

not been collated either for the benefit of the Department or for the information of the public. Nevertheless the publication of such would be of considerable interest, as well as of some practical value to colonists, if only as a guide to lessen the possibility of failure by settlers who may be desirous of improving their holdings by the formation of plantations either for shelter, ornament, or profit. This apparent negligence is due to the absence of a properly organized and efficient staff for carrying out these and similar duties that are now attempted in a perfunctory manner by a single officer.

Amongst imported conifers *Pinus austriaca* has succeeded well on almost any class of soil or situation. In deep heavy loam, in poor pumice land, on rocky faces, or on marshy grounds this pine has alike flourished luxuriantly. The yellow-pine of America (*Pinus ponderosa*, and its variety *Pinus benthamiana*) has also been successful wherever planted. On cold clay-bottomed lands in south Otago, the warm limestone country of central Canterbury, the exposed pumice plains of central Auckland, or the dry rigorous climate of central Otago its success has been phenomenal. *Abies douglasii* (the Oregon pine of America) and the European larch may also be mentioned as desirable trees worthy of extensive cultivation in the future. The former, however, will not withstand the frosty winds experienced during early spring in Central Otago, nor is the latter suitable for situations with a northern aspect in any portion of the colony. The home of the larch is on southern slopes, from the lower foothills to the snow-line on stony or gravelly soils, where there is constant moisture without stagnation. No tree promises better results than the Californian redwood (*Sequoia sempervirens*), especially on the heavier class of low-lying pumice lands of the hot-lakes district. Its growth here is exceedingly vigorous in deep and porous soil, the surface of which is kept cool by a light growth of fern. This tree is peculiarly adapted for extended cultivation in the North Island, where the burning of fern lands is of frequent occurrence, through its capability of withstanding fire without sustaining permanent damage. Amongst the deciduous trees the oak, ash, sycamore, plane, birch, alder, chestnut, and walnut will undoubtedly take a prominent place in the future as timber-producers. All the varieties mentioned are easily raised from seed, obtainable in the colony in great abundance, whereas for the supply of coniferous-tree seeds we are chiefly dependent on Europe and America, from whence there is no certainty of obtaining our annual requirements owing to frequent failure of the seed-crops.

Although experiments have been carried on at the various nurseries and plantations with a comparatively large number of trees of reputed sylvicultural value, there remain a vast variety of species available for further trial—notably amongst the Australian eucalypti and American hardwoods. Something is being done in this direction during the present season at the Rotorua Nursery and also at Starborough Nursery in Marlborough. Sufficient knowledge has, however, been obtained as to the suitability of the trees at present being grown in quantity to warrant a continuance of their propagation on an extensive scale.

Many species of eucalypti of known value cannot be grown in any of the nurseries or plantations already established, owing to their impatience of frost. Jarrah, ironbark, and sugar-gum may be mentioned as instances. During the last few years I have frequently brought this matter under the notice of my superior officers, pointing out the value of these timbers for extended cultivation for the supply of bridge and sleeper timber, which forms fully 75 per cent. of present imports. An excellent site for a nursery was obtained near Whangarei, and plantation-areas were selected in every way desirable for the timbers mentioned, on the Puhipuhi Forest Reserve, but here the matter rests awaiting further instructions. I venture the assertion that no more profitable undertaking could be entered upon than the extensive planting of the eucalypti mentioned. Should it be decided to establish plantations in the future, the selection of the sites is of paramount importance. Every mile distant from a railway, harbour, or river means increased cost of haulage from the plantation; or, in other words, the value of the timber is increased when grown in close proximity to convenient and cheap means of transit.

The choosing of nursery-sites also requires mature consideration, otherwise this work will be carried on at a disadvantage. Take, for instance, the Starborough Nursery in Marlborough. Although the soil, water-supply, and general surroundings are in every way suitable for the purpose intended, the Crown does not possess more than 100 acres of land fit for plantation purposes within a radius of twenty miles, and none of the areas are accessible by rail. Every thousand trees grown in a nursery to the required size for permanent planting means 2s. 6d. added to their cost for transit of, say, twenty miles (or a day's journey by wagon), besides additional expenses in stable accommodation and travelling-expenses of officers and workmen to and from. In certain districts, however, the long distance between a nursery and plantation is unavoidable, on account of climatic conditions, soil, water-supply, &c., not being suitable for the raising of young seedlings. Such an instance occurs in Rotorua district, where a plantation is some twenty-two miles from the nursery. The ideal site for a nursery is the centre of proposed planting operations, but, of course, such positions are not always available. If the present system of employing prison labour in tree-planting is to be extended (and I can see no reason why the whole of this class of work should not be undertaken by the Prison Department) the necessity for concentration of works is doubly desirable.

STATE FORESTS, TIMBER AND CLIMATIC RESERVES.

No record of the area or quantities of timber remaining in these reserves is at present available. The last report from the Commissioner of Crown Lands, Auckland, however, gives an approximate estimate of the kauri timber on Crown lands at 715,000,000 superficial feet; on Native lands, 540,000,000 superficial feet; on private lands, 124,776,000 superficial feet: total, 1,379,766,000 superficial feet. The average annual output is given at 70,000,000 ft. per annum, so that in less than twenty years these forests will be exhausted. The possibility of enormous destruction by fire, however, is not taken into account, and judging by losses during previous years from this cause the probable shrinkage may be set down at 10,000,000 ft. per annum. There are comparatively large areas of mixed bushes practically untouched in both Islands, but with the advance of settlement comes the axe of the bushfeller, the destruction wrought by stock in eating and trampling the under-scrub, and the careless lighting of fires by adjoining settlers in clearing their land.