An Environmental History of State Forestry in Scotland, 1919 – 1970

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Ph.D

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I hereby declare that this thesis has been composed by myself and embodies the work done by me unless explicitly stated otherwise. I also declare that this work has not been previously included in another thesis.

Stirling, 6 December 2001

K.J.W. Oosthoek

Cruaidh mar am fraoch
Buan mar am ghiuthais

Hard as the heather
lasting as the pine

Gaelic proverb

Contents

Abstract

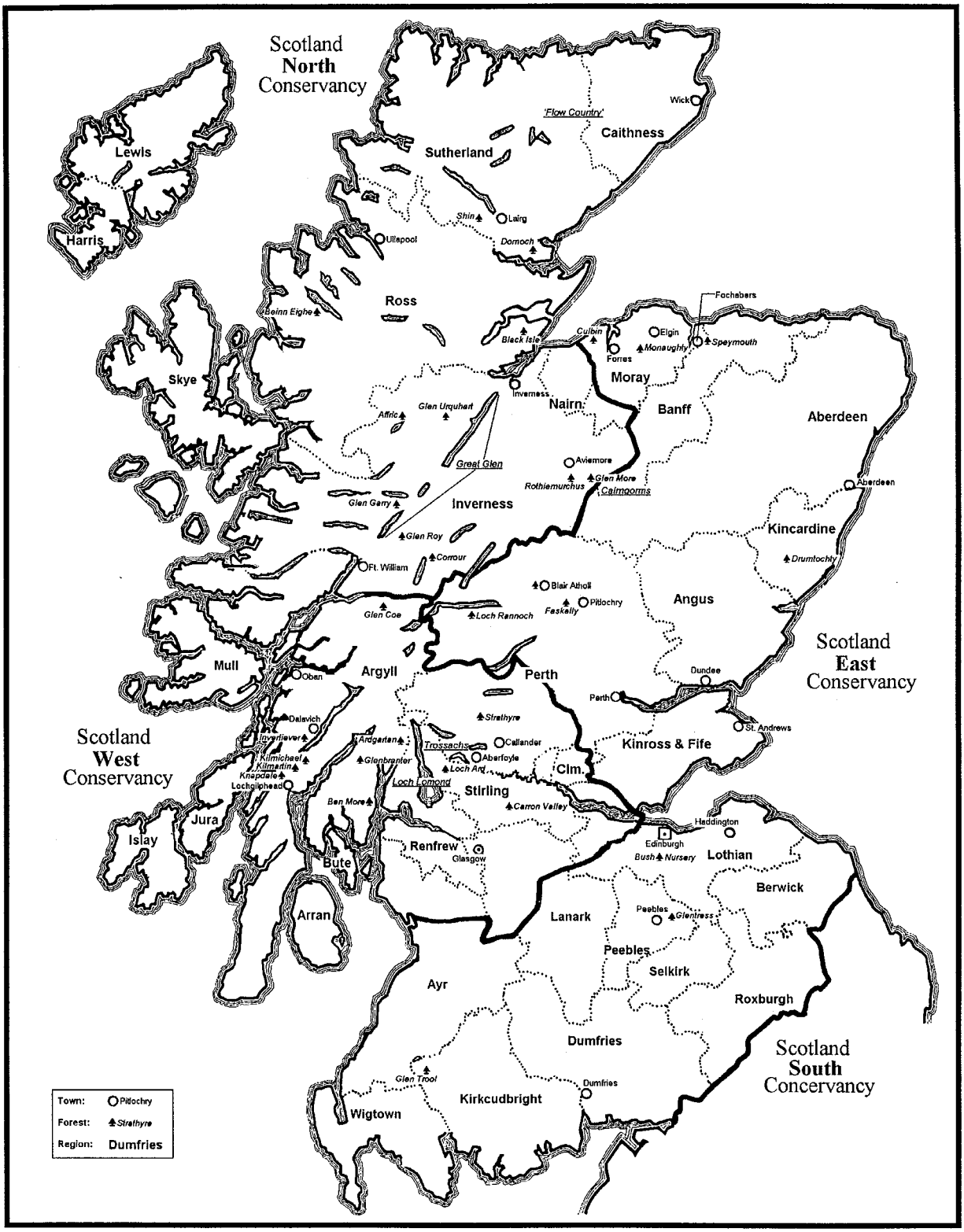
The present single species geometric forest plantations in the Scottish landscape suggest that foresters were not interested in conservation issues and landscape aesthetics. This thesis argues that the appearance of the forests is not so much the result of the foresters' lack of interest in conservation and nature but the social, economic and political pressures that underpinned their creation as well as the Scottish physical environment. Scottish foresters have had a long-standing interest in conservation issues that dates back to the colonial roots of Scottish forestry in mid-19th century India. The concept of conservation was introduced in Scotland through foresters returning from their service in India and other parts of the Empire. The root of the interest in landscape aesthetics dates back even to the 18th century when Scottish landowners started to plant trees, both exotic and native, to beautify their estates.

By the second half of the 19th century influential landowners became concerned about the fact that Scotland could not produce sufficient timber to provide for its own needs. They also thought that forestry could provide jobs in the Highlands of Scotland and thus contribute to strengthening the social and economic fabric of rural Scotland. To increase timber production and improve the rural economy, influential landowners lobbied for the creation of a forestry agency. It was from these roots - aesthetics, conservation and social and economic concerns - that forestry policy in Scotland developed.

It was only after the First World War, when Britain was confronted with severe timber shortages, that a state forestry organisation, the Forestry Commission, was created. Its initial task was to create a strategic timber reserve but over time conservation objectives came on board forest policy. The lands available for forestry were poor upland areas where only a handful introduced conifers were able to survive the harsh condition and, because of their fast growth, created in a relatively short time-span the desired timber reserve. It was for this reason that the forests created by the Forestry Commission were mainly made up of fast

growing conifers introduced from the Pacific coast of North America. Technical improvements such as the introduction of mechanical ploughing and the use of fertilisers expanded the range of planting and pushed planting even further uphill. The coincidence of ploughing and the use of conifers on a large scale also led to an increasing monotonous appearance of the new plantations. It was this monotonous and artificial appearance that attracted the first opposition to the planting of conifers in the Lake District, but not in the Scottish Highlands.

The development of an environmental policy as part of state forestry in Scotland was not so much driven by external pressures from conservation organisations but by a combination of economic and social pressures in the Highlands and the fact that many foresters are sensitive to the environment in which they work. The general public and nature conservation organisations were until the 1970s not much concerned about the emergence of coniferous plantations in the landscape. Other more pressing environmental issues, such as the impact of build structures on the landscape, the use of herbicides, and the creation of nature reserves, occupied public environmental concern and nature conservation organisations alike. In the meantime the Commission developed the fundaments on which the broadleaf and conservation policies of the 1990s became based. It was the pressure from the Treasury and the wood processing industry that made it hard to change direction because hard economics were dominant. But when change came, the Commission was able to adapt to the new situation thanks to the deep-rooted interest of its staff in nature conservation.



Map 1: Map of Scotland, indicating place names and forests referred to in the text (after Forestry Commission, 1961).

List of Tables, Figures and Maps

Acknowledgements

During the more than three and a half years that it took to research and write this thesis many people asked me why a Dutchman came to Scotland to study its forest history. The answer to this question has a somewhat romantic beginning. In the summer of 1992 I came to Scotland for a hiking holiday in the Highlands. It was a very dry summer and the water tables were dramatically low, exposing the lake beds. These conditions revealed thousands of tree stumps normally concealed by the water in the lochs. It made clear that once a massive forest had flourished where no trees can be found now. My curiosity was awakened and I wanted to find out what had happened with these lost Scottish forests.

A couple of years later I spent six months at the University of Hull as part of a student exchange programme. It was here that I discussed the problem of the lost Scottish forests with Professor Donald Woodward. He advised me to contact Professor Chris Smout in St. Andrews if I wished to study Scottish woodland history. I took up this advice and contacted Professor Smout, who invited me over for a discussion. Initially I wanted to make a study of the ancient forests of Scotland but Chris Smout suggested I look at the recent past and to make a study of the Forestry Commission. It took more than a year of applying for funding before Chris Smout drew my attention to a studentship in environmental history offered by the Department of History at the University of Stirling. I am very grateful to both Professors Woodward and Smout for their advice and encouragement. It was this that put me on the ultimate course that brought me to Stirling.

I am also very grateful to the History Department of the University of Stirling for awarding me a studentship in environmental history that enabled me to write and research this thesis. I wish to thank my supervisors, Dr Fiona Watson and Professor George Peden, for the time they spent reading the drafts of chapters at different stages, their critical comments,

advice and support throughout my Ph.D studies. Their help and encouragement made the whole undertaking, from research to writing, a valuable learning experience.

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Also a warm thank you to my good friend and academic colleague Justine Kemp who spend many hours of proof reading the final draft. Her eye for detail ironed out the remaining flaws and ripples in the text which improved the readability considerably.

Finally I feel deeply thankful for the support from both of my parents, and especially my mother, who never witnessed me finishing this undertaking. I am sure that she would have been proud. I'd like to thank my father for his unconditional support, especially during the final stages of my Ph.D. It was his interest in history and the world surrounding us that aroused my interest in the past and the planet we live on.

Jan Oosthoek
Stirling
December, 2001

1. Introduction

The twentieth century witnessed big changes in the Scottish Landscape. Suburban developments were sprawling over the landscape, new industrial estates and airports were constructed and to connect everything an extensive road network was build. But it was the establishment of forest plantations that accounted for the biggest transformation of land use in Scotland during the 20th century. Between 1919, the year that the Forestry Commission was established, and 1970 the state forestry organisation planted more than 3600 square kilometre in Scotland, which equals about 5% its total land surface.[1] This large-scale afforestation programme made a considerable visible impression on the rural environment; it transformed entire landscapes by creating large coniferous plantations on previously bare moor and peat land.

The purpose of this thesis is to examine the State afforestation programme in Scotland, why it was set up and how it was carried out, and why the Commission preferred the use of non-native conifer species for the creation of new plantations. It will also examine forestry theory and practice and the attitudes of foresters with regard to landscape and wildlife, and how these issues related to contemporary public opinion.

1.1 Structure

The present thesis is an environmental history of State forestry in Scotland and this has consequences for its structure. Although a considerable part of chapter two and three are devoted to the 19th century, the main focus of the thesis is the period as indicated in the title: 1919-1972. The starting date is the year that the Forestry Commission was set up. The termination date of 1972 is chosen because during that year the report of the third Government review of forestry policy was presented to Parliament. The findings of the report gave forest policy its hard economic edge that culminated into the 'Flow Country-Debate' during the mid-1980s and the greening of the Forestry Commission. But these developments lie outside the scope of this thesis.

[1] Forestry Commission, *Annual Report 1970-71*, p. 46.

Chapters two to four are essentially more traditional histories in scope and therefore chronological. They are essential to understand the background of the development of forestry theory and practice in Scotland during the 20th century. Chapter one is dealing with the disappearance of the primordial forest of Scotland, the so-called wood of Caledon. It will examine how the modern version of the myth is a product of the mid-20th century, although its origins date back into the 16th century. This is necessary to make clear that the founding fathers of the Forestry Commission could not have been influenced by ideas that came together only fifty years later. As said before, a considerable part of chapter three is devoted to the 19th century, but it is essential to understand Scottish forestry before the events that led to the creation the Forestry Commission in 1919. It will explain how modern forestry developed in Scotland and that there was an increasing enthusiasm among landowners for forestry. It was from these land-owning forestry enthusiasts that a small group of men emerged that were to become the founding fathers of the Forestry Commission. It is here that chapter four will continue the story with discussing the background of these people and why they were convinced that the creation of a state forestry authority in Scotland was urgent. It was the First World War and the timber shortage during that war that provided the proponents with the right climate to make their case of forestry and establish the Forestry Commission. During the fifty years that followed the policy of the forestry Commission has been constantly changing as a result of economic and social pressures, as well as new insights into forestry and nature conservation. An analysis of these pressures and the changes that resulted from it are a fundamental element of chapter three. It will provide insight into the economic and social pressures affecting both the Forestry Commission itself and the resource which it was set up to manage. But it will also reveal that the Commission was sometimes remarkable ahead of the times, for example in the creation of forest parks and the employment of a landscape architect.

1.2 Environmental history

The final three chapters are in fact the environmental history part of the thesis and thematic in approach. To understand the structure of these chapters themes they cover, we have to define what environmental history is and which aspects are relevant to the study of forest history. Environmental history is about human interaction with the natural world or, to put it in another way, it studies the interaction between culture and nature in the past[2]. But it is not only the relations between humans and the physical world that is the subject of study. Environmental historians also study the way people and cultures explained, described, interpreted and appreciated nature, something Smout described as the 'cultural history of human understanding of the world around us'.[3]

The second theme in environmental history is the story of human exploitation of the natural world, which includes the impact of forestry on soil and landscape and its effects on wildlife. But environmental history is not a one-way alley with nature at one end and humans at the other because the natural environment is interwoven with human society. The environment provides us with the resources we need to live and survive: food, shelter and energy. It provides the opportunities we need to expand human prosperity, but the environment also places restriction on the nature of human exploitation of resources.

And last, but not least, environmental history is about unmasking myth and distorted perceptions of the past. Myth and false perceptions are not based on historical facts and can be highly influential, even in government and scientific circles. It an important task of environmental history to correct these misconceptions of the past because it can help to understand our current problems better and to make proper decisions to deal with these problems, now and in the future.

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[2] Verstegen, S.W. & Zanden, J.L van., Een *Groene Geschiedenis van Nederland*, (Utrecht, 1993), p. 11.
[3] Smout, T.C., *Scotland since Prehistory. Natural Change & Human Impact* (Aberdeen, 1993), p.xiii.

The first aspect of environmental history that is relevant to the study of forest history in Scotland will examine how foresters perceived and analysed the natural world in relation to forestry. Chapter five will explore the intellectual origins of modern forestry and what effects they had on the development of forestry practice in Scotland. In her thesis, Judith Gerber pointed out that modern forestry practice in Scotland cannot be properly understood without considering its historical roots in German forestry practice. This practice was characterised by the creation of even-aged, monocultural, high forest plantations, managed by a clearfelling system. Gerber further suggested that this forestry practice was simply copied and remained virtually unchanged until the 1980s.[4] However this notion of the German connection is partly undercut by a statement made in a report by the World Wildlife Fund on Scottish forestry: 'during the 20th century under the aegis of the Forestry Commission, the model of continental plantation forestry emerged as the dominant forestry practice in Scotland'.[5] This statement suggests that not only German forestry influenced forestry practice in Scotland but continental forestry practice, i.e. French and German, in general. The French and German forestry practices were amalgamated in the colonial context and introduced in Scotland by foresters and botanists returning after their service in the colonies.

The colonial forestry practice combined two ideas that were to become the leading themes in British forestry. On the one hand there was forestry along ecological lines and on the other economic forestry based on scientific principles. Up to the 1950s many plantations were established with some regard to choice of species in relation to site conditions, a practice known as ecological forestry [6]. But between about 1950 and the 1980s large even-aged blocks of mainly spruces and firs were planted.[7] Rackham concluded that this new forestry ethic was the result of the work of academic foresters who wanted to provide forestry

[4] Gerber, Judith, *The Construction of Nature*, (Ph.D. thesis, Oxford, 1997), pp. 99, 123-124
[5] Wightman, A. D. (ed.), *A Forest for Scotland. A Discussion Paper on Forest Policy* (WWF, 1992), p. 6
[6] Site in relation to species means that conditions of a site, such as local climate, elevation and soil, are taken into consideration to chose the tree species that is best adapted to these circumstances.
[7] Wightman, *A Forest for* Scotland, p. 6

with a 'sound theoretical basis'. After the Second World War foresters worked out 'the profitability of plantations on the most favourable, rather than the most probable outcome'.[8] The most favourable outcome was a fast-growing timber plantation that provided a high income. The development of this economic forestry practice was mainly the work of Oxford based forestry economist Hiley.

But at the same time there were others academics who doubted the viability of this forestry practice and who advocated the improvement of ecological forestry. It was especially Mark Anderson who developed the ideas of ecological forestry further and at the University of Aberdeen it was Steven who put the ancient pine woodlands on the political map. But not only the universities played an important role in the development of forestry. Within the forestry Commission there was a realisation by the late 1950s that the visual impact of the new forests was aesthetically a nightmare. To correct this the Commission employed a landscape architect who first defined the simple rules of how to fit forests more naturally into the landscape so that it was not disturbing. This was the start of an education process that taught foresters how to fit forests better into the landscape.

Chapter six sets out to examine the creation and exploitation of the forest resources in Scotland. This is in fact the most environmental part of this thesis because the thesis sets out to describe the physical environment available for Scottish forestry and how it put limitations on forestry in Scotland. It will then examine how some pioneers devised methods to overcome these environmental limitations. The most important developments in conquering the Scottish uplands for forestry were the development of new site preparation techniques and the choice of tree species used for the afforestation of these difficult environments.
But before new site preparation techniques developed trees were planted with regards to the local environmental conditions, including soil, climate, elevation and the local plant

[8] Rackham, Oliver, *Trees and Woodland in the British Landscape. The Complete History of Britain's Trees, Woods and Hedgerows* (London, 1995), p. 102.

communities. This was the forestry practice that Anderson called ecological forestry. It will be shown in this chapter that many foresters were using this practice and that Anderson's ideas were far from extraordinary during his lifetime. It appears that way because a new forestry practice was introduced by the end of the 1950s, based on large-scale cultivation with the aim to iron out local differences and the use of fast growing species. It was this new forestry practice that created the much despised monoculture conifer plantations that are so despised by present day conservationists.

A statement made on the Internet site of 'Reforesting Scotland' that reads: 'The new Scottish forests would not resemble the dark regimented plantations which many of us picture when we think of present day forestry'.[9] The author of this is clearly not fond of the forests as we find them today in Scotland. In doing so he is unconsciously judging the past by looking through the distorting lens of our present values and knowledge with regard to landscape and environment. This person falls into this trap because forests do not bear a date like a book or a newspaper article and therefore it appears as a static element of the landscape to a modern observer. Normally the life span of a forest exceeds the working life of a human being and makes the observer forget that modern forests are not the products of the present but of the past. It is this aspect of time that makes forestry so vulnerable to criticism. Forestry practices and their impacts on the landscape that are perfectly acceptable at the time of planting are very often unacceptable to people living fifty years later. This is because insights in natural processes, as well as the fashions in our appreciation for the landscape and environment change over time. But how can we know what foresters and society as a whole were thinking about forestry, nature and landscape in the past? To understand why a forest appears the way it does nowadays we have to know the date when it was planted. If we know when a

[9] Reforesting Scotland, http://www.gn.apc.org/reforestingscotland/intro.htm, December 1998. Reforesting Scotland is a non-profit organisation. Its aims are: raise awareness and promote understanding of the deforestation of Scotland and its implications in ecological, social and economic terms; Develop community participation in ecological restoration, forest management and integrated land use; Promote sustainable forest culture and economy in a well-forested land.

particular forest was planted we can make this date a subject of study by analysing forestry theory and practice of that particular period. That is the subject of chapters six and seven.

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But before new site preparation techniques developed trees were planted with regards to the local environmental conditions, including soil, climate, elevation and the local plant communities. This was the forestry practice that Anderson called ecological forestry. It will be shown in this chapter that many foresters were using this practice and that Anderson's ideas were far from extraordinary during his lifetime. It appears that way because a new forestry practice was introduced by the end of the 1950s, based on large-scale cultivation with the aim to iron out local differences and the use of fast growing species. However, it will be argued that the break in forestry practice not so dramatic because the practice of ecological forestry and the new mechanic forestry practice had the same aim: the production of timber to make a profit.

Forestry is not an activity that exists in isolation but is embedded in a social context. To understand the practice of forestry better, the influence of contemporary opinion on matters with regard to forestry, landscape and the environment will be analysed in the final chapter. At the present day there is the belief that the Forestry Commission did ignore criticism of its plantations with regard to environmental and visual impact. Judith Gerber is explaining that 'the fear for the dark, square plantations of the Forestry Commission', was such that the Council for the Protection of Rural England made an agreement with the

Commission to leave an area of 300 square miles unplanted in the Lake District.[10] But this fear was not universal and did certainly not apply to Scotland. Chapter seven will set out to explain that the Lake District is a special case that is heavily influenced by the work of the poet Wordsworth. His approach to landscape and nature will be compared with that of his contemporary and colleague poet in Scotland Sir Walter Scott. Scott's attitude to the landscape was utilitarian and very much in line with the Scottish agricultural improvers.

This practical and utilitarian outlook also characterised the landowners that founded the Forestry Commission. The same people were also involved in the creation of the first Scottish conservation organisations. It will be explained that these organisations were interested in conservation issues but not with regard to the impact of forestry on the rural landscape.

After the Second World War the Nature Conservancy became the most important conservation organisation in Scotland. As the pre-war organisations, it was not very much occupied with the visual impact of forestry on the landscape. More important issues were the preservation of special geological features and the protection of native pinewoods. It will be argued that public concern about the impact of the forests was almost absent and that environmental concerns were focussed on other issues such as the use of pesticides and that the appearance of the forests came only under fire after the period of study.

Why is it worth studying past thinking in Scottish forest history? At the present we are trying to work out more environmentally sensitive methods of forestry. Here we can learn from the knowledge of past foresters, because it is arrogant to think automatically that their ideas were 'wrong'. The dismissive attitude toward some past forestry practices is born out of a lack of sufficient historical insight. The current concern about the environment, the preservation of ancient woodlands and sustainable timber production has a long history.

[10] Gerber, *Social Construction of Nature*, pp. 125-126.

The same can be said about the difficult and ambivalent relations between the general public and foresters. I hope that this thesis will contribute to a better understanding of foresters and the realisation that they not only wanted to create a natural resource but also a forest ecosystem.

2. The Myth of Caledon

2.1 Introduction

It may seem odd to start a thesis about the Forestry Commission, a 20th century creation, with the natural forest, the so-called Wood of Caledon, that once covered much of Scotland. However, for most people Scottish woodland history begins with the destruction of these ancient woodlands. In the popular perception all of Scotland was once densely wooded, and that it was cut down by outsiders, a view that became known as the Myth of Caledon. One glance at the table of contents of John Davies' book on Scottish forestry, *The Scottish Forester*, reflects this perception. In the first chapter he describes the long decline of the Caledonian forest at the hands of the various invaders, followed by a chapter about the men who introduced modern forestry in Scotland. According to Davies this culminated in the activities of the Forestry Commission, in fact the creation of a modern Forest of Caledon.[1]

The Myth of Caledon has been gaining popular credence since the 1950s. Herbert Edlin, publication officer of the Forestry Commission during the 1950s and '60s, made use of the rising popularity of the Myth by that suggesting that the activities of the Forestry Commission are partially an attempt to restore the lost forest of Caledon.[2] The question if restoring the Wood of Caledon was on the mind of the founding members of the Forestry Commission. This chapter will give an answer to this question and discusses the modern perception of the Myth of Caledon. It will be shown that the 20th century version of the Myth only started to permeate popular culture after the 1950s, and that the founders of the Forestry Commission were not influenced by the myth of Caledon in the same way conservationists and foresters are at the present day.

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[1] Davies, John, *The Scottish Forester* (Edinburgh, 1979), p. vii.
[2] Edlin, H.L., *Forestry in Scotland* (London, 1971), pp. 3-4.

2.2 The Creation of a Myth

Much of the popular perception about the history of the Scottish forests is derived from the work of Scottish ecologist Frank Fraser Darling and Mark Anderson, Professor of Forestry at the University of Edinburgh. They both described the destruction of the ancient forest, the Great Wood of Caledon, and argued that, while the lowland forests might have been affected by humans, the Highlands were almost untouched by human hands at the start of the Roman invasion. According to Fraser Darling's and Anderson's accounts, from the first century AD various invaders cleared the forests for strategic reasons, including shipbuilding and construction. From about 1000 AD parts of the remaining forests are supposed to have been preserved for hunting by draconian laws and severe penalties. The unprotected forests were partly felled and used for fuel and construction material. The process of deforestation continued further during the 18th century through forced clearing of forests to suppress the resistance to the union of Parliaments as well as clearing of woodland for sheep grazing and the production of charcoal for iron smelting.[3]

Anderson further argued that the first re-planting efforts were on Scottish estates in the last decades of the 18th century but that these quickly waned after the turn of the 19th century. According to him, what followed was a period of stagnation and neglect of the forests and when the demand for timber rose by the middle of the 19th century, most of the timber had to be imported from overseas. During the First World War, however, Britain was cut off from the wood producing countries due to the German naval blockade and had to rely on its own woodland resources, most of which were found in Scotland. It was during the war that the last remnants of the ancient forests were cut down, this was the last act in the destruction of the Caledonian forest.[4]

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[3] Darling, Frank Fraser, *Natural History in the Highlands and Islands* (London, 1947), pp. 57-63
Anderson, M.L., *A History of Scottish Forestry, Vol. 1*, (London, 1967), pp. 76-83.
Watt, Andrew, 'The forests of Scotland: Past, Present and Future', *Scottish Forestry*, 6 (1952), pp. 23-26

[4] Anderson, M.L., *History of Scottish Forestry, Vol. 1*, pp. 80-83.

This is a logical and widely accepted story but the question remains what are its origins and how reliable is this history? The Myth of Caledon finds its origins with the Roman arrival in Scotland. In their heroic descriptions of the Scottish campaigns of Agricola and Serverus, Roman historians like Tacitus, Dio and Heroditus gave a vivid picture of the Roman legions that had to find their way through marshes and fight through forests. Dio even stated that Serverus had to cut down the forests and drain the swamps of Caledon to fight his enemies. Dio's account is a wonderful but unreliable source of the Roman campaigns in Scotland, and when it comes to the reconstruction of the Scottish environment at the time we must approach this account with caution. The almost god-like efforts of the Roman generals to tame the harsh Caledonian environment was part of the Roman literary style and was meant to impress the reader back in Rome.[5]

After the Romans had left Northern Britain the Great Wood of Caledon seems to have been forgotten until the 16th century. In 1527 Hector Boece, the first principal of the University of Aberdeen, described the *Caledonia Silva* of Roman times as a great wood that once had stretched north of Stirling covering Mentieth, Strathearn, Atholl and Lochaber. During the 17th and 18th centuries the Great Wood of Caledon was hardly mentioned by contemporary commentators; perhaps its existance was generally believed and did not need confirmation.

From the end of the 18th century authors increasingly referred to the Great Wood of Caledon. Between 1795 and 1815 the Scottish Agricultural Commission published a series of reports reviewing the agriculture in all the counties of Scotland. In the volumes on the Highland counties the different authors attributed the destruction of the Caledonian Forests not to outsiders, but to the local population:

[5] Smout, T.C., *Nature Contested. Environmental History in Scotland and Northern England Since 1600* (Edinburgh, 2000), pp. 41-42.

> Besides the demolition of the Caledonian Forest of which Xiphilinus speaks ... there is reason to believe that the natives, from economical views, joined in after ages, in stripping the country of its wood.[6]

An interesting interpretation of the forest destruction in the county of Inverness comes from James Robertson. In 1808 he explained that its 'warlike inhabitants' caused the destruction of the forests in the county of Inverness. The Highlanders had always resisted invaders and fought constantly among each other. In order to keep up the fighting there was 'the necessity of increasing the population, as the only means of preserving themselves from extermination'. Robertson thought that in order to feed such a large population every inch of land had to be brought into cultivation, which caused the disappearance of the forests:

> But this policy was destructive of the growing timber. No wonder that the trees were felled to make room for men, when we consider, that such a small territory could maintain so many men able to bear arms...[7]

The interpretation of the disappearance of the forests in Scotland caused by local farmers in their pursuit of producing food for a growing population is a plausible explanation. But Robertson is talking about his own times and does not take into account that much of the forest cover had been cleared during pre-historic times. However, the notion that local people are to blame for the disappearance of the ancient forests is a correct one.[8] It is very unlikely that invaders were the villains. Of course military actions sometimes required the burning of tracts of woodland for strategic reasons, but when forests are left alone they have the capacity to regenerate. In the case of expanding fields for agriculture wood cover is removed and the new activity prevents regeneration. But Robertson's explanation for the growth of the population and disappearance of the forests is also a political statement. Robertson was the minister of Callander and probably educated at one of the major Scottish Universities.

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[6] Graham, Patrick, *General View of the Agriculture in the County of Stirlingshire With Observations on the Means of its Improvement* (Edinburgh, 1812), p. 207.

[7] Robertson, James, *General view of the Agriculture in the County of Inverness with Obsevations on the Means of its Improvement* (London, 1808), p. 56.

[8] See for a discussion of woodland cover during Neolithic and Roman times: Smout, T.C., 'Highland Land-use before 1800: Misconceptions, Evidence and Realities', in: Smout, T.C., *Scottish Woodland History* Edinburgh, 1997), pp. 6-7, and Simmons, I.G., *An Environmental History of Great Britain. From 10,000 Years ago to the Present* (Edinburgh, 2001), p. 60.

Although he lived on the edge of the Highlands, Robertson's mindset was that of a Lowland Scot. The Lowland Scots saw the Highlanders as a half barbarian people that had to be civilised, and descriptions, like Robertson's of them as destructive and warlike people fits perfectly with this perception.[9] However, this view of the Highlanders as the agents of woodland destruction was not a lasting one.

In 1807 George Chalmers published his book *Caledonia* in which he mentioned the Caledonian Forest in connection with the many place names in Scotland that are derived from the forest that no longer existed. He further mentioned the Romans as agents of destruction but concluded that the deforestation caused by them was not the major cause for the disappearance of the forests in Scotland. He blamed more the local nobility, bishops, abbots and barons, for the destruction of the forests during the Middle Ages and early modern times. Chalmers was a third of the way towards the creation of the Myth of Caledon. The Romans were mentioned, the Vikings and English had still to be added. What remains is a feeling that at some time during the past 250 years everyone, both locals and outsiders, are blamed for the destruction of the Caledonian forest. However, the notion that outsiders are the main agents of destruction was to become very strong by the mid-20th century.

By the end of the 19th century, the almost modern form of the myth of the Caledonian Forest appeared in an article by David Nairn in the *Transactions of the Gaelic Society of Inverness*. In this long essay with the title 'Notes on Highland Woods', he began with a description of the Great Wood of Caledon that once covered all of the Highlands. He then went on with the story of the Roman invasion and the destruction of the forests by the Roman legions:

[9] The idea of overpopulated glens was not just imagined. From the middle of the 18th century until the mid-19th century the population of the Highlands rose sharply. This put considerably pressures on resources and local landowners saw improvement of agricultural practices as the only solution, although making profit also played and important role. By the beginning of te 19th century the Highland economy started to deteriorate which was reinforced by population pressures. This resulted in the clearing of land for sheep, which was still profitable and a call to civlise the population in order to counter the population growth. See for a detailed discussion: Smout, T.C., *A History of the Scottish People, 1560-1830* (London, 1985), Ch. XIV.

> Steadily the Roman Legions cut their way through the pathless tracks of Strathspey, and by-and-by they stand victorious on the gently-lapped shores of the Moray Firth. Victorious! But at what a cost.[10]

According to Nairn the Romans paid a high price for their victory. They not only lost 50,000 men but also large tracts of forests were destroyed, and this was only the beginning. At the start of the Middle Ages Scotland suffered under the attacks from the Vikings but Nairn did not say explicitly that these new invaders were destroyers of forests, although the suggestion is strong. Instead he blamed the local population as agents of forest destruction:

> ...nothing seems so permanent as the Strathspey pine forests... . But they, too, give way, as in other parts of the country. At last the law comes to the rescue of the outraged forests, now threatened with extinction ... by the cry for more land and less timber.[11]

The works of Boece, Chalmers and Nairn contained the basic elements of the modern Myth of Caledon. It needed only a few additional elements such as the English and the coming of the sheep to create the 20th century story of the misuse and destruction of the natural wood in Scotland.

2.3 The Myth in the 20th Century

The modern story of Caledon was made popular through the works of Fraser Darling and Professor Anderson among others. The more influential of the two writers was probably Fraser Darling. He had an ability to write concisely and intelligibly for a wide audience, while Anderson's style was thick and confused and a struggle to read. The work of Fraser Darling retains the traditional elements mentioned in the previous section, but he pushed the start of the destruction of the forests back long before Roman times. He regarded natural causes as more important in changing the natural history of the Highlands during prehistoric times than human activity. Climatic change, i.e. change towards a wetter climate, stimulated the development of a peat blanket. According to Fraser Darling 'the growth-rate of sphagnum

[10] Nairn, David, 'Notes on Highland Woods, Ancient and Modern', *Transactions of the Gaelic Society of Inverness*, 17(1892), p. 172.
[11] Ibid., p. 173.

moss under optimum condition has felled forests as surely as the fires and the axe of mankind.'[12] He then went on to describe the effect of the arrival of the Hallstatt Celts in Scotland. In Darling's view these peoples were 'probably the first considerable human destroyers of the Caledonian forests'. [13] Darlings's judgement of the Romans was not as harsh as that of Nairn. He concluded that 'the Romans would doubtless deforest a considerable area within view of the walls of Hadrian and Antoninus', but 'the great forest of the North and West would be untouched'. In Darling's opinion, that was just the beginning of a long of decline that got, worse over time. The Vikings were 'great destroyers from the ninth to eleventh centuries', but 'the English have been the greatest agents of destruction in Scottish Forests'.[14] Darling goes on to describe how the English burned forests to get rid of rebels opposing the Union of Crowns, and the 'discovery' of the forests of the north by English during the 18th century. In this view, iron masters from the south were looking for new sources of charcoal to replace the depleted English forests. They found these in the Highlands of Scotland and soon furnaces were established in the western Highlands, especially in Argyll and around Loch Awe. Further inland the York Building Company had bought large tracts of pinewood in the Highlands. The company felled trees on a large scale 'devastating large areas quite remorselessly'.[15] But the greatest attack of all on the native forests was the coming of the sheep in the 18th and 19th centuries. According to Darling, 'the sheep finished the process of changing the face of the old Highlands'.[16] Activities of the English iron-masters, wood extraction for shipbuilding and construction and finally the coming of the sheep created what Fraser Darling used to call 'a wet desert'.[17] In an almost

[12] Darling, F. Fraser & Boyd, M., *The Highlands and Islands* (Revised edition; London & Glasgow, 1969), p. 66.
[13] Darling, F. Fraser, 'History of the Scottish Forests', *Scottish Geographical Magazine*, 65(1949), p. 132.
[14] Ibid., p. 133.
[15] Ibid., p. 134.
[16] Darling, *Highlands and Islands*, p. 63.
[17] Darling & Boyd, *The Highlands and Islands*, pp. 66, 69-70, 73-74; Smout, T.C., *The Highlands and the Roots of Green Consciousness, 1750-1990* (Edinburgh, 1993), p. 9.

melodramatic tone Fraser Darling concluded that by the start of the 19th century 'the great Forest of Caledon was finished'.[18]

In his magnum opus, *A History of Scottish Forestry*, Mark Anderson followed Fraser Darling in the interpretation of Scottish woodland history. He wrote that local people made the first inroads into the forests in Neolithic times and the Iron Age, but, that these actions could hardly have affected the primordial forest of Scotland. With the arrival of the Romans massive deforestation, started especially in the Lowlands. Anderson gave the impression that the Romans were immediately succeeded by the Vikings and, worst of all, the English in the 17th and 18th centuries. In Anderson's opinion outsiders mainly caused the destruction of the Scottish forests[19].

The works of Anderson and Fraser Darling made tremendous contributions to our understanding of past woodlands, but both failed to address some problems properly. Both saw deforestation from prehistoric times well into the 20th century as a continuous process. This seems to overlook the fact that these respective 'occupations', the Roman period, the Vikings and the late Middle Ages, were separated by hundreds of years, and that the centuries between the different periods of destruction were long enough for the natural regeneration of forests to occur. If the forests continued to decline between different invasions, then destruction must partly have been owing to the practices of local farmers. It is surprising that both authors failed to recognise that the local users of the land must have been a major agent of forest destruction. Even by the time the first edition of Fraser Darling's *Natural History* book was published in 1947, there was evidence that the local population was, from prehistoric times, a major agent of the destruction of the Scottish forests. In 1951 Professor H.M. Steven of the University of Aberdeen published an article in *The Scottish Geographical*

[18] Darling,, 'History of the Scottish Forests', p. 134.
[19] Anderson, *A History of Scottish Forestry, Vol. 1*, pp. 65, 75, 76-83, 485-510.

Magazine in which he wrote that 'man did not reduce appreciably the forest until the Bronze Age and Iron Age times, and then only in the favoured lowland and coastal regions'.[20] Then he took a few giant leaps in time describing the military invasions of the Romans and John of Gaunt during the first and 14th centuries. On both occasions forests were burned for military reasons but, according to Steven, 'too much emphasis should not be placed on this, because one would expect that there would be regeneration'. Steven was very cautious in blaming outsiders for the destruction of woodlands and he continued: 'the progressive decline of the forest area is likely to have been due more to the conversion of forest into land for tillage and the grazing of domestic animals preventing regeneration'.[21] John Walton, Professor of Botany at the University of Glasgow, also held this point of view. He wrote of the disappearance of the forests in the Border region that 'the main cause of the forest's decline had been grazing by domestic animals'.[22] He did not blame the English for introducing sheep but instead attributed the increased numbers of animals to the local population.

Although Steven was cautious about blaming outsiders for the destruction of the Caledonian Forest, Fraser Darling maintained his version of the destruction of the old forests in the 1964 version of *The Highlands and Islands*.[23] It was through these and other publications that Fraser Darling's version of the Myth of Caledon permeated popular culture. Herbert Edlin, public information officer of the Forestry Commission, made use of myth to fuel the public imagination and suggest that one of the results of the Forestry Commission's activities was the creation of a modern Caledonian Forest[24], a suggestion that other authors mentioned directly. In 1975 Millman wrote in his book, *The Making of the Scottish Landscape*, that:

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[20] Steven, H.M., 'Forests and Forestry in Scotland', *Scottish Geographical Magazine*, 67(1951), p. 113.
[21] Ibid., p 114.
[22] Walton, John, *National Forest Park Guide. The Border* (Second edition, London, 1962), p. 4.
[23] The original book had as title *Natural History in the Highlands and Islands*. This edition published in 1964 was co-authored with J. Morton Boyd.
[24] Elin, H.L., *Forestry in Scotland* (Edinburgh, 1971), pp. 3-4.

> In the space of two hundred years, the fastest and most profound changes ever to take place in the Scottish landscape had occurred: not least among these, the new man-made Forests of Caledon had begun to form.[25]

Millman implies here that the plantations of the Forestry Commission are not only a commercial timber resource, but also an attempt at restoring the lost forests. Although Fraser Darling helped to make this modern version of the old forest popular, he was aware that the Forestry Commission was never set up to restore it. He wrote:

> The nation set the Forestry Commission the task of producing wholesome commercial timber, and a lot of it. They were not asked to rehabilitate relict native woodlands or resurrect the Wood of Caledon.[26]

Indeed, there is not a single reference to the Caledonian forests in the writings of the founding members of the Forestry Commission, including Lord Lovat and John Stirling Maxwell. Furthermore, there is no evidence that the Myth of Caledon influenced the creation of the Forestry Commission. The idea that it might have played a role is a popular late 20th century belief based on the assumption that Scotland was once densely wooded and that the forests must be restored. If the creation of the Forestry Commission was not influenced by a desire to restore the old forest, what developments did influence the events that led to its creation? This question will be addressed in the following chapter.

[25] Millman, R.N., *The Making of the Scottish Landscape* (London, 1975), p. 148.
[26] Darling & Boyd, *The Highlands and Islands*, p. 193.

3. Historical Background

3.1 Introduction

In the previous chapter we explored the development of the Myth of Caledon as largely a product of the second half of the 20th century, although its origins date back to Roman times. It was suggested that the myth did not influence the founding members of the Forestry Commission, and that therefore they used other arguments to convince the Government to create a State forestry authority. The timber shortage as experienced during the First World War in Britain is always regarded by writers on forestry as the trigger for the creation of the Forestry Commission[1], but the reasons underlying the establishment of the Forestry Commission are more complex and have roots stretching back into the 18th century. This chapter sets out to explore the development of modern forestry in Scotland from about 1750 until the end of the Victorian period. It will be argued that before the Victorian period Scottish forests were a mix of plantations and woodlands used for different purposes such as local demand of timber, shelter and above all amenity, planted to be admired and to beautify the surroundings of country houses of the aristocracy. Subsequently the chapter sets out to describe how forestry was transformed over the course of the 19th century. Alien species were introduced as well as modern forestry practice from the colonies and the Continent. At the same time, demand for timber increased considerably due to further industrialisation and the construction of railways. In many parts of Scotland new forestry plantations emerged and there was a call for better trained foresters to introduce a proper scientific silvicultural management system. This resulted in the call for the creation of forestry schools, but for some landowners and foresters this was not enough. The new planting schemes were small in comparison with plantations on the continent and not all landowners in Scotland were

[1] For the trigger of the establishment of the FC see Chapter 4 and: Pringle, Douglas, *A brief Account of the History of the Forestry Commission, 1919-1994* (Edinburgh, 1994) and Ryle, G.B., *Forest Service. The First Forty-five Years of the Forestry Commission of Great Britain* (New Abbot, 1969).

enthusiastic foresters. This small-scale forestry worried some prominent landowners and foresters who saw great benefits for both the state and the local populations in Scotland and Britain as a whole if a State funded organisation would undertake a large-scale afforestation scheme in Scotland. The final section of this chapter will discuss this group of forest enthusiasts who became the founding members of the Forestry Commission and their activities that laid the foundations of State forestry in Scotland.

3.2 Forestry during the 19th Century

During the 18th century Scottish forestry was a mix of ornamental and commercial planting. There was a considerable amount of ornamental planting around country houses in Scotland, but management of these park woodlands was quite different from forest plantations. The main distinction was that park woodlands had a multiple function: delight/beauty, woodland pasture and, to a lesser extent, timber production, while forest plantations had the sole function of producing timber.[2] Commercial forestry was not new and there was a tradition of planting that was not ornamental but aimed at timber production for building purposes, and especially ship construction. However the concept of plantations that treated trees as an agricultural crop, managed on a system of scientific principles, was a new idea by the start of the 19th century. This scientific forestry concept was, as will be explained in a subsequent section, imported from the continent and the colonies.

The naturalistic-style landscape park was one of the dominating landscape fashions during the late 18th and early 19th century, where planting and landscaping was carried out with the intention of creating parks that were to be seen and admired in their own right. These park-like landscapes became an important part of the Scottish countryside, and were typified

[2] Comment made by Chris Dingwall in paper 'Parkland & Planting on Landscape Estates', presented at a one-day conference *Wood-pasture and Grazing in Woodlands, Past, Present and Future*, SNH Conference Centre, Battleby, Perth, 14 November 2000.

by serpentine lakes, meandering streams and rolling expanses of grassland dotted with clumps of trees. To create the desired parkland landscapes, landscape architects changed the course of rivers, altered the profile of hills, and planted trees on a fast scale.[3] The planters of these trees were not exactly the forerunners of the development of commercial plantations during the 19th century but they contributed to their development. In order to beautify their estates landowners introduced exotic trees, but they also developed a parallel fashion for commercial plantations. Many of the new exotic introductions were soon used in commercial plantations. The most famous of these plantations are undoubtedly the forests created by the Dukes of Atholl. The third Duke of Atholl, who succeeded his father in 1764, introduced European larch as a commercial species in Scotland, the first introduced tree species to be grown commercially on a large scale. Although he started to plant the hills in the vicinity of Blair Castle and Dunkeld, the development of the Atholl forests for commercial use was left to his son, nicknamed the 'Planting Duke'.[4] The extent of the planting can be deduced from the fact that by 1818 enough timber had been grown for the construction of a 170-ton brig at Perth. A 28-gun frigate ordered by the Admiralty followed the success of this first vessel. The launching of this ship, the 'Atholl', in 1820 was a tribute to the Fourth 'Planting Duke' of Atholl.[5] It is estimated that by the time the 'Planting Duke' died in 1830 over fourteen million larches had been planted on the Atholl estates. The forests of Atholl were not the only productive forests in Scotland: trees were being planted and harvested in estates all over the Highlands. In her memoirs, Elizabeth Grant of Rothiemurchus, gave a vivid description of logging activities on the Rothiemurchus estate:

> It was a busy scene all through the forests, many rough little horses moving about in every direction, each dragging its load, attended by an active boy as guide ... .[6]

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[3] Knowles, Clive H., *Landscape History* (London, 1980), p. 35.
[4] O'Dell, A.C. & Walton, K., *The Highlands and Islands of Scotland* (London and Edinburgh, 1962), p. 148.
[5] Ibid., p. 149.
[6] Grant of Rothiemurchus, Elizabeth, *Memoirs of a Highland Lady, 1797-1827* (London, 1960), p. 152.

She went on to describe log floating in the Spey catchmen. There was a sophisticated system of dams and sluices that regulated the stream of water that was needed to float the timber logs downstream. Gangs of specialised woodsmen who lived along the riverbanks gathered when the logging season started, and guided the floating timber rafts down the river.[7] This labour-intensive system of extracting timber, which involved numerous timber floaters, shows that timber production was an important ingredient of the Highland economy in the Spey catchment during the first decades of the 19th century.

There was also forestry activity in other parts of the Highlands and Islands during the early decades of the 19th century. In the west, the MacGregors planted between 1804 and 1809 more than 60 acres of mixed plantations on Arran.[8] The species used included European larch, pines, silver firs, ash and oak. In the north, around Speyside, the Earls of Seafield planted some 45,000 acres on their estates between 1811 and 1881. More than 30,000 acres were planted in Strathspey consisting mostly of conifers of which many were newly introduced from North America.[9]

3.2.1 The Introduction of Exotics

During the 18th century and the first decades of the 19th century forests in Scotland were, as a rule, composed of three species of conifer: larch (*Larix*), Scottish pine (*Pinus Sylvestris*) and Norway spruce (*Picea abies*). In addition there were five broadleaf species planted: beech (*Fagus Sylvatica*), elm (*Ulmus*), sycamore (*Acer pseudoplatanus*) and most importantly, oak (*Quercus*). Most other species were seldom planted as forest trees but were used for aesthetic purposes in landscape parks and gardens.[10] It was in the context of

[7] Ibid., p. 153.
[8] MacGregor Papers, Stirling Council Archives, PD60, Bundle 394.
[9] Working Plan Glenurquhart, 1950-1965, National Archives for Scotland (hereafter NAS) FC7/3.
[10] Dunn, Malcolm, 'Forestry in Scotland in the Reign of Her Most Gracious Majesty Queen Vicotria', *Transactions of the Royal Scottish Aboricultural Society*, 15 (1898), p. 109.

landscape parks that the first exotics were introduced in Scotland, and Scotsmen hold a prominent place as introducers of exotic trees in Britain. The first to be mentioned was Archibald Menzie, born in Perthshire in 1754. In the years 1790-1796, he accompanied Captain Vancouver on his voyage around the world as the ship's naturalist. Menzies was the first to describe some of the pines of the West Coast of North America and introduced several new species in Britain himself.

Others followed in Menzie's footsteps. John Fraser from Inverness shire travelled widely over the eastern United States between 1784 and 1811. John Lyon, a native of Forfarshire, also travelled over much of the eastern part of the North American East Coast in the years between 1802 and 1812.[11] However, the most important of the tree and plant collectors was David Douglas. Born in 1799 near Perth, he travelled in various parts of North America to collect tree seeds for the Royal Horticultural Society in London. Between 1823 and 1833 he sent home to Britain more trees than any other plant collector before or after him. Douglas introduced most of the major hardy tree species that were going to play an important part in the development of commercial forest plantations in Scotland. Among the most important species he introduced were three species of silver firs, six new species of pine, Douglas fir and Sitka spruce. All these species are fast growing and Sitka is a very tough species that grows well in wet and windy conditions, which made it ideal for the Scottish conditions.[12]

In 1850 a group of Scottish landowners formed the Oregon Association with the aim of introducing new tree species from the western United States. That same year John Jeffreys, a native of Perthshire, set sail for America to collect tree seed on behalf of the Association.

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[11] Ibid., p. 114.
[12] Davies, *The Scottish Forester*, pp. 16-17.

Jeffreys was the first to send back the seeds of western hemlock and lodgepole pine, of which the latter was destined to become a key species in planting acid and wet peats.[13]
Through these and other channels, about 800 exotic tree species were introduced in Britain during the first half of the 19th century, although a handful of these were destined to change the appearance of forestry in Scotland and Britain. These species included Sitka spruce, Douglas fir, Norwegian spruce, European larch, Japanese larch and lodgepole pine.

3.2.2 The Victorian Age

During the Victorian Period forestry in Scotland was transformed from amenity forests with some timber production in rational managed forest production plantations. There were two important developments: First of all, the amenity tradition continued but forestry was increasingly turned into a science that was carried out by formally trained foresters. Secondly, many of the new exotic species used in the new commercial plantations were introduced in Scottish forestry.

The Victorian age was an age of optimism in many ways. New technologies such as steam trains, the electrical telegraph and electricity were expanding rapidly, science made major discoveries and the geographic expansion of the British Empire reached its zenith. This sense of optimism was also shared by many foresters and landowners with regard to the development of forestry in Scotland. Dunn noted in 1898 in an article published in the *Transactions of the Royal Scottish Arboricultural Society* that forest plantations had considerably expanded:

> ...extensive planting operations have been carried on all through [the Victorian Age] with more or less continuity; and ... it is natural to believe that our forests are spreading in their extent, and yearly adding to their acreage.[14]

[13] Ibid., p. 18.
[14] Dunn, 'Forestry in Scotland', pp. 118-119.

It was observed with approval that some of the big landowners in Scotland were planting thousands of acres during this period. This was the continuation of a trend that had begun during the final decades of the 18th century. These developments were perfectly described by Francis Innes in his article 'A Century of Forestry-1806 to 1906-on the Estate of Learney, Aberdeenshire' that was published in 1907 by the Royal Arboricultural Society. The first plantations on the Learney estate, mainly consisting of larch, were made between 1806 and 1825. Up to 1844 there was little activity in the plantations while the trees were growing. Between 1844 and 1906 thinning, clear cutting, planting and replanting was carried out. The extent of planting was considerable. In 1806 there was only 50 acres of semi-natural woodland. Up to 1844 about 1420 acres were planted with trees, and from that date to 1905 1370 acres were harvested. Of the cleared ground 661 acres were replanted and 169 acres of new ground were planted in addition. With the 50 acres of old woodland added the total land area under trees on the Learney estate accounted 880 acres in 1905.[15] This brief account of forestry on the Learney estate shows an active managed forest, but was this a typical Scottish forest estate? According to James Brown, wood manager to the Earl of Seafield, and Surveyor General of Woods, it was typical for Highland estates. In 1861 he commented that 'after the year 1830 ... many proprietors, especially in Scotland commenced to plant largely'.[16] The Learney estate was a typical well-managed estate and a good example of proper silvicultural management. But it was not the only estate that was thought to be properly managed because on all of the estates mentioned above there was a considerable expansion of actively managed plantations. This was clearly appreciated by Colonel Bailey, lecturer in forestry at the University of Edinburgh, when he wrote in 1891:

> Scotland can show numerous well-managed forest estates – such, for example, as those of the Duke of Atholl, of the Earls of Mansfield and Seafield, of Lord Lovat, and of

[15] Innes, Francis N., 'A Century of Forestry-1806 to 1906-on the Estate of Learney, Aberdeenshire', *Transactions of the Royal Scottish Aboricultural Society*, 23 (1906), pp. 168-169.
[16] Brown, James, *The Forester. A Practical Treatise on the Planting, Rearing, and General Management of Forest Trees* (Edinburgh & London, 1861), p. 5.

> other proprietors who might be mentioned; and it is universally admitted that the art of raising nursery plants, of establishing plantations ... is here carried out with a success unsurpassed by foresters of any other country.[17]

According to, Nairn, a naturalist and writer, the expansion of forests was not confined to the few estates mentioned by Bailey. Nairn observed in 1890 that forest surveys in the 1880s 'shewed that plantations in Scotland had again rapidly recovered lost ground, there being an increase of 95,000 acres in nine years'.[18] This total acreage planted sounds impressive but if we consider the total percentage of this area of the total landmass of Scotland it becomes less impressive. The area of new plantations covered only 0.5% of the total Scottish landmass. If this increase of forest plantations was sustained at the same rate since the 1830s, the time that Brown claims the forests started to expand, the total acreage up to the 1880s must have increased by about 2.5%. But because of the lack of reliable surveys from that period there is no evidence at present to prove if this expansion rate is correct. However, during the last quarter of the 19th century the Scottish Arboricultural Society became alarmed about the condition of the forests in Scotland.

The Scottish Aboricultural Society was established in 1854 by a group of Scottish landowners and foresters, who were determined to raise the status of the forestry profession in Scotland. Their aim was 'to place Scottish forestry on a sounder basis as an important section of rural industry'.[19] That sounder basis was thought to be forestry science as it had developed on the continent and in the colonial context. To introduce this new approach foresters had to be formally educated and it is for that reason that the establishment of forestry education became one of the prime concerns of the Scottish Arboricultural Society during the decades between its establishment and the First World War. But soon the aim of

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[17] Bailey, Frederic, 'Introduction to Course of Forestry Lectures, Edinburgh University, Session 1891-92', *Transactions of the Royal Arboricultural Society*, 13 (1893), p. 184.
[18] Nairn, 'Notes on Highland Woods', p. 191.
[19] Dunn, 'Forestry in Scotland', p. 129.

establishing a formal State forestry policy was added, on account of the concern about the perceived bad state of the Scottish forests.

The perception of the bad state of Scotland's forests did not have much to do with the destruction and decline of semi-natural woodlands, but with the way a large number of estate plantations were managed. It was this concern that made not all 19th century observers share the optimism of Dunn and Innes. In 1892 Nairn saw the development of Scottish forestry during the second half of the 19th century as a story of decline, and in doing so contradicted himself in the same article on forestry. This raises the question of why, if plantations were actually expanding and actively managed, there was a feeling that the opposite occurred? There are two explanations for this. First of all, the view of decline and neglect was fuelled by the development of the technological advances of the 19th century.

By the second half of the 19th century the demand for timber rose spectacularly due to industrial development and the construction of railways. Although much planting had been done, Scotland, like the rest of Britain, could not supply its own need for timber. Therefore it relied on the import of timber from Canada, the colonies and to a lesser extent Scandinavia. The introduction of the ocean steamer and railways caused a transport revolution in the second half of the 19th century. The result was the opening up of huge timber producing areas in North America and Scandinavia. During the same period imports of timber became cheaper after the removal in 1866 of the duty on imported timber. The result of these developments was increasing imports and decreasing timber prices. This convinced 19th century observers that domestic timber production had become a very unprofitable enterprise, with the result that forests were neglected, i.e. not tended and there was no replanting, and the total area of woodlands decreased. Hiley, forest economist at Oxford, commented on the decline of forestry in the 19th century that:

> There are many reasons for this [decline] ... One important factor was the increase in timber imports and the improved facilities for distributing them through the country.[20]

However, as suggested earlier, there was an expansion of forest plantations throughout the Victorian period. At that time, the demand for timber was so high that it became profitable to exploit domestic sources of timber, and the expansion of the railways in Scotland made it possible to extract timber from remote places. It is ironic that the same transport revolution that encouraged cheap timber imports also created possibilities for the timber trade industry at home. Anderson noted in this respect: 'In spite of the complete removal of timber import duties in 1866 a considerable timber trade developed inland as a result of the rapid extension of railways during the period'.[21] He concluded that the forestry industry therefore relied on the forests that had grown during the previous decades. Anderson observed here:

> In general, by 1871 uses of home timber had increased although preference was given to imported timber. From then on to 1879 there was an increased demand for home grown timber for railway, mining and manufactures and there was a constant drain on the supply of larch for telegraph poles. Many estate owners were thus benefiting from the planting activities of their forebears.[22]

This is what must have happened on many estates, for example the Atholl estates. As discussed before, between 1818 and 1820 two ships for the navy were entirely constructed from larch timber from the Atholl estates. However, after this initial success no new ships were constructed from larch, owing to the development of iron shipbuilding. But at the same time new markets opened up and during the 1840s and 1850s large quantities of Atholl timber was sold for railway sleepers and telegraph poles.[23] This example suggests that the trees growing on many Scottish estates must have had considerable value for landowners and were immediately replanted. Additional research is needed in the future to get a better picture of the importance of forestry for the Scottish estates during the 19th century.

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[20] Hiley, W. E., *Economics of Plantations* (London, 1956), p. 21.
[21] Anderson, *History of Scottish Forestry, vol. 2*, p. 319.
[22] Ibid., p. 329.
[23] O'Dell & Walton, The *Highlands and Islands*, p. 149.

There was a second reason why many landowners and foresters felt uneasy about forestry in Scotland. During the late 19th century landowners realised that the potential for forestry in Scotland was considerable and wondered why this was not realised by the preceding generations. By the start of the 20th century a group of large landowners in Scotland realised that the expansion of the forests would have several advantages. Firstly, the land would be used more effectively because previously unproductive land would be made productive. Secondly, the expansion of forestry would bring more jobs and higher incomes to the landowners. Thus the economy of the Highlands could be improved and prevent depopulation of rural areas, a theme that would run right through the 20th century. Lastly, an increased production of home-grown timber would decrease the dependence on timber imports, a weakness in times of war.[24] These arguments were used to convince the government that state action was needed to increase the area of forests in Britain.

3.3 Prelude to State Forest Policy

The story of British State forest policy did not start with its first formulation by the Forestry Sub-committee of the War Reconstruction Committee in 1918. It started around the turn of the 20th century with the activities of a small group of men, mainly Scottish landowners and foresters, who were to become the founders of the Forestry Commission. They were farsighted men who had become uneasy at the perceived lack of planting for timber production. Among the most important persons were John Stirling Maxwell, Lord Lovat, Roy Robinson, and John Sutherland. They all contributed in different ways to the development of Scottish forestry but their ideas concerning the need for a State forestry authority were very similar.

[24] Lovat, Lord Simon, 'Afforestation', *Transactions of the Royal Scottish Arboricultural Society*, 25 (1908), pp. 157-161.

Their concern for the neglected state of Britain's forests was fuelled by the belief that from the mid-19th century until the 1890s the rate of planting for timber production had slowed down in Great Britain. This state of affairs was attributed to the fact that most of Britain's timber was imported from abroad. Ninety percent of this timber consisted of softwoods that were chiefly imported from Scandinavia, although as we have seen before the planting did not slow down, but Britain, including Scotland, did not produce enough timber to be self-sufficient. Before the First World War the low percentage of land used for growing trees in Britain caused alarm to those who made a study of the world's timber resources. They were convinced that a world-wide 'timber famine' was imminent and concerned that Britain could not reckon indefinitely on imports from abroad.[25] Royal Commissions and Parliamentary Committees held several enquiries, but little was done. One of the most important of these committees was the Royal Commission on Coast Erosion that reported in 1909. This report advised to establish a national scheme of afforestation with the aim of planting nine million acres by the state over sixty years. In reaction to the report the Royal Scottish Arboricultural Society sent a deputation to the Chancellor of the Exchequer to urge for its adoption. However, the report was greatly ignored and no action was taken to establish a State forestry organisation.[26]

In a reaction to the report of the Royal Commission on Coastal Erosion, Lord Lovat wrote in the *Transactions of Royal Scottish Arboricultural Society* that the State had to play an indispensable part in forestry. He proposed the establishment of a central forestry board in Britain. Its mission should include the establishment of experimental and demonstration areas; the establishment of schools for foresters; survey of mountain and moorland areas suitable for forestry; acquisition of areas suitable for afforestation and subsequent planting;

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[25] BBC forestry talk no. 2, 29 March 1928, Glasgow City Archives (hereafter GCA) T-PM 122/4/7/2; See also: *Final Report of the Forestry Sub-committee of the Reconstruction Committee* (Cmd. 8881), HMSO, London 1918, p. 5.

[26] Davies, *The Scottish Forester* , p. 21.

and finally encouragement of co-operation between private landowners and the state. These tasks of the proposed forestry board anticipated the mission of the Forestry Commission after its establishment in 1919. Lovat's article and his speeches in the House of Lords makes clear that he associated the question of forestry in the Highlands with the question of land settlement and economy in the Highlands. In a modern sense we might call this a more holistic approach in which forestry became part of the wider issue of land utilisation. Lord Lovat and other Scottish landowners believed that any forestry scheme had to maintain in decent comfort a larger number of people on the land. In his opinion afforestation offered the only large-scale solution to the difficulty of enabling the smallholder to supplement his living from the land. According to Lovat, afforestation would turn much unproductive land into productive areas that would be able to sustain a considerable number of families in the Highlands.[27]

According to his biographer, Sir Francis Lindley, Lovat's interest in forestry was a hereditary one. His father and grandfather had planted large areas with Scots pine and larch, in line with the operation of many Scottish landowners at that time. These woods had been neglected for some time and between 1900 and 1914 Lovat took the restoration of the Beaufort woods very seriously. It was through these forestry activities that Lovat came into touch with timber merchants, foresters and university lecturers, and built up a network with people sharing similar ideas about forestry. In doing so Lovat developed into the most outspoken and influential proponent of state forestry of the day and was to become the ideologist of the movement. He was more interested in the sociological and strategic consequences of forestry than in its technical details, but his connections with high political circles in London, his interest in social and economic issues in remote rural areas, and his

[27] Lindley, Francis, *Lord Lovat. A Biography* (London, 1935), pp. 154-158; Davies, *The Scottish Forester*, p. 23.

knowledge of forestry made him the perfect choice as the first Chairman of the Forestry Commission.

The 50th anniversary of the Royal Scottish Arboricultural Society was an opportunity for Lovat to use and increase his knowledge of forestry in the Highlands. To commemorate its anniversary the Arboricultural Society decided to sponsor and publish a sample survey such as he had recommended. The Board of the Society described the survey as follows:

> The first serious attempt to grapple with the economic difficulties which confront afforestation in that part of Great Britain where the largest extent of plantable land – that is to say, land sufficiently cheap – is to be found.[28]

This statement determined the future status of upland Scotland as the most important area for afforestation and also the nature of the future forests, as will be discussed in subsequent chapters. The task of the survey was entrusted to Captain Archibald Stirling of Keir (brother of John Stirling Maxwell), Lord Lovat and Colonel Bailey, a retired Indian forester who edited the Society's *Transactions*. The area chosen for the survey was the Great Glen, or Glen More. The reason why this area was selected was that the Glen represented both east and west coast climate and soil conditions and contained all the typical social and physical elements of the Highlands such as crofters, extensive sheep farming, soil and climate, deer forests, grouse moor and old estate forests.[29] The three surveyors received help from great proprietors, owners of deer forests and foresters.

The survey concluded that there existed in Scotland a large extent of land suitable for forestry and that this land could be afforested under a well-framed scheme. A single Central Forest Authority for Scotland was thought to be necessary to carry out this 'well-framed scheme'. Its duties would include the provision of forestry education and creation of demonstration areas; the organisation of research and the undertaking of surveys; the creation

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[28] Lovat, Lord Simon & Stirling of Keir, Archibald, *Afforestation in Scotland. Forest Survey of Glen Mor and a Consideration of Certain Problems Arising Therefrom* (Edinburgh, 1911), p. i.
[29] Ibid., p. 6.

and management of forests; marketing of forest products and lastly the encouragement of private forestry. It further concluded that afforestation would eventually bring a considerable financial return to a Forest Authority as well as creating extra employment in the Highlands. To accommodate the forest workers it was suggested that 'in all cases the building of the dwelling house should be financed by the Forest Authority'.[30] It was envisaged that these dwelling houses would be set up as smallholdings with farmland that could supplement the forest worker's income. The idea was that the small holders worked a guaranteed number of weeks, say forty, in the forests and used the remainder of the year to work their own land.[31] Forestry and the smallholdings were seen as a means to stop the decrease of the rural population in Scotland.

The survey was published in a special edition of the *Transactions* of the Society in July 1911 and was a model of what a woodland survey of the Highlands should be. All the elements that were to determine Scottish forestry during the 20th century were brought together for the first time in this report. In fact the report was a blueprint for the organisation, functions and policies of the Forestry Commission.

In the same year that the Great Glen survey was undertaken the Department of Agriculture appointed a Committee on Forestry in Scotland. The chairman of this committee was another influential landowner: John Stirling Maxwell of Pollok. Maxwell took a particular interest in forestry and devoted a large part of his life to the work of the Forestry Commission, becoming the chairman in 1929. The Secretary to the Committee was John Sutherland of the Board of Agriculture for Scotland, who later became the first Assistant Commissioner for Scotland. The Report of the Committee on Forestry in Scotland was published in the autumn of 1911. The objective of the report was formulated as follows:

> to report as to the selection of a suitable location for a Demonstration Forest area in Scotland; the uses present and prospective, to which such area may be put (including

[30] Ibid., p. 34.
[31] Ibid., pp. 37-38.

> the use that may be made of it by the various Forestry teaching centres in Scotland); the staff and equipment required for successful working; the probable cost; and the most suitable form of management.[32]

The Report summarised the purpose of the demonstration forest and the state of forestry education in Scotland and advised on its development. It laid the blueprint for forestry education in the United Kingdom after 1919, as we will see in chapter five. Most of the areas under consideration as demonstration areas later became important estates of the Forestry Commission or played an important role as examples of forestry practice and organisation as used by the Forestry Commission. These estates included Novar (Ross & Cromarty), Newton , with parts of the woods on the east part of the Beaufort estate (Inverness-shire), Methven and Lynedoch (Perthshire) and Drumtochty (Kincardineshire). A demonstration area was not established until after the war when Lovat started a forest training school at his Beaufort estate in 1919.[33]

It is not by accident that Stirling Maxwell was chosen as the chairman of a committee that advised on forestry in Scotland. He was an expert on forestry in the Highlands. Before the First World War he had experimented with new forestry techniques on his Corrour estate near Loch Ossian with methods of afforestation on elevated and peaty grounds. His most important contribution to Scottish forestry was the introduction of a new system of turf planting from Belgium and the adaptation for the Scottish environment, which will be further explored in chapter six.[34] During the First World War Stirling Maxwell was appointed Assistant Controller of Timber Supplies and worked in France together with Lovat. His interest in the environment extended to the country's natural and architectural heritage, as we will see in chapter seven.

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[32] *Report of the Committee on Forestry in Scotland*, HMSO, London, , 1911, p. i.
[33] Scottish Forestry Committee. Confidential memorandum on estates visited by the Committee, Munro of Novar Papers 1882-1948, Highland Council Archives (hereafter HCA) 538/37.
[34] Workingplan Inverliever Forest, 1907-1951, NAS, FC7/6.

Although most planting experiments were undertaken on private estates, of which Corrour was probably the most important, the state started some experimental work in the early 20th century. In 1907 the Office of Woods, which managed the crown woods, acquired Inverliever Forest in Argyll[35] as an experiment in large-scale afforestation. Planting started in 1909 but was not supervised by an academically trained forester and therefore not managed according to the latest ideas in forest science. This changed three years later when Roy Lister Robinson was placed in charge of the experimental plantation. Robinson was a graduate from the Oxford School of Forestry and had studied with Professor William Schlich. After graduation, he was employed by the Board of Agriculture and later transferred to the Office of Woods to report on the effectiveness of the management of the Crown Forests. When Robinson was put in charge of Inverliever Forest he laid down 50 experiments dealing with planting on difficult soils. The experience gained at Inverliever helped the Forestry Commission with the successful establishment of new plantations after 1919. Robinson continued his work at Inverliever until he was appointed as the first Technical Officer of the Forestry Commission.[36]

By 1914 a small group of men had laid down the main features on which Britain's forest policy would be based for most of the 20th century. They believed that the nation should set up a State forest agency with the task of creating large forests to ease the difficulties of a possible world timber shortage. At the same time the afforestation programme could be a means of reinforcing the economies of remote rural areas by keeping people on the land. The development of better silvicultural techniques that had started just before the war made the possibility of reforesting exposed upland areas more feasible. However, the political climate was not ready for the adoption of a State forest policy and the creation of a national forest

[35] Inverliever Forest is situated on the north bank of Loch Awe in Argyll, western Scotland.
[36] Ryle, G.B., *Forest Service. The First Forty-five Years of the Forestry Commission of Great Britain* (New Abbot, 1969), p. 21-22; Forest History Inverliever Forest, NAS FC7/6.

agency. As long as the bulk of timber could be imported there seemed no need for action, but what would happen if Britain were to be cut off from its timber supplies in times of war? No one knew the answer to this question on the eve of the outbreak of the First World War.

3.4 Summary

During the 18th century Scottish landowners developed a taste for creating landscape parks. In doing so they imported new tree species from all over the world to be planted in these parks. At the same time some landowners, of which the most notable were the Dukes of Atholl, developed such an appetite for tree planting that they created large new forest plantations. These forests were not only planted for delight but their timber was also regarded as an important source of income for estate owners. There is plenty of evidence that forests in Scotland were actively managed during the decades of the 19th century. During the Victorian period the interest in forests increased further due to the rising demand for timber in Scotland and the United Kingdom as a whole, was caused, in part, by the expansion of the railway network. It was this economic incentive that gave a push to making forestry more professional. In this atmosphere of expansion and optimism the Royal Scottish Aboricultural Society was established by the mid-19th century. This organisation played an important role in the lobby for better forestry education and the creation of a national forestry policy, especially a small group of landowners among its members that played a key role in establishing the Forestry Commission. Among them were practical men such as John Stirling Maxwell and John Sutherland who pioneered the planting of trees on elevated and exposed moorland. On the other hand there was Lovat who defined the aims for a State forestry organisation and who had a clear vision of how this State forestry body should be organised. These men were distinctively empowered by a combination of scientific background and high social status and political influence. Their preoccupations with forestry were closely

connected to a variety of agendas of social reform in rural Britain. Forestry was regarded as an important means of enhancing the economic and social situation of remote rural areas of Scotland. It was on these ideas that forestry policy would ultimately be based, but one essential element was still missing and became only clear after the outbreak of the First World War.

4. Forestry Policy, 1919-1973

4.1 Introduction

Political decisions played an important role in the final appearance of modern forests in Scotland. Political decisions are normally formalised in policies enshrined in legislation, but a policy on paper has to be carried out and normally this is done through a Government agency or department. To carry out forest policy in Britain the Government established the Forestry Commission. The aim of this chapter is to describe and analyse the policy of the Forestry Commission since its creation in 1919.

In this description of forestry policy emphasis will be laid on environmental aspects where that is possible. The environmental aspects of forestry are the combined ecological, aesthetic and recreational components. However, we must keep in mind that State forestry policy in Scotland was part of a wider policy that concerned the United Kingdom as a whole. The Forestry Commission was set up as a nation-wide government agency and its policies laid emphasis on national needs and priorities. Although the policies of the Forestry Commission were nationwide, an attempt is made in this chapter to keep an eye to the implications for Scotland. There is a good reason to focus on Britain north of the border because Scotland played a key role in the history of the Forestry Commission. More than half of all planting in the United Kingdom took place in Scotland and for decades the Secretary of State for Scotland has also been the senior forestry minister.

This chapter is divided chronologically into five sections. The first section sets out to describe how the Forestry Commission came into being and the reasons underlying its creation. This is followed by a section covering the inter-war period which will examine how the Commission survived several attempts of the Treasury to terminate state forestry and dismantle the Forestry Commission. During the same period the Forestry Commission was

heavily criticised in the Lake District for wrecking the aesthetics of the landscape by planting conifers on a large scale. It will be argued that this had considerable consequences for Scotland.

The third section is concerned with the Second World War and the post-war forestry policy. It will describe the ambitious planting programme as it was laid out by the Government to create a sufficient timber reserve to survive the next war. However, the basis of this planting programme was removed around 1958 leaving the Forestry Commission without a clearly defined *raison de être*. Consequently the final section deals with the search for a new direction of British forestry policy. It will show that forest policy developed along two parallel branches: an economic one and an environmental branch. The consequences of this dual development will be described and analysed.

4.2 Establishment of the Forestry Commission

At the outbreak of the First World War no one had foreseen what an important part timber was destined to play in modern warfare or what immense quantities a campaign would consume. It was required for huts, hospitals, roads, barges, trenches, ammunition cases, provision boxes and a host of other purposes. Even more important was the use of pitprops in mines. No pitprops meant no mining, no coal, no heating and transportation and thus no modern war effort.

The importation of such a bulky material as timber naturally created difficulty when tonnage became scarce due to the activities of the German U-boats. In importance timber was second only to food and took up infinitely more room. The Prime Minister, speaking to the House of Commons in January 1917 on the limitations of imports by the submarine menace, placed timber first as absorbing most of the tonnage. 'Obviously' he said 'if tonnage is to be

saved this is the first problem to be attacked'.[1] It is here that the men pleading for the creation of a State forestry authority before the war saw their chance. They were able to conduct a successful lobby because of the fact that the leading figures in forestry of the day, such as Lord Lovat, had contacts high up in the government hierarchy.[2] As a result a forestry sub-committee was added to the Government Reconstruction Committee with the mission to 'consider and report upon the best means of conserving and developing the woodland resources of the United Kingdom, having regard to the experience gained during the war'.[3] F.D. Acland headed the forestry sub-committee, which became subsequently known as the "Acland Committee". Roy Robinson of His Majesty's Office of Woods was Secretary of the Committee. In addition to these two men the most active members of the Committee were L.C. Bromley from the Treasury; Lovat (who was to become the Forestry Commission's first chairman);. T.H. Middleton of the Board of Agriculture and Fisheries; Professor William Schlich from the Oxford School of Forestry; John Sutherland, Board of Agriculture for Scotland (who became the Forestry Commission's first Technical Commissioner); and John Stirling Maxwell (who later became a Commissioner and third Chairman of the Forestry Commission).[4] The Committee included all the persons who had played an important role in Scottish forestry before the war and who were destined to play major roles in the Forestry Commission.

The work of the Committee was not easy because of the lack of information on the extent and quality of the country's wood reserves. In his history of the Forestry Commission

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[1] 40 House of Commons (hereafter HC) Deb., 1917, col. 1595, Speech on Limitation of Imports, 23 February 1917.

[2] BBC forestry talk no. 2, 29 March 1928, GCA, T-PM 122/4/7/2.

[3] *Final Report of the Forestry Sub-committee of the Reconstruction Committee*, HMSO, London 1918, (Cmd. 8881), p. 3.

[4] Ibid.

Ryle[5], in his history of the Forestry Commission's first 45 years, commented on this problem, that 'the sub-committee examined in great detail the available, if rather unreliable, statistics in regard to the acreage of woodlands ... and land suitable for expansion'.[6] It is very likely that in this respect the Committee relied heavily on Lovat's knowledge about the acreage of woodland and land suitable for forestry that he had gained during the Great Glen survey in 1911. However, the lack of reliable statistics did not prevent the Committee from producing a report in which they recommended the adoption of an adequate forest policy. The timber shortage caused by the war did not need hard statistics to prove the need for such policy.

After a description of British forestry before the war the report next looked at the depredations on the forests in Britain as a result of the war. It concluded that dependence on imported timber had proven a source of strategic weakness in time of war. The lack of a timber reserve in the United Kingdom had caused a serious shortage of timber. The report argued further that 'a famine of timber' was a scenario inevitable not only in a future war but also in time of peace because of the escalating world demand for timber and its shrinking supply. In this context, the Committee showed a deep concern about the over-exploitation of Canada's natural forests.[7] The Acland report also gave an eloquent exposition of the social and economic benefits of afforestation such as rural employment and a strengthened Highland economy. The Acland Committee regarded the creation of smallholdings by a new State forestry agency as one of the cornerstones of forestry policy. It was also in the Committee's view a means to repopulate upland rural areas and to acquire enough labour to carry out the massive planting programme. They envisaged that 'the small holdings will be grouped together on the best land within or near the forests so as to economise labour in the working

[5] G.B. Ryle was deputy director of the Forestry Commission from 1963 to 1965.
[6] Ryle, *Forest Service*, p. 26.
[7] Ibid., p. 5,14, 27.

of the holdings, ... and to provide an ample supply of ... labour for [forestry] work. Families settled on new holdings in forest areas will be a net addition to the resident rural population'.[8]

Based on these findings the Committee recommended the adoption of an adequate forest policy for the United Kingdom. The three objectives of the policy were: maintaining an adequate reserve of standing timber against any emergency, the desirability of making better use of uncultivated and derelict land and the general well-being of rural Britain, including rural employment. These objectives remained the justification for British forest policy for almost 40 years. The Committee concluded that in order to secure the double purpose of independence of foreign supplies for three years and a reasonable insurance against timber shortages as well as the other policy aims, the woods of Great Britain should be gradually increased from three million acres to four and three quarter millions. It advised further that in the first ten years 150,000 acres should be planted by the State and 50,000 by private landowners with state assistance. The planting had to be supervised and conducted by a state forest authority 'equipped with funds and powers to survey, purchase, lease and plant land and generally to administer the areas acquired'.[9] The Committee concluded that a forest authority be established with the responsibility to co-ordinate and carry out forest policy in Britain, and that it should be called the Forestry Commission.

It is must be noted that the Acland Committee considered forests as a source of a commodity: timber. The main purpose of the forestry programme was the economic wellbeing and security of the country: 'the true justification for national afforestation is the well-being of the country. Wood is one of the prime necessities of life'. Wood was placed here on the same footing as grain and other agricultural products when it continued: 'next to

[8] *Report of the Sub-Committee on Forestry*, p. 28.
[9] Ibid., p. 5.

food, it is the article of which an abundant supply is most essential to the nation'.[10] Considerations such as amenity, wildlife and nature conservation were not mentioned at all because the Forestry Commission was simply not set up as a nature conservation organisation. It was created with the aim of managing a strategic timber reserve.

The Government implemented the recommendations of the Acland Report almost to the letter. In the summer of 1919 the Forestry Bill was smoothly rushed through Parliament and received Royal assent on 19 August. The discussion in Parliament focussed on issues such as the organisation of the Commission, employment in rural areas and finance. Environmental issues were not raised because they were not considered to be an issue. The Forestry Commission was set up as a tree-growing agency that was meant to create a timber reserve and in the process of doing that also provided extra employment.[11] The Forestry Act established the Forestry Commission and charged it with the duty 'of promoting the interests of forestry, the development of afforestation, and the production and supply of timber, in the United Kingdom'.[12]

[10] Ibid., p. 76.
[11] 119 HC Deb., 1919, col. 217, Forestry Bill second reading.
[12] Forestry Act 1919, 3-1.

4.2.1 Organisation of the Commission

The Forestry Commission came into being on 1st September 1919, and the first eight Commissioners were appointed on 29 November. The first commissioners were Lord Lovat (Chairman), Mr F.D. Ackland, Lord Clinton, Mr Forestier-Walker, T.B. Ponsonby, R.L. Robinson, Col W. Steuart-Fothringham, and Sir John Stirling-Maxwell. Robinson was the Technical Commissioner and trusted with the task to run the Commission's Headquarters. Apart from the Technical Commissioner, these posts were part-time posts and the daily business of the Forestry Commission was trusted up-on three Assistant Commissioners (Chief Executive Officers), one for each part of the United Kingdom - England & Wales, Scotland and Ireland (until 1922). A regional organisation was set-up under the Assistant Commissioners dividing the country into 15 divisions: nine in England and Wales, four in Scotland and two in Ireland. After the independence of the Irish Republic the two Irish divisions disappeared in 1922. The Divisions were headed by university trained foresters called Divisional Officers. In turn the Divisions were divided into a number of forest districts administered by an academically trained District Officer who were supervising a workforce of Forest Officers who where in charge of the local forests. They were supported by Foresters, Foreman who were recruited, partly form private forestry but mainly from Forester Training Schools set up and run by the Forestry Commission, in various parts of the country.[13] It were these last two categories of forest officers who planted and managed the forest plantations and because of their remoteness from the top of the Commission's hierarchy they enjoyed a considerable degree of freedom. The result of this was that the appearance of the forests and its subsequent management of forests rested in the hands of the local foresters. According to Bob Allison, who was in charge of the forests around Fochabers, he had a great

[13] Ryle, *Forest Service*, pp. 37-39; Forestry Commission, *Thirtieth Annual Report of the Forestry Commissioners for the year ending September 30th 1949*, p. 11; Pringle, *The First 75 Years*, p. 7.

amount of freedom to decide how a forest was planted, what was planted and how it was managed.[14] However, the picture was mixed and the attitude of foresters differed from district to district. There were foresters who were in line with official forest policy while others carried out their own ideas and ignored directives from above. Good examples of these extremes can be observed between Fred Donald, who was a District officers and Don Macaskill, who was in charge of the forests around Strathyre. Donald did not notice that there was a difference in attitude between foresters at the top and in the field because 'foresters were doing what the politicians wanted, because anything else reduced the profitability'.[15] Macaskill on the other hand planted forests with regards for the surrounding landscape and in doing so ignored official policies from Forestry Commission Headquarters. These two extremes show that foresters had a fair amount of freedom, which resulted in considerable differences in management between the different forest districts.

Apart from minor changes, the organisation of the Forestry Commission remained the same until the Forestry Act of 1945 when the time was ripe for a complete re-organisation of the Commission. The first major change was the appointment of National Committees for Scotland, England and Wales. The National Committees became responsible for the acquisition of land, management, housing, private forestry and National Parks. In addition three Director's of Forestry were appointed who where in charge of the Commission's operations in England, Wales and Scotland. These officers took over a large number of duties previously carried out by the assistant Commissioners. In Headquarters The post of Technical Commissioner disappeared and was replaced with two new executive posts: Director-General and Deputy Director-General. These positions were created in order to assist the Commissioners in the execution of their policy, administrative work and technical co-

[14] Personal comment Mr. Allison
[15] Personal comment F.T. Donald.

ordination. Finally the divisions into which the country was divided before 1939 were re-organised into eleven conservancies with a Conservator of Forests in charge of each. Attached to each Conservancy were Divisional Officers in charge of both State Forestry and Private Forestry. In the field District Officers in charge of groups of forests assisted the Conservator and local supervision was entrusted to Foresters and Foreman. This organisation remained unchanged between 1945 and 1970.[16]

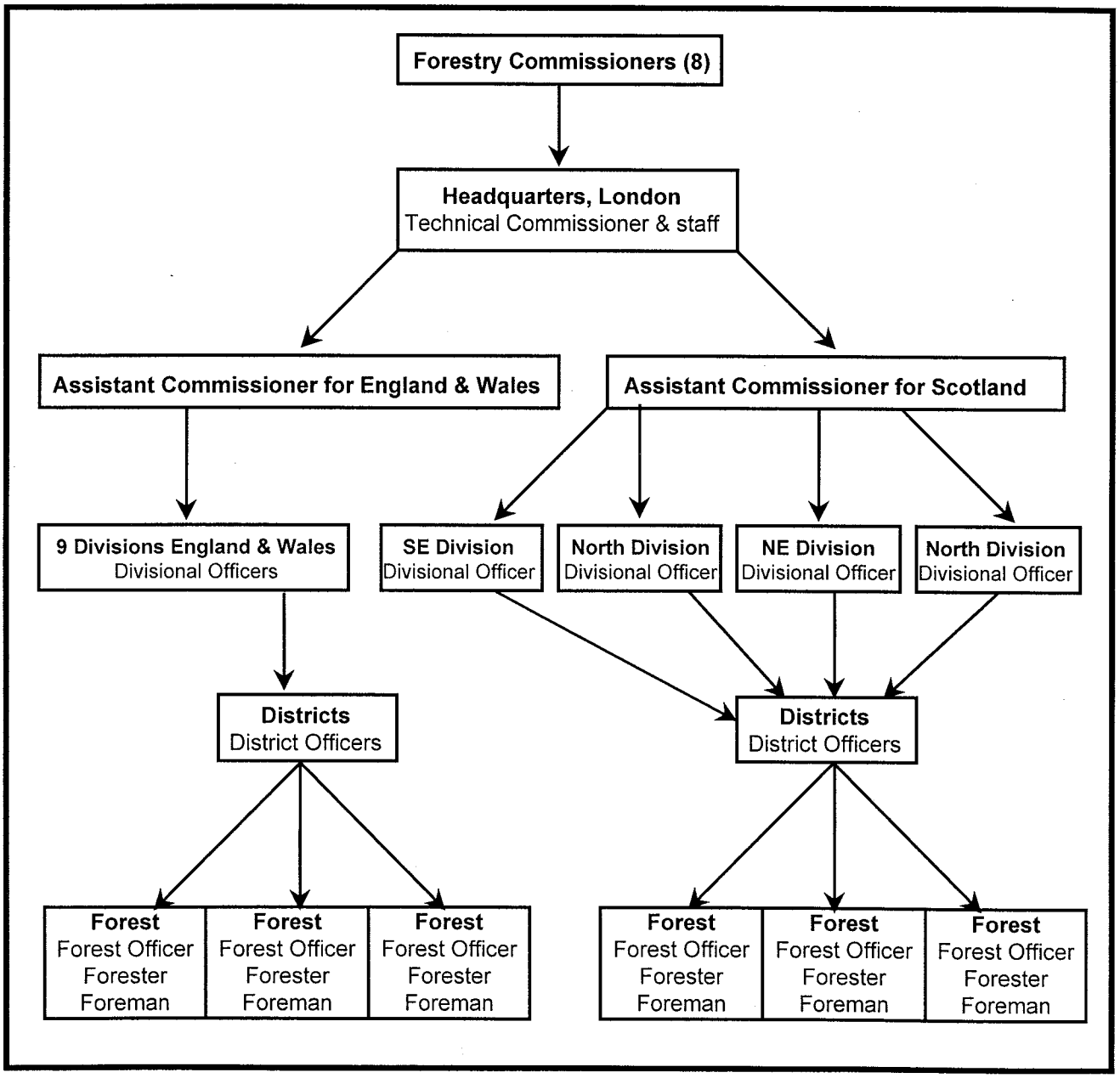

Figure 4.1: Organisation of the Forestry Commission, 1922-1939.

[16] Forestry Commission, *Thirtieth Annual Report*, p. 12.

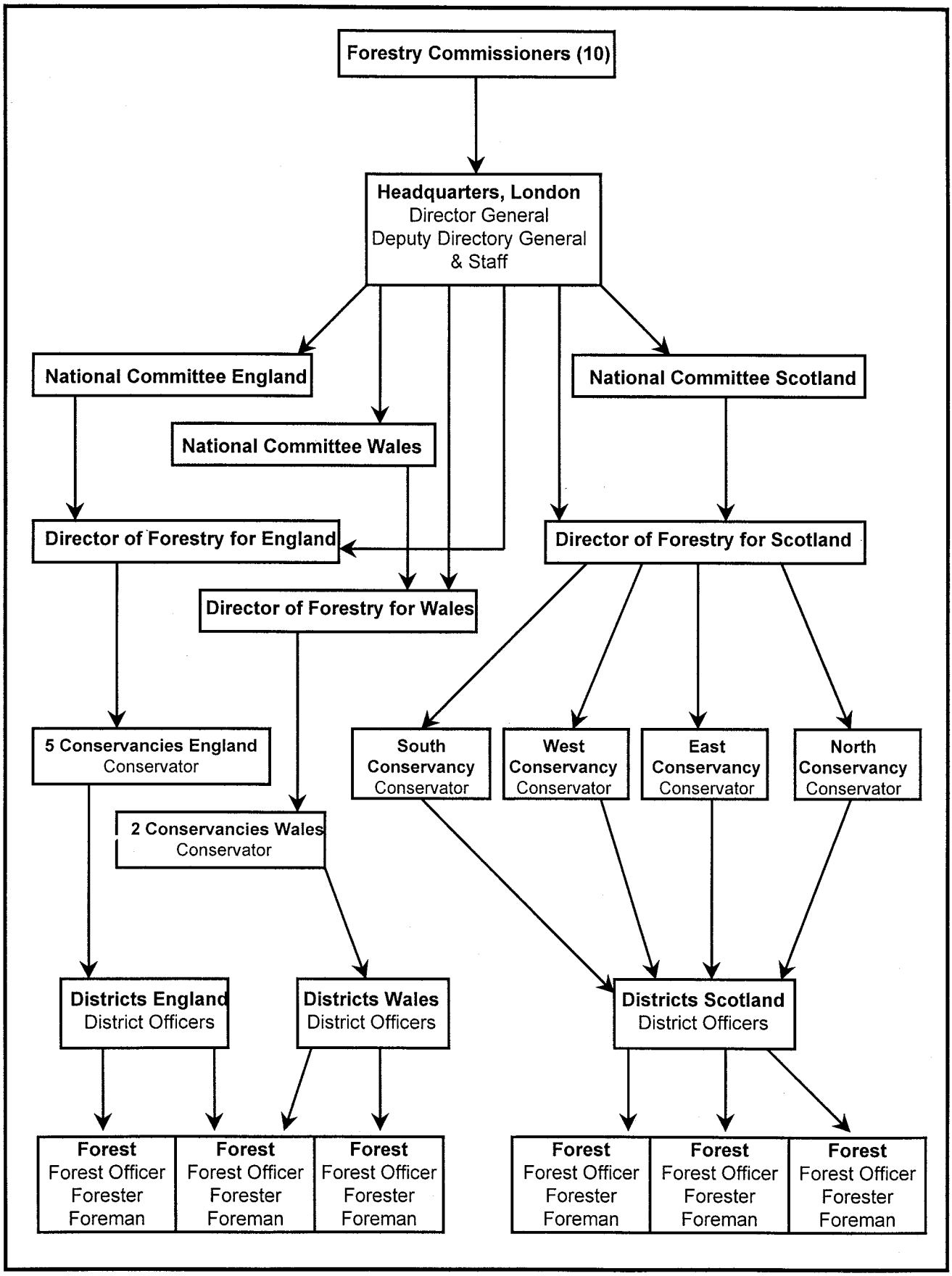

Figure 4.2: Organisation of the Forestry Commission, 1945-1970.

4.3 The Inter-war Period

The new chairman, Lovat had gathered an excellent team of commissioners around him. He had two great advantages that made him the perfect person for the setting up of the new Forestry Commission. The first was his intimate knowledge of forestry in Scotland. A second advantage was that he knew the several Commissioners very well through forestry activities before the war and his membership of the Ackland Committee. He knew Robinson, the newly appointed Technical Commissioner, from his work for the Office of Woods in Scotland and as secretary of the Acland Committee. He had worked with Sutherland in France before the latter was appointed as Assistant Commissioner for Scotland. He knew Stirling Maxwell through his brother Archibald Stirling of Keir, who was incidentally married to Lovat's fourth sister, and who had been his co-worker during the Great Glen survey. Another advantage mentioned previously was the fact that Lovat had ready access to many political and government circles and knew how to tackle both friend and foe.[17]

The experience and knowledge of the Forestry Commission chairman and staff meant that the first years of its existence were characterised by expansion of the forest area to meet the policy aims of establishing a timber reserve and reducing Britain's dependence on imported timber. However, in 1922 the Geddes Committee on National Economy threatened the existence of the Forestry Commission by stating that forestry was simply uneconomic. According to an account by Stirling Maxwell 'this overworked Committee, after an enquiry lasting twenty minutes, recommended the scrapping of the whole forestry scheme.[18] However, the Commission fought back with the argument that the Geddes Committee had ignored the three fundamental considerations on which forestry policy based by the Acland

[17] Ryle, *Forest Service*, 40.
[18] Lecture on Afforestation for the Rotary Club, 22 November 1927, GCA, T-PM 122/4

Committee. The Commissioners warned that Britain could not afford to be without a timber reserve in case of another war.[19]

With this argument the Forestry Commissioners were able to convince the Government that it was not a good idea to abolish the Forestry Commission. The Cabinet, with the experience of the war fresh in their minds, turned down the advice of the Geddes Committee, but instructed the Forestry Commission to freeze expenditure on afforestation for a period of two years.

The second threat to the Forestry Commission came with the May Committee on National Expenditure in 1931. The May Committee recommended that 'no fresh acquisitions of land be made for the present and that no more forest workers holdings be created'.[20] The Commission was still allowed to continue its planting programme but at a lower rate and on the land it already owned. The Commission appealed to the Government and after a meeting between the Chancellor of the Exchequer and the Chairman of the Commission an agreement was reached. The annual amount of money available for forestry was reduced but the Forestry Commission would be free to spend their money, as they thought best, in the interest of forestry.[21]

After the Forestry Commission survived the Geddes and May committees, the rapid expansion of the area of forested land became even more important. The Forestry Commission had to show its political opponents that it was an efficient working organisation that was worth investing money in. The amount of land that was annually planted was the benchmark of the Forestry Commission's performance. It was for this reason that Members of Parliament were very interested in the progress of the Commission's work. On a regular basis

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[19] Ryle, *Forest Service*, p. 43.
[20] Committee on National Expenditure, *Report*, HMSO, London 1931, (Cmd. 3920), p. 131.
[21] Pringle, *The first 75 years.*, 20-21.

MP's asked the representative for the Forestry Commission in the House of Commons how many acres were planted and if the Commission was able to keep up with the proposed planting rate.[22] These pressures had serious consequences for the forestry practices used by the Commission. It increased the preference for monoculture conifer plantations of the high forest type managed by a clearfelling system. This system was the easiest and cheapest to establish and manage. That made it possible for the Forestry Commission to expand the area covered with trees more rapidly. But there were also environmental restrictions caused by climate and soil, which dictated the application of the planting of coniferous plantations. The chapter on forestry practice will examine the environmental restrictions in more detail.

But there was a third reason why the Forestry Commission preferred the practice of coniferous monocultures of the high forestry type. Throughout the inter-war period the Commission made a distinction between productive forms of management, semi-productive forms of management and non-productive forms of management. High forestry was regarded as the most productive form of forest management. 'Coppice' and 'coppice with standards' were seen as semi-productive forms of management, while all the remaining categories such as scrub, heath and grazing were regarded as non-productive or lost for forestry. Of course, there was not much appreciation for other qualities such as grazing ground for cattle or sheep, natural habitats for wild-life or flora or simply scenic beauty. Extensive grazing was even seen as an unproductive use of upland grounds and in this context the Commissioners complain in a memorandum reviewing forest policy that 'no more than 60 per cent of the total area is under a form of management which can be considered as potentially productive'.[23] Considered from the Commission's main objective of creating and maintaining an adequate

[22] Examples are: 1134 HC Deb., 1929, col. 224, Oral Answers 31 January 1929; 1585 HC Deb., 1935,col. 307, Written answers 17 December 1935

[23] Forest Policy, Review by the Forestry Commission, July 1939, p. 4, Public Record Office, London (hereafter PRO), F18/142.

reserve of standing timber, it is not surprising that they wished to convert land under, what they perceived as, non-productive management into productive forests. Other possible qualities of the land were simply ignored because they were not part of the Forestry Commission's objectives. However, we must be careful in judging these statements because the land available for use by the Forestry Commission consisted mainly of marginal grounds. To make better use of unproductive land was even part of official forest policy. To define other land-use as non-productive was probably a strategy to convince the Government that it was better to give more productive lands to forestry because other land uses were not able to exploit fully the potential of the land. In doing so the Commission hoped to get an advantage in the competition for land with other agricultural users.

By 1930 the results of the work of the Forestry Commission had become visible in the landscape. The changes this made in the scenery of popular holiday destinations such as the Lake District and Snowdonia resulted in the first resistance to the planting policy of the Commission. In these particular cases foresters were criticised for having no regard for the amenity aspects of the landscape, but according to Mackay these objections were isolated incidents. He observed that no objections were raised against forestry in Scotland and that amenity there took a decidedly lower place than in the Lake District. He concluded that 'public opinion was very little exercised about the appearance of forestry, even in the recognised scenic areas'.[24] In chapter seven the background of this difference between the Lakes and Scotland will be further discussed. It will suffice here to conclude that Mackay is perfectly right here because there is no evidence of large scale organised opposition in Scotland before the 1980s. A survey through 45 years of issues of the *Oban Times* and the *Glasgow Herald* produced only one letter to the editor in which a holidaymaker complained

[24] Mackay, Donald, *Scotland's Rural Land Use Agencies. The History and Effectiveness in Scotland of the Forestry Commission, Nature Conservancy Council and Countryside Commission* (Edinburgh, 1997), p. 27.

about the ugliness of the forests in Argyll.[25] However, this was well after the Second World War, in 1965. By this time, the protests in the Lake District had been thirty years earlier and had direct consequences for forest policy in Scotland. However, the absence of official opposition to the forest plantations in Scotland does not prove that amenity was not important. In chapter seven it will be discussed that amenity was important in Scotland but not in connection with forestry.

4.3.1 National Forest Parks

Regard for amenity and improving the beauty of the landscape was initially not included in the objectives of forest policy because the Commissioners did not regard it as necessary. They believed that simple afforestation was improving the beauty and amenity value of the landscape anyway and therefore it was regarded as an integral part of forestry. The term amenity was used in a broad sense to describe the aesthetic and recreational aspects of the landscape as well as conservation of wildlife and natural beauty.[26] Although amenity was initially no explicit part of forest policy soon after the establishment of the Commission an amenity stipulation was formulated and used. During a meeting of the Commissioners in 1921 the Assistant Commissioner for Scotland, John Sutherland, mentioned that the amenity stipulation of the commission was used to keep scenic hilltops free from planting.[27]

Demand for access to forests was another aspect that was not included in the initial forestry policy of 1919. In spite that, during the 1920s the number of people visiting the forests increased, and it was in recognition of this fact that the Forestry Commissioners

[25] *Oban Times*, 5 August 1965, Forest Planning, Letter from T.F. Hall, Cheshire.
[26] Amenity aspects 1956-1968, PRO F18/817.
[27] Minute meeting 5 April 1921, Public Record Office (hereafter PRO) F1/2.

obtained powers in the Forestry Act of 1927 to make regulations governing the admission of public to State Forests.

It was not only the Forestry Commission that was confronted with an increasing demand for access to the countryside, and in reaction to this development a National Parks Committee was appointed by the Government in October 1929. Its task was 'to consider and report if it is desirable and feasible to establish one or more national parks in Britain'. The two main objectives of the parks were to be 'the preservation of natural characteristics, including flora and fauna, and the improvement of recreational facilities'.[28] The Forestry Commission, as an important landowner in rural areas, was represented on the National Parks Committee. The Forestry Commission was 'quite friendly to the idea' of creating a national park for recreational purposes.[29] It was a means for the Commission to sell off unplantable land or to turn it into useful land for recreation. The Commissioners stated in a preliminary comment to the National Parks Committee Report that 'the Forestry Commission might be prepared to hand over some 8,000 acres of Ben More Forest in the Caingorms' under provision that 'the plantations of the Forestry Commission may not be endangered through admission of the public'.[30] The Commission did not allow any interference with the creation and maintenance of its forests, i.e. the standing timber reserve. It also wanted to protect the forests from fire or other damage caused by visitors. The National Parks Committee accepted this, probably to keep the Commission happy and involved with the national park movement.

In April 1931 the Report of the National Parks Committee was presented to Parliament and concluded that a system of small parks and reserves had to be created in Britain.

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[28] Amenity aspects 1956-1968, National Parks - Brief history of the present movement, PRO F18/817.
[29] Maxwell, John Stirling, 'A Decade of State Forestry and its Lessons', *The Scottish Forestry Journal*, 44 (1930), p 6.
[30] National Forest Parks, correspondence and papers, 1925-1931, Preliminary comments, 17 Sept. 1929, PRO F19/9.

The objective to be achieved by these parks would be to safeguard areas of exceptional natural beauty and to improve the means of access for pedestrians to areas of natural beauty. Finally parks could be an instrument to introduce measures for the protection of flora and fauna.[31]

Because of the economic difficulties at the start of the 1930s, caused by the deep international recession, no action was undertaken to implement any of the conclusions of the report. In the meantime the first large-scale conservation conflict over the planting activities of the Forestry Commission in the Lake District reached a climax. This conflict was settled with a voluntary agreement between conservation organisations and the Forestry Commission which promised not to acquire land for afforestation purposes in the central Lake District.[32] This will be dealt with in detail in chapter seven. The whole Lake District episode had given the afforestation programme of the Forestry Commission a bad image, which it attempted to restore by setting up an internal committee, the National Forest Park Committee, with the task 'to advise how the surplus and unplantable land in the forests ... may be put to a use of public character'.[33] The Committee, headed by Stirling Maxwell, advised the Forestry Commission to create National Forest Parks for the purpose of outdoor recreation. The parks had to be established mainly on unplantable ground, but production forests would be included in the lower parts of the parks. The report did not mentioned nature conservation because the Forest Park Committee did not regard this as part of the duty of the Forestry Commission and they referred to the report of the National Park Committee:

> National Forest Parks, and we feel that it is desirable to indicate that this term is deliberately intended to denote something different from a National Park as described in the Report of the National Park Committee'.[34]

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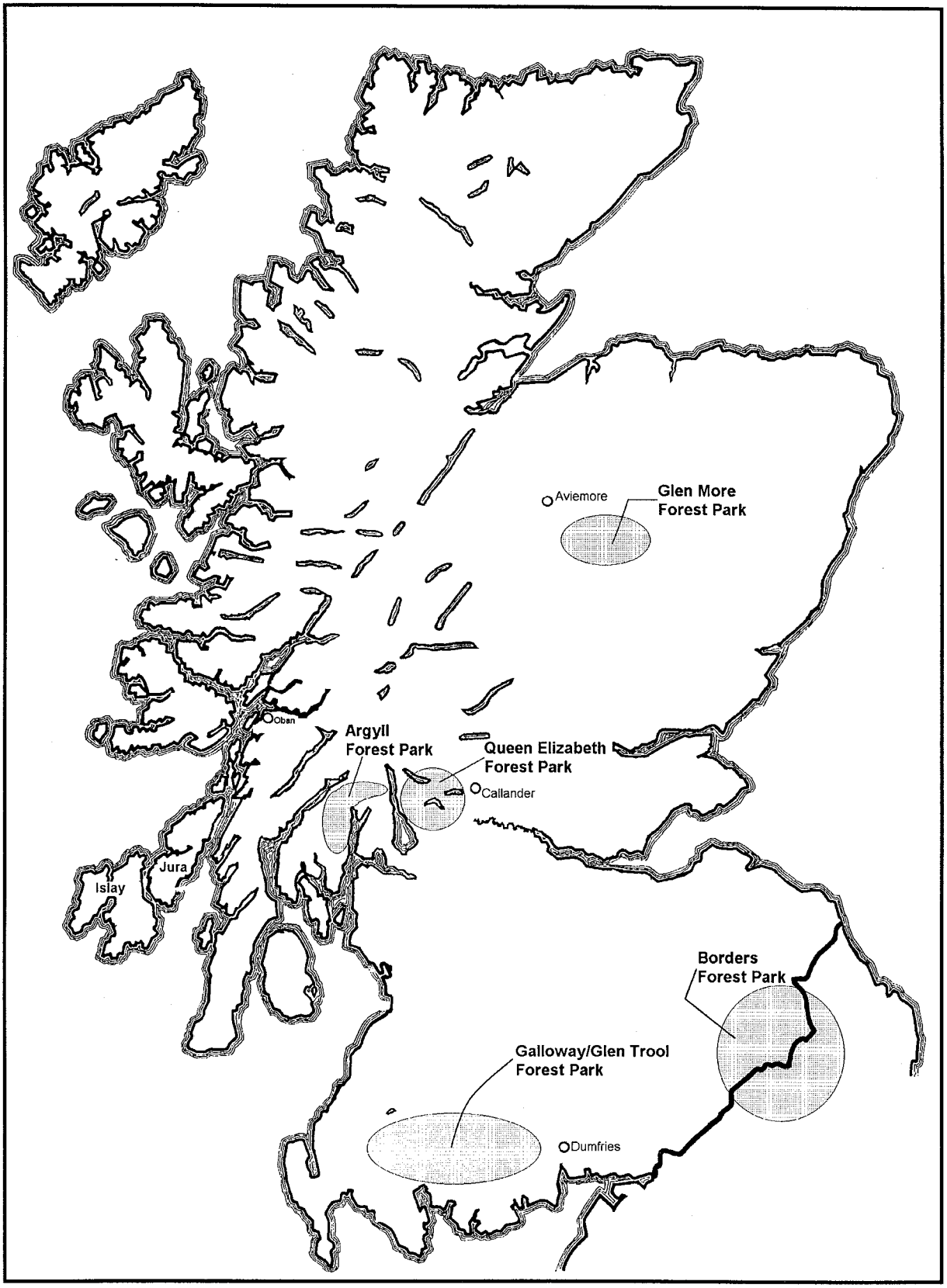
[31] National Parks. Brief History of the Present Movement, June 11th 1936, PRO F18/817.
[32] Pringle, *The First 75 Years*, p. 23.
[33] Forestry Commission, *Report of the National Forest Park Committee 1935*, HMSO, London, 1935, p. 2.
[34] Ibid.



Map 4.1: Forestry Commission Forest Parks in Scotland

In fact the Forest Park Committee did not take on any of the conclusions of the National Park Committee's report, except for the objective of improving recreational facilities and access for hikers. In a discussion paper that was published after the war the Commission described the aim of the parks as follows:

> The aim [of the forest parks] is to afford the public the maximum access compatible with proper protection and management of plantations. With this in mind the Commission make provision for suitably equipped camp sites, car parks, etc., as well as for hostels, mountain shelters and the like in association with responsible national organisations.[35]

The attitude of the Forestry Commission towards access had not changed since the early 1930s and the issue of amenity and nature conservation was left out because, as the Forest Parks Committee had concluded, they were not part of forest policy. That is not surprising considering the fact that the Forestry Commission was set up to create a forest resource and not to act as a nature conservation body.

As soon as the Report was published the Commissioners took action and implemented the findings of the National Forest Park Committee immediately by creating the first National Forest Park in Argyll in 1935. Between 1935 and 1952 a total of seven Forest Parks were opened, of which four were in Scotland (See map 4.1). The parks proved to be very popular and during the first year over 13,000 overnight stays were recorded in Argyll Forest Park. The next year the number of visitors exceeded 20,000 and it continued to rise in subsequent years.[36] With the establishment of the National Forest Parks the Commission realised that it had created a powerful tool to improve its popularity. During a general forestry discussion in 1938 it was said that the National Forestry Parks were 'a good bid for popularity' and that it aroused interest 'in all grades of society'.[37]

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[35] Discussion paper 'Border Forest Park' sent to Duke of Northhumberland, 25th September 1956, NAS FC6/2.
[36] National Parks, Preliminary draft section of Post War Reconstruction Report, p. 2, PRO F18/817
[37] General Discussion on forest Policy, 1 December 1938, p. 5, 7, PRO F18/142.

It was the start of the Forestry Commission's involvement in tourism, and laid the foundation for a policy to enhancing the amenity of the State forests.

4.3.2 Workers' Holdings

Although the forest survey of the Great Glen in 1911 and the Acland Report had both suggested that the systematic establishment of workers' holdings should be part of any afforestation scheme, the Forestry Commission did not adopt a workers' holdings policy until 1924. The Forestry Act of 1919 did not include the provision of rural employment as one of the Commission's duties. However, the act contained a clause that made it possible for the Commissioners to create forest workers holdings for its work force:

> The commissioners shall have power to ... utilize any land acquired, and erect such buildings or execute such other works thereon as they think necessary.[38]

The 1924 scheme included the construction of houses with not more than 10 acres of agricultural land in or near a forest. The occupier performed a yearly minimum of 150 days' work in the forest; the remainder of his time could be used for working the land of his holding or for additional forest work. According to a 1943 report by the Forestry Commission this forest holding scheme was 'from 1924 to 1931 a scheme of land settlement'.[39] After the economic crisis of 1931 this aspect receded into the background and the creation of new holdings was restricted to the areas where it was essential to the planting and tending of the forests. In spite of this the Commission had by 1935 managed to create 1250 holdings, and the number gradually increased until 1939 when there were 1470.[40]

This number of workers' holdings was not enough to satisfy the Forestry Commissioners. By 1943 the Forestry Commission concluded in its report on post-war policy

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[38] Forestry Act 1919, p. 4.
[39] Forestry Commission, Post-War Forest Policy, HMSO, London, 1943 (Cmd. 6447), p. 42.
[40] Forestry Commission, *Annual Report 1950*, p. 71.

that 'at present there is a shortage of 2000 cottages'.[41] Therefore the Commission launched a major construction programme after the war and most of the new houses were built in so called forest villages. These villages were of a different kind from the smallholdings that had been created before the Second World War they were created to house Forestry Commission staff in or near the forests where they worked and did not include agricultural ground. In their *Annual Report* of 1959 the Forestry Commission gave an optimistic account of the development of a forest village in the west of Scotland to show the success of the villages in arresting the depopulation of remote rural areas and in enhancing the social fabric of the countryside:

> For example, to provide a stable labour force for the forest of Inverliever beside Loch Awe in Argyll, a new forest village, now of 47 houses, has been built at Dalavich. In 1908, when there was no forestry activity there, the resident population of this area was 55, of whom only 11 were children under the age of 16. The population is now 318; there are over 125 schoolchildren, for whom the County Council has built a new school in the village.[42]

In retrospect we must conclude that this was only a temporary development. From the early 1960s the number of forest workers' houses and holdings started gradually to decline because the Commission had started to sell redundant houses. This development can be attributed to the declining workforce of the Forestry Commission due to the mechanisation of forestry operations (see figure 4.3), a trend that has continued up to the present day. Nevertheless, the picture of thriving forest villages was very attractive to many councils in the Highlands of Scotland and other remote areas of Britain. In the summer of 1959 the county of Sutherland's Planning Committee was heavily disappointed when the Forestry Commission decided not to proceed with a planting programme in north-west Sutherland because it was regarded as too remote and therefore too expensive to plant.

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[41] Forestry Commission, *Post-War Forest Policy*, p. 42.
[42] Forestry Commission, *Annual Report 1960*, p. 7.

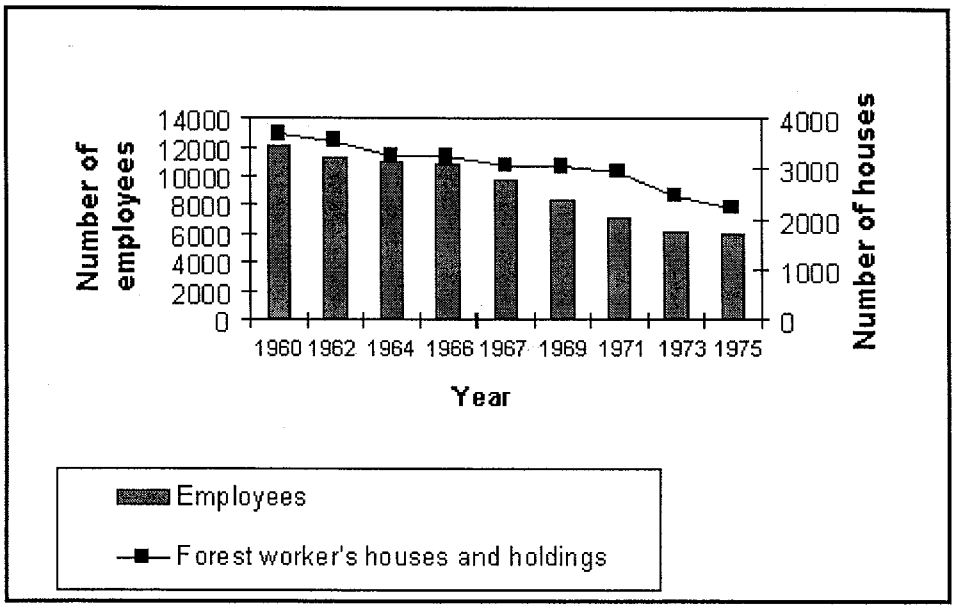

Figure 4.3: Forestry Commission Employees and Houses, 1960-1975.
(Source: *Forestry Commission Annual Reports*)

The *Glasgow Herald* reported that the authorities in Sutherland were assured by the Secretary of State for Scotland 'that forestry would be a major industry in Sutherland'.[43] The Sutherland County Council felt that the Forestry Commission had let them down and that they were misled about the possibilities of creating employment through forestry. They had, on the advice of the Forestry Commission, constructed houses for forest workers in areas that were subsequently not planted

The employment argument remained strong among Forestry Commission circles and the general public throughout the 1960s, although the numbers of people employed by the Forestry Commission were falling. In January 1966 the *Oban Times* discussed in a major article the benefits of the expansion of forestry activity as presented in a Government paper on 'The Scottish Economy, 1965-70'. The newspaper reported enthusiastically that 'forestry is likely to provide further sources of employment' because the Government had decided to increase the Forestry Commission's planting programme in Scotland considerably.[44]

[43] *Glasgow Herald*, 25 June 1959, 'Forestry in Sutherland'.
[44] *Oban Times*, 27 January 1966, 'More forestry planting. - State plan 6000 extra acres per year'.

The employment was not expected to be found in forestry itself, but in the industries that would process the home-grown timber that was increasingly being harvested from the maturing forests. As will be discussed in the next section, the British wood processing industry was rapidly expanding during the 1960s. The extra planting was only meant to sustain the flow of raw materials to feed these industries. This development fitted neatly with the demands from the government to make forestry a more commercially viable undertaking.

4.4 The Second World War and After

The massive felling during the Second World War proved the strategic justification underpinning British Forestry Programme as it had been formulated in 1919. When the war broke out almost all of the plantations created by the Forestry Commission were less than 20 years in age. This resulted in the felling of many of the older forests in Britain, but in particular in Scotland. The depletion of large areas of mature timber proved that a renewed planting programme would be needed after the war. The Forestry Commissioners realised this and in June 1943 they published the *Report on Post-War Forestry Policy*. This Report was modelled on the Acland Report and its findings resembled a strong echo of its 1918 predecessor. It stated the importance of wood as a raw material and the unfavourable balance of trade as far as the United Kingdom was concerned. It concluded that a renewed effort was needed to create an adequate timber reserve for 'national safety and ... also provide a reasonable insurance against future stringency in world supplies'.[45] The Report proposed that five million acres should be devoted to forestry to create a sufficiently large timber reserve. It was suggested that most of the ground for planting was to be found on bare unproductive upland areas in Scotland. The report also emphasised the social advantages of the

[45] Forestry Commission, *Post-War Forest Policy*, p. 8.

afforestation programme for rural communities in the uplands of Scotland (and Wales) when it stated 'there are valuable contingent advantages associated with forests, such as the development and settlement of rural Britain'.[46] A new element that was introduced by the Report was the idea of forestry as a valid form of business investment. This was to attract investors to help with financing the proposed planting programme. Also brought into play were amenity and recreational advantages and the possibility of increasing the number of forestry parks. This was in recognition of the mounting demand for access and recreational facilities. The Forestry Commission believed that it had to formalise its policy with regard to the National Forestry Parks and amenity.

The *Report on Post-War Forest Policy* laid the foundation for the Forestry Act of 1945, and it was implemented to the letter, like the Acland Report before. The new Act referred to the 1919 Act in repeating that the Commission was charged with the establishment and maintenance of adequate reserve of timber growing in plantations. The 1945 Act also reformed the organisation of the Forestry Commission in that the Commissioners became responsible to the Minister of Agriculture and the Secretary of State for Scotland. The Act did not include any clause on amenity, National Forestry Parks, recreation or nature conservation. These were still unofficial objectives of the Forestry Commission. But the Commission had more important problems to deal with. In the first place they had to cultivate land that no one had attempted to cultivate before. Before and during the war new cultivation techniques, such as ploughing had been successfully developed. It was now time to use these techniques on a large scale and in doing so make the proposed expansion of the forests possible.

Until 1957 the Commission's focus was on the expansion of the area forested and to secure a large reserve of timber. It was also part of the post war aim to make Britain as self-sufficient as possible to limit imports and the outflow of hard currency needed to recover

[46] Ibid.

from the war damages. Therefore the Forestry Commission felt very confident that it could carry out its ambitious planting programme because it felt that its policy 'is in line with the Government's own policy for developing native resources under State initiative'.[47]

In 1952 the Chancellor of the Exchequer called for the need to reduce national Expenditure. In response the Commissioners reviewed their finances and the money spent on the different operations. It was decided to curtail the construction of new buildings, houses, and roads and to limit the employment of new staff. However, the Commissioners made very clear that there could not be a reduction in the proposed planting programme. The 1952 *Annual Report* of the Commission said that a reduction of the planting operations or abandonment of the goal of creating a timber reserve was seen a waste of public money and labour.[48] The plea for not reducing the Treasury funding for forestry was successful and in 1954 the peak of Commission's planting was reached. However, the commissioners expected a downward trend of the planting programme in the future. This was not caused by financial problems but was due to a shortage of land available for planting. This had already been a problem before the war but after 1945 the problem had become more serious. The Commission had to compete with agriculture for land because a national policy for the expansion of home food production was being pursued with even greater vigour than the forestry policy. Mackay commented on this state of affairs that government agricultural officers exercised 'a *de facto* veto over the release even of land in the possession of the Forestry Commission' for afforestation.[49] The forestry Commission itself had not the power to decide where to plant new forests if the Department of Agriculture thought that the land could be better used for the production of food. This forced the Forestry Commission to go further up the hill and use the

[47] Draft joint memorandum by Minister of Agriculture and Secretary of State for Scotland to the Treasury, 1947, PRO T224/234.
[48] Forestry Commission, *Annual Report 1952*, p. 7-8.
[49] Mackay, *Land Use Agencies*, p. 32.

poorer grounds for forestry, a development that had been made possible by the introduction of new planting techniques, fertilisers and the use of hardy tree species. The development of these new techniques had been a response to the poor soils and exposed land available for forestry. This had considerable effects on the landscape, wildlife and flora and fauna in large areas of Scotland. The chapter on forestry practice will deal further with this problem.

4.5 The Zuckerman Report

In the 1943 report on *Post-War Forest Policy* it was stated that 'the post-war position will demand speedy and large scale action'.[50] This coincidence of the need of timber after the Second World War, and the desire to restore the strategic timber reserve, made a fertile environment for the ideas of Oxford-based forestry economist W.E. Hiley on forestry economics based on shorter rotations. Dr William Mutch, retired lecturer from the University of Edinburgh, confirmed this when he commented that 'among some of the younger people in the Forestry Commission there emerged a concept of big scale forestry'.[51] But Roger Bradley, an economist who was involved in these developments in the Forestry Commission, felt that the emergence of large-scale forestry was not due to the change in attitude by foresters, but rather an expression of the increasing opportunities for land acquisition.[52] It is indeed very unlikely that there was a change in attitude among foresters after the Second World War. Forest policy continued along the same lines as it had been doing since 1919. Therefore it was not clear-cut in the 1950s that economically driven short rotation forestry was to become the dominating forestry practice in Britain less than twenty years later.

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[50] Forestry Commission, *Post-War Forest Policy*, p. 7.
[51] Interview W.E.S. Mutch.
[52] Written comments by Roger Bradley.

At that time forestry on an ecological basis, a practice that took local environmental and biological conditions into consideration, was popular among foresters, as will be further explained in chapter six. But at the same time the official silivicultural practice in use by the Forestry Commission was that of even-aged monoculture high forestry and clear felling and long rotations as it was introduced during the 19th century. It was regarded as the 'only practical means of exploiting the large even-aged plantations made by our ancestors'[53], but by 1960 changes took place that altered the nature and course of British forestry.

In 1957 the *Report of an Enquiry into Forestry, Agriculture and Marginal Lands* was published, better known as the Zuckerman Report. Its conclusions undermined the basis for the existing forest policy. The more influential conclusions were that end-users for forest products should be actively sought and that the strategic need for a three-year self-sufficiency of timber had disappeared with the advent of nuclear warfare. A less important argument that was not made explicit in the report was the fact that a shortage of hard currency, which meant dollars, was over by 1958. It was therefore less important to produce timber than to limit the money spent on timber. A further recommendation was that forestry and agriculture should be integrated and planned as an integrated whole, and that more attention should be devoted to amenity and recreational aspects of forestry.[54]

The Commissioners welcomed the Zuckerman Report and felt that its findings were supportive. Although it removed the principle justification under the existing policy, it became clear that the commercial and social functions of forestry were becoming more important. In the *Annual Report* of 1957 we can read that 'there is evidence of a growing public demand for the recreational facilities provided by the Commission'.[55] The response of

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[53] 'How Should We Grow Conifers? Forestry Meeting at Dartington Hall', Devon, June 1958, *Scottish Forestry* 12 (1958), p. 24.
[54] Pringle, *The First 75 Years*, pp. 44-45; Mackay, *Rural Land Use Agencies*, p. 33.
[55] Forestry Commission, *Annual Report 1957*, p. 56.

the Commissioners was the publication of new expanded editions of forestry park guides and pamphlets about camping and facilities in the parks.

The Government also accepted the Zuckerman Report and acknowledged that the creation of a strategic timber reserve could be no longer the central justification of forestry policy. According to Mackay this was the opening the Treasury had been looking for to cut expenditure on forestry. Before the war the Treasury had already been pressing for adjusting the 'planting programme to the most economic figure'.[56] However, the Forestry Commission was fighting back, for the third time in her existence, to save herself.

After the Zuckerman Report had removed the main reason for the existence of the Forestry Commission, an inter-departmental Working Party was set up to review forest policy and to formulate new aims for British State forestry. The report of the working party, made public in early 1958, can be roughly divided into two sections: a section on forestry economics and a section on the social aspects of forestry including amenity and nature conservation. The opening pages of the Working Party report made a clear statement about the type of trees and timber that was needed in the future:

> The growing of hardwoods on a large scale is commercially unattractive in the United Kingdom because the main species mature slowly and yield very little revenue in the early years. Home production of hardwoods is therefore likely to decline and need not be taken into account as a factor of major importance in the future.[57]

It was expected that the demand of softwood would rise in the decades to follow. Already in 1956, 230 million cubic feet of softwoods were imported. Compared with 8 million cubic feet produced in Britain, imports made up 97% of all softwoods. So the question was whether timber should be produced in Britain at all. The problem here was that so much had been invested in new plantations that abandoning the forestry schemes was regarded as a waste of

[56] Forestry Commission memo no 128, 2nd November 1937, PRO F18/142.
[57] Cabinet Working Party on forest policy, Draft Report, p. 4, PRO F18/815.

money. The report observed that Britain's forests were reaching the stage of maturity and expected an increasing output of timber. A serious concern was the question of whether the existing wood processing industry had a sufficient capacity to deal with the increasing supply of homegrown timber. The Working Party advised creating new manufacturing capacity by means of further investment in pulp and chipboard mills, particularly in the remoter areas of the United Kingdom such as northern Scotland. It was expected that those domestic mills would have to meet heavy foreign competition. To counter this effectively the industry would depend on further afforestation and on the size of a potential softwood surplus this increase in forest area would create.[58]

The changing attitude towards forestry also reflected a shift in the global economy and political situation that took place during the 1950s. As the Zuckerman report concluded, the division of the world into two political blocks and the introduction of the atomic bomb was undermining the objectives of forest policy in Britain. On the economic side the economies of the western world, including Britain, were becoming more integrated. It was thought that the liberalisation of trade would have a self-regulating effect and that import restrictions had to be abolished and government subsidies limited. The Working Party advised therefore:

> ...although a measure of subsidy may be justified on social grounds it would not be to our general advantage, or accord with our policy of increasing liberalisation of trade, to foster the production of raw materials for British industry at anything other than truly competitive prices... .[59]

In this light the Working Party recommended that direct investment by the State, by means of subsidies of forestry through the budget of the Forestry Commission, could not any longer be justified. Forestry, in their opinion, had to be as profitable as agriculture and needed only loans from the State. However, it was expected that it would be a problem for forestry to pay

[58] Ibid., p. 7-8.
[59] Ibid., p. 8.

these loans back even when the first forests started to become productive.[60]

With regard to any investment by the State the criterion to be applied was the expected rate of return. In 1958 the minimum that was applied by the Treasury was 6.25% when considering a new investment, which also applied to forestry. Estimates by the Working Party forecasted a return between 3 and 3.5% on new planting by the Forestry Commission. This meant that the Commission did not meet the criteria set by the Treasury and that it was problematic if State funded forestry was to survive. The Working Party realised that a solution had to be found to this problem. To do so they took a proven strategy from the past and pointed out that economic criteria 'are not the only grounds on which the State forestry programme must be determined'.[61] These other criteria were the social benefits of forestry.

The Working Party recognised two important social areas in forestry: the amenity aspect and the economic and demographic problems experienced by the remote upland areas in Scotland. Although the amenity section was the shortest section of the report, it was the first time that it got such a prominent position in a policy document. Its significance must not be overestimated. According to the working party, amenity could not be more than 'a make-weight in the determining of policy' and the Government did not mention it in its ministerial statement.[62] Nevertheless, around 1960 the issue of amenity was becoming increasingly more important. Since the 1930s the Commission had opened up their plantations to walkers and established National Forest Parks. By the second half of the 1950s the Commission had adopted among their objectives that attention had to be given to the aesthetic and protective role of the forest and that due regard had to be paid to recreation and sporting interests, flora and fauna. These objectives were not included in the statutory aims of the Commission but

[60] Ibid., p. 14.
[61] Ibid., p. 14a.
[62] Ibid., p. 15.

the Working Party thought it was time to correct this. In doing so the Working Party was not a lone voice. The National Parks Commission and the Nature Conservancy had recommended to expand the statutory aims in order to enable the Commission 'to take account of the contribution which forestry can make to the conservation of soil, water, protection from exposure and erosion, nature conservation, sport and recreation and the development of a more balanced rural landscape'.[63] However, this argument could not be justified by itself and the Working Party was looking for ways to embed the amenity issue in the wider context of forestry. It did this by connection to the social objectives of forestry in upland areas.

With regard to the remote upland areas, the Working Party was convinced that forestry would be able to stop the declining size of the rural population. They advised that 'great weight must clearly be given to the social factor in determining forestry policy'.[64] These social objectives, such as the provision of rural employment and the creation of new rural communities, especially in the remote parts of Britain, were more or less copied from the 1919 Ackland Report. But the rural population situation in 1958 was different from that in 1919. Contrary to popular belief, census data of the rural parts of Scotland shows that the population declined slowly until World War II. Only in the very remote north did the population decline seriously between 1881 and 1921, but after the Second World War the population in many rural areas of Scotland started to decline rapidly.[65] Contemporary commentators warned that this would leave behind an ageing population, abandoned homesteads and villages, and a decline in the availability of social services such as schools and shops. This in turn would accelerate the drift of people away from the land, and the

[63] Ibid.
[64] Ibid., p. 18.
[65] Flinn, Michael (ed.), *Scottish Population History from the 17th Century to the 1930s* (Cambridge, 1977), pp. 306-307.

countryside would slip into a vicious cycle of depopulation and decline.[66] By the end of the 1950s, there was a much stronger case for promoting forestry in remote rural areas to enhance their economic and social structure than during the previous decades. In fact, it had become one of the main objectives to justify public money spent on forestry. In the process the issues of amenity, recreation and nature conservation became linked to the social issue. Forestry would be able to provide jobs and also maintain a forest resource with a value for wildlife, landscape beauty and nature conservation.

In reaction to the Zuckerman Report and the findings of the Working Party the Minister of Agriculture made a policy statement in July 1958. The Government endorsed a curtailed planting programme. It was also announced that the planting programmes of the Forestry Commission would be fixed for periods of ten years and that the programme would be reviewed every five years, the first review to be conducted in 1963, which was clearly done to keep the Treasury happy. With regards to the private sector the Government moved in the opposite direction of the Working Party. A dedication scheme had been introduced before the war to encourage private landowners to dedicate their land to the production of timber. Under the dedication scheme the Forestry Commission provided subsidies to landowners for creating new production forests The Working Party had advised to abolish the dedication scheme, but instead the Government increased the grants for dedicated woodlands. The system of felling licences continued but a statutory instrument was proposed so that felling in dedicated woodlands no longer required a licence. The abolition of felling quotas made it possible for private landowners to manage their own woodlands with a view to the most economic management of their estates. It was also announced that future planting would be concentrated in the upland areas, particularly in Scotland and Wales, where expansion of

[66] Matthews, J.D., Phillip, M.S., Cumming, D.G., 'Forestry and the Forest Industries'. In : Ashton, J. & Long, W.H. (eds), *The Remoter Rural Areas of Britain* (Edinburgh, 1972), pp. 39-41.

forestry would provide a source of employment.[67] With all this in hand the Forestry Commission had the go-ahead for another five years before its work was scrutinised again.

4.6 The Working Party of 1962

In July 1962 another Working Party, also know as the Dew Committee, was appointed to review the progress made since the Working Party of 1958. The report was finished by the summer of 1963 and confirmed and reinforced the findings of the 1958 government statement. However, there was one serious threat to the survival of the Forestry Commission: the profitability of forestry. The 1962 Working Party believed that the likely return on investment in new planting might be better than previously foreseen. The Working Party estimated that the rate of return could go up to 4.5 or 5%, but that was only half the rate the Treasury preferred.[68] In the years between the Zuckerman report and the second forestry review, the Treasury had put up its borrowing rate considerably. In 1963, the minimum return on any new investment that was applied by the Treasury was between 8 and 10%. The Working Party realised there was a problem and tried to find a way to secure the financial future of the Forestry Commission by continuing to justify any planting programme with social considerations. The 1962 Working Party put even more emphasis on the social aspects than its 1958 predecessor did, however, it was not enough because the Working Party observed that 'planting may, by itself, be adequate to stop or at least retard the depopulation of an area...', but 'the full benefit will result only when wood becomes to be extracted and used in enterprises ranging from small rural industries to large pulp mills ...'.[69] It also added that forestry could stimulate employment less directly through catering for tourists attracted

[67] Forestry Commission, *Annual Report, 1958*, pp. 7-8.
[68] Forestry Policy. Report by a Working Party of officials, July 1963, p. 3, PRO F18/755.
[69] Ibid., p. 4.

by the forests. The Working Party observed with regards to recreation that ' recreational value of the forests is increasing every year'. Between 1951 and 1963 the number of campers on Forestry Commission sites rose five fold to 250,000.[70] Although the Commission had no specific power in the Forestry Acts to spend money on access or recreation they applied a broad interpretation of the 1919 Act to provide recreational facilities such as footpath and car parks. By the early 1960s the Commission declared a policy of the so called 'open forests', which was a deliberate attempt to attract the public. The Working Party supported this development and was of the opinion that the 'commission should now broaden its approach'. They were thinking of providing scenic routes and harmonising buildings and bridges with the landscape. This last aspect was by no means new because it was already done during the 1920s and especially the 1930s in the newly created Forest Parks. Therefore, the Working Party thought that providing recreational facilities 'would cost little money and would not require special legislation'.[71]

With respect to landscape preservation and nature conservation the Working Party thought that the extent of the future planting programme could not be influenced by this factor. It only would become important once the general programme was determined, based on such factors such as checking depopulation and the financial return on investment in forestry. But the Working Party welcomed the proposed employment of a landscape consultant by the Forestry Commission, and recommended in the light of this:

> Ministers should direct the Commission to take public access for recreation and the appearance of the landscape positively into account when they draw up their programme for the planting and acquisition of land.[72]

The Working Party did not think it was necessary to formalise this objective in a new

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[70] Ibid., p. 10.
[71] Ibid., p. 9.
[72] Cabinet Working Party on Forest Policy 1963, draft report, NAS AF79/191

Forestry Act because they believed that there 'is now sufficient awareness of the importance of preserving the landscape to make any special legislation unnecessary'.[73]

The Working Party's findings were presented to the House of Commons on 24 July 1963, exactly five years after the first Government statement on forestry policy. The Minister of Agriculture read another statement to the House in reaction to the working party's findings. It defined forest policy until the early 1970s. The most important feature of the statement was that the Commission's planting programme was determined for a period of ten years between 1964 and 1973. Unlike the programme in the statement of 1958, the planting programme was not meant to fall off towards the end of the period but to increase. Most of this planting was to take place in upland Britain. In saying this the Government once more confirmed the importance of forestry for the rural economy and communities in the upland areas of Scotland and Wales. Secondly, the government and the Forestry Commission were confident that private forestry, with the aid of grants administered by the Commission, would increasingly play a part in the development of forestry.

Thirdly the Commission was encouraged to give more attention to the beauty that well planned forestry can bring to the landscape, and to continue their policy of providing access and recreational facilities. Finally the Government recognised the benefits that an increased home production of wood could bring to the national economy. The mounting supply of raw material from the forests needed the expansion of a timber processing industry, which deserved the support of the Government through the agency of the Forestry Commission.[74]

By 1964 the future of the Forestry Commission depended upon two factors. Firstly the success of reinforcing the rural economy in upland Scotland and Wales, and, secondly, the success of the production and supply of raw materials, i.e. timber, to an emerging domestic

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[73] Ibid.

[74] Forestry Commission, *Annual Report*, 1963, pp. 6-10.

timber industry. The advent of a domestic market for fast produced cheap wood was to change forestry during the 1960s.

4.7 In Search for a New Aim

By the close of the 1950s the Forestry Commission found itself in a reflective mood. In its 1959 *Annual Report* the Commission was redefining its policy objectives. The removal of the strategic underpinning of British forestry policy created a lot of uncertainty among foresters. The question of what the aim of British forestry was had became paramount. For decades foresters were accustomed to the practice of planting trees, growing them and leaving the crop as long as possible in the forests as a timber reserve. They did not bother about the needs of the market, economics or marketing. By the late 1950s foresters were forced to take these things into consideration; it was felt that the former policy was not very economical and locked up an excess of capital in the woods.[75] In 1958 Sir Henry Beresford-Peirse, Deputy Director-General of the Forestry Commission, defended this state of affairs during a meeting of foresters at the Forestry Training Centre at Dartington in Devon. He questioned:

> Whether one could say we were growing conifers badly in the absence of certain knowledge of what we were growing conifers for. In a period of building up stocks, economics tended to be pushed in the background.[76]

However, the findings of the 1958 Working Party had put economics on the centre stage together with the social aspects. The development of a wood-processing industry would meet both the social and economic objectives of the post-1958 forest policy. The wood-processing industry would provide an outlet for forest produce and it also encouraged the planting of

[75] Ryle, G. B., 'New Trends in Silviculture of Conifers', *Scottish Forestry* 15 (1961), p. 72.
[76] Anon., 'How Should We Grow Conifers? Forestry Meeting at Dartington Hall', Devon, June 1958, *Scottish Forestry*, 12 (1958), p. 20.

more trees to secure future supply. The Commission commercialised by applying short rotation species, mechanisation of operations and, in line with the Zuckerman Report and the two working parties, active marketing of forest products to end-users. In this way forests were turned into "wood factories". This mood was reflected at a symposium on natural resources held at the Royal Society of Edinburgh in October 1960, where James Macdonald, Deputy Director General of the Forestry Commission, recognised the need for a domestic wood processing industry to absorb forest products. The Government understood that the Forestry Commission needed an outlet for their products to enable them to make forestry profitable. Although the Government was convinced of the value of forestry for the rural economy in Britain, the Treasury was clearly sceptical about the proposed forestry programme. As discussed before, the return of forestry was about half the rate of return prescribed by the Treasury for the investment of public money. That was why the Forestry Commission wrote a memorandum to the Treasury arguing that forestry could make a profit if two conditions were met: firstly that better soils could be planted to produce quicker and better timber; and secondly, that a domestic wood processing industry would emerge to buy the timber. Growing timber faster would mean that the interest on the investment would be lower and therefore the forestry operation would become more profitable. But the Commission was aware that if this did not work out another justification was needed. It was for this purpose that the memorandum included a statement to justify the non-economic benefits:

> It should be recognised ... that the returns to capital vary widely from one form of public investment to another, and that there is no one rate of interest that can be regarded as the minimum acceptable return from all forms of public expenditure in view of the diversity of non-monetary benefits.[77]

[77] Factors influencing investment in forestry, Memorandum of the Planning & Economics Branch of the FC to the Treasury, September 1964, PRO T224/618.

The statement about the non-monetary benefits was carefully included to act as insurance in case the return would be much lower than predicted. The memorandum was written a year after the Government decided to subsidise the construction of a large paper and pulp mill at Fort William in Scotland and was clearly aimed to keep the Treasury convinced that it was a healthy investment. It worked, and the programme continued and mills were not only built in Scotland but also in other parts of the United Kingdom. In 1967 Thames Board Mills opened a new pulpmill at Workington, in the Lake District, followed by the reopening of a chipboard plant at Thetford, East Anglia, to mention only a few examples.[78] The emergence of a domestic forest product processing industry reinforced the need for single-species planting since manufacturers did not like to vary their chemical formulae, and they needed a cast-iron guarantee of supply.[79] This required a highly rationalised and mechanised forestry practice that would make it possible to grow large quantities of timber in short rotations. The pressures from the Treasury and the wood-processing industry resulted in the intensive planting of monocultures and by the mid-1960s the forest area in Scotland planted by the Commission expanded at a rate of around 30,000 ha per year.[80]

However, the planting by the Forestry Commission was not rapid enough to cater for the future demands from the industry. It did not even reach its planting ceiling of 35,000 ha per annum as set as objective in 1958. Mackay suggested that this was due to the fact that the Forestry Commission needed licences from the Scottish Department of Agriculture to clear any trees and that slowed down harvesting operations considerably. As a result private plantings, which were exempt from the licence system, shot ahead. The growth of private forestry was also stimulated by the increased grants under the dedication and approved

[78] See: Forestry Commission, *Annual Report*, 1964, 1965, 1966, 1967-69.
[79] Mackay, *Scotlands Rural Land Use Agencies*, p. 35.
[80] Forestry Commission, *Annual Report*, 1964, 1965, 1966.

woodlands scheme.[81] Other factors that contributed to the increased planting in the private sector was the fact that the market for mutton collapsed in the 1960s. This resulted in the abandonment or disposal of outlying pasture that could now be used for forestry. Ryle noted that at the same time syndicates of land investors were emerging. These investors were able to acquire large areas in upland Scotland which became available and which were not accessible to the Forestry Commission. A third factor was the generous forestry grants that were available for these private companies for forest expansion.

An additional factor was technical in nature and involved the development of mechanical site preparation and aerial application of fertiliser that made afforestation on the poorest sites possible. Sites could now be adapted to the species, rather than species to the site. Dr Mutch said that this led to an increase in the large-scale use of the fast growing Sitka spruce.[82] In 1961 Ryle noted in an article in *Scottish Forestry* that 'mass production in the factory needs to be fed by raw materials mass produced in the forests'.[83] The silvicultural system that was thought to answer the needs of the market was that of short rotations and an even-aged one-species crop. This silvicultural system was regarded as the easiest to manage, to harvest and to market, and therefore the most economic. Ryle concluded that 'there must be a very sound reason for any divergence from the silvicultural system which will be the cheapest to manage: the selection forest or the forest changing in age or constitution by tiny cellules, though delightful aesthetically and of unending interest to the silviculturist, must be discounted to some extent as a commercial investment'.[84] These developments gave rise to a new type of plantation, with a particularly hard-edged commercial aim at the fastest way to produce cheap timber. This new kind of forestry pushed the practice of ecological forestry

[81] Ibid.
[82] Interview W.E.S. Mutch, August 1998.
[83] Ryle, 'Trends in Silviculture', p. 79.
[84] Ibid.

aside but nevertheless, during the 1960s a rudimentary environmental policy developed within the Forestry Commission.

4.8 Towards an Explicit Environmental Policy

The 1959 *Annual Report* of the Forestry Commission devoted for the first time space to environmental issues. The Commission admitted that its policy had irretrievably ruined many square miles of unspoiled upland by imposing large blocks of commercially managed conifers on land where the semi-natural cover is heather, bracken, moorgrass and scrub. It is interesting to note the perception of this landscape by the Forestry Commission. It was regarded as natural; however, heather, bracken, moorgrass and scrub were the result of a long history of sheep and cattle grazing. The *Annual Report*s agreed that there are some areas where large-scale conifer plantations were not acceptable, although these were, according to the Commission, only exceptional areas. They tried to make single-species conifer plantations acceptable by saying that 'intelligent managed conifer plantations ..., can be a positive enhancement to the scenery as soon as they have passed out of the thicket stage, when no plantation ... is beautiful'.[85] Finally the Commission defended itself against accusations that it had a prejudice against hardwoods and replied that 'where hardwoods will make a worthwhile crop the Commission will continue to plant them'. If conifers would grow better, then they would use these to make 'best use of the land available to them'. [86]

The Commission clearly felt in which direction the tide of forestry was moving and that environmental issues and landscape utilisation were becoming more important. In doing so the Forestry Commission saw hardly any contradiction with its new emerging policy of forest expansion and efficient timber production on a large scale to cater for the wood processing

[85] Forestry Commission, *Annual Report 1959*, p. 8.
[86] Ibid.

industry. It still would provide forests that could be used for recreation and other purposes, which was part of the emergence of forest management for multiple use, as discussed below. The Forestry Commission moved further towards an explicit environmental policy during the early 1960s. Many of these developments were based upon the Forestry Commission's experience with the National Forestry Parks and the problems in the Lake District. In 1963 the first five-year period that had started in 1958 was reviewed. It might be considered a sign of the times that a paragraph in the forestry statement of the Minister of Agriculture was devoted to recreation, and paying attention to the beauty of the landscape.[87] It was for the first time that a Government Minister, and not only a Working Party or the Commission included these themes, recreation and amenity, in a policy statement. The first theme, recreation was one of the discussion topics during a meeting of the Scottish Forest Parks Advisory Committee in December 1963. The Chairman, Lord Waldegrave, referred at this meeting to the Ministers Statement of July 1963 in which it had been stated that the Commission, in preparing its future programmes, 'will bear in mind the need, whenever possible, to provide public access and recreation ...'.[88] In pursuance of this policy the Commissioners were prepared to spend a certain amount of money on the improvement of facilities in the existing Forest Parks. It was also agreed to consider the creation of one or two new forest parks in Scotland in addition to those already in existence. To make these forests more attractive the Commission was aware that it had to make them more acceptable, i.e. less monotonous, for the general public. It was for this purpose that in the *Annual Report* of 1963 the Commission stated that it was 'clearly directed to give more attention to the beauty that well planned forestry can bring to the countryside'.[89]

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[87] Forestry Commission, *Annual Report 1963*, pp. 6-7.
[88] Notes of meeting, 4 December 1963, PRO F18/596.
[89] Ibid., p. 7.

To achieve this goal of integrating forestry with aesthetic considerations and the provision of recreational facilities the commission appointed two landscape consultants. The first to be appointed was Mrs. Betty L.C. Moira, a landscape architect from Edinburgh, to make a plan for the Ben More Forest Park in the Cairngorms. She was appointed in December 1964 and her task was described as follows:

> to investigate and report in the best way to develop the facilities afforded to the public in [the Glen More] Forest Park so as to co-ordinate the demands of the various amenity and holiday bodies into an integrated plan.[90]

That same year Sylvia Crowe, a former president of the institute of Landscape Architects, was appointed to assist the Commission in making their forests as attractive in appearance as possible. For the first time attention to the aesthetic and recreational functions of the forests were as an active part included in the Commission's policy. Crowe's work will be further reviewed in chapter five.

These beginnings developed slowly but steadily during the 1960s. In the *Annual Report* of 1964 nature conservation in the countryside was added to the policy objectives of attention to amenity and recreation. It is no coincidence that during that same year the communal interest in land-use of the Forestry Commission, the National Parks Commission and Nature Conservancy was given special recognition by the institution of quarterly meetings of their chairmen. This initiative was taken to ensure the cohesion between the development of forestry, the preservation of amenity and the conservation of nature. These arrangements had their counterpart in Scotland, where the Chairmen of the Scottish National Committee of the Forestry Commission, the Nature Conservancy and the National Trust for Scotland were engaged in quarterly meetings.[91]

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[90] Letter from R.I. Affleck to D.R. Collinson of the Treasury, considering the appointment of Mrs. Moira,, 18 December 1964, F18/596

[91] Forestry Commission, *Annual Report 1964*, p. 10-11.

In 1965, two years after the official adoption of conservation elements as policy objectives, the Commissioners recognised themselves as custodians of 'magnificent scenery and great variety of wild life'.[92] The Commission recognised the importance of both timber production, conservation and recreation as important functions of its forests when it wrote in reaction to the Government's White Paper on leisure in the countryside:

> While the Commission's primary function is to produce timber to help to meet the steadily increasing demands of industry, there is growing recognition both inside and outside the Commission of the part which the forests can and should play in improving the landscape and in improving opportunities for open-air recreation... .[93]

Amenity and recreation were regarded as closely linked and almost treated as the same problem. This was made possible by the introduction of the concept of the multi-purpose use of forests, which was introduced from the United States in 1950s. In this concept the forests are managed for the protection and use of timber, water and other resources. The forests are managed also to preserve their beauty and attractiveness for recreational purposes, and to maintain a favourable habitat for wild life. All these resources are co-ordinated under management plan known as 'multiple use'. This means that the forest a whole is managed to sustain the production of a variety of products and services as wide ranging as commercial timber production and recreation.[94] The concept of multiple land use fitted perfectly with the Commission's aim of producing timber for a growing wood processing industry. They saw the integration of forestry, recreation, visual amenity and nature conservation as 'a practical demonstration of multiple land use'.[95]

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[92] Forestry Commission, *Annual Report 1965*, p. 10.
[93] Ibid., p. 9.
[94] Memorandum of evidence by the Nature Conservancy, pp. 3-4, PRO F18/617.
[95] Forestry Commission, *Annual Report 1965*, p. 10

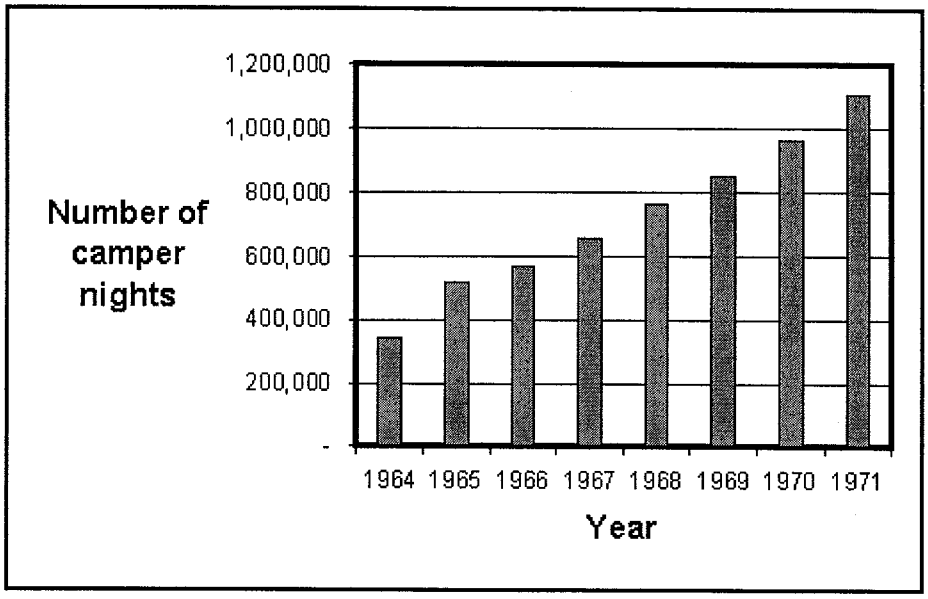

Figure 4.4: Number of camper nights on Forestry Commission campsites, 1964-1971 (Source: *Forestry Commission Annual Reports*)

By 1970, the pressures on the Forestry Commission to formulate a full amenity and recreation policy had become urgent. The public demand for countryside recreation was increasing rapidly (figure 4.4) and made the commission realise that it was in a unique position to meet that demand. As the largest landowner in Britain, the Commission's forests were situated in some of the most scenic parts of the country. The size and the wide distribution of these estates also meant that it had a considerable capacity for absorbing visitors without putting too much pressure on the environment. The increasing pressure for recreation made the Forestry Commission realise that the time had come for a full definition of a recreation policy. In 1969 the Commission established a recreation and conservation branch. A year later the Chairman of the Forestry Commission, Lord Taylor of Gryfe, called a press conference to explain its newly formulated recreation policy. During this press conference the chairman pointed out that it was the Commission's aim 'to develop the unique features and potential of its forests'.[96] He further explained that the Commission was to allow

[96] Forestry Commission, *Annual Report, 1970-71*, p. 40.

the public to enter all its forests on foot without charge. It was also announced that plans were in the making for the expansion of car parks, campsites and other facilities. Finally the Chairman said that special attention would be given to the use of the forests for educational purposes and the study of natural history. Because conservation and recreation were both so strongly regarded as two sides of the same coin, emphasis was to be laid on the protection and preservation of the forest environment and its wildlife. These were some of the most important attractions for visitors so that the Commission could not afford to neglect them.

By the start of the 1970s everything seemed progressing smoothly and forestry had found its new aims: producing commercial timber for a growing domestic wood industry, playing part in sustaining the rural economy and the provision of recreational facilities and the protection of the beauty of the landscape. However, this sense of optimism was soon shattered with another review and the Commission again had to redefine its aims. In June 1972 the Government presented the results of the third review of forestry policy. At the time the Forestry Commissioners welcomed the review and felt it was supportive. In the *Annual Report* of 1972 they concluded that the 'main justification for Forestry Commission planting is to be found in the part which it can play in sustaining the rural economy'.[97] The Report continued with the happy message that the Forestry Commission was encouraged to further increase the acreage of forests and that there should be a 'marked increase on emphasis both on visual amenity and on realising their potential for recreation'.[98] What the Commissioners deliberately left out of their *Annual Report* was the fact that the cost benefit analysis, carried out by economists of the Treasury, concluded that the creation of State forests was simply uneconomic. With regard to the role of forestry in sustaining the rural economy it became clear that the costs of providing jobs in state forestry was very high. If cheaper means of job

[97] Forestry Commission, *Annual Report, 1971-72*, p. 7.
[98] Ibid.

creation could be found, it was felt that resources would be moved away from forestry. It seemed that forestry was facing hard financial times but the Commission was creative and started to search for a new aim for State forestry, which resulted in a remarkable greening of State forestry policy. In the 1971-72 *Annual Report* the Commission showed an acute insight into the nature of their own plantations:

> From the beginning the Commission was automatically oriented towards conifers; and the uplands of Scotland, England and Wales provided the widest and most natural scope for them on a large scale.[99]

This had been done to create a strategic timber reserve as fast as possible. During the 1960s this was no longer necessary and the Commission laid increasing emphasis on the need for the best economic return form taxpayer's money invested in their forest plantations. Broadleaves were attractive trees but were growing too slowly to be of any economic value to the newly emerging wood processing industry. Now that the government had removed the basis for the existence of even the conifer plantations the question of what was left for the Forestry Commission became paramount. The answer to this question was broadleaves. The Commission realised that even an economic or employment function, their forests were still attractive to the rising number of urban dwellers visiting the forests. However, any eventual criticism could no longer be countered by the argument that young commercial plantations are not particularly attractive but necessary for the provision of employment in upland areas. So, British foresters faced the serious task of making their forests more attractive. It was for this reason that the Commission put emphasis on landscape values in a public statement following the Treasury review:

> More recently the Commissioners have, however, recognised that greater emphasis should be given to maintaining the woodland character of the countryside particularly in the south of England. They have recognised that to this end in certain of their woodlands the maintenance of hardwoods, where silviculturally this is possible, is an essential part of the landscape.

[99] Forestry Commission, *Annual Report 1971-72*, p. 10.

> The objective of the Commissioners is to perpetuate by active management the living character of the woodland landscape for future generations to enjoy.[100]

The Forestry Commission 'discovered' broadleaves in 1972 and in doing so they showed themselves to be remarkable enlightened and ahead of their time. However, we must certainly not overrate this development because from the Chairman's statement it is clear that the new broadleaf policy mainly applied to the English countryside. North of the border, the new policy aim was hardly noticeable and the planting of conifers simply continued, especially in the far north of Scotland. It continued because these regions, especially Caithness and Sutherland, were not regarded as important tourist destinations. A second and probably more important reason is that the Forestry Commission had invested in infrastructure to cultivate these areas for forestry and did not want to loose the money invested. The *Annual Report*s of the Forestry Commission showed no slowing down in the planting of conifers during the first half of the 1970s and the number of hectares of broadleaf trees planted is far from impressive. For example, between 1969 and 1975 only 120 hectares were planted with broadleaf trees while 91,120 hectares of conifers were planted during the same period (table 4.1).

Table 4.1: Hectares of conifers and broadleaf trees planted in Scotland, 1969-1975.

	1969-70	1970-71	1971-72	1972-73	1974-75
Conifers	15,566	19,763	19,630	17,739	18,422
Broadleaves	19	15	12	25	49
Total planting	15,585	19,751	19,642	17,764	18,471

(*Source: Forestry Commission Annual Reports*)

Broadleaves are wonderful looking trees but take a very long time to grow before harvested and therefore were not profitable. The Forestry Commission paid lip service to the broadleaves and environmental issues in general, and little value was assigned to the concept in practice. In the *Annual Report* of 1970-71 we can read that the Commission was planting substantial areas with larch and other conifers 'in order to bring a variety of shades of green'

[100] Ibid., p. 11.

to the forests.[101] What was not specified in this *Annual Report* and following reports was the area of 'other conifers' planted and their geographical distribution. We only can speculate why the Commission ceased to publish such details, but it was probably because the proportion of Sitka spruce was embarrassingly high in comparison with other species, especially broadleaves. Although the Countryside Acts of 1967 and 1968 conferred new powers with regard to recreation and conservation on the Forestry Commission, no new resources were assigned to the Commission to implement them.

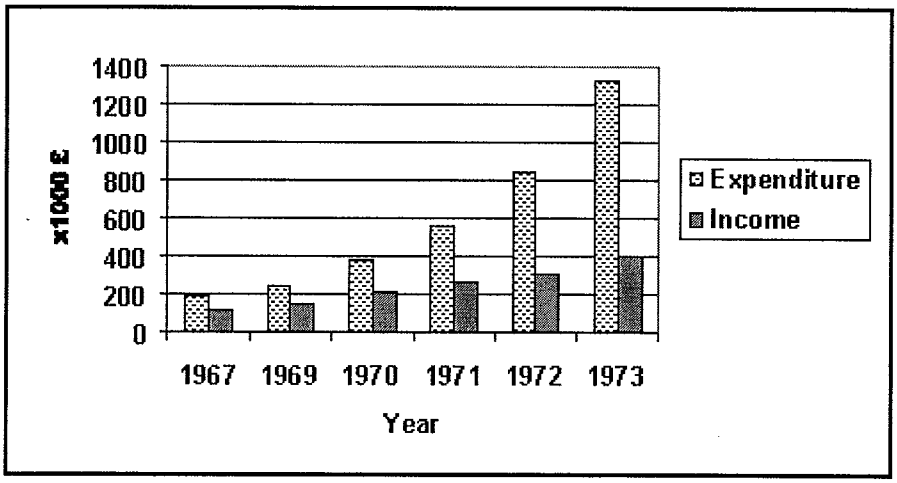

Figure 4.5: Expenditure and income for recreational facilities, 1967-1973. (*Source: Forestry Commission Annual Report, 1972-73*).

A glance at the expenditure and income for recreational facilities explains why the Forestry Commission was more interested in conifer plantations that could possibly make a profit in the long run than plunging whole heartedly into a policy with an emphasis on recreation and conservation. Between 1967 and 1973 the money spend on recreational facilities rose more than five times from about £200,000 to over £1,200,000 while income rose only to about £400,000 (figure 4.5). Providing recreational facilities did not pay for itself and certainly not for a conservation scheme. This was policy because a taxpayer was granted access to visit the forests they had paid for. This harsh reality created a policy with

[101] Forestry Commission, *Annual Report 1970-71*, p. 11.

double standards. On the one hand the Forestry Commission adapted, under public pressure, a new management policy for the New Forest in Hampshire, in which a priority was given to conservation of 'the ancient and ornamental woodlands ... without regard to timber production objectives'.[102] On the other hand planting of conifers was going strongly ahead on the 'bare grounds' of the Scottish uplands without much consideration for the visible impact on the landscape. The intention to make State forestry 'greener' was established in the Forestry Commission by the early years of the 1970s, but it took another 15 years before the pendulum of policy making really swung towards the conservation side of forestry, and suggests that the Forestry Commission was under pressure to make profit during the 1970s and 1980s.

4.9 Summary

The objectives of the initial forestry policy of the Forestry Commission were based on the economic and social aspects of forestry. The economic aspects were reflected in the desire to create a timber reserve against any emergency, both in times of war and peace. This was to decrease British dependence on timber imports and to create a sustainable resource at home. There were also strategic considerations involved because timber was an important raw material in times of war. A second economic aim was the desire to make better use of uncultivated land and extensively used poor pasture. This was linked to the social objective of the initial forestry policy, which was aimed at countering the depopulation of rural areas by providing jobs in forestry. To meet these objectives the Commission embarked upon a massive planting programme.

This policy and its objectives remained the pillars under British forestry policy until about 1958. The forestry practice associated with this policy was that of monocultural high

[102] Ibid., p. 9.

forestry managed by a clearfelling system. Aesthetic considerations and the conservation of wild plants and animals as part of the ecological aspects were not included in the initial policy of the Forestry Commission. It was simply not regarded as important because the Forestry Commission was not set up as a conservation organisation but as a Government agency with the task to produce timber. However, as time progressed nature conservation and aesthetics were included in forest policy as a result of the nature of forestry. Forestry transforms entire landscapes both visible and ecological. It was especially the visible impact that initially attracted most interest and debate, although not in Scotland.

During the first 20 years of the Forestry Commission, the number of visitors to the areas that were designated for afforestation increased. It was mainly in the Lake District that visitors to forest areas started to resist the plantations of the Forestry Commission because of what they regarded as landscape spoliation. After a well organised campaign by the Association for the Protection of Rural England and the Friends of the Lake District, the Forestry Commission realised that it was better to co-operate with them than to resist. As a result of this the Commission agreed to leave the heart of the Lake District unplanted. The result of the Lake District conflict became visible north of the Border with the creation of the first National Forestry Park in Argyll. It was then that the aesthetic aspect was introduced as an unofficial part of the forestry policy and the starting point of the development towards a modern environmental policy.

The experience of the heavy felling that occurred during the Second World War resulted in a white paper on forest policy that advised the Government to increase the area of forest plantations considerable after the war was over. In 1945 the new Forestry Act directed the Forestry Commission to carry out an ambitious planting programme. Until 1958 the objectives of the creation and maintenance of an adequate reserve of standing timber and the

provision of stable rural communities remained in place. Then in 1957 first the Zuckerman Report, followed by the Working Party reviewing forestry policy, removed the basis of the existing forestry policy. As a result of these reviews British forestry was forced in two directions. On the one hand forestry had to become more commercial to produce 'customised' timber for the new emerging timber industry. On the other hand forestry became concerned with conservation issues. The introduction of conservation issues was driven by two developments. The first of these was the fact that the numbers of people using the countryside for recreation increased rapidly by the early 1960s. These people demanded more regard for amenity, recreation and nature conservation. The second development was that land use agencies such as the Countryside Commission and the Nature Conservancy Council became more critical about the environmental implications of forestry operations.

To handle these developments the Forestry Commission introduced in the 1960s the concept of multi-purpose land use to combine commercial pressures with recreational demands and the interests of other land managing organisations and farming. This resulted in a hybrid policy with two branches of which the first was concerned with expansion of the forest area for commercial reasons. The second branch was concerned with environmental issues including amenity, recreation and nature conservation and it was here that the Forestry Commission for the first time fully included the components of ecology and aesthetics in its policy.

The reality was that the commercial side of the new forestry policy overshadowed the environmental aspects. Little economic value was assigned to environmental issues. Hoiwever, this all changed in the light of a cost/benefit analysis of forestry made by the Government in 1972. The Treasury assessment showed that forestry was uneconomic and would never pay for itself. Again the Forestry Commission redefined its objectives which

resulted, at least on paper, in a remarkable 'greening' of forest policy. The new objectives included, apart from making profit, regard for broadleaves and recreation. It was all meant to please both the Treasury, by including economic objectives, and the general public by emphasising the importance for the forests of recreation and nature conservation. By 1973 the Forestry Commission had a recreational policy with a conservation edge in place. Conservation and recreation were not regarded as incompatible with each other or the commercial objectives of the Commission. Recreation and nature conservation were part of a general utilitarian philosophy of the forests that was coined 'multi-purpose use'. However, the implications of this new philosophy for Scotland must not be over-estimated because large-scale conifer planting continued in Scotland and was regarded as economically viable. This was contrary to the forestry reviews, which pressed for a combination of nature conservation, recreation and timber production. The Commission had difficulties to adapt to this model of multi-purpose forestry because of the infrastructure that was in place and the way the Commission was organised. It is tempting to condemn the Commission for being environmentally unfriendly, but we must keep in mind that the concept of nature conservation for its own sake had not yet arrived even though the Commission had recognised the need for the preservation of broadleaves in the landscape and the conservation of wildlife by 1973. The concepts for the environmental forestry policy as it finally developed from the mid-1980s were already in place by the early years of the 1970s.

5. The Intellectual Framework of Forestry

5.1 Introduction

According to most foresters a more diverse forest can withstand problems such as wind and disease better than a monoculture. Looking from a forester's point of view a mixed forest that is given time to develop is in fact a better forest because it will produce quality timber and is sustainable. If it incidentally also produces wildlife it is regarded as a bonus.[1] This is the hybrid view that we find among many foresters: the economic side is closely linked with biological and conservation considerations. Which of the two is more important depends on the social, political and economic situation of a particular period. It also depends to a large extent on the way foresters are educated and how ideas about forestry practice and the place of forestry in the wider environment changed.

This chapter aims to unearth the origins of modern forestry and its hybrid character. It will discuss how British, including Scottish, forestry was based on scientific principles developed to counter the negative effects of deforestation in continental Europe. The chapter will then trace how the continental forestry science travelled to India where it was amalgamated with conservation ideas that had developed in the colonial context before this was transported to Scotland. The mindset of foresters in Scotland was to a great degree defined by this imported forestry practice and it was disseminated through the forestry education system that developed in Scotland.

The second part of the chapter will examine the development of forestry education in Scotland from the Victorian period through the 1970s. Forestry was for most of the 20th century provided at two levels: university level and below. The latter was initially taught in courses run by different societies and later in the forester training schools of the Forestry Commission. The curriculum of both the universities and forester training schools will be

[1] Personal comment Jim Atterson, Interview 13 August, 1999.

analysed in order to establish the hybrid character of it and which of the two sides of the forestry coin, economics or conservation, were the more important.

The activities of the universities did not stop with the provision of forestry courses. Universities are also breeding ponds for new ideas and often harbour some of the most creative minds in forestry. The third part of the chapter sets out to analyse the ideas of three 'intellectual giants' who worked at the universities during the 1950s: the professors Anderson, Steven and Hiley. The ideas of the first two men focussed on ecology and ancient pine woods and not so much on the development of a new field in forestry: economics. Forestry economics was being developed in Oxford by W.E. Hiley during the 1930s and was to become highly influential in the Forestry Commission after the Second World War. These forestry researchers and thinkers helped to shape the development of forestry during the latter half of the 20th century. They were not the only people contributing to new ideas in forestry because the Forestry Commission itself played an important role in developing new insights. By the beginning of the 1960s the Commission employed a landscape architect in order to develop guidelines and practices to fit forest plantations better into the landscape. The ideas of this landscape architect, Ms. Sylvia Crowe, will be discussed in the final section. Although her ideas did not develop in an educational context, she educated the Commission's foresters in the principles of landscape design and aesthetics. It added another piece to the puzzle of the modern intellectual framework in which foresters work.

5.2 The Indian Connection

A dominant source that influenced forestry practice in Scotland, and Great Britain in general, can be found in the colonial context and continental Europe. From the mid 18th century theories about deforestation and climate change and desiccation developed. Botanists and other scientists in the service of the East Indian Company and later the Colonial Governments noticed the combined impact of Imperialism and local overexploitations of the forests on the

landscapes of many tropical islands and India. The most important impact they observed was the disappearance of forest vegetation cover. They thought that deforestation influenced local and world-wide climates. It was feared that the disappearance of forest cover contributed to a temperature rise, a drying up of the world's land surface and a less humid atmosphere. It was believed that this process of desiccation was leading to desertification and degradation of soils. It was also thought that deforestation contributed to the extinction of species. This fear was fuelled by the publication of Charles Darwin's *The Origin of Species* in 1859.[2] But there was also another fear. In 1874, in an address to the Royal Scottish Arboricultural Society, Hugh Cleghorn, the first Conservator of Forests in Madras, said that 'the government in India began to be seriously embarrassed by the scarcity of timber; its attention was directed to the management of the indigenous forests'.[3] There was a fear of a serious timber shortage in the near future. This all resulted in the feeling that something had to be done to preserve the forests. According to Mackenzie, Scottish botanists such as Hugh Cleghhorn, Alexander Gibson and others pressed for the foundation of forest policies in India during the 1850s.[4] They did this not without success and in 1864 the Indian Forestry Service was established, more than 50 years before a state forestry agency came into being in Britain. Cleghorn was made the first Inspector General of Forests of the new forestry service.

However, Cleghorn had to share his post with the German forester and botanist Dietrich Brandis, who had been a lecturer in botany at the University of Bonn before he was employed by the Indian Colonial Government to manage the forests in India in 1856. The Government was so impressed by his work that he was made Inspector General of Forests alongside Cleghorn. It was Brandis who organised the recruitment and training of new foresters.[5] The

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[2] Grove, Richard H., 'The Evolution of the Colonial Discourse on Deforestation and Climate Change, 1500-1940', in: *Ecology, Climate and Empire. Colonialism and Global Environmental History*, 1400-1940 (Cambridge, 1997), pp. 5, 11-20.

[3] Cleghorn, H., 'Address Delivered at the Twenty-first Annual Meeting', *Transactions of the Royal Scottish Forestry Society*, 7 (1875), p. 206.

[4] MacKenzie, John M., *Empires of Nature and the Nature of Empires* (East Linton, 1997), p. 70.

[5] Hartig Stiftung, *Biographien Beduetender Hessischer Forstleute* (Wiesbaden, 1990), p. 633.

staff of the Indian Forest Service was first composed of selected civil or military officers who were thought to 'possess a natural aptitude to the work' in the forests.[6] Their task consisted mainly of acquiring control over the forests and preventing unauthorised felling by the local population. However, it was felt that the training of these people was not sufficient and that something had to be done to turn them into proper foresters. Because a forestry school did not exist in India the expertise was simply lacking, arrangements were made with the Imperial Forestry School at Nancy in France and with forestry schools in Germany. In 1867 the first students from India were sent to Germany and France, but after 1871 no more students were sent to Germany because it was felt more convenient to concentrate all instruction in France because this was cheaper.[7] Foresters were exposed to French ideas of forest conservation at the forestry school in Nancy, which had served as a centre of environmental ideas and training since its establishment in 1824. At Nancy the experience of foresters and botanists at home and in the colonies had merged into a forestry tradition that Grove typified as 'anti-desiccation forestry'.[8] Anti-desiccation forestry was meant to counter the negative effects of deforestation. Robert E. Brown summarised the aim of this kind of forestry during a meeting of the Highland and Agricultural Society in 1870 as follows:

> Estates would be greatly improved by having large masses of wood planted upon them, which would tend to increase the temperature of the climate in winter, and assist greatly in retaining moisture on the properties in the summer season, and generally equalising the climate.[9]

Apart from the desiccation problem, the French forestry school was also concerned with the problems of conversion of coppices and uneven aged mixed stands into high forests. The conversion of coppices and mixed stands conflicted with the interests of the water and forest authorities and the charcoal industry. This produced a lot of debate and, in the end, a

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[6] Bailey, F., 'The Indian Forest School', *Transactions of the Royal Scottish Arboricultural Society*, 11(1887), p.155.
[7] Ibid., pp. 155-156.
[8] Grove, 'Evolution of Colonial Discourse', p. 30.
[9] Brown, Robert E., 'On the Formation and Management of Young Plantations', *Transactions of the Highland and Agriculture Society of Scotland*, 5 (1870), p. 106.

moderately conservative silvicultural practice in which coppices and mixed stands were kept in place. In doing so, French forestry was characterised by a flexible approach with attention for broadleaves, coppices, and mixed stands, and by the natural evolution of forests including natural regeneration.[10] At the same time forest plantations managed on scientific principles were also planted.

Although many foresters in the Colonial Service were trained in France, the Germans had an impact on forestry practice in India that was much more direct. As already mentioned in chapter three, German foresters were employed in the highest echelons of the Indian Forest Service. In fact, the first three Inspectors General of the Indian Forests between 1864 and 1900 were all Germans, as were many of the high ranking officers.[11] It was the first Inspector General, Brandis, who had recruited senior forest officers from Germany to build up the Indian Forest Service. One of them, William Schlich, was to become the founder of forest science in Great Britain. In 1881 Schlich succeeded Brandis as Inspector General of Forests in India, a post he held for six years before going to Britain to found the Forest School at Coopers Hill in Surrey, and later became the first lecturer in Forestry at Oxford. Berthold Ribbentrop, another German forester who was originally recruited by Brandis, succeeded Schlich.[12]

These men and other foresters brought the expertise of German forestry techniques with them. Ciancio and Nocentini characterised German forestry as 'bookkeeperish'. According to these authors the German forestry school was based on a set of rigid rules, which in turn were derived from tables called felling keys, which schematised cutting arrangements to produce artificial, contrived pure forests.[13] Gerber summarised this forestry practice as 'based on

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[10] Ciancio, O. & Nocentini, S., 'The Forest and Man: The Evolution of Forestry Thought From Modern Humanism to the Culture of Complexity. Systemic Silviculture and Management on Natural Bases', in: Ciancio, O. (ed.) , *The Forest and Man* (Florence, 1997), pp. 43-46.

[11] Brandis, Dietrich, 'The Proposed School of Forestry', *Transactions of the Royal Scottish Arboricultural Society*, 12 (1890), p. 73.

[12] Hartig Stiftung, *Beduetender Hessischer Forstleute*, pp. 633, 637-639.

[13] Ciancio & Nocentini, 'The Forest and Man', pp. 42-43.

even-aged, monocultural, high forest plantations, managed by a clear felling system'.[14] But this is only part of the picture of German forestry practice. The forest produced by the system described above is called a 'normal forest', which was described by Edlin as a forest 'so planned that it will yield timber for ever without diminishing in value'. He continued to say that the aim of normal forestry is the 'continuing profitable growth of timber in perpetuity'.[15] It is surprising how close this aim is to the modern notion of sustainable forestry, but it was first drawn up during the 19th century. In 1877, at a meeting of the Royal Scottish Arboricultural Society, the Scottish botanist John Croumbie Brown said that the aim of German forestry practice was 'to secure simultaneously ... a sustained production of wood and timber, a progressive amelioration of the state of the forests and a natural reproduction of these by self-sown seed'.[16] This forestry practice is more related to the French forestry school than is suggested in the description of German forestry practices by Ciancio and Nocentini. The closeness of the French and German forestry schools is also suggested by the fact that Brandis was concerned with the negative effects of deforestation. With regard to this problem he told the audience at the annual meeting of the Royal Arboricultural Society in July 1887 that the aim of foresters in the Indian Forestry Service was:

> ... the provision of a lasting and, if possible, steadily increasing supply of timber, wood, bark and other forest produce as the aim and object of forest management, and, in addition, we hoped that by improving the forests on the hills the water supply for irrigation would be better regulated, that inundation and the silting up of rivers would be diminished.[17]

Here we see Brandis, educated as a German forester, advocating forestry as a means to counter the negative effects of desiccation and climate change. If this is typical for the German school, and that is very likely, we might call it also anti-desiccation forestry. But we must be careful drawing conclusions because Brandis was exposed to the Indian context.

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[14] Gerber, *The Construction of Nature*, p. 124.
[15] Edlin, H.L., *Forestry and Woodland Life* (London, 1947), p. 164.
[16] Brown, J. Croumbie, 'On Forest Schools', *Transactions of the Royal Scottish Arboricultural Society*, 8 (1878), p. 226.
[17] Brandis, 'Proposed Forestry School', pp. 73-74.

After his service in India he returned to Bonn in Germany to work at the Imperial Forestry Institute.

The question is how different the French and German forestry traditions were. According to Grove, the employment of both French and German foresters resulted in an inter-mixing of the two traditions in the British colonial context.[18] However, it is interesting to note that it was in India that a forest policy influenced by commercial imperatives was adopted after the establishment of the Indian Forestry Service. This led to the preference for fast growing tree species and the German practices of high forests.[19] It is very tempting to see the German school as less 'environmentally sensitive' than the French school but both schools had much in common. Both traditions were born out of concern of a looming timber shortage and climatic change, species extinction and desiccation of the continents as a result of deforestation caused by intensive logging of the natural forests. It is probably better to speak of a continental tradition than of two separate German and French traditions. Some methods differed but the aims were the same, including the aim to obtain a high profit from the forests and to counter the negative effects of deforestation and landscapes devoid of tree cover, which was called the protective aspect of forestry. High forests were regarded as the most sustainable forestry method as they included both the economic and protective aims.

The connection between Indian forestry and forestry in Scotland is not hard to trace. In Britain a forestry section was established at the School of Military Engineering at Cooper's Hill, Surrey, which was first headed by the famous William Schlich, the second Inspector of Forests in India. Schlich later moved to Oxford to become director of the Oxford Forestry Institute at the University. He published a five-volume handbook, *Schlich's Manual of Forestry*, which was highly influential. Schlich's manual was used as a textbook at the universities of Aberdeen and Edinburgh until the 1930s. However, Scottish botanists and

[18] Grove, 'Evolution of Colonial Discourse', p. 31
[19] MacKenzie, *Empires of Nature*, p. 71.

foresters who had served in the Colonies also introduced forestry theory and practice. A good example is John Croumbie Brown, who came back to Scotland after the post of Botanist at the Cape Colony was abolished in 1866. When back in Scotland he published a series of books and wrote articles to promote forestry and made propaganda for the establishment of a forestry school in Britain. In April 1877 he addressed the Town Council of Edinburgh and the board of the Royal Arboricultural Society, advocating the establishment of a forestry school and arboretum in Edinburgh. The arboretum was established later that year with the purchase of the estate of Inverleith for this purpose.[20]

Another prominent botanist, whom we have encountered before, was Hugh Cleghorn, who was elected as president of the Royal Scottish Forestry Society in 1874. He delivered several speeches on forestry in India and Scotland to the general meetings of the Society between 1869 and 1880. Another example was Colonel F. Bailey, the first director of the Indian Forestry School in Dehra Dún. In 1885 he presented a paper at a meeting of the British Association on the Indian Forestry School, which was published in the *Proceedings of the Royal Scottish Arboricultural Society.*

The list of Indian forestry celebrities visiting the Royal Scottish Aboricultural Society is not complete without Dietrich Brandis. In 1887 he delivered a paper to the general meeting of the Arboricultural Society in which he explored the possibilities for a Scottish forestry school. In these public appearances, Brandis, Brown and others left an lasting influence on Scottish forestry by introducing ideas of the maximisation of soil rent, high forestry and environmentally sensitive forestry connected with desiccation theories. Together these themes formed what Brown called 'scientific forestry' in his paper on forestry schools.[21] The efforts of these men, who came back from India to convince landowners and the government

[20] Anderson, M.L., 'Forestry Education in Scotland, 1854 - 1953', *Scottish Forestry* 8 (1954), p. 116; Brown, J. Croumbie, *Introduction to the Study of Modern Forest Economy* (Edinburgh, 1884), pp. iii-iv.
[21] Brown, 'On Forest Schools', p. 225.

alike that the only way to introduce new forestry science in Scotland through a system of forestry schools was not in vain. In the decades that followed two university courses were established together with a forestry school for working foresters.

5.3 The Beginnings of Forestry Education in Scotland

For most of the 19th century foresters were trained through an apprenticeship system where young men worked for several years under a senior forester from whom they learned the practices concerned with managing a forest, or more generally an entire estate. This system had provided the estates with sufficient trained men since the 18th century. They were capable of managing the existing amenity woodlands and forest plantations but not modern production forests.[22] By the middle of the 19th century forestry had started to change and landowners and organisations such as the Scottish Arboricultural Society started to argue that there should be a more formally organised education system. In 1870 the Marquis of Tweeddale, president of the Highland and Agricultural Society, wrote to the Government that 'the organisation of forest education in Britain is a matter of great importance to this country'.[23] New forests had to be planted to counter the possible negative effects of a timber shortage and erosion and therefore extra foresters were needed. Education was also important for the dissemination of the French and German forestry practices that had merged in the colonial context.

However, the Society did not wait until the government undertook action to organise a more formal system of forestry education. In 1870 it instituted its examinations for first and second class certificates in forestry. These examinations were run under the auspices of the Highland and Agricultural Society until 1935, and then continued by the Royal Scottish Forestry Society as the Junior and Senior Certificates in Forestry. The certificate

[22] Anderson, *History of Scottish Forestry, Vol. 2*, p. 411.
[23] Quoted in: Anderson, 'Forestry Education', p. 115.

examinations were finally terminated in the 1970s. The junior certificates were aimed at young people who wished to make their career in forestry and to be skilled forest workers. The examinations for the First Class Certificates were designed to produce highly skilled men able to become foremen and head foresters on private estates. The Junior Certificates were mainly practical examinations, whereas the First Class Certificate examinations were much more theoretical (five written papers over three days in the 1950s).[24] For 22 years the certificate exams were the only official examinations for working foresters. In 1892 a special course for forest workers was established at the Royal Botanical Gardens in Edinburgh. In the years that followed, the three Scottish Agricultural Colleges in Glasgow, Edinburgh and Aberdeen introduced both evening and day courses in forestry. These courses ceased after 1918 because the Scottish Education Department stopped financing them, foreshadowing the forestry act of 1919, which conferred powers on the Forestry Commission to provide education at levels below the universities.[25] The Education Department stopped financing the courses because the Forestry Act of 1919 conferred powers to the Forestry Commission to provide forestry education.

5.4 The Forester Training Schools

The Forestry Act of 1919 gave the Forestry Commission the authority to 'promote and develop instruction and training in forestry by establishing or aiding schools or other educational institutions or in such other manner they think fit'.[26] But the first few years the Forestry Commissioners were fully occupied with their main task of establishing the Commission and starting planting. As long as forest officers and workers were available there was no need to concern themselves with the establishment of training facilities or schools.[27]

[24] Written comment Mr J. Keenlyside.
[25] Anderson, 'Forestry Education', pp. 118-121.
[26] Forestry Act 1919, section 3 (1) (g).
[27] Anderson, 'Forestry Education', p. 123.

Forest officers were recruited from the universities and the Colonial service, and forest workers from two forestry schools at the Forest of Dean in England and at Birnam, near Dunkeld in Perthshire. The latter was a temporary school for disabled ex-servicemen established by the Scottish Board of Agriculture in 1918. During the same year the Education Committee of the Royal Scottish Arboricultural Society urged for the establishment of permanent forestry schools. The committee was also of opinion that 'the [Birnam] scheme should be extended so that a larger number of trained men be made available for carrying out schemes of afforestation'. Therefore the Committee regretted 'that there was no intention at the Birnam school to train young men who were apprentice foresters on equal terms with' the disabled soldiers.[28] The Forestry Commission soon corrected this when it took over of the forestry school in the Forest of Dean in 1919, and in the same year the Commission also became responsible for the Birnam school and closed it in 1921.

One year earlier in July 1920, the first Scottish forestry training school of the Forestry Commission was opened on the Beaufort estate near Beauly, Inverness-shire, which was owned by the Lovat family. It was Lovat, the first chairman of the Forestry Commission, who provided the facilities for this school, and where he and his father and grandfather had experimented with 'reproducing forests by natural means'. This probably influenced the students educated at the Beaufort estate. In 1892 Nairn already commented on the Beauly estate that:

> the Lovat estate has been greatly augmented by planting, while the natural pine woods have been rendered more productive and valuable by the scientific practice of regeneration by natural sowing, a system carried out in the great forests of Europe, India and the Colonies. For this reason the Beaufort woods possess a unique interest to the student in forestry.[29]

It is not known what made the Commission decide to establish its first school on the Beaufort

[28] Anon., 'Discussion on Forestry Administration and Forestry Education at the General Meeting Held on 3rd July 1918', *Transactions of the Royal Scottish Arboricultural Society*, 33 (1919), p. 13.
[29] Nairn, 'Notes on Highland Woods', p. 202.

Estate, but this argument might have been a decisive one, although it is more likely that the Beaufort Estate was chosen for the simple fact that Lovat was the First Chairman of the Commission and that the facilities already existed.

Robinson, who was to become the fourth chairman of the Forestry Commission, in a paper delivered to the Inverness Scientific Society in 1929, gave a detailed description of the Beaufort forestry training school. The staff consisted of two men: an instructor-in-charge, and one forester. The course extended over a two-year period and was aimed at foresters with some practical experience. There was no entrance examination; instead admission was obtained by applying directly to the Forestry Commissioners. The men in training at the school received free quarters, board, stationary and tuition. Attached to the school was a 5½ acres forest nursery that was used for practical training and the woods belonging to the Beaufort estate were also used for that purpose. The course included also theoretical instruction. The Forestry Commission Headquarters in London prescribed the content of this theoretical instruction. The subjects included physics, chemistry, botany, silviculture, and forest protection.[30] In the first issue of the *Journal of the Forestry Commission* Fraser Story, first instructor at the Beaufort forester school, wrote a detailed account on the syllabus of the Commission's Forester Schools.[31] Students were instructed in the basic principles of silviculture including such matters as climate and soils in relation to tree growth, the composition of woods, thinning operations and the silvicultural characteristics of trees. Students also had practical instruction in all kinds of forestry operations such as preparation of planting ground, fencing, nursery work, planting, tending (weeding, pruning etc.), felling and engineering. Most of these skills clearly dealt with the establishment of forests, but after planting, forests must be tended to make sure they will produce good timber. Therefore

[30] Robinson, R. L., 'The development of State Afforestation in the Highlands', *Transactions of the Inverness Scientific Society and Field Club*, 9 (1918 to 1925), pp. 327-328.
[31] Story, Fraser, 'Foresters' Schools', *Journal of the Forestry Commission*, 1 (1922) 8-9.

instruction in pathology and mycology was given to instruct students how to prevent the forests from damage caused by insects, fungus and diseases. Protection of the forests against frost, drought, fire etc. was also an integral part of the syllabus. The economic side of forestry was covered by instruction in the practical skills of tree measurement and valuation. Calculation of the costs of various forest operations was also part of the course. A revised syllabus at the Benmore Forester School later replaced this syllabus but the basics remained the same throughout the 1930s.[32]

The Beauly school was closed in 1929. During that same year the Forestry Commission opened a permanent Forester Training school at Benmore near Dunoon in Argyll. John Keenleyside, a retired forester, pointed out that the school at Benmore had its nursery alongside and maintained close links with the Botanical Gardens in Edinburgh.[33] The school was not very different from the first school at the Beaufort estate. The Benmore school provided two-year courses for young men who had spent at least one year in the forests as apprentices. After passing a simple entrance exam, the students underwent an intensive practical and classroom course. About two-thirds of the time was devoted to practical work and the rest to theoretical instruction. Students who successfully passed the examinations received a certificate and most of them returned to service in the Forestry Commission.[34] Dallimore, presumably a forester, gives a detailed account of the syllabus that was used at the Benmore School during the 1930s. He distinguished four areas in the curriculum. He called the first areas 'special subjects', which included subjects such as botany and plant physiology, ecology and genetics, entomology and mycology, and meteorology. He related the second group of topics to the social functions of forestry, which included amenity, protection of soils from erosion and forestry law. Dallimore labelled the third group of

[32] Ibid.
[33] Personal comment by John Keenleyside.
[34] Ryle, G.B., *Forest Service*, p. 256.

subjects as economic-related topics including surveying, yield calculations, timber measuring, finance and sales. The fourth and final area he distinguished was that of forest engineering which included road construction, protection of unstable land and water control.[35] It may be observed that 'special subjects' can be summarised as 'biological-related topics'.

It seems that the establishment of the forestry schools between 1920 and 1930 was no accident. During the same decade the Forestry Commission began its planting effort and the Commission needed skilled forest workers to carry out the intensive afforestation programme. The syllabus of the Forester Training Schools was designed to meet the needs of the Forestry Commission and in this respect Rouse, wrote: 'that it was therefore natural that attention in the school instruction should be focused on technical skill in fencing, draining, planting and the establishment of new plantations'.[36] But the syllabus had a wider content than this, and also provided for the tending and managing of established forests and the economic and institutional side of forestry. And last, but not least, it was concerned with environmentally topics such as meteorology, ecology, amenity, and protection of soils from erosion and plant physiology.

The syllabus of the Forester Training Schools is summarised in table 5.1. The table is based on the curricula as described by Fraser Story and Dallimore. With his classification Dallimore recognised four areas of interest. This is more sophisticated than the dual division we observe in Schlich's *Manual of Forestry*, which will be discussed below. Although we can make a distinction between economic and environmentally sensitive related topics, it must be realised that the distinction is not clear-cut. Biological topics with environmentally sensitive aspects were contributing to the economic viability of the forests. A biological healthy forest that is more diverse is likely to produce more and better timber than a forest

[35] Dallimore, W., 'Training in Forestry and Arboriculture', *Quarterly Journal of Forestry*, 30 (1936), p. 37.
[36] Rouse, G.D., 'Forestry Education in Scotland', *Scottish Forestry*, 10 (1956), p. 161.

where the biological aspects are not taken into consideration. In fact it is impossible to separate the two, and for this reason both economic and biological subjects dominated the curriculum of the Forester Training Schools.

Table 5.1: Curriculum of the Forester Training Schools in the inter-war period.

	Fraser Story, 1922	Dallimore, 1936	Combination syllabi Story & Dallimore , 1920-1940
Biological-related	▪ Meteorology ▪ Soil ▪ Composition of woods ▪ Forest protection (mycology, pathology) ▪ Nursery	▪ Meteorology ▪ Botany ▪ Forest protection	▪ Meteorology ▪ Botany ▪ Forest protection ▪ Nursery ▪ Woodland composition
Social conditions		▪ Amenity and ornamental planting ▪ Protection against erosion ▪ Forest law	▪ Amenity and ornamental planting ▪ Protection against erosion ▪ Forest law
Economic-related	▪ Measuring and valuation ▪ Surveying ▪ Thinning	▪ Yield calculations ▪ Surveying ▪ Finance and sales	▪ Measuring and valuation ▪ Surveying ▪ Thinning ▪ Finance and sales
Engineering	▪ Ground preparation ▪ Planting ▪ Fencing ▪ Felling	▪ Water control ▪ Road making	▪ Ground preparation ▪ Planting ▪ Fencing ▪ Felling ▪ Road making ▪ Water control

5.5 Forester Training Schools in the Post-war Years

At the outbreak of war in September 1939, it was decided to discontinue training at the Forester Training Schools, but in 1941 the schools were reopened and the Scottish School at Benmore continued to function throughout the war. In 1943 a *White Paper on Post-war Forest Policy* envisaged the need for additional training schools to provide extra foresters for the expected increase in reafforestation after the war. As soon as the war ended three additional schools, Lyndford Hall near Thetford, Glentress in Scotland and Gwydyr in Wales were opened to bring the total of Forester Training schools to five. In Scotland an old wartime camp was converted into a school at Glentress Forest in Peebleshire. This school functioned only for seven years, until 1953, before the school was transferred to Faskally.[37]

[37] Anderson, 'Forestry Education', p. 125; Forestry Commission, *Annual Report, 1949*, p. 75.

From the end of the Second World War to about 1963 the curriculum was based on the same subjects as before the war.

In the early 1950s the Royal Forestry Society in England and the Royal Scottish Forestry Society established the National Diploma in Forestry. Although the diploma had a central examination board both societies continued to award their own certificates. The course was aimed at forester and woodman level and the first successful candidates received their certificates in 1953. The Forestry Commission said that they would recognise the National Diploma in Forestry, but according to John Keenleyside, who took the exam and worked as a forester for the Forestry Commission, there was not much evidence that it led to rapid promotion as few of the Commission's foresters actually studied for it. At the least, the Commission was generous in the way they treated candidates who were studying for the diploma.[38]

The literature list of the National Diploma of Forestry of the mid-1950s showed a wide diversity in titles and content. Publications of representatives of the different silvicultural schools, such as Anderson, R.S. Troup, Hiley[39] and Edlin, were included in the literature list.[40] The syllabus and literature list does not indicate the changes in forestry that took place during the 1950s. These changes will be discussed in the next chapter.

From 1963 to1964 the Education Branch of the Forestry Commission carried out a comprehensive review of the courses at the Forestry Training Schools. The aim was to make training better reflect the changes that were taking place in forestry. The establishment of new forests remained an important part of the training programme but the management of production operations was added. This reflected the fact that many forests were reaching the productive stage and the Government and the Forestry Commission whished to increase

[38] Written comment John Keenlyside.
[39] Troup was professor in Foresry in Oxford and concerned with forestry in the colonies. Hiley developed forestry economics at Oxford.
[40] Minutes of the Central Forestry Examination Board of the United Kingdom, 5th January 1959. Attachment National Diploma in Forestry. Rules and syllabus. Archive Royal Scottish Forestry Society, Not catalogued.

wood production.[41] At the same time forestry operations were increasingly mechanised, which meant that fewer foresters were needed to do the same work. The review concluded therefore that the Commission already had a surplus of a hundred foresters and it proposed a reduction in the output from the schools of about 45 men over the next decade.[42] In order to achieve this the review suggested limiting the total number of students and concentrate the training of foresters in a few locations, and closing down the smallest schools. In 1963 it was decided to close Benmore school because it was the smallest, containing only thirty places, and due to its remoteness it was the least economical to run.

The review of the Forestry Commission coincided with a major review of agricultural education as a whole. The Sub-Committee on Agriculture of the National Advisory Council on Education for Industry and Commerce proposed to reform agricultural and technical education. They recommended that the responsibility of forestry education had to be transferred from the Forestry Commission to the State Education Departments. By the end of 1963 the first phase of the transfer took place when the Forestry Commission was no longer in a position to assume financial responsibility for forestry education for the private sector. The establishment of forestry courses at Newton Rigg Agricultural College in Cumberland in 1965 met the requirements of the new situation. In 1968 the second phase in the transfer of educational responsibilities started when the Forestry Commission stopped recruitment for its Forestry Training Schools and ended with the closing of the last forestry school in 1971.[43]

The background of the reorganisation of forestry education had everything to do with the changes that took place in forest policy at the time. The policy of creating and maintaining a strategic timber reserve was dropped in 1958 and since then new emphasis was

[41] James, J.H., 'Training of Foresters in the United Kingdom', In: *Supplement to Forestry* (London, 1965), p.22.
[42] Minute to Lord Hughes to seek consent for the Forestry Commission's proposal to dispose of Ben More House, NAS AF 79/209.
[43] Danbury, D. J., *Technical Forestry Education in Great Britain - A New Approach*, Paper read at the tenth Commonwealth Forestry Conference, 1974, Manuscript of D. J. Danbury; Scottish Technical Education Consultative Council - Forestry Committee, Interim Report on Craft Courses, NAS AF70/946.

laid on the production of wood for the emerging wood processing industry. This required a different kind of forestry that focused on the production and marketing of wood and timber. Pyman wrote that to cater for this new type of forestry 'the time has come to think about planning an educational and training programme to fit an efficient forest economy'.[44] This type of forestry needed more people with specialised training than before. The new education scheme was supposed to train people with distinct specialised skills such as forestry technicians, managers, forest scientists, and forest administrators and economists. The time of the all-round forester was giving way to a team of specialists that managed the forests as if they were factories. It also meant that the rigid distinction between forest workers and officers, and thus university trained foresters and non-university foresters started to fade.

5.6 The Universities

In 1882 Professor Dickson, President of the Scottish Arboricultural Society and Professor of Botany in Edinburgh, wrote that forestry education had to provide two distinctive classes of foresters: practical foresters, mainly concerned with forestry at home, and men trained to obtain government posts in the colonies and dependencies.[45] This explains the origins of the division between men educated at the universities and foresters trained below university level. The first group became head foresters and officers in the Indian Forestry Department and later in the Forestry Commission; the latter became the men working in the forests, both in India and in Britain.

However, around 1880 no university course existed in Britain and there was a call for the establishment of a central forestry school or university course in forestry. The problem was that money had to be raised to establish a chair or at least appoint a lecturer in forestry. In 1889 money was raised to appoint Dr. William Somerville as Lecturer in Forestry at the

[44] Pyman, A. G., 'Now and in the Next Ten Years. Education', In: *Supplement of Forestry* (London, 1969).
[45] Pyman, 'Education', p. 116.

University of Edinburgh, the first post of its kind at a British university. This lectureship was partly financed by the Royal Scottish Arboricultural Society, the Highland and Agricultural Society and the University. Thanks to the efforts of both societies and Somerville's successor, Bailey, the lectureship was elevated into a Chair of Forestry in 1906. After Bailey's retirement in 1910, Edward Percy Stebbing was appointed to the Chair in Forestry, which he held for more than forty years, until he finally retired in 1951. Stebbing had experience in colonial forestry and was educated at the Royal Indian Engineering College at Coopers Hill and in France, so that he was well acquainted with continental forestry.[46] The University of Aberdeen followed eight years later in the footsteps of Edinburgh with the institution of a B.Sc. Degree in Forestry in 1914, but the course did not come into effect until after the First World War in 1919.[47]

5.6.1 The University Curriculum

When the first forestry courses were established in Britain, the curriculum was heavily influenced by Continental forestry. As discussed before, this kind of forestry was introduced through the Indian Forest Service and the first three lecturers in forestry, Somerville, Bailey and Stebbing, all had an Indian forestry background.[48] This meant that they were well acquainted with Continental forestry practice and theory as it had merged with practices in the colonial context. Therefore it is not surprising that William Schlich's five-volume *Manual of Forestry* was used as a handbook at the universities. Schlich wrote in the introduction that the main objective of the manual was 'to give a picture of Forestry as practised in those countries where that industry has been brought to greatest perfection, so that students ... who remain in this country, should become acquainted with the best methods of managing

[46] Taylor, Charles J., *Forestry and Natural Resources in the University of Edinburgh. A History* (Edinburgh, 1985), pp. 5-10, 11, 25.
[47] Anderson, 'Forest Education', pp. 117, 121-122.
[48] Anderson, *History of Scottish Forestry*, p. 423; Taylor, *Forestry and Natural Resources*, p. 1

forests'.[49] The countries Schlich is referring to are Germany, France and India.The titles of the volumes of Schlich´s *Manual of Forestry* reflected the curriculum of forestry education in Britain around 1900: 1. forest policy; 2. silviculture; 3. forest management; 4. forest protection; and 5. forest utilisation. Apart from these topics related to forestry itself, he recognised what he called, 'sciences auxiliary to forestry'. Amongst these topics he mentioned pure and applied mathematics, surveying, elements of general law, political economy, physics (including meteorology), chemistry, mineralogy and geology, zoology and botany. Schlich was aware of the division that can be made between topics related to silviculture and biology and topics related to economics. He wrote about forestry economics that 'this branch of a forester's education is in no way less important than the study of natural history, which, in the past, has only too often been mistaken for the sole basis of forestry'.[50] Silvicultural topics dealt with the establishment and growth of forests and their biological functions, or in Schlich's own words: 'the realisation of indirect effects, such as landscape beauty, preservation or amelioration of the climate, regulation of moisture, preservation of erosion, landslips and avalanches, preservation of game etc.'.[51] The economic topics were concerned with the management of forests on economic principles, 'such as the production of a definite class of produce, or the greatest possible quantity of produce, or the best financial results'.[52] These two quotes reflect the two lines of thinking in 19th century forestry: the line concerned with biological issues and the economic line.

When the first forestry lectures started at the University of Edinburgh, Somerville did not exactly follow the main topics of Schlich´s Manual. His curriculum can also be divided into economic topics and silvicultural topics with biological topics. Among the first were measuring and valuation of woods; forest utilisation; and forest policy. The latter included,

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[49] Schlich, W., *Manual of Forestry, Vol. 1., Forest Policy in the British Empire* (3rd Edition,London, 1906), pp. v-vi.
[50] Ibid., p. vii.
[51] Schlich, W., *Manual of Forestry, vol.3., Forest Management* (3rd Edition., London 1905), p. 1.
[52] Ibid.

silviculture, pathology and zoology.[53] But over time the curriculum developed more in the direction of Schlich's classification. When Bailey had succeeded Sommerville as Lecturer in Forestry, the course continued more or less as Somerville had begun. But after two years Bailey started to make modifications. Forestry zoology disappeared and instruction in working plans, forest protection and, later, structure and classification of timber and forestry in Scotland were added. Another of Bailey's innovations was the introduction of more practical work. Bailey retired in 1910 and was succeeded by Stebbing, under whom the curriculum finally evolved into the classification that Schlich had made in his *Manual* a decade earlier. Stebbing made in his inaugural lecture a division between sciences auxiliary to forestry and subjects related to forestry itself. Among the first he recognised subjects such as botany, chemistry, geology, zoology, surveying and forest engineering, while the latter comprised forest policy, silviculture, forest management, forest protection, forest utilisation and forest valuation.[54] This curriculum remained in essence the same for some 40 years, the period that Stebbing was head of the Forestry Department.

5.6.2 Chairs in Forestry

Right from the start the university courses were criticised for being too theoretical for the training of practical foresters. The Education Committee of the Royal Scottish Arboricultural Society was of the opinion that 'the diploma ... of forestry at the University of Edinburgh are much too artificial for forestry purposes'.[55] The Forestry Commission thought otherwise; they needed higher educated men to fill the higher ranks and guide the proposed afforestation programme. At the same time the universities were expanding their forestry courses. In 1919 the lectureship of forestry at the University of Edinburgh was elevated into a Chair of

[53] Taylor, *Forestry and Natural Resources*, p. 5.
[54] Stebbing, E.P., *Forestry Education. Its Importance and Requirements*, Inaugural Lecture 12 October 1910, University of Edinburgh Special Collections, SB.378 (41445) 04/5.
[55] Anon., 'Discussion on Forestry Administration and Forestry Education', p. 12.

Forestry. The University of Aberdeen followed this example and created a Chair of Forestry in 1926. In the meantime the University of Edinburgh instituted two postgraduate courses. The first was a one-year Honours Degree course that followed the ordinary undergraduate course in forestry. The second course was a D.Sc. Degree that was instituted in 1924. The first to obtain this degree was Mark L. Anderson, who was to become one of Scotland's most significant foresters.[56] Although he is more renowned as an academic at the present day, he started as a forester conducting experiments for the Forestry Commission.

The role of the universities in relation to the afforestation programme, the significance of forestry, and important subjects in forestry were described by Albert Borthwick in his Inaugural Lecture as Professor in Forestry at the University of Aberdeen in May 1926. He said that afforestation 'requires the service of the university in training men suitable for the accomplishment of the great task, which lies ahead'.[57] For Borthwick this 'great task' was of important for human society because it contributed to the 'economic, the social and the aesthetic welfare of mankind'.[58] The economic aspect was regarded as the most important of these three because timber was the most valuable and chief product of the forests. But it was not there that the value of the forests ended for Borthwick and his colleagues. They believed that forests were serving humankind in ameliorating climatic extremes, in conserving water, in regulating drainage and preventing erosion, and enhancing the beauty of the landscape. Borthwick mentioned also another concern that has already mentioned: the fear for a timber shortage. During the post-Great War years there was a renewed concern for a world-wide timber shortage. Foresters and politicians believed that 'the annual growth of timber in most countries is not keeping pace with the annual consumption'.[59] To address this problem Borthwick was convinced that scientific forestry was the answer to the problems related to

[56] Taylor, *Forestry and Natural Resources*, pp. 15-16.
[57] Borthwick, Albert W., 'The University and the Practice of Forestry', *Transactions of the Royal Scottish Arboricultral Society*, 40 (1926), p. 52.
[58] Ibid., p. 41.
[59] Ibid., p. 41-42.

the timber shortages. He said that a forest under proper scientific management produced ten to twenty times a greater return than a forest growing under natural conditions. Scientific forestry was also a means to deal with the difficult problems of afforesting the Scottish moors and uplands. To face both problems it was, according to Borthwick, the task of the universities to educate foresters scientifically 'to successfully face the problems they will undoubtedly have to encounter'.[60] But what did he exactly mean by scientific forestry?

In the first section of this chapter we have seen that scientific forestry developed on the continent and in the colonial context. One of the main purposes of both continental and colonial schools was to improve the forests' economic viability. Borthwick was aware of this and wrote that 'forestry it must be remembered is an industry and must therefore be run on economic lines'.[61] But Borthwick warned that this had to be based on sound silvicultural lines. He argued that the forest itself must always remain the central object of forestry and warned that if no notice was taken of biological factors the forester is 'very liable to lead to erroneous conclusions'. Borthwick continued: 'the forest is an extremely complex organisation of plant and animal associations, and so finely adjusted that any mistake in treatment may seriously upset the balance'.[62] He was convinced that the measuring of increment and yield gave rise to false expectations, unless biological factors were taken into consideration.[63] By stressing the importance of biological factors, Borthwick was in favour of forestry along natural lines, which included regard for the natural evolution of forests and natural regeneration as taught by the colonial and continental forestry schools. He explained that 'my reason for laying stress on this [biological] subject is because it has been too much neglected in the past, and scientific forestry has tended to become over-dominated by rules and empirical formulae'.[64] In Borthwick's opinion, scientific forestry had to be based on

[60] Ibid., p. 43.
[61] Ibid., p. 47.
[62] Ibid., p. 49.
[63] Ibid.
[64] Ibid., p. 50.

biological factors. To avoid confusion between biologically-based forestry and forestry based on economics, Borthwick proposed to divide the study of forestry into two main groups: the study of production method and the study of results. With 'method of production' he meant all the topics related to biological questions and silvicultural practice such as artificial and natural regeneration, tending, cleaning, pruning, thinning, soil conservation, and the silvicultural characteristics of trees and knowledge of its ecology. The 'study of results achieved' contained all the subjects related to measurement of increment and yield and economics. Borthwick believed that a scientific biological approach contributed more to the economic viability of forestry than a scientific approach based solely on statistics and economics.

5.7 Forestry Economics

Although Borthwick believed that the biological approach of forestry would be more successful, not everybody was convince. In England at the Imperial Forestry Institute W.E. Hiley developed new ideas about forestry economics. Although this happened far south of the Scottish Border it was to have a huge impact on forestry practice in Scotland after the Second World War. The ideas Hiley developed were general theories of how to manage forests as profitably as possible and had no bearing on the country or region in which the forests were growing. It happened that more than half of the planting in the United Kingdom took place in Scotland and that is why Hiley's ideas must be explored further.

When Hiley started to investigate forestry economics in the 1920s it was a poorly developed area in Britain. Many British foresters disregarded economic considerations 'since the period between sowing and reaping in forestry is generally longer than the working life of a man, foresters escape the gruelling test of profit making to which other cultivators are

subjected'.[65] During the inter-war period forestry was based on the objective of general human welfare rather than financial gain. Therefore forests had to be managed in a sustainable way, based on an ecology with less emphasis on economics. Hiley attempted to develop the economics of forestry in a form that would be useful to the long-term enterprise of forestry. One of the problems with forestry economics was that the long life cycle of forests made calculations on return very difficult. No-one can predict markets and prices many decades from the initial planting. Nevertheless German foresters had devised a method to calculate returns on forestry based on a combination of forest valuation (*Forstwertrechnung*) and forest statistics (*Forststatik*). Forest valuation dealt with the valuation of forests using of traditional methods, while forest statistics was concerned with the relative costs of various forest management operations. Hiley thought that this approach was too artificial. In the preface of his first book, *The Economics of Forestry*, he explains that forestry economics was a mathematical exercise that could be used to evaluate forestry practices. Hiley tried to bridge the gap between practical forestry and economics and advocated a less subjective approach.[66]

Hiley's ideas evolved over a period of twenty years from an acceptance of the Continental tradition of long-rotation forestry, with an emphasis on the long-term aspect of forestry, towards advocating shorter rotation forestry. He thought that the solution to the problem of the long-term and profit was not found in traditional forestry methods but in matching silvicultural practice with economic considerations. Owing to the long period of production in forestry, compound interest played a dominating role in the economics of forestry. Compound interest is an expression of the cost of waiting. Timber that can be supplied at once is worth more than timber that becomes available in only 15 or 30 years time. The shorter the rotation the more valuable the timber. Based on this fact Hiley came to

[65] Hiley, W. E., *The Economics of Forestry* (Oxford, 1930), p. vi.
[66] Ibid., pp. 1-6.

the conclusion that the time between sowing and harvesting had to be reduced: 'an attractive return cannot be obtained unless the trees grow very fast and reach maturity at an early age'.[67] To achieve this goal he advocated the application of silvicultural systems that speeded up the growth of trees. Such a silvicultural system included the planting on fertile soils, heavy thinning, and the use of fast growing species and fertilisers. He welcomed the introduction of new techniques such as 'the drainage of peaty soils by means of high-powered machinery and their subsequent cultivation with Sitka Spruce'.[68] These developments made it possible to grow short rotation forests on poor sites. By the 1950s Hiley was convinced that short rotations of single species were the future for British forestry.

5.8 Professor Anderson

A forester who was not convinced that short rotations of single species were the future for British forestry was Mark Anderson, probably the most famous forester Scotland has ever produced. In 1951 Stebbing retired from the University of Edinburgh at the age of 82. He had led the Department of Forestry for more than 40 years and at the time he retired his ideas of forestry and education had become old fashioned. According to Charles Taylor, Emeritus Professor of Forestry at the University of Edinburgh, Stebbing's education policy was good in the 1920s, but it lacked progression and was outmoded by the Second World War. Taylor commented that 'it was a pity he lingered too long in a Department that needed change in leadership long before it came'.[69]

That change of leadership came in October 1951 when Anderson succeeded Stebbing as Professor of Forestry. With his appointment Anderson brought his knowledge and experience of many years involvement in forestry research to the University. His career had started as a

[67] Hiley, W. E., *Woodland Management* (London, 1954), p. 29
[68] Ibid., p. 33.
[69] Taylor, *Forestry and Natural Resources*, p. 25.

student at the University of Edinburgh. After graduation he worked for the Forestry Commission as a research officer, but in 1932 he resigned from the Commission as a result of frustration from not being allowed to do more scientific research. According to Taylor and Mutch, who were lecturers at the time, Anderson could not carry out the experiments he wanted because his ideas were ahead of his time and people did not understand him.[70] Another factor seems to have been his dislike for the then Chairman of the Forestry Commission, Roy Robinson. Anderson disagreed with the vision of Robinson, who was concerned with large-scale plantations and the use of exotic trees, in particular Sitka Spruce.[71] As we will explore later, Anderson was interested in forestry along ecological lines. After Anderson had left the Forestry Commission he took up several occupations. First he took up a position in the Irish Forestry Service which culminated in his promotion to a directorship. After the war he returned to Britain to become a lecturer at the University of Oxford. He did not feel at home in the college world of Oxford and was about to leave Britain for Australia when the Chair of Forestry in Edinburgh became vacant.[72]

According to Mutch, Anderson started to change the Forestry Department from the moment that he arrived in Edinburgh. A month after his arrival, Anderson wrote a letter to the Secretary of the University in which he announced his intention to increase the standard of instruction in Forestry.[73] John Dargavel, who studied with Anderson between 1953 to 1956, commented that the quality of forestry education in Edinburgh was not very high in comparison to modern standards. He explained that undergraduates were not allowed to use the departmental library and that they relied almost solely on notes taken during lectures.[74] Anderson started to improve the standard of the curriculum and education. He introduced

[70] Taylor, *Forestry and Natural Resources*, p. 26; Interview W. E. S. Mutch, 12 August 1998.
[71] Interview W. E. S. Mutch.
[72] Taylor, Charles, 'Mark Anderson - Scottish Forester', *Scottish Forestry* 36 (1982), p. 298; Interview W. E. S. Mutch.
[73] Taylor, *Forestry and Natural Resources*, p. 27.
[74] Written comment by John Dargavel.

tutorials, improved the library and instituted scientific research, which, according to Taylor, had been absent before.[75] Anderson introduced forest influences and meteorology to the curriculum and added later the teaching of surveying, which had been taught in another department before. Anderson wanted to bring all the subjects relevant to forestry under the responsibility of the Forestry Department. The institutional changes were the backdrop of the introduction of Anderson's own ideas to the Department. This influenced a generation of foresters and the development of the Forestry Department after his untimely death in 1961. Both Mutch and Taylor think that the transition of the Department of Forestry into the wider scope of the Department of Forestry and Natural Resources was made easier because of the standards and ideas that Anderson had introduced.[76] It is interesting to observe that, according to Dargavel, the students of the time had a different opinion about teaching standards than the contemporary members of staff. Dargavel commented that Anderson was good in re-organising the department and was a good researcher, but a bad teacher.

One of the key texts for understanding Anderson's ideas is his *Guide to the Selection of Tree Species*, from which we gain a good understanding of what is meant by forestry along ecological lines. It is not aimed at fitting forests aesthetically into the landscape or the protection of habitats of wildlife etc; instead it propagated the selection of tree species based on a detailed assessment of the local conditions, including the local biological, ecological, meteorological and soil conditions. Anderson's whole outlook on forests was what we call holistic nowadays. In a radio talk he described forests as 'extremely complex associations of organisms, living in a delicately balanced harmony, amongst which the trees are merely the most conspicuous components'.[77] He regarded forests as living communities, a term used by Josef Köstler in his book *Silviculture*, which Anderson had translated into English. The

[75] Taylor, 'Mark Anderson - Scottish Forester', p. 298.
[76] Ibid., p. 299; Interview W. E. S. Mutch, 12 August 1998.
[77] 'Time for Forestry'. Broadcast talk by Professor M. L. Anderson on Monday, 2 January 1956, University of Edinburgh Special Collections, GEN 1971/6.

concept of the living forest community recognised the reciprocal dependence of all biotic and abiotic parts upon the whole of the forest. Köstler writes in this book that 'silvicultural thought and action must deal with living communities; it must take the laws of nature into account and adapt itself to them'.[78] He makes a distinction between the mechanical outlook of forestry and the biological outlook. The mechanical outlook regards the forest as a productive entity controlled by humans and yielding timber. The biological line of thought regards forests as part of the natural world. It was thought that in a natural state, undisturbed by humans, forests renew themselves in perpetual harmony. Köstler regarded the careful study of natural forests as important in learning how to imitate the natural processes as a way to secure the well being of the forests and the balance of nature in these living communities.[79] But the aim in the end was to produce timber without compromising the capability of a locality to grow a new crop.

Anderson also used Köstler's division between the mechanical and biological approach of forestry, although he called it the economic and protection functions of the forests. The first of these functions, the economic function, in Anderson's view, was concerned with the production of timber. Anderson defined the protection function as all the benefits of forestry other than wood production: the influence of the forest on climate, on soil, water supply, and the provision of recreational areas for the community, the improvement of amenity, rural scenery and country life, the provision of habitats for plants and animals. Anderson was concerned with forestry on an ecological basis. He defined forest ecology as the relationship of the forest to its environment.[80]

Anderson's ideas had developed during the inter-war years long before he translated Köstler. He drew heavily upon the forestry tradition that was developed in the colonial

[78] Köstler, Josef, *Silviculture*, Translated by M. L. Anderson (Edinburgh, 1956), p. 3.
[79] Ibid., p. 11.
[80] 'Time for Forestry'. Broadcast talk by M.L. Anderson, 2 January 1956; Interview Mutch.

context and on the continent. This can be observed in lecture notes that he wrote in Oxford in 1928, in which he stated that 'the ideal forest is one which is capable of regenerating itself without man's assistance'. He continued:

> With such forests ... the condition of the stand and the soil and the nature of local climate are such that seed is produced plentifully and germinates abundantly. The balance of nature is such that sufficient seedlings survive to form a new stand.[81]

At the same time, Anderson realised that this was quite impossible in Scotland where most forests had to be grown from scratch because there were no forests in existence on the elevated lands where afforestation was to take place. There could be no natural regeneration without an existing forest. 'In such cases', he wrote, '[the forester] resorts to artificial regeneration ... by planting out in an area of ground specially set aside for the purpose', i.e. a nursery.[82] The young trees grown in these nurseries had then to be planted out to form new forest plantations. This was acceptable for Anderson in the Scottish context, but he was not very keen on the uniform blanket forests that the Forestry Commission started to create, especially after the war. Anderson opposed the management of blanket forests under a system of clear felling because it requires uniform monocultural forest plantations. Anderson thought that uniform plantations were undesirable and even impossible in the Scottish context. Site conditions are so extremely varied and complicated troughout Scotland that Anderson proposed to adapt forestry practice and the species used to the local environmental conditions.[83] That meant in practice that a forest could become in patchwork of different species because soil and aspect (orientation of a slope to the sun) can change considerably over short distances.

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[81] M. L. Anderson, Lecture notes on nursery management, 1928. University of Edinburgh Special Collections, miscellaneous papers Department of Forestry, not catalogued.
[82] Ibid.
[83] Anderson, M.L., *The Selection of Tree Species. An Ecological Basis of Site Classification for Conditions Found in Great Britain and Ireland* (Edinburgh & London, 1961), p. xi.

Anderson advocated a forestry practice that was able to grow trees, have a number of non-economic functions, produced timber and was also capable of regenerating itself by natural means after it was properly established. Anderson summarised his ideas as follows:

> Some foresters, notably the French, are in general opposed to such a system and in favour of a system of management which involves no clearfelling but clearings over small areas only and use the greatest extent possible of the natural process of regeneration of the forest.[84]

In this citation the influence of the French forestry school on Anderson's work is visible. Taylor confirms that Anderson 'was very much in harmony with the French' and that his maxim was 'study nature, follow her if you can, but guide her where need be and record what is done and achieved'.[85]

Anderson felt that the tide of history was against forestry on an ecological basis. According to him the Government's attitude during the 1950s was that forests had simply to offer 'the prospect of producing a certain minimum amount of produce annually ... enough to pay the annual expenditure ... plus compound interest'.[86] New economic ideas about return on invested capital had emerged during the years before the war and new technology had made it possible to prepare large tracts of land and try to wipe out local differences. One of the exponents of this new economic forestry ethic was the Oxford-based forestry economist W. E. Hiley, discussed in the previous section. The practice of short rotations of single species was a reaction to the demands of post-war forest policy of rapid expansion of the forests and pressure from the Treasury to make forestry pay. To reach the post-war planting targets and to pay the annual expenditure foresters faced the task of speeding up the growth of trees. Therefore experiments were staged with fast growing exotics and new thinning techniques and the application of fertilisers. This fitted in very well with the emergence of

[84] M. L. Anderson, Miscellaneous notes, lectures, etc. on forestry. University of Edinburgh Special Collections, GEN 2158/1.
[85] Taylor, 'Mark Anderson - Scottish Forester', p. 302.
[86] Radio talk Anderson, 2 January 1956, University of Edinburgh Special Collections.

sitka spruce as a more robust productive species and the emergence of large scale plantations, Canadian style. These forests were treated as a crop, a collection of trees grown in a timber farm, which can be removed and converted for use and re-sawn like a crop of wheat. Anderson warned against these practices and doubted if stimulating fast growth and large scale exploitation saved time and money. He said in a radio talk that any advantage in the rapid growth of forests and production of timber 'may be more than offset by serious troubles later'.[87] With these 'troubles' he meant unsustainable practices leading to exhaustion of the soil and erosion, attraction of diseases and pests and increasing risks of the trees blown over. Anderson did not wish to treat a forest as a crop,

> but of a stand to be conserved in such a way that the material that is removed can be replaced with no irreparable damage to the forest as a whole, that is to say, either to the soil or to the stock growing on it. [The forester's task] is not to exploit the forest but to ensure its perpetuation as a production unit.[88]

In this quote Anderson is in fact describing sustainable forestry long before the modern meaning of the concept was introduced in the 1980s! That does not mean that he was not interested in the commercial exploitation of the forests. Anderson's aim was not different from the people who advocated large-scale monocultures of fast growing species: the production of timber to make a profit, although in order to achieve this goal he advocated a different management strategy based on ecological considerations. Anderson was convinced that an income could be drawn from a balanced and healthy forest in perpetuity. Anderson was not concerned with the short-term return on invested capital. For Anderson it was the long term and forestry on ecological bases that counted in generating a healthy forest for the benefit of humankind.[89]

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[87] Ibid.
[88] Ibid.
[89] Interview W. E. S. Mutch.

5.9 Aberdeen and Professor Steven

In 1937 Professor Borthwick died and H.M. Steven was appointed to succeed him as the Chair of Forestry at the University of Aberdeen. In character Steven almost the opposite of Anderson. He was reasonable and patient and apparently reserved whereas Anderson could be pugnacious, somewhat impatient and sometimes even rude. Steven found a department with a strong emphasis on ecology. During the period immediately after the First World War this was firmly established by George K. Fraser and Alexander Stuart Watt. Fraser worked at the Macaulay Institute for Soil Research (now the Macaulay Land Use Research Institute) and Watt was lecturer in forest botany and forest zoology at the University. The two men carried forward the knowledge of tree growth in relation to soils and Watt was later elected a Fellow of the Royal Society for his work on the ecology of beech and oak in Britain.[90]

After the Second World War Professor J.R. Matthews established the study of plant ecology at Aberdeen University. He was member of several committees of the Forestry Commission, amongst others the liaison committee with the Nature Conservancy, but it was undoubtedly Steven who left an lasting and almost equal legacy in Scottish forestry as Anderson. According to Matthews, Steven was 'one of the founders of modern forest industry in Britain'.[91] He had a long career in forestry research during which he helped to establish planting methods to grow trees on deep peat. In 1930 Steven took charge of the East of England division of the Forestry Commission where he showed his skills as a successful forest manager. He was transferred to Aberdeen in 1933 to hold a similar post before he was appointed at the University of Aberdeen. Like Anderson, his practical career as a research worker and forest manager gave him a unique knowledge of British forestry and this knowledge influenced a generation of foresters trained at Aberdeen. Probably his most influential legacy is his work on Scottish pine that he undertook in collaboration with one of

[90] Written Comments Professor D.J. Matthews.
[91] Matthews, J.D., 'Henry Marshall Steven', In: *Yearbook Royal Society of Edinburgh, 1968-69.*

his Ph.D. students Alan Carlisle. This resulted in the publication of *The Native Pinewoods of Scotland* in 1959. The book discussed the native pinewoods from a historical, ecological and forestry point of view. In the introduction the historical value of the natural pinewood is described as follows 'To walk through the larger of them gives one a better idea of what a primeval forest was like ... ; to stand in them is to feel the past'[92], a very romantic perception of the pine forests that echoes the Myth of Caledon. Another comment in the final chapter also referred tothe great wood of Caledon: 'the remnants of the pinewoods are not the least important historical monuments of Scotland'.[93] However, Steven and Carlisle did not regard the historical aspect of the pinewoods as the most valuable because the natural pinewoods also had an ecological function. The native pine woods were a habitat that contained their 'own distinctive plants and animals, some of which are rarely found elsewhere in Britain'.[94] But Steven and Carlisle were above all interested in the genetics of the Scottish pinewoods. They urged for the preservation of the remnants of what they thought were uncontaminated strains of Scots Pine. C.H. Gimingham, an influential ecologist, commented on this aspect that 'although not primarily ecological in character, this book contains detailed information on all the surviving pinewood stands for which there was evidence of descent without artificial planting from the former more extensive natural forests'.[95] It was thought that these strains were particularly adapted to the Scottish natural environment. Therefore Steven and Carlisle expected that Scots pine was coming to play an increasingly important role in British forestry in the future: 'some of these strains are already important in the forestry in Britain, ... hence from a practical point of view this source should be maintained'.[96] Preserving native Scots Pine was regarded as important for a pure silvicultural reason: to grow good

[92] Steven, H. M. & Carlisle, A., *The Native Pinewoods of Scotland* (Edinburgh and London, 1959), p. v.
[93] Ibid., p. 298.
[94] Ibid., p. v.
[95] Gimingham, C.H., Spence, D.A.N., Watson, A., 'Ecology', In: *Two Hundered Years of the Biological Sciences in Scotland. Proceedings of the Royal Society of Edinburgh*, (Edinburgh, 1983), pp. 85-118.
[96] Steven & Carlisle, *Native Pinewoods*, p. 298.

timber. Steven and Carlisle regarded the practice of natural regeneration as the best method to preserve, expand and perpetuate Scotland's native pinewoods.

Steven retired in 1963 and was succeeded by John Matthews. At that time there was some doubt about the need for two forestry schools in Scotland, but as things turned out, environmental science expanded in Edinburgh and forestry in Aberdeen. The Forestry Department in Aberdeen had close relations with the plant ecologists in the Botany Department and the syllabus was developed from Steven's time to continue the strong ecological basis and strengthen the management component.[97] Aberdeen took also account of the increasing output of timber from the older plantations in Scotland and the increasing use of the forests for recreation. It was for this reason that the curriculum of the Department developed into a mixture of ecology, management and economics, timber industry and the public use of the forests. This curriculum reflected the rise of the concept of multi-purpose use of forests and proved to be a successful mix. It was aimed at training foresters for modern multi-purpose forestry management and attracted students who aimed to pursue a career in forestry.[98] The Forestry School in Aberdeen thrived because its main aim remained the training of foresters; however its success was partly due to developments that took place at the University of Edinburgh during the 1960s.

5.10 Edinburgh: Widening the Scope

In the autumn of 1961, immediately following the death of Anderson, a committee was appointed by the Senate of the University of Edinburgh to consider the future of the Chair of Forestry. It became clear that the future of the Department was under threat because there was some doubt about the need for two forestry departments in Scotland. The threat of closure was unacceptable to the Forestry Department, but it was clear that change had

[97] Written Comment Professor J.D. Matthews.
[98] *Aberdeen University Calendar, 1965-1966 & 1970-71.*

become unavoidable. In May 1962 the Special Committee proposed that 'the scope of the Forestry Department should be enlarged to include natural resources and related topics'.[99] Earlier in 1961, Professor Waddington, an animal geneticist, had recommended this in a memorandum submitted to the Special Committee. According to Mutch, Professor Waddington was an extraordinary man with a wide influence within the University and the wider academic community. He was concerned with the juxtaposition of scientific ideas from different academic disciplines such as biology, philosophy, and the natural sciences, in fact everything flourishing together. In this view forestry was increasingly regarded as a part of the wider ecological field in which natural resources were only a part. This wider field consisted of hydrology, biology, soil science and general ecology, but excluded agriculture.[100]

In 1963, Dr John N. Black was appointed to the new Chair of Forestry and Natural Resources. The objective of the new Department was to expand its interests in the direction of general ecology, and the utilisation of biological natural resources, and take a broad outlook to Scottish and international issues. The desired result of this was the education and training of managers of biological natural resources.[101] The course appeared for the first time in the University Calendar for the 1966-67 academic session. The syllabus of the new department differed considerably from the old Forestry Department syllabus. The first striking feature is the different organisation of the study. During the first three years all students followed a general programme consisting of four main fields: ecology, forestry, resources management and wildlife management. At the end of the third year a student chose one of these four main areas as a specialisation. Within these fields the student was trained in a wide range of subjects including biology, chemistry, climate and water resources,

[99] Quoted in: Taylor, *Forestry and Natural Resources*, p.36.
[100] W. E. S. Mutch, Interview, 12 August 1998; Taylor, *Forestry and Natural Resources*, pp. 35-37.
[101] Taylor, *Forestry and Natural Resources*, p. 40.

economics, geography, geology, mathematics, oceanography and physics.[102] The B.Sc. forestry course continued until 1967 when the last 17 graduates received their degrees. This marked the end of the Department of Forestry as an independent department at the University of Edinburgh.[103] It is very likely that these activities foreshadowed the environmental wave that lay ahead. It was the right time for change because the circumstances, with the Department of Forestry under threat and the rising concern about the environment, made the establishment of the new department possible. Dr. Mutch suggested that in doing so, the University of Edinburgh created the breeding pond in which the men and women were trained who devised the changes in environmental thinking in the Forestry Commission twenty years later.[104]

The decision of the forestry school in Edinburgh to amalgamate the biological and ecological studies into one new department produced a clear distinction from the Forestry school in Aberdeen. If Aberdeen kept a strong school of forestry it was because the demand for the courses remained strong throughout the 1960s to the early 1980s and Aberdeen had become in fact the only place in Scotland with a pure forestry course. This suggested that there was no space for two university schools fully devoted to forestry in Scotland.

5.11 Sylvia Crowe: Educating the Forestry Commission

Outside the universities and the forestry schools a development took place that would influence foresters up to the present day. In 1964 the Forestry Commission officially appointed Sylvia Crowe as landscape consultant. This was a direct result of the ministerial statement of July 1963 (see chapter 4) that included the provision of recreational facilities and aesthetic considerations for the first time in forest policy, as discussed in chapter four. Here

[102] University Calendar 1968/69 and 1975/76, Special Collections University of Edinburgh.
[103] Taylor, *Forestry and Natural Resources*, p. 39.
[104] W. E. S. Mutch, , Interview, 12 August 1998.

we will focus on the ideas and work of Crowe, who was a distinguished landscape architect and had published a standard work on landscape design entitled *Tomorrow's Landscape*. It was in this book that that she first defined the simple rules of how to fit forests more naturally and less intrusively into the landscape. According to Crowe, landscape patterns evolved naturally by geological and climatic processes. In order to make sound decisions on amenity issues it was first necessary to analyse and understand the character of every landscape.[105] She argued that the constituent landscape elements, such as existing types and patterns of vegetation and land use and the colours of the rocks and the soil, and the shape of the relief, define the visual character of a particular landscape. In Crowe's opinion the distribution and combination of these elements determined the pattern and the nature of the forest, i.e. a particular mix of tree species or pure stands, to make it look right in any given landscape.

The method that Crowe used to fit forests into the landscape was based on three interrelated issues. The first of these issues was the introduction of contrast between different landscape elements. In her opinion this was essential to maintain a balanced and attractive landscape pattern. To achieve this there must be both contrasts between areas of open ground and of planting, and changes in the variety of tree species, farm crops and other vegetation.[106]

The second issue, the choice of species with relation to the landscape, determined the appearance and character of that landscape. Crowe wrote about forests in Scotland:

> Over the great majority of Forestry Commission land in Scotland, ... where conifers can be accepted as the only possible timber trees, the landscape requirements can be met by the occasional introduction of hardwoods related to access routes, ... and the retention of existing hardwoods where they make an important contribution to the pattern of the landscape.[107]

The trees had to be matched to the site, not with regard to the soil, aspect or biological considerations, but to make it match with the existing landscape elements and forms, for

[105] Crowe, Silvia, *Tomorrow's Landscape* (London, 1956), p. 16.
[106] Crowe, Silvia, *Forestry in the Lanscape* (London, 1966), p. 6.
[107] Ibid, p. 13.

example, a mix of conifers could be planted on higher slopes and on the lower slopes belts of hardwoods would give the forest a more varied appearance, especially along roadsides. She also advised the Commission to keep the existing hardwood trees in place when a new plantation was started. To her dismay, however, Crowe observed that many of the existing hardwoods, often oak and birch, were underplanted with conifers, which made them invisible to the great detriment of the landscape. Sometimes hardwoods were ringbarked so that the trees were slowly killed and lost forever. Crowe concluded that underplanting and ring barking were undesirable practices and that consideration should always be given to broadleaf woods, and not only where they had most visible impact but also because of their importance to the general health of the landscape, especially the encouragement of wildlife. She proposed to leave or plant belts of broadleaves at the fringes of the forest and also to feather up gullies on hillsides. She also advised avoidance of the obliteration of interesting landscape features such as cliffs, burns and waterfalls by planting. Apart from aesthetic considerations, Crowe recognised the importance of hardwood belts in coniferous forests for linking habitats and concluded that 'this pattern also provides the ideal habitat for bird and animal populations'.[108]

The third and last issue was that of the appearance of the planting shapes of forest blocks in the landscape. Planting shapes refer both to the pattern of different species within the forest and to the outline of the forest as a whole. Crowe advised the Commission to follow the natural variation of soil and topography and to suit the species to the situation. Crowe also advised that size and shape of plantations should be related to the shape and scale of the terrain. She used the pattern of planting to accentuate the modelling of the hills instead of blanketing it. In making the outline of plantations conform to the shape of the landscape, straight lines should be avoided.[109]

[108] Ibid.
[109] Ibid., p 18.

Finally felling operations have an extreme impact on the landscape. To avoid damage to the scenery Crowe applied the same principles as in the case of new plantations. The shape of the felling areas should be in harmony with the form of the landscape. It could also be used to diversify the forests by taking out small coups at one time and plant the open space with young trees of different species of different age. Felling could also be used as an opportunity to erase straight lines in the landscape and rectify the shape of plantations.[110]

For Crowe landscape meant not only the way it looked, but included also the whole of land use and ecology. Her principle was that when it was used well ecologically it was good to look at or, to put it in a different way, when a forest is good for nature conservation, it is good for the landscape too. But it was not only the landscape she was interested in. Crowe's ideas evolved over time from landscape design, which is fitting forests into the landscape and beautifying them, towards multi-purpose forestry with some emphasis on nature conservation. Crowe recognised the importance of forests for timber production but also for nature conservation and recreational purposes.[111] In order to do so Crowe advised that a plan should be drawn up to make the best use of all forest resources and 'to ensure that no one use will conflict with another, and to bring all uses together into a landscape with will both function well and look well'.[112] For Crowe nature conservation and recreation always came in second place after the prime aim of producing timber. In this context she commented that 'conservation of resources should always take precedence over demands for use'.[113]

This opinion was very consistent with that of Anderson, and other foresters and was underscored once more during a discussion about the multi-purpose forest organised by the Royal Scottish Forestry Society in 1972. During this meeting an officer from the Forestry Commission, Mr. Holtam, acknowledged the importance of Crowe´s work in educating the

[110] Crowe, Silvia, *The Landscape of Forests and Woods* (London 1978), pp. 32-35.
[111] Crowe, Sylvia, 'The Multi-purpose Forest', *Scottish Forestry*, 26 (1972), pp. 214-215.
[112] Crowe, *The Landscape*, p. 41.
[113] Ibid., 41.

Forestry Commission and giving its officers 'a better understanding of the landscape and some of the simple measures which could be ... effective in making improvements'. But he continued by saying that there was a danger of '... losing sight of the prime object for most of British forests'[114], i.e. the production of timber.

Crowe's ideas have strong echoes of Anderson's ideas about matching trees to the site because she also advocated the matching of trees to the site, not based on biological factors but on landscape and topographical elements. In the chapter six, on forestry practice, it will be argued that many foresters were combining both methods naturally.

5.12 Summary

In this chapter we have seen that modern forestry first developed on the continent, in particular in Germany. It was here that forestry was first approached as a science based on high forestry monocultures felled with a clear cutting system, although, this is not so clear cut as it might seem. The German forestry practice was aimed at creating a sustainable forest resource to counter a potential timber shortage. It was also aimed at countering the negative effects of deforestation such as desiccation, erosion and the protection of water resources. In France, on the other hand, forestry was less scientific although French foresters aimed at producing timber as efficiently as possible with an eye on preserving soils, water and woodlands.

Meanwhile in the colonies botanists and other scientists witnessed the negative effects of the overexploitation of forests and the disappearance of vegetation cover. This gave rise to the fear for local or even continental climate change, desiccation, species extinction and soil erosion. To counter these negative effects and a looming timber shortage the Indian colonial Government created in 1864 the Indian Forest Service. It employed German foresters to help

[114] Ibid., p. 215.

set up the service because of their expertise in forestry. Forest workers and officers were sent to France to be trained at the Imperial forestry school in Nancy. It was in the colonial context that the fears raised by colonial scientists amalgamated with the continental European forestry practices. These ideas were brought back to Britain by foresters who had served in the Colonies where it provided the fundament on which modern forestry in Britain developed.

The continental/colonial forestry practice and theories formed the basis for the curricula of forestry education in Scotland. In the past various bodies and people have been involved with providing forestry education. Initially landowners and head foresters ran apprenticeship schemes but the quality depended much on the individual in charge. The first attempt to provide organised forestry education was made by the Highland and Agricultural Society in the latter part of the 19th century and it awarded forestry certificates until 1935. These certificates were the forerunners of the Junior and Senior Certificates of the Royal Scottish Forestry Society which continued up to 1970. Successful courses were also held at the Royal Botanical Gardens in Edinburgh in the decades around the turn of the century.

The Forestry Commission forester training schools were established to train the working foresters intending to enter the State forestry service. The course included practical technical skills for establishing plantations, the main activity of the Forestry Commission for most of its existence. Apart from this aspect the syllabus also included instruction in forestry management, economics and environmental topics. In essence the curriculum remained the same until 1970 when the last Forester training school was closed. From then on most people would be trained at agricultural colleges or universities, the system that continues up to the present day.

The first university course in Scotland was established during the last decade of the 19th century at the University of Edinburgh and the University of Aberdeen followed after the First World War. The first lecturers appointed, such as Bailey and Stebbing, were familiar with colonial and continental forestry practice because they

had worked in colonial forestry. Therefore the University curricula laid emphasis on anti-desiccation forestry, economic production of timber but also had regards for the beauty of the landscape. The economic aspect was regarded as the most important but it was not there that the value of the forests ended. Both Bailey and Stebbing believed that forests were serving humankind in ameliorating climatic extremes, in conserving water, in regulating drainage and preventing erosion and enhancing the beauty of the landscape. This opinion did not disappear until the end of the period under study although the aspects that were emphasised changed over time.

The approach of forestry at the Universities differed due to the personalities heading the forestry departments. In Edinburgh Anderson opposed the ideas of forestry economist Hiley from Oxford, whose ideas had become quite influential in the Forestry Commission. Hiley's ideas were concerned with economic rotation lengths, i.e. the use of faster growing species and the use of fertiliser, and with intensive plantation management. This did not mean that Hiley was arguing for short rotation forestry per se. He was simply reacting to the demands of the post-war forest policy that required rapid forest expansion and making forestry pay. Anderson doubted if time and money were saved by stimulating fast growth and large scale plantations and believed that ecologically healthy forests were capable of producing a sustainable timber resource. In his opinion a forest comprised much more than trees and what counted was long term forestry on ecological bases that could generate a healthy forest both for the benefit of humankind and the forest itself.

It is remarkable how much Silvia Crowe's ideas of forest landscape design resembled Anderson's ideas about matching trees to the site, which Crowe also espoused, but based on elements like terrain shape, landscape colour and the presence of landscape elements such as burns, waterfalls, gorges, farm houses or roads, rather than biological reasons. Like Anderson, Crowe approached every landscape individually, but where Anderson based the

choice of species and where to plant them on biological data, Crowe based these decisions on visual data like colour and form.

Anderson's counterpart in Aberdeen was forest ecologist Steven. He will always be remembered for his work on Scots pine in collaboration with Carlisle. They comprehensively reviewed the natural history of the native pinewoods and their relation to human society and recognised the importance of preservation of the remnants of ancient Scots pine both from a historical and, most importantly, from a genetical point of view. The merit of the work of Steven and Carlisle is that they placed the conservation and natural regeneration of the remnants of semi-natural, native pinewoods on the political and forestry agendas.

After Steven's retirement in 1963, the Forestry Department in Aberdeen developed a programme that was aimed at training managers to apply the new concept of multi-purpose forestry. At the same time the University of Edinburgh decided, under pressure, to broaden its scope and amalgamated with the environmental sciences. In doing so, the University of Edinburgh created a breeding pond which trained the men and women were who devised the changes in environmental thinking in forestry that shaped the appearance and management of the forests over the past 20 years. The decision in Edinburgh to broaden the scope and link forestry to the wider field of environmental science saved not only forestry in Edinburgh but also benefited the Forestry Department in Aberdeen. While ecology expanded in Edinburgh, forestry grew stronger in Aberdeen.

We can conclude that the programme of the State-operated forester training schools was very static and hardly changed during the 50 years the schools existed. There was no need for change as long as the Forestry Commission needed men to carry out the planting programme and tending the plantations. The university programme, on the other hand, changed considerably over time because of its

independence. University forestry courses were not specifically set up to train people for service in the Forestry Commission and therefore the Commission had no say in what was taught. The research at the university was also independent and could follow the interests of different researchers, it could also be more sensitive to scientific, social and economic pressures than the State run forester training schools. For this reason the forester training schools became obsolete. During the 1960s the universities developed a programme that took environmental and ecological issues into consideration and in doing so prepared the ground for the changes that would occur in the decades between 1970 and the end of the 20th century.

6. Forestry Practice

6.1 Introduction

The Forestry Act that established the Forestry Commission came into force on September the first 1919. The first Forestry Commissioners were appointed on 29 November of the same year and on 7 December they held their first meeting in London. After the meeting was over, Lovat and Commissioner Clinton decided on a little competition to see who could plant the Commission's first trees. When Lovat arrived at Elgin in Scotland he was handed a telegram from Clinton. It said that the Commission's first trees were planted at Eggesford in Devon. The planting in England started a few hours ahead of Scotland.[1]

These first trees, a number of beech and larch, were only the beginning of a massive planting programme. However, the first trees were planted on fertile and accessible land compared to the majority of the millions of trees that followed. The creation of large new forests was made difficult because the majority of land available for forestry was poor, and exposed to severe climatic conditions. It was realised from the early days of the Forestry Commission that the best grounds should be reserved for agriculture, i.e. the production of food. After the two World Wars food production was even more important than the production of timber because it was needed to feed the population and it helped to reduce imports of agricultural products and thus money could be saved. A quote from a little booklet about afforestation written by John Boyd[2] in 1918 illustrates this concern 'it must be borne in mind that all land suitable for cultivation, excepting such small areas as are required for nursery purposes, will be excluded from planting in any well-considered planting scheme'.[3] The land that remained for forestry was mainly to be found in the remoter rural parts of Britain and Scotland in particular. In general these areas were characterised by high

[1] Pringle, *The First 75 Years,* pp. 7-8
[2] John Boyd was foreser on the Corrour estate, owned by John Stirling Maxwell. He oversaw planting experiments conducted here and contribute considerably to the knowledge of planting on elevated peats.
[3] Boyd, John, *Afforestation* (London/Edinburgh), 1918), p. 17.

elevation, the presence of peat and heather, high rainfall and high wind exposure, which meant that these grounds were not very suitable for forestry. Foresters had to find ways to cultivate these poor unplantable grounds and make them suitable for afforestation.

This chapter will explore how foresters devised methods that made it possible to plant the upland peat and heathland in Scotland. The success of these planting methods made a considerable impact on the landscape and defined to a great extent the attitude of general public and foresters alike to the coniferous plantations that resulted. The final part of the chapter will explore how foresters identified the problem of the visual impact of forestry soon after the Forestry Commission was established. It will be argued that there was considerable discussion in forestry journals in which some foresters argued that the best way to fit forests into the landscape was the use of ecological forestry. It will be shown that Anderson's ideas were widely practised before, and even after, the Second World War. Foresters have also been instrumental in recognising the value of forests for wildlife, which is not surprising given that they are working outdoors daily and are being confronted with forests, wildlife and plants. The final section of this chapter will explore Edlin's statement that 'the calling of the woodman demands ... keen observation, and a deep understanding of wild nature'.[4]

6.2 The Forestry Process

To better understand the difficulties that foresters experienced in Scotland, we must first have a better understanding of the forestry process as practised in Scotland. From the start of the State forestry programme, and even before, natural regeneration was not regarded as practical in the Scottish context. By natural regeneration is meant the opening out of old woods to allow seeds to fall on the ground and germinate naturally.[5] As most of Scotland's new forests were to be created on bare ground, there were no trees present to provide seeds for the

[4] Edlin, *Forestry and Woodland Life*, p. 176.
[5] Robbie, T.A., *Teach Yourself Forestry* (London, 1955), p. 86.

regeneration and it was necessary to plant them. This led automatically to the adoption of a high forestry system managed with regular thinnings and clear felling of the final crop. The lack of large forests and the ambitious state afforestation programme defined the choice for this silvicultural system, but it is also a matter of culture. In the French context natural regeneration was preferred over planting because it was a well-established tradition in a country where large trackts of forests were available.

High forestry managed by a clear felling system goes through four distinctive stages during a rotation cycle. The first stage in the cycle is the preparation of the ground for planting where the trees are to be planted. During this stage the ground is cleared of weed and scrub that potentially can outgrow the trees and the soil is prepared, which means that it is ploughed and drained, although ploughing was not common practice until the Second World War.

The next step in the forestry process is the selection of tree species for planting. This is the most important decision in the creation of forests for visual impact and diversity. The selection of tree species is mainly defined by the physical factors of the locality, the soil, exposure and elevation, as we will explore in the section on physical factors.
After the selection of tree species the time has come for tree planting, but when this is done the work is hardly finished. The development of the forest needs tending to produce the best timber quality. If failures occur in a plantation, an operation called 'beating up' is carried out in which dead trees are removed and replaced with new ones. When a plantation is between five and ten years old it enters the so called 'thicket stage', when the forest is closing its canopy but is too young to be thinned. This stage requires minimal management. The thicket stage ends when the canopy is closed and the lower branches start to die back from lack of light. These branches are removed in an operation called brashing. If dead branches are left in a tree they form dead knots, which is regarded as a defect in the timber. Brashing has also the

advantage that it lessens the risk of fire because dead branches are very susceptible to fire. A further advantage, described by Edlin, is the fertilising effect of dead branches left on the forest floor. Here they decompose quickly and add humus to the forest soil.[6] Another purpose of brashing is to allow foresters into the woods to mark trees for the first thinning and to enable forest workers to get into the forest and carry out the thinning. In this respect brashing is the prelude to the pole stage. Brashing has ceased as a practice during the last few decades because it is very labour-intensive and therefore expensive.

From ten to twenty years after planting, most forests reach the so-called pole stage, which lasts for fifty years or more until the stand is matured. During this period the forest is thinned several times. Thinning is regarded as the key in a high forest system. In his forestry instruction book T.A. Robbie, head of the Forestry School in Faskally during the 1950s, explained the necessity for thinning as follows:

> If plantations were left to develop naturally there would be a huge wastage of potential timber, and probably plantations, if not wholly diseased and insect infected, would be windblown. We thin woods for the health and stability of the crop...[7]

The essence of thinning is to take out a number of trees in order to give the remaining trees more nutrients, light and space to grow. Under this system trees develop steadily, and the stems retained expand rapidly to give a large volume of timber. A forest might receive more than ten thinnings before the so-called 'final crop trees' are felled. The 'final crop trees' are all harvested in a single operation called clear felling. All the trees in a certain area are then cut and removed to make way for a new crop planted for the next rotation.

This forestry practice seems straightforward and relatively simple, but the establishment of forests is far from simple in the Scottish uplands. The physical conditions in the Scottish uplands make it extremely difficult to plant trees. The experiments undertaken at Corrour have already been mentioned in chapter three, but before we examine these experiments in

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[6] Edlin, H.L., *Forestry and Woodland Life*, p. 107.
[7] Robbie, *Teach Yourself Forestry*, p. 104.

more detail we must first look the physical conditions that made forestry in upland Scotland so difficult.

6.3 The Physical Environment

The problems that confronted the Commission stemmed partly from the fact, as we have already seen, that the worst grounds were available for forestry. The conditions on these sites were determined by four physical factors: elevation, rainfall, soils and exposure. If one looks at a relief map of the United Kingdom it can immediately be observed that most of the high and mountainous ground can be found in Scotland, and to a lesser extent in Wales (map 6.1). The highest mountains are situated in the west of Scotland and on the Cairngorm plateau of the Central Highlands. The relief of Scotland tilts roughly from the north-west to the south-east, with the highest mountains in the north and west and rolling agricultural lands in the south and east. This relief distribution is also reflected in the annual rainfall pattern with the highest annual means in the west, and falling towards the east (map 6.2). This is caused by the fact that the mountains in the west catch much of the rain that comes with the prevailing westerly winds from the Atlantic.[8]

It is no coincidence that the general soil distribution in Scotland roughly follows the relief and rainfall pattern (map 6.3). We can divide the characteristic soil landscape pattern of Scotland roughly into four geographical regions. These are the Highlands and Islands in the west and north, the east and north-east, the Central Belt and the Southern Uplands. The soils in the western Highlands are influenced to a large extent by moist and cool climate. The low temperatures and waterlogged conditions cause organic material to decompose slowly, so that it accumulates in layers up to several metres thick to form peat.[9]

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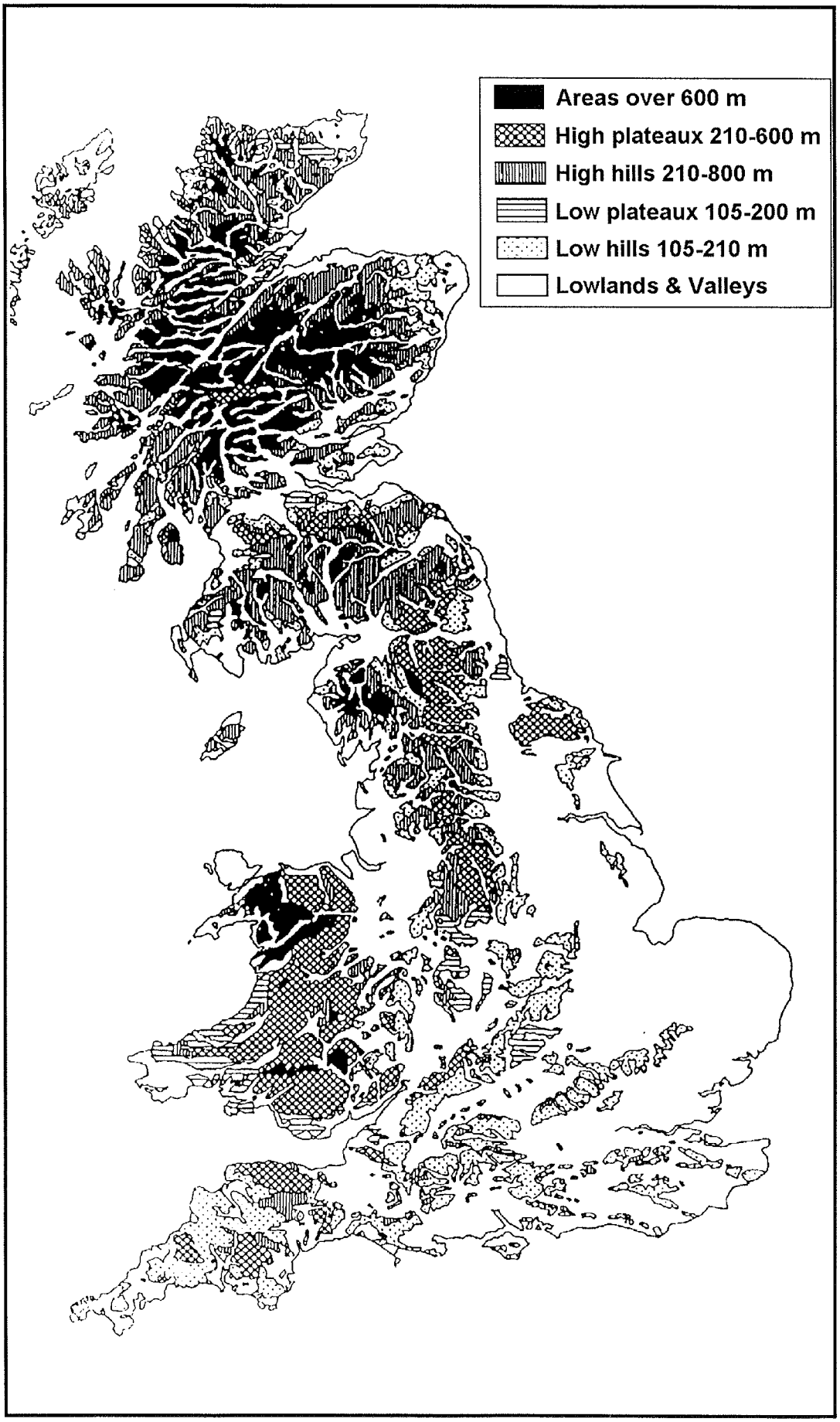
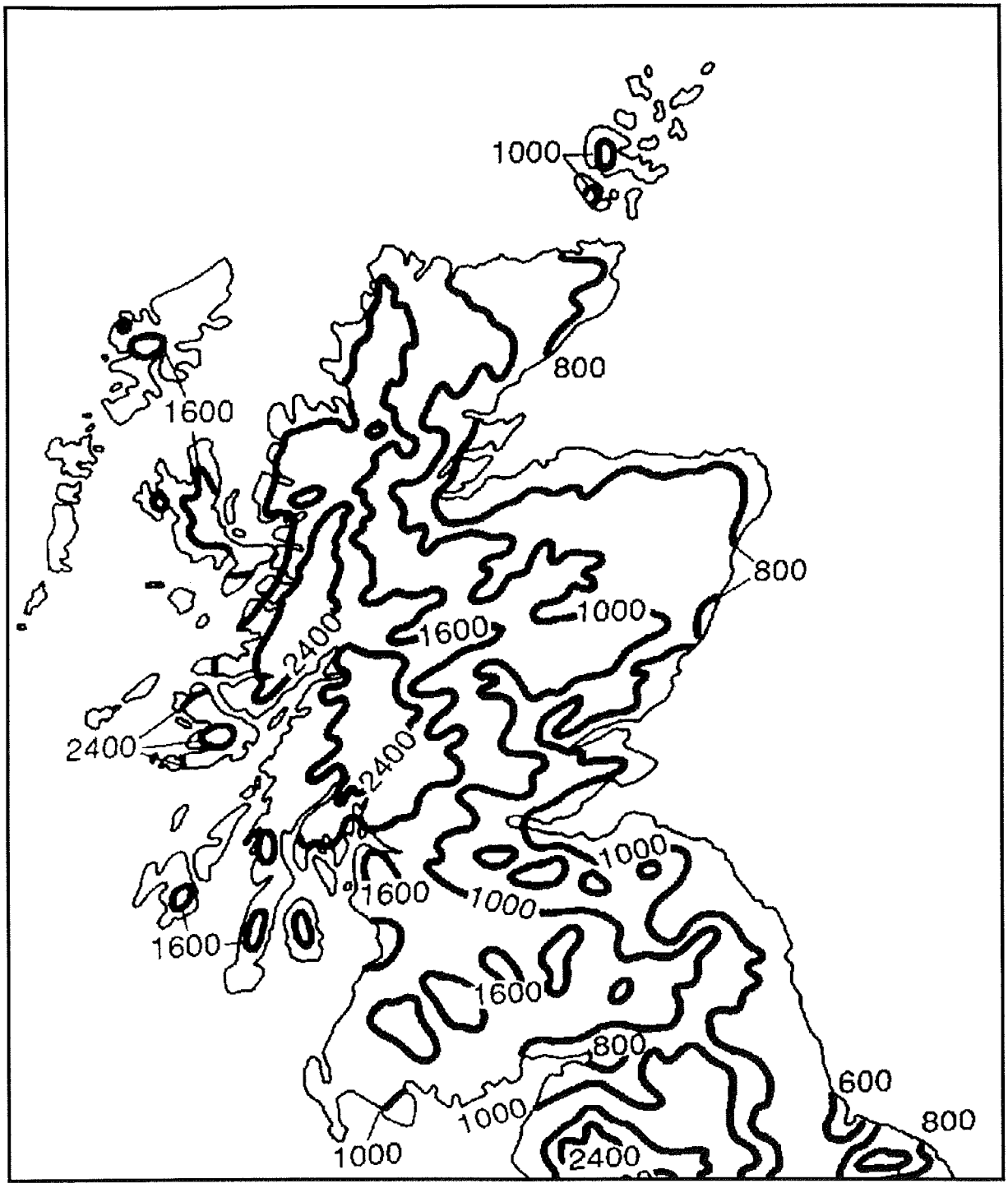
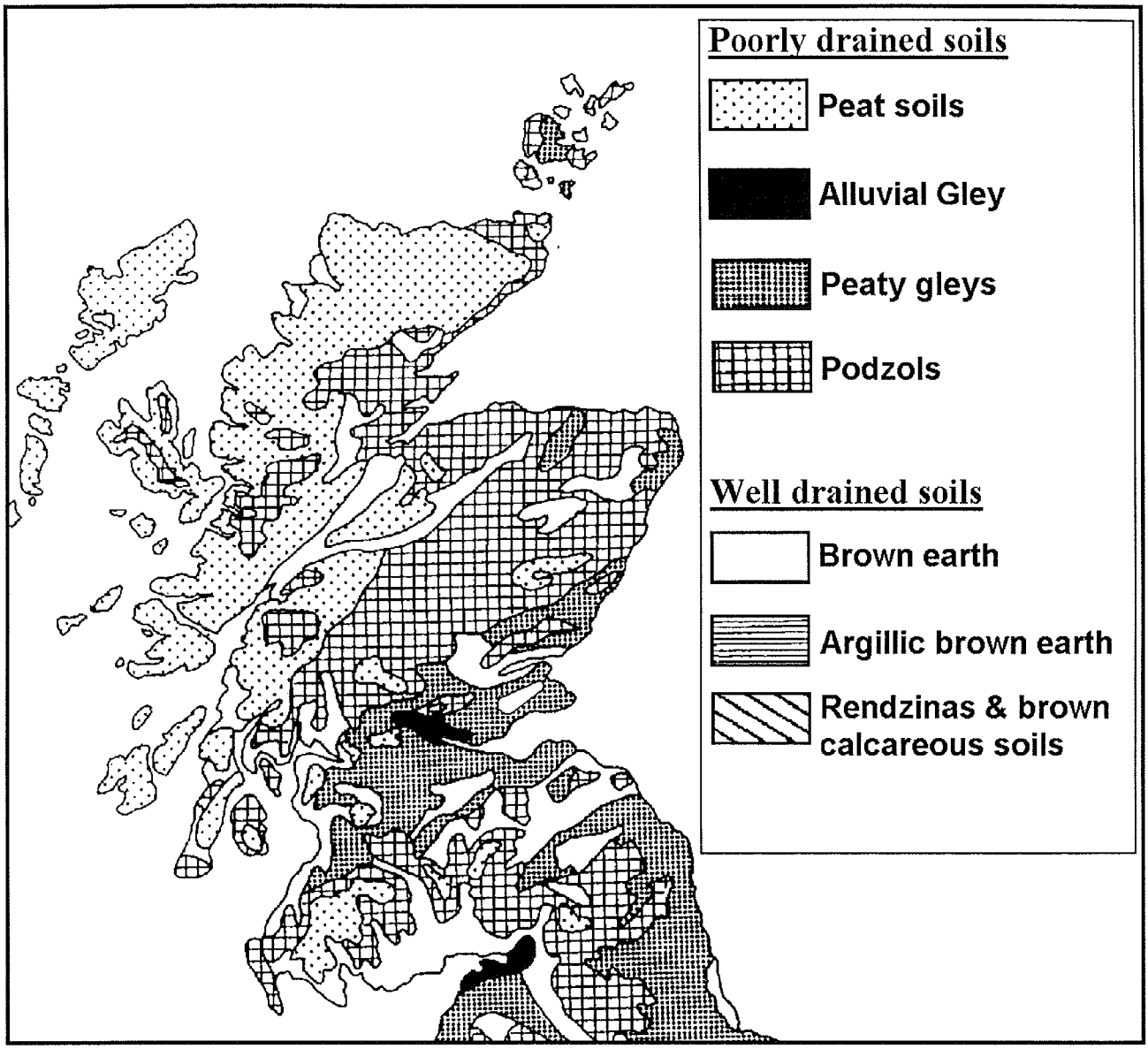
[8] Goudie, A.S. & Brunsden, D., *The Environment of the British Isles. An Atlas* (Oxford, 1994), p. 20, 60.
[9] Whittow, John, *Dictionary of Physical Geography* (London, 1984), pp. 389-390.



Map 6.1: Relief distribution in the UK(After Goudie & Brunsden)

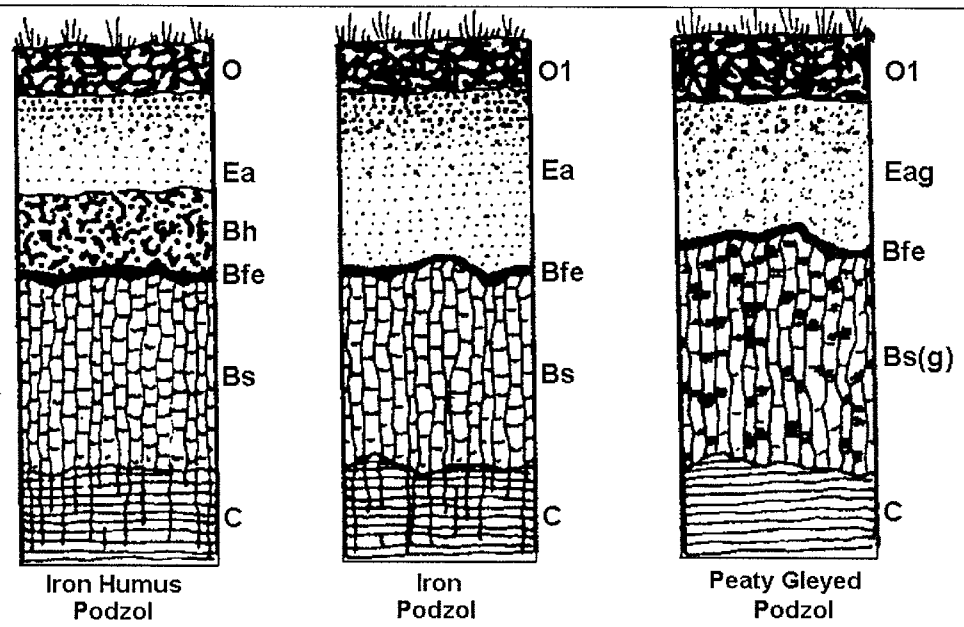


Map 6.2: Mean annual rainfall in Scotland (in mm) (After Goudie & Brunsden)



Map 6.3: General soil distribution in Scotland (After Goudie & Brunsden)

Most of the upland areas and low waterlogged areas of the West Highlands are covered with peat, which under natural circumstances has hardly any value for forestry. In the central Highlands the same conditions exist on some elevated slopes and high plateaux. But in general, we find a typical pattern of podzols in the Central Highlands while in the valleys brown forest soils are common.



A-horizon:	O	- Surface litter and decomposed organic matter
	O1	- Surface peat
	Ea	- Dark mineral soil
	Eag	Gleyed horizon (contains clay)
B-horizon:	Bfe	- Iron pan
	Bh	- Horizon enriched by humus
	Bs	- Horizon enriched with clay minerals (g = gleying)
C-horizon	C	- Parent material (bedrock)

Figure 6.1: Podzols (after: Whittow)

In the centre and eastern most parts of the Scottish mountain belt lies the upland heaths, which are usually treeless and situated on podzolised compact soils with a thin layer of raw humus, typically with a thin iron pan. This is the so-called iron-humus podzol, but the typical podzol found in more elevated and wetter grounds is the iron podzol, in which raw humus layers thickens until true peat forms. Because of the high rainfall levels in these areas, iron, aluminium and other metals are washed down from the top soil into the second soil layer, the

B-horizon, where it develops into a sharply visible and very hard iron pan which prevents proper drainage. This type of podzol is different from the lowland podzols with its characteristic soft iron pan and clay rich B-horizon, and is called a peaty-gleyed podzol.[10] Gley podzols form under conditions of periodic or permanent saturation by water in the absence of effective drainage. Under natural circumstances this soil carries a vegetation cover of heath or coniferous forest. Podzols are generally fertile when properly drained and ploughed to break the iron pan, which is impermeable to water and inhibits root penetration. Many of the lands which feature well-developed podzols are used for sheep grazing.

The brown earths are the most fertile soils to be found in Scotland and extremely useful for agriculture. Brown forest soils are mainly restricted to the area around Aberdeen, Fife and the Lothians and parts of south-west Scotland.[11] Parts of the east coast and the Central Belt are dominated by gley soils, which are characteristically affected by periodic or permanent saturation by water. In many parts of Scotland humus or peaty topsoil overlies the gley. When properly drained the gley soils are useful for agricultural purposes.[12]
The Southern Uplands are a mix of brown forest soils, podzols, gley and upland peat. They are more a continuation of the soil landscapes south of the border than part of the more northern soil pattern.

In all regions wind exposure is a limiting factor for both agriculture and forestry. Because of the dominance of westerly winds the west coast is most vulnerable to strong winds but high slopes and mountain summits are also windy places. The orientation of valleys is another important factor with regard to wind exposure. Valleys with a west - east orientation are more vulnerable to wind exposure than valleys with a north - south orientation. It is therefore harder to predict which parts of the country are most vulnerable to

[10] Zehetmayr, J. W. L., 'Afforestation of Upland Heaths', *Forestry Commission Bulletin* 32 (London, 1960)., pp.1-2.
[11] Ibid., pp. 390-391; Taylor, Andrew et.al., *Soils, Scotland's Living Heritage* (Edinburgh, 1996), p. 9, 16.
[12] Whittow, *Dictionary*, p. 128.

wind exposure but we can make some generalisations. The west coast and the highest mountains are more vulnerable to high wind exposure than the more sheltered eastern parts of the country, and inland areas are also less susceptible to strong winds than the coastal zone.[13]

6.4 The Corrour and Inverliever Experiments

When the Forestry Commission started its work it embraced some old woodland areas, such as Eggesford Forest, which were within existing forestry experience, i.e. planted on fertile ground and made up mainly of native species. However, for the reasons explained above, it was necessary to push beyond the limits of traditional estate planting into the poorer upland grazing, heathland and moorland. It was here that the Commission was confronted with the problem that large-scale planting on these grounds far outstripped contemporary experience. Fortunately the Forestry Commission did not have to invent everything from scratch. During the 19th century Scottish foresters had created a corpus of technical knowledge unrivalled in Britain. This experience was mainly gained during the hundred years between 1750 and 1850, when landowners in Scotland planted for pleasure but also started to create commercial forests. Their main aim was to enhance the amenity of the estates and not timber production. The arrival of exotic conifers from all parts of the world, but especially North America, helped to increase the interest in forestry among estate owners. Around 1890 most of the exotic conifers planted in Scotland were between 35 and 60 years old. The majority of these trees had been planted on fertile and sheltered sites where they thrived.[14] Hardly any attempt was made to try these trees out on more difficult sites, and in this respect the experimental work done by John Stirling Maxwell at Corrour and by the Office of Woods at Inverliever was breaking new ground. The Corrour estate is situated in the middle of the Highlands

[13] Goudie & Brunsden, *The Environment*, pp. 90-95; The Meteorological Office, *The Climate of Scotland. Some facts and Figures* (London, 1979), p. 20.
[14] Matthews, J.D., 'Forestry', *Proceedings of the Royal Society of Edinburgh*, 84B (1983), p. 145, 159.

around Loch Ossian in Inverness shire, just east of the West Highland Railway line. The Loch Ossian plantations were begun in 1892 and intended to improve the landscape and afford shelter for deer, but also to demonstrate that planting on elevated moorlands was possible.[15] The conditions around Loch Ossian are not very well suited for forestry. All the plantations lie above the 1250 feet (412 metres) contour, the soil is poor and consists for the most part of peaty soils, and very exposed slopes. The initial results of the planting were far from successful and would have been forgotten if there had not been an increasing interest in afforestation around 1900. Since 1902 Stirling Maxwell, with the help of his foresters Simon Cameron and John Boyd, laid down several experiments involving planting on peat soils. The aim of these experiments was 'finding out whether it is possible to convert bad moorland soil into forest at this altitude in Scotland'.[16]

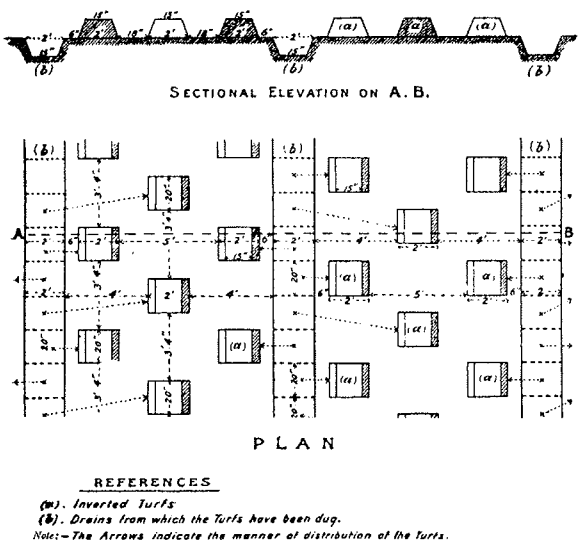


Figure 6.2: Plan of the Belgium peat planting system as published by John Stirling Maxwell in 1907 in the *Proceedings of the Royal Scottish Arboricultural Society*.

The experiments were based on the experience gained by the Belgium Forest Service with establishing plantations on elevated peat. The Belgians had developed a method by which a network of ditches was created to drain the peat. The surface material that came out of the drains, often referred to as turf, was dragged out of the drain and turned upside down in rows roughly several feet apart (figure 6.2). By planting time the turf would have settled

[15] Stirling Maxwell, John, 'The Planting of High Moorlands', *Transacrions of the Royal Scottish Aboricultural Society*, 20 (1907), pp. 1-2.
[16] Stirling Maxwell, John, *Loch Ossian Plantations* (Glasgow, 1913), p. 5.

and dried and could then be easily slit open to contain a tree, spreading out the roots under the turf. With the original Belgium method a circular plug was cut from the centre of the turf, creating a hole in which the young plant was placed. However, the Corrour experiments showed that spreading the roots under the turf provides the young tree with a better nutrient supply.

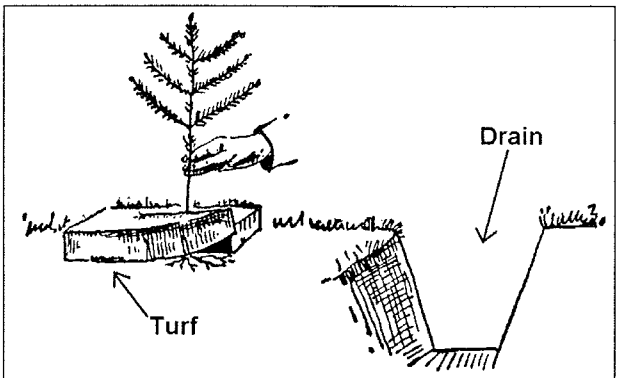


Figure 6.3: Planting in a turf according to the Corrour method (*Source: T.A. Robbie*)

When a tree is planted according to the Corrour method, it stands in the centre of the turf with its roots near where the two layers of vegetation are rotting, and releasing nutrients, providing aeration, and keeping roots from the peat soil which may still be too wet and cold (figure 6.3).[17]

The advantage of the Belgium method is that it provided local drainage, weed suppression and the release of nutrients. It proved possible to plant trees in the turfs successfully and even at higher elevations. On the Corrour Estate Stirling Maxwell tried to adopt this Belgium method to the more extreme Scottish conditions. One of the most important innovations was the use of phosphatic fertilisers to give the young trees a growth boost.[18] The value of the Loch Ossian plantations was that it showed for the first time what could be done on mountain peat of various kinds.

The work at Inverliever differed from that at Loch Ossian in the respect that, whereas the latter was designed as an experiment in peat without any commercial objective, the former was laid out as the first large-scale planting on both good and poor land as if it were a commercial undertaking. Inverliever Forest is situated on the north side of Loch Awe in

[17] Stirling Maxwell, 'The Planting of High Moorlands', pp. 2-4; Robbie, *Teach Yourself Forestry*, pp. 92-93.
[18] Stirling Maxwell, *Loch Ossian*, p. 46,

Argyllshire and was thought to be reasonably representative of large areas of plantable land in the west of Scotland. It was placed under charge of Roy Robinson in 1912 and, together with the local forester, John Boyd, he started a scheme that was meant as a model for large-scale afforestation of upland areas. They set out to develop a standard procedure for selecting land for afforestation. The land was first surveyed in advance of planting to find out which parts were expected to produce good timber and were to be planted. It became clear that soil and exposure were factors that played a leading part in limiting tree growth, while existing vegetation was important in its effect on the growth of young trees. Robinson and Boyd also classified vegetation types as an indicator of the character and condition of the soil and therefore of the probable productivity of the site. The second group of experimental work carried out was large-scale planting on poor sites, mainly with spruces. These experiments differed from those at Loch Ossian because most of the trees were directly planted in the peat soil and no fertilisers were applied.[19]

In 1920 the Forestry Commission took over Inverliever Forest from the Office of Woods. Because the forest was a decade ahead of the first plantations of the Commission it was carefully monitored. The examination of its development, silviculture and management could provide information on problems that were likely to arise in the newer plantations. Inverliever provided the Commission with invaluable information of the problems of afforestation and silviculture of fast growing conifers on difficult sites.[20]

The experiments at Corrour and Inverliever were only the beginning of the development of techniques that would make the planting of upland areas possible but much work had still to be done. The Forestry Commissioners realised this and soon after the establishment of the Commission appointed H.M. Steven as research officer for Scotland. A year later in 1920 a research branch was set up:

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[19] Notes on Inverliever Forest by Roy L. Robinson, 1923, 195, NAS FC7/6.
[20] Matthews, 'Forestry', p. 148.

> To carry out experiments designed to improve techniques in all branches of practical forestry work, to study the factors of production, and to hold a watching brief for new diseases and pests as well as discovering methods of controlling existing disorders.[21]

The research branch was confronted with five themes that dominated British forestry during the inter-war years: the classification of land for planting; nursery practice; choice of species; preparation of the planting sites; improvement of production.[22]

Because the choice of species, preparation of planting sites and improvement of production has greatly affected the appearance of the forests and forestry practice, these themes will be followed below.

6.5 Site Preparation

The development of better site preparation techniques made the biggest impact on the development of forestry practice in Scotland. The work at Corrour and Inverliever had proved that the development of forests on peat was possible, but the costs were very high and growth slow. Nevertheless the Commission continued along these lines and concentrated research on testing different tree species, improving the turf planting methods and the use of fertilisers, on drainage work and later ploughing. To improve the turf planting method Mark Anderson designed a series of experiments that were carried out on the Lon More just south of Fort Augustus between 1925 and 1928. These experiments confirmed the findings of the Corrour experiments. By 1929 turf planting had been adopted in every district on the peat types suitable for forestry.[23] However, the method of turf planting had some basic problems because it was very labour intensive, it did not improve drainage sufficiently, and it was not deep enough to break through podzolic iron pans. Anderson realised after 1925, when he took the Scottish research over from Steven, that if the land could be ploughed it would solve

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[21] Guillebaud (second head of the Forestry Commission Research Branch) quoted by: Wood, R.F., 'Fifty years of
Forestry Research', *Forestry Commission Bulletin* 50 (London, 1974)., p. 5.
[22] Matthews, 'Forestry' p. 145; Wood, 'Fifty Years', p. 10.

these problems and make it possible to cultivate upland moors and plant them economically. In 1927 the first attempts were made to pull a plough by horses, but these experiments were not very successful.[24] The horses were not strong enough to turn the tough peat and the ploughs were not heavy enough to break the iron pan.

The Scottish experiments were not the first experiments with ploughing. The first ploughing by the Forestry Commission took place in 1921 on elevated heathland at Allerston, in North Yorkshire. During this test an ordinary agricultural tractor and light single furrow plough with subsoiler or tine were used. The problem with this equipment was that the plough was not heavy enough to break the pan and was useless on the more stony and steeper slopes and on the much wetter peats. What was needed was the development of more powerful tractors and, especially crawler tractors that could work on deep peat. Research continued through the 1930s and concentrated on the cultivation of wet soils and heathland. Ploughs Breakages during experimental ploughing were normal during the 1930s and much energy was spent on the design of a more robust forest plough that could maintain the desired depth on the worst ground. Over time heavier ploughs and more powerful tractors that were able to plough deeper and to break the pan with a longer and stronger tine became available. By the early 1940s a special plough, for use on dry grounds with an iron pan, was designed by Messrs. Russell of Kirbymoorside in Yorkshire. The initial tests of this plough, which was to become known as the RLR plough, at Langdale Forest in Yorkshire were a great success. The plough was named after Sir Roy Lister Robinson (RLR), then Chairman of the Forestry Commission, and its introduction made the cultivation of large stretches of heathland possible.[25]

A similar development can be observed with the development of ploughs for wet and peaty sites. The use of these ploughs was delayed by the fact that the wetter sites demanded

[23] MacDonald, J.A.B., *The Forestry. An Autobiography* (Unpublished, 1997), pp. 15-16.
[24] Davies, *The Scottish Forester*, p. 33.

more powerful tractors than the drier heathlands, but when these machines became available by the end of the Second World War the development and use of ploughs for the cultivation of the wet peatlands became common practice. Davie Ross, a Commission's forester stationed at Minard in Argyll, designed one of the first specialised forest ploughs for use on wet sites. But it was James Cuthbertson, an engineer of plough manufacturer Biggar, who further developed Ross' ideas. The result was the famous Cuthbertson Plough which, combined with more powerful crawler tractors, made large-scale mechanical cultivation economically feasible by the end of the Second World War.[26] By the early 1950s ploughing for drainage and cultivation was an established practice in the Forestry Commission and by 1970 the Forestry Commission ploughed at least 70 per cent of the annual afforested area.[27]

Most of the forests created since the war have been planted on poor heath and peatland because the new techniques made it possible to plant these areas economically on a large-scale. Although the ploughing improves these poor soils, they remain far less fertile than the brown earth soils that are nearly all used for intensive agriculture. This explains why most of the new established forests are made up of conifers in general, and Sitka spruce in particular, because conifers are more tolerant of poor soils than hardwoods. The development of fertilisers and its distribution of it extended the range where conifers could be planted even further. The coincidence of exotic conifers, ploughing and the use of fertilisers had a profound impact on the sites where these were planted.

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[25] Zehetmayr, *Afforestation of Upland Heaths*, p. 47.
[26] Davies, *The Scottish Forester*, p. 34.; Avery, Mark & Leslie, Roderick, *Birds and Forestry* (London, 1990), pp. 50-51.
[27] Wood, *Forestry Research*, p. 68.

6.6 Tree Species

From the previous sections it is clear that the physical factors in Scotland had a profound impact on the development of forestry in Scotland. Initially much effort was put into the selection of tree species. The objective of this was to match tree species to the right soil conditions, or, to put it differently, to find the tree that grows best on a certain soil. Some trees demand fertile soils to grow well. Such trees are called exacting species and they include beech, ash, elm, oak and silver fir. At the other extreme are a few trees that will accommodate themselves to poor soils. They are called accommodating species and include pines, spruces, birch and willow. This distinction has huge consequences for the trees that can be used on the land available for forestry. It can be observed that, in general, broadleaf trees are more exacting species than conifers and it is for this reason that conifers became to dominate the poor upland plantations.[28]

Table 6.1: Composition of FC conifer plantations in the 1960s in Scotland

Species	**Area planted** (thousands of hectares)
Scots pine	61.4
Corsican pine	2.8
Lodgepole pine	44.5
Sitka spruce	135.4
Norway spruce	33.3
European larch	6.9
Japanese and hybrid larch	26.6
Douglas fir	6.5
Other conifers	5.6
Total	**323**

(*Source: Forestry Commission, Census of Woodlands, 1965-67, H.M.S.O., 1970*).

The conifers used in forestry shifted over time. Initially Scots pine was the most planted tree because it was believed that this hardy species grows well on both dry and wet soils.[29] As can be seen from table 6.1 the total land area planted with Scots pine came second only to Sitka spruce. However, this area gives a false impression of the levels of planting of this tree

[28] Rowe, *Our Forests*, pp. 66-67.
[29] Ibid., p. 69.

throughout the period 1919-1970. During the first decade of the Forestry Commission almost half of the trees planted were pines of which the majority was Scots pine, but by 1970 its planting was almost negligible.[30]

By 1933, the experiments at Inverliever had shown that only a few conifers were suitable for planting on wet peat soils. Scots pine thrives in areas where Sitka spruce, lodgepole pine and other spruces are likely to fail because it is too dry. Scots pine does best on well-drained sands, gravels and other well drained sites. Because of this Scots pine was dismissed as a useful tree on wet peat and banned to the drier sandy soils in the east and on drier heathlands. The consequence was that during the 1930s Sitka and Norway spruce overtook pines as the most planted trees. Norway spruce was planted on moist waterlogged sites of medium to high fertility, including the less acid peats, but because Norway spruce is less accommodating the proportion of planting fell rapidly against Stika Spruce and Lodgepole pine from the 1940s onwards.[31] Lodgepole pine resembles Scots pine and, like the latter, it is tolerant of poor soils. However, logdepole pine can tolerate wet conditions much better than Scots pine and is therefore widely planted at high elevations on the poorest western soils and it will grow well with only low inputs of fertiliser. Its hollow roots bring air into the ground and provide it with the capacity for drying out peat. Lodgepole pine is widely planted as a nurse to provide shelter, usually in mixtures of Sitka spruce. However, this practice almost ceased by the late 1960s in favour of Sitka spruce.[32]

The use of Sitka spruce had a profound impact on the shape of British forestry. From the late 1920s it was realised that it was a tough tree that was easy to establish and hard to kill, and it was regarded as the most suitable tree for growing on the wet upland parts of

[30] Avery & Leslie, *Birds and Forestry*, pp. 7-8.
[31] Ibid., pp. 8, 49-50; Savill, Peter S., *The Silviculture of Trees Used in British Forestry* (Oxford, 1991), pp. 59-60, 76-77.
[32] Savill, *The Silviculture of Trees*, pp. 65-66; Tivy, Joy (ed.), *The Organic Resources of Scotland, Their Nature and Evaluation* (Edinburgh, 1973), pp. 176-177.

Scotland. Sitka spruce is highly productive, tolerates high levels of exposure, and grows well on a wide variety of sites. It grows well on drained peats, is highly productive on gley soils and grows best on well-drained deep soils in suitable high rainfall areas. It was in conjunction with research into new planting techniques for marginal grounds that Sitka spruce began to assume its dominant position on difficult sites. Because of its suitability for planting on the upland peats of Scotland, more research has been devoted to Sitka spruce than to any other single tree species.[33]

Although the tree looks superior in the Scottish context to other trees it has a few problems that prevented it from becoming the dominant tree before the Second World War. Sitka spruce is site demanding, which means that nutrients, particularly phosphate, must be added when grown on poor sites. Like Norway spruce, lodgepole pine and some other conifers, Sitka hardly grows in competition with heather unless the heather is killed or enough fertiliser is added to enable to outgrow the heather. It was only after the introduction of better manuring techniques, herbicides and ploughing that these problems were overcome. To give the young trees a kick-start to outgrow the heather phosphatic fertiliser was added before ploughing the ground so that it was ploughed into the soil. But after a couple of years the fertiliser would be used up and the danger existed that the re-emerging heather would check the growth of the trees. This problem was solved when the spraying of fertiliser from the air became available.[34] Ploughing made the large-scale planting of Sitka spruce possible because it suppressed the heather on lands that had been unavailable for this tree. The emergence of ploughing and Sitka spruce as the dominant species made the large-scale afforestation of the post-war decades possible but also created the geometric green patches on the hill slopes.

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[33] Fraser, F. K., 'Studies of Scottish Moorlands in Relation to Tree Growth', *Forestry Commission Bulletin*, 15 (London, 1933), p. 100; Wood, 'Fifty Years', p. 17-19; Zehetmayr, 'Afforestation of Upland Heaths', p. 80.

[34] Savill, *Silviculture*, pp. 60-64; Avery & Leslie, *Birds and Forestry*, pp. 50, 51-52; Wood, *Forestry Research*, p. 65.

6.7 Choice of Species Related to Site

The massive afforestation programme that had been running since 1919, and especially after the Second World War, had a direct impact on the landscape. The most visible of this impact is, of course, the change in the landscape that come with the planting and harvesting of forests. There is a sense of loss when a familiar landscape is transformed by forestry operations such as afforestation and harvesting of trees. It is for this reason that the visible impact of forestry operations sparked off the earliest debates about landscape aesthetics and amenity in relation to forestry. Surprisingly enough the earliest debates took place among the least expected group: foresters themselves.

The discussion about the visible impact started immediately after the Forestry Commission was established, almost before the first trees had got into the ground. In 1920 an article by John Parkings, a member of the Linnean Society and an accomplished botanist, warned about the effect that large single species plantations would have on the landscape:

> To plant pure is a sound silvicultural maxim. To follow this out to the letter will result in plantations of a severe type - largely consisting of rectangular areas of a single species of conifer.[35]

He predicted that the result would be:

> A closely grouped mass of trees of the same kind and pattern with no relief to cheer the eye.[36]

This article set the tone for the discussion about the impact of forestry on the landscape in the decades that followed.

During the 1930s the negative effects of forestry on the landscape were recognised by foresters and gradually the ideas of the organic integration of forests in the landscape emerged. By the mid-1930s Lord Clinton, one of the original Forestry Commissioners and former Chairman of the Forestry Commission, wrote about forestry and landscaping that:

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[35] Perkins, John, 'A Plea for the Consideration of the Aesthetic Side in Restocking Our War-felled Woods', *Quarterly Journal of Forestry*, 13 (1920), p. 255.
[36] Ibid.

> One really valid objection to modern planting from the artistic point of view is the hard margins and rectangular figure which are generally adopted in the layout. [37]

To prevent hard margins and straight lines Clinton proposed to plant or regenerate several species that differ in colour, shape and size in irregular patterns at the boundaries of plantations to 'disguise any straightness in outline or sharpness in angle'.[38] This was written thirty years before the Forestry Commission appointed Silvia Crowe as a landscape consultant.

Instead of deliberately planting trees in irregular patterns to make forests fit organically into the landscape some proposed a more natural method to achieve this. This method was Anderson's forestry on an ecological basis, i.e. planting trees that match the site conditions. Anderson's forestry on an ecological basis does not seem extraordinary nowadays, but was quite extraordinary for its time in the 1950s. The question is how extraordinary Anderson's *ideas* of ecological forestry were during the post-war years. According to Dr Mutch, a former member of his staff at the University he was a 'prophet crying in the wilderness' in the 1950s.[39] This opinion seems somewhat biased in favour of Anderson, but as it is not hard to find evidence that the ideas of ecological forestry were widely accepted among foresters in Scotland.

In 1954, in the midst of the post-war planting bonanza James Macdonald, Director of research and education of the Forestry Commission, argued that research should not only be aimed at nursery problems, pests and diseases, genetics and mechanical development and other plantation techniques, but that more research should be devoted to increase the ecological knowledge of the forests. Macdonald added that successful afforestation of bare hill land and moorland depended on the understanding of ecological processes, and he

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[37] Clinton, Lord, 'Trees and Landscape', *Quarterly Journal of Forestry*, 30 (1936), p. 200.
[38] Ibid.
[39] Interview W.E.S. Mutch.

regretted that so little work had been done in this field.[40] This statement is significant because it came from one of the most senior officers of the Forestry Commission.

However, the importance of ecology in forestry was already recognised during the Inter-war years. In 1933 A. C. Forbes, Assistant Commissioner for Ireland until 1922, published an article with the title 'Silviculture on Natural Lines' that appeared in a 1933 issue of *The Scottish Forestry Journal*. In this article Forbes discussed a visit to a Scottish forest, managed by a system of forestry on natural lines including the planting of species related to site conditions and natural regeneration. Forbes observed that the result of this type of management was 'extremely attractive' and concluded that 'the wood is now practically uneven-aged, and resembles a natural woodland in every respect'.[41] The theory behind this type of forest management was described by Arthur Geddes in an article published in the *Scottish Forestry Journal* with the title 'Landscape and Ecology in relation to Afforestation'. Geddes said in this article that the utilitarian ideas of forestry with their straight-line boundaries and uniform plantations were a mistaken philosophy. He linked forestry on ecological lines with aesthetic considerations and argued that the adaptation of a forestry practice that matched tree species to the site would create a forest that looks more natural and blends better into the landscape. He based this on the experience gained at Inverliever, which showed that uniform plantations were not uniform after ten years due to local differences in site conditions. Almost every block at Inverliever showed variable growth and some blocks simply died. A few years later, a new planting method had been worked out that consisted of noting the natural main plant communities and planting on that patch the tree that grows best where that particular plant community is found. The application of this method led to the creation of mixed woods and curved lines, not by means of planting but by using ecological

[40] Macdonald, James, 'Forestry research and experiment in Scotland 1845-1953' *Scottish Forestry*, 8 (1954), p. 130.
[41] Forbes, A. C., 'Silviculture on Natural Lines', *The Scottish Forestry Journal*, 47 (1933), p. 1

principles which allowed nature to do the landscaping.[42]

Just after the Second World War W. H. Rowe, a forester from Oxford, wrote about forestry on an ecological basis in his book, *Our Forests*. He wrote that forests are 'a living community throbbing with life'. Rowe continued: 'for here, indeed, is a colony of individuals - plants, trees and animals, co-existing in a communal life'.[43] To preserve this, Rowe advocated the use of mixed woods and, where possible, natural regeneration to avoid monotonous forests planted in straight lines and geometric patterns: 'The new forests need not become monotonous blobs obscuring a favourite view or marring a familiar landscape'.[44] But at the same time the prime objective was in Rowe's eyes the production of timber and selecting tree species based on site conditions was the most suitable method for achieving this.

But how common was the *practice* of planting of trees according to the site conditions? The conclusion depends on where you look and at what time. Before the war there was a general tendency match trees to the conditions at the site, like in Strathyre. The Strathyre working plan of 1951 reads that 'great care was taken to plan species according to the indications of even small vegetational changes'.[45] It was here that the local forester, Alistair Cameron, the son of Simon Cameron who helped create the experimental forests at Corrour, planted trees according to the site. He used the local plant communities and soil differences to define where to plant a certain tree species and he took also the topography and the microclimates that stem from it into consideration. Cameron realised that if the best use of the land was to be made, it was not a good idea to plant trees in compact and regular blocks of single species. In Strathyre Forest the topography and soil vary markedly from place to place,

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[42] Geddes, Arthur, 'Landscape and Ecology in Relation to Afforestation', *The Scottish Forestry Journal*, 58 (1944) 53-57.
[43] Rowe, W.H., *Our Forests* (London, 1947), p. 11.
[44] Ibid., p. 23.
[45] History of Strathyre Forest, 1934-195, 1 NAS FC7/9.

as does the vegetation that it supports and the exposure on the upper slopes can be severe. The foresters in Strathyre followed this natural pattern of soil, vegetation and climatic variation in order to plant trees to the best advantage. They really made an effort to match the trees to the site and thus created the diverse forests we see at the present day. This method of planting resulted in a pattern of different species mixed in irregular patterns with irregular upper and side edges of the plantations. Although the main species used were conifers, on the lower slopes and on the roadsides native broadleaves were favoured to increase the variety and beauty of the forests.[46] The planting method used in Strathyre did not remain unnoticed. It was Fraser Darling who commented in his book *Natural History of Highlands and Islands* that:

> Such is the country either side of Loch Lubnaig where the Forestry Commission is changing the face of the hillsides. The varied scheme of plantings here can serve as a model to confound those who hold that forestry spoils the scenery.[47]

A 1951 a Forestry Commission guide to Strathyre forest said with pride, that this forest 'shows how forestry can be enhancing a Highland landscape when forethought is given to its future effects'.[48]

North of Loch Ness, in Glen Urquhart, the Commission's foresters took a similar approach. The Forestry Commission acquired the first part of this estate in 1923 and the remainder in 1944. Most of the planting here was a mix of conifers, of which Scots pine was the dominant species. Where and what kind of species was planted depended in the local variations of vegetation and soil conditions.[49]

The forests around Fochabers in the Speymouth area are another example of trees matched to the site. The forester in charge, Bob Allison, planted 1000 acres per annum

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[46] FC7/9 History of Strathyre Forest, NAS FC7/9; Macdonald, J.A.B., *The Forestry*, p. 49.
[47] Darling, *Highlands and Islands*, p. 23.
[48] Forestry Commission, *Britain's Forests; Strathyre* (London, 1951), pp 5-6; Personal Comment Professor D.J. Matthews.
[49] Working Plan Glen Urquhart 1950-1965, NAS FC7/35.

around Fochabers during the 1950s. The planting of these extensive areas was possible due to the introduction of large-scale cultivation by means of ploughing. That did not make much difference to the choice of species with regard to the site conditions. Allison wanted to plant the most suitable species with respect to soil and climatic conditions but the problem was that the nurseries did not always supply what he needed. The nurseries mass produced seedlings and foresters had to take the trees that the nurseries supplied, but despite this problem and the commercial objective, the forests around Fochabers are remarkably diverse. Natural regeneration was allowed to take place in the pine and larch plantations and the planting of trees with respect to the soil and climatic conditions created the mixed forests we see today.[50] However, the conditions in Strathyre, Glen Urquhart and around Speymouth are not as wet and windy as the west coast. Matching trees to the site was practised, but did not result in a mix of different species. In Benmore Forest in Argyll very little mixing of species was carried out, and planting was almost entirely confined to pure blocks of different common conifers, generally large blocks of spruce and smaller compact blocks of pines, larches and Douglas fir. During the inter-war period most trees were planted in turfs to deal with the wet and peaty conditions. After the war the introduction of new cultivation techniques allowed larger planting programmes to be initiated, mainly of spruce. The reason for the predominant use of spruces is that these trees are better able to survive the wet and windy conditions of the west coast. The same story applies to Ardgartan Forest, part of Argyll Forest Park, where initial planting by the Forestry Commission was spruce planted in turfs.[51]

Loch Ard Forest is situated in the heart of the Queen Elizabeth Forest Park, in the upper Forth basin around the Trossachs. The forest is predominantly one of spruces, which accounted for more than two-thirds of the planted area in 1960. In the forest working plan the area planted during the inter-war period is described as 'diverse in character' and that 'a very

[50] Personal comments Bob Allison.
[51] Forest History Ben More Forest, 1925-51 NAS FC7/3; Forest History Ardgartan Forest, 1924-51, NAS FC7/1

intimate choice of species related to site variation was practised resulting in a form of group mixtures'.[52] After the war the 'choice of species related to the site' philosophy was abandoned in favour of the large-scale cultivation that was made possible by the introduction of ploughing. The working plan described this shift in cultivation techniques as follows:

> Due to the nature of the sites being planted, their remoteness, plough draining and cultivation techniques, combined with manuring, the choice had normally been spruce or pine.[53]

It was the new cultivation techniques that made foresters shift from a forestry based along ecological lines to a forestry that was mechanised and able to create site conditions that were very similar over great areas. During the inter-war years the choice of species related to the site was the most economical way to grow timber, but after the war the new cultivation methods looked more promising to create profitable forests because it was more efficient and reduced growth times. This can be observed in the Carron Forest were most forests were established by means of ploughing. The majority, a staggering 93%, of all trees planted in Carron Forest were spruce, of which 79% was Sitka spruce.[54] The same happened in the forests of Mid-Argyll around Kilmartin, north of Lochgilphead. The plantations here are for more than 80% comprised of spruces planted on ploughed ground. The management objective of these forests was to 'supply the maximum pulpwood to the Fort William pulp mill'.[55] This shift towards an industrial-scale timber production reflects the policy change by the beginning of the 1960s that was discussed in chapter four. However, foresters realised that the new mechanical forestry practice did not produce healthy sustainable forests. In 1964 Andrew Watt, Director of Forestry for Scotland, suggested that forest research could not afford to neglect the need more basic knowledge on climate, soils, ecology and tree

[52] Working plan Loch Ard Forest, NAS FC7/48.
[53] Ibid.
[54] Working Plan Carron Valley, 1966, NAS FC7/52.
[55] Working plan for mid Agyll, 1966, NAS FC7/59.

physiology[56]. This was exactly what James Macdonald, Director of Research and Education of the Forestry Commission, had argued ten years earlier. He wrote that research should not only be aimed at nursery, pests and diseases, genetics and mechanical development and other plantation techniques, but also at ecological knowledge. As already mentioned he believed that successful afforestation of bare hill land and moorland depended on better knowledge of ecological processes.[57] At about the same time there was considerable discussion between proponents of ecological forestry and the more economic minded foresters. Part of the debate took place in the public sphere through correspondence in newspapers. In July 1956 John McEwan, forester in the west of Scotland, attacked the movement opposed to rapid development of highly productive forests in a letter to the *Glasgow Herald.* He was of the opinion that:

> This ecological school of thought plans for protective forestry and places [it] on a much higher plane than money-making policy.[58]

In a reply to McEwan, C. Brenshaw, a forester from Perthshire, defended the ecological school by stating that, in line with Anderson, long rotations and use of native deciduous trees would improve the soil. Brenshaw thought that ecology was a necessary component in forestry and that 'it would be pathetically foolish to neglect its revelations'.[59] But the tide was against ecological forestry and short rotation forestry based on large-scale mechanical cultivation, and the use of Sitka spruce became firmly established by the early 1960s.

The break in forestry practice is less dramatic if we bear in mind that both the practices of ecological forestry and the new mechanical forestry had the same aim: the production of timber to make a profit. Despite that their aims were similar, the new forestry practice had a

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[56] Watt, Andrew, 'Some Aspects of Forest Research in Great Britain', *Scottish Forestry*, 18 (1964) 106-109.
[57] Macdonald, James, 'Forestry Research and Experiment in Scotland , p. 130; Macdonald, James, Progress in Forestry Research, Scottish Forestry 4 (1950) 40-48.
[58] John McEwan, 'Forestry and land use in Scotland. Attack on the "Ecological School"', Letter to the *Glasgow Herald*, 18 July 1956.
[59] C.M.B. Brenshaw, 'Case for Native Deciduous Trees', Letter to *Glasgow Herald*, 21 July 1956.

profound impact on the appearance (and function) of the forest. The forests became less diverse, larger and their shape had to be rectangular because this was easier for ploughing operations. However, the changes do not tell us much about the attitudes of foresters towards nature conservation, wildlife management and nature in general. To gain an understanding of foresters' attitudes towards nature conservation and ecology we need to have a closer look at foresters at an individual level.

6.8 Foresters, Forests and Ecology

The famous Scottish ecologist, Fraser Darling, described the upland moors and peatlands in a vivid phrase as a 'wet desert' and was convinced that these areas had to be reclaimed for the recreation of forests that had once thrived there. If that could not be done through natural regeneration then it had to be done artificially. The main purpose of forest re-creation was the production of timber, but Fraser Darling was convinced that this would increase biodiversity in the Highlands, and it was for this reason that he regarded the work of the Forestry Commission as important and valuable.[60] In the 1969 BBC Reith Lectures he praised the Commission by saying:

> [The Forestry Commission] preceded State action in establishing its own National Forest Parks, which in Scotland have to make do for the National parks that the country has been denied. Furthermore, in the last twenty years the Commission has planted its new forests with much more ecological awareness, using different species.[61]

From the start of the Forestry Commission foresters showed an interest in other aspects of forestry than simply growing poles of timber. The Forestry Commission used the high forestry system managed with regular thinning and clear cutting of the final crop in the hills of Scotland, although this system had a few disadvantages. The high forestry system can easily turn into a kind of forestry dictated by textbooks calculations and data in yield tables,

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[60] Darling & Boyd, *The Highlands and Islands*, pp. 66, 69-70, 73-74; Smout, T.C., *The Highlands and the Roots of Green Consciousness, 1750-1990* (Edinburgh, 1993), p. 9.

[61] Darling, Fraser F., *Wilderness and Plenty, The Reith Lectures 1969* (London, 1970), p. 67.

turning forestry into a hard-fact science with the aim of producing the most desirable product in the most economic time. F. Oliver[62], a district officer of the Forestry Commission, observed this and wrote in 1939 a provoking article in the *Forestry Commission Journal*. In this article he questioned the outcome of the current forestry management system in use. Oliver was surprised that much forestry literature suggested that foresters have to imitate nature, i.e. to plant the trees and let nature do the rest. In his experience the reality was quite the opposite:

> to a forester nature is everything that is bad: she is slothful, wasteful, careless, extravagant, and the results she obtains are often deplorably poor.[63]

He continued by saying that this is quite obvious because in natural forests developments occur randomly with an unpredictable outcome. In nature, trees are never arranged in geometric patterns, it would be 'uneven, patchy and blanky, with much variation of species'.[64] The result of the high forestry system is the opposite of irregular natural forests; their whole management is tailored to make the plantations as productive as possible. Oliver was of the opinion that high forests were degraded into 'pole factories' and that forestry 'has inevitably become something resembling a mass production business'.[65] He even went a step further by saying this proper forest management could become mismanagement, ultimately doing harm to the landscape. Oliver observed further that, under the label of proper silviculture, healthy birch forests were removed or ring barked followed by planting with conifers. He concluded his article by suggesting that forestry should be less mechanical and allow more natural development of the forests. He argued that 'a measure of untidiness may be good forestry, and may be sound both silviculturally and economically. It would certainly

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[62] F. Oliver started his forestry carreer as a District Offices of the Forestry Commission in Inverness. In 1937 he moved to Dumfries to head the forestry district in the South of Scotland. After the war the was the chief controller of wood exports in Hamburg, Gemany, before becoming conservator of the East of Scotland in 1947. Mr. Oliver retired in 1964.

[63] Oliver, F., 'Thoughts on Afforestation', *Forestry Commission Journal*, 18 (1939), p. 123.

[64] Ibid.

[65] Ibid. p. 224.

improve in amenity'.[66]

Oliver was not the only forester appalled by the ruthless suppression of vegetation other than commercial trees. By the beginning of the 1950s, Arthur Cuthbert, a former district officer in Perthshire, was employed as a young forester in a large woodland survey. In many areas he observed that before planting the existing trees were ring barked. He was appalled by this practice and included a long personal letter in the final draft of the survey presented to the Forestry Commission to protest against this practice. He had not gone into forestry to kill trees but to plant new ones and to care for the existing forests.[67]

Many foresters had gone into forestry not only because they wanted to plant and tend trees but also because they had a general interest in natural history.[68] John Davies, Conservator for the west of Scotland, said in this context:

> I think that you must keep in mind that most foresters are keen naturalists. I never met a forester that was not interested in birds or something like that and therefore were pretty good custodians of what they had.[69]

These words contain the echo of G.B. Ryle, the later Deputy General Director of the Forestry Commission, who wrote in 1927: 'a naturalist is born and not made'. He continued:

> and in most cases the factors which go to make the born forester also bring out in him the instinct and feelings of the born naturalist. In fact, the very life which he leads, with his unique opportunities for first-hand observation during all seasons of the year, cannot help but to inculcate in him a degree of insight into the ways of the wild which few others could obtain in a lifetime of book learning.[70]

Ryle suggests here, like Davies, that good foresters must be keen naturalists with the desire not only to create forests but also to enhance and protect the life in them. Later in the article Ryle expressed his concern that the conversion of bare ground into forests would change the local flora and fauna. Therefore, he thought that 'foresters and naturalists will be losing

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[66] Ibid. p. 225.
[67] Personal comment Arthur Cuthbert.
[68] Personal comment Jim Atterson, Interview 13-08-1999.
[69] Personal comment John Davies, Interview, 22-09-1999.
[70] Ryle, G.B., 'The Forester as a Naturalist', *Forestry Commission Journal*, 6 (1927) 21-22.

opportunities if they do not make a study of the changes they are causing to take place in both fauna and flora of their charges'.[71] He believed that foresters were the custodians of their estates and decided what nature should look like. If species declined because of the creation of new forests the forester was only following nature by doing nothing to prevent this, but if 'by accident the Forestry Commission is instrumental in saving from extinction such creatures as the wild cat, the pine marten, the badger and others, every lover of Britian's small fauna will thank them'.[72] The forester is here the custodian and creator of nature; a nature that was concerned with silviculture guided by the principles of nature itself.

At the forest level there were foresters studying the wildlife of their forests. For instance, in Perthshire there was Donald MacCaskill who studied and recorded small mammals and birds living in the forests under his care. He was a keen naturalist who published books on wildlife and birds.[73] MacCaskill continued the work that Cameron had started around Strathyre, where he was head forester. However, he went a step further than Cameron in that he not only tried to fit the forest organically into the landscape but also to have consideration for wildlife. In the case of a glen where eagles were known to be nesting he had designed the forest so that the eagles were not disturbed. It may not have been the most efficient way to plant a production forest but MacCaskill believed that a forest is more than a collection of potential telegraph poles.[74] The forestry practice he advocated did not always find favour with his superiors but that did not stop him from practising it. MacCaskill was not the only forester interested in forest wildlife. John Davies recalled the observation of wild cats in the Central Belt and pine martens in the Great Glen where they had been absent for a long time. He wrote about the wild cat:

'I well remember the excitement we felt in the 1960s when we found them breeding in

[71] Ibid., p. 20.
[72] Ibid., p. 21.
[73] Personal comment by Mr. F.T. Donald, retired forest officer Forestry Commission. Other foresters that were interviewed told that similar motivations played a considerable role in becoming a forester.
[74] Crumley, Jim, 'Don MacCaskill', *The Scots Magazine*, 134 (2000) 96.

> Carron Valley Forest, outside Falkirk. I have no doubt they will continue to move south'.[75]

He attributed the spread of these and other animals to the expansion of the forests since 1919 and was convinced that the process would continue with the creation of new forests. Forester Fred Donald, Assistant District Officer in Kincardine and Angus, recalls that one of his foresters, Struan Stewart, was an expert on deer. This forester would stay up all night to see the deer and recorded numbers and studied their foraging pattern.[76] In an article in *Scottish Forestry* MacDonald Lockhart, President of the Royal Scottish Forestry Society stressed the benefits of afforestation for Scotland's wildlife. Newly planted forests provide shelter for wildlife such as birds, small predators and deer. Animals are attracted to forests because here they find there a better environment to survive than in the open field. He was convinced that rare animals, like the badger, 'will increase as our forest area does'.[77] However, these statements must be approached with caution because Forestry Commission sources, like the annual reports, are silent about wildlife numbers in the forests. That was not included in the aims of the Forestry Commission.

The foresters mentioned here are only a handful of the many foresters who were keen naturalists with an interest in the conservation and protection forest ecosystems. Further study is needed to find out if interest in natural history was a general motivation motivation for foresters to go into forestry. This is also suggested by George Peterken, who wrote that many foresters were (and are) sympathetic towards nature conservation.[78] It seems that there was a general idea among foresters working in the forests that there should be more concern for nature conservation amongst Government agencies. According to Jim Atterson, the foresters at headquarters had exactly the same ideas as foresters out in the forests, but it was just that

[75] Davies, *The Scottish Forester*, p. 52.
[76] Interview, F.T. Donald.
[77] Macdonald Lockhart, S.F., 'Forestry and Wild Life', *Scottish Forestry*, 14 (1960), 199-204
[78] Peterken, G.F., *Woodland Conservation and Management*, p. 198

foresters on the ground could actually do something, although perhaps in a small way. They could not really protect wildlife because it was not part of their main programme and it was not budgeted for and therefore they had to do it during their own time. However, during the 1960s this started to change. As discussed in chapter four, the protection and conservation of flora and fauna became an issue within the Forestry Commission during the 1960s. In 1964 the Forestry Commission appointed a Wild Life Officer with the task 'to harmonise the conservation of wild life with the need of timber production'.[79] For more than 40 years there was no official conservation policy but many foresters were keen naturalists. That they did not act like national park rangers is understandable because their task was to create new forests and produce timber, not to create national parks and conserve wildlife. If that happened incidentally foresters regarded this as a bonus.

6.9 Summary

In this chapter we have explored the development of forestry practice in Scotland since the start of the 20th century. The creation of large new forests in Britain was no easy task because the best grounds were already in use for agriculture. Only marginal grounds were available for forestry, and these were mainly elevated moor and heath lands, which were wet, exposed and had poor conditions for tree cultivation. Before the First World War, Stirling Maxwell had experimented with planting on elevated peat grounds on his Corrour highland estate, with considerable success, and he showed for the first time that such lands could be used for forestry.

The Corrour peat cultivation method was further perfected at Inverlieverin Argyll by Sutherland and made possible the cultivation of more land in the Scottish uplands than before. However, the physical environment still imposed restrictions on the usable land because it was still not possible to break the hard iron pans in peaty

[79] Forestry Commission, *Annual Report, 1964*, p. 11.

and podzolic soils.

The Corrour planting method also had the problem that it was very labour intensive and therefore expensive. For this reason the Forestry Commission tried to find quicker and less labour intensive methods to cultivate land for forestry. During the 1930s and '40s the Commission developed successful methods to plough upland peat and heath land and experimented with the application of fertilisers. The use of exotic conifers, especially Sitka Spruce, further extended the range and scale of the land that could be used for cultivation. The combination of ploughing and the use of fertiliser made it possible to iron out local soil variations, but not to diminish the effects of wind exposure. The use of Sitka spruce partly compensated for this.

However, before these new cultivation techniques were developed, foresters had learned to take local site conditions into consideration when they had to choose a tree species for afforestation. This was done in order to make up for the fact that they were not able to create uniform soil conditions. A side effect was that forests became more diverse in character and natural appearance. This forestry practice was called ecological forestry, and was advocated and studied by Anderson.

Ecological forestry was not only used to make up for soil differences, but also to create forests that were more diverse in appearance. It may surprise some environmentalists to learn that foresters of the Commission were among the first to urge for more consideration of landscape aesthetics and diversity of native flora and fauna. During the early 1920s, shortly after the first plantations had become visible in the landscape, debates about how to limit the negative visible impact of forest plantations appeared in forestry journals. Enhancing amenity was initially not an explicit part of the afforestation programme because foresters did not regard this as necessary. They believed that afforestation improved the beauty and amenity of the landscape anyway and therefore that landscape aesthetics was already an integral part of

forestry. Foresters linked ecological forestry to aesthetic considerations and argued that the adaptation of a forestry practice that matched tree species to the site would create a forest that looked more natural and blended better into the landscape.

It was also believed that an ecologically healthy forest would harbour much of wild life and wild plants. There is strong evidence that many foresters were interested in birds, wildlife and plants. These foresters had partly entered forestry for their interest in wildlife, plants, birds, everything they called natural history. Many of them observed and recorded with great delight the development of wild life in forests in their care. Some even went so far as planting forests to avoid disturbing the habitats of certain animals. Most foresters, past and present, are genuinely interested in what we call conservation issues and it is for this reason that, until recently, they thought that planted forests could only have a positive effect on the rural environment. In the next chapter we will explore whether this opinion was shared by the world outside forestry.

7. The Forestry Commission and the Outside World

7.1 Introduction

Forestry makes a considerable impact on the landscape and on natural. The most visible of these impacts are the visual changes that are the result of forestry operations. As we have seen before, the visual impact of forestry attracted most attention but the consequences for wildlife and ecosystems had also become more important over time. In addition the activities of the Forestry Commission also had an effect on the discussion about access to the countryside because the Commission had a tendency to fence off their young forest plantations and restrict public access. These issues defined greatly the relations between the Forestry Commission and the outside world.

This chapter will explore the relationship between the Forestry Commission and amenity and conservation organisations. It will address the question of whether there was as much criticism as is often suggested and, if not, why the Scottish situation was different from that of England, and in particular the Lake District. The chapter can be chronologically divided into two parts. The first part looks at the inter-war years and the second part examines the period after the Second World War. However, to understand the differences between the Lake District and Scotland the influence of the Lake poets and Sir Walter Scott must be dealt with.

After exploring the differences between England and Scotland the chapter then sets out to look at the involvement of several leading figures of the Forestry Commission in the establishment of Scottish nature conservation bodies during the inter-war period. This section, covering the post-war period, will mainly focus on the establishment of the Nature Conservancy and its dealings with the Forestry Commission. The focus is on the Nature Conservancy because it became the most important and influential nature conservation organisation in Britain during

the post-war years. Finally the chapter will look at how the Forestry Commission became more sensitive to public opinion during the 1960s and what the role of the general public was in this development.

7.2 The Lake District

The Lake District region of mountains and lakes is situated in north-western England and extends about 50 km (about 30 miles) from north to south and about 40 km (about 25 miles) from east to west. It became famous when a group of English poets made it their home at the beginning of the 19th century. The group included William Wordsworth, Samuel Taylor Coleridge, and Robert Southey. Their works had little relationship to one another, although each espoused romantic principles in poetry. One of the features that bound these poets together was their love for the Lake District, which was expressed in some of their works. Wordsworth's *A Guide Through the District of the Lakes in the North of England* especially struck a chord among the English upper and middle classes. This guide, combined with some of the poems, attracted a growing number of people to the Lake District. Thus the Lake District became more than a popular tourist destination. Wordsworth's guide put the landscape of the Lake District in the national consciousness of the English and by doing so the district became a national asset. Wordsworth first formulated this notion almost 200 years ago:

> Persons of pure taste throughout the whole island . . ., testify that they deem the district a sort of national property, in which every man has a right and interest.[1]

The early conservationists who established the National Trust and the Friends of the Lake District later picked this up. The founders of these organisations believed that the essence of

[1] Wordsworth, William, *A Guide Through the District of the Lakes in the North of England, With a Description of the Scenery, &c. for the use of Tourists and Residents* (Fifth Edition, Kendall, 1835), p.92.

Englishness was to be found in the landscape: the fields, hedgerows, hills and lakes. They found their inspiration in Wordsworth's vivid descriptions of the landscape and the beauty of the lakes and the colourful mountains surrounding them.[2] It also defined the perception that the Lake District landscape was not heavily wooded and that the existing trees were native broadleaves. Although Wordsworth valued the open landscape of the District, he was correctly convinced that the landscape had been more wooded in the past:

> Formerly the whole country must have been covered with woods to a great height up the mountains.[3]

Wordsworth concluded that this was a long time ago and he did not regret that the forests had disappeared. In his opinion these were replaced by a more diverse and attractive landscape:

> The plough of the first settlers having followed naturally the veins of richer, drier, or less stony soil; and thus it has shaped out an intermixture of wood and lawn, with a grace and wilderness which it would have been impossible for the land of studied art to produce.[4]

Wordsworth was concerned about any development that could damage or disrupt the landscape. Among the threats he saw was the planting of non-native tree species in the Lake District. He wrote on this subject that:

> Other trees have been introduced within these fifty years, such as beeches, larches, limes &c., and plantations of firs, seldom with advantage, and often with great injury to the appearance of the country.[5]

He was one of the first public figures to object to this development, but he would not be the last. In his dislike for conifers he inaugurated a tradition of opposition against the creation of plantations in the Lake District. This tradition reached its zenith during the 1930s when the activities of the Forestry Commission threatened to change the landscape of the Lake District

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[2] Phillips, Adrian, 'Conservation' , in: Newby, Howard (ed.), *The National Trust. The Next Hundred Years* (London, 1995), p. 32.
[3] Wordsworth, *A Guide Through the District of the Lakes*, p. 43.
[4] Ibid., p. 44.
[5] Ibid.

considerably, which worried visitors and locals alike. Any threat to the landscape, as it was pictured in Wordsworth's work, met with opposition and forestry was no exception.

During the 1920s the Forestry Commission purchased land in Ennerdale, and in the nearby Thornthwaite Estate, and also some 5000 acres near Keswick. The planting of these large areas with conifers alarmed conservationists, but not much attempt was made to prevent it until 1933.[6] It was then that the acquisition of land in Upper Eskdale by the Forestry Commission triggered the mounting concern. The direct result was the establishment of the Friends of the Lake District (hereafter FLD) in 1934. This organisation tried to persuade the Forestry Commission to plant as many hardwoods as possible and to safeguard rights of way.[7] The widespread nature of the controversy was shown by discussions that appeared in *The Times* in 1934, when novelist Hugh Walpole, who lived in the Lake District, wrote a letter to the newspaper to protest against the planting of spruces and larches in Eskdale.[8] Colonel D. Clifton, MP, summed up the basic objections of people protesting against planting in the Lake District, in an amendment to be presented before Parliament:

> There is the danger of grave damage to the peculiar beauty of the Lake District by monotonous planting of conifers; there is the danger to the organic life of a historic part of England by displacement of its native sheep-farming and traditions; there are dangers to free access in a holiday area of great renown.[9]

In addition to this it was felt that the non-native species were out of place and that broadleaves were more suitable for planting in the Lake District. It was further argued that the erection of deer fences around the forests prevented public access, to land that had habitually been open to

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[6] Berry, Geoffrey, *The Lake District: A Century of Conservation* (Edinburgh, 1980), p. 14.
[7] Ibid.
[8] Ibid., p. 15.
[9] Amendment by Col. D. Clifton, final draft sent to the FLD 24-01-'38, Cumbria Record Office, Historical Records Friends of the Lake District, files of administrative records, parliamentary letters etc.

the public by courtesy of farmers and landowners. And last, but not least, forestry displaced the sheep and forced farmers to abandon ancient farms.[10] As we can observe from Clifton's statement, sheep farming and its way of life was seen as an integral part of the Lake District.

In 1935 the Forestry Commission purchased an additional 7000 acres in Eskdale and Dunnerdale. To protect the area the FLD offered to buy back the land in question, but the Forestry Commission did not accept this because they had to keep up with their planting target. Frustrated of this failure the Executive Committee of the FLD decided to organise a petition against the proposed afforestation scheme.[11]

Early in 1935 a Joint Informal Committee of the Forestry Commission and the Council for the Preservation of Rural England (hereafter CPRE) was set up. The Commission was prepared by that time to join such a committee because planting in the Lake District had become a political issue and could no longer be ignored. The purpose of the Joint Committee was to consider how the interests of timber production and amenity could, as far as possible, be reconciled. In its final report the Joint Committee recognised that large-scale afforestation and the preservation of areas of natural beauty were both important for the nation. It was further stated that at some locations preservation should be the primary consideration.[12] In the summer of 1935 a minor compromise was reached between the CPRE and the Forestry Commission. The Commission agreed to refrain from planting 440 acres of upper Eskdale provided that £2 per acre were paid by the CPRE and other conservation bodies. The FLD were not satisfied with this agreement, as they considered that the agreement would do little to safeguard the amenity of the

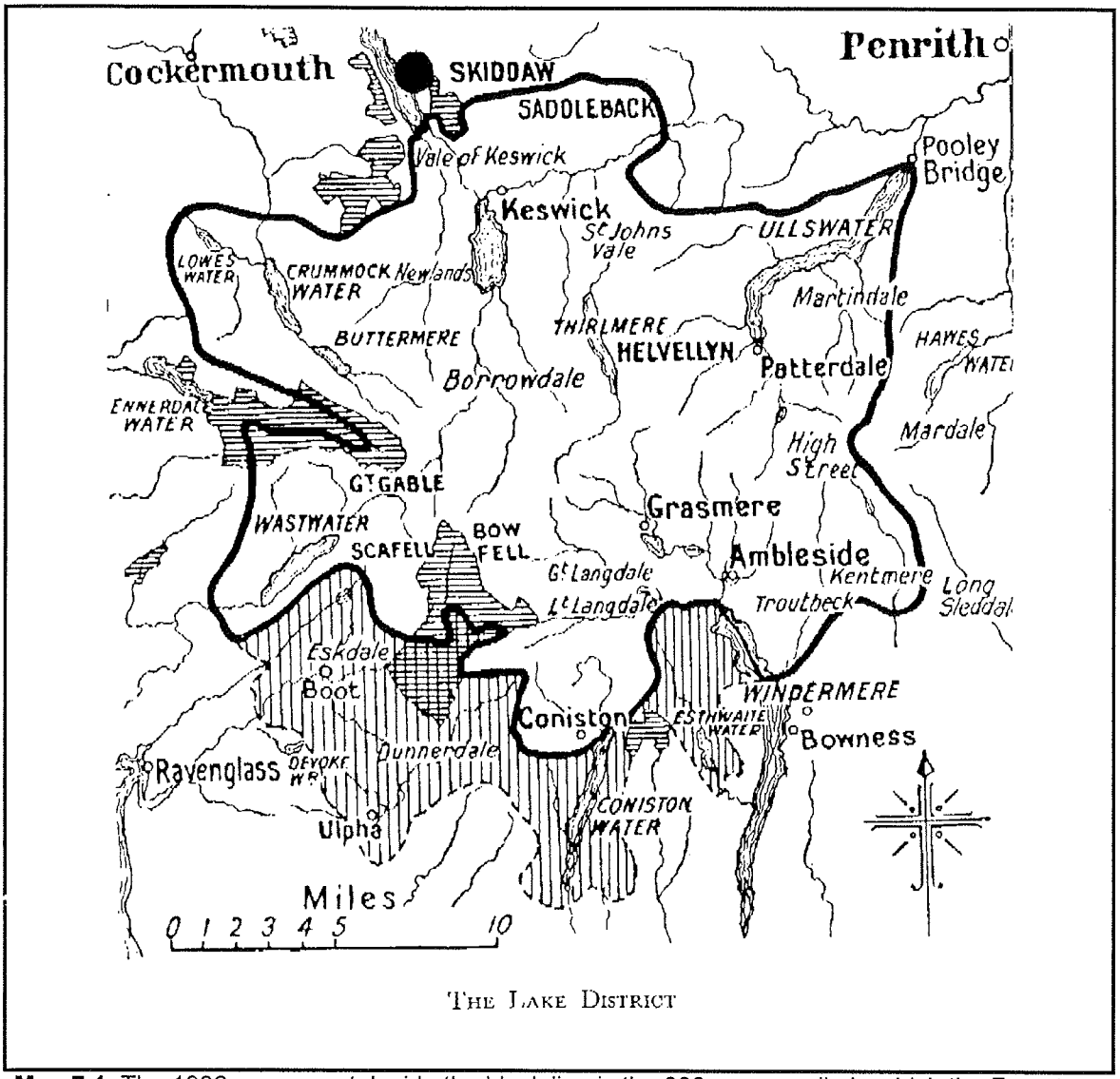
[10] Friends of the Lake District, *Annual Report 1936*, p.6.
[11] Ibid., p. 5.
[12] Forestry Commission, *Afforestation in the Lake District. Report by the Joint Informal Committee of the Forestry Commission of the FC and the CPRE*, HMSO, London 1936, p. 3.

valley in question. They decided therefore to carry on with the petition to convince the Forestry Commission to refrain from planting any of the purchased area.[13]

Between 18 July and 3 September 1935, 13,000 signatures were received, of which 2,500 were persons resident in Cumberland and the Lake District. It was indicative of the widespread feeling that the Lake District afforestation scheme had aroused that the signatories included people from all over the United Kingdom. However, the number of signatures from Scotland appears to have been low. Out of the 334 dignitaries mentioned in the petition, admittedly a sample of only 2.6% of the total number of signatures, only two were from Scotland.[14] Although a small and sketchy sample the lack of signatures of dignitaries from Scotland is an indication that the issue of tree planting hardly stirred the upper classes north of the Border during the 1930s. In June 1936, following the petition, the Friends of the Lake District sent a deputation to the Forestry Commission to underline their demands. The deputation was composed of prominent signatories of the petition that was received by the Forestry Commissioners in Autumn 1935. It was headed by the Archbishop of York, who was chairman of the FLD, and included further the Vice-Chancellor of Oxford University (Rev. F.J. Lys), the Bishop of Peterborough, and a number of MP's. Also included were Rev. H.H. Symonds, who was to become Treasurer of the FLD, and John Dower, a member of the FLD Committee, and later author of an influential report that was instrumental in setting up the National Parks.[15] The latter prepared a map showing areas that should be protected from planting. Dower's map was used as the basis of an uneasy new agreement that was finally reached by the informal Joint Committee of the Forestry Commission and the CPRE in July 1936. It was agreed that the Commission

[13] CPRE, *Annual Report 1936*, p. 6.
[14] Symonds, H.H., *Afforestation in the Lake District. A Reply to the Forestry Commission's White Paper of 26th August 1936* (London, 1936), pp. 79-92.
[15] Friends of the Lake District, *Newsletter*, Dec. 1936, p. 1.

should not acquire any land for afforestation in the central 300 square miles of the Lake District (map 7.1).[16]



Map 7.1: The 1936 agreement. Inside the black line is the 300 square mile in which the Forestry Commission agreed not to acquire any land for afforestation (Source: H.H. Symonds, *Afforestation in the Lake District*, p. 17).

Although the Forestry Commission had tried to avoid any interference with its planting programme from outside they finally had to give in to public pressure. But the agreement was not without problems. One of the problems left by the 1936 agreement was the shaded areas on

[16] Forestry Commission, *Joint Report*, p. 4.

the map which, although subject to special considerations, were outside the protected area. The CPRE publicly regretted this and recorded their disagreement in a White Paper by the Forestry Commission on afforestation in the Lake District, which was published in August 1936.[17] After the 1936 agreement the CPRE and FLD continued their campaign against afforestation in the Lake District. In 1938 an agreement was reached with the Forestry Commission to leave part of Eskdale unplanted. However, during the war years the afforestation problem became less important. It as only during the early 1960s that forestry in the Lake District appeared on the agenda again due to the increased activity of the post-war Forestry Commission and the forestry acts of 1945, 1947 and 1951. This led to a renewal of the 1936 agreement in 1954. After this forestry in the Lake District was overshadowed by other issues in the Lake District such as the increase of the numbers of visitors and hydro-electric schemes.

The legacy of the conflict over afforestation in the Lake District was considerable. It gave later generations the impression that resistance to the afforestation programme was general and widespread over the United Kingdom. It also partly explains the dislike for non-native conifers and a preference for native broadleaf trees. The Lake District conflict also led to the perception that the situation in Scotland was similar to that in other parts of the UK. We can find this perception in a work by Thomas Hinde describing the forests in Britain. He wrote:

> As in England and Wales, the Commission has been criticised for introducing alien species, planting without consideration for the landscape and creating huge monotonous forests in which little wild life can live.[18]

To consider whether this notion is correct we must now look at developments in the Scottish context.

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[17] Symonds, *Afforestation in the Lake District*, p. 24.
[18] Hinde, Thomas, *Forests of Britain* (London, 1985), p. 263.

7.3 The Scottish Landscape and Sir Walter Scott

Like the Lake District, Scotland is a country of lakes and mountains but that is where the resemblance ends. One reason of the vast differences is that the scale of the Scottish landscape is so much bigger than the Lake District. While the Lake District is roughly 2000 square kilometres in area, Scotland covers 78,780 square kilometres, of which more than 50% is situated in the Highlands and Islands. There are 277 mountains in Scotland that rise above 3000 feet compared with the Lake District, which has only four. The lakes are also much larger than in England and Wales with Loch Lomond and Loch Ness at the top of the list, which are the largest freshwater lakes in Britain. Wordsworth also observed this difference in scale when he wrote that the Lake District is so special because the landscape differ so much over short distances, distances so short that they are easily accessible for walkers. On the other hand he noted that:

> In Scotland and Wales are found, undoubtedly, individual scenes, which, in their several kinds, cannot be excelled. But, in Scotland, particularly, what long tracts of desolate country intervene! So that the traveller, when he reaches a spot deservedly of great celebrity, would find it difficult to determine how much pleasure is owing to excellence inherent in the landscape itself. And how much to an instantaneous recovery from an oppression left upon his spirits by the barrenness and desolation through which he has passed.[19]

Scotland was, in his opinion, a country with some beautiful mountain scenery separated by large tracts of 'barrenness' and 'desolation'. In this situation what can be better than planting the barren land with trees to make it more beautiful? However, this was not what Wordsworth meant with 'barrenness' and 'desolation'. That was necessary to create the remote spots of beauty and loneliness where the tired urban dweller sought to escape in the safe tranquillity of a non-human landscape. Wordsworth regarded nature as quite different, and often even opposite to, the cultivated world humans had created for themselves. Nature and the landscape had a direct

[19] Wordsworth, *Guide to the Lakes*, p. 26.

connection with the human world, and it was a spiritual and moral source for those busy urban dwellers who went there to visit. Wordsworth did not claim to speak for the common urban dweller but for members of the cultured and well-educated middle and upper classes who had the sensitivity to appreciate natural beauty. In his poems Wordsworth translated nature and landscape into moralising and spiritual symbols. In this way the landscape become something transcendental and far removed from the utilitarian outlook of the countryman who lived from the land.

Scott's view of landscapes was rather different from the Wordsworthian view in that it was more utilitarian. Being a landowner himself, Scott saw the landscape through the eyes of a countryman, a farmer, a hunter and a forester. On the other hand there is Scott the storyteller, the historian who regards the landscape as the product of past human action. In Scott's view a landscape becomes an interesting place only through human action, which invests the landscape with a meaning. Scott admires the landscape in which heroes like Rob Roy and others had lived and acted such that just seeing the landscape with all its historical elements stimulated his imagination. This attitude made it possible for him to accept changes in the landscape made by humans. To him, features created in the landscape in the past, such as castles, mills and farmsteads, represented a tradition and historical continuity. Nature in this view was not detrimental to man, but part of the human world itself.

In the Scottish context Sir Walter Scott's view of nature does not seem to be an isolated case but part of an older tradition. In the centuries preceding Scott, the people living in the Scottish countryside, especially the Highlands, did not attribute any aesthetic or scenic value to their landscape, but neither were they intimidated by it either. According to Smout most of the Scottish landscape in the 17th and 18th centuries was perceived by local people as a delightful

place 'rich in natural resources for use, with excellent hunting grounds'.[20] The landscape was delightful because it was useful for human purposes. In this respect this attitude preceded the improvement movement that developed during the Enlightenment. The Improvers regarded nature as a resource that was waiting to be exploited. In this view nature was 'untamed' and 'wasted'. But nature could be altered so that it would serve human purposes better. A landscape that was not improved was in this view regarded as a 'waste land', a waste of opportunity to make better use of its resources.[21]

With this knowledge in mind we are better able to understand the context in which Sir Walter Scott wrote an unpublished treatise on forestry, *Sylva Abbotdiensis*, in which he described the forests of his estate and his ideas about how to improve them. The improvement movement was a largely movement of landowners; and because Scott was of their number and behaved accordingly. According to David Daiches, planting trees was for Walter Scott 'an absolute passion ... all his life'.[22] This passion reflects the delight side of the improvement movement.[23]

Another of Sir Walter Scott's work on forestry reflects his utilitarian outlook to forestry and the landscape in general. In his 76-page essay, *On Planting Waste Land*, published in 1827, Scott proposed to plant the upland moors of the Scottish hills to make better use of them. In his view forestry was not spoiling an untouched landscape, but improving, in good improvers' fashion, wasteland, turning it into a source of income and pleasure for future generations. This view is also similar to what the founding members of the Forestry Commission had in mind at the start of the 20th century. How much these men were influenced, and how familiar they were with by Scott's ideas on forestry we only can guess. However, one clue indicates some influence of

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[20] Smout, T.C., 'Use and delight: Attitudes to Nature since 1600', in: Smout, T.C., *Nature Contested. Environmental History in Scotland and Northern England Since 1600* (Edinburgh, 2000), p. 13.
[21] Ibid., p. 20.
[22] Daiches, David, *Sir Walter Scott and His World* (London, 1971), p. 86.
[23] Term used by Smout, *Nature Contested*, p. 7.

Scott's ideas on future generations of foresters. When the forerunner of the Royal Scottish Forestry Society was established in 1852, its founders took a quote from Scott's novel *The Heart of Midlothian*, as its motto:

> Jock, when ye hae naeting else to do, you may aye sticking in a tree. It will be growing, Jock, when ye're sleeping.[24]

In this way, up to the present day, the Society honours a man for whom tree planting was an absolute passion. The legacy of Sir Walter Scott is that he actively advocated forestry in Scotland and that he was convinced that planting its moorlands would be good for Scotland and its people. His approach to forestry was utilitarian and in line with that of land-owning improvers of the age. It is easy to conclude that the founders of the Forestry Commission and the first nature conservation bodies, established a hundred years later, were familiar with Scott's work and took his view of improving the wastelands in Scotland, although there is little direct evidence that Scot's ideas are linked with those of the founders of the Forestry Commission. At best we can assume that they were part of a general movement of agricultural improvement that spanned the 19th and 20th century.

Scott's influence on the founders of the Forestry Commission is hard to trace, but it is not difficult to see the impact of his work on present day popular perception of the Scottish landscape. With the publication of *Lady of the Lake* in 1810, Scott did for the Trossachs what Wordsworth did for the Lake District. Robert Cadell, a trainee publisher in Edinburgh, observed that the publication of the *Lady of the Lake* inspired many to visit the Trossachs:

> ... crowds set off to the scenery of Loch Katerine, till then comparatively unknown; and as the book came out just before the season for excursions, every house and inn in that neighbourhood was crammed with constant succession of visitors.[25]

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[24] See the logo of the Royal Scottish Forestry Society and Scott, Sir Walter, *The Heart of Midlothian*, p. 56

[25] Quoted in: Daiches, David & Flower, John, *Literary Landscapes of the British Isles. A Narrative Atlas* (London, 1979), P. 201.

These visitors were in search of the landscape that Scott had created in his poem and later novels, and which became the archetypal Scottish landscape with rough mountains, and tranquil lakes surrounded by trees. Because trees were an integral part of Scott's landscape visitors expected trees to be there. We now have to explore whether this influenced the general attitude to newly planted woods in Scotland during the 20th century.

7.4 Scottish Conservation Bodies

During the inter-war years the major amenity and conservation organisations came into being. The reasons for this must be seen in the wider context of developments that took place in society as a whole. Firstly there was a growing national awareness in Scotland and a feeling that the natural and historical heritage of the country had long been neglected. It was felt that something had to be done to correct this and to safeguard 'the valuable natural and historical features of this country'.[26] Secondly the number of visitors in Scotland was growing due to an increase in car ownership. The number of cars passing through Stirling during the 1920s illustrates this. In a survey of 1921 there were 375 cars passing through Stirling during the day. By 1925 this figure had trebled.[27]

In the spring of 1930 a series of articles appeared in the *Callander Advertiser* under the title 'Scotland's Glory' describing attractive day tours through the scenic landscape of the Trossachs and the Loch Lomond area. The author of the series, Richard Williamson, recommended a visit to the Trossachs as 'one of the most charming day's outings'.[28] He regarded Perthshire's mountains, lochs and moors not only as a Mecca for tourists, lovers of nature and rambles, but

[26] Hurd, Robert, *Scotland Under Trust. The Story of the National Trust for Scotland and its Properties* (Edinburgh 1939), p. xii.
[27] *Callander Advertiser*, August 29, 1925, 'Motor Traffic Passing Trough Stirling'.
[28] Ibid., 10 April 1930, Richard, Williamson, 'Scotland's Glory'.

also for the motor enthusiast.

Another factor that helps to explain the emergence of nature conservation bodies in the 1930s is an ideological one. In the first decades of the 20th century rural life became increasingly linked with physical and moral welfare. This ideology developed fully in the 1920s when back-to-the-land ideas sprang up all over Europe. Illustrative in this respect is the growth of the Scout movement of Sir Baden Powell in this period, the establishment of the Scottish Youth Hostel Association and the Ramblers Association. The idea common to all these organisations was to create a better society that avoided the evils of urban life and industrialisation. The conservation organisations that emerged were vehicles of reform with the mission of bringing the countryside closer to urban based people.[29]

7.4.1 The Association for the Preservation of Rural Scotland

The connections between the founders of the Scottish conservation organisations and the Forestry Commission were very close. Many of them were organised by landowners and a considerable number of them had been involved with the establishment of the Forestry Commission. The first and initially most prominent of the amenity and nature conservation organisations to be established was the Association for the Preservation of Rural Scotland (hereafter APRS). The APRS was the brainchild of the Royal Incorporation of Architects in Scotland and conceived by the Edinburgh Architectural Association. The driving force behind the idea was Frank Mears, one of Britain's leading planners at the time, who was to become the Association's first secretary. In 1926, the year that the Council for the Preservation of Rural England was established, Mears wrote a letter to the *Scotsman* suggesting the formation of the

[29] Bramwell, *Anna, Ecology in the 20th Century. A History*, (New Haven & London, 1989), pp. 104-105.

APRS. The reactions were overwhelmingly positive and the Association was formally constituted on 4 July 1927.[30] The APRS was a federation of Scottish societies and private individuals interested in safeguarding the countryside from disfigurement. This 'protection of rural scenery and amenities of country towns and villages' was mainly focussed on built structures and roads[31]. It called for a harmonious blending of houses, bridges and roads into the rural landscape. It is not surprising that an organisation that was first conceived by a group of architects would focus on buildings and roads, but soon the Society's concerns expanded to include the pollution of water and air and the impact of forestry on the landscape.

When the APRS was founded it had some prestigious board members and among these were a considerable number of influential landowners (table 7.1). The honorary president was the Earl of Crawford and Balcarres. His son David was to become involved with a number of important Scottish bodies such as the National Trust, the National Gallery, the National Library and other cultural organisations. The president of the APRS was the Earl of Haddington, and John Stirling Maxwell, Bart of Pollok, became vice president. Maxwell was also chairman of the Forestry Commission between 1929 and 1932. From 1931 he was the representative for the National Trust at the APRS council and he was also involved in the Glasgow Tree Lovers Society. Apart from Maxwell another Forestry Commissioner was involved in the APRS: Major Strang Steel was member of the APRS council for a couple of years during the mid-1930s. Other landowners involved in the APRS were the Duke of Atholl and Sir Ian Colquhoun, Bart of Luss. The latter was chairman of the APRS during the early years and played an important role in the

[30] Russell, *The National Trust for Scotland. The Formative Years*, Unpublished paper. Archives APRS, Edinburgh 1989.
[31] APRS, *Association for the Protection of Rural Scotland*, Edinburgh 1928.

formation of the NTS. In 1931 he became the first chairman of the NTS council, a post he held till 1946.[32]

Table 7.1: Founding members of the Scottish conservation organisations.

	APRS	NTS	FC
Earl of Crowford & Balcarres	Honarary President	Founding member	
Earl of Haddington	President		
John Stirling Maxwell	Vice President	Representative NTS at APRS Council	Chairman 1929-1932
Major Strang Steel	Member APRS Council		Commissioner 1931-1949
Ian Colquhuoun, Bart of Luss	First Chairman 1927-1931	First Chairman 1931-1946	
Duke of Atholl	Founding member		

From the start of its existence the Forestry Commission took the APRS very seriously and formal contacts were soon established. However, it is surprising that the English National Trust tried to become the principal conservation organisation in Scotland. In February 1929 the London representative of the *Glasgow Herald*, Mr Spence, asked the Secretary of the Forestry Commission, A. Herbert, for information 'as to what the commission were doing in the Grampians and what they were prepared to do [in the future]'.[33] The Forestry Commission had acquired 12,000 acres in the Cairngorm area, of which about 4000 were suitable for afforestation. The rest was regarded as unsuitable for forestry but the Commission recognised it as 'some of the finest hill scenery in Britain'. Herbert continued: 'such areas may be very attractive to the mountaineer and suitable for recreational purposes'.[34] Furthermore, he suggested that a considerable area of Glen More could be transferred to the National Trust (England) for

[32] Russel, *Formative Years*, p. 2.
[33] Letter from Secretary FC to Mr Hamer of the National Trust, 16 March 1929, PRO F18/596.
[34] Letter of A. Herbert, Secretary of FC to James Spence of the *Glasgow Herald*, 26 February 1929 PRO F18/596.

the use of the public, on the same lines as an area at Ennerdale, which was transferred by the Commission to the Trust in 1927. The *Glasgow Herald* had a report on forestry in the Cairngorms during the first week of March and two weeks later *The Times* published an article reporting on the same topic.[35]

Herbert made the suggestion that the unplantable areas could be designated for public use in his letter to Mr. Spence, but in a letter to Mr. Hamer, secretary of the National Trust, he presented the whole matter as if the *Glasgow Herald* had first prompted the suggestion of a national park. It is not clear what motives underlie this hesitant behaviour but it is very likely that the Forestry Commission was looking for ways to make use of its unplantable land without investing any money. It is therefore understandable that it was looking for co-operation with other bodies such as the National Trust. Orchestrating the publications in the *Herald* and *The Times* was probably meant to give a signal to external bodies that the Forestry Commission was interested in discussing the possibilities of land-use agreements with a view to their general public use. Indeed, the article in *The Times* provoked a reaction from the National Trust when Hamer wrote in his letter to the Forestry Commission:

> I saw on Tuesday the most interesting statement in *The Times* with reference to the Forestry Commission's activities in the Grampians. You seemed almost to invite a communication from the National Trust. We are most anxious to extend our work to Scotland, and if we could make a start with 8000 acres in the Grampians it would be a very good beginning.[36]

Herbert replied by writing that 'I understand that the first suggestion of a great public park was prompted by the *Glasgow Herald*'.[37] He advised the National Trust to seek direct contact with

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[35] *The Times*, 12 March 1929, 'Forestry in the Grampians'.
[36] Letter from Mr. Hamer, Secretary of the National Trust (England), to H.A. Pritchard, Assistant Commissioner FC, 14 March 1929, PRO F18/596.
[37] Letter from the Secretary, FC, Mr. A. Herbert to Mr. Hamer, 16 March 1929, PRO F18/596.

the Assistant Commissioner of the Forestry Commission for Scotland, John Sutherland, to find out if the Scots were interested in transferring land in the Cairngorms to the National Trust.

As it turned out, the Scottish branch of the Forestry Commission was not very interested in an arrangement with the National Trust in England. In July 1929 Member of Parliament Macpherson questioned the spokesman of the Forestry Commission in Parliament, Lansbury, about whether there was a 'project of securing for the nation in perpetuity some area in the Cairngorm range or elsewhere in Scotland for free and unfettered use of the public and as a sanctuary for birds and animals'. Lansbury, replied by saying that 'the Forestry Commission, who own a tract of land in the Cairngorms, are prepared to co-operate, and that the matter is now under consideration by the Association for the Preservation of Rural Scotland '.[38]

At around the same time the owner of the Loch Dee Estate in the Galloway hills offered his estate to the APRS, but the Association was not constituted to hold or manage land and therefore the Council discussed the matter with Hamer, the secretary of the National Trust (England).[39] Although the Trust from south of the border was entitled to hold land in Scotland, there was a strong feeling in the APRS Council that Scotland should not be 'invaded' by the National Trust from south of the Border. It was these two incidents that gave birth to the National Trust for Scotland.

7.4.2 A National Trust for Scotland

By mid 1929, the APRS realised that it was high time that Scotland formed its own National Trust. In particular Stirling Maxwell was very vehement over the matter and is thought to have been the principal spokesman for the movement to create a Scottish National Trust. In his

[38] HC Deb., 1929, col. 1329, Oral Questions, 4 July 1929.
[39] Leaflet, *The First 70 Years of the APRS*, Edinburgh 1999; Russell, *Formative Years*.

position as Vice President of the APRS and Chairman of the Forestry Commission he was able to influence the attitude towards this matter in both organisations. When it became clear that the English National Trust was trying to extend its work to Scotland he took action in favour of the APRS. In the autumn of 1929 Stirling Maxwell organised a meeting with the APRS council to discuss the use of Glenmore Forest, near Aviemore, as a possible national park. The Assistant Commissioner for Scotland, Sutherland, attended this meeting and recorded that the Commission appeared to be sympathetic towards the idea to co-operate with the Association. It was during this meeting that Stirling Maxwell recommended forming a National Trust for Scotland based upon the same principles as the existing Trust in England.[40]

However, it appeared that the Government was not very keen on seeing a National Trust being established in Scotland on the same lines as the one in England. There was the feeling in the Government that the creation of two organisations would take energy and money away from the effort to establish national parks. But the Government had lost the initiative in Scotland where the idea for the establishment of the creation of a National Trust was spreading. The National Trust for Scotland was established on 10 November 1930 and was incorporated as a company in May 1930. In the meantime, the issue of the creation of National Parks in Scotland was not neglected by the APRS. Following a discussion in the *Glasgow Herald* the APRS decided to set up a committee to investigate the possibilities of a National Park in Scotland. On this committee Sutherland represented the Forestry Commission. The investigations had not proceeded very far when the Prime Minister appointed a Government committee to inquire, and report, on the same question, for the United Kingdom as a whole. The Government committee desired that the APRS Committee continued its work, given that the work was co-ordinated with

[40] Minute by A.C. Scotland John Sutherland, 16 October 1929, meeting with APRS, PRO F18/596.

the national Committee through John Stirling Maxwell, who served on both Committees.[41] In April 1931 the Report of the National Parks Committee was presented to Parliament. Because of the tight financial situation at the time, no action was taken to establish any National Parks.[42] On 15 February 1934, the Minister of Health was asked in Parliament if, in the light of the improved financial condition of the country, 'he wanted to consider the advisability of making a grant in accordance with the recommendations of the National Park Committee'.[43] The answer to this question was a negative one and out of frustration non-government organisations such as the Friends of the Lake District, and somewhat later, the CPRE decided to create their own National Parks Committee. The APRS also responded and decided to undertake a further survey of the question of National Parks in Scotland. Soon after this decision was taken the Forestry Commission was approached 'to ascertain their attitude towards the public use of forestry hinterlands for recreational purposes and as National Parks'.[44] In their reply the Commissioners showed a very positive attitude towards the public use of forest hinterlands for recreational purposes. They encouraged the Association's investigations by stating that 'it would ... be best that the association should investigate the position and make known its views and submit any proposals that it has to offer'.[45] In the spring of 1935 the Forestry Commission appointed a National Forest Park Committee, chaired by Stirling Maxwell. Discussion continued between the APRS and the Commission and, on the whole, the Association supported the Forestry Commission on the matter.

Another organisation that held close links with the APRS was the Glasgow Tree Lovers Society. A correspondence in the *Glasgow Herald* in April 1932 drew together a number of

[41] APRS, *Annual Report 1930*, pp. 6-7.
[42] Mackay, *Land Use Agencies*, p. 143.
[43] National Parks. Brief History of the Present Movement, 1936, p. 6, PRO F18/817
[44] Minutes of Council meeting APRS, 2 May 1934, Archive APRS.
[45] Letter from John D. Sutherland on behalf of the Commissioners, 28 May 1934, Archive APRS.

people whose common link it was to make Glasgow greener. This group formed a Tree Planting Committee, under the aegis of the existing Civic Society. In the autumn of 1933 the Committee reformed itself into an independent body: the Glasgow Tree Lovers Society.[46] One of the more prominent people involved in the Society was Stirling Maxwell, who was made Honorary President in 1951.[47]

7.4.3 Co-operation and Discussion

During the inter-war period the Forestry Commission consulted the APRS regularly about the issue of amenity planting. The APRS inspected fences erected by the Forestry Commission and trees planted along roadsides to decide whether these fitted aesthetically into the landscape. A good example is the case of tree planting along the road between the Trossachs and Aberfoyle. The Forestry Commission had planned to plant trees on either side of the road and fence them off from deer. In 1934 the Commission asked the APRS to inspect the fences and to comment on the tree species used. This led to agreements about viewpoints on the road and about certain exotic tree varieties to be introduced. During the same year concern was also expressed that forestry operations at Strathyre would cause the disappearance of attractive stands of timber. A party of APRS members was invited by the Forestry Commissioners to inspect the effect of forestry operations on the landscape. The visit resulted in an agreement securing the preservation of certain stands of pine and deciduous trees for aesthetic purposes.[48]

Nevertheless the occasional individual complaint was received by the APRS. In the summer of 1933 a letter was received from a member of the Association, Hugh Gardener, who

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[46] *First Annual Report Glasgow Tree Lovers' Society, 1933-34*; *Twenty Second Annual Report Glasgow Tree Lovers' Society, 1953-54, Coming of Age Report, 1933-1954*

[47] *Eighteenth Annual Report Glasgow Tree Lovers' Society, 1949-50*

[48] APRS, *Annual Report 1934*, p. 14; *Annual Report 1935*, p. 9.

complained about the extensive operations of the Forestry Commission and the effect on Highland scenery. Professor Bailey, during a meeting of the APRS council, expressed the view that German-style afforestation of large areas with conifers should hardly be duplicated in Scotland. After consideration it was decided that no further action was to be taken on Gardener's letter, because it was believed that the Forestry Commission took consideration of amenity where it was in general accord with the economics of afforestation.[49]

Sometimes complaints were sustained, as in the case where the Inverness-shire branch and Inverness member, Mr. Seton Gordon, reported that the Forestry Commission was ring barking birch and allowing them slowly to die amongst the young conifer plantations. Forestry Commissioner Major Strang Steel said at a Council meeting of the APRS that the Association should draw the Commission's attention to these complaints so that they could prevent foresters from ring barking trees.[50]

While the odd APRS member was concerned that the extensive operations of the Forestry Commission would change entire landscapes to their detriment, the APRS Council thought that forestry would bring advantages:

> Appearance, to a certain extent, may be scarified, but a countryside re-populated and turned to greater economic account seems preferable to vast areas of relative sterile moorland.[51]

It was also believed that Scotland had so much empty, unproductive moorland, and that the landscape was so 'wild' that Bailey concluded:

> The effect of immense stretches of gloomy coniferous timber, ... can hardly materialise in this country.[52]

For all of the 1930s the two complaints described above are the only objections to forestry

[49] Minutes Council meeting APRS, 27 September 1933, Archives APRS.
[50] Minutes Council meeting ASPRS, 5 January 1938, Archives APRS.
[51] *Annual Report 1934*, p. 14
[52] Ibid.

recorded in the *Annual Reports* or minutes of the APRS. The NTS reported none and its archives in Edinburgh do not contain a single letter complaining about forestry during the first decade of the Trust's existence. But if these organisations were not interested in the impact of forestry on the landscape, what stirred them into action? The answer is the impact of built structures on the landscape.

Shortly after the APRS was constituted the Ministry of Transport announced their intention to construct an improved road through Glen Coe. The road was part of a wider scheme to make the Highlands more accessible from the Central Belt. The APRS was immediately alarmed by these plans and staged its first public campaign to stop its construction. It feared that the 'the scenery of Glen Coe will be greatly changed by this road'. In an address to the Glasgow Rotary Club, Stirling Maxwell called the road, if constructed, a 'kind of vandalism', which would make 'mince meat of the humble [landscape] ... of the 'Glen of Weeping'.[53] The construction of the new road was not prevented but the action of the APRS resulted in a compromise. It was agreed to improve the existing road and it was arranged 'that stonework should be used in the Glen itself instead of naked concrete'.[54]

During the inter-war period opposition to the afforestation activities of the Forestry Commission was virtually absent. However, the campaign against the Glen Coe road illustrates that there was interest in conservation issues in Scotland during the inter-war period. However, forestry itself was not on the agenda of the conservationists. One might have expected a reaction along the lines of the Lake District but it was in fact completely absent. As already stated, the conservation organisations in Scotland were dominated by rural landowners, who made at least part of their living from the land. At the same time a considerable number of them was also

[53] Lectures and papers of John Stirling Maxwell, Lecture to the Roraty Club on Glen Coe road, 22 November 1927, GCA T-PM 122/4/6
[54] APRS, *Annual Report, 1929.*

involved in the Forestry Commission. These landowners defined to a great extent the appearance of the landscape and can be regarded as producers of the rural landscape. Because Scottish landowners were involved in estate management, the nature conservation organisations, and the Forestry Commission the interaction between conservation bodies and the Forestry Commission were very smooth. At the same time not many public complaints were heard with regard to forestry. In contrast, in the Lake District the leaders of conservation organisations, such as the Association for the Protection of Rural England and the Friends of the Lake District, were urban people who had settled in the region or were visitors from urban areas. In a sense they can be regarded as consumers of nature and the landscape who had come to the countryside for recreation.

7.5 The Post-war Years

The conservation organisations that emerged during the 1920s and 1930s carried on after the war as they had done before. But there was a major change: the momentum of action had shifted away from the 'old' conservation organisations to the newly formed Nature Conservancy, as will be discussed in a subsequent section. However, both the APRS and NTS continued to exert considerable influence in matters of landscape conservation and amenity.

Public complaints about forestry in the landscape did not increase dramatically during the post-war period. In fact disapproval was virtually absent. In the decade before the war the APRS and NTS combined received only three complaints about Forestry Commission plantations disfiguring the landscape. In the period 1945-1970, the number of complaints received numbered only five.[55] In newspapers the score was not much higher. A survey of the *Stirling Observer*, and

[55] Archives APRS and NTS.

the *Glasgow Herald* did not produce a single article on the impact of forestry in the period 1945-65. The harvest of a survey of the *Oban Times* was only a little higher, with only a couple of critical articles and letters found. In 1955 an article about the impact of the massive afforestation programme on sheep farming in the Highlands appeared in the *Oban Times*. This largely concerned dispute between farmers on the West Coast and Western Islands and the Forestry Commission which predated the Second World War. The farmers were afraid that they would be pushed out of business if the Forestry Commission bought more ground for planting. The sheep breeders doubted if forestry could replace the economic loss which would follow the disappearance of sheep farming.[56]

More interesting for our purposes is a letter on forestry planning that was published in the *Oban Times* in August 1965. A certain Mr. Hall, a holiday maker from Cheshire, had recently returned from a holiday in the western Highlands and was

> ...very dismayed to see new planting on the seaward side of ...the coast[57]

He continued

> Trees are an economic necessity but for goodness sake let us keep a sense of proportion. Often the strip of land to seaward is narrow and, if left unplanted, would surely be but a modest price to pay toward the saving of a superb view.[58]

The man was not against forestry but disliked the coniferous plantations obscuring a nice view as well as the change in a landscape he had become familiar with through many holidays in Scotland. It is interesting to note that Mr. Hall was from England and not a Scotsman. He complained as an outsider and aware of this he finished his letter with the observation that:

> It seems to me that there is a great deal too much apathy on behalf of the people ... who stand to lose their present enjoyment [of the Scottish countryside]. Raise your voice, Scotland![59]

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[56] *Oban Times*, 23 July 1955, 'Sheep Breeders and Forestry. Request for Impartial Inquiry'.
[57] *Oban Times*, 5 August 1965, 'Forestry Planning'
[58] Ibid.
[59] Ibid.

Unconsciously Mr. Hall had imported to Scotland the English public opinion that valued and insisted on landscape preservation and its dislike for conifer plantations and observed, to his surprise, that public opinion on this issue differed from that south of the border.

Forester Jim Atterson confirmed the virtual absence of resistance against the planting of conifers in Scotland. He could not remember that through the 1960s and 70s 'much being said against planting in Scotland by the general public, even conservationists'.[60] Atterson told that even ecologist Fraser Darling did not object to the activities of the Forestry Commission but that is not entirely correct. Fraser Darling was not against forestry itself but he was probably one of the Commission's most severe critics. In his book *Highlands and Islands* he criticised the Commission's planting policy for being ecological primitive, as the principle of planting monoculture high forest, 'which has been obsolete for half a century on the Continent'.[61] Although Fraser Darling was sceptical about certain aspects of the work of the Forestry Commission, he still believed that afforestation was in essence a good thing. The mistakes of the past could be corrected and he was already seeing signs that the Forestry Commission was trying to get it right:

> As the Commission develops and widens its outlook it will be solving ... part of the problem for the caring for the wild life [of the Highlands] Already the Forestry Commission has done more towards the establishment of national parks and ... reserves than any other body.[62]

However, by the beginning of the 1960s, the National Trust showed that it was not entirely happy with the achievements of the Forestry Commission. In June 1961 a Landscape survey was commissioned to Bill Murray, one of Scotland's most distinguished mountaineers. The aim of the survey was

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[60] Interview Jim Atterson.
[61] Fraser Darling, *Higlands and Islands*, p. 260.
[62] Ibid., p. 260.

> ... to delineate areas of outstanding natural beauty, to report on the distinguished character of these areas, and to assess change.[63]

The survey was completed by the autumn and the results were published in a booklet early 1962, and contained some critical notes with regard to the Forestry Commission.

The areas of the survey were confined to the Highland region itself because it was thought that this area of unspoiled country was most vulnerable to the modern world and 'most likely to be overtaken by change'.[64] Murray was clearly not charmed by changes relating to the modern world and in this respect the report had a conservative view of the Highlands. He observed to his regret that the face of the Scottish Highlands was changing markedly due to the activities of the Forestry Commission and the North of Scotland Hydro-Electric Board. Murray's judgement of the Forestry Commission is somewhat contradictory because some changes were seen as beneficial as long as they restored the landscape. He saw the afforestation activities of the Commission partly as an effort to improve the beauty of the landscape. Murray thought that the planting would bring back the forests to Scotland and

> In them ... is the main hope for the restoration of woods and other flora and fauna that would otherwise be lost.[65]

In Murray's opinion this had to be carried out carefully, but he doubted if the Forestry Commission was always careful. He observed that in some cases valuable old stands of Scottish pines had been lost because they were underplanted with exotic conifers. As an example, Murray gives the conifer plantations on the slopes of the Cairngorms, which he regarded as inferior to natural stands in the region. As a comparison he referred to the pinewoods on Rothiemurchus, an area the Forestry Commission had proposed to fell. This was only prevented by the intervention

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[63] Murray, W.H., *Highland Landscape. A Survey* (Aberdeen 1962), p. 9.
[64] Ibid.
[65] Ibid., p. 17.

of the Prime Minister, acting on appeal by Colonel J.P. Grant of Rothiemurchus.[66] To prevent the loss of valuable woodlands and to protect the landscape Murray advised that the activities of the Commission to be monitored and warned:

> Mere declarations of policy on amenity by the ... Commission can never be taken on trust, ... for their work has been too unequal to justify trust... .[67]

Murray concluded his assessment by calling for a central planning body to protect Scotland's natural heritage. If that did not happen he feared that the combined activities of the Forestry Commission and the Hydro-Electric Board, together with the expansion of towns, would irreparably damage and destroy Scotland's natural heritage.[68]

7.6 Individual Complaints

How much Murray's *Highland Landscape* contributed to greater awareness of the need for better landscape conservation in Scotland is not clear. Mr. Hall, the holidaymaker from Cheshire, referred to this booklet in his letter, which showed that he was familiar with the survey. The survey itself did not make a huge difference with regard to the general attitude towards forestry in Scotland, but it was clearly a sign of a growing awareness of the impact of forestry on the Scottish landscape. However, the complaints about the activities of the Forestry Commission received by the conservation bodies in Scotland remained low in the period between 1945 and 1970. The handful of complaints that were received and the way they were dealt with followed a similar pattern as before the war. In the autumn of 1952 Isabelle Lindsay from Bearsden had sent a letter to the National Trust to complain about the fact that the Forestry Commission did not allow natural regeneration in Glen Falloch, west of Loch Lomond. Both the APRS and the NTS

[66] Ibid., p 16
[67] Ibid., p. 17.
[68] Ibid., p. 19.

had high level contacts in the Forestry Commission and therefore the Trust referred the letter to Beresford Peirse, Director of Forestry for Scotland. He took the matter very seriously and even finding time to visit the forest by himself, and replied with a report on these trees, writing that he 'had a chance to see them [the trees] for myself'.[69] Beresford Peirse invited Isabelle to have a talk with Mr. James, conservator for the south of Scotland and the Glasgow area, to discuss her objections. The outcome is not know because no written evidence of this meeting survived.

In another case the APRS responded in similar fashion. In April 1960 the Association received a letter from a member of the Glasgow Tree Lovers Society drawing attention to the felling of broadleaves by the Forestry Commission in the Queen Elizabeth Forest Park (Ard Forest).[70] Sir Samuel Strang Steel, Former Chairman of the Scottish National Committee of the Forestry Commission, pointed out that this was probably only a selective felling and suggested asking the Commission for further information. In a reply from the Conservator West it was explained that it was the policy of the Commission to grow hardwoods where the soils allowed and that some selective felling was indeed carried out. The Conservator offered to talk with the person who had originally written the letter.[71]

This was the typical pattern of interaction between the Forestry Commission and the conservation organisations: if an individual had some complaint about the impact of forestry on the landscape he or she was invited to discuss their grievances with forestry officers. The Forestry Commission took complaints very seriously and encouraged its officers to look into these matters. This also applied to concerns raised by local councils, as we can read in an internal memo of the Assistant Commissioner for Scotland, Mr. Forres, in December of 1961:

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[69] Letter from Sir Henry Bereford Peirse, Director of Forestry for Scotland, to the National Trust, 17 October 1952, Archive National Trust for Scotland.
[70] Minutes Council Meeting APRS, 3 May 1960, Archives APRS.
[71] Minutes Council Meeting APRS, 6 July 1960, Archives APRS.

> local authorities have certain responsibilities in the matter, and it is important that their views should be sought in all appropriate cases as well as considerations being given to any representations they may make to us.[72]

They could probably deal with individual complaints because the numbers were so low that it was easy to deal with.

This also accounts for the relations between the boards of the conservation bodies and the executive of the Forestry Commission. Both the boards of the APRS and the Glasgow Tree Lovers Society were invited by the Forestry Commission for a visit to Aberfoyle to obtain their views on the management of hardwoods in the area. The organisations met on 16 September 1960 in the Trossachs Hotel, around which the Commission had acquired land for afforestation. It was agreed during this meeting that the objective of management of the area would be to retain its essential hardwood character.[73] The gentlemen once more reached an agreement in the informal way that they were used to, but that was about to change in the decade that followed, as will be discussed in a subsequent section.

At the highest political levels the opinion from the old organisations was still highly appreciated. When a Government Working Party on forest policy was set up in 1962, the APRS were invited to submit their views on amenity and forestry. The Working Party was informed that the council of the APRS '...were strongly of the opinion that more planting of broad-leaved trees of hardwoods should be undertaken'.[74]

The Association also stressed that popular viewpoints should left unplanted in new forestry schemes. In addition, the opportunity was taken to express concern about the gradual disappearance of hedgerows from the landscape. With regard to hedgerows, the APRS initiated a press campaign to bring the disappearance of hedgerows to the attention of the general public, a

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[72] Amenity, Memo by Assistant Commissioner (Scotland) 20th December 1961, FC11/24.
[73] Minutes Council Meeting APRS, 5 October 1960, Archives APRS.
[74] APRS, *Annual Report 1963*, p. 21.

very English issue.[75] The hedgerows remained an important topic throughout the 1960s, but other issues were starting to eclipse the concern over the impact of forestry on the landscape. In the wake of the public concerns over pesticides, the APRS became involved in a campaign against water pollution by chemicals. The NTS focussed more on the management of its own properties. In the case of forest restoration and landscaping the Trust asked for advice from Sylvia Crowe about how to make forests fit into the landscape. That did not necessarily mean that the NTS entirely agreed with the Forestry Commission's policies and practice. It criticised the commercial plantations of the Commission and thought that this was not an example the NTS had to follow. By the start of the 1970s we can conclude that Scotland's conservation bodies were preoccupied with issues other than forestry or focussed on their own activities with regard to woodland management. It was public opinion that became the most critical voice with regard to forestry. This was the result of the democratisation of all sectors of society during the 1960s and '70s, including nature conservation and environmental activism. In the next section we will see what role the media played in ending the era in which gentleman conservationists were the guardians of nature.

[75] APRS, Leaflet, *1926-1996, 70th Anniversary.*

7.7 The Nature Conservancy

After the Second World War the Nature Conservancy's Scottish Committee emerged as a new major player on the conservation and land management stage. The Nature Conservancy was established in 1949 and its mission was to set up and manage nature reserves, which preserved flora and fauna, geological and physiological features. The Conservancy was also to conduct research and advise planning and land management authorities on areas of special scientific interest. It was set up as a nation-wide organisation but the Scottish Wildlife Conservation Committee (the Ritchie Committee), which advocated the creation of a single conservation service for Britain, concluded that a Scottish Division was needed to carry out an effective conservation policy in Scotland. According to Donald Mackay, the Scottish Committee was a unique feature within the Nature Conservancy because it was virtually autonomous.[76]

As in the case of the APRS and the National Trust before the war, the personalities involved with the Nature Conservancy were of some importance to its influence and objectives. The list of members reads like a shortlist of the post-war scientific and land-owning establishment in Scotland. Among them were the Earl of Wemyss and March, Sir Henry Beresford-Peirse Bart., Director General of the Forestry Commission, Sir Basil Neville-Spence, along with Fraser Darling, Dr. D. McVean and Professors Ritchie (zoology Edinburgh) and Matthews (Botany, Aberdeen), one of the leading ecologists of his time. A Committee of this calibre was necessary for gaining the confidence of major landowners in Scotland.[77]

The Scottish Committee was headed by Dr. John Berry, a biologist who was a former environmental advisor to the Hydro-Electric Board. According to Smout, the choice of Berry was a political one. Fraser Darling seemed the logical choice with all his knowledge and

[76] Mackay, *Scotland's Landscape Agencies*, p. 109.
[77] Ibid.

expertise with regard to the Scottish environment. He was, however, an outspoken critic of the Scottish landowners and official land management policy, and he was a man who lacked the political tact needed for the job.[78] Berry, on the other hand, Smout commented, 'combined tact with independence and a certain firmness in standing up to authority'.[79] He had shown these qualities as a wartime censor and a member of the Hydro-Electric Board. In the latter position Berry was a hydrologist and fisheries specialist but, as he told the author, 'other conservation interests sometimes superseded'.[80] It was these qualities and experience that made Berry the perfect choice for leading the Scottish branch of the Nature Conservancy. Another advantage was his many contacts with Scottish land-owners and other land-use agencies. He was on the Council of the APRS, an advisor of the Forestry Commission and also a member of the Scottish Landowners Federation.[81] Under Berry a policy emerged of creating much larger National Nature Reserves (hereafter NNR) than in England and Wales, beginning with the purchase of Beinn Eighe in 1951. Three years later an even larger NNR was created in the Cairngorms, next to the Forestry Commission's National Forest Park.[82]

At first sight it seems that there was little disagreement between the Forestry Commission and the Nature Conservancy. The silence of contemporary sources is deafening. In this respect there are two possibilities: either there were no difficulties, or the difficulties were not recorded. The latter possibility seems the most likely. If a conflict of interests seemed to emerge, Berry had the habit of inviting the people involved for an informal discussion. If the headquarters of the Nature Conservancy in Edinburgh seemed inappropriate he suggested a weekend meeting on the

[78] Smout, *The Highlands*, p. 22-23.
[79] Ibid, p. 23.
[80] Personal Comment Berry, Letter 26-05-1999.
[81] Smout, *The Highlands*, p. 23; Berry Personal Comment, Letter 26-05-1999.
[82] Mackay, *Land use Agencies*, p. 109.

'neutral ground' of the library at his home at Tayfield in Fife.[83] Hugh Ingram gave a vivid description of the atmosphere of these meetings:

> Some of us, I recall, were prone to impatience, but a sense of proportion could always be restored in the Tayfield library, as the mind became chastened by the great bookshelves, rising to unguessable heights; while the body was refreshed with Mrs Berry's tea.[84]

As during the inter-war period, most disagreements were solved behind closed doors in a gentleman's way. However, sometimes conflicts over afforestation broke through the surface.

7.7.1 Beinn Eighe

As mentioned above, the Nature Conservancy established its first National Nature Reserve with the purchase of a complete mountain, Beinn Eighe, in 1951. Long before the purchase it had been recognised that the remnants of old Scots pine woodland had to be protected and preserved. During the war the south-east end of the Beinn Eighe wood was partially felled and it was felt that this had to be restored. The condition of the pine wood remnants can be deduced from comments by Beresford Peirce, director of the Scottish branch of the Forestry Commission, who recorded in the minutes of a meeting of the Nature Conservancy, Scottish Branch, in the autumn of 1952:

> In the seven years since the last heavy felling, the wood had deteriorated so much that [Beresford Peirse] feared it might revert to moorland or to birch scrub if no active steps were taken to protect the natural regeneration of Scots pine.[85]

The Forestry Commission agreed with the Nature Conservancy that action was needed to prevent further loss of pines. The discussion about how to prevent further loss focussed on the question of whether to use active intervention by means of planting or no intervention and allow natural

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[83] Personal comment Berry, Letter 26 May 1999.
[84] Recreation of the Dundee Botanical Garden. Presentation address to Dr. Berry by Hugh Ingram. Personal copy John Berry.
[85] Signed minutes of first and subsequent meetings, meeting 25 Sept 1952, NAS SNH1/1.

regeneration. It was here that the Forestry Commission showed its real face.

During a visit to Beinn Eighe in July 1952 Beresford Peirce, stated that 'the actual regeneration of this area could ... be done by the Forestry Commission '.[86] The Forestry Commission felt that a forestry project should not be undertaken by two different organisations, but by the appropriate agency that was specially set up to carry out State forestry in the United Kingdom: the Forestry Commission. Beresford Peirse saw two advantages in doing this, the first being 'that the Nature Conservancy would be relieved of a heavy expenditure'.[87] Secondly, the Nature Conservancy would not have to reinvent forestry management techniques and operations and leave the difficulty of arranging management and supervision of the woodlands to the Forestry Commission.

With this proposal Beinn Eighe was in fact close to being taken over by the Forestry Commission. However, the Nature Conservancy was concerned that the activities of the Forestry Commission would result in the loss of old woodlands in the nature reserve. It was due to the intervention of Captain C. Diver, Director General of the Nature Conservancy, that the Conservancy in Scotland was forced to re-think its position with regard to Beinn Eighe in late 1952. It was recognised that a survey of the pine woods in the nature reserve had to be conducted first before further action was taken. In early 1953 Donald McVean started his study on the ecology of Scots Pine at Beinn Eighe. Based on this study, MacVean concluded that large-scale forestry operations were not needed to ensure the continued existence of woodlands. He recommended a non-interventionist management strategy for the ancient woodlands and this

[86] Quoted in: Clifford, Tim & Foster, Andrews, 'Beinn Eighe National Nature Reserve: Woodland Management Policy and Practice 1944-1994', in: Smout, T.C., *Scottish Woodland History*, p. 194.
[87] Ibid.

became the basis for the Beinn Eighe Reserve's woodland management plan as it finally appeared in 1954.[88]

Another result of the Nature Conservancy's experience with the Forestry Commission in the case of Beinn Eighe was the development of a cautious attitude towards the Forestry Commission. A plan by the Forestry Commission and the Department of Agriculture to place the whole of the Spey catchment area under forest was not received with enthusiasm by the Nature Conservancy.[89] It was for this reason that McVean drew attention to the need for closer liaison with the Forestry Commission to gain a fuller understanding of the forestry agency's activities. The Chairman, Berry, stressed the need to secure woodlands as nature reserves before they disappeared.[90] The result of these two experiences of the Nature Conservancy with the Forestry Commission was the emergence of a greater appreciation for the need to protect semi-natural woodlands.

7.7.2 Glen Roy

Two years later in the Spring of 1955 another conflict with the Forestry Commission arose over the afforestation of Glen Roy. The Glen and the surrounding areas are important both scientifically and from a cultural-historical point of view because of a geological phenomenon so called Parallel Roads. To understand its scientific and cultural significance we must consider the history of the Glen in more detail.

The Parallel Roads are a group of three well-defined, naturally contoured benches that run parallel to the valley floor at heights of 60, 125 and 150 metres (figure 7.1).

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[88] Ibid., p. 196.
[89] Signed minutes of first and subsequent meetings, meeting 29 January 1953, NAS SNH1/1.
[90] Ibid, meeting 5 November 1953.

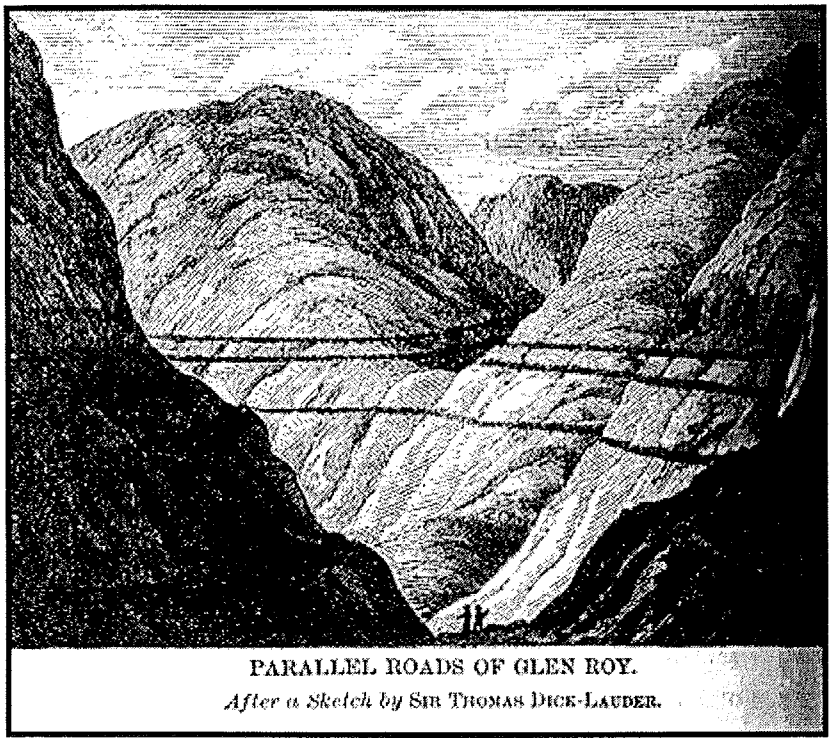

Figure 7.1: The Parallel Roads of Glen Roy (From: J. Tyndall, Fragments of Science, 1899)[91]

The Roads were known for a long time among the local population and Gaelic legend claimed they were roads created by the Celtic warrior Fingal for hunting. However, local tradition held that the kings of Scotland built them when they resided in the castle at Inverlochy. Thomas Ross, in the first *Statistical Account of Scotland*, echoed this belief when he wrote that the Roads were 'one of the most stupendous monuments of human industry'.[92] We know now that the roads are of natural origin. As the Ice Age drew to an end over 10,000 years ago, a huge loch filled the Glen as the result of ice damming of the valley exit downstream. The Parallel Roads in Glen Roy and the adjacent valleys are its former shorelines. However, it took a long time before scientists

[91] Tyndall, John, *Fragments of Science*, Vol.1, (6th ed., New York, 1899), Ch. 8.
[92] Ross, Thomas, 'Parish of Kilmanivaig', in: Sinclair, John, *The Statistical Account of Scotland, 1791-1799, vol. 17*, (Edinburgh, 1981), p. 162.

formulated their correct origin, as the first scientific descriptions preceded the ice-age theory of climate history.[93]

The first published description of the Parallel Roads was by Thomas Pennant in 1771 in his book *A Tour of Scotland.* This work was far from scientific but during the 19th century Glen Roy played an important role in the development of geological and geomorphological theories of landscape evolution.[94]. Initially it was thought that the shorelines were of marine origin and formed during a period when the sea reached the level of the hills surrounding Glen Roy. Among the proponents of this theory were both Charles Darwin and Charles Lyell, the Scottish geologist, whose writings strongly influenced the development of modern geology.[95] It was Darwin in particular who was impressed by the parallel road features at Glen Roy. In 1838 he wrote to Lyell, 'I wandered the mountains in all directions and examined that most extraordinary district. I think without any exceptions, not even the first volcanic island, the first elevated beach, or the passage of the Cordillera, was so interesting to me as this week. It is by far the most remarkable area I ever examined. ... I can assure you Glen Roy has astonished me'.[96] Darwin's visit resulted in a major paper that was published in the *Philosophical Transactions* of the Royal Society a year later. In this paper he expressed the view that the Roads were a succession of beaches formed as the land rose from the sea. Darwin based this hypothesis on similar formations that he had seen on the Chilean coast and it occurred to him that the same process that had created them, namely the elevation of land, had also occurred in Scotland.[97]

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[93] Peacock, J.D. & Cornish, R. (eds.), Glen Roy. Field Guide (Cambridge, 1989), p. 1.

[94] The search for a theory of the formation of the Parallel Roads is an instructive case study in the history and philosophy of Science. See for a detailed discussion: Rudwick, Martin J.S., *The History of the Natural Sciences as Cultural History* (Amsterdam, 1974).

[95] Jamieson, Thomas F., 'On the Parallel Roads of Glen Roy, and their Place in the History of the Glacial Period', *Quartely Journal of the Geological Society of London*, Vol. X, 1863, pp. 237-239.

[96] Darwin, Francis, *The Life and Letters of Charles Darwin Including an Autobiographical Chapter, Vol. 1* (London, 1887), p. 293.

[97] Darwin, 'Charles, Observations on the Parallel roads of Glen Roy', *Philosophical Transactions of the Royal Society*, (1839) 39-82.

Both Darwin and Lyell proved to be wrong in the matter when Louis Agassiz, the Swiss-American researcher of glacial features, who propounded the existence of a former ice-dammed lake in Glen Roy after a visit there in 1840. Agassiz proved to be right and his idea was subsequently further developed by the Scottish geomorphologist Thomas Jamieson who published an article in 1863 on the origin of the parallel Roads in Glen Roy. His conclusions settled the question of the origin of the Parallel Roads once and for all.[98] Jamieson's conclusions were further refined during the subsequent century by several generations of geomorphologists. At present we have a detailed picture of the sequence of events that led to the formation of the Parallel Roads.

Glen Roy was once a pro-glacial lake that formed due to the advance of the Lochaber Ice Lobe during the final cold epoch of the last Ice Age, called the Loch Lomond Stadial (11,000 – 10,000 years ago). The ice blocked Glen Roy in a major advance and pushed the water level up to 350 metres above sea level. The level of the lake was controlled by the altitudes of the lowest ice-free cols on the perimeters of the lake (Figure 7.2). As the ice retreated the water level fell in two successive stages to 325 metres and 260 metres above sea level. The shorelines have remained on the sides of the glen like tide marks left on a bath after the water has drained away.[99] On the slopes of Glen Roy these former shorelines clearly can be seen and the valley bottom is made up of lake deposits that contain important information about the final stages of the last Ice Age in Scotland.

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[98] Chorley, Richard J., Dunn, Antony J. &, Beckinsale, Robert P., *The History of the Study of Landforms of the Development of Geomorphology. Vol. 1: Geomorphology Before Davis* (London, 1964), pp. 338-339

[99] Gordon, J.E., 'Glen Roy and the Parallel Roads of Lochaber', in: Gordon, J.E. & Sutherland, D.G. (eds.), *Quaternary of Scotland* (London, 1993), p. 339.

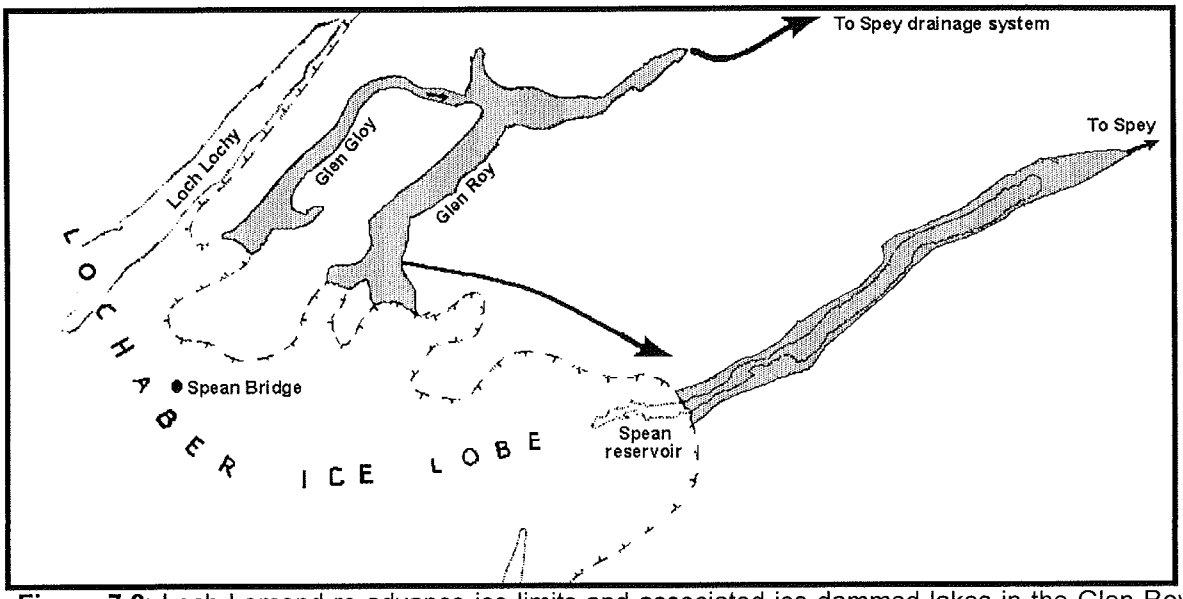

Figure 7.2: Loch Lomond re-advance ice limits and associated ice-dammed lakes in the Glen Roy area. The shaded areas are the ice dammed lakes and the arrows show overflow channels. (After O'Dell and Walton, 1962, p. 24-25).

After the ice had disappeared the River Roy and its tributaries reworked the debris left by the ice and the melt water. Over time the rivers have cut channels into the glacial infill resulting in step-like terraces. From a geological point of view Glen Roy is unique in Scotland and a classical examples of the remains of a pro-glacial lake in Europe.[100] However the survival of these rare geological features has not always been secure.

In 1955 the Forestry Commission announced its intention of purchasing the Glen Spean Estate, which lies along the east bank of the River Roy, for afforestation.
This threatened an important part of the 'Parallel Roads', both by concealing them from view and by digging drainage canals and the construction of forest roads through the parallel features themselves. For this reason that the Nature Conservancy's opinion was firmly against the Forestry Commission's proposal for planting. The Conservancy regarded the Parallel Roads 'of the highest scientific and historical importance'. It noted further that the roads and other

[100] O'Dell & Walton, *The Highlands and Islands of Scotland*, pp. 25-26; McKirdy, A., Crofts, R., *Scotland. The Creation of its Natural Landscape* (Edinburgh, 1999), pp. 30-31, 36.

geological features in the glen 'thoroughly deserve preservation both as a museum piece for present and future generations'.[101] Three years of negotiations elapsed before the Nature Conservancy reached a compromise with the Forestry Commission in 1958.

It was agreed that the Forestry Commission would be free to plant 578 acres in three blocks on Cranachan Farm at the east side of Glen Roy. They would also be free to plant 600 acres on the Caol Lairig section of Inverroy Estate at the opposite, west side, of the Glen. The rest of Glen Roy had to remain unplanted. To demonstrate its good will the Forestry Commission subsequently reported that instead of planting 578 acres in three blocks on Cranachan Farm they would confine planting to a single block of 330 acres on the north side of Glas Dhoire. The remainder of the farm had to be sold and was therefore not afforested.[102] On a modern map it can be observed that the Forestry Commission planted all three blocks as it was initially intended, but for the remainder the Commission kept its promise and planted only in the areas that had been negotiated in 1958. In the case of Glen Roy the Nature Conservancy successfully influenced the opinion of the Forestry Commission and its planting programme.

The reason for this fits with the observation made earlier that the people at the highest levels of the forestry Commission and Nature Conservancy came from the same background. They were gentleman scientists and foresters with an elite, middle class point of view at the scientific and cultural values of Glen Roy. It had to be preserved, not for the benefit of the ordinary tourist or walker, but for the interests of scientists and because it had played such an important part in the development of earth sciences. The preservation of Glen Roy was not meant for pinicmakers but the learned public. This example of nature conservation would remain an isolated incident until the 1970s when the successor to the Nature Conservancy, the Nature

[101] Annex A to minutes NC Scottish Committee, 3 March 1955, NAS DD12/877.
[102] Minutes of Scottish Committee, 1961 - 1963, Nature Conservancy Report 13-06-1961, NAS DD12/881.

Conservancy Council, started the preparations for a publication on forestry and conservation. The paper was only published after a long internal debate in 1986.[103] Long before it was published the Nature Conservancy had made some critical comments on the Forestry Commission's conservation record in evidence submitted to the 1958 Working Party on Forestry.

7.7.3 The 1958 Working Party

The Working Party that was set up after the Zuckerman Report had the task of advising the government on future forest policy. In order to gain a proper picture of forestry in the United Kingdom the Working Party invited organisations involved in forestry, landscape management or conservation to submit a memorandum with their views on the work of the Forestry Commission. The Nature Conservancy acted swiftly and submitted their memorandum of evidence in February 1958. In this memorandum the Nature Conservancy presented its views regarding the scope and activities of the Commission and its relationship with them.

The memorandum started by saying that the Forestry Acts of 1919 and 1945 took some account of amenity, but that it failed to anticipate the problems related to the integration of forestry and nature conservation. It continued by saying that the had Commission also underestimated the pressures on the forests caused by a rising demand for use of the forests for recreation. This failure was most noticeable on the ground. In their many dealings with the Forestry Commission, the Nature Conservancy had found that the readiness of the Commission's staff to co-operate in matters important to nature conservation were often hindered by the Commission's statutory powers or financial restrictions. The major obstacle seemed to be that the Commission was too narrowly restricted to activities directly concerned with growing maximum timber volumes at the quickest possible rates. The Nature Conservancy concluded that

[103] Mackay, *Land Use Agencies*, pp. 101-102.

this was a mistaken forestry practice and urged for a forest policy with a much wider scope, including the conservation of ancient woodlands and trees, protection of the soil against erosion, nature conservation, and recreation. The memorandum also suggested that forestry could help to develop a more balanced rural economy and landscape.[104]

But how could this be implemented? To address this practical question the Nature Conservancy referred to a development on the other side of the ocean. In the United States the Forest Service was developing a management system that was known as 'multiple use'. The main principle of this system was that all resources and values in the landscape are managed under an integrated management plan. The aim of this plan is to produce a forest that provides timber, protects habitats, creates opportunities for sports, recreation, and the protection of land from flood and erosion. In the end, this would also produce sustainable forests that provide the highest total number of benefits.

To introduce this system in the United Kingdom the Nature Conservancy recommended that, in any fresh legislation, the widest possible definition of the Forestry Commission's scope and function should be adopted. They also added a critical note stating that it was useless to introduce this management system if the Forestry Commission did not change its practise. The issuing of felling licenses was felt to be one of the most harmful practises in use. It encouraged, in the Conservancy's opinion, large-scale clear felling, which increased the rate of erosion and loss of fertility to an extent that was ecologically undesirable.

Another aspect that was criticised was the attitude of the Forestry Commission to 'vermin'. The Conservancy commented that on this aspect that

> ...the vague language in the Forestry Act of 1919 regarding damage by rabbits and hares or other vermin has an almost medieval flavour.[105]

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[104] Forestry Working Party on Forest Policy, *The Nature Conservancy's Memorandum of Evidence*, pp. 1-2, PRO, F18/817

[105] Ibid., p. 11.

It was recommended that the Forestry Commission should draw up a list with species that could be hunted and those that had to be protected. The Nature Conservancy was happy to assist the Forestry Commission in this. However, it took, six years before the Commission seriously looked into the matter of hunting and wildlife. In February 1964 the Forestry Commission announced that it had appointed Peter Garthwaite, division officer at Basingstoke, to the new post of Wildlife Officer. His responsibility was to co-ordinate and develop Commission policies and practices in wildlife conservation and management in England, Scotland and Wales, in liaison with the Nature Conservancy and other bodies. The aim for the Commission was to develop methods of control to harmonise the conservation of wildlife with the needs of timber production.[106]

After the comment on vermin the Nature Conservancy finished the memorandum stating that the relations with the Forestry Commission were excellent and that it was:

> ...unnecessary here to refer to the numerous problems of mutual interests which constantly arise and are settled by mutual arrangement.[107]

7.7.4 Herbicides

At the start of the 1960s both the Forestry Commission and the Nature Conservancy felt the need to improve communications between the two organisations. In December 1962 the Conservancy and the Commission set up a Scottish Joint Management Liaison Committee. The creation of this committee reflected the changes that took place in the attitudes towards nature conservation. It was during this time that modern concerns about pollution and preservation of biodiversity as well as the concept of multi-purpose land use emerged. In this respect the focus on the effects of

[106] Forestry Commission, *Annual Report 1964*, p. 11; Joint Management Committee Scotland 1962-1968, Forestry Commission and Wildlife, Memorandum by the FC, 12-2-1964, PRO, FT3/124.
[107] Forestry Working Party on Forest Policy, *The Nature Conservancy's memorandum* p. 11, PRO, F18/817

toxic chemicals used as pesticides on the natural world is interesting. At the first meeting of the Joint Management Committee it was noted that Rachel Carson's book *The Silent Spring* was due to be published in Britain and that it would probably result in a similar impact on public opinion as had earlier been the case in the United States. The book had become a huge best-seller and placed the issue of the negative side effects of pesticide use high on the political agenda. The general public had simply demanded that the Government examine the effects and ban, if necessary, the use of the chemicals.

In the United Kingdom the issue was already a major concern in government circles before the publication of Carson's book. In December 1962 the Joint Management Committee agreed to review the practices of the Forestry Commission and the Nature Conservancy on the use of pesticides for their purpose.[108] The usage of pesticides was briefly considered during the second meeting in March 1963. It appeared that the Forestry Commission did not use insecticides on a large scale and reported only to have used them in one or two cases against a harmful caterpillar. It was agreed that the use of this type of insecticide would be examined in detail to see how effective it was and the possible side effects for the surrounding countryside. At this point it seems that the Nature Conservancy was not particularly alarmed by the usage of toxic chemicals by the Forestry Commission, but this was about to change.[109]

In January 1965 the Forestry Commission published a *Chemical Control Supplement* with the *Entopath News*, a publication of its Alice Holt Research Station. It was a clinical technical account on the usage of chemicals to control pests in the Forestry Commission. There was, however no warning about the dangers of persistent insecticides. This worried researchers of the Nature Conservancy. In a letter of Dr. Norman W. Moore of the Nature Conservancy

[108] Nature Conservancy/FC Joint Management Liaison Committee. Minutes of the first meeting, 17 December 1962, PRO, FT3/119.
[109] Ibid, Second meeting, 5 March 1964.

Experimental Station, Monks Wood, to Colonel Floyd, an agriculturist and forester and prominent member of the Royal Forestry Society, Moore showed his concern that the Commission was going to use pesticides on a large scale:

> If the Forestry Commission as a whole, goes into the extensive use of herbicides, an important matter of policy is raised because such a use will destroy wildlife habitat on a vast scale and will cause widespread ugliness.[110]

There was particular concern about the use of 2,4,5-T (trichloro-pheno-oxyacetic acid) used for brush control in forests. This chemical was used in the Vietnam War as a defoliant but the *Entopath News* advised on its use and that of other chemicals without any reservations. Moore concluded that the use of pesticides was an important political matter to deal with before it got out of hand. He argued that the Forestry Commission could set an example for the outside world by abandoning the use of persistent insecticides altogether.[111]

Although the Forestry Commission agreed with this point of view, it took more than a concern by Nature Conservancy researchers to make the Forestry Commission ban some of the most harmful chemicals. In 1967 a regional forest officer in East Anglia drew attention to the possible harmful effects of the use of 2,4,5-T for several Sites of Special Scientific Interest on Forestry Commission land or the adjacent reserves. In view of the mounting public concern about the spraying of herbicides the forestry Commission wrote in its annual report 1967-69 that it was taking

> ...the utmost care to ensure that, when using weedkillers, insecticides and fungicides in forest management, any possible effects to flora and fauna are minimised.[112]

However, developments on the other side of the ocean forced the Commission to rethink its policy on the use of chemicals. In America there was concern over the health of soldiers in

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[110] Nature Conservancy/FC Joint Management Liaison Committee,Letter of N.W. Moore of the NC Monks Wood Experimental station to Colonel Floyd, 18 January 1965, PRO, FT3/119.
[111] Ibid.
[112] Forestry Commission, *Annual Report 1967-1969*, p. 15.

Vietnam who had handled or were exposed to defoliants such as 2,4,5-T. In October 1969 the Science Advisor of the White House announced that the use of this herbicide would be restricted. Tests carried out by the National Cancer Institute had shown that large doses of 2,4,5-T caused deformities in young children.

In Britain the findings of the Americans had a considerable impact in the Forestry Commission, which sprayed about 80% of the total amount of 2,4,5-T used in Britain. The result was that, in light of the American findings, the trade unions demanded the withdrawal of the chemical by the Forestry Commission.[113] The Commission had to take this very seriously in the light of a 1952 law that all government organisations, including the Forestry Commission , had to protect their employees from the harmful effects of their work. Backed up by this law, the American experience and the data of the Nature Conservancy, the trade unions had a strong legal trump card to force the Forestry Commission to abandon the use of harmful pesticides.[114] In April 1970 the Commission announced that the use of 2,4,5-T would be abandoned in forestry operations.

In view of the fact that the Nature Conservancy had raised concerns about the use of pesticides and even wanted to see some of them withdrawn, it is interesting that it was public concern that overtook the Commission and forced it to rethink its use of chemicals. Both organisations were overtaken by events that were partly beyond their control. There was not a lack of will in the Forestry Commission to look seriously at the dangers of the use of chemicals, but they wanted to have all the facts straight before they would take action. However, the pressure of public opinion accelerated the review process and the final abandoning of the most harmful pesticides by the Commission. The media had provided the public with information that

[113] Sheail, John, *Pesticides and Nature Conservation. The British Experience 1950-1975*, pp. 124-126.
[114] Personal comment made by John Sheail.

was previously only available to experts and provoked a feeling among the general public that they had a right to know. This was part of the democratisation process that took place during the 1960s and was partly driven by the introduction of the television and better education of the whole population. The pesticide issue was a demonstration of what a potent power the combination of mass media and better-educated people can be.

7.8 Summary

It is difficult to say that there is a long standing tradition of resistance against large-scale afforestation in Scotland. While the Lake District saw a well-organised mass movement against the activities of the Forestry Commission, hardly any voices were raised against coniferous trees in Scotland. There are several factors that account for this fact, the first being the difference of scale. The Lake District is small in comparison to Scotland and any large-scale afforestation scheme would be noticed because it would affect a considerable area. By contrast, a large plantation in Scotland wouls affect only a small portion of the total land area.

The second factor that influenced the perception of forestry in the Lake District was that the region is perceived as a national asset in England since it was made famous by the writings of the Lake Poets. As a result large numbers of tourists came to the Lake District to see the beauty of the landscape for themselves. The same thing happened in the Scotland through the writings of Sir Walter Scott, but this was mainly restricted to the Trossachs and Loch Lomond area. Scott's outlook on nature was more utilitarian than those of the Lake poets although this must not be overemphasised. Scott regarded the landscape as a part of daily experience that was there for the use of human beings. This utilitarian attitude seems common among Scottish landowners and might help to explain the practical view of the landscape of the men who established the Forestry Commission. Forestry was a practical undertaking that reinforced the economy and social fabric

of the countryside. That is not to say that these landowners were not interested in nature conservation issues. By the end of the 1920s a considerable number of the leading figures in the Forestry Commission were involved in the establishment of the Association for the Preservation for Rural Scotland and the National Trust for Scotland. These organisations were more interested in the effects of buildings, bridges and roads on the landscape than production forests. There was an interest in conservation issues, but they did not focus on forestry operations. It is also important to note that the conservation organisations were dominated by large landowners. A number of them had also been involved in the establishment of the Forestry Commission and did not regard forestry operations as harmful to the landscape. Their opinion was that the forestry plantations even enhanced the landscape.

After the Second World War a new player entered the conservation arena in Scotland: the Nature Conservancy. This inaugurated a new era in nature conservation in Scotland because the Conservancy was a government organisation run by professional experts such as biologists, ecologists and other scientists. The inter-war conservation organisations were run by volunteers, most of them large landowners and/or involved in planning and land use organisations and agencies. Many of them were also part of the nobility, gentry or the upper echelons of the middle class and their interest in nature and landscape conservation is part of the tradition of the 19th century gentleman scientists. In this case it is probably better to speak of gentlemen conservationists. Their activities had two characteristics: first of all they dealt with disagreements over conservation issues behind closed doors in an informal manner. This is strongly suggested by the lack of documentary evidence. Secondly, they believed that nature conservation was not meant for the benefit of the common people to enjoy, but for the well-educated and sophisticated expert to study and to admire. The idea of the masses visiting Glen

Coe or even Glen Roy was not on their minds when they argued for its protection, although with the emergence of the Nature Conservancy this changed.

Because the Nature Conservancy was set up as an independent Government body and staffed with a new breed of scientist experts it was able to be more critical than the gentleman conservationists. The Forestry Commissioners feared that the Nature Conservancy could interfere in what they regarded as their field of expertise: forestry. The Commission was convinced that the Nature Conservancy could not make decisions and recommendations with regard to forestry operations. It was for this reason that the Commission tried to take over Beinn Eighe and in doing so part of the work of the Nature Conservancy. This was prevented by interference from the Conservancy's headquarters in London but this experience made clear that the Conservancy had to follow its own course. The first sign that they did follow their own course came with the memorandum for the 1958 forestry Working Party when the Conservancy did not hesitate to criticise the Forestry Commission, but real change only became visible with the important issue of the use of pesticides in forestry operations.

Already by the early 1960s the Nature Conservancy had warned about the dangers of using persistent insecticides. However, it took the concerns of Nature Conservancy researchers to convince the Forestry Commission and ban some of the most harmful chemicals was not sufficient to convince the Commission. It was public concern that forced the Forestry Commission to take immediate action and ban the use of the most dangerous chemicals in its forests. From now on the Forestry Commission had to take the force of public opinion more seriously than ever before. But the ban on the use of chemicals could not have been so easy without the evidence provided by the Nature Conservancy. Public opinion had become a more important factor in nature conservation issues but expert organisations still dominated the scene.

They learned how to channel public concerns to their own benefit and in this way the leading conservation organisation would forge the changes during the 1980s.

8. The Last Act, 1973 - 1988

The prohibition of the use of certain herbicides and the recognition of the importance of broadleaved trees and nature conservation issues by the Forestry Commission by the early 1970s were only the beginning of a radical change that would take place in the next 20 years. By 1977 forest design, as introduced by Crowe, had become general practice in the Forestry Commission and its importance was well accepted by the Commission's staff. A year later the Commission published a statement on its landscape design policy, which was based on the principles outlined in a booklet on forestry design by Sylvia Crowe.[1] This policy statement provided the Commission with a sense that their practices were in step with conservation and forestry thinking outside the State forestry organisation. But the reality was quite different.

In 1978, the Nature Conservancy and the Natural Environment Research Council jointly published a forest policy review. The review identified over 700 sites of biological importance, covering 1 million hectares, including 60,000 hectares of Forestry Commission land. The review laid emphasis on the importance of broadleaf woodlands and in particular on so called ancient woodlands. The Forestry Commission responded by stating that such sites 'are already protected by management plans of one kind or another'. They dismissed the claim that more consideration had to be paid to broadleaves than was already done and the concept of ancient woodlands was rejected.[2]

In 1979, a House of Lords Select Committee under Lord Sherfield began an investigation into the *Scientific Aspects of Forestry*. The Committee made the recommendation that:

> ... The proper objective for those woodlands and old broadleaf plantations which are not specially selected for nature conservation is to manage them productively and

[1] Forestry Commission, *Annual Report, 1979.*
[2] Forestry Commission, *Annual Report, 1978*, p. 17

> profitably in a way that is compatible with maintaining a value for wildlife and amenity.[3]

The HoL Committee linked native broadleaves with timber production and amenity, something the Forestry Commission had done seven years earlier after the forestry policy review of 1972.

In 1982, a conference on broadleaves in Britain was held at Loughborough. It is interesting to note that the Forestry Commission and the Institute of Chartered Foresters had organised this conference. This conference can be identified as the turning point against the dominant use of conifers in favour of native broadleaves. The Commission recognised the concern of many people over the poor state of much of Britain's broadleaved woodland and, in particular, the loss of ancient semi-natural woodland to agriculture and other uses. Following the Loughborough conference the Commission undertook a comprehensive review, lasting two years, of all aspects that would involve a broadleaves policy. Some 120 organisations, including many major forestry and environmental bodies, were given opportunities to put forward their views. This review culminated in the Government statement on broadleave policy in July 1985.[4] The Government's Broadleaf policy was aimed at:

> Encouraging positively and sympathetic management of the country's broadleaved woodland to arrest depletion, to increase the quality of timber and to expand this valuable national resource to meet the various complementary objectives.[5]

One of these complementary objectives was:

> To encourage the maintenance and greater use of broadleaves in the uplands, particularly where they will *enhance the beauty of the landscape* and the wildlife interest (emphasis added).[6]

The Commission said further in the policy description that:

> woodlands designated as areas of high landscape value require special

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[3] HoL Select Committee on Scientific Aspects of Forestry, 1979-1980
[4] Forestry Commission, Forest Facts, Leaflet 4, Forestry in the Environment (Edinburgh, 1986)
[5] Forestry Commission , *The Policy for Broadleaved Woodlands* (Edinburgh, 1985)
[6] Ibid.

management attention.[7]

The intentions of the Broadleaf policy were impressive. The Commission committed itself to the protection of broadleaved woodlands and trees, especially the so-called ancient woodlands and hardwood trees of high landscape value. But these intentions hardly seemed to apply north of the Scottish border where the Forestry Commission and private forestry alike continued to create new conifer monocultures. However, a year after the announcement of the Broadleaves Policy, the Royal Society for the Protection of Birds (herafter RSPB) published a report with the title *Forestry in the Flow Country*. With this report the RSPB drew attention to the extensive planting undertaken by Fountain Forestry in the so-called Flow Country of Caithness and Sutherland. The Flow Country is the largest continuous expanse in Britain of a type of peat moorland known as "blanket bog". In ecological and landscape terms it is a unique region, and the creation of massive conifer plantations by Fountain Forestry threatened to destroy it. The forestry operations by Fountain Forestry were made possible through the substatial tax reductions available for forestry in remote rural areas and it also received considerable technical assistance from the Forestry Commission. The public campaign staged by the RSPB and other environmental organisations against forestry in the Flow Country had a profound impact on both public opinion and the Forestry Commission. The dislike of conifers by the general public was swept to unprecedented heights but the Commission and Fountain Forestry pretended not to notice and continued business as usual. If the Forestry Commission was not listening, the Chancellor of the Exchequer, Nigel Lawson, was. In March 1988, without any warning, forestry was taken out of the scope of income and corporation tax reductions. Officially it was done to demolish 'arrangements under which tax payers ... had been able to shelter other income from tax by setting it

[7] Ibid.

against expenditure on forestry, while effectively enjoying freedom from tax on the income from the eventual sale of timber'.[8] The Forestry Commission, which had supported the tax incentives on forestry, was shaken by this fiscal change and commented in its annual report that it needed 'a period of adjustment' to the new situation.

The result of the Flow Country episode was that public opinion became firmly against conifer planting and in favour of the use of native broadleaves. The Forestry Commission changed its policy radically and encouraged actively the use of native broadleaves. It was in this framework that a native woodland advisor was appointed, conifer plantations were cleared out to restore underplanted ancient woodlands and active financial and technical support was given to the planting and management of broadleaf woodlands by private landowners and forestry companies.

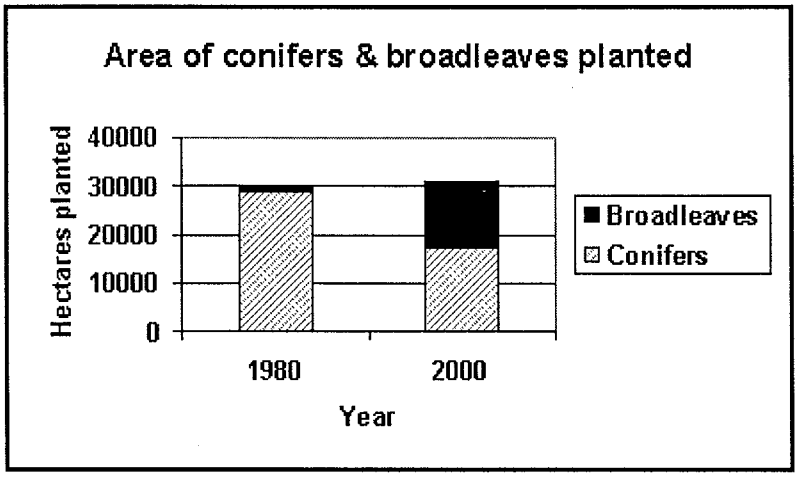

Figure 8.1: Total area of conifers and broadleaves planted in the UK, 1980 & 2000

The result of these developments was that the area of boadleaves planted rose from about 2,5% in 1980 to over 43% in the year 2000 (see figure 8.1), and that figure is likely to rise even further in the future.[9]

[8] Forestry Commission, *Annual Report 1988.*
[9] Forestry Commission, *Annual Report 1980.*
Forestry Commission, *Facts & Figures, 1999-2000* (Edinburgh, 2000).

9. Conclusion

Although environmental considerations, i.e. aesthetics and conservation, were initially not included in the State forestry programme they were implicitly present from at least the middle of the 19th century. The aesthetic side of Scottish forestry dates even back to the 18th century when landowners started to plant forests around their country houses to beautify their estates. A new impulse in this movement occurred during the first decades of the 19th century when new tree species were introduced on a large scale in Scotland, mainly from North America. These trees were planted not only for aesthetic reasons but also to increase the income from estates.

During the same period German and French foresters developed modern forest management techniques to make their forests more profitable. When the Indian Forest Service was created in 1854 German foresters were employed to establish modern forestry in India. The reason why a state forestry agency in India was set up was the observation that woods and forests were disappearing rapidly and it was feared that this would result not only in timber shortages but also in soil erosion, desiccation and climate change. It was here, in the colonial context, that environmental concerns amalgamated with continental forestry practice. This in turn was transported to Scotland by foresters who were trained and served in India or some of the other British colonies. It was on the colonial forestry practices that the curricula of forestry education in Scotland came to be based.

By the second half of the 19th century a group of influential Scottish landowners, who were to become the founding members of the Forestry Commission, had started to lobby for the creation of a State forestry authority in Scotland. The arguments used in favour of State forestry were that forestry could make previous wasteland productive and that forestry could provide jobs in rural areas of the country. These arguments were wholly economic, although there was a realisation that forests could also improve the aesthetic value of the landscape.

The objectives of the proponents of state forestry did not include restoration of the lost ancient forests of Scotland. Although the idea of the Caledonian Forest was known, there is no evidence that the founding fathers of state forestry in Scotland were influenced by it.

Improving previous unproductive lands was not as simple as it seemed. Continental-colonial forestry practice would never work in Scotland without adaptation to the local environmental conditions. This was realised by some of the forestry enthusiasts, most importantly John Stirling Maxwell and John Sutherland, who made the first attempts to modify colonial-continental practice for use in the Scottish uplands. At the same time others, and in particular Lord Lovat, actively lobbied for the creation of a state forestry organisation but failed to raise enough support.

The timber shortage that resulted from the German naval blockade during the first World War provided the proponents of forestry with the ammunition to convince the Government to create a State forestry authority. As a result, the British Forestry Commission was established in 1919. Its main aim was the creation of a forest resource as an insurance against timber shortages during a national emergency, i.e. another war. The appearance of the forests created by the Forestry Commission was dictated by its strategic and economic objectives, the ground available for forestry and the physical conditions in these areas. The economic objectives required monocultures planted in regimented geometric shaped blocks of conifers because these were easiest to establish and harvest. But on the infertile and exposed upland areas available for forestry in Scotland even such forests were not easy to establish. The harsh conditions of the Scottish uplands limited the number of species that could be used to a few hardy conifers. However, soon after the first trees had gone into the ground a debate sparked off among foresters about the aesthetics of the emerging forest blocks in the landscape. There is strong evidence that many foresters did not like the

appearance of the forests and wanted to create more diverse forests that fitted better into the landscape.

That was also the objective of the Association for the Preservation of Rural Scotland (APRS) and its direct offspring the National Trust for Scotland (NTS). Both organisations were concerned with the aesthetic impact of artificial structures on the landscape including forest plantations. Initially, forestry was not an issue for the Scottish organisations, that were more interested in the negative impact of new roads and bridges, such as the new road through Glen Coe in the late 1920s. This scheme was heavily opposed by the APRS but when it came to forestry both the APRS and NTS were almost silent. The Forestry Commission regularly consulted the APRS, and on the odd occasion the Association received a complaint a friendly enquiry was sent to the Commission. That the relations between APRS and the Forestry Commission were so smooth is not surprising when we consider that the same group of influential landowners founded both organisations. In Scotland land-use issues were dominated by the upper classes with political power and the opinion of the rest of the population about forestry issues remaining obscure. Newspapers contained few letters raising concern about the appearance of forests and the archives of NTS and APRS hold only the odd letter of complaint.

However, the Forestry Commission in Scotland was not entirely untouched by what happened south of the border. The conflict over the creation of forest plantations in the Lake District made the Commission aware of the fact that landscape aesthetics were an important issue for an increasing number of visitors. It can be no coincidence that, at the height of the conflict in the Lake District in the mid-1930s, the Commission appointed a committee to study the use of unplantable land for public use. The Committee recommended the establishment of several forest parks for recreational purposes and the same year the first park was opened in Argyll. This can be interpreted as a public relations exercise to increase the

Commission's popularity but on the other hand it does show that the Commissioners and their foresters were interested in more than timber production.

After the Second World War a new and more ambitious planting programme was announced as a result of war timber shortages. Another reason that made a renewed planting programme possible was the introduction of new technology, fast growing species and fertiliser. The combination of these three elements turned forestry into a mechanised, industrial undertaking that was able to cultivate land that was previously out of reach of forestry. Anderson was very critical of this new mechanised forestry practice and doubted its viability. He argued that the fast growing species would never create a diverse fully-grown forest eco-system that would provide a sustainable source of timber. As an alternative he proposed the use of the principles of ecological forestry, which included mixed plantations, long rotations and consideration for local environmental conditions. Anderson was not a lone voice because many foresters before the war had advocated and used the principles of ecological forestry. But after the war the power of the Treasury was stronger than that of the foresters and forced the Commission to introduce the new forestry practice of mechanised short rotation forestry.

Although short rotation single species plantations was officially the forestry practice in use, the diverse forests that we see today in Scotland testify to the fact that a considerable number of foresters continued to practice ecological forestry. At the same time there were two other developments, one outside the Forestry Commission and one inside, that made forest policy in the long run move away from large-scale blanket forestry. The external development was the work of Anderson and his graduate student Carlisle at the University of Aberdeen. In 1959 they published their book *The Native Pinewoods of Scotland*, which soon became highly influential among foresters. It was in this book that the importance of the remnants of ancient pinewoods in Scotland was recognised.

The internal development in the Forestry Commission was of an economic and political nature. Over the course of the 1960s and early 1970s it became clear that forestry in Scotland, and the UK as a whole, would never be profitable. At the same time the number of visitors visiting the Forestry Commission's forests was rising and the Commission realised that providing recreational facilities was the only argument left for justifying investing tax money in forestry. In fact this process had started just after the Zuckerman Committee had removed the strategic objective underpinning forest policy in 1957. A few years later the Forestry Commission appointed Silvia Crowe, a landscape architect, to assist its foresters with fitting forests better into the landscape. By 1972 the Commission announced that it would include the use of more broadleaves and pay attention to existing broadleaf woodlands in its policy objectives. In fact in 1972 all the elements that would make up forest policy after 1987 were in place: broadleaves, ancient pine woods, recreation and landscape aesthetics.

The acceptance by the Forestry Commission of these elements was not so much driven by wider society or even conservation organisations but by foresters inside the Forestry Commission and the external pressure of the Treasury and, to some extent, the Nature Conservancy. The Treasury wanted the Forestry Commission to justify its spending of public money on forestry and wanted to see a return on the invested money. It was for this reason that the Forestry Commission rationalised its plantations, including short rotations and mechanisation, to make it pay for itself. However, subsequent Treasury reviews exposed the fact that forestry would never pay. Because many foresters were interested in conservation issues, wildlife and biodiversity, and they realised that many visitors to the forests were interested in the same things, it was not hard to come up with an alternative justification for forestry. The new justification focused on the provision of recreational facilities, nature conservation and the protection of landscape values.

It is striking that the lack of debate about forestry among conservation organisations is deafening in the post-war decades. Even the most important and influential player on the conservation stage, the Nature Conservancy, was more interested in the creation of Nature Reserves and the impact of pesticides than the impact of conifer plantations on the landscape and environment. It must be said that the protection of fragile and unique areas and the threat of the use of pesticides were more pressing issues than forestry at that time. It was only when these issues became less pressing during the 1970s and 1980s that attention was drawn towards forestry. It was the action of the conservation organisations that finally tipped the balance in favour of broadleaves and ancient woodlands. Although all the elements needed for this policy change were in place by the early 1970s, it was hard to change forestry practice and policy. The whole machinery of the Forestry Commission was geared towards the rapid expansion of coniferous plantations and efficient extraction of timber from the plantations. It is hard to stop a train that is at full speed but after 1980 enough internal and external pressure had built up to change the course of forestry in Britain. When the change occurred it was quick and radical due to the long-standing tradition of ecological forestry, concern for aesthetics and interest in nature conservation among foresters. After the conflicts and policy changes of the last 15 years of the 20th century, it is hard to recognise that foresters have played an important role in the development of nature conservation in Britain. The forest parks are testimony of this, together with the diverse forests that were created, based on the principles of ecological forestry and the many protected pinewoods and ancient woodlands owned by the Commission. We might wonder if they would have been there if the Commission had not existed and if the foresters who managed them had not been interested in nature and conservation.

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Interviews, comments and meetings

The following were interviewed or provided written and/or oral comments:

Mr R.A. Allison, 21 July 1999, at his home in Fochabers.

Jim Atterson, 13 August 1999, at the University of Stirling.

Mr John Berry, Correspondence, 28 April and 29 may, 1999.

Mr Roger Bradley, 27 August 1998, at the University of Stirling.

Dr. John Dargavel, correspondence by e-mail, 15 July 1998, 15 September 1998 and 6 October 1998.

Mr John Davies, 22 September 1999, at his home in Dumfries.

Mr F.J. Donald, 13 July 1999, at his home in Edinburgh.

Mr George D. Holmes, 22 June 1999, at his home in Edinburgh.

Mr John Keenleyside, meeting 11 August 1998, at Cairngorm Forestry Park, Aviemore and 12 February 1999, at Inverness.

Professor John D. Matthews, oral and written Comments; meetings 11 March 1999 at Carlisle and 19 May 1999 at Stirling and Strathyre.

Dr. William E.S. Mutch, 12 August 1998, at his home in Edinburgh.

Mr Allison was Chief Instructor for the Women's Timber Corps for Scotland during the Second World War. From 1946-1950 he was Foreman in charge at Auchtermuchty. From 1950 until his retirement in 1970 worked in the Speymouth forests and was appointed Head forester in 1953.

Mr Atterson read forestry at Edinburgh University. After graduation he joined the Forestry Commission and posted to the Research Branch in Edinburgh he was then transferred to the Dornoch District in the North of Scotland Covering Sutherland Catithness and the Northern Isles. Atterson was there seven years as a District Officer before he was appointed and as principal silviculturist North at the start of the 1970s. At the beginning of the 1980s he became Assistant Conservator harvesting and marketing for West Scotland Conservancy before becoming the Conservator for Scotland.

Mr Berry was chairman of the Scottish Committee of the Nature Conservancy from 1949 until his retirement in 1967.

Mr Bradley graduated from Oxford in 1960. Then the Forestry Commission employed him as a Research Officer at Alice Holt Research station, Surrey. There he was responsible for research in planning and economics. From 1970 to 1983 he occupied the posts of District Officer in Argyll, Scotland, Assistant Conservator in South Wales, Conservator N. Wales and Director Wales. From 1983 to 1985 he was director of Harvesting and Marketing of the Forestry Commission before becoming Forestry Commissioner. After the reorganisation of the Forestry Commission in 1992 he was made Head of the Forestry Authority for Great Britain. In 1996 he left the Forestry Commission to become President of the Institute of Chartered Foresters. Mr Bradley is currently Chairman of the UK Forestry Accord.

Dr Dargavel studied between 1953 and 1956 with Professor Anderson in Edinburgh. After his graduation he took up employment with the Australian Forestry Service. He is currently involved in the Urban Research Programme in the Research School of Social Sciences, at the Australian National University at Canberra.

Mr Davies graduated in 1949 from the University of Edinburgh and joined the Forestry Commission in 1950 as an acquisition officer. He was then promoted to assistant conservator Conservancy West, Scotland and then he became conservator. In 1971 he became the senior forestry officer for Galloway and stayed there until his retirement in the 1980s.

Mr Donald graduated in forestry from Aberdeen in 1950 and was then employed on survey work. Worked from 1951 until 1957 as private woodlands officer in Banff before he was appointed as a district officer, a position he held in several places before he retired in 1980.

Mr Holmes was Director general of the Forestry Commission from 1976 until his retirement in 1987.

Mr Keenleyside was educated as a forester at the Forestry Commission's Forester Training School at Glentress, Peebles between 1951 and 1953. He served as a forester in several posts in the Forestry Commission until his retirement in 1988.

Professor Matthews, Emeritus Professor of Forestry, University of Aberdeen.

Dr Mutch graduated from Edinburgh in 1946 and then went to Nigeria in the Colonial Forest Service. After his return in the UK he became a research assistant in Oxford. In 1953 he was appointed as a lecturer in forestry at the University in Edinburgh. From 1981 until 1987 he was head of the Department of Forestry and Natural Resources. Dr. Mutch is now retired.

Appendix 1: Availability of Sources

All historical research depends on the availability of sources in archives, libraries and private collections. For this particular study the archive collections of the Forestry Commission in the National Archives for Scotland in Edinburgh and the Public Record Office in London were the prime collections consulted. In addition other collections in both record offices including those of the Nature Conservancy, the Treasury, Department of Agriculture and Fisheries for Scotland, Scottish Natural Heritage and the Scottish Development Department were consulted. The Forestry Commission Library in Farnham, Surrey, was also consulted and contains an impressive collection of journals, reports but also correspondence and other documents related to forestry and the Commission. However, as it turned out the there were gaps in the Forestry Commission files and it seemed likely that these were still held by the Forestry Commission, in particular the forest working plans and records concerning the forester training schools. Forest working plans are important sources of information with regard to the past management of forests in Scotland from the 1920s until 1970s.

Several retired officers of the Forestry Commission explained that Commission records used to be stored at the Blairadam Estate in Fife. After contacting Colin Morton, the Forestry Commission's head of information, it turned out that the store at Blairadam was closed down in 1997 and that recent material had been moved to a private storage company.[1] In a further communication it was explained that for 'security purposes we cannot authorise any non-FC staff to access these directly'.[2]

[1] Email communication from Colin Morton, 19 February 1999, regarding Forester Training Schools.
[2] Ibid., 15 April 1999, regarding record storage firm.

It was suggested that working plans, documents relating to the Forester Training Schools and other material would be held by the Scottish Record Office.

A search in the National Archives of Scotland resulted in over forty forest working plans, but hardly any material related to the forestry training schools, apart from the materials relating to the closing down and sale of the school buildings. In the hope that after the closure of Blairadam some material was transferred to the National Archives Miss Alison Lindsay, the National Archives West Search Room Archivist, was contacted to find out if any material was received from the Forestry Commission after 1997. She asked the archivist responsible for the transfer of Forestry Commission Records, Dr David Brown, if any material was received from the Commission. He was unaware of unlisted material from the Forestry Commission and suggested getting in Touch with the Departmental Records Officer of the Commission.[3] The response from Julie Gunn, Records Officer for the Forestry Commission, was that 'the material you seek in respect of training and education is over 30 years old and will have been destroyed.'[4] It seems very unlikely that any records concerning the forester training schools survived.

Another possible lead concerning the first Forester Training School established on the Beaufort estate near Beauly in the north east of Scotland, where estate records and the papers of Simon Sixteenth Lord Lovat. This material could also hold documents and correspondence related to the establishment of the Forestry Commission and Lovat's time as first Chairman. In order to get access to the papers Hugh Fraser, uncle of the present Lord Lovat, was contacted. In a very positive response letter, dated 29 April 1999, he explained that the he had did not know how many papers were still kept in the estate office. A complicating factor was that he did not have smooth relations with the factor in the estate office in Beauly.[5] In a

[3] Letter from Miss Alison J. Lindsay, dated 3 March 1999 regarding Forestry Commission Records.
[4] Letter from Julie Gunn, Departmental Records Officer Forestry Commission, dated 30 March 1999 regarding records.
[5] Letter from Mr Hugh Fraser, dated 29 April 1999.

second letter he explained that 'no proper records ... have been kept in the estate office going back that far [to the beginning of the 20th century]. All that have been kept are letter books... .' The factor also thought that no 'estate files had been kept or sent to either the Record Office of the National Library of Scotland'.[6] Unfortunately this was a dead end and it turned out those documents relating to the first forestry school and Lovat's papers and correspondence concerning the early days of the forestry commission were either lost or out of reach for the moment.

In order to find more forest working plans than the copies held by the National Archives, a number of Forestry Commission District Offices were contacted. Retired foresters had suggested that some working plans were probably still sitting on the shelves of the different offices. Unfortunately it turned out that most working plans where either destroyed or transferred to the document storage of the Forestry Commission or the National Archives. However, it is very likely that in the future some forest working plans will be found in the District or Conservancy offices.

[6] Ibid., dated 11 May 1999.

Appendix 2: Methods of Oral History

The advantage of an historian researching the second half of the 20th century is that he or she can interview people involved in the events being studied. Part of the material for this thesis was gathered by interviewing foresters, a technique called oral history.

For this thesis oral history was used to supplement and confirm the information found in the documentary evidence. The first task was to select a group of respondents in this case foresters that formed a cross section of the Forestry Commission including people from different levels of the organisation but also outsiders, mainly from the academic world. The highest officer of the Commission interviewed was a former Director General and the lowest ranking forester was a head forester. Initially Michael Osborn of the Royal Scottish Forestry Society and Richard Toleman of the Forestry Commission Retirement Association suggested respondents but later interviewed foresters suggested former colleagues as respondents.

After respondents had been selected they were approached with an introductory letter explaining the research project and its aims and why an interview with them would provide valuable information and with the question if they were willing to be interviewed. After a positive response from a respondent, a place and time were arranged for the interview and a second letter was send to explain the aims of the interview. It was kindly asked if they would not prepare the interview but in case they wanted to show photographs or other documents they were welcome to do so.

In order to get most out of the interview the background of each respondent was researched so that it was exactly know what the background was of each person and what his position in the Forestry Commission or his relation to the organisation was. Each interview started with an informal chat over a cup of coffee to make both the interviewer and the respondent feel more at ease. When the tape recorder started all the respondents were first

asked to give a description of their careers in forestry. Normally this was followed by a more specific question relating to their individual background and position in forestry. After that there was no particular order in which questions were asked and the respondents were allowed to talk freely and questions were asked when it seemed appropriate in the context. This continued until all questions were covered and normally this was the case by the time the interview drew naturally to a close. Finally all respondents were asked if they wanted to add anything in particular. All the people interviewed talked easily and their stories were consistent with the evidence in the documentary sources. This suggests that the memory of the respondents were good and their statements valid, although every story had a natural bias to personal opinions.

The tapes of the interviews were transcribed and send to the respondents for comments and approval before they were used. The information contained in the interviews was used for three purposes. The first purpose was to check these statements to the data found in documentary evidence and secondly it was used to cross-reference what other foresters had said and to compare each other's statements. Finally the information contained in the interviews were used as primary source in cases no other data was available from documentary evidence.