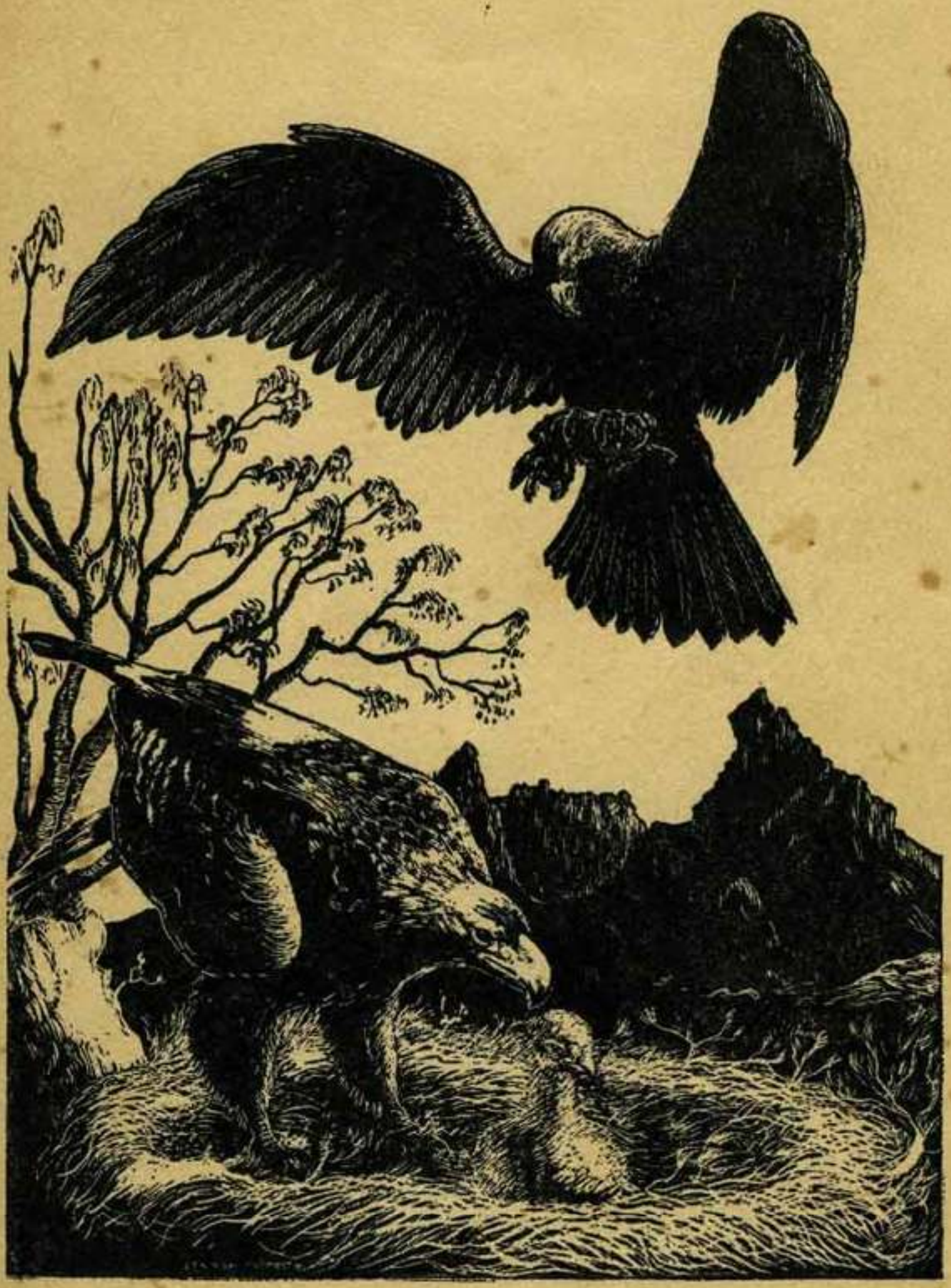
THE ARGYLL NATIONAL FOREST PARK GUIDE



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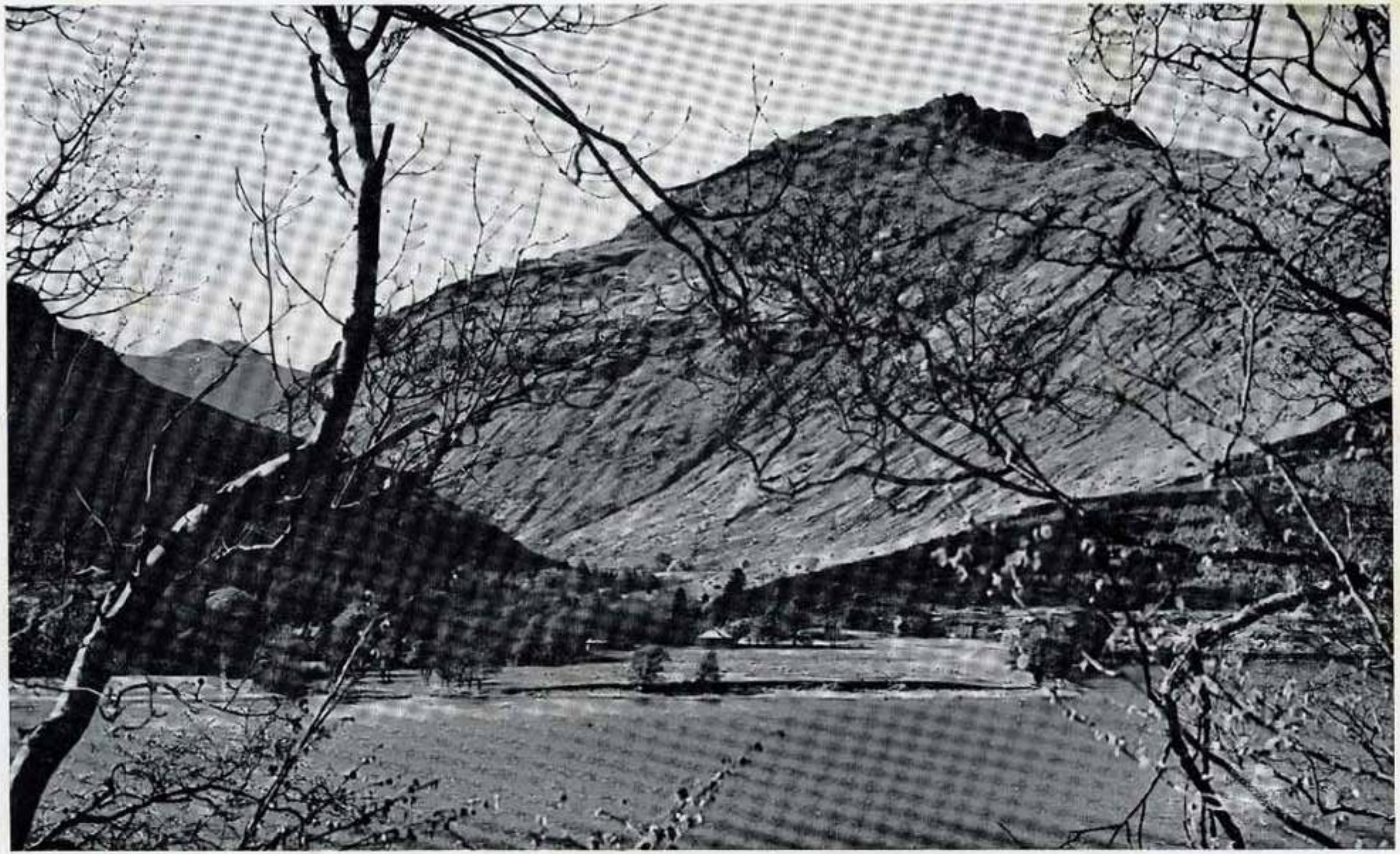

Looking across Loch Long to " The Cobbler " (2,891 ft.), Glen Croe and the Ardgartan Public Camping Ground.

GUIDE TO THE ARGYLL NATIONAL FOREST PARK

Foreword by

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FOREWORD

By Sir Roy Lister Robinson
(*Chairman of the Forestry Commission*)

The purpose of the Argyll National Forest Park is primarily to provide recreational facilities for those who love the Scottish mountains, forests and lochs. Some are content to enjoy Nature broadly as they find her, without close attention to detail; there is health and happiness to be found in that way. Others already know, or want to know, about the details. They are interested perhaps in the geological structure of the region, in the plants, both large and small, in the birds and beasts, in the insects and perhaps even in the fish. Intelligent interest in features of natural history must add immensely to the enjoyment of those who make use of the Park.

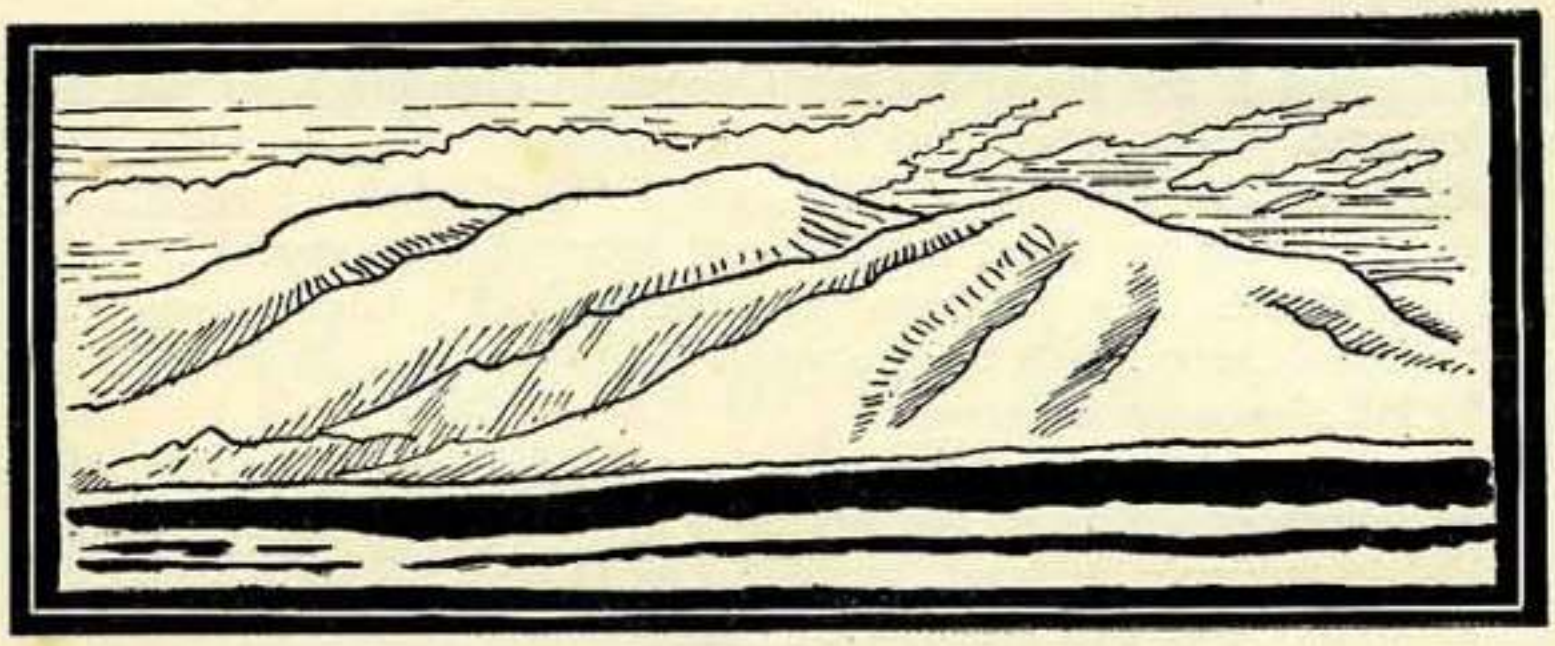
But with whatever object the visitor approaches the Park, he should remember that there are rules, both written and unwritten, to be observed. To all I would say enjoy Nature to the full, but give her such respect that those who come immediately after you will find no cause for complaint or even disappointment.

Forestry Commission.
April, 1938.

GUIDE TO
THE ARGYLL NATIONAL FOREST PARK

CONTENTS.

(In the pocket at the back of the book are maps of the northern and southern areas of the Park.)



INTRODUCTION

THE Argyll National Forest Park consists of large stretches of mountain and moorland lying to the west of Loch Long. It is divided into two main areas. The northern area consists of Ardgartan and Ardgoil and forms a wedge of mountains between Loch Goil and Loch Long: the rest of the boundary is formed by a line which runs north from Arrochar up Glen Loin and Coiregrogain round the northern slopes of Beinn Ime to Glen Kinglas and then follows approximately the road to Rest-and-be-Thankful and then on to Lochgoilhead. The southern area is bounded on the east by Loch Long and Loch Goil. Its western part consists of the Bheinn Mhor ridge of mountains extending from Benmore to near Strachur on Loch Fyne. Its north-eastern boundary lies roughly on a line between Carrick Castle on Loch Goil to Strachur.

The two areas are built up of a group of estates, one of which, Ardgoil, was presented to the Corporation of the City of Glasgow by Mr. T. Cameron Corbett in 1906; the others were acquired by the Forestry Commission. The first planting done by the Commission was in Glenbranter in 1922, and since then the Commission has afforested large areas.

In 1936 the Forestry Commission, under the Chairmanship of Sir Roy Robinson, conceived the idea of utilising the area as a National Forest Park, and the Corporation of Glasgow consented to co-operate.

The total area of the estates is about 54,000 acres, of which certain strips round the coasts and below 900 ft. in altitude, amounting to about 19,000 acres, are reserved for afforestation, leaving approximately 35,000 acres available for use as a National Park.

Besides this rugged and magnificent stretch of Highland scenery the beautiful grounds of Benmore House at the southern end of the Park offer in their finely laid-out gardens and shrubberies added attraction for visitors from the cities. Benmore House and grounds were presented to the Forestry Commission by Mr. Harry G. Younger in 1925. Mr. James Duncan, the previous owner of the estate, had planted many kinds of trees, including the avenue of stately Sequoias which form the avenue to the house. Mr. Younger had made notable additions to the gardens, and now many of the beautiful flowering

shrubs raised in the Royal Botanic Garden in Edinburgh are planted at Benmore, where they find a most congenial climate. To visit Benmore towards the end of May, when the rhododendrons are in bloom (and there are about 200 different species), is an experience not easily forgotten. Not far from Benmore is Puck's Glen, a place of great natural charm, with the memorial hut to Sir Isaac Bailey Balfour on the hill above the tree-tops.

Arrochar and Lochgoilhead and the road between them offer the easiest points of access to the northern area. Lochgoilhead may be reached by steamer or road, while Arrochar may be approached by rail as well. One can get to Dunoon, Kilmun, Ardnadam, Strone, Blairmore and Strachur by steamer and thence on to Benmore or the southern part of the Park. Various motor services connect between Arrochar, Cairndow, Strachur, Benmore and Dunoon. The paths which give access through the plantations to the mountains are indicated on the maps in this guide. A spacious public parking place for cars has been provided near Ardgartan House.

Once the Park has been reached there are easy walks for those who like fine views and fresh air. For more ambitious pedestrians the district will provide an inexhaustible variety of rambles. The mountains in Ardgartan, particularly Beinn Arthur (2,891 ft.), provide a certain amount of rock climbing for the expert. For those who seek them there are the solitude and peace of the mountains, the joys of exploration of high corries and bens, and for others the delights of easier expeditions along the singularly interesting coast.

The Park has its interests large and small ; the naturalist will find here in the most minute detail of meadow, rock or stream, enough for lengthy study. At the same time one need not be deeply versed in science to appreciate fully the natural beauty of the district—the trees, the flowers, the animal life, all to be seen in such wonderful surroundings.

Those who read this guide will realise that the Park not only provides scope for recreation and amusement, but that it should be regarded even more as a place where the past history of the country is revealed by the configuration of the land, and one where the native plants and animals of Scotland may be seen at their best in their natural setting.

The Editor gratefully acknowledges the assistance of his colleagues in the preparation of the guide. His thanks are due to Mr. Lennox Paterson, of the Glasgow School of Art, for the cover design, to Mrs. Gordon Gildard for the drawings for chapter headings and to the Misses Ker and Mr. Cecil Day Lewis for permission to quote from published work.

EDITOR.

HISTORY OF THE AREA

THE beautiful areas which form the National Forest Park must be numbered amongst those happy lands which have no history. At no time can they have carried a big population. They were probably inhabited during those prehistoric days when man preferred to live upon the high ground, and though no monument recording events in that far-off time has come to light, it is quite possible that some remains await discovery, for there is a fort (Bronze or Early Iron Age) near Strone just outside the boundary of the Park.

About the fourth century A.D. bands of Gaelic-speaking Scots from Northern Ireland began to form colonies in the islands and mainland of modern Argyll, and by the year 500 these colonies had blossomed into the tiny kingdom known as Dalriada. But of the history of this little kingdom little is known, and of the Park areas practically nothing.

The inhabitants some centuries later must have seen, more often perhaps than they wished, the sails of the Norse galleys, for between the ninth and the thirteenth centuries our western coasts were seldom without Scandinavian visitors, and few were the sea-ways which those bold seamen did not explore. They went everywhere. In the course of Hakon's great invasion of 1263, galleys appeared even on Loch Lomond itself. It is more than likely, then, that the shores of Loch Goil received these warlike visitors, and probably here, as elsewhere, the visitors, having come to plunder, remained to colonise. Tradition says that the round hillock of Tom-a-Chorachasich, near the head of Loch Eck, marks the grave of a gigantic Scandinavian prince, slain by the natives; and it is believed by some that Carrick Castle, on the shore of Loch Goil, was founded on the site of an ancient Norse fort. The later castle, whose ruins suggest a fifteenth-century origin, was held by the Earl of Argyll. This reminds us that for centuries the inhabitants of the district paid fealty to the great family of Campbell, which, founding its fortunes upon the loyal support it had given to Robert Bruce, obtained wide domains and a vast authority in the country now called Argyll. This authority was not, indeed, undisputed. Carrick Castle itself, which one would suppose impregnable before the invention of gunpowder, was once taken by the Atholl men, and it is possible that the lands which are now the Park felt the scourge of Montrose's men in the winter of 1644–45. But there is no mention of this, and the areas about Loch Eck and Loch Long, removed from the main route of the invasion, can have offered little to stray plunderers. They may rather have offered a shelter to the scattered Campbells at this time, and indeed there is a tradition that in one period of crisis the family papers were secreted in one of those caverns which form a feature of the Bheinn Mhor range.

Remote and inaccessible as our territories were, there were yet ways through, and as the country developed and the cattle trade throve, the road along the side of Loch Eck had some importance, for there was a famous market at Strachur. The road through Glen Croe was even more important, for it was one of those put into order by General Wade, and later, as a stone tells, it was " repaired by the 93rd Regt. 1768 ".

Before the eighteenth century was ended the sparsely populated lands of the west Highlands were found to possess, in their timber, an asset of considerable value. The enterprising Mr. Fleming, of Sawfieldmill, discovered that Scots pine would make up into boxes quite as well as the fir purchased in Norway or North America, and about the year 1753–54 he purchased some standing timber near Kilmun. As became a wise man, he personally superintended the cutting, and, looking askance at the accommodation to be obtained in a Highland cottage of the period, he preferred to abide in a burial vault of the Campbell family—the very tomb, presumably, which held the remains of the great Marquis who was executed in 1661 and of other members of the house. One fine Sunday morning he went in his white nightgown to the door of the mausoleum, stretched himself and yawned. The result was astonishing. The crew of a Greenock boat which was moored nearby hurried aboard, and, neglecting the rules of Sabbath observance, sailed home with all speed to spread throughout their burgh the story of this dreadful but well-attested apparition. A formal enquiry was needed before the alarm was quelled. It seems as if, in our own times, the day of timber has come again, but whether material prosperity comes to the Highlands or not, they have and will always have, unless vandal hands destroy it, the asset of a great natural beauty. These vandal hands are apt to come suddenly and disastrously, and for that reason it is more than fortunate that we are to have preserved for us, in the new National Park, a piece of virgin country which, if it has played no great part in our national history, is richly dowered with natural beauty, and, if it did not breed many men, bred good ones.

THE GEOLOGICAL STRUCTURE OF THE PARK AREA

"... Stand with us here.
Feel underfoot the linked vertebrae of your land
Standing north to the far fells, the head of rivers.
Prehistory sleeps below in many beds."

CECIL DAY LEWIS.
(From *Noah and the Waters.*)

THE area which includes the two portions of the National Park is as definitely Highland from a geological point of view as it is in respect of geography, scenery and vegetation. The various types of rocks that occur are representative of those which build up most of the country between the Firth of Clyde and the Great Glen containing Loch Linnhe and Loch Ness. The interpretation of the structure of the most ancient of these rocks provided the key to an understanding of the formation of the south-west Highlands as a whole. Further, in the National Park area, as throughout the Highlands, there is abundant evidence of a comparatively recent glaciation which has had characteristic effects upon the topography and superficial deposits.

Most of the region is underlain by metamorphic rocks. These were originally sediments, such as shales, impure sandstones, limestones, etc., but at one or more times in their history they were subjected to intense heat and pressure which greatly altered both their mineral composition and their structure. In general these metamorphic rocks may be recognised by the presence of marked cleavage or foliation, which causes them to split very readily in one direction and even in the unbroken state to appear divided into thin parallel bands.

In addition to the metamorphic rocks the region provides us with examples of various types of primary or igneous rocks. These have been formed by the consolidation of molten material which has risen from the depths and has been forced into cavities and fissures in the earth's crust. The igneous rocks, although varying widely among themselves, may be distinguished from the metamorphic rocks by their more homogeneous nature, by their closely welded appearance, and by the absence of cleavage or foliation.

Excluding the glacial deposits, which are still loose and uncompacted, the region shows no rocks other than metamorphic and igneous types. Part of the history of the area in comparatively recent geological times can, however, be made out from a study of the valley systems, and the effect of the glaciation upon these.

The Metamorphic Rocks.—The metamorphic rocks belong to what is known as the Dalradian system. This occupies a large proportion

of the country between the Highland Boundary Fault, a great break in the earth's crust crossing Scotland from Stonehaven to Rothesay, and another major fracture which determines the course of the Great Glen and Loch Linnhe. In the National Park the Dalradian system is represented mainly by various kinds of mica-schist. Thoroughly

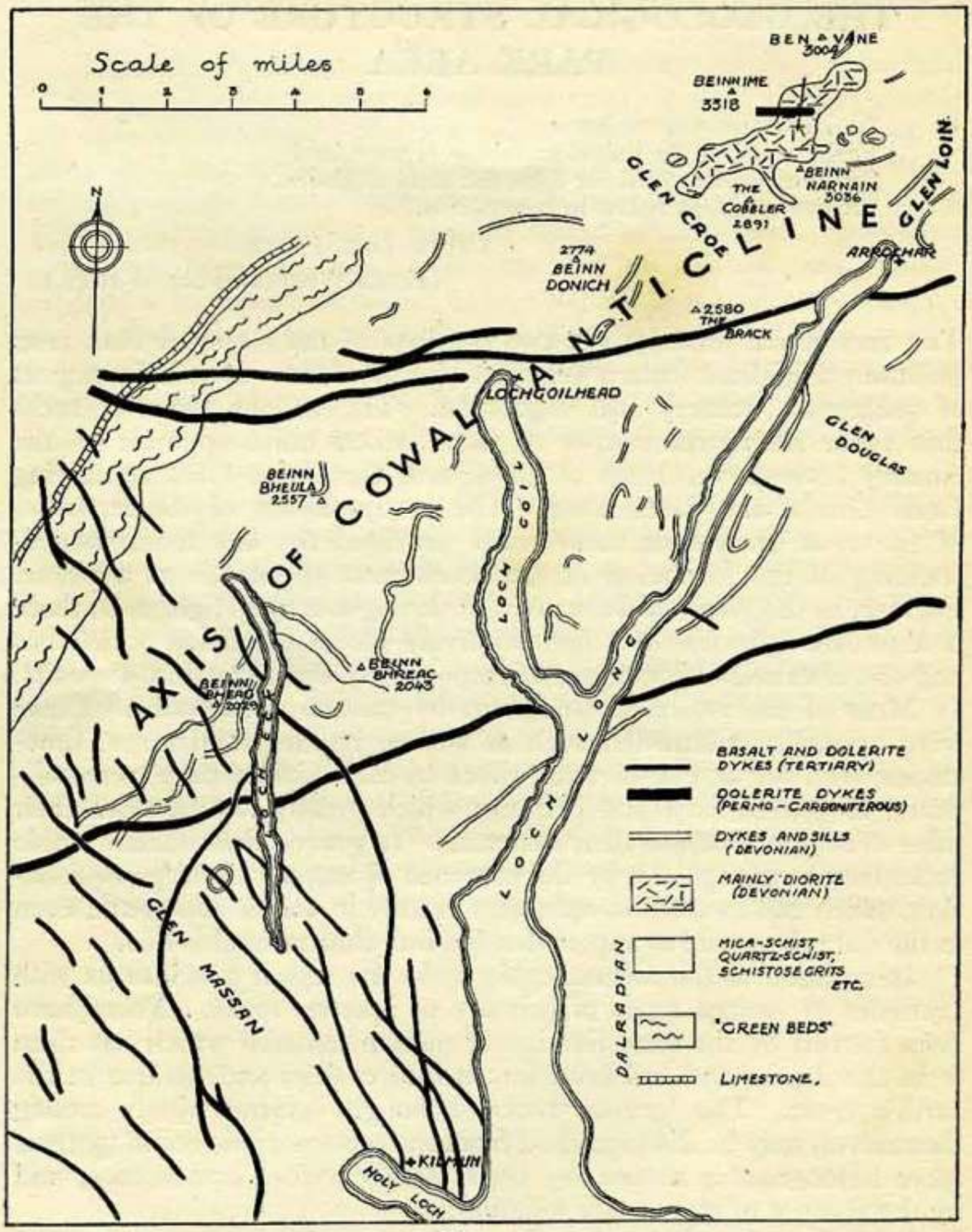


FIG. 1.

typical examples may be seen on the Cobbler and are noteworthy for their extremely well-marked foliation, for the minor puckers and folds into which the latter is often contorted, and for their beautiful silvery sheen due to the abundance of flakes of glittering muscovite or white mica. Along with mica-schist proper (*see* Fig. 1) are grouped rocks with a much higher proportion of quartz which have a dull white

appearance and are often gritty. Such rocks occur abundantly on either side of the mouth of Loch Goil and at the north-east end of Loch Eck.

North-west of Loch Eck the mica-schist, etc., is succeeded by a rather puzzling group referred to as the " Green Beds ", the colour of which is due to the presence of such minerals as chlorite and epidote which are richer in iron and magnesium than white mica. Then at the boundary of the Park, and just south of where the river Cur bends sharply north-west is exposed a band of altered and re-crystallised limestone. This band, which is spoken of as the Loch Tay limestone, although comparatively thin, has been traced to the north-east far into the central Highlands.

All these rocks were involved at the close of Silurian times in major horizontal movements of the earth's crust accompanying what is known as the Caledonian period of mountain-building which brought into existence a great chain, with a general north-east trend, in Scotland and Scandinavia. At first sight this seems only to have produced a great arch or anticline. Thus along the zone marked on Fig. I " Axis of Cowal Anticline " (for example near the middle of Loch Eck and on the Cobbler), the rock surfaces will be seen to appear like a pack of cards lying flat ; to the north-west (for example in the valley of the river Cur) like a pack of cards sloping north-west ; and to the south-west (for example near the Holy Loch) like a pack of cards sloping south-east. It was first realised by the geologist Clough, however, that this interpretation was too simple and did not fit the facts. The opposite sides of the arch did not match. Clough was able to show that the rocks of the district had first of all been forced into a flat-lying fold, almost like a piece of paper doubled over, and that it was this fold that had later been bent into an arch. A little consideration, or experiment with pieces of paper, will show that in such a flat-lying or " recumbent " fold, as it is called, the beds in the lower " limb " must be in inverted order. This is believed to be the case with all the strata in the north-east part of the area. The Loch Tay limestone and Green Beds originally below the mica-schist and grits have now come to rest on top of them. No absolute proof of this has so far been forthcoming in Cowal, but lest it be thought that such wholesale overturnings of Highland strata are impossible, it may be mentioned that they have been proved beyond doubt in the Loch Leven district farther north.

The age of these Dalradian rocks, which are quite unfossiliferous, is unknown but the Caledonian mountain-building movements are believed to have taken place some 350 million years ago.

The lower Old Red Sandstone Rocks.—In the extreme north-east of Fig. I will be noticed one large and several smaller outcrops of " diorite ". These are masses of igneous rock which by comparison with similar intrusions of known age farther to the north are believed to have been injected in Old Red Sandstone or Devonian times. The largest mass of diorite may be well seen immediately north of Beinn Narnain, from where it descends to form a long exposure in the Allt

Coiregrogain, and in the stream to the north-west of the Cobbler. The diorite really includes a variety of rocks, all of which are fairly basic, that is rich in iron and magnesium, and of a dark colour. In the centre of the largest mass, between Beinn Narnain and the head of the Allt Coiregrogain, is an intrusion of granite (not large enough to be shown in Fig. I), which is light grey or pink in colour. The diorite seems to have given rise to much softer topography than the schist, which often rises as crags above it. In addition to the diorite, in Old Red Sandstone times, liquid rock was injected into narrow fissures which, if approximately horizontal, gave rise to *sills* and, if vertical, to *dykes*. These may be seen almost throughout the Park and consist for the most part of fine pinkish or greyish compact rocks known as porphyries and lamprophyres.

Igneous Rocks later than the Old Red Sandstone.—In Fig. I will be noticed a few broad persistent dykes with an east-west trend. These consist of the blackish, medium-grained basic rock dolerite and are outlying examples of a number of such dykes which were injected for the most part in the Midland Valley of Scotland in late Carboniferous or early Permian times. Then in the south-west of the area will be seen a large " swarm " of dykes all of which have a general north-west trend. These are the youngest solid rocks of the region. They consist of dolerite or of the similar but finer grained rock basalt and may be traced to a focus in the great Tertiary igneous centre of Mull.

Topography.—The striking relief of the district is not the direct result of the upheavals that have been described. The scenery, as throughout Scotland, is the result of sculpture. The mountains are what has been left of an elevated, south-easterly sloping plateau deeply intersected by numerous valleys. The valleys to begin with followed the slope of the tableland and are believed to have carried the head-streams first of a primitive river Tweed following what is now the Clyde valley above Glasgow and continuing through the Biggar Gap and later of an enlarged river Forth. Relics of these old " consequent " valleys, as they are termed, may be seen in the continuation of Glen Croe by the Tarbet Gap, Coilessan Glen by Glen Douglas, etc. As time went on they were intercepted by the present valley system and directed into the river Clyde. Several of the present valleys are occupied by deep narrow lochs of the fiord type, *e.g.* Loch Long. According to one view the fiords are the result of faulting or fissuring during a late uplift. They are, however, more likely to have been river valleys scooped out into deep basins by glaciers and transformed into sea lochs by a submergence of the land.

Glaciation.—The chief effect of the glaciation was to modify the existing valleys, not to produce new ones. This modification characteristically took the form of " over deepening ", so that on the retreat of the ice the tributary valleys which had formerly been " in grade " with the main valley now had to drop steeply into it. A glaciated valley is in fact typically U-shaped compared with the V-shaped valley due purely to river erosion, and much more open as spurs which originally projected into it were ground back by the ice. A magnificent

example of such a glaciated valley may be seen by looking down the Allt Coiregrogain from the col between the Cobbler and Beinn Ime.

Another effect of the glaciation is seen in the deposits of clay, sand and gravel, mixed with boulders, which cover a large part of the area. Often these occur in well-marked mounds, termed moraines, for example in the valley of the Allt Coire Odhair (north-east of Lochgoilhead) and in Glenbranter.

Post-Glacial Geological Changes.—The last of the glaciers disappeared perhaps only 12,000 years ago. The operation of geological changes since that date is seen in the great tumbled masses of landslipped material which occur on many of the hill-sides (for instance on the Glen Croe face of the Cobbler, also on the west side of the middle of Loch Eck) and in the deltas which many of the rivers have built out into the lochs, as at the mouth of Glen Croe.

Geological maps (1 in. to the mile) to which reference may be made are Sheets 29, 37 and 38.

THE VEGETATION

On the surface of the land moulded by mountain-building movements and left bare at the end of the Great Ice Age, the present vegetation developed, and is still undergoing slow changes. When the land reappeared from beneath its covering of ice the rocky slopes and deposits of detrital material were slowly colonised by plants most of which must have migrated from the south, although a few arctic alpine species may have existed during the Glacial Period on some of the peaks which stood above the ice-sheet. Lichens and mosses would be the first colonists and these would be followed by larger plants. On the soils formed by these pioneers moorlands and forests developed. There is evidence that at one time the area which includes the Forest Park was more wooded than it is at present. Man and grazing animals have been largely responsible for the destruction of the original forests, only traces of which are left.

The Park area is deeply cut into by sea lochs, and with the exception of parts of the Bheinn Mhor range of mountains to the west of Loch Eck there are no parts of it which are more than four miles from sea water. It is therefore a region where, with the exception of the higher ground, the mean annual temperature is relatively high. The lower levels surrounding the lochs are rarely subject to severe frosts. In the magnificent gardens of Benmore House the visitor may see many exotic flowering shrubs and such plants as Eucalyptus and palms flourishing out-of-doors. The rainfall is high, at Benmore for instance the average annual rainfall is about 100 in. while at the Arrochar end of the Park it is not less than 130 in. Such climatic conditions favour the growth of cone-bearing trees and if at the close of the Glacial Period the North Sea had not existed as a barrier to plant immigration from northern Europe, the natural vegetation of the Park would probably have been spruce forest from shore level up to possibly 1,000 ft.

Marine Vegetation.—The coasts of Loch Long and Loch Goil are for the most part rocky but owing to their narrowness the wave action on the shores is not nearly so severe as that of the more open Firth of Clyde. As a result we find on the rocks exposed at low tide a dense covering of sea-weeds, red, brown and green which offer an interesting study to the botanist. There is practically no sand dune or salt marsh vegetation in the Park area.

Vegetation of the Valleys and lower Slopes.—Perhaps the most striking feature of the vegetation to the visitor from other parts of Great Britain is the exceptionally rich flora of lichens, bryophytes (mosses and liverworts), and ferns due to the abundant rainfall. Practically all rock surfaces removed from the splash of salt water from shore level to the highest summits are encrusted with lichens or festooned

with bryophytes and the varied colouring these plants lend to the country is quite remarkable.

The river valleys contain some cultivated and pasture land and on the river banks and in marshy areas woods of alder, willow, birch and ash are found, along with a rich meadow and river bank flora of herbs. Loch Eck is an exceptionally fine example of a highland freshwater loch and contains a representative flora of aquatic species including water lobelia, water millfoil, pond-weeds, quillworts, horsetails, stoneworts and others.

The land rises in most places fairly steeply from the shore and at lower levels bears woodland. The natural woods of the district consist of alder, willow and birch, in the wetter or marshy parts, and oak, ash, birch, hazel, elm, rowan and holly on the better drained ground. Scots pine occurs in places, but has probably been introduced ; it grows better in the drier climate of the east of Scotland. The herbaceous flora of the woods appears at its best in spring and early summer before the trees have developed their canopy of foliage. Large areas may be found covered with wild hyacinths, primroses, anemones and violets ; the small shrubby blaeberry is also abundant.

On drier slopes there are large bracken-covered areas and heathland in which the ling (*Calluna*) and the fine-leaved heath (*Erica cinerea*) are the dominant elements in the vegetation. In the wetter parts of the heather-covered areas the cross-leaved heath (*Erica tetralix*) is to be found.

On level areas moorland vegetation consisting of grasses and sedges forms a characteristic covering : sometimes the purple moor grass dominates with an admixture of cross-leaved heath, the yellow-flowered bog asphodel and the spotted orchis. In places there may be extensive thickets of the diminutive bog myrtle (*Myrica gale*), a shrub whose purple twigs give a bright colour to the landscape in winter, and whose aromatic green shoots are the badge of the Clan Campbell.

On the wet banks of the streams the insectivorous sundew and butterwort and the showy yellow saxifrage are frequent ; in shaded ravines and on wet rocks *Hymenophyllum* (the filmy fern) with its small translucent fronds is often found among the mosses from which it is not readily distinguished at first sight.

Vegetation of the higher Slopes and Moorland.—Oak woodland does not extend above about 800 ft. but the woods of birch with occasional rowans and holly may extend to greater altitudes. Bracken and heather are not usually found above 2,000 ft. and are gradually replaced by an increasing amount of dwarfed blaeberry and cowberry (*Vaccinium vitis idaea*). The upper slopes are grassy and such plants as the club mosses (*Lycopodium selago* and *L. clavatum*) occur.

On the more level ground and on the tops of the rounded mountains at about 2,000 ft. there may be peat moors on which grasses, small sedges and the small rush *Juncus squarrosus* is abundant. On the very wet parts the cotton grass with its white cottony fruits are conspicuous and the bogs are largely covered with sphagnum (bog moss). Occasionally plants of the cloudberry (*Rubus chamaemorus*) and the

crowberry (*Empetrum*) occur in patches. Above 2,000 ft. on the well-drained slopes the grassland contains such species as the alpine lady's mantle (*Alchemilla alpina*), cat's-foot, (*Antennaria dioica*), *Lycopodium alpinum*, and the moss campion whose green cushion-like masses of small shoots are covered with bright pink blossom in early summer.

In the stream gorges and in the corries, so characteristic of glaciated mountains, a rich flora is to be found, for in such situations occur plants which elsewhere on the mountains may be found both at higher and lower altitudes. Perhaps the most conspicuous are the globe flower (*Trollius*) with its large golden yellow flowers, the golden rod, several species of saxifrage (including the purple saxifrage) and the rose root (*Sedum roseum*).

On the summits over 1,700 ft. one may usually find the dwarf willow (*Salix herbacea*) and the diminutive rush *Juncus trifidus* growing among the mosses and in the crevices of the rocks. A similar flora to that occurring in the stream gorges is to be found on the rock ledges in the precipitous corries particularly those with a northern aspect. Magnificent clumps of *Trollius*, purple saxifrage, and moss campion may sometimes be seen on the more inaccessible ledges.

The Park contains a fine variety of the types of vegetation characteristic of the western Scottish Highlands from the marine vegetation of the coast up to the arctic alpine vegetation of the summits. Although there may not be many of the rarer Scottish plants, there is indeed sufficient variety to please the eyes of all who take pleasure in natural beauty and to satisfy the naturalist who will find immense scope for study and investigation. It is to be hoped that those who visit the Park will take a keen interest in its plant life and will help to preserve its botanical treasures from damage and extinction.

THE FORESTS AND PLANTATIONS

In the preceding section the kinds of trees that occur naturally are mentioned. The area covered by natural woods is very small, however, although the presence of parts of trees preserved in the peat bogs shows that at one time it must have been more extensive. The remains of charcoal kilns here and there on the lower slopes also show that more trees existed on the area and tell something of how the trees disappeared. The kilns were probably made during the latter half of the eighteenth and beginning of the nineteenth centuries, when charcoal was much in demand for iron smelting at Furnace and Bunawe. But burning for charcoal is only part of the story of destruction. Had man left the land unused after he felled the old trees a new growth, perhaps partly of other kinds of trees, would have arisen. Seed blown by the wind, carried by birds and animals and dropping from any remaining trees would have re-populated the ground. This part of the country was early adopted by sheep farmers, who by burning and grazing destroyed the tree growth over vast areas. In this way the whole character of the Park was gradually changed.

The land was being utilised for sheep grazing when it was taken over by the Forestry Commission. Even the old cut-over or "coppiced" areas of oak with birch, hazel and rowan, such as occur between Ardgartan and Mark, were grazed by sheep. Probably the only woodlands that remained nearly in a natural state were the small block of oak, ash, birch and hazel below Sron Criche on Glenbranter and the wood mainly of scattered birch near Knap on Glenfinart.

The table on page 18 gives some particulars of each of the areas acquired by the Glasgow Corporation and the Forestry Commission within the Park.

It will be seen that a large part of the total area is said to be unplantable. This includes the arable land which is of relatively small extent. Of the remainder the greater part is situated at such an elevation that trees could not be grown to timber size on it. Exposure to wind and lack of soil are the factors that control the development of forests. Generally within the area of the Park the upper limit for planting has been fixed somewhere in the neighbourhood of 900 feet.

At Glenfinart, Glenbranter and Benmore, nurseries can be seen in which tree plants are reared from the seed till they are large enough

to be planted out in the forest. This generally takes three or four years. The seeds are sown in specially prepared seedbeds and the seedlings remain there for one or two years. They are kept free from weeds and some kinds have to be protected from frost during the winter and spring of their first year. When they are large enough to be handled they are lifted and set out in lines so that they may grow strongly in the greater space that is given them. This transplanting is done in spring and the plants remain in the transplant lines till they are planted out in the forest either during the next or the second winter and spring. The plants at this stage represent a great deal of careful work and the forester places a high value on them. When they are planted in the forest each different kind of tree is placed in the situation

Estate.	*Owned by.*	*Acquired from.*	*Area.* Acres.	*Approx. Area plantable.* Acres.
Ardgoil.	Glasgow Corpn.	Mr. J. Cameron Corbett (Gift).	7,000	3,500
Glenbranter (including Island).	Forestry Commission.	Sir Harry Lauder.	9,700	4,000
Ardgartan.	do.	Sir A. J. Colquhoun's Trustees.	7,797	2,428
Benmore (excluding Island).	do.	Mr. H. G. Younger (Gift).	10,198	2,500
Glenfinart.	do.	Major Laschelles.	8,721	2,554
Glenbranter (Ballemeanach).	do.	Mr. J. Black's Trustees.	2,515	1,386
Coilessan.	do.	Glasgow Corporation (Part of Ardgoil).	4,719	1,350
Pole.	do.	do.	2,854	800
Benmore (Inverchapel).	do.	Mr. A. J. K. Clark Kerr.	840	838
Benmore.	do.	Mr. H. G. Younger's Trustees.	18	18
		Totals	54,362	19,374

to which it is best suited. Spruces are planted in the moister places, as for instance, where rushes grow ; larches are given parts with good deep soil in which there is a moderate amount of fresh, moving water ; Scots pine is planted on drier places and particularly on those that grow heather.

But before planting is started a certain amount of preparatory work must be done. Wet ground must be drained and fences erected to keep out sheep. In many of the moister places large turfs, taken out in making the drains, may be laid out. In these, spruce plants coming from the nurseries are planted.

For several years after the trees are planted they must be kept free from grass and other weeds which would smother them.

The plants are placed at about 4 to 5 ft. from each other. As branches form knots in the timber it is necessary to suppress their

growth before they become large and this is done by keeping the trees so closely together that light is excluded from the lower parts of the stem. The leaves become overshaded and die. The branches also die and either drop off or are cut off. But if the tree is to grow strongly and remain healthy, a certain number of branches must be kept alive. For this reason the forester makes thinnings in the plantations. In these thinnings certain trees are removed leaving others, which have been selected as being better specimens, with more room to develop.

In attending to these details the forester and his men are kept busy and during dry weather they have in addition the constant dread of fires that may ruin the whole of their work. Every forest fire is the result of carelessness and visitors to the Park will do a great service if they not only make certain that they do nothing that is in any way likely to start a forest fire but also warn others to be extremely careful when near plantations to see that matches and tobacco are carefully extinguished. The total area of plantations formed by the Forestry Commission within the Park by the end of 1936 was 9,403 acres. They range in age from those planted in 1922 onwards. By far the greater number are conifers or cone-bearing trees which usually have needle-like leaves.

In the section dealing with the vegetation of the district it is said that after the Ice Age, had there been no barrier, the lower slopes would have been covered with spruce. Norway spruce and Scots pine are the main trees in somewhat similar conditions on the shores of the Norwegian fiords. There the spruce grows to be a stately tree that can be converted to magnificent timber. In Scotland it grows well also, though for several years after planting it may seem to make somewhat slow progress. In addition to Norway spruce there is Sitka spruce named after the district in Canada where it was first discovered ; it grows rather more quickly than Norway spruce.

The spruces form the greater part of the plantations and they can be distinguished quite readily from other trees. They are evergreen and their needles are set singly on the branches. The needles are borne on small projections which remain on the branch for a number of years after the needles have fallen. It is easy also to distinguish between the two spruces. If a needle of Norway spruce is cut across, the section will be seen to be quadrangular ; in Sitka spruce it is much more flattened. The needles of the Sitka spruce are much sharper than those of Norway spruce. They are also darker green and frequently bluish-green.

Next to the spruces in importance come the larches. Again two kinds are planted ; one, the more important, is a native of Central Europe, while the other is at home in Japan. The European larch is rather particular about the conditions of soil and climate in which it will grow. It grows badly where the soil is not deep and fairly fertile. It dislikes wet soils and peat and it does not usually thrive in places where there is stagnant moist air. The Japanese larch is less particular and indeed a good soil seems to encourage it to grow too quickly so that the stems do not remain straight. Of the two trees the European larch produces the better timber.

The larches are not evergreen but cast their needles every autumn. Consequently in summer while the growing shoot has needles on it the shoot of the previous year has none. On the growing shoot the soft, rather thin needles are placed singly and there are no projections on which they rest. On the growth of the previous year in addition to branches being developed, there are small dwarf shoots on which tufts of needles grow during the summer. The easiest way to distinguish the Japanese from the European larch is by comparing the colour of the shoots. In both, the growing shoot is green, but by the autumn that of the Japanese larch is brownish-red in colour while in the European larch the colour is rather more yellow with longitudinal streaks of grey.

The Scots pine will also be found planted, mainly on small knolls. A native of Scotland and of a very large part of the Continent, it is not very particular about the soil or climate. On our western coast the rainfall is too great for the ordinary races of Scots pine to produce first-rate timber although this does not hold with the pines which are found naturally in this climate. Unfortunately the seed of this type of pine is scarce.

In its early years the Scots pine is not an attractive tree to look at but few trees can compare with the older specimens. Their colouring when the evening sun hits their upper bark is beautiful and their rugged appearance compels admiration. So, if the young pines look dingy, call to mind the story of the Ugly Duckling.

Pines are evergreen and the needles remain on the branches for two or more years. The needles grow in groups of two to five together, and on the young shoots they are enclosed round the base by a thin sheath of tissue-like material. The Scots pine has two needles together. In healthy trees they are bluish-green and the buds are rather pointed. Another pine has been planted to some extent in recent years. This is the lodge-pole pine (*Pinus contorta*). The lodge-pole pine is a native of western North America and its common name is derived from the fact that it was the favourite tree of the Red Indians for their lodge poles. The lodge-pole pine is generally planted on poorer ground. As compared with Scots pine its foliage is darker. It has usually two, but sometimes three needles together. The easiest way to distinguish it from Scots pine is to examine the buds which are rather long, almost cylindrical, and have a dome-shaped point. A few small groups of mountain pine have been planted on poor soil. This is a tree not unlike Scots pine but the needles are stiffer and darker. Generally it has a dwarfish habit.

The trees mentioned above are the main conifers that have been planted by the Forestry Commission, but here and there groups of other kinds may be found. Among these are several kinds of silver fir, distinguished by their rather symmetrical growth with distinct whorls of branches and rather flat needles that leave a circular scar where they fall off the shoot. A small plot of this kind is growing near the Sour Milk Burn. It is *Abies nobilis* which is a native of western North America.

Some plots of Douglas fir have also been planted. The largest and

oldest block can be seen on the hill-slope above the Ardgartan camping ground for the Juvenile Organisations. The Douglas fir is a magnificent tree and produces the Oregon pine timber that is so much used. It is a native of western North America where it attains a very large size. It can be recognised quite easily by its dark twigs which give off a pleasant smell when crushed. The buds are brownish, rather long and torpedo shaped.

There are also plots of trees with very small, scale-like leaves closely pressed together, giving them a more fern-like appearance than other conifers. These groups are either of Lawson's cypress or arborvitae (*Thuya plicata*). Both are natives of western North America. Lawson's cypress has a darker, rather more rounded shoot than the arborvitae. If, however, cones can be found the two trees can be easily distinguished. Lawson's cypress has a small pea-like cone while the arborvitae has a relatively long ($\frac{3}{4}$ in.) and thin cone.

Comparatively few broadleaved trees have been planted. Where they occur they have been introduced for amenity or for silvicultural reasons. Their leaves mixed with the needles of conifers help to improve the soil conditions. Sycamore, beech and red oak may be found, and there are groups of Oregon alder. The last named is a fast-growing tree and excellent examples of its development may be seen at Glenfinart at the entrance to the Laird's Grave and near the Forester's house.

As already mentioned the Forestry Commission's first plantations within the area of the Park were made at Glenbranter in 1922. Before the Benmore estate was acquired by the Forestry Commission there were about 1,100 acres of woods of various ages up to 100 years. The greater part which is about 54 years old was planted by Mr. James Duncan, who then owned Benmore. Mr. Duncan was a notable man : he was a pioneer in attempting to promote the growing of sugar beet in East Anglia so early as 1870. In forestry many of the kinds of trees he introduced to the district are being planted extensively today. The plantations formed at Benmore between 1889 and 1925 were made by Mr. H. G. Younger and his father. At Glenbranter small conifer plantations similar in age to the oldest at Benmore existed, but excepting those round the mansion house all have been felled. At Glenfinart too the older conifer plantations have been reduced in area, leaving only a few groups in the glen and the larch wood at Driseige. The conifers in the plantations that remain are mainly the same kinds as those now being planted by the Forestry Commission.

When the Park was formed in 1936 the Glasgow Corporation owned a considerable area of woods. These ranged in age up to 23 years and were formed of the same kinds of trees that have been described for the Forestry Commission's plantations.

Old hardwoods have not been much interfered with. Oak woods with birch, ash and some other trees can be seen at Glenfinart, on the sides of Loch Eck and at Coilessan.

Looking at what appears to be a large area covered with young plantations it is natural to ask the reason for all the work and expense. The trees are being grown to produce timber which is used in enormous

quantities for various purposes. Without going fully into this let us consider some of the many uses of timber. There is the timber wanted for house building, ship and boat building, for piers, fences, boxes, crates, barrels, bobbins and spools, furniture, paving blocks, handles for tools, sporting goods, railway sleepers, pitprops and mining timbers, clogs, brush backs and many other purposes. In addition cellulose products are derived from wood, thus newspaper and packing paper are made from it as well as artificial silk. It will be realised that when the trees growing in the Park have reached a sufficiently large size there should be no question as to what to do with them.

The operations of planting and thinning employ many men, and when utilisation begins there will be work for a still larger number. Any mishap to the plantations, such as loss by fire, will delay matters and keep men out of employment.

BEN VANE *

Of mica-schist, in many a twist
The goodly frame began,
By Lomond shore, some time before
The Leven water ran.

But, ages long, the fabric strong
Had time enough to cool
While ice and snow their virtue show
In every furrow full.

At last, yielding, one lucky spring,
The ice drew back, and there
Beneath the face a resting place
Was offered to the bear.

And woolly elephants, they tell
In Coiregrogain roamed,
Still on the bank you see the fank
Where they were dipped and combed.

Then withering fast the glaciers passed
And there at length arrayed
With mosses sheen and waters green
The mountain is displayed.

W. P. KER.

THE FAUNA

THE fauna of the National Park constitutes another great attraction, especially to naturalists, and if the protection of wild life within its boundaries is fully realised, the number and variety of animals to be seen are likely to increase very considerably. Apart from the effect of protection on the persistence of various species which find great difficulty in surviving, it is well known that in protected areas wild animals soon become less timid and in consequence are more easily observed by the ordinary visitor.

In the space available it is only possible to mention a few of the more interesting species that have been known to occur within the boundaries of the Park during recent times. In spite of the migrations and changes continually undergone by animal populations, it is likely that when the growth of the forests is more advanced, the additional cover, together with protection, may result in a large increase in the present fauna, and species such as the pine marten, which now seem to be extinct in this area, may once again return to their former haunts.

The red deer occurs sparingly, especially on the fringe of the northern region, whilst roe deer (*Cervus dama thotti*) are not uncommon. As both species are essentially forest animals, they are likely to become commoner when the growth of the trees is more advanced.

The Carnivora, being generally nocturnal in habits, are difficult to observe. The common otter, an inhabitant of the lochs and streams, is perhaps the one most likely to be seen. The red fox, although fairly common, generally remains near its lair, and the badger, a still more

* Ben Vane lies just beyond the northern boundary of the Park.

retiring inhabitant of the district, rarely leaves its earth during daytime. Stoats and weasels are common, especially during vole epidemics. From about November until March the colour of the stoat changes from brown to white, the latter being the well-known ermine. The fur in this district, however, has neither the thickness nor the whiteness of that which comes from Russia. The wild cat, pine marten and polecat seem to have been extinct in this area for at least fifty years, their disappearance having been hastened by the destruction of the forests.

The Insectivora are represented by the common hedgehog, the mole and two or more species of shrews.

In addition to the ubiquitous rabbit, rodents include both the common hare (*Lepus europaeus*) and the mountain hare (*L. timidus*), the latter being common on the slopes of the mountains. This species is restricted to the northern part of Scotland, and in winter the whole body changes to a snowy whiteness, except the tips and edges of the ears which remain black. The red squirrel is very rare, but one specimen can often be seen on the Benmore estate. Since this species became extinct in Scotland about the end of the 18th century, any squirrels in this region are almost certainly descendants of those set free in 1847 at Minard House on the west of Loch Fyne, which had reached Inverary in 1853 and Glen Orchy in 1865. The grey squirrel, also present, was introduced much later, specimens being liberated at Finart, Loch Long, about 1892.

Among the lesser rodents the common field vole (*Microtus agrestis hirtus*) is of special interest as it shows periodic increases in numbers, resulting in very high densities of population in some of the afforested areas. Abnormal vole populations in this district have been observed in 1922, 1926, 1929, 1932, and 1935, and during these years the enormous increase in their numbers was followed by a corresponding increase in the carnivorous beasts and birds which prey on rodents. The cause of these periodic fluctuations in the numbers of rodents is still uncertain, but after reaching a maximum there is a very sudden drop in numbers and the animals disappear as if by magic. A study of the plague of 1932, shows that the disappearance of the voles in the following year was due, at least in part, to the outbreak of an epidemic disease, caused by a minute animal parasite living in the brain.

Birds are represented by a variety of species of which pride of place must be given to the magnificent golden eagle (iolair dhubh). At least two pairs nest within the confines of the Park, one on Bheinn Mohr and the other on Beinn Bheula. The peregrine falcon (sheabhag), equal in beauty of form, and almost superior in spirit, may be seen in the wilder parts of the region and is known to nest there.

At least six pairs of buzzards occur in the district, and among other members of the hawk family may be mentioned kestrels, merlins and sparrow hawks. Kestrels in particular are very common during vole plagues and must destroy countless thousands of these rodents.

The barn owl is the commonest of the nocturnal birds of prey, but the tawny owl and the long-eared owl with its striking tufts of feathers on the head, are found in the woods, the long-eared owl having a preference for fir plantations.

The raven is a fitting inhabitant of the lonely glens, and carrion crows and hooded crows are frequent, especially in the neighbourhood of Loch Eck.

The heronry at Mark is a nesting site of these handsome birds which may often be seen fishing in the lochs or at the sides of streams. The kingfisher also frequents these streams and is common in the river running through the Benmore estate.

Water birds are represented by swans, geese, many species of ducks, and diving birds, which may be seen to the best advantage in Loch Eck.

The game birds include the handsome capercaillie, another re-introduced species which has now become established on many of our northern moors. The cock with a length of 3 ft. is a particularly striking bird. This species inhabits pine forests and during winter feeds almost entirely on the young shoots of conifers, hence it is not welcomed in afforestation districts. Black grouse occur on the heaths and in the forests, and the cocks with their beautiful plumage may sometimes be seen engaged in contests for the grey hens. The black cocks begin " bubbling and displaying ", as early as January and their peculiar cry, figured as " gock-au-u-camiel ", often indicates their presence. Red grouse occur in the open moorland and usually avoid the wooded regions.

The well-known ptarmigan, with its summer and winter plumage, is confined to the higher altitudes, especially to the zone of lichens and mosses, but in winter may descend to the lower heath-covered slopes. It is not uncommon throughout the area, but is always difficult to recognise in the regions it frequents.

Other game birds present include the common pheasant and partridge, also, especially in the neighbourhood of Loch Eck and Loch Goil, snipe and woodcock.

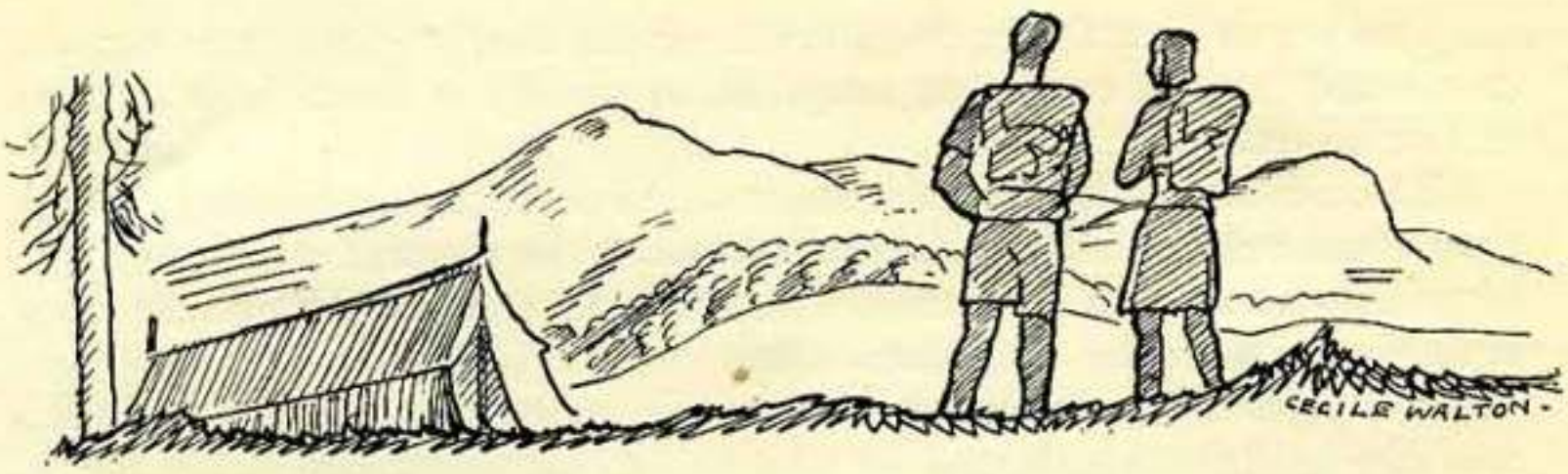
The great spotted woodpecker is not uncommon and can often be seen in the woods round the southern end of Loch Eck ; since it feeds largely on wood-boring insects it is a useful member of the local fauna.

Among the lesser birds, crossbills occasionally visit the district, and special mention should be made of a winter visitor, the snowbunting, a neat and lively little bird met with on the hills in small flocks, where its prevailing white coloration is in keeping with the landscape.

It has only been possible to refer to very few examples of the many species of birds that may be found in the district. In addition to land and water birds, a great variety of sea birds can always be seen, especially on the shores of Loch Goil and Loch Long, and the student of ornithology will find the Park well worth a visit.

Reptiles are represented by the common viper, slow worms and lizards, and the Amphibia include the common frog and toad, also newts. Salmon and sea trout are common in Loch Eck, the outlet of which at the south end runs through the Benmore estate and joins the Clyde estuary at Holy Loch near Dunoon.

No mention has been made of the wealth of insect life which occurs in the neighbourhood, nor of the other groups of invertebrates, but in the varied localities, ranging from sea-shore to high mountains, naturalists will find favourable hunting grounds for all types of animal life.



CAMPING GROUNDS IN THE PARK

PUBLIC CAMPING GROUNDS.

Ardgartan Public Camping Ground.

Camping ground with water supply, lavatories and shelter hut.
About 4 miles from Arrochar Station.

Charges :—Per tent of normal size .. .. 1*s.* per night.
5*s.* per week.
Per car and caravan or car and tent .. 2*s.* per night.
12*s.* per week.

(Note. See also under Car Park on page 27.)

Succoth Public Camping Ground.

Camping ground with water supply and lavatories.
About 1 mile from Arrochar Station.

Charges :—Per tent of normal size .. .. 6*d.* per night.
2*s.* 6*d.* per week.

Enquiries in respect of both of these camps should be addressed to :—

The Assistant Commissioner (Scotland),
Forestry Commission,
25 Drumsheugh Gardens,
Edinburgh, 3.

Bookings are not arranged—permits being issued at the Camps.

Note.—*All camping charges are increased by 6d. per day or 2s. 6d. per week during Glasgow Fair week.*

RESERVED CAMPING GROUNDS.

Juvenile Organisations Camp for Boys, Ardgartan.

For use of members only.

Communications should be addressed to :—

The Secretary,
Scottish Central Council of Juvenile Organisations,
11 Manor Place,
Edinburgh, 3.

JUVENILE ORGANISATIONS CAMP FOR GIRLS, ARDGARTAN.

For use of members only.

Communications should be addressed to :—

The Secretary,
Scottish Central Council of Juvenile Organisations,
11 Manor Place,
Edinburgh, 3.

CAMPING CLUB OF GREAT BRITAIN AND IRELAND—ARDGARTAN CAMP.

For use of members only.

4 miles from Arrochar Station.
Communications should be addressed to :—

H. E. Wheelan, Esq.,
55 Maxwell Avenue,
Westerton,
Nr. Glasgow.

CAR PARK.

There is an excellent car park at Ardgartan where cars can be left for the day. The following charges include lavatory facilities :—

Motor Cycle	.. 3*d*. per day.
Private Car	.. 6*d*. per day.
Coach or Charabanc	2*s*. 6*d*. per day.

HOSTEL ACCOMMODATION.

SCOTTISH YOUTH HOSTELS ASSOCIATION.

ARGARTAN HOUSE (about 3½ miles from Arrochar).

Communications should be addressed to :—

The Warden,
S.Y.H.A.,
Ardgartan House,
Arrochar,
Dumbartonshire.

GLEN LOIN HOSTEL (about ½ mile from Arrochar).

Communications should be addressed to :—

The Warden,
S.Y.H.A.,
Glen Loin Hostel,
Arrochar,
Dumbartonshire.

LOCHGOILHEAD HOSTEL (Lochgoilhead).

Communications should be addressed to :—

The Warden,
S.Y.H.A.,
Lochgoilhead Hostel,
Lochgoilhead,
Argyll.

Other Organisations have a special interest in the Park, and correspondence should be sent to the following addresses :—

ASSOCIATION FOR THE PRESERVATION OF RURAL SCOTLAND.

44 Queen Street,
Edinburgh, 2.

BOY SCOUTS' ASSOCIATION.

The Secretary,
Scottish Headquarters,
44 Charlotte Square,
Edinburgh, 2.

BOYS' BRIGADE.

Boys' Brigade House,
The Secretary,
168 Bath Street,
Glasgow, C.2.

CYCLISTS' TOURING CLUB.

The Secretary,
3 Craven Hill,
London, W.2.

SCOTTISH CENTRAL COUNCIL OF JUVENILE ORGANISATIONS.

J. Campbell Young, Esq.,
11 Manor Place,
Edinburgh, 3.

SCOTTISH COMMITTEE OF NATIONAL PLAYING FIELDS ASSOCIATION.

E. D. Fiddes, Esq.,
4 Great Stuart Street,
Edinburgh, 3.

SCOTTISH RAMBLERS' FEDERATION.

James L. Snedden, Esq.,
66 Kildonan Street,
Coatbridge,
Lanarkshire.

SCOTTISH RIGHTS OF WAY AND RECREATION SOCIETY, LTD.
George D. Cheyne, Esq.,
32 Rutland Square,
Edinburgh, 2.

THE WAYFARING SOCIETY OF GREAT BRITAIN.
Tom S. Hall, Esq.
4 Heugh Street,
Falkirk.

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DON'T LIGHT FIRES
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OR CIGARETTE ENDS
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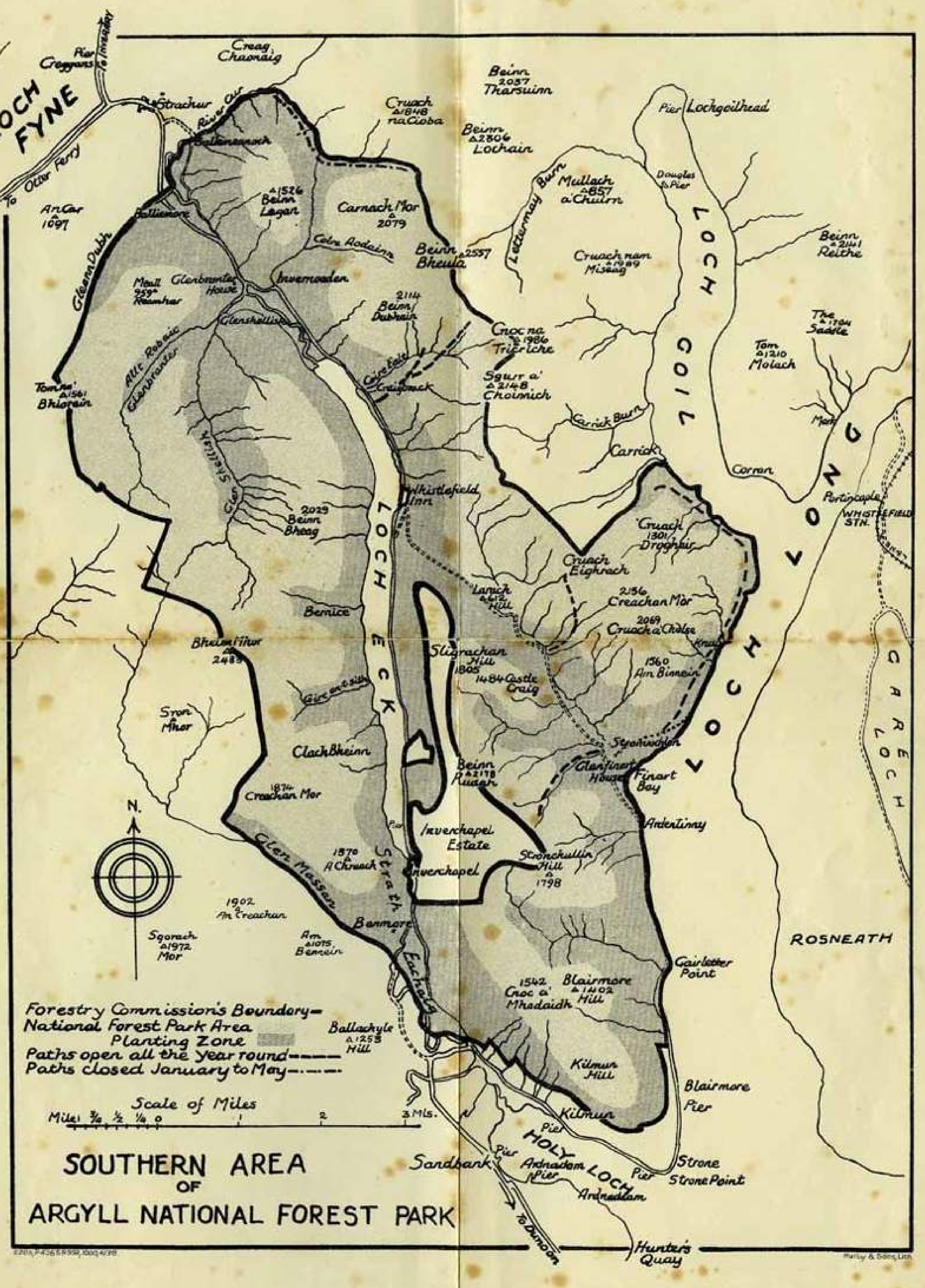
NORTHERN AREA
OF
ARGYLL NATIONAL FOREST PARK



SOUTHERN AREA OF ARGYLL NATIONAL FOREST PARK