

both Hanmer Springs and Ranfurly Nurseries yearling pines are lined out most successfully, and permitted to occupy the same position for two years; whilst at Tapanui Nursery greater success is attained by transplanting two-year-old seedlings, and allowing only one season for development before permanent removal. Seedlings are conveyed in shallow boxes direct from the "heeling-in" quarter to the planting-ground, and placed in convenient positions there. Every effort is made to conduct the lining-out work with workmen who have previously had special training, as some time must elapse before a casual worker becomes proficient or smart enough to hold his own along the line.

The planter, after putting a sufficient number of trees in his bag (which is strapped round the waist) to complete his "break," firmly grasps the trowel with one hand, whilst with the other he separates about half a dozen plants. Then, assuming as comfortable a position as possible, with the right foot well back into the trench, he thrusts his trowel deeply into the ground, the left edge touching the line, and the right about $\frac{1}{2}$ in. further out. A vertical crevice for the reception of the tree is then formed by the operator simply drawing the trowel towards him, and into which the tree is quickly placed, as near the line as possible. Briskly withdrawing the trowel, it is again utilized in pushing a little soil against the plant, and the operation is completed by the application of foot-pressure to the base of the young tree. The next plant is similarly dealt with at about $2\frac{1}{2}$ in. distant; and the planter, working along the line to the right, continues in this manner until his allotted "break" is finished. The arrangement of the planting and ground-preparation gangs is so effected that one keeps the other steadily occupied. After completing the planting of one line, a width of about 1 ft. is ploughed and levelled, and the line again brought forward 10 in. The number of plants lined out per man daily depends to some extent upon the nature of the soil worked. It is, however, not unreasonable to expect a trained staff of planters to handle between 8,000 and 10,000 plants each in a day of eight hours, although this does not include the preparation of ground. In the plant-sorting operation a small percentage of undeveloped seedlings generally remain, and these are lined in closely. The plants are placed about $\frac{1}{2}$ in. apart, in lines 10 in. between; but as the resulting trees mostly develop into unsatisfactory, spindly specimens, which rarely succeed when planted permanently in exposed situations, the lining-in treatment is discarded as much as possible. There is no doubt that the unnecessary crowding of plants in nurseries is often conducive to badly ripened wood, and consequent failure in operating with even the hardier varieties.

TENDING TRANSPLANTED TREES.

Climatic conditions influence largely the extent of work necessary in keeping the nursery free from weeds and the surface-soil in an open state. The drier the season the less the expense essential in keeping the "breaks" of trees in good order. Dutch-hoeing between the lines is resorted to some few weeks after the transplanting-labour is completed. This has the effect of breaking the surface-crust, and paves the way for the later machine-hoeing. The manipulation of the small Planet wheel-hoe is extremely simple, and requires but little explanation here. The machine is fitted with six cultivator-teeth, 1 in. in width, three of which stir up the soil between each line. On fastening to the arch a light rope with handle-bar attachment, a workman is able to steadily draw the hoe all day without feeling the least fatigue. The hoe follows precisely the same course as the man in front—viz., straddling the line of trees; but the guiding of the machine is done by another workman, who firmly holds the handles, and walks along the last cultivated row, so that on the return journey his footprints are obliterated. The suppression of weed-growth close to young trees cannot be accomplished by the wheel-hoe method, as in attempting to run the cultivator-teeth very closely to the lines there is a decided risk of disturbing the root-system of the growing plants, with disastrous results. Hand-weeding is thus resorted to.

Employees are provided with small weeding-forks, and in a kneeling position extract by the roots all foreign weed-growth—principally sorrel, spurrey-weed, and shepherd's purse—which is deposited in rows about six lines apart. The weeds thus accumulated are then drawn into heaps and removed preferably by means of a hand-barrow. Although in past years we have successfully omitted the early autumn "wrenching" process when the season's growth has matured early, there can be no question that checking the progress of late-growing evergreen and deciduous trees is helpful in bringing about the desired hardening-off state so necessary in tree-growing when carried on in districts where severe winters are experienced.

LIFTING AND BUNDLING TREES FOR TRANSFERENCE TO PLANTATIONS.

The distribution to State plantations, domains, &c., of an approximate 3,120,000 trees annually from the nurseries at Tapanui, Ranfurly, and Hanmer Springs necessitates tree-lifting being commenced immediately the season's growth has matured. We endeavour to make a start towards the latter part of April, but perhaps the presence of autumnal foliage on larch, rowan, or birch offers the most accurate guide as to how early the removal of trees may be undertaken. The systems adopted in tree-lifting from nursery lines vary somewhat, for whilst one man may conduct the actual spade-lifting of small two-year-old trees, a correspondingly increased cost and labour are involved when dealing with more advanced stock. It is essential, however, that all trees must be loosened to such an extent that no mutilation of roots will eventuate when "pulling-up" is being undertaken. The lifting of a line of medium-sized trees is expeditiously carried out by two workmen, who insert their sharpened spades on each side of the trees, some 5 in. distant. On applying simultaneous foot-pressure the spades are driven down until they almost touch, cleanly cutting all roots that come into contact. After this treatment has been applied to several lines, a workman follows up the lifters, pulling up and counting into twenty-fives all well-developed trees. The employee in charge of the tying operation, having previously prepared a number of flax strips of required thickness and length, fastens a tie around each bundle, just above the collar. Bundles secured in this manner are then removed by hand-cart to the end of the "break," where they undergo a final root-trimming and puddling process. Tree-roots