

## (b.) NEGLECTED FOREST-PRODUCTS.

Besides the value of trees for timber purposes there are various other uses for certain of them, and it is more than possible that in the near future forests now thought valueless may become profitable. The wood-pulp industry is a case in point. This has attained enormous proportions in Scandinavia, Germany, and the United States. The chief trees used are spruces, pines, and poplars. Trees of medium age are employed. Experiment would be needed to find out which of our trees were suitable, and if those now quite neglected—such as the taraire in the north, the various species of beech, and especially the smaller trees, species of *Pittosporum*, the wineberry (*Aristotelia racemosa*), *Carpodetus serratus*, and others—proved suitable, and they could be used at an early stage of growth, then the supply would be indeed great. The dry distillation of wood also suggests itself as a profitable undertaking. For this purpose hard woods such as oak, elm, beech, and chestnut; soft, such as pine, fir, poplar, and willow; and intermediate, as birch, maple, ash, larch, and alder, are used in Europe. Wood-spirit, pyroligneous acid, acetic acid, are some of the important products. Doubtless a considerable percentage of our woods could be so utilised. Then, there are methods of treating timbers so that they will become very durable, and in this way certain of our trees, now neglected merely on account of their non-durability, may become of value. Also, there are many uses of wood for woodware of various kinds, most of which is now imported, ornamental woods for veneering, &c. It seems very probable indeed that in our neglected forest-trees is a good deal of latent wealth, and it does not seem a wise policy to turn them into smoke and ashes before fully testing their capabilities and educating the public as to the same.

## (c.) REGENERATION OF FORESTS.

The forests of New Zealand, as was explained earlier on, differ altogether from those of Europe and America where forestry operations are being carried on. It is quite true that those of Europe are for the most part artificial, but that fact does not alter the case. A European or American forest consists of trees nearly all of which are available for timber, whereas in that of this country often three-fourths of the ground is occupied by unprofitable growths. The foreign forests whence come "Baltic," "Oregon," and other pines or hardwoods can by the methods of scientific forestry—i.e., cutting out only trees of a certain size and at fixed seasons, replanting, and so on—be made to yield a continuous crop. This is quite out of the question in a New Zealand taxad or kauri forest. The trees are of too slow a growth to allow a profitable reinstatement; the difficulties of planting within the forest, owing to the multitude of shrubs, the tangle of roots on the ground, and the fallen and rotting trees, are very great, while for the reproduction of certain trees—the kauri, e.g.—the light of the forest-interior is not generally sufficient. Even were saplings left to replace the felled trees, the length of time required before they were of "millable" size would be altogether too great to profitably allow the regenerating forest to occupy good ground.

At the same time, where the ground is unsuitable for settlement, or where there would be no special benefit in opening up for farming purposes that particular area, it certainly should be preserved, especially as no one can tell but that many of the neglected species may be of value. Also, undoubtedly, the present methods of dealing with our timber forests are far from perfect. Trees are cut at all seasons of the year, there is little supervision as to what trees should be cut, much damage is done to the standing timber, and, finally, there is a lamentable amount of waste. Undoubtedly, more supervision and less wasteful and more careful methods would materially assist in conserving the present timber-supply.

Furthermore, those areas which have been burned, if cattle, &c., be kept away, where the climate is wet, will again be covered with trees or shrubs; but at first, at any rate, the valuable timber-trees will be absent, and a quite different growth to the original will for many years occupy the ground, nor is it known what would be the final outcome\*. Kauri and beech forests are an exception, the dominant trees in both cases coming up by thousands when the larger timber has been removed. In Stewart Island, too, owing to the cloudy skies and large number of rainy days, even the rimu, that most difficult of trees to grow in the open, is reproduced thickly by thousands even where the forest has been altogether removed. But these exceptional cases are of little moment from the timber standpoint, and it may be assumed that when once a New Zealand forest has had its large trees cut out it is practically worthless for any future growing of timber that could compete with artificial forests made of foreign pines or hardwoods.

Certain of the native trees will grow under artificial conditions, and it might pay to cultivate them: such are the totara, kowhai, and puriri.† Beech forests could be produced artificially, and will regenerate, as noted above, if cattle, &c., are kept out of them, but in the latter case the timber would not equal that of foreign trees much more easily raised and quicker to mature.

## (d.) FORESTS AND CLIMATE.

Apart altogether from the importance of woodlands as yielding timber, &c.—and which, so far as New Zealand is concerned, leads to their destruction—they are in many places a most valuable asset as they stand, and if cut down would probably have to be reinstated at great expense by some future generation. The indirect importance of the forest, which may be called "climatic," was in the early colonial days a matter of little interest, and even at the present time is not generally recognised. The settler who on clearing his land leaves a few acres of "bush" upon his property is exceptional, and where small pieces still exist in gullies upon private holdings they are rather the result of it not

\* Accurate observations on this head would be a very valuable contribution to scientific forestry.

† Details as to rapidity of growth under various conditions in different parts of New Zealand should be collected.