

CONICAL HILLS PLANTATION, OTAGO.

(Area, 3,672 acres; altitude, 400 ft. to 1,050 ft.; commenced operations, 1903.)

During the year 42.98 in. of rain fell on 186 days. The precipitations were distributed fairly well over the twelve months, and permitted work to be carried out without any lengthy intermissions. The maximum shade temperature was registered in February, it being 89°, whilst the lowest reached 22° on several occasions in July and August.

Tree-growth.—Generally an excellent season's tree-growth has resulted; but the condition of our larch-trees of all ages cannot be commented upon favourably. Their leaders continue to make good progress; but there is no mistaking the premature shedding of needles on the side branches, which appear to be affected more acutely near the base of the tree. It is perhaps undesirable to detail in length the progress of each variety of tree planted, as information in this respect printed in last year's report might again be applied rightly. Perhaps greater headway has been shown by the various *Piceas* and *Pinus Laricio*, all of which have shown their partiality for wet seasons. It was disappointing to find that poplar cuttings, planted on the higher levels, did not "root" with uniformity, and it is our intention to in future raise rooted poplars in the associated nursery. A trial planting of one-year-old *Pinus radiata* has given so much promise that we intend putting out, under similar conditions, over 100,000 yearlings during the coming season. Excepting in the well-sheltered valleys, the hardwoods—ash, oak, and sycamore—are failing to come up to expectations, and it is fortunate that the Department ceased operating with these varieties some years ago. There are, however, a sufficient number of hardwoods planted at this plantation to furnish all the data required for any future discussion on the question of ash and oak planting. Several small areas, originally containing ash and sycamore, have been replanted with more suitable trees; but there still remains a good deal of work to be accomplished in this direction. The advancement of *Sequoia sempervirens* or *Fagus sylvatica* does not justify the inclusion of either variety in the list of suitable trees for extensive planting, although the latter tree has not yet been utilized for under-planting, for which purpose the beech is highly recommended by continental writers. Both *Cupressus macrocarpa* and *Cupressus Lawsoniana* evidently find the unavoidable exposure detrimental to good progress, and we are thus compelled to place greatest reliance upon the pine family for afforestation under local conditions.

Pitting and Tree-planting.—Owing to the comparatively small output available from the local nursery and a large number of pits remaining unplanted from the previous year, it was only necessary to prepare some 104,400 pits, which were made by contract at 12s. 6d. per thousand. The area now being operated upon, however, is of a very rough nature, and the preparation of this ground, when pits are distanced 6 ft. apart, will cost in future 15s. per thousand, at which rate employees are able to make a reasonable wage.

The expenditure attached to the actual planting of 675,684 trees on new area amounted to £425 0s. 1d., which included heeling-in and distribution. In addition, some 23,080 trees were used for replanting purposes, and this labour was conducted chiefly on No. 1 plantation by the general maintenance staff.

Fire-preventive Measures.—Every advantage was taken of the early completion of nursery-work to obtain the services of both teams of horses for putting fire-breaks into an effective state. The ploughing, disking, or cultivating nearly 100 acres of ground was necessary this year; but the presence of thirty-five ewes and lambs over certain areas dispensed with the necessity of cultivating, whilst at the same time an equally satisfactory result was attained. Past experiments have shown the wisdom of extending the grazing idea at this station. The animals so far, having little inducement to wander amongst the trees, have created no damage, and do not require much attention, excepting perhaps during the lambing period.

Some eleven depots for the storage of fire-fighting appliances have been placed at convenient positions over the planted area, and it is needless to emphasize the greater security against the spread of fire that is afforded by having suitable fire-beating contrivances handy. Fuller details of the scheme are outlined in another portion of the report.

Surplus Fencing-material.—To permit of the area being systematically cleared of rabbits, it was necessary to erect temporary divisional fences, which have been from time to time removed as the land became afforested. As the whole of the reserve is now being operated upon, and the fences have fulfilled the purpose aimed at, they have been dismantled, and 230 chains of wire netting, 650 standards, ninety posts, and thirteen strainers have been stored in readiness for the enclosing of a further planting-area, which will likely be acquired during the ensuing season.

Cutting Noxious Weeds.—For some time past a considerable expenditure has been allocated annually to the cutting of Californian thistle and ragwort, and in several of the more fertile gullies these noxious plants have spread slightly. On no occasion, however, has it been deemed prudent to allow employees, with knives or hooks, to undertake cutting-work throughout the more densely timbered areas; but every effort is directed to control the noxious plants by attending to those that may prove detrimental to adjoining properties. As all surface vegetation is gradually suppressed with the advancement of tree-growth, the speedy eradication of thistles and ragwort is thus effected naturally.

General.—As might be expected, the item "General upkeep of plantations" is assuming greater proportions, and this year an expenditure of £1,204 16s. 4d. was devoted to such works as tree-pruning, removal of coarse herbage from young trees, replanting failures, rabbiting, repairing roads, caretaking, &c. The pruning consists principally in removing any double leader that becomes noticeable, although it is almost impossible to detect or remedy these defects amongst the well-advanced blocks of trees.