

In thinking of a future timber-supply, one naturally asks what are likely to be the needs of the future; and if we go to older and better-developed manufacturing countries we find that there is a great demand for soft woods for packing-cases, wood-pulp for making paper, &c., and for these purposes some tree or trees are required that will grow quickly and produce cheap wood. Railways, again, are great consumers of hard woods for sleepers and bridges, and it is most necessary that provision should be made for a future supply of this class of wood. There is a third class of wood, of an elastic nature, that is always required for tool-handles, shafts, &c. Then, one thinks of special woods for decorative purposes, furniture, &c. Now, all these are grown and can be grown in New Zealand to perfection, but the question is which are the most economical trees to plant for our several special needs.

In Europe and America the greater portion of the supply of soft woods are from the different spruces, a lesser supply coming from poplars and willows. All these different trees from Europe and America have been introduced into New Zealand, but I venture to say that *Pinus insignis* will produce twice as much timber per annum as any one of them; consequently, for this class of wood, *Pinus insignis* is to be preferred for planting for the production of wood of this class—and I speak from the experience of the growth of twenty species of European and American spruces, besides several Asiatic ones.

For woods of a more durable character, fit for sleepers, the oak, both in Europe and America, has largely been depended upon, and most of the oaks of these countries, as well as many of those of Asia, have been introduced into New Zealand, but none of them can compete with the gums of Australia to furnish a supply of hard wood in a short time. Besides the gums, there are at least two pines out of the many that have been introduced that promise in the south to furnish in a reasonable time timber fit for railway-sleepers: they are *Pinus Laricio* and *Pinus ponderosa*. Both trees grow well here, and specimens are 50 ft. high that were planted in 1881. None of the oaks planted about the same time contain more than half the amount of timber of the above pines, or more than one-fourth of the timber of *Eucalyptus Stuartiana*. So that from a profitable standpoint *Eucalyptus Stuartiana*, *Pinus ponderosa*, and *Pinus Laricio* are much to be preferred to any of the oaks.

In Europe and America for tool-handles the ash is almost exclusively used. In Canterbury, at least, this can only be grown successfully in a sheltered place and on good land. This wood will undoubtedly be in request in the near future; and, unlike most other woods, it is at its best in a young state, and when quickly grown. I have no doubt there are many places in the bush districts of New Zealand where the ash could be successfully grown. The same situation as is required for the ash is necessary for the hickory, judging from my experience here. Of about a dozen species of American and European ashes, and about half that number of species of hickories, all require a sheltered position.

Many of the New Zealand woods have been in request for the making of furniture, and no doubt for a very long time to come will be had in sufficient quantity for that purpose; in the meantime, walnut and oak trees are being grown in considerable numbers in New Zealand, and will, when more matured, be used instead of rimu and kauri and other New Zealand woods, and in the milder portions of the Dominion some of the best Australian fancy-wooded trees may be grown to profit. Of walnuts, for timber purposes, the American black-walnut is to be preferred before all others that have been tried here, as it grows faster and better than either of the European or Asiatic species that have been introduced.

Tables of the growth of trees may be most misleading, as, under cultivation, some trees will make splendid growth which, left to themselves in an ordinary plantation, will be dismal failures; this I could give many instances of, and while I will give a table such as is desired I shall at the same time select fair average growth or state the conditions under which the particular species grew. To give one instance, in 1887 I planted a triangular plantation of a few acres, every other row of which was *Pinus Laricio*; some of these in the second row I cut down twelve months ago, and found they measured on an average 45 ft. long, out of which I cut some good scantling. This row fronted due north. The first row, also facing due north, and along which a water-race ran, I sowed with acorns, planting with them about every 10 yards a walnut-tree. The south-east side of the triangle I treated in the same way, sowing acorns, and planting about every 10 yards a walnut-tree. On both sides the oaks came away well, those on the side of the water-race growing very rapidly into long poles, most of which have been cut down, and when cut down measured at least 25 ft. long; but on neither side have the walnuts made any progress, and I doubt if there is a tree 6 ft. high, they having been completely overtopped by the oaks and pines. The third row was planted with *Abies Menziesii*; these have all been cut out and used for stakes in fencing, for which they seem well suited. They had made an excellent growth, and were, when cut out, probably nearly 30 ft. high on the average. Other trees planted at the same time in this plantation were *Pinus ponderosa*, *Cedrus atlantica*, *Juniperus virginiana*, *Cupressus torulosa*, and *C. Lawsoniana*, *Picea pinsapo*, *Betula alba*, and odd trees of Turkey oak, *Cupressus funbris*, beech, *Araucaria imbricata*, *Libocedrus decurrens*, birch, holly, elm, and alder, all of which are still living and are rather good examples of what each species will do when left to itself under rather favourable circumstances. Between the rows of trees the first year after planting, the land was given to a labourer to grow a crop of carrots, and to encourage him to cultivate a crop of vegetables a second year I gave him some artificial manure. This cultivation of the land for two years gave the trees such a start that they have far outstripped older plantations of the same kind of trees; and this system may be safely commended for general adoption by all those desirous of raising healthy vigorous trees. The following tables give in a condensed form much of my experience, which I trust may prove useful to other planters. It will be noticed that *Pinus insignis* has grown much faster than any other tree*: trees planted here in 1873 range from 100 ft. to 118 ft. in height, and twelve of the finest, lately measured, girthed at 4 ft. from the ground the following measurements respectively: 7 ft. 11 in., 8 ft. 8 in., 8 ft. 9 in., 8 ft. 10 in., 9 ft., 9 ft. 4 in., 10 ft., 10 ft. 1 in., 10 ft. 2 in., 10 ft. 3 in., 10 ft. 5 in., and 11 ft. 1 in.

* Vide photo opposite p. 112.