ground it leaves four depressions 13 in. wide and ½ in. deep, in which the seed is sown by hand. When the whole bed has been sown the roller is brought back over it, and presses in the seed to an even depth throughout. The seed is then covered with soil which has been screened and made free of large lumps. The roller referred to was introduced into the State nurseries by the late Mr. H. J. Matthews, a somewhat similar system having been in force in Germany, and I know of no method whereby seeds can be sown in quantity with such efficiency combined with cheapness. The 4 in. space between each bed serves as a means whereby the seedlings can be wrenched, and during the summer this space is kept well stirred up with hoes in order to catch as much as possible of the rainfall. When the seed is covered, seed-frames with hessian or unwashed paperhanger's scrim stretched over them are placed on the beds for the double purpose of protecting the seed from the birds and excluding the light sufficiently to allow of germination taking place.

The two months following the sowing of the seeds is perhaps the most critical period of the year's operations. Constant care is required in order to cope with "damping off," which may be accelerated either by excessive rain, strong growth of weeds, or a calm humid atmosphere. Usually the trouble cannot be prevented, but the evil results can be much reduced by keeping the seedlings free from weeds, and raising the seed-frames to allow of a good circulation of air amongst the young trees. (Plate No. 2 shows the manner of raising the seed-frames.)

The length of time that it is permissible to leave the seed-frames on the young trees is determined by the weather-conditions during the summer months, and also to a less extent by the species of trees. It has been found in this nursery that generally a hot dry summer has less ill effect upon larch-seedlings if they are protected by the hessian shading. On the other hand, no marked difference is noticeable with the seedlings of Corsican pine, and as a rule the shading is removed from these as soon as they have produced the secondary leaves. Whenever shading is removed, however, the seedlings are gradually prepared for the change by propping up the frames so that the sun strikes them gradually and for a short period only each day, and this procedure goes on until the leaves are somewhat hard to the touch. In this nursery all shading is, as a general rule, removed by the middle of March, and if possible dull weather is chosen for doing the work.

Before entering upon a description of the further progress of the seedlings through the nursery, a few general remaks as to the most suitable age and size for sending trees to the plantations seem advisable. Amongst nurserymen and foresters much difference of opinion exists upon this question, and there is undoubtedly room for such, as local conditions will in each case go a long way towards shaping out a general policy to follow. On one point, however, there seems to be a consensus of opinion——namely, that trees must have a good fibrous-root system if success in transplanting is to be assured. The root-growth of trees varies considerably according to species. Some, such as spruce, keep very much to the surface, and have a mass of fibrous roots, and practically no tap-root. Birch and alder usually develop several strong roots which spread in the surface soil and from which rootlets are sent down into the subsoil. Oak, ash, larch, Corsican pine, and heavy pine produce decidedly strong tap-roots, which descend well into the subsoil, and from which rootlets of varying sizes are given off. It is through the small rootlets or root-hairs that the tree absorbs the soil-moisture, and consequently a tree which has a fair amount of such roots, as a rule, suffers very little when transplanted. Those trees which produce a strong tap-root with little or no fibrous roots are the kinds which usually transplant badly. Corsican pine, Canary Island pine, and eucalypti are instances of this. Deciduous trees, such as oak, ash, and larch, although producing more or less strong tap-roots, do not need the fibrous root to insure successful transplanting to the same extent as is necessary with the evergreen pines and eucalypti.

In order to cause trees to produce fibrous roots, it is necessary to prune the main root or roots either before or after the trees are lifted. If this is done before the trees are lifted it is termed "wrenching." This consists in cutting off about one-third of the root-growth by inserting a sharp spade on each side of the row of trees. The spade is held at an angle of about 45°, and is pushed well under the trees, care being taken that only the extreme ends of the tap-root and rootlets are severed (see plate No. 3). In this nursery "wrenching" is usually done in the spring, and generally only those trees which it is intended should remain in the same position for more than one year are so treated. In addition to improving the root-growth "wrenching" is beneficial in that it prepares the trees for removal by arresting the growth somewhat, and causing the wood to ripen and become hard, thus lessening the chance of death occurring when transplanting takes place. When trees are lifted for transplanting in the nursery for a further period the roots are trimmed with sheep-shears in order to bring about the same result as is aimed at in "wrenching," but even in cases of this sort "wrenching" may also be done with advantage where trees making quick soft growth are being dealt with.

Many parts of the plantation-areas on which trees are planted are much exposed to strong winds. This applies chiefly to hill-tops and ridges, where the comparatively dry soil is another factor which militates against successful planting. Altogether, the conditions prevailing on the plantation reserves are unavoidably somewhat more severe than those pertaining to the nursery where the soil is subjected to frequent tillage. As the result of experiments extending over some years, it has been found that comparatively small trees transplant much better than large ones, and that seedling-trees, or trees which have never been transplanted in the nursery, succeed as well as transplanted ones, provided they have been well "wrenched." It is somewhat difficult to define a "small" tree, as the different species that are grown vary considerably in their growth, but, to give some indication of what is meant, the average size of trees usually sent from this nursery is somewhat as follows: Larch, 12 in.; Corsican pine and heavy pine, 6 in.; Weymouth pine, 5 in.; Douglas fir, 8 in.; eucalypti, 6 in. Another very strong argument in favour of using small trees is that the cartage and handling costs less than is the case with large ones. To give some idea of what this means, it may safely be said that each tree which is grown in the nursery is handled, on the average, six times through the processes of sizing, lining-out, lifting and tying into bundles, carting, heeling-in, and finally planting in the permanent position on the plantation.