

Pinus Strobus (Weymouth pine).—Seeds of this species are sown at the rate of 1½ oz. to the square yard, and, as a rule, the germination is poor. The growth is very slow in the seedling stage, and on this account the seedlings are seldom “lined out,” but sent to the plantations direct from the two-year-old beds.

Pinus radiata (the remarkable pine), better known as *Pinus insignis*, is a very fast grower, and seedlings six months old are usually large and strong enough to send to the plantations for permanent planting. Seed is sown in October, at the rate of 1 oz. per square yard, and in the following March or April the seedlings are lifted, the roots pruned, and then “heeled in” for about a month. This treatment is necessary in order to cause the rapid soft growth to ripen and harden off, and render the plants fit for further transplanting to the plantation-areas.

Pseudo-tsuga Douglasii (Douglas fir).—The seed of this tree is becoming more difficult to obtain, and the germinative quality varies greatly, but it is generally satisfactory if sown at the rate of 1¼ oz. per square yard. This species is treated in a similar manner to *Pinus ponderosa*.

Eucalyptus Stuartiana (apple-scented gum of Tasmania).—Sowings of this species are made at the rate of about 1½ oz. to 8 square yards. The seed, which is sown in November, is exceedingly small, and unless it is carefully sown or mixed with sand the seedlings will be much too thick. Owing to the rapid growth made by this, and in fact all gums, it is necessary that they should be planted out permanently at the seedling stage. The treatment of gum-seedlings is the same as is described under *Pinus radiata*.

SENDING TREES TO PLANTATIONS.

All trees before leaving the nursery are counted into bundles of twenty-five, and tied with strips of flax. The bundles are then brought together, and the straggling ends of the roots are trimmed off with a pair of sheep-shears. Next the roots are dipped in a tub containing a “puddle” of soil and water mixed to a fairly fluid consistency. This process is commonly called “puddling,” and is necessary to counteract the drying effect of the air upon the roots whilst the trees are being lifted. A trench is then prepared with a spade, and the bundles of trees “heeled in” until it is convenient to send them to the plantations.

TOOLS AND IMPLEMENTS USED.

As far as possible, all cultivation is done by horse-labour. Reid and Gray’s double and single furrow ploughs are used, and for the small breaks the short American ploughs are found very convenient. For general summer cultivation the Planet Jr. two-horse and the Syracuse spring-tooth cultivators are used. Amongst the trees the weeds are kept in check mostly with two-wheeled Iron Age hoes and Dutch hoes. A general assortment of spades, forks, and other garden tools is, of course, required, but the use of these is confined mostly to the lifting of the trees.

COST OF OPERATIONS.

The costs of the various operations are as follows: Per thousand—Sizing, 2s.; lifting lined-out trees for sending to plantations, 2s. 6d.; lining-out seedlings, 1s. 6d.; weeding, 9d.; sowing, 2s. These costs represent actual labour expenses, without taking into consideration cost of plant. buildings, and upkeep of same. Taking an average of the total expenditure and trees since the inception of the nursery, the raising of trees has cost 18s. 6d. per thousand.

PLANTATION-WORK.

[By D. J. BUCHANAN, Plantation Foreman, Whakarewarewa Plantation.]

The land on the Whakarewarewa Plantation is principally of a very rough, broken, often precipitous nature, varying in height from 1,200 ft. to 2,500 ft. above sea-level, and covered for the most part with a dense growth of fern, tutu, and various native shrubs, which has to be cleared off before planting operations can be commenced. Where the growth is chiefly manuka it is cut down, left to dry for a time, and then burned off; but if the area to be planted is covered with fern and tutu a fire-break 1 chain in width is cleared around it, and a fire put through the block. After the fire the growth which then remains standing is cut down, slashers and fern-hooks being used for the purpose. Burning-off is usually done in February or the beginning of March, when the conditions are most favourable and a good burn is assured. When the land has been cleared, roads and sledge-tracks for the distribution of trees are formed, and pitting is at once commenced.

The method of pitting employed, and the one found to be the most successful, is by means of the wire line. This line consists of a number of links of No. 12 galvanized fencing-wire, the length of each link corresponding to the distance between the pits; for conifers a line having 4 ft. links is used, and for eucalypti the links are 6 ft. in length. Eighty of these links are contained in a full line, which is found quite sufficient for one man to pull tight. To each end of the line a heavy iron pin is attached, and three sighting-poles—one at each end and one in the middle—are used to keep the line straight. These poles are first set up in a straight line in the direction the rows are required to run, and the line is stretched tightly against the poles, and the pits are then dug all along one side of the line, at the end of each link. The digging of the pits in the pumice soil is a simple matter; with a No. 2 Black spade a deep square sod is lifted out and placed upside down in the hole from which it was taken, and roughly broken up. When the first row of pits is completed the sighting-poles are shifted out, forming a second line parallel with the first, the distance between the rows being in all cases equal to that between the pits. In the second row the pits do not come opposite those in the first, but midway between them; to do this the line in the second row is drawn half a link beyond where it was pegged the first time, and on the third row is again drawn back, so that the pits in every alternate row are opposite. This method of pitting approaches that known as the triangular form, in which the trees are spaced out to form equilateral triangles, thus giving an equal growing-space to each tree.