

PLANTATIONS ON THE ESTATES OF BENMORE AND KILMUN, ARGYLL
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Benmore and Kilmun estates, of which James Duncan is the proprietor, have an area of 12,260 acres, extending from the Firth of Clyde to the north end of Loch Eck.

The estate has a frontage of 4 miles running along the Holy Loch and Loch Long which has been fued and closely built upon with superior sea-coast summer residences; while immediately behind these is a sloping belt of full grown larch, oak and birch trees which import ornament and afford shelter to the houses below. Behind this lies the arable and grazing land which has a gradual ascent to the base of a wide curving range of hills and terminating at an elevation of 1,800 ft.

Benmore House is situated near the south end of Loch Eck, and head of the extensive, undulating and fertile valley of Eachaig, the greater part of which until recently was in a wild state of nature, overgrown with brushwood, heather and rushes. On it Mr. Duncan now grazes his celebrated West Highland cattle and blackfaced sheep, which acquired such celebrity at the Paris International Exhibition in 1878 and continue to carry off the first awards at the annual exhibitions of the Highland and Agricultural Society of Scotland.

In 1870, when the proprietor obtained possession of the estate, he resolved on effecting extensive improvements; but preparatory to commencing operations, arrangements of a most amicable nature were entered into with a few of the tenants to give up such portions of their hill pasture as Mr. Duncan considered should be planted.

With three of the largest grazing farms in his own hands, Mr. Duncan was enabled, both by tile-draining and ploughing, to bring under cultivation all waste lands adapted for that purpose; while on moorish wastes and portion unreclaimable he planted. And in testimony of the extreme suitability of both soil and climate for growing wood, the following statements may be narrated. About 65 years ago (say about 1820) the base of the hill immediately behind Benmore House, where previously only a surface herbage of coarse grass, brackens and heather existed, 55 acres or thereby were planted with Larch, Scotch fir, Norway spruce and several species of hardwood, chiefly with the view of contributing to the amenity and shelter of the house - the present average value of which is £70 and, since planted, has yielded an annual rent of over 25/- an acre.

With such conclusive proof of the advantages to be gained from planting such portions of the estate as under heather and brackens were of no value whatever, arrangements were made by Mr. Duncan for planting extensively such steep and rocky portions as could not be reclaimed and brought under cultivation.

Since 1871 thirty-one separate enclosures have been planted, the extent of which amounts to about 1622 acres, and the number of trees 6,488,000. The following indicates the divisions and acreage of each and the time of planting.

<u>Divisions</u>	<u>Acreage</u>	<u>Time of Planting</u>			
Uig Hill	205	Autumn 1871,	Spring 1872		
Benmore Hill	42	"	"	"	"
Glen Massan Arbour	12	"	"	"	"
Home Farm Clumps (7)	14	"	"	"	"
Finnartmore	320	"	1872,	"	1873
Strone Belt	8	"	"	"	"
Rashfield Hill	170	"	1873	"	1874
Craigend Clumps	3	"	"	"	"
Massanside, Auchnaclauch	8	"	"	"	"
Auchnaclauch Hill	45	"	"	"	"
Finnartbeg	280	"	1875	"	1876
Gairletter Hill	283	"	1876	"	1877
Burnside, Gairletter	10	"	"	"	"
Hillside Belt Gairletter	62	"	"	"	"
Blairmore Clump	36	"	"	"	"
Claudy House Belts (4)	5	"	"	"	"
Kilmun Mansion Avenue	2	"	"	"	"
Rashfield Belt	8	"	"	"	"
Strone Clump	2	"	"	"	1879
Benmore Quarries	100	"	1878	"	"

<u>Divisions</u>	<u>Acreage</u>	<u>Time of Planting</u>
Flagpole Avenue, Strone	7	Autumn 1878, Spring 1881
Total		<u>1622 acres</u>

The following is a near approximation to the species, age and cost of plants, as also the amount of capital expended on the formation of the plantations, including fencing, draining and planting.

Larch	2,850,000	1 & 2 year seedlings, 1-2 years planted
Scotch fir	2,130,000	2 years seedlings, 1-2 years planted
Spruce	1,350,000	2 years seedlings, 2 years transplanted and twice transplanted
Ornamental conifers	126,000	2 years seedlings, twice and thrice transplanted
Hardwood (varieties)	20,000	2-3 feet high

Cost as follows

Plants and shrubs	£ 4,136: 2: 0	Average per acre	£2:11: 6
Freight and carriage	486:12: 0	" " "	6: 0
Planters wages	1,703: 2: 0	" " "	1: 1: 0
Draining	1,216:10: 0	" " "	15: 0
Fencing 27 miles	3,000:14: 0	" " "	1:17: 0
Planting vacancies	892: 2: 0	" " "	11: 0
and additional drains			
Cutting grass and bracken	729:18: 0	" " "	9: 0
	<u>£12,165: 0: 0</u>		<u>£7:10: 6</u>

A description of the soils, species of plants, altitudes, fencing and mode of draining and planting will now be given. Uig and Rashfield plantations are situated to the east of the valley of Eachaig with a north-western exposure and at an average height of about 450 ft. The ground is steep, undulating and rocky. The surface soil, consisting of sandy peat, is on the ridges and tops of precipitous rocks coated with heather, while the intervening hollows are of an open, sandy and gravelly nature and covered with brackens and grass.

The substratum consists of a clay-slate and quartz rock alternating and prevailing throughout the estate but with a few narrow seams of whinstone. On the ridges of the Uig and Rashfield plantations native Highland SCOTCH PINE, P. LARICIO, P. AUSTRIACA and P. MONTANA with a mixture of MOUNTAIN ASH have been planted and into hollows, or wherever the adaptation of the soil was favourable LARCH was planted, interspersed at distances of 15-30 ft. apart, with several varieties of coniferous and deciduous trees, including P. INSIGNIS, EXCELSA, AUSTRIACA, LARICIO and STROBUS: PICEA NORDMANNIANA, PECTINATA, BALSAMEA, NOBILIS: ABIES DOUGLASII, MENZIESII and CEDRUS DEODARA. Also PURPLE BEECH and SCARLET OAKS. Higher up the hill NORWAY SPRUCE and SCOTCH FIRS were mixed with the LARCHES, and in places where brackens and grass fought for mastery, BLACK ITALIAN POPLARS and SYCAMORES.

The Dunoon and Kilman road to Inveraray skirts the base of these plantations for about 2 miles. Along the road, on both sides, are grouped together ornamental conifers, including WELLINGTONIA GIGANTEA, ARAUCARIA IMBRICATA, CEDRUS DEODARA, C. ATLANTICA, PICEA NORDMANNIANA, P. NOBILIS, PECTINATA, LASSIOCARPA, PINSAPO: ABIES DOUGLASII, MENZIESII, ALBERTIANA, ENGLEMANII, NIGRA and ALBA: ABIES SMITHIANA and PINUS LARICIO, BENTHAMIANA, EXCELSA, AUSTRIACA and CEMERA. THUJA LOBBII, THUJOPSIS BOREALIS, CRYPTOMERIA JAPONICA, C. ELAEGANS and CUPRESSUS LAWSONIANA. Next to these and bordering the road are trees and shrubs comprising PURPLE BEECH, WALNUTS, PURPLE and VARIEGATED PLANES, SCARLET OAK, HAWTHORNS, COMMON and GOLDEN LABURNUMS, LILACS, BAY and PORTUGAL LAURELS, HOLLIES, RHODODENDRON PONTICUM, MAHONIA AQUIFOLIUM and COTONEASTERS.

Another improvement has been effected on this part of the estate. A bridle path, five feet wide and nearly 2 miles in length has been constructed at a cost of 2/- per lineal yard, including wooden bridges which span the burns. The path diverges from the main road opposite the "Loch Eck porter's lodge" and curves up through the plantation till it reaches the south side of it at an altitude of 600 feet. At this point it connects itself with a road one mile in length along the course of Uig burn.

Entering this we follow the course of the burn. Between huge overhanging rocks, in the crevices and sides of which are an endless variety of ferns, mosses and other Alpine plants, the burn flows rapidly down in a series of waterfalls. WELLINGTONIA GIGANTEA, PICEA NORDMANNICA and other conifers have been planted into recesses in the rocks in the glen, which for wildness and grandeur is by few equalled and certainly by none excelled in the west coast of Argyll.

In the home-farm fields trees planted in clumps are making rapid progress; as already stated the fields in Eachaig valley have but very recently been reclaimed, and a most interesting illustration of the good effects of cultivation is here shown in the contrast between the luxuriant crops of corn, ryegrass and turnips which surround the clumps; while the young trees, which stand from 6 to 10 feet high, there is a covering of rank heather nearly 2 feet in height.

Finnartmore and Finnartbeg plantations are contiguously situated on an eminence confronting the Holy Loch and Firth of Clyde at an average height of 550 feet. The ground is steep yet comparatively regular and smooth on the surface. The soil, which is covered with grass, brackens and heather, seems admirably adapted for the growth of timber, being a rich, gravelly loam resting on a subsoil of gravel and rocky debris, and being naturally dry, comparatively few drains were required.

From the base upwards, two-thirds of the ground has been planted chiefly with LARCH; while the higher slopes and summits are planted with native Highland SCOTCH PINE.

Evergreen and ornamental conifers, including 8,000 PICEA NORDMANNIANA and clusters of mostly all the hardier species of the SILVER FIR, PINE, SPRUCE, CYPRESS and CEDAR, have been interspersed among the LARCH at distances varying from 15 to 30 feet apart so as to give some verdure during the winter months, and also to have a variety of profitable timber trees growing on the ground after the LARCH trees are removed. NORWAY SPRUCE has been planted almost exclusively on patches growing a strong vegetation of grass, brackens and rushes; while on rocky parts, thinly covered with mossy soil, native Highland SCOTCH PINE were planted. As in the case of Uig and Rashfield, these plantations have been carefully gone over a second time and attention bestowed on wet and blank spots. The trees are all healthy and making rapid progress. The LARCH, ABIES DOUGLASSII and ALBERTIANA, THUJA LOBBII, PINUS LARICIO and INSIGNIS have now reached a height of 10 to 12 feet. The other PINE trees although not so high are growing rapidly and appear in perfect health. Previous to being planted the ground presented a bleak, sterile and uninteresting appearance, but now that it is clothed from base to summit (highest elevation about 1200 feet) with young trees, it is a pleasing object along the Holy Loch and the Firth of Clyde.

Gairletter plantations are so named by reason of their being in the glen of the same name. The exposure is easterly, at an average height of nearly 600 feet. The largest division is situated on the eastern extremity of the Kilman estate. The surface soil consists of decomposed sandy peat, resting in turns on rock and yellowish gravel and mostly covered with grass. From the wet and retentive nature of the ground, close and extensive draining had to be resorted to, yet it withholds the needful sustenance from the young trees especially on high and exposed parts. After a time however when the plants attain such dimensions as to cover the ground and thereby suppress the strong grassy vegetation they may be expected to grow as well as trees in the more favourably situated plantations. In kindly soils which contain a larger proportion of gravel and sand and consequently drier, the LARCH, NORWAY SPRUCE and SCOTCH FIRS are growing satisfactorily.

Auchnaclauch plantations in Glen Massan have a north-western exposure and an average height of 250 feet, and in respect to both ground and plants they are similar to Uig and Rashfield.

Glen Massan arbour plantation is within the Benmore Policies with a north-western exposure and an average height of 150 feet. The trees are very thriving and making rapid progress, particularly the LARCH, ABIES DOUGLASSII, PICEA NORDMANNIANA and SCOTCH FIRS.

Benmore hill and Benmore quarries plantations are situated side by side on the hill immediately behind Benmore House, with a south-eastern exposure and an average height of 450 feet. The ground and general state of these plantations is similar to Uig but differs in this respect that Benmore quarries plantation is not

so advanced, having only been in existence for 3 years and also that it contains more Douglas than the others. 40,000 of these were planted as an experiment and in congenial soils and sheltered situations have made magnificent progress; but on exposed sites they have, with a few exceptions, been deprived of their tender tops by frosty winds.

Craigend, Strone and Blairmore belts and clumps were primarily designed for shelter and embellishment and were planted at judicious intervals on the grazing fields, in close proximity to the summer residences along the sea-shore. All the trees give evidence of health by their rapid growth.

Fencing. Uig and Rashfield plantations are, on each side of the public road, protected by 'continuous wrought iron bar fencing' which cost from 2/9 to 3/6 per lineal yard. Uig plantation, on the northern extremity of the Kilmun estate, has a march fence constructed solely of iron, 3½ feet above ground, with 7 wires (Nos. 5 & 6 best bright wire) laced between the standards, with No. 8 wire fastened on top and bottom wires; wrought iron standards, 1¼ in. broad by ⅝ in. thick battled stones placed 7 feet apart, with iron side-stays ⅝ in. square at every fifth standard in curving parts of the fence; one wrought iron straining pillar, 1½ inches square at 100 yards or thereby, which make it a most substantial fence, scarcely ever out of repair and therefore most suitable for the boundary of an estate. The cost was 1/6 per yard. On the upper and side boundaries there is a 6 wire fence stapled to larch posts 5½ ft. long, 5 ft. apart. This fence, which cost 9d per yard, is a most serviceable one and by the time the posts require replacing thinnings from the plantation will be of sufficient size for the purpose.

Rashfield, on the upper and side boundaries, is enclosed with a 6 wire fence, 3 ft. 4 in. high; iron standards, 1¼ in. broad by ¼ in. thick, battled into stones 6 ft. apart; iron straining pillars 1½ in. square. The cost per yard was 1/5 and it is a most durable fence.

Finnartmore and Finnartbeg are protected by a wire fence 3 ft. 4 in. high and by a rough stone dyke 4 ft. high on top of which is a double line of wooden rails nailed to larch posts and reclining against the dyke on the inside. The cost was about 8½d per yard.

Benmore hill and quarries plantations are surrounded by a common six-wire fence, larch posts and straining posts and in part by the Corriemony fence.

Auchnaclauch plantations have been enclosed by iron and wire fencing.

Draining. The ground was drained by contract and also by men employed at a fixed rate of wages per day. The method adopted in draining the steep and rocky enclosures was, by having all the wet ground drained by "surface drainers" who, with 'big spades' and other tools adapted for that purpose, performed the work far more expeditiously and at less than a fourth of the price that could possibly be the case by using the ordinary spades or shovels. The drains were made from 2 feet to 2 feet 3 inches wide at top, 18 inches deep and 6 to 8 inches broad at bottom. The cost of this was from 1/9 to 2/6 per 100 yards according to the soil.

In deep, loamy and mossy soils open drains were formed by contract and also by day labourers. The dimensions of the drains were from 2½ to 3 feet broad at top, 2 to 2 ft. 9 ins. deep and 6-9 inches broad at bottom. The cost was from 9/- to 12/6 per 100 yards.

Planting. Planting operations were performed under the constant supervision of the forester and an assistant.

The plan devised for transporting the plants to their new habitation was carried out in the following way. But first of all, and in nursery phraseology, the plants were properly "shouched" into dry ground at the base of and within the enclosures. Four Shetland ponies, on whose backs pack-saddles were strapped and into which bundles of plants were placed (roots inward) proceeded on their march up the hill in pairs, each being tied to the other's tail and under the charge of a man and boy. On reaching their destination the plants were again "shouched" close to where the planters were at work. Pits were formed for deciduous broad leaved plants and also for ornamental and expensive pines, which were interspersed among the others at moderate altitudes and at distances of 12-30 feet apart.

The usual number of men in one squad, notching the plants into the ground with common spades, was about a dozen and two lads were fully employed in keeping up the supply of plants to the hands of the boys and girls, each of whom inserted them into the slits or notches made by every two men. The plants were placed at from 3-3½ ft. apart, or an average of 4,000 to the acre.

The situations and boundaries of the plantations were carefully laid off with the view of providing shelter for the flocks on the adjoining grazings and to promote this object the fencings were carried along in curving lines thereby forming a series of spacious recesses into which flocks might congregate in snow-storms and inclement weather during the lambing season.

There are upon the estate about 100 acres of fully grown larch and pine timber and upwards of 300 acres under old hardwood and deciduous trees. Mr. Duncan has expended large sums in improving the latter, 50 acres of woodlands have undergone this improvement and for this purpose and the planting of other portions of the estate there are growing in Benmore home nurseries the following conifer and ornamental trees.

PICEA	NORDMANNIANA	36,000
"	NOBILIS	11,000
"	CEPHALONICA	2,000
"	PICHIA	6,000
"	PINSAPO	600
PINUS	LARICIO	40,000
"	AUSTRIACA	15,000
"	INSIGNIS	12,000
"	EXCELSA	3,000
"	CEMBRA	600
ABIES	DOUGLASSII	33,000
"	MENZIESII	20,000
"	ORIENTALIS	4,000
"	CANADENSIS	3,000
WELLINGTONIA	GIGANTEA	6,500
ARAUCARIA	IMBRICATA	3,160
CYPRESSUS	LAWSONIANA	6,000
THUJA	LOBBII	1,000
CEDRUS	DEODARA	1,000
"	ATLANTICA	500
OTHER PINES	VARIETIES	2,000
		<u>206,360</u>

The situation of Benmore House is a most desirable one. The gardens, green-houses and fernery are of themselves sufficient to attract the admiration of visitors to the locality. But another and still greater treat has been provided for them; it consists of a picture gallery erected in 1879-80 and is situated close to the house. It's length is 150 feet by 60 feet broad and 40 feet high. The walls are adorned with most interesting and valuable works of art, many of them being extra large-sized paintings by some of the most eminent ancient and modern masters, while the centre of the gallery is filled with statuary and embowered with crotons, palms, ferns and other graceful foliage plants. That the public evince a due appreciation of this splendid acquisition to Benmore House is evident from the fact that hundreds of people are availing themselves of the liberty at all times granted to inspect the gallery.

The policies are extensive and exceedingly interesting, being intersected by two rapidly flowing rivers, Eachaig and Massan, in both of which salmon abound. About four acres of ground, stretching along the sides of the Loch Eck Avenue and Eachaig riverside, have been formed into a pinetum and three acres along the banks of the Massan are being gradually converted into an arboretum by the introduction of duplicate and single specimens of all the hardy trees known in Britain.

Mr. Duncan has also planted within the last 6 years about 30 acres of ground, principally moorland, in numerous belts on his Balliemore estate in Strachur on Loch Fyne-side, chiefly for sheltering newly reclaimed and improved parks.

The benefits resulting from having plantations of serviceable timber interspersed at intervals over extensive mountainous property such as Benmore are manifold. Moorlands, the most sterile and uninteresting, when planted, rapidly become a source of great beauty, attraction and wealth.

From no reason beyond what was a prevailing custom, the majority of Highland proprietors have contented themselves hitherto with planting only for sheltering and embellishing their mansions and grounds; it is surprising how many of them are still satisfied with a comparatively small wood behind their dwellings, frequently not exceeding 50 acres while they might be forming plantations in their dreary glens and barren hillsides and thus make portions of their estates as attractive and certainly far more remunerative than the grounds immediately surrounding their mansions. When trees become matured in a glen or other secluded part of a property they may be cut down without in any way detracting from the general aspect of the estate. Several extensive landed proprietors at the present time, being well aware of the advantages to be derived from the planting of moorlands, have placed large tracts of their properties under forest trees, and none of them will ever have occasion to regret this, as it increases their revenues and greatly improves the soil for pasturing purposes, as well as the climate.