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## CEDRUS DEODARA AT GLENGARRA

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THE subject of this note is a small but remarkable stand of *Cedrus Deodara* which is situated on the side of a remote mountain valley which cuts deep into the southern slopes of the Galtee Mountains in Tipperary. This stand is now the property of the Dept. of Lands, Forestry Division and forms part of Glengarra Forest.

### Location.

The approach on the ground can be found through a lodge gate just south-west of Glengarra bridge, which is situated about half-way between Mitchelstown and Cahir on the main Dublin-Cork road. Cahir, which is a little nearer than Mitchelsown, is about nine miles from Glengarra bridge. The way from the main road to the Cedar stand (which is really an old avenue) is nothwards along the bottom of a most impressively beautiful river valley where some remarkably fine specimens of Scots Pine, European Larch, Norway Spruce, Silver Fir and Cedar can be seen in passing; but the walk is most renowned, and very rightly so, for the range and magnificence of its bordering rhododendrons the splendour of whose flowers in spring can only be underrated by any attempted description. The avenue finally comes to an end at an old shooting lodge known as Mountain Lodge (nearly two miles from the main road) and now an An Oige hostel. The place is very well worth a visit. The river of this valley is the Burncourt river whose source is a little more than two miles further to the north-west at the foot of the Galteemore peak 3,018'.

### History and Past Treatment.

Of the early history of this stand nothing concrete could be found as no records were procurable. This is greatly to be regretted as an account of any stand is incomplete unless accurate recordings of some sort can be made, of the origin of seed and plants, the type of ground planted, the method of planting, and so on.

The planting was done some seventy years ago by the Butler family of Shanbally who owned the woods in the locality up to recent times. The planting lines appear to have run across the slope and, though

there is not sufficient evidence to deduce the exact spacing of the original planting, there are indications that the plants were put in at six feet apart. There are prominent flattened ridges within the wood running up and down the slope of the ground which would seem to suggest that the ground was cultivated at one time, probably by potato drills, but at first sight these ridges were associated with the method of planting. There is nothing with which to fill the gap between 1880 and about ten years ago when the Dept. high-pruned the area then owned by them to about 20'. Apart from this operation nothing was done since except to cut windfalls off root when they blew down in the valley bottom where there is a patch of soft ground.

### **Climate.**

The annual rainfall for the locality is about 45". Heavy falls of snow are not usual but the high lying ground of the district is subject to occasional south-westerly gales of high velocity.

### **Soil and Vegetation.**

The soil is Old Red Sandstone drift—a light stony well-drained soil of good depth. A shallow 4" layer of brown earth seems to be prevalent at the surface. Over this there is a raw humus layer of 1" to 1½" in which there seems to have been exceptionally little decomposition of the needles and the line between it and the surface of the mineral soil appears particularly sharp. Podsolisation was not evident. The vegetation in the wood is sparse and is mainly composed of a moss carpet in which *Polytrichum* was prominent and occasional small herbs of which *Oxalis* was most noticeable. Taller plants were represented mainly by erratic bracken (*Pteris*), briar (*Rubus*) and fox-glove (*Digitalis*). The vegetation outside the wood on the north side was luxuriant with grasses, briar and bracken.

### **Aspect and Elevation.**

The aspect of the ground is south-westerly on a steep slope which rises from about 680' at the lower side of the stand to about 760' at the upper edge. The wood is not very exposed except on its N.E. side where it is open to north and easterly winds.

### **The Stand.**

The wood covers about 1½ acres and one's first impression is of a vigorous healthy stand with an ideal amount of growing space for each tree. This impression is confirmed by more detailed examination and though the growth in general has fallen off in recent years the leaders and crowns of the trees have a very healthy and vigorous appearance. As mentioned before one part of the stand has been pruned up to about 20' but the remainder (which was only recently acquired by the Dept.) was not pruned. In the latter area dead but firmly attached branches are retained on the trees almost down to

ground level. This fact together with other observations suggests that the stand was unduly open from an early stage in its life. The average tree bears a live crown down to from 35 to 40 feet above the ground but the canopy is only semi-closed and there is abundant light in the stand which fact contrasts strangely with the sparse vegetation on the floor of the wood. Although it is now about 10 years since the pruning was done the bark has not closed over the pruned branches—due no doubt to the age of the trees and in lesser part to the old branches which were abnormally thick for pruning.

About 12% of the trees in this wood are forked low down at from 2' to 4' above ground level and many roots bear two fine tall stems (7" to 9 $\frac{3}{4}$ " Q.G.B.H.  $\times$  50' Approx.). Whether this forking is due to some damage by animals or weather in early life or to the natural habit of the species is not known.

The taper of the Cedars, in spite of their age, appears to be small, but no detailed investigation into this quality of the crop could be achieved. Random Pressler borings of average sized trees revealed periodic ring growth similar in pattern to European larch. In the absence of sufficient span to illustrate this may best be indicated as follows:—

First ten years' growth 1 1/16".	Second ten years' growth 3 1/16"
Third ten years' growth 2 6/8".	Fourth ten years' growth 2 1/16"
Fifth ten years' growth 1 3/16".	Sixth ten years' growth 2"
Last seven years' growth 6/8".	Total 67 years.

So far as can be seen the only unusual item in the above analysis is the 2" growth in the sixth decade and this may have been due to some thinning factor. Stumps, old or new, are remarkable for their absence and this is further suggestive that the crop has stood in its present open state for some long time past.

The following figures indicate well how fine a crop of trees is this Cedar at Glengarra. The mean Basal Area tree was found from measuring 30 trees in a line across the middle of the wood. The number of stems per acre was found by averaging the number of stems per acre on two 1/10th acre squares located in the middle of the wood. The measurements were made three years ago when the stand was 67 years old according to ring count.

Age 67 years.

Stems Per Acre 160.

Mean Basal Area Tree 14 $\frac{1}{4}$ " Q.G.B.H.

Total Ht. of Basal Area Tree 68".

Live Crown Ht. Over Ground Level 38' (Dead branches retained to ground level).

Total Timber Ht. Of B.A. Tree 48' (Calculated to 6" diam.

Volume would have been greater by calculating to 3" but the tops were very rough).

Mid Q.G. of Mean B.A. Tree  $10\frac{1}{2}$ ".  
 Volume Per Acre. 4,762.8 c. ft. Hoppus.  
 Mean Annual Increment 71.08 c. ft. Hoppus.

Higher volume figures were obtained from a 1/10th acre plot measured at the same time and from a Census of Woodlands which was carried out a few years before, both of which showed a V.P.A. of well over 5,000 cubic feet. The V.P.A. figure of 4,762.8 may therefore be considered conservative.

### Comment.

Comparison shows that this Cedar crop falls easily into first quality Scots Pine (Scotland) (B.F.C. Yield Tables) when judged by volume production, but it falls far short of first quality when judged properly on height growth according to age. When compared with European Larch it is found that on a basis of volume the Cedar falls into second quality class, but the contrast as to height growth is still more marked in this case, the Cedar falling below third quality class B.F.C. yield tables.

This Cedar at Glengarra impresses one most as to the bulk of the individual tree in the stand and in the manner in which they hold their girths so well up to about 40'—this, apart from their apparent vigour and health. Having taken into consideration the retention of dead branches for so long and to such a low level and the other factors enumerated above, not least the relation of height to volume, it seems not unlikely that the planting distance was greater than six feet in the first place, or that there was some species in mixture which failed, or that considerable failures were caused in the early stages by some damage being done to the young crop resulting in the trees being widely spaced for the greater part of their life.

### Seed.

A fine crop of cones is borne on these Cedars in favourable years. Seed was extracted from twelve cones which were collected in the autumn of 1944. Thirty selected seeds were sown by the writer in the spring of 1945 from which three seedlings, two of which still survive, were obtained. The remainder of the seed was sent to Avondale where a few more seedlings were obtained and the transplants are still to be found in the garden nursery there. It seems indicated that as many seed collections as possible should be made from these trees before they start to decline.

### Conclusion.

There seems to be one definite conclusion to draw from the foregoing observations: that the cultivation of *Cedrus Deodara* as a forest crop deserves much more of our attention than it has had in the past.

### General Note on Species.

The Deodara (*Cedrus Deodara* Loudon) is a native of the West Himalayas, extending westwards through Kashmir and on to Afghanistan. It is not generally found naturally in pure stands but is found in mixture with *Picea morinda*, *Pinus excelsa* and various oaks. Its maximum range of elevation is from 4,000' to 10,000' in its natural habitat but it is more usually confined to from 6,000' to 8,000'. It finds its region of optimum growth where the rainfall is between 40 and 75 inches.

A tree of 250 feet was recorded by Schlich in the Himalayas but these trees live to a great age in their own country, some standing trees being estimated to be 400 years old. Normal growth under these conditions is said to be 8 to 12 annual rings to the inch—which seems to indicate that growth here is faster but only sustained for a comparatively short period.

The seed of *Cedrus Deodara* was introduced into Britain by Leslie Melville in 1831. In 1841 seed was sown on a big scale and the plants were widely distributed throughout estates in Britain. Subsequently it was noted by many observers that trees suddenly failed in or about from 40 to 50 years and the species was said to be vulnerable to frost and the cold damp English climate. It appears from the context of these remarks that they applied to single park or avenue trees and very little information of solid stands seems to be available.

A tree of 84'  $\times$  7' 2" girth was recorded by Professor Henry at Fota, Co. Cork in 1904 and was later recorded by H. M. Fitzpatrick at 85'  $\times$  8' 11" about 1928. Other fine trees recorded by Mr. Fitzpatrick were 76'  $\times$  8' 9" at Carton (Co. Kildare) 79'  $\times$  12' at Headfort (Co. Meath). The best tree recorded in Britain in Henry and Elwes was 90'  $\times$  9' 1". Doubtless these dimensions have been far exceeded long since by more recent recordings.

The timber of *Deodara* is said to be very durable when grown in its natural habitat. It is hard, oily and scented being used for building, sleepers, furniture and for many other purposes.

Some doubt has been thrown on the quality of the timber when grown in the climate of these islands and it is said to be soft and to lack durability.

### Works of Reference :

TREES OF GREAT BRITAIN AND IRELAND	...	Henry and Elwes
CONIFERAE : KEYS TO THE GENERA AND SPECIES		H. M. Fitzpatrick
TREES OF IRELAND NATIVE AND INTRODUCED	...	H. M. Fitzpatrick
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HARDY CONIFEROUS TREES	... ..	A. D. Webster
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