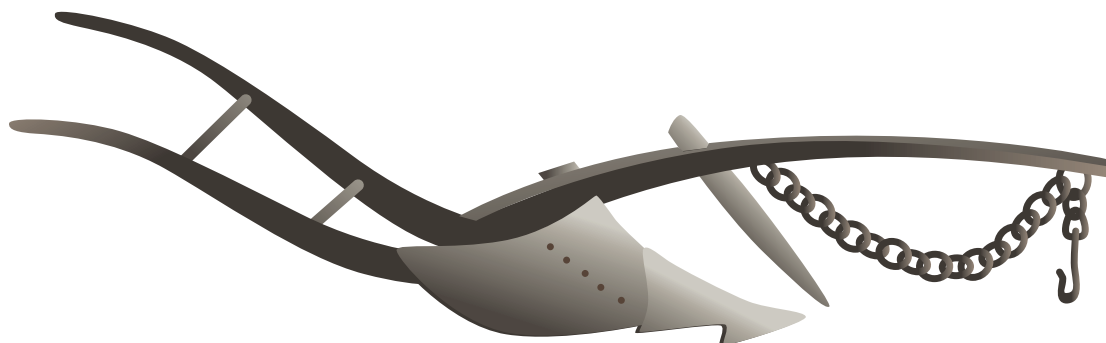


New machinery was revolutionising agriculture.

4.3 The Agricultural Revolution

In the early 1700s Scotland was desperately short of food. Agriculture was primitive and dependent on the back-breaking work of people with no resources to increase their crop yields, or to grow new crops. They may have been able to produce enough to survive but it wasn't much better than that. In a bad year people faced starvation. The new aristocratic landowners had money to spend and wanted to improve the income from their country estates. They were keen to adopt new ideas that would help them get better yields from their land. Agriculture changed dramatically during the Enlightenment, partly because Enlightenment ideas were applied to producing food. Agricultural technologies improved dramatically. Improved tools came into use, fertilisers were understood better and lime and manure were applied systematically, stock, especially cattle and sheep, were bred to be more productive and the rotation of crops was introduced. All this dramatically improved crop yields and helped remove much of the risk of catastrophic failures that had marked agriculture in the seventeenth century. And as landowners learnt more about agricultural improvement they started to apply similar ideas to forestry.

 **Topic Focus: The McDowalls and Castle Semple House p.86**



James Small of Berwickshire patented his chain plough in 1767.

5. What does the Enlightenment have to do with trees?

Modern Scottish forestry developed during the Enlightenment. Before then woods had been managed in often very sophisticated and efficient ways that had developed over a long time and were well suited to the needs of the local population. Trees were part of daily life for rural people, and a tree like Oak (tree story) had many uses and beliefs associated with it.

 **Woodlands, forests and gardens as a source of cultural identity p.147**

 **Folklore and Healing p.148**

An important thing to remember is that the Enlightenment occurred at a time of great social, economic and political change. These changes had a huge impact on the countryside. Before this time most people lived in rural areas and in small communities. They grew most of their own food and made the things they needed from locally available material like wood. During the time covered by the Age of Enlightenment many people moved into cities where they worked in factories for someone else and were paid a wage that they used to buy food and other things they needed. This was especially true in Scotland. These changes help to explain how forestry developed at that time and why the old ways of managing woodland disappeared in Scotland, although they can still be found in parts of England and much of mainland Europe.

5.1 Modern Forestry and Traditional Woodland Management

Table 1 shows how different modern forestry is compared to traditional woodland management. There is more on how ordinary people related to trees in the eighteenth century in:

 **The relationship between ordinary Scots with woodlands, forests and gardens p.135**

Although the eighteenth century was in the middle of the Enlightenment period, ordinary people, i.e. people who were not rich or highly educated, still had a fairly traditional approach to trees and woodlands, although this was changing rapidly as they moved away from rural areas of Scotland into cities or emigrated abroad. When they left their knowledge and culture went with them. Ordinary people who were left behind often had to find jobs as gamekeepers, gardeners or foresters, all jobs that developed with the rise of the country estate. The old times, when ordinary people could be their own boss, were over.

Many of the ideas that underlie modern forestry developed in the Enlightenment. Although it is very different to traditional woodland management, and it causes many problems, such as the destruction of natural habitats and wildlife, it is still considered a rational approach

Table 1.
Differences between Modern Forestry and Traditional Woodland Management

MODERN FORESTS	TRADITIONAL WOODLAND MANAGEMENT
Trees are usually planted.	Trees have mostly grown naturally.
Forests were often planted in places where trees have not grown for a very long time, if at all.	Traditionally managed woodlands often have been woodland for a long time. Many of them are ancient woodlands, which means, in Scotland, that they are recorded on the Roy maps from the 1740s and 1750s.
Most forestry trees came from other countries, i.e. they are not native to Scotland.	Woodland management usually relies on native tree species.
Mostly conifer forests.	Native pinewoods are only one sort of natural woodland.
Large blocks of the same species of tree are felled at the same time when they are all the same age.	Only small areas of a wood were cut at the same time and there is usually a mosaic of different aged trees across the wood.
Forests usually only have one layer, the canopy layer, with no shrub layer, or even trees of different sizes.	Woodlands have more than one layer and often the shrub layer was as important, or more so, than the canopy layer.
Forest trees are not coppiced.	Coppicing, i.e. cutting a tree or shrub to ground level and letting it re-grow, was an important management tool.
Forests are often quite large.	Woodlands are usually rather small.
Forest trees are tall and straight.	Woodland trees may be as useful crooked as straight.
Forests produce timber. Ideally long, straight planks or beams that could be used in large building projects. In the growing industries of the 18th and 19th centuries this included railway sleepers, floorboards for factories, planking for wooden ships, etc.	Woodland produces wood products. This includes charcoal, firewood, roof crucks, small wooden objects for use in the home, furniture, bark for tanning, sticks and stakes that can be used for baskets, wattle walls, and many other uses.
Timber is exported away from where it is produced.	Wood was used in the home or local economy.
Shelter and feeding of domestic animals is not part of forestry.	Woods were often used to shelter cattle and sheep and to provide feed for them.
Forests belong to someone and are often private, although the Forestry Commission has started to change this idea.	Woodlands were mostly accessible to the local community and were useful to them.



© Blair Castle

Blair Castle, Atholl Estate.

to forestry. The Enlightenment, the Industrial Revolution and the birth of modern forestry all occurred at about the same time. New industries wanted new trees and Enlightenment landowners wanted to develop rational and profitable ways of producing them.

One of the most important points to note from the table is that modern forestry resembles agriculture. Trees are treated like crops in a field. They are all planted at the same time, perhaps into ploughed land, and quite likely into ground that was bare of trees. Just like an arable crop, fertilizers and weed-killers may have been used and the whole crop tends to be felled at the same time. Just as in a wheat or barley crop straightness is important. Foresters want tall, straight trees planted in evenly spaced, straight lines. The straightest, tallest trees, which also happen to grow well in Scotland are conifers, but native conifers like Juniper and Yew, don't grow tall or straight at all, and even Scots pine can't compete with trees from North America or continental Europe. Most trees planted by foresters are species that do not grow naturally in Scotland such as the most widely planted of them all, Sitka spruce, or Douglas fir from America. One of the earliest exotics to be adopted was European larch,

See Tree Stories p.24

Straight, regularly growing trees are relatively easy to measure and their measurements enable foresters to work out how much timber a forest can produce. Measurement was an important feature of the Enlightenment in general, and in forestry in particular.

See DBH activity (p.30) and

 **Tree Hunt p.77**

This is a very unusual way of managing woodland and is very different to how it occurs in other parts of Europe and to how woodland was managed in Scotland before the Enlightenment. Unlike traditional woodland management modern forestry relies on the availability of large areas of empty countryside in which to plant trees and then manage them as forests, with no cattle, sheep, or people, wandering through them.

Many people left the countryside in Scotland during the Enlightenment time. There were many reasons for this. A notorious time in Scottish history is known as The Clearances. This happened when landowners forced people living on their land to move away and they were replaced by sheep, or trees. This was a terrible thing to happen and left many bad memories. The story of The Clearances is a powerful one and, because many of the people who were moved out emigrated around the world, it is very well known outside of Scotland, especially in places where there were many Scots, such as Canada, the USA and New Zealand. However, the story is much more complicated than simple eviction by evil landowners.

Why was so much land available for the Colonial Merchants to buy? p.83

Many landowners took pride in how they managed their land. They worked hard to improve it using new agricultural techniques that developed out of Enlightenment thinking. They didn't want their tenants to starve, although sometimes they acted in a way that was very hard for them and many left. Sometimes they were forced to leave the land. This was often because landowners were trying to make profit. This was a new idea, and a difficult one. Most land in Scotland is not, and never has been, profitable. But they thought that by using 'improved' methods of cultivation they could make money. They thought they were behaving rationally.

Treating trees like an agricultural crop was seen to be reasonable, or rational, then and still is for many foresters now. It may not seem very rational to plant American conifers in Scotland and treat them in the same way as barley but remember that many people in Scotland had been close to starving because they hadn't been able to grow good, reliable crops. Ideas that developed during the Enlightenment helped to increase crop yields dramatically, and to ensure a much more consistent food supply. There was good evidence that new agricultural methods worked and if they worked on food crops then why not with some of this new range of tree species that the new breed of plant-hunters like David Douglas and Archibald Menzies were sending back to Scotland? It was a time for experimentation and as the new conifers shot up with spectacularly straight growth that suited the needs of developing industries in the ballooning cities, especially Glasgow, the experiments paid off. These conifers were worth growing. And since people had left to live in the cities or emigrate there was more land available where they could be planted.

Atholl estate, in Highland Perthshire, was one of the first places where these conifers were grown. There is more on this under:

The Planting Dukes and the Plant Hunters p.41



David Douglas, Planthunter.



6. Enlightenment People

Many different people, mostly men, had an impact on the Scottish Enlightenment. Although it was a time dominated by rich men, influential people came from all walks of life. Social mobility was possible, for some at least.

Some people already owned land. They had mostly inherited it through family connections. They were:

The Aristocratic Landowners p.18

They did not always have much money and had to look for ways of making their estates more profitable.

Newly enriched men became prominent and enthusiastic landowners in this time.

Merchants – people who traded goods by buying and selling them – could make a lot of money and many of them used it to buy land. They were:

The Merchant Landowners, p.18

Science developed during the Enlightenment and the inventions and ideas of scientists were important to the practical advances made in agriculture and forestry. General scientific principals and discoveries were also important and Scots scientists had some insights that are still critical today. For more detail on the role of scientist in the Scottish Enlightenment see:

The Scientists, p.19

Many Scots travelled abroad. It was thought an essential part of the education of a rich young man to take a tour around Europe on:


The Grand Tour p.37


Many less wealthy men, and women, travelled in the Americas, Asia, Australasia and Africa. Scots were particularly intrepid and tough and **Explorers** like David Douglas and Archibald Menzies made many discoveries, especially of new tree species, which had an enormous impact on Scottish forestry during and after the Enlightenment. **Travellers** from other parts of Britain also had an impact, especially Dr Samuel Johnson, who journeyed through the Highlands and Islands with his companion James Boswell. Johnson was caustic about the lack of trees in Scotland and famously, though probably not very accurately said:

‘A tree might be a show in Scotland as a horse in Venice’.

Surveying Scotland itself was also important at this time and **map makers** like William Roy and Statisticians such as Sir John Sinclair were busy throughout the country.

The Arts were just as important in the Enlightenment as Science. Before the Enlightenment people thought the Scottish countryside was horrible to look at.

 **Artists p.20** helped to change this idea by seeing beauty in the Scottish landscape and expressing it in their fashionable paintings.

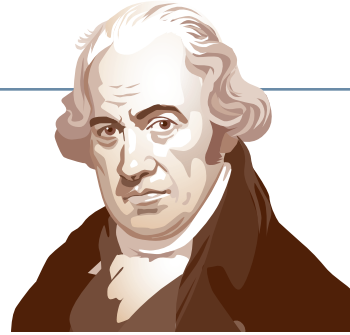
 **Writers p.21** played a similar role and some, particularly Sir Walter Scott and Robert Burns had an enormous impact. Walter Scott's writing, especially his long poem *Lady of the Lake*, inspired many people to visit the Trossachs, where the poem was set. These visitors were amongst the first tourists. An idealized image of rural Scotland came from Scott's writing.



David Hume



Robert Burns



James Watt



Adam Smith



Sir Walter Scott



Mary Eleanor Bowes

It can still be seen in the many clichés of the Scottish tourist industry and influences how Scottish landscape is viewed today.

Architects like Robert Adam were as important as artists and writers in defining what was tasteful. Their work was essential to the design and layout of the country estate. Their ideas came from many sources, including Ancient Rome, but they were also influenced by ideas about manners and the role of women in the home.

6.1 Women and the Ideal Home

Although the story of the Scottish Enlightenment features the names of many men and very few women, women were still important. The Country Estate and country houses were often very similar and followed the same pattern. Women and, specifically, ideas of good manners, which were often concerned with the role of women in society, played an important part in developing this pattern. There was even said to be a:

 **Revolution of Manners p.39**

There is more on individual women and their lives under:

 **Aristocratic Women and the Country Estate p.109**

6.2 Education

Education was essential to the Enlightenment. One of the remarkable features of Scotland at the time was its high rates of literacy. Most people went to school and could read and this was an important reason why Scots played such a major role at the time. Schooling was strict and much more limited in the subjects taught than it is now.

 **The Church and Schools p.14**

 **Activity p25.**

7. The Country Estate

Landowning was not all about mass tree planting and profit. Many of the new landowners and the existing aristocracy wanted to show their good taste by building elegant houses in their country estates.

'Castles are so last century' p.34

They employed the most fashionable and influential architects such as Robert Adam (Talented Architects, p. 57) to build grand houses that replaced the old-fashioned and uncomfortable castles of the past. These houses were at the centre of a formal, and formulaic, landscape. The house would be surrounded by geometrically laid out flower beds that gave way to sweeping lawns, dotted with graceful trees like the Cedar of Lebanon (tree stories). Food was needed for the landowner's family and the large numbers of staff needed to look after them and their property. Fruit and vegetables were grown in a walled kitchen garden, often with elaborate greenhouses for growing tender plants. There would also be a home farm to provide milk, eggs and meat for the household.



© Hopetoun House / G.A. Robb

Hopetoun House.

Vistas were important. Good views of the house and its surrounding landscape were essential to showing off the good taste of these new aristocrats and their elegant, expensive, country estates. Landscape painting was the height of artistic fashion but a good landscape picture, and the landscape it depicted, had to have particular features such as grottoes, majestic trees, elegant ruins and references to a well-known story, preferably from Classical Literature. A typical picture of a country estate of the time was by James Norie who painted Taymouth Castle, which belonged to the Campbells of Glenorchy (the Earls of Breadalbane). You can see the picture on the National Galleries of Scotland website www.nationalgalleries.org. It shows the castle from the south and combines a bird's-eye view with a detailed depiction of the recently landscaped gardens.

The wider estate was less formal, although how it was seen from the house and gardens was all part of the landscape plan. Plantations of exotic conifers were situated further away from the house and its gardens, although some rustic features may have been located amongst them. Some estates, including Atholl, had a hermitage, literally a place for a hermit to live. Sometimes they even employed a man to dress roughly, grow a beard and act at being a hermit.

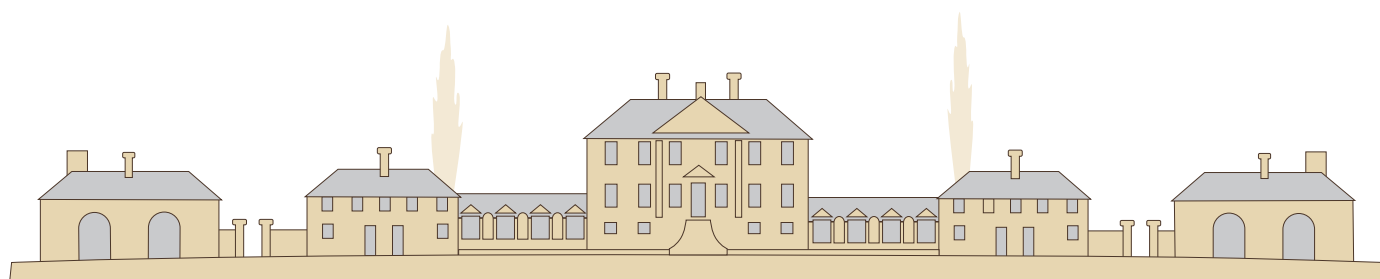
There is more detail about this in the resource:

 **The Country House and Estate p.51**



© Forestry Commission

The Hermitage, Dunkeld.



For a focus on one country estate see:

 **The McDowalls and Castle Semple House p.86**

Castle Semple house no longer stands and the estate is now part of Clyde Muirshiel Regional Park. The park website www.clydemuirshiel.co.uk also has a full account of the history of Castle Semple.

Suggested Activities

 **Design p.102**

 **Drama p.103**

Tree Stories: Cedar of Lebanon on p.24

8. Recording the Earth

Enlightenment ideas encouraged a passion for measuring and recording, especially of the natural world.

This wasn't just a hobby, although it became so for many fashionable men and women. Precise records are the basis of scientific research but they are also invaluable for practical matters. If a forester or gardener plants a new tree they've never grown before then it is really useful to them if they can find out more about what it needs to grow well. Gardeners and foresters started to publish books, like John Evelyn's *Sylva*, the tree manual of its day. John Reid published the first book on Scottish gardening in 1683, twenty years after Evelyn

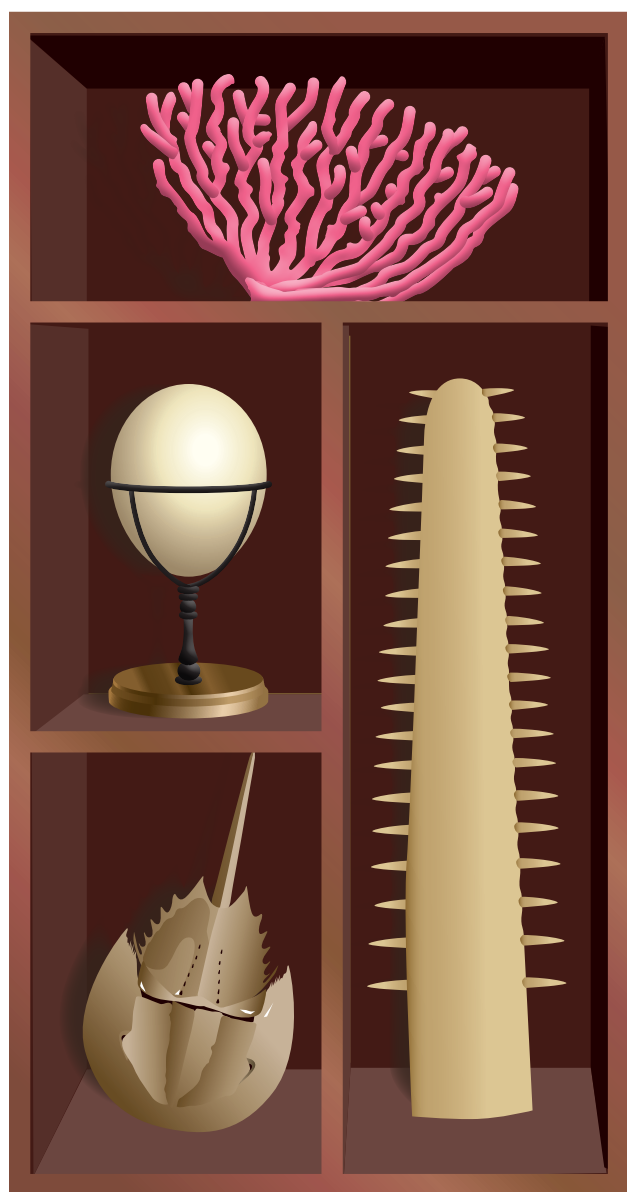
and Robert Sibbald and Andrew Balfour set up a botanic garden in Edinburgh, which later became the Royal Botanic Garden. Botanic gardens were centres for research on gardens and trees. They collected new species from around the world, both as living plants but also as dried specimens, which were stored in a herbarium, effectively a giant catalogue of the plant world.

Later, societies were established where learned and interested people could gather and share their observations and ideas. Some were overtly practical and specialized such as the Honourable Society for the Improvement in the Knowledge of Agriculture. Others, such as the Royal Society of Edinburgh included subjects from science to literature, but its prime concern was still to investigate and explore the world, whatever method used.

Greater awareness of scientific developments relating to farming and plants p.36

The new societies and scientific institutions wanted all the knowledge they could get. Knowledge of Scotland was rapidly increasing but there was also a thirst to know more about other countries, especially places that were remote and previously unknown in Scotland. Many Scots travelled widely during the Enlightenment and a few of them were employed by societies and institutions like the Horticultural Society (now known as the Royal Horticultural Society), who employed David Douglas. Archibald Menzies learned some of his trade at Edinburgh Botanic Garden before he travelled the world and collected many new plant species.

Not all this mania for survey was done by specialist surveyors. Sir John Sinclair, who led the first *Statistical Account of Scotland*, starting in 1791, asked Church of Scotland ministers to tell him about their parishes. He wanted to know about geography, natural history and history as well as how many people lived in each place and what they did. He asked the right questions and got good



Prized 'curiosities' from afar were displayed for ease of inspection and study.

answers and this first statistical account (there are two more, including one which finished in 1992) paints a remarkable picture of Scotland. It showed how Enlightenment thinking could be applied in a way which was immensely useful to practical people interested in managing their land better.

Many wealthy people liked to show their own interests and knowledge through their private collections, or:

Cabinets of Curiosity, p.75.

Such collections were often very large and included objects from around the world. Some of them were given to museums and formed the basis of their collections.

(Visit the Royal Botanical Garden Edinburgh Herbarium where you can see the Archibald Menzies and David Douglas collections. Local libraries hold copies of the Statistical Accounts.)

8.1 Maps

Mapping the countryside was an important way of measuring what was in it and maps were a vital tool for Enlightenment landowners who wanted an accurate picture of their property and to governments who wanted to know more about the country they were ruling.

The earliest detailed maps of Scotland were made by Timothy Pont in the 1580s and 1590s. They can be seen at www.maps.nls.uk/pont

You might be able to see a map of your home town or village. Pont's maps show important houses as well as villages, towns, rivers, hills and woodlands. They are detailed and for some places they are still quite accurate.

Although Pont's maps were good for their time, by the 1700s they were outdated. After the Jacobite rebellions the British government wanted better maps of the country. William Roy was commissioned to survey the country and draw new maps. They were made between 1747 and 1755 and are known as the 'Great Map'. They were amongst the best maps ever produced in their time and had an enormous influence on later mapmakers, including the Ordnance Survey, who are still mapping the country today. The Roy maps can also be seen on the National Library for Scotland website www.maps.nls.uk/roy

Woodlands that still exist now and are marked on the Roy maps are considered to be Ancient Woodland in Scotland.



Fine detail was accurately recorded on the new maps.

9. Tree Stories

The four trees chosen here have very different tales to tell. They all played a part in our story of trees and the Scottish Enlightenment but their parts differed according to their place in the country estate, modern forestry, traditional woodland management and industry.

Three of them, Cedar of Lebanon, Douglas fir and European larch are not native to Scotland and because they are not native they are sometimes called exotic species. The fourth, Oak, is a native species and has been in Scotland since trees came back to the land after the Ice Age, about ten thousand years ago. There is another difference. Cedar of Lebanon, European larch and Douglas fir are all conifers. That means they have small, needle-like leaves, a fairly regular shape, and their seeds are held in woody cones, which gives them their name: conifer means cone-bearer. Oak on the other hand is a broadleaf. Its leaves are flattened and much bigger than the conifers'. It also produces acorns, which look a little bit like cones but are actually a nut, a big-seeded woody fruit.

Three of the species are important in Scottish forests and woodlands. Cedar of Lebanon is not economically important but was very popular with landscape gardeners in the eighteenth and nineteenth centuries and their elegantly spreading branches seemed to define the country estate at that time. European larch was the first forest tree to be widely planted in Scotland and Douglas fir is now one of the most important trees for modern foresters. Oak produces many valuable products, not just timber, and has always been used and highly valued, wherever it grows. It is also very important ecologically and defines many woodland habitats.

9.1 Cedar of Lebanon

I like to call myself Cedric, though many people think that is not a suitable name for a tree, especially one of my great historical fame, but I don't like to seem too pompous and I like Cedric. You may know me as Cedar of Lebanon and should call me that to be correct. In Latin I am called Cedrus libani and I have been known by many names in my home countries. I come from the mountains of Syria and Lebanon where my kind once formed grand and beautiful forests. Now, I am rare in my homeland. I am not common in Scotland either, quite the contrary. I have been favoured by the rich and powerful for nearly four centuries. Scottish aristocrats loved me. They admired the majesty my spreading branches and dark foliage brought to their graceful lawns. I am the perfect finishing touch to any country house and the perfect way to demonstrate the refinement and wealth of my planters. I am not planted in forests in Scotland. I am too special for that.

I have always been special. The Bible records me many times and aristocratic gentlemen, and especially ladies favoured me because I showed how well they knew their Scriptures, though my splendid looks were a bonus such educated people could not ignore. Of course, there were many other reasons to respect me. My relatives

© Forestry Commission



Cedar of Lebanon.

have been renowned since ancient times, times even before those recorded in the Bible. One of the first stories ever recorded, *The Epic of Gilgamesh*, tells of Gilgamesh and Enkidu travelling together through the Cedar Forest, guarded by the terrible ogre, Humbaba. Gilgamesh and Enkidu defeat Humbaba and cut down the biggest Cedar tree in the forest and float it on a raft down the Euphrates, taking Humbaba's head with them. Enkidu makes the tree into a great temple door but comes to curse this act later, when the felled tree and the death of Humbaba haunt his dreams. I shudder to think of the death of that tree. Of course it would haunt the dreams of anyone who had destroyed such a hallowed tree.

You would not grow me to make money. Profit is not a motive for planting Cedar of Lebanon. We have never been concerned with utility, though some have used our timber. Our wood has a special fragrance, which is thought to be unpleasant for moths, though to me it is truly the most wonderful scent. Moths are of no import to me, though the wood of my relatives has been used to make storage boxes to protect precious things, especially wool, from those fluttering pests. This would be beneath me. Please do not use me to deter insects. Find a better use for my timber. If you must use me then make me into a noble frame for a great building. My ancestors sacrificed themselves to provide timber for the first Temple of Solomon, described in the Bible in the Old Testament. They were truly great. And if you must think of utility we do have some mildly antiseptic properties that make us useful for healing and don't require that you kill us first.

Sometimes we drop our branches suddenly. I dropped one twenty years ago. My country house has long gone and I stand on a golf club now. The members were worried I might kill someone if I dropped another but there were some wise men amongst them and they saved me from the terrible chainsaw. I have props to support my heaviest branches and when there are gales someone puts a fence of red and white striped tape around me. Some would say that is humiliating for such a grand specimen as me, but I have the weight of history behind me. I can bear it.

 **'The largest tree of the Cedar of Lebanon, except one!' p.92**

9.2 Larch

I am Larissa, famous for my grace and delicate foliage. You might know me as larch and scientists call me *Larix decidua* but I prefer Larissa. I came from the Alps, high up in the mountains where you can still see my beautiful cousins.

I was once a favourite. The Dukes of Atholl loved me best of all trees. They planted millions of my relatives and when the third Duke, John Murray, wrote the history of trees in his county of Perthshire it was my name, larch, which he wrote in red ink with a grand capital letter. No other tree was treated with such reverence.

My timber is strong and will last in the ground for centuries, so I've heard, though I will grow for many years before they fell me and use my timber. When the time comes for me I want to line the walls of a great house. Blair Castle, home to the Atholl Dukes who loved me so well, is lined with larch timber and it is said that when it is polished it shines so bright that a candle light looks like fire in its reflection. I would like to see that. I would like to shine like that.

We were amongst the first trees to be planted by rich men. Before we came there were few trees in Scotland. The hillsides were bare, even the great rock of Craigvinean was bare. You might see that rocky crag if you drive north of Perth on the A9 near Dunkeld. It towers over the road and the river Tay and it is clothed in trees now. Spruce and fir grow there, but you can still see my kind amongst them. We are the lighter ones, our needles are a softer green than our



Larch.

evergreen neighbours and we lose them in the winter. Before our needles drop they turn golden orange and we light the hillsides like fire, or that's how I like to think of it. There were trees here before we came of course, but they were natives, broadleaf species mostly, slow and crooked. When we came we grew fast, tall and strong. Aristocrats loved us. They thought that trees should be planted for 'Beauty, Effect, or Profit' and that it was us, larch, which was best for all three.

More than three hundred years ago Sir William Lockhart of Lee in Lanarkshire discovered how well we grow in Scotland. He tried some seeds in the greenhouse, but of course we are mountain trees and it was too warm and dry. It was only when the young plants were outside that they grew happily and he noticed how well they did in the Scottish climate. He told his friends about the virtues of the larch and rich men around the country looking for a fine profitable tree started to plant us. James Murray, the first Duke of Atholl to notice our great worth, planted two larch trees in 1727, and the great Parent Larches a few years later. One of those five famous trees still stands beside the cathedral at Dunkeld, still strong, though not so tall as she once was.

Another Atholl Duke built a ship from our timber. He called it 'Larch' and it was a strong ship, resistant to seawater and fast as the wind. But then iron ships came and our timber was less valued. Other kinds of tree have come too and we are no longer as esteemed as we once were. Millions of us still stand tall in Scotland. We are still proud of our place in the hills and the profit we give from our timber.

 **A predilection for the larix p.89**

 **Tree Study: The Larch (or Larix) p.105**

9.3 Big Douglas

My name is Big Douglas, Douglas fir they call me, though scientists know me as *Pseudotsuga menziesii*. We come from the west coast of North America and can grow 120 metres tall over there, nearly the tallest trees in the whole wide world.

I came to be in Scotland when seed from my forefathers was collected by one Mr David Douglas nearly two centuries ago. He was a Scottish plant hunter and he found us near Cape Disappointment. He was not disappointed when he saw my mighty ancestors. He'd heard tell of great trees growing near Puget Sound, where Cape Disappointment is located, from his fellow Scot, Archibald Menzies. Mr Menzies made a specimen out of one of us and sent it to those scientists who like to give fancy Latin names to plain old trees. It was Mr Menzies that the scientists called me after, but English-speaking folk named me for Mr Douglas.

We are certainly no disappointment, not to Mr Menzies, Mr Douglas, nor all those aristocrats who planted me and my brothers in this great little country of yours, and not to those foresters who still plant us here. We can be seen all over this country and one of my brothers is the tallest tree in Scotland. He lives at the Hermitage, near Dunkeld. He is about 60 metres tall, so he has a way to go to catch up with our 120 metre uncles in Oregon, way back home.

Anyways, back to Mr Douglas. He collected cones by shooting them out of my grandfather's branches, safer than climbing, for Mr Douglas anyway. Grandpa wouldn't have minded much, shooting off a few branches is not much to bother about for the likes of him. Mr Douglas sent seed back to those illustrious fellas at the Horticultural Society in London back in 1827. He even stood in front of some of those scientist fellas at the Linnaean Society and told



Douglas fir.



Douglas fir at the Hermitage, Dunkeld.

them all about what he'd found, including the mighty Douglas fir. They were powerful men in those societies and they knew more powerful men. We were the thing back then, rich guys wanted to plant us on their land, and plenty of them did. One of them was Lord Mansfield. He planted two of us, we call them Mother and Father, on his estate at Scone Palace near Perth. They'd gone to the right place you could say since when he was a lad Mr Douglas worked the gardens at Scone Palace. Mother and Father had so many seeds and so many folk wanted them they made a fortune for Lord Mansfield. He should've been mighty pleased with his profit. I hope he was.

Mr Douglas travelled all over North America. He once walked two thousand miles with a Calumet Eagle he was given by local warriors. That shows the high regard those Native Americans had for him, some of them anyway, plenty others were not so friendly, but that's a whole lot of other stories. When the eagle died Mr Douglas carried on walking with his dog Billy. They walked thousands more miles and the man and dog were great

companions and had some great adventures together. One of the most dangerous was when they went over a roaring cataract of water and their canoe was overturned. Mr Douglas had to swim, and Billy too, but they both survived their little tumble.

Mr Douglas died badly in the end. Some said he was murdered. His body was found in a pit that had been dug to trap wild cattle on Hawaii. Billy was keeping guard beside him when he was found. Poor Mr Douglas, he had a hard life and it was too short, he was only 34 when he died. Not much of an age, especially when you look at us. We can grow for hundreds of years. I'm looking forward to my next century, and the one after. I'm not a one for fashion, though you could say it was fashion brought me here I guess. Foresters still have their fashions, but now I'm here I just get on and grow and remember my family motto:

Tall is what we are and taller is what we intend to be.

 **Archibald Menzies p. 46**

 **David Douglas p. 48**

9.4 Oak

Ca' me Oak. People have given me many names. I hae' ma ain secret name, which I cannae tell ye, so ca' me Oak. Scotland is ma native land and oaks have been here for thoosans of years. There are twa oak clans in Scotlan'd. *Quercus robur* is called *Pedunculate oak* and they live in the south and east of the country. They are mostly incomers and were planted by men in places where they didnae live naturally in the north and west, the land of *Quercus petraea* or *Sessile oak*. There is nothing to stop marrying between those clans and both can bear acorns from pollen from the other. There are many cross-bred hybrids where they grow together. I am one of those hybrids and I am proud of my mixed heritage.

Before the time of the Enlightenment (a word I ha' just learned, but one I'm sure you already ken) rich and poor alike valued me. In ancient times they revered me. My name in the Gaelic language is *dàrach* and I am the Guardian of the Door, the ancient way to the land of Faerie the folk we call the Shee.



Oak.

Druids worshipped in ma groves and ma wood is burned by those who still keep the ancient festivals at the midwinter and midsummer solstices.

I am crookit but strang. A roof made from ma crucks is the strongest roof to be found. The Great Hall of Stirling Castle is roofed with two hundred oak trees and not a single nail was used to hold 'em together. Oaks last. Oor timber lasts centuries and is the best for shipbuilding. The Great Michael was built by the Scottish King James IV and launched in 1512. It was a muckle ship, made from one thousand oak trees and to ma mind the sacrifice of ma relatives made it the greatest ship ever built in Scotland. Greatness is a word often linked to oak.

Modern men, enlightened men, were obsessed wi' profit and utility. They did not trust oor glamourie, oor magic, and their new fangled machines could not use oor crooked timber. We were compared to new, exotic, trees and found wantin'. But we survived and country people saw oor wirth. They made small things from oor wood for their houses and farms and they knew how many creatures and plants lived amongst oor groves. Some of them remembered oor glamour.

Profit seeking men found a use for us in some of their industries. Oor bark is thick wi' tannin, which was used to preserve and soften animal skins and mak leather and we were stripped so tanners could mak the best Scottish leather. Iron smelters needed us too. Oor wood was coppiced to make charcoal. Oak is different to those conifers you ha' already met since we dinnae die when we are cut to the ground. We sprout again from the cut stump and that is called coppicing. It means that we dinnae need to be replanted but will grow agin, and agin, and agin. Wood cut in that ilk was burnt slowly in special kilns until all the water was driven oot o' it and it turned to black charcoal. Charcoal burns hotter than wood, hot enough to smelt iron. We can change ore to metal. As you ha' kent already, there is magic in oor limbs. We had value before profit, which came late in oor history.

Magic and usefulness maks oak a muckle tree to Scots folk. But it is oor place in the native woods of Scotland that matters most to me and to the oak-woods that bear ma name. They are special places, full of life and secrets. They are where to find oak's true magic.

 **The importance of coppiced woodlands and the development of Scottish trade and Industry in the 18th century p.152**

 **Leather tanning p.154**

 **The iron industry p.157**

© Historic Scotland



Furnaces at Bonawe iron works.

10. Some more books and websites

10.1 Trees and Landscape

The books listed have stories about individual trees, including the Mother and Father Douglas fir at Scone Palace, the tallest tree at the Hermitage, The Parent Larch at Dunkeld, one or two Cedars of Lebanon and many, many oak trees.

Heritage Trees of Scotland by Donald Rodger, Jon Stokes and James Ogilvie. 2003. The Tree Council
Meetings with Remarkable Trees by Thomas Pakenham. 2003 (Paperback). Weidenfeld & Nicholson.

Probably the most popular book to identifying trees is the Collins Guide:
Collins Tree Guide by Owen Johnson. 2006. Collins.

There are identification guides on many websites but most of them do not include exotic conifers. The Forestry Commission website has a key (a stepwise way of identifying species, based on logic!) to trees growing in Scotland, including exotic conifers.
www.forestry.gov.uk/forestry. Search for Tree Name Trail.

Big Tree Country is inspired by the trees of Perthshire, where many exotic conifers were first planted in Scotland and where there are many significant native trees. It includes a listing of Places to See. www.perthshirebigtreecountry.co.uk

Big Trees often grow in planned landscapes that date from the Scottish Enlightenment. Scone Palace, near Perth, Atholl Estates in Highland Perthshire and Kinnoull Hill in Perth are all Big Tree Country sites with a strong connection to the Scottish Enlightenment. They are all easily visited. There is such a rich diversity of exotic conifers in Scotland now it has an important role to play in conifer conservation. The iCONic project is linked to Big Tree Country and has its own website with more information on conifer species. www.iconictrees.org

Many books and websites have information on the folklore of trees.

The Scots Herbal: The Plant Lore of Scotland by Tess Darwin. 2008 (paperback). Birlinn.
 This includes native Scottish trees and many other plants besides. More specifically about trees is:

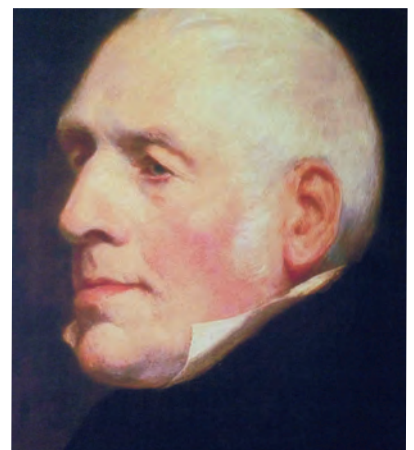
A handbook of Scotland's Trees: The Essential Guide for Enthusiasts, Gardeners and Woodland Lovers to Species, Cultivation, Habits, Uses and Lore by Fi Martynoga. 2011 (paperback). Saraband.
 This book also provides an alternative to the 'traditional' Scottish forestry, the story of which is told in this resource and has its origins in the Enlightenment.

10.2 People

The lives of David Douglas, Archibald Menzies and many other Scottish plant hunters are told in:

Seeds of Blood and Beauty by Ann Lindsay. 2008 (paperback). Birlinn.

There is more on the Planting Dukes of Atholl and their love for Larch in:
Landscapes and Lives: the Scottish Forest Through the Ages by John Fowler. 2002. Canongate.



Archibald Menzies.

© David Henderson/Castle Menzies



11. Activities

11.1 Diameter at Breast Height (DBH)

Diameter at Breast Height sounds a bit odd, but it is a standard way of measuring trees and is very useful for foresters who want to know how much timber is in their forests. It is measured at a standard height above the ground, 1.3 metres.

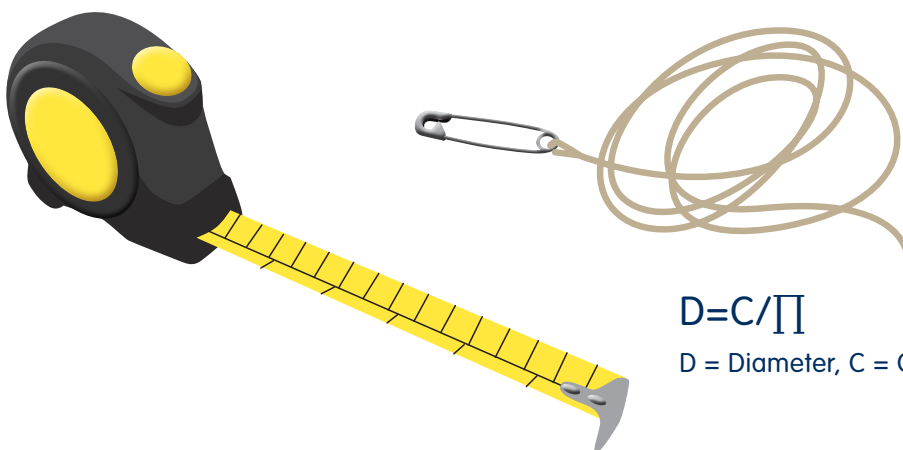
What you will need

Measuring tapes, string, safety pins and a calculator.

How to do it

Work in pairs. Use a tape measure to work out where 1.3 metres is on your body and put a safety pin with a string attached in your clothes at that height. If you're not tall enough then find someone who is and use them as your measure. Stand next to the tree and use the string from your safety pin to work out where 1.3 metres is on the tree. Make sure the string is level. Take a tape measure and wrap it around the tree at this height. You may need to help each other to reach around and keep it level if it's a big tree. Write down the distance measured on the tape. Make sure that you start at 0 on the tape (or if you can't hold it at 0 then be careful to note where you started from) and that it is level and not twisted. This will measure the tree's circumference, which if you know your maths, is not the same as diameter.

You will need to work out the diameter from the circumference based on the formula:



$$D = C / \pi$$

D = Diameter, C = Circumference, π = Pi (3.14)

Try and measure 10 trees and work out an average (mean) DBH by adding all 10 measures together and dividing by 10. This will give you a mean DBH for those 10 trees. Do all the measuring pairs come up with the same DBH? If not think about why there may be differences between them.

For a quick way of measuring tree height see:

 **Tree Hunt p.77**



Measuring diameter at breast height of a 40 year old larch.

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11.2 Discover a lost landscape

Visit a local landscape that was planned and laid out during the Enlightenment. Many parks were originally the grounds of country houses and you may find that your local park, especially if it's big and not in a city centre, was laid out then. Even if the big house has gone there will be clues. Try and find features that suggest its origins in the Enlightenment.

Things to look out for

Conifers, especially exotic ones.

Follies and grottoes, often with unusual stonework or architectural features.

Pretty bridges with a good view of water and landscape.

Viewing points.

Paths, especially wide, well-made ones (walkways). Where do they go to?

Tree avenues.

Ha-has. These are ditches, with one vertical side lined with stone. The vertical side will be closest to the house. They were used as barriers in country estates to stop domestic animals from wandering into the more formal parts of the estate and eating bits of the garden they shouldn't. They are not visible until you come across them, hence the name, ha-ha!



'Follies' abound in Enlightenment period estates.

11.3 Make a Tree Map

First take a look at the Pont and Roy maps online (www.maps.nls.uk) to see what old maps look like. Draw a map of somewhere in your local area. This could be your school grounds, if they're big enough, or a local park.

What do you think should go on your map? You should try and map the things that you think are important. Include local trees and woodlands. Unless you live right in the middle of a city there will be some trees around. Try and work out whether they were planted or not (use table 1 to help you if they are in woodland). You will probably have to be selective about what else you put on your map so think what would be the most useful things to mark on it before you start. Are you going to use symbols (like OS maps do) or are you going to draw a more detailed picture? It's up to you which you use but remember: more detail takes more time and uses up more paper but not enough detail will make your map less useful.

Are you going to make your map to scale? If you do you will have to think about how to measure distances. Accurate maps use specialist surveying equipment but this is very expensive and difficult to use. If you have access to one, a hand-held GPS sold for walkers (not a satnav system for the car) could be helpful. But a cheaper and more low-tech method is to count your paces. You need to work out how long your step is when you walk normally and then multiply the number of steps by this distance. Try this anyway and, if you can, use a GPS to compare the results. Pacing can be quite an accurate method, if you don't lose count of your paces!

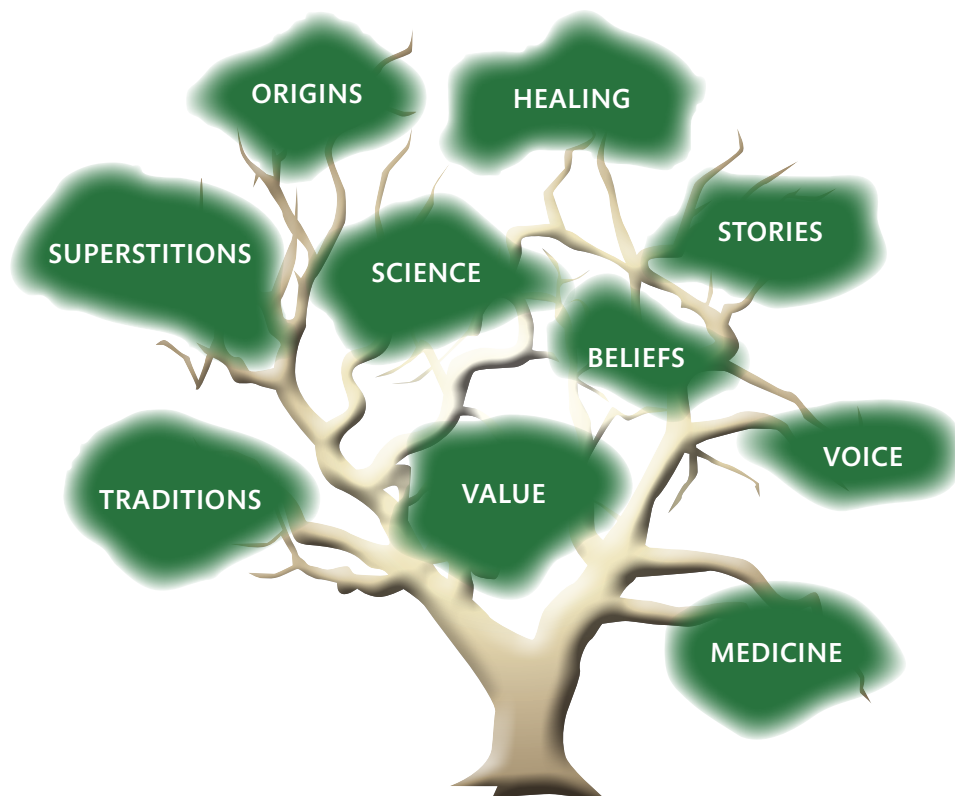
Try not to use Google Maps until you've drawn your map!

11.4 New New Statistical Account

Visit the local studies department of your local library and have a look at the Statistical Accounts. They should have the original and the subsequent revisions. Take note of what they recorded and use this to come up with questions that you could ask to make a new *New Statistical Account* for your local area. Think about what has changed since the Statistical Accounts were recorded. Should your questions be the same as the ones they asked? If not, then what do you think it would be useful to know about? Although the Statistical Accounts are online at www.stat-acc-scot.edina.ac.uk. You may need to ask a librarian or historian to help you use it since parish names can be difficult to search.

11.5 Write your own Tree Story

Every tree has a story to tell so write your own story about a different sort of tree. You will need to read about the tree first. Find out how and where it grows naturally, its scientific name and its value to people. This could include stories that have been told about it, uses in healing and modern medicine, beliefs about it and how it is useful to people today. There are many trees that you could write about including: Ash, willow, Scots pine, yew, juniper, hazel, elm, birch, beech, sycamore, sitka spruce, rowan, etc. etc. Do your research and then try and imagine what sort of voice the tree might have and try and write in that voice. Use the books and websites given at the end of Tree Stories or see what else you can find.



Notes



Forestry Commission Scotland serves as the
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