

The conifers most extensively planted at Awamoa are *Pinus insignis*, *P. halepensis*, *P. pinaster*, and *P. sylvestris*. The latter especially flourishes more luxuriantly than I have observed it elsewhere in the colony. Of *Pinus muricata*, there are fine symmetrical specimens 18 inches high; also of *P. austriaca*, *P. Jeffreyana*, *P. laricio*, *P. Benthamiana*, *P. Sabiniana*, and many others. The majority of these, however, are planted out as single specimens. In the copious collection of spruce and silver firs, *Abies Douglassii*, *A. Menziesii*, *A. morinda*, and the well-known *A. communis*, demand special notice; also *Picea Nordmanniana*, *P. Fraseri*, *P. Webbiana*, and *P. pectinata*. The European species will probably prove of greatest value in this colony. *Thuja* and *Libocedrus* are well represented, and there is a comprehensive collection of cypresses, the specimen of *C. Craigiana*, although small, being one of the most attractive. Some remarkably well-grown deodars, numerous cedars of Lebanon (raised from seed collected on Mount Lebanon), and a fine Atlas cedar, are of special interest.

Quercus robur has been introduced into some of the plantations, mixed with pines and other trees; also the European ash, elm, sycamore, birch, lime, beech, oriental and occidental planes, with several poplars, &c., &c., nearly all exhibit the robust, vigorous growth so characteristic of these plantations.

In addition to the trees already mentioned, Mr. Holmes has formed good collections of *Crataegus*, *Ilex*, *Fraxinus*, *Pyrus*, *Ulmus*, and of general ornamental shrubs.

Quercus Cerris, the Turkey oak, is found in some of the plantations, and exhibits greater luxuriance than *Q. robur*. Although its timber is not equal in durability to that of the English oak, it is well adapted for general plantations in New Zealand, and is especially worthy of notice for street planting.

One or two of the plantations were formed by loosening and pulverizing the soil, in spaces about a foot square, at regular distances, as if for planting, then sowing two or three seeds of eucalyptus near the centre of each space, and ultimately pulling up the weaker of the seedlings. Although the general results obtained by this method are good, they are not equal to those obtained by ploughing, subsoiling, and planting, and in places where the work was somewhat slurred the difference is equal to three or four years' growth.

The great value of the holly for permanent live fences is demonstrated by a capital hedge of this plant at Awamoa. Three-years-old nursery plants were set out four years ago, 15 inches apart; the hedge is now perfectly sheep-proof, greatly superior to hawthorns planted at the same time. It is the best fence plant we have in this colony, for all ordinary soils.

The plantations were formed rather for shelter and effect than with a view to profit from the growth of timber. Had the latter object been kept in view I venture to think that even more satisfactory results might have been obtained by thick planting than could possibly be secured under the thin planting adopted in the mixed plantations.

In a young plantation of from 35 to 40 acres, to be made up to 60 acres, the trees, pines, poplars, oak, ash, willow, &c., are planted fully 24 feet apart between the rows, and 12 feet in the rows. Mangolds or potatoes are cultivated between the rows for the first three or four years, and kept clean by horse-hoeing. This certainly has the advantage of keeping the soil open and improving it without any great amount of impoverishment, so far as the trees are concerned. But if the plants were restricted to one or two kinds, and, if more than one, of kinds having a tolerably equable growth, and planted at a distance not exceeding 6 feet apart over all, the annual increment of growth would be greatly larger, as the energies of the plants would not be wasted on the excessive growth of lateral branches so largely encouraged by thin planting. At the same time the thinnings would almost from the first command a profitable sale in such a district as Oamaru, so that the trifling gain from root crops would be speedily exceeded.

There are few districts in which the formation of plantations is of greater importance, whether viewed with regard to their climatological effects or as furnishing a future timber supply, and I know of no district, on the whole, in which plantations could be undertaken with greater prospects of success, and direct profitable results.

APPENDIX C.

REPORT BY DANIEL ROBERTSON, FORESTER, UPON THE FOREST LANDS IN THE PROVINCE OF CANTERBURY.

SIR,—

In compliance with your instructions to me dated 23rd August, 1876, I proceeded to make an inspection of the forests and forest lands, hereinafter named, in the Province of Canterbury, and beg to report in detail as follows:—

FOREST OF WAIMATE.

The forest of Waimate, which originally extended to nearly 4,000 acres, is situated principally on the flat and lower portion of the hill about a mile distant from the township of Waimate, which township is twenty-eight miles from Timaru and the same distance from Oamaru—the nearest seaports. The main trunk line of railway, when finished, will pass within four miles of the forest. The timber consists of black and white pine and totara in nearly equal proportions, with patches of manuka along the upper edge. The whole, with the exception of 100 acres of a Government reserve, near the centre, and about 200 acres up a ravine in the north-west corner, has become freehold. In the former, the great part of the heavy timber has been removed, and the remainder sold to the owner of a saw-mill in the vicinity, by order of the Road Board. In the latter the timber is much lighter, and, being very difficult of access, is only worth (including land) from £7 to £8 an acre.

As these two patches represent the whole of the timber land belonging to the Government in the neighbourhood, they would not be worth the trouble of conserving. There are four saw-mills at work in the forest, and, if they are kept going at the present rate, ten or twelve years will clear the ground of its crop. This, as well as all the other forests in Canterbury, has been sold in large blocks to private individuals, at the nominal price of £2 an acre (land inclusive), and the present owners are selling the timber only to the saw-mill proprietors at about £65 per acre, and the land when cleared will readily realize an additional £6 an acre.

There is no timber of any description within a radius of forty miles of this forest.