

1907.
NEW ZEALAND.

DEPARTMENT OF LANDS: STATE NURSERIES AND PLANTATIONS

(REPORT ON).

Presented to both Houses of the General Assembly by Command of His Excellency the Governor.

SIR,—

Department of Lands, Wellington, 11th June, 1907.

I have the honour to submit herewith report on that portion of the State Forests Branch of the Department which relates to the nurseries and plantations under the control of the Chief Forester, and provides for the afforestation of Crown lands in treeless localities.

In doing so, I would briefly mention the fact that 6,810 acres have now been planted with 15,309,823 trees, and as this branch of the Department was only constituted in 1896, and the sole source of revenue from which to defray the expenses of afforestation is the sale of timber in State forests, the result must be regarded as highly satisfactory under the circumstances. In addition, no less than twenty-two million trees were also grown in the nurseries, and of these nearly fifteen million are available for planting out in future seasons.

I have, &c.,

WILLIAM C. KENSINGTON,

Under-Secretary for Lands.

The Hon. Robert McNab, Minister of Lands.

REPORT BY CHIEF FORESTER.

To the Under-Secretary for Lands.

IN submitting the eleventh annual report, for the year ending the 31st March, 1907, I regret that the operations carried on in the South Island have not been attended with the success heretofore attained. This has been entirely due to the unprecedented dry season experienced at all South Island stations. In the North Island the usual success has been maintained, although a small percentage of loss occurred owing to exceptionally heavy rainfall during January. Reference to the table of rainfall shows that over 69 in. of rain fell at Rotorua, and nearly 74 in. at Ruatangata, while no less than 92 in. was recorded at Puhipuhi. The average for four North Island stations was 73·38 in., and in the South Island the average rainfall at the five nurseries was only 22·74 in., the lowest records being registered at Eweburn and Kurow with 13·38 in. and 13·97 in. respectively.

As the success attending the work of this branch of the Lands Department is in a great measure dependent on climatic conditions, the general result of the year's operations may be considered satisfactory, and I have to express my obligation to the staff generally for their strict attention to duties, interest, and enthusiasm displayed.

To the Inspector of Prisons and his staff (with whom we are so closely associated) our best thanks are due for the continued satisfactory results attending the employment of prison labour at the four plantations. The value of the work done during the year by prison labour is £5,173 1s. 9d., equal to £60 10s. 7d. per man, the average number employed being 78·90.

During 1905-6 3,254,778 trees were planted permanently on a total area of 1,435½ acres, while the past year's planting totals 5,209,228 trees, covering 1,992½ acres.

The total number of trees raised to date is 37,436,317, of which 14,849,830 are in nurseries and 15,309,823 planted permanently in twenty-three plantations, occupying a total area of 6,810 acres.

Although it is stated that 37,436,317 trees have been raised, yet as only 30,159,653 remain in the nurseries and plantations, a brief explanation as to the discrepancy is required.

A large number of young trees have died whilst in the seed-beds through various causes, such as drought, frost, depredation of insects, &c.; a certain proportion died during the operation of transplanting from nurseries to plantations; fire has also occasioned large losses, the recent disastrous outbreak at Dusky Hill alone accounting for 1,202,551 trees; whilst a great number have been used for shelter and ornamental purposes, and to act as fire-breaks in the plantations, &c., and are not reckoned in the total number available. In addition, various Government Departments and a few local bodies have from time to time been supplied with young trees for planting on their grounds, when such could be spared from the surplus stock on hand; and in several other ways plants that have actually been raised are excluded from the totals given as remaining in the nurseries and plantations.

The expenditure for the year amounts to £23,900 10s. 5d., the estimated value of plantations being omitted this year on the grounds that any such estimate is purely problematical, owing to data relating to the actual value of artificially raised forests in this colony being unavailable. In the statement of accounts appended to the report on each nursery will be seen the financial position of same, including the actual expenditure to date in comparison with the stock in hand and sent out, as well as general improvements by way of buildings, formation, &c. In the statement the values of improvements have been computed on actual cost of same, whilst the stocks of trees are valued according to the schedules attached, at prices averaging one-fifth of ruling trade rates.

The disastrous fire which occurred at Dusky Hill Plantation on the 27th October points to the necessity of enacting legislation for the adequate protection of forests generally, both artificial and natural. In the case under notice the plantation is bounded on two sides by the Pomahaka River, which forms an effective fire-break as well as a natural stock-proof boundary. A chain reserve, however, runs along the river-side, as well as a road-line of similar width. The road and reserve in question are largely used by anglers and sportsmen, as well as being a resort for picnic parties, who visit the locality in large numbers during the summer.

Both for the protection of the adjoining forest and for the convenience of visitors the Department prepared convenient camping-places, with fireplaces built of stone, a supply of dry firewood, and a cleared space to prevent the possible spread of fire therefrom. Notwithstanding these provisions the camps are seldom used, and very often parties take no care to extinguish their fires, leaving such work to the employees, who are on duty until dusk every day in the year.

The fire which resulted in the destruction of about two-fifths of the forest area, and valued at £8,536 16s. 10d., was due to the almost criminal negligence of an angler who elected to boil his billy, during a fierce north-west gale, at a spot where ordinary common-sense would have suggested extreme danger. Fanned by the furious wind, the flames spread with alarming rapidity across some two miles of young forest, which was more or less destroyed except amongst deciduous trees such as oak, ash, and sycamore, which were immediately pruned down to the ground-level and have subsequently made splendid growth. Proceedings were instituted against the person responsible for this enormous loss, with the result that a fine of £5 was inflicted. Had the information been laid under section 310 of the Criminal Code, the decision would probably have in some degree acted as a warning to careless sportsmen and others. The section above mentioned is as follows: "Every one who wilfully sets fire to any wood, coppice, or plantation, or to any indigenous tussock, grass, heath, gorse, furze, or fern, is liable to fourteen years' imprisonment, with hard labour." And by section 73, "All persons aiding and abetting in the commission of the crime are liable to the same penalty." If the convicted offenders are too young for imprisonment they may be detained in an industrial school as youthful criminals, and their parents, in that case, have to pay for their maintenance.

There is further provision in the State Forests Act in regard to persons lighting fires and intentionally or negligently allowing the same to spread, for which the penalty is by way of fine not exceeding £50, in addition to recovery of the amount of any damage done. It may be pointed out, however, that the class of persons likely to start fires are not usually in a position to pay any such fine, far less pay for the damage done—in the case under notice amounting to £8,500.

In regard to trespass on any State forest, the penalty is by fine not exceeding £50, but, as in fire-lighting, there is no alternative by way of imprisonment.

The inadequacy of our fire-breaks have been severely criticised by enthusiastic anglers, who, no doubt, fear their probable exclusion from this favourite fishing-ground in future. I am, however, assured by the plantation employees that if the present fire-breaks had been 20 chains in width instead of 1 chain they would have been none the more effective, as the immense body of flame carried live embers across gullies fully 20 chains distant, igniting the plantation on the opposite ridge, whilst the gullies were left unharmed. Although there were many willing hands ready to assist in subduing the fire, it was quite impossible to render effectual service, owing to the intense heat, and more especially as fresh outbreaks were occurring many chains in advance of the main body.

In reality fire-breaks are only effective in stopping a fire unaccompanied by wind, or in the case of a fire burning back against the wind. On Dusky Hill Plantation there are about six miles of fire-breaks, averaging 1 chain in width and occupying an area of 45 acres out of the total acreage planted—viz., 800 acres. Owing to the configuration of the land it is quite impossible to further extend these fire-breaks on ploughable lines unless hand-labour is resorted to for keeping down growth—a proposal quite out of the question on the score of expense. It has been suggested that the Department should burn the grass and other herbage which appears on the fire-breaks between each annual ploughing. Such a course, however, is almost impossible, as, in addition to the difficulty of burning growth only a few months old, there is the enormous risk of fire getting beyond the control of the workmen, more especially as this work would be an annual one extending over a period of from sixty to eighty years.

Ploughing seems to be not only the cheapest but the most effective method of keeping growth in check, but even by this means the work is a very expensive and annually increasing one, as for every 100 acres planted in forest there are approximately 5 acres laid out in fire-breaks.

Computed by the present annual output of trees—viz., five million, covering roughly 1,800 acres—there are 90 acres of fire-breaks added yearly, which must be maintained, either by plough, or, where this is impracticable, by manual labour.

CONTROL OF STATE FORESTS.

At present no officer of this branch has any legal status regarding the protection of State forests, plantations, or nurseries, and, although nominally under the control of the Chief Forester, all such areas are under the jurisdiction of the Conservator of State Forests for the several land districts. The difficulty is at present got over by appointing officers of the State Forests Branch as Crown Land Rangers, who can then act under the direct instructions of the Conservators of Forests.

Foresters in charge of valuable plantations might be armed with the power of special constables, empowering them to arrest suspected persons if necessary, as unless some such provision is made it is quite possible for an unknown offender to give a fictitious name, and thus escape justice.

GENERAL REMARKS ON THE SUITABILITY OF TREES FOR VARIOUS LOCALITIES.

It is almost impossible to state with accuracy whether the species of trees now being extensively planted by this Department are altogether suitable for general planting in the several localities. Soil, aspect, elevation, rainfall, shelter or exposure, time of planting, and weather experienced during planting are the dominating factors for success or failure, and, as some of these conditions necessarily vary more or less (even in a single acre), the difficulty of stating definitely whether a certain species is successful or not at a given locality is apparent. Take the larch, for instance: Generally speaking, this tree does well at all stations from Rotorua southwards. It is, however, injuriously affected during exceptionally dry seasons, such as occurred last year at Tapanui, Otago Central, Marlborough, and in a lesser degree at Hanmer Springs; whilst at Rotorua a late spring frost cut back the leaders of many thousands planted in varying aspects, while those on a northern aspect were not so affected. In the South Island, generally, larch planted on lands with a northern aspect would certainly result in failure; and even in such a position, with a free, open, gravelly soil, which became dust-dry during a drought, this tree has suffered more or less.

There was considerable loss amongst larch at Dumgree and Gimmerburn Plantations where planted on flats, where the soil is naturally deep and heavy, whilst on the steep southern slopes hardly a single failure occurred. But the most remarkable feature here is the loss amongst the Oregon pine, Weymouth, pitch, and Corsican pines at Dumgree, the latter being generally considered one of the best of drought-resisting species.

At Hanmer Springs the losses were confined to a few dozen larch-trees, from 5 ft. to 8 ft. high, which had inadvertently been planted on a gravelly patch.

Amongst the pine family, probably no species is more generally adapted for extensive planting than *Pinus Laricio*: the seed is cheap and easily raised, and its timber is of excellent quality. The chief disadvantage, however, is failure in transplanting and susceptibility to spring frosts, the latter occurring only at Waiotapu. This year it has been demonstrated by losses at Dumgree that a certain degree of moisture is necessary for its entire success, although in other dry localities, even where planted on pure gravel, no deaths have taken place. As the foregoing shows, the question of the adaptability of a tree for a given locality depends on such varied circumstances that it is quite impossible to supply reliable information.

Of the correspondence received by this Department, fully one-half relates to this subject, and it is seldom a correspondent requiring information thereon offers any further facts than that "the soil is good" or "the land is poor."

Amongst the hundreds of species of trees grown in New Zealand the writer can only name with certainty two examples which will thrive in any position or soil (except swamps), and in any portion of the colony from sea-level up to the limit of tree-growth—viz., *Pinus ponderosa* and its variety *Pinus Benthamiana*. So far as the experience of the officers of this Department goes, the species named have never been injured by frosts, heat, drought, or insect life, whilst thriving specimens may be seen on such dissimilar lands as pure sea-sand, pumice, gravel, heavy, moist, or dry clay, to almost solid rock.

A question frequently asked at each of the stations by settlers and others contemplating planting is, "What kind of trees do best?" The answer is that all the species grown at each of the nurseries are generally suitable for that particular district, provided the individual requirements of each species are duly considered. Precisely what these requirements consist of—varying as they do with each species—cannot be definitely stated without a personal acquaintance of the particular locality, and practical experience.

TREE-PLANTING ON PUMICE LANDS.

In the Waiotapu district the available area of Crown land totals over 1,000,000 acres, of which 22,900-odd acres has been leased on pastoral license, yielding an annual revenue of £61 15s. 6d. At present an additional area of 3,500 acres is being enclosed, which necessitates the erection of 800 chains of fencing, at a total cost of £600, or 15s. per chain. This area will, at the present rate of planting, be sufficient for five years.

At Whakarewarewa Plantation fencing has been imperative, owing to the boundaries being adjacent either to private lands or much-frequented tourist routes, and where stray cattle and horses are somewhat numerous. This cattle-nuisance is, unfortunately, a very serious problem in connection with the planting of this reserve. Included within the fence-line are some 300 acres of Native land covered with dense forest, which it is impossible to fence, owing to the precipitous nature of the boundary-lines. Here are a large number of Native-owned cattle, which trample and destroy the young trees during the night, taking refuge in the bush during the day. On several occasions some twenty-five mounted men have endeavoured to drive them out, but the cattle being of a particularly wild nature the efforts proved unsuccessful. Shooting was then resorted to, with the result that the Native owners laid a criminal charge against the writer and an employee for wilfully shooting a bull. The case was, however, dismissed by the Magistrate, though further attempts to destroy the herd have not been deemed prudent, owing to the risk of further charges of a personal nature.

Under the State Forests Act the penalty for allowing any animal to wander on any reserve is a fine not exceeding £5, in addition to recovery of amount of damage done, and it is further provided that any Ranger or other person may drive cattle to the nearest public pound. In the present case the cattle are owned by several Natives who cannot remove them, owing to their practically wild state, nor can any number of persons succeed in driving them to a pound. Further, it is futile to sue a penniless

Native, either for allowing cattle to wander or for the damage they have done. As there does not appear to be any legal provision in the State Forests Act to allow of the shooting of these animals the cattle are still in possession, and are doing more or less damage to the plantation generally.

Another matter which is giving the officers at the Whakarewarewa Plantation considerable anxiety is the presence of a herd of red-deer recently liberated on an adjoining pastoral leasehold of 6,300 acres, at an annual rental of £12 12s. As the herd have already been seen on the reserve, it is a matter for the decision of the Government whether tree-planting is to be continued at the risk of being eaten and destroyed by these deer, which are rapidly increasing.

The following summaries show the result of the year's operations and present position :—

TABLE A.—SUMMARY OF RESULTS.

| Nursery or Plantation. | Number of Trees raised in Nurseries and Plantations, 1906-7. | Total Number of Trees raised, 1896 to 1907. | Values of Same. | | | Number of Trees in Nurseries or Plantations on 31st March, 1907. | Values of Same. | | | Number of Trees planted, 1906-7. | Area planted in 1906-7. | Total Area planted to 31st March, 1907. |
|--------------------------------|--|---|-----------------|----|----|--|-----------------|----|----|----------------------------------|-------------------------|---|
| | | | £ | s. | d. | | £ | s. | d. | | Acres. | Acres. |
| Eweburn Nursery .. | 307,550 | 1,945,162 | 4,753 | 6 | 11 | 946,550 | 1,833 | 17 | 3 | .. | .. | .. |
| Hammer Springs Nursery .. | 875,400 | 2,253,400 | 2,281 | 15 | 0 | 2,091,750 | 3,586 | 5 | 9 | .. | .. | .. |
| Kurow Nursery .. | 176,000 | 176,000 | 178 | 0 | 0 | 297,600 | 447 | 17 | 0 | .. | .. | .. |
| Rotorua Nursery .. | 2,902,600 | 19,552,982 | 37,382 | 1 | 8 | 6,565,050 | 8,871 | 12 | 6 | .. | .. | .. |
| Ruatangata Nursery .. | 516,775 | 1,091,022 | 2,488 | 14 | 0 | 733,390 | 1,434 | 5 | 10 | .. | .. | .. |
| Starborough Nursery .. | 750,500 | 3,281,550 | 6,154 | 4 | 6 | 1,357,700 | 2,054 | 11 | 0 | .. | .. | .. |
| Tapanui Nursery .. | 973,150 | 7,524,855 | 18,434 | 17 | 2 | 2,852,790 | 4,971 | 3 | 6 | .. | .. | .. |
| Conical Hills Plantation .. | 236,500 | 811,796 | .. | .. | .. | 2,943,379 | * | .. | .. | 632,708 | 281½ | 946½ |
| Dumgree Plantation .. | .. | .. | .. | .. | .. | 1,061,661 | * | .. | .. | 561,175 | 193½ | 385½ |
| Dusky Hill Plantation .. | 15,050 | 411,750 | .. | .. | .. | †801,032 | * | .. | .. | 27,000 | .. | †331 |
| Gimmerburn Plantation .. | .. | .. | .. | .. | .. | 415,695 | * | .. | .. | 243,500 | 70½ | 146½ |
| Hammer Springs Plantation .. | .. | 374,200 | .. | .. | .. | 1,271,770 | * | .. | .. | 502,500 | 177 | 462 |
| Kaingaroa Plains Plantation .. | .. | .. | .. | .. | .. | 44,275 | * | .. | .. | .. | .. | 21 |
| Naseby Plantation .. | .. | .. | .. | .. | .. | 360,185 | * | .. | .. | 6,500 | .. | 132½ |
| Punipuhi Plantation .. | 1,000 | 13,600 | .. | .. | .. | 461,005 | * | .. | .. | 178,245 | 248½ | 700 |
| Raincliff Plantation .. | .. | .. | .. | .. | .. | 50,000 | * | .. | .. | .. | .. | 206½ |
| Ruatangata Plantation .. | .. | .. | .. | .. | .. | 7,224 | * | .. | .. | .. | .. | 22 |
| Waitapu Plantation .. | .. | .. | .. | .. | .. | 4,341,704 | * | .. | .. | 1,642,175 | 561 | 1,776½ |
| Waitabuna Plantation .. | .. | .. | .. | .. | .. | 26,825 | * | .. | .. | 26,825 | 11 | 11 |
| Whakarewarewa Plantation .. | .. | .. | .. | .. | .. | 3,391,436 | * | .. | .. | 1,388,600 | 450 | 1,668½ |
| Domains, reserves, &c. .. | .. | .. | .. | .. | .. | 133,632 | .. | .. | .. | .. | .. | .. |
| Totals .. | 6,754,525 | 37,436,317 | 71,672 | 19 | 3 | 30,159,653 | 23,198 | 12 | 10 | 5,209,228 | 1,992½ | 6,810 |

* Reliable estimates of values not available. † 1,302,551 trees burnt on 474½ acres, deducted from totals.

TABLE B.—SUMMARY of EXPENDITURE and VALUES.

| | Expenditure for Year ending 31st March, 1907. | | | Expenditure from September, 1896, to 31st March, 1907. | | | Value of Trees grown and Improvements in Nurseries, 1906-7. | | | Value of Trees in Stock and Improvements in Nurseries, from Inception to 31st March, 1907. | | |
|---|---|----|----|--|----|----|---|----|----|--|----|----|
| | £ | s. | d. | £ | s. | d. | £ | s. | d. | £ | s. | d. |
| Amount at 31st March, 1906 .. | 89,779 | 9 | 11 | .. | .. | .. | .. | .. | .. | .. | .. | .. |
| Eweburn Nursery .. | 791 | 6 | 8 | 8,717 | 5 | 5 | 2,134 | 18 | 6 | 6,300 | 19 | 4 |
| Hammer Springs Nursery .. | 1,148 | 4 | 7 | 2,676 | 12 | 7 | 4,187 | 7 | 1 | 4,877 | 7 | 10 |
| Tapanui Nursery .. | 1,517 | 14 | 4 | 13,385 | 7 | 8 | 5,381 | 7 | 7 | 11,883 | 15 | 8 |
| Rotorua Nursery .. | 3,848 | 17 | 3 | 21,612 | 4 | 5 | 9,993 | 0 | 7 | 15,727 | 19 | 6 |
| Starborough Nursery .. | 1,107 | 10 | 7 | 7,630 | 19 | 5 | 2,423 | 2 | 5 | 6,712 | 9 | 2 |
| Ruatangata Nursery .. | 1,492 | 19 | 5 | 4,384 | 2 | 3 | 2,182 | 6 | 4 | 3,973 | 16 | 4 |
| Kurow Nursery .. | 1,741 | 2 | 6 | 2,491 | 2 | 6 | 1,765 | 14 | 4 | 2,515 | 14 | 4 |
| Conical Hills Plantation .. | 2,782 | 11 | 5 | 8,283 | 1 | 8 | .. | .. | .. | .. | .. | .. |
| Naseby Plantation .. | 75 | 4 | 6 | 1,832 | 3 | 5 | * | .. | .. | * | .. | .. |
| Gimmerburn Plantation .. | 608 | 2 | 2 | 1,605 | 5 | 5 | * | .. | .. | * | .. | .. |
| Dusky Hill Plantation .. | 582 | 4 | 9 | 8,599 | 9 | 1 | * | .. | .. | * | .. | .. |
| Raincliff Plantation .. | .. | .. | .. | 1,104 | 12 | 5 | * | .. | .. | * | .. | .. |
| Hammer Springs Plantation .. | 683 | 1 | 6 | 3,250 | 10 | 9 | * | .. | .. | * | .. | .. |
| Dumgree Plantation .. | 2,556 | 3 | 0 | 8,796 | 18 | 0 | * | .. | .. | * | .. | .. |
| Whakarewarewa Plantation .. | 2,482 | 18 | 2 | 10,339 | 18 | 1 | * | .. | .. | * | .. | .. |
| Waitapu Plantation .. | 504 | 8 | 4 | 3,661 | 19 | 7 | * | .. | .. | * | .. | .. |
| Kaingaroa Plains Plantation .. | 35 | 2 | 6 | 357 | 15 | 6 | * | .. | .. | * | .. | .. |
| Punipuhi Plantation .. | 1,237 | 9 | 7 | 3,103 | 9 | 8 | * | .. | .. | * | .. | .. |
| Waitaki Plantation .. | 44 | 7 | 9 | 44 | 7 | 9 | * | .. | .. | * | .. | .. |
| Naseby Domain .. | .. | .. | .. | 10 | 0 | 0 | * | .. | .. | * | .. | .. |
| Albury Plantation .. | .. | .. | .. | 72 | 4 | 11 | * | .. | .. | * | .. | .. |
| Torea Neck Reserve .. | .. | .. | .. | 1 | 7 | 6 | * | .. | .. | * | .. | .. |
| Waitabuna Plantation .. | 115 | 4 | 10 | 154 | 14 | 5 | * | .. | .. | * | .. | .. |
| Wellington Nursery (proposed) .. | .. | .. | .. | 11 | 3 | 11 | .. | .. | .. | .. | .. | .. |
| Supervision thermal reserves, &c. .. | .. | .. | .. | 336 | 16 | 9 | .. | .. | .. | .. | .. | .. |
| Clerical assistance .. | 118 | 15 | 0 | 523 | 15 | 0 | .. | .. | .. | .. | .. | .. |
| Postages and telegrams (January to March) .. | 18 | 5 | 0 | 18 | 5 | 0 | .. | .. | .. | .. | .. | .. |
| Contingencies: Telephones, stationery, office material, travelling-expenses, and transfer of officers, &c. .. | 408 | 16 | 7 | 674 | 7 | 3 | .. | .. | .. | .. | .. | .. |
| Totals .. | 113,680 | 0 | 4 | 113,680 | 0 | 4 | 28,067 | 16 | 10 | 51,992 | 2 | 2 |

* Reliable estimates of values not available.

TABLE C.—OUTPUT OF TREES FROM NURSERIES.

| Nursery. | During 1906-7. | | Since 1896. | |
|-----------------------|----------------|-------------|-------------|------------|
| | Number. | Value. | Number. | Value. |
| | | £ s. d. | | £ s. d. |
| Eweburn | 250,000 | 732 3 0 | 1,022,562 | 2,989 12 5 |
| Hanmer Springs | 496,000 | 1,158 1 6 | 936,026 | 2,445 0 7 |
| Tapanui | 709,733 | 2,090 17 3 | 4,832,063 | 15,734 1 8 |
| Rotorua | 3,282,361 | 7,000 17 9 | 12,987,932 | 28,510 9 2 |
| Ruatangata | 177,245 | 389 11 4 | 461,005 | 1,267 6 8 |
| Starborough | 1,292,175 | 2,329 8 9 | 1,923,950 | 4,113 16 6 |
| Totals | 6,207,514 | 13,700 19 7 | 22,163,438 | 55,060 7 0 |

TABLE D.—MINIMUM AND MAXIMUM READINGS OF THERMOMETER (FAHRENHEIT) AND RAINFALL AT VARIOUS STATIONS FOR THE YEAR.

| Station. | Temperature. | | Rainfall. | |
|-------------------------------|--------------|----------|-----------|-----------------|
| | Minimum. | Maximum. | Inches. | Number of Days. |
| | Deg. | Deg. | | |
| Eweburn Nursery | 6 | 89 | 13·38 | 94 |
| Tapanui Nursery | 21 | 88 | 30·37 | 134 |
| Kurow Nursery | 19 | 97½ | 13·97 | 80 |
| Hanmer Springs Nursery | 18 | 82 | 34·71 | 117 |
| Starborough Nursery | 21 | 95 | 21·28 | 102 |
| Rotorua Nursery | 19 | 84 | 69·03 | 174 |
| Ruatangata Nursery | 28 | 88 | 73·97 | 194 |
| Waiotapu Plantation | 16 | 85 | 58·22 | 137 |
| Puhipuhi Plantation | 28 | 88 | 92·28 | 158 |

TABLE E.—AVERAGE NUMBER OF WORKMEN EMPLOYED DAILY AT THE VARIOUS NURSERIES AND PLANTATIONS DURING THE YEAR 1906-7.

| | Free Labour. | Prison Labour. | | Free Labour. | Prison Labour. |
|--------------------------------------|--------------|----------------|-------------------------------------|--------------|----------------|
| | No. | | | No. | No. |
| Eweburn Nursery | 5·15 | ... | Dusky Hill Plantation | 6·00 | ... |
| Tapanui Nursery | 13·00 | ... | Conical Hills Plantation | 17·00 | ... |
| Hanmer Springs Nursery | 6·00 | ... | Waitaki Plantation | 0·25 | ... |
| Kurow Nursery | 7·00 | ... | Hanmer Springs Plantation | 2·00 | 14·50 |
| Starborough Nursery | 8·00 | ... | Dumgree Plantation | 21·79 | 17·28 |
| Rotorua Nursery | 29·49 | ... | Whakarewarewa Plantation | 20·52 | 11·50 |
| Ruatangata Nursery | 10·00 | ... | Waiotapu Plantation | 2·00 | 35·62 |
| Gimmerburn Reserve Plantation Survey | 2·05 | ... | Kaingaroa Plains Plantations | 0·25 | ... |
| Naseby Paddock Plantation | 0·45 | ... | Puhipuhi Plantation | 10·16 | ... |
| | | | Waitahuna Plantation | 0·25 | ... |
| | | | | 161·36 | 78·90 |

H. J. MATTHEWS,
Chief Forester.

The following are the reports of various stations:—

EWEBURN NURSERY, NEAR NASEBY, OTAGO.

(Area, 49 acres; altitude, 1,400 ft.)

The rainfall during the year has been very slight, the total being 13·38 in., which fell on ninety-four days, the maximum fall being 2·27 in. in December. This has been the lowest record for rain since the year 1897-98.

The highest reading of the thermometer was 89 deg., on the 24th of December, and the lowest 6 deg. (26 deg. of frost), on the night of the 26th June. Frost occurred on 166 nights.

Owing to the season being very dry the general growth of nursery stock has not been too good, although the strike of lined-out stuff has been very good.

The crop of seedlings is fair, with the exception of larch, which is very poor.

The number of trees lined out was 400,900, at a cost of 2s. 10½d. per thousand. The number of trees sent to Government plantations was 250,000, their total value being £732 3s.

The number of trees sent out to date amounts to 1,022,562, their total value being £2,989 12s. 5d.

The number of trees in the nursery at the 31st March was 946,550, and their value £1,832 17s. 3d. The details of above will be found on Schedules 1 to 4.

All land not required for tree-growing was sown down in oats and grass for horse-feed, but owing to the dry season the crops were poor, oats yielding a moderate result, while hay was a total failure.

During the year the work of keeping down weeds, &c., has been carried out as far as possible, buildings painted, and tools, implements, &c., kept in good repair.

One foal has been reared during the year, and it is valued at £10.

The average number of men employed was 5·157 (wages).

The following is a record of the rainfall and temperature for the year :—

| Month. | Rainfall. | Number of Days Rain fell. | Maximum Tempera- ture. | Date. | Minimum Tempera- ture. | Date. | Number of Days on which Frost occurred. |
|---------------|-----------|---------------------------------|------------------------------|------------|------------------------------|-------|---|
| 1906. | Inches. | | Degrees. | | Degrees. | | |
| April ... | 1·60 | 9 | 64 | 19th, 20th | 23 | 1st | 14 |
| May ... | 1·04 | 9 | 56 | 2nd | 21 | 30th | 19 |
| June ... | 1·38 | 5 | 56 | 21st, 28th | 6 | 26th | 23 |
| July ... | 0·68 | 9 | 48 | 11th | 14 | 16th | 26 |
| August ... | 0·64 | 6 | 56 | 26th | 12 | 7th | 29 |
| September ... | 0·72 | 8 | 65 | 28th | 20 | 17th | 19 |
| October ... | 1·09 | 7 | 68 | 5th, 13th | 22 | 1st | 14 |
| November ... | 0·84 | 6 | 78 | 11th | 24 | 10th | 13 |
| December ... | 2·27 | 8 | 89 | 24th | 30 | 20th | 4 |
| 1907. | | | | | | | |
| January ... | 0·55 | 4 | 85 | 21st | 30 | 29th | 3 |
| February ... | 0·83 | 10 | 86 | 24th | 30 | 26th | 1 |
| March ... | 1·74 | 13 | 81 | 7th | 29 | 19th | 1 |
| Totals ... | 13·38 | 94 | ... | ... | ... | ... | 166 |

Statement of Accounts.

| | Expenditure. | £ | s. | d. |
|---------------------------------|--------------|--------|----|----|
| Amount at the 31st March, 1906 | ... | 7,925 | 18 | 9 |
| Tree-growing | ... | 365 | 3 | 9 |
| General maintenance and repairs | ... | 230 | 19 | 9 |
| Nursery-formation | ... | 26 | 14 | 3 |
| Horse-feed, purchased and grown | ... | 42 | 4 | 4 |
| Tree-seeds | ... | 45 | 1 | 0 |
| Tools, implements, &c. | ... | 56 | 19 | 2 |
| Fuel and freight | ... | 9 | 13 | 5 |
| Supervision | ... | 14 | 11 | 0 |
| | | £8,717 | 5 | 5 |

Values of Stock

| | £ | s. | d. | £ | s. | d. | £ | s. | d. |
|--------------------------------|-------|-----|-----|-------|----|----|--------|----|----|
| Amount at the 31st March, 1906 | ... | ... | ... | 6,340 | 10 | 7 | | | |
| Less value of trees | 2,082 | 15 | 9 | | | | | | |
| " horse-feed | 44 | 4 | 0 | | | | | | |
| " tools written off | 47 | 10 | 0 | | | | | | |
| | | | | 2,174 | 9 | 9 | | | |
| Trees, as per Schedule 1 | ... | ... | ... | | | | 4,166 | 0 | 10 |
| " " 2 | ... | ... | ... | | | | 311 | 0 | 9 |
| " " 3 | ... | ... | ... | | | | 298 | 3 | 6 |
| Tools, implements, &c. | ... | ... | ... | | | | 1,223 | 13 | 0 |
| Nursery-formation | ... | ... | ... | | | | 63 | 8 | 8 |
| Horse-feed in stock | ... | ... | ... | | | | 26 | 14 | 3 |
| Value of foal | ... | ... | ... | | | | 15 | 0 | 0 |
| Improved value | ... | ... | ... | | | | 10 | 0 | 0 |
| | | | | | | | 183 | 18 | 4 |
| | | | | | | | £6,300 | 19 | 4 |

Summary.

| | £ | s. | d. |
|---|-------|----|----|
| Value of present stock and general improvements | 6,300 | 19 | 4 |
| Value of trees sent out since initiation of nursery | 2,989 | 12 | 5 |
| | 9,290 | 11 | 9 |
| Expenditure to date | 8,717 | 5 | 5 |
| Credit balance | £573 | 6 | 4 |

Stock in Hand.

SCHEDULE 1.—Details of One-year-old Trees, grown 1906-7. (Eleventh Crop.)

| Name of Tree. | Number in Seed-beds. | Height in Inches. | Amount of Seed sown. | Value per Thousand. | Total Value. | Remarks. |
|-----------------------|----------------------|-------------------|----------------------|---------------------|--------------|-----------------|
| | | | Lb. | £ s. d. | £ s. d. | |
| Pinus Austriaca | 78,600 | 2 | 14 | 1 0 0 | 78 12 0 | Very fair. |
| " Laricio | 162,000 | 2 | 42 | 1 0 0 | 162 0 0 | Very even crop. |
| " ponderosa | 41,000 | 2 | 25 | 1 0 0 | 41 0 0 | Good. |
| " Jeffreyi | 1,450 | 2 | 1 | 1 5 0 | 1 16 3 | Very fair. |
| " Torreyana | 300 | 2 | 1 | 1 5 0 | 0 7 6 | Strong. |
| " Benthamiana | 12,200 | 2 | 7 | 1 5 0 | 15 5 0 | Very good. |
| Larix Europæa | 12,000 | 2 | 140 | 1 0 0 | 12 0 0 | Poor. |
| Totals | 307,550 | .. | .. | .. | 311 0 9 | |

SCHEDULE 2.—Two-year-old Trees, grown 1905-6. (Tenth Crop.)

| Name of Tree. | Number in Seed-beds. | Height in Inches. | Value per Thousand. | Total Value. | Remarks. |
|-----------------------|----------------------|-------------------|---------------------|--------------|----------------|
| | | | £ s. d. | £ s. d. | |
| Pinus Austriaca | 20,900 | 3 | 1 5 0 | 26 2 6 | Sturdy. |
| " ponderosa | 18,000 | 4 | 1 5 0 | 22 10 0 | Strong plants. |
| " Laricio | 66,500 | 3 | 1 5 0 | 88 2 6 | Very sturdy. |
| " Jeffreyi | 200 | 4 | 1 10 0 | 0 6 0 | Strong plants. |
| " Benthamiana | 2,000 | 4 | 1 10 0 | 3 0 0 | Very strong. |
| Larix Europæa | 130,500 | 6 | 1 5 0 | 163 2 6 | Fair growth. |
| Totals | 238,100 | .. | .. | 298 3 6 | |

SCHEDULE 3.—Three-year-old Trees, grown 1904-5. (Ninth Crop.)

| Name of Tree. | Number in Nursery Lines. | Height in Inches. | Value per Thousand. | Total Value. | Remarks. |
|-----------------------|--------------------------|-------------------|---------------------|--------------|------------------------|
| | | | £ s. d. | £ s. d. | |
| Pinus Austriaca | 154,300 | 6 | 3 0 0 | 462 18 0 | Very good. |
| " Laricio | 73,500 | 6 | 3 0 0 | 220 10 0 | " |
| " ponderosa | 16,800 | 8 | 3 0 0 | 50 8 0 | Very fair. |
| Larix Europæa | 74,100 | 8 | 3 0 0 | 222 6 0 | Fair growth. |
| Cytisus vulgare | 35,000 | 10 | 2 5 0 | 78 15 0 | Strong plants. |
| Larix Europæa | 47,200 | 12 | 4 0 0 | 188 16 0 | Very strong (4 years). |
| Totals | 400,900 | .. | .. | 1,223 13 0 | |

SCHEDULE 4.—Trees transferred from Eweburn Nursery to Forest Plantations, &c., 1906-7.

| Where sent. | Name of Tree. | Number. | Value per Thousand. | Total Value. |
|-------------------------------|-----------------------|---------|---------------------|--------------|
| | | | £ s. d. | £ s. d. |
| Gimmerburn Plantation Reserve | Pinus Austriaca | 180,200 | 3 0 0 | 540 12 0 |
| | Larix Europæa | 53,100 | 3 0 0 | 159 6 0 |
| | Cytisus vulgare | 10,200 | 1 5 0 | 12 15 0 |
| | | 243,500 | | 712 13 0 |
| Naseby Paddock Plantation | Pinus Austriaca | 5,250 | 3 0 0 | 15 15 0 |
| | " ponderosa | 1,250 | 3 0 0 | 3 15 0 |
| | | 6,500 | | 19 10 0 |
| Totals | | 250,000 | .. | 732 3 0 |

A. W. ROBERTS,
Nurseryman in Charge.

HANMER SPRINGS NURSERY, CANTERBURY.

(Area, 26 acres ; approximate altitude, 1,225 ft.)

The weather conditions experienced during the year were somewhat unfavourable for tree-growing, but the crops grown are, on the whole, very good.

The rainfall amounted to 34·71 in., falling on 117 days; the heaviest fall being 5·42 in. during April, and the lowest monthly fall recorded 1·05 in October. The rainfall for 1905-6 was 62·18 in.

The maximum shade temperature was 82 deg. on 9th January, and the minimum recorded was 18 deg. on 30th July.

Seed-sowing was commenced on the 13th October, and, owing to the very favourable weather experienced while this work was in progress, it was completed on the 25th of the same month. Owing to several weeks of very dry weather immediately following completion of seed-sowing, germination extended over a much longer period than usual, but eventually the principal species sown yielded excellent crops; the larch, Corsican, and Austrian pines being particularly well-grown healthy plants. *Pinus ponderosa* and *Benthamiana* germinated very thinly, but these have subsequently become strong plants.

Two-year-old larch in seed-beds have made good growth, and one-half of these will be suitable for transfer to plantation this season.

Transplanting of one-year-old trees was commenced on the 14th August and completed on the 12th October, under favourable weather conditions.

Trees to the number of 924,466 were lined out at a labour cost of 1s. 8½d. per thousand, and 350,000 were lined in at 1s. 5d. per thousand; the total area occupied being 6 acres.

The experiment of lining out trees at 2 in. apart in nursery lines instead of 4 in. as formerly was an entire success, particularly as regards larch, which have grown to fine straight plants with a very small percentage having double leaders.

The entire crop of lined-out and lined-in trees have made good growth, and the percentage of deaths is small considering the exceptionally dry season experienced. *Pinus Laricio* and *Picea sitchensis* have not made such good progress as the other species transplanted, probably owing to their being transplanted immediately preceding a long spell of very dry weather.

The number of trees raised in the nursery during the year was 875,400, their value being £879 15s.

The number of trees in the nursery at the 31st March was 2,091,750, valued at £3,586 5s. 9d.

Trees to the number of 496,000, valued at £1,158 1s. 6d., were transferred to the plantation during the year.

The estimated number of trees available for planting during the coming planting-season is 750,000.

The number of trees grown in nursery since its inception to date is 2,253,400, valued at £2,281 15s., and the number transferred to the plantation to date is 936,026, valued at £2,445 0s. 7d.

Buildings.—Men's quarters, consisting of two bedrooms, kitchen, and bath-room, with all necessary conveniences, were completed during January, and comfortable accommodation is now available on the nursery for eight employees.

A galvanised-iron sizing-shed (30 ft. by 15 ft.) was erected, and the sizing of trees can now be carried on with comfort and convenience during weather unfit for outdoor work; this building is also used for the storage of tools, &c.

An implement-shed (16 ft. by 15 ft.) was also erected, and all nursery implements can now be conveniently stored when not in use.

The roads throughout the nursery were graded where necessary, and those on which the traffic is heaviest gravelled.

Nursery-extension.—An area of 7 acres was broken up for this purpose during the winter, and has since been drained and partly cultivated and graded in preparation for lining out in the spring.

Several small areas of spare land have been prepared for ornamental plantations, and will be planted during the spring.

About 2 tons of oaten sheaves was grown on spare land, also 2 tons of horse-carrots and a quantity of swedes.

The daily average number employed was five men and one boy (free labour).

The following is a record of the rainfall and temperatures for the year:—

| Month. | Rainfall. | Number of Days Rain fell. | Maximum Temperature. | Date. | Minimum Temperature. | Date. |
|---------------|-----------|---------------------------|----------------------|-------|----------------------|-------|
| 1906 | Inches. | | Degrees. | | Degrees. | |
| April ... | 5·42 | 12 | 74 | 19th | 27 | 13th |
| May ... | 3·80 | 10 | 66 | 5th | 24 | 6th |
| June ... | 2·26 | 7 | 62 | 24th | 19 | 26th |
| July ... | 4·86 | 15 | 60 | 25th | 18 | 30th |
| August ... | 1·23 | 6 | 66 | 27th | 20 | 7th |
| September ... | 3·53 | 14 | 74 | 28th | 30 | 22nd |
| October ... | 1·05 | 6 | 79 | 30th | 30 | 3rd |
| November ... | 3·64 | 12 | 82 | 24th | 32 | 10th |
| December ... | 1·15 | 6 | 90 | 22nd | 33 | 15th |
| 1907. | | | | | | |
| January ... | 1·91 | 8 | 94 | 10th | 34 | 30th |
| February ... | 2·70 | 8 | 94 | 16th | 42 | 1st |
| March ... | 3·16 | 13 | 92 | 3rd | 35 | 26th |
| Totals ... | 34·71 | 117 | ... | ... | ... | ... |

Statement of Accounts.

| Expenditure. | | | | £ | s. | d. |
|---------------------------------|-----|-----|-----|--------|----|----|
| Amount at the 31st March, 1906 | ... | ... | ... | 1,528 | 8 | 0 |
| Tree-growing | ... | ... | ... | 471 | 14 | 10 |
| General maintenance and repairs | ... | ... | ... | 49 | 6 | 6 |
| Nursery-formation | ... | ... | ... | 103 | 12 | 9 |
| Horse-feed, purchased and grown | ... | ... | ... | 28 | 3 | 4 |
| Manures | ... | ... | ... | 6 | 16 | 4 |
| Tree-seeds | ... | ... | ... | 44 | 1 | 9 |
| Tools, implements, &c. | ... | ... | ... | 60 | 9 | 2 |
| Water-supply, Extension of | ... | ... | ... | 20 | 10 | 2 |
| Buildings | ... | ... | ... | 314 | 16 | 5 |
| Miscellaneous | ... | ... | ... | 24 | 11 | 4 |
| Supervision | ... | ... | ... | 24 | 2 | 0 |
| | | | | £2,676 | 12 | 7 |

Values of Stock.

| | £ | s. | d. | £ | s. | d. | £ | s. | d. |
|--------------------------------|-------|-----|-----|-------|----|----|--------|----|----|
| Amount at the 31st March, 1906 | ... | ... | ... | 3,034 | 10 | 6 | | | |
| Less value of trees | 2,329 | 9 | 9 | | | | | | |
| " | 15 | 0 | 0 | | | | | | |
| | | | | 2,344 | 9 | 9 | | | |
| Trees, as per Schedule 1 | | | | | | | 690 | 0 | 9 |
| " " 2 | | | | | | | 879 | 15 | 0 |
| " " 3 | | | | | | | 2,486 | 10 | 9 |
| " " 4 | | | | | | | 205 | 0 | 0 |
| Tools, implements, &c. | | | | | | | 15 | 0 | 0 |
| Water-supply | | | | | | | 60 | 9 | 2 |
| Nursery-formation | | | | | | | 16 | 10 | 2 |
| Buildings | | | | | | | 93 | 12 | 9 |
| Horse-feed in stock | | | | | | | 314 | 16 | 5 |
| Improved value | | | | | | | 13 | 0 | 0 |
| | | | | | | | 102 | 12 | 10 |
| | | | | | | | £4,877 | 7 | 10 |

Summary.

| | | | | | |
|---|-----|-----|--------|----|----|
| Value of present stock and general improvements | ... | ... | 4,877 | 7 | 10 |
| Value of trees sent out since initiation of nursery | ... | ... | 2,445 | 0 | 7 |
| | | | 7,322 | 8 | 5 |
| Expenditure to date | ... | ... | 2,676 | 12 | 7 |
| Credit balance | ... | ... | £4,645 | 15 | 10 |

Stock in Hand.

SCHEDULE 1.—Details of One-year-old Trees, grown 1906-7. (Fifth Crop.)

| Name of Tree. | Number in Seed-beds. | Height in Inches. | Seed sown. | Value per Thousand. | Total Value. | Remarks. |
|-------------------------|----------------------|-------------------|------------|---------------------|-----------------|--------------------|
| Larix Europæa | 500,000 | 2-5 | Lb. 140 | £ s. d. 1 0 0 | £ s. d. 500 0 0 | Germinated well. |
| Pinus Laricio | 300,000 | 2 | 35 | 1 0 0 | 300 0 0 | Strong plants. |
| " Austriaca | 30,000 | 3 | 7 | 1 0 0 | 30 0 0 | |
| " pouderosa | 15,000 | 3 | 12 | 1 0 0 | 15 0 0 | Germinated thinly. |
| " Benthiana | 7,000 | 3 | 7 | 1 5 0 | 8 15 0 | |
| " Torreyana | 1,000 | 3 | 5 | 1 5 0 | 1 5 0 | Strong plants. |
| Pseudo-tsuga taxifolia | 8,000 | 3 | 4 | 1 5 0 | 10 0 0 | |
| Betula alba | 10,000 | 3 | 10 | 1 0 0 | 10 0 0 | Good crop. |
| Alnus glutinosa | 3,000 | 4 | 4 | 1 0 0 | 3 0 0 | Sturdy plants. |
| Cottoneaster Simmondsii | 1,400 | 3 | 6 | 1 5 0 | 1 15 0 | " |
| Totals | 875,400 | .. | .. | .. | 879 15 0 | |

SCHEDULE 2.—Two-year-old Trees, grown 1905-6. (Fourth Crop.)

| Name of Tree. | Number in Nursery Lines. | Number in Seed-beds. | Height in Inches. | Value per Thousand. | Total Value. | Remarks. |
|----------------------------|--------------------------|----------------------|-------------------|---------------------|-----------------------|----------------|
| <i>Larix Europæa</i> | 450,000 | 100,000 | 10 | £ s. d. 2 5 0 | £ s. d. 1,012 10 0 | Good growth. |
| " | " | | 6 | 1 5 0 | 125 0 0 | Medium growth. |
| <i>Pinus Laricio</i> | 450,000 | " | 3 | 2 5 0 | 1,012 10 0 | " |
| " <i>Austriaca</i> | 36,000 | " | 4 | 2 5 0 | 81 0 0 | " |
| " <i>ponderosa</i> | 90,000 | " | 4 | 2 5 0 | 202 10 0 | " |
| " <i>Benthamiana</i> | 20,000 | " | 4 | 2 10 0 | 50 0 0 | Strong plants. |
| " <i>contorta</i> | 1,200 | " | 4 | 2 5 0 | 2 14 0 | " |
| " <i>Jeffreyi</i> | 150 | " | 3 | 2 5 0 | 0 6 9 | " |
| Totals | 1,047,350 | 100,000 | .. | .. | 2,486 10 9 | |

SCHEDULE 3.—Three-year-old Trees, grown 1904-5. (Third Crop.)

| Name of Tree. | Number in Nursery Lines. | Height in Inches. | Value per Thousand. | Total Value. | Remarks. |
|-------------------------------------|--------------------------|-------------------|---------------------|-------------------|-------------------|
| <i>Pinus muricata</i> | 12,000 | 12 | £ s. d. 3 0 0 | £ s. d. 36 0 0 | Excellent growth. |
| <i>Picea sitchensis</i> | 50,000 | 6 | 3 5 0 | 162 10 0 | Fair growth. |
| <i>Pseudo-tsuga taxifolia</i> | 2,000 | 6 | 3 5 0 | 6 10 0 | " |
| Totals | 64,000 | .. | .. | 205 0 0 | |

SCHEDULE 4.—Trees transferred from Tapanui Nursery.

| Name of Trees. | Number in Nursery Lines. | Height in Inches. | Value per Thousand. | Total Value. | Remarks. |
|--------------------------|--------------------------|-------------------|---------------------|-------------------|--------------|
| <i>Betula Alba</i> | 5,000 | 18 | £ s. d. 3 0 0 | £ s. d. 15 0 0 | Good growth. |

SCHEDULE 5.—Trees transferred to Hanmer Springs Plantation.

| Name of Tree. | Number. | Value per Thousand. | Total Value. | Remarks. |
|-------------------------------------|---------|---------------------|--------------------|-----------------|
| <i>Larix Europæa</i> | 200,000 | £ s. d. 2 5 0 | £ s. d. 450 0 0 | Good growth. |
| <i>Pinus Austriaca</i> | 94,000 | 2 5 0 | 211 10 0 | Have done well. |
| " <i>Laricio</i> | 81,000 | 2 5 0 | 182 5 0 | |
| " <i>ponderosa</i> | 11,100 | 2 5 0 | 24 19 6 | |
| " <i>muricata</i> | 12,000 | 2 5 0 | 27 0 0 | |
| <i>Pseudo-tsuga taxifolia</i> | 41,000 | 2 5 0 | 92 5 0 | Fair growth. |
| <i>Picea excelsa</i> | 56,000 | 3 0 0 | 168 0 0 | |
| " <i>sitchensis</i> | 500 | 3 0 0 | 1 10 0 | " |
| <i>Acer pseudo-platanus</i> | 400 | 1 10 0 | 0 12 0 | " |
| <i>Betula alba</i> | 5,000 | 3 0 0 | 15 0 0 | Good growth. |
| <i>Alnus glutinosa</i> | 1,500 | 3 0 0 | 4 10 0 | " |
| Totals | 502,500 | .. | 1,177 11 6 | |

T. B. CURLE,
Nurseryman in Charge.

KUROW NURSERY, NEAR OAMARU.

(Area, 45 acres ; altitude, 676 ft.)

Rain fell on eighty days during the year, with a total of 13·97 in. The maximum temperature recorded was 97½ deg., and the minimum 19 deg.

The initial work of the Department began at Kurow on the 1st March, 1906.

Throughout the year North Otago experienced a continuous drought unprecedented in severity ; the average annual rainfall is 21·78 in. on 113 days, while our records for the past year show 13·97 in. on eighty days. With such a great reduction on the average annual rainfall all plant-life has suffered, especially so on the light limestone lands of the Waitaki Valley. Owing to such unfavourable conditions the work for the year has not been entirely successful ; considerable loss has to be recorded both in the trees lined out, and in the one-year seedling crop. Though the loss in stock is to be regretted, yet the experience gained is of inestimable value to the Department. We have been most fortunate in securing at such an early date a full knowledge of the bedrock climatic conditions ever likely to obtain in this district. The future success of forestry operations in the Waitaki Valley will develop along much safer lines, and ultimately realise the great purpose for which it was initiated.

Nursery Grounds and Formation.—The major portion of the land is hilly. The area suitable for nursery purposes (some 14 acres) was subsoil ploughed to an average depth of 12 in. The ground has been laid out in convenient blocks with necessary roads, shelter-belts being provided to form break-winds. A portion of the seed-bed ground was mock-trenched to a depth of 18 in.; this work was difficult and laborious owing to the natural hardness and dry condition of the soil. 25½ chains of shelter-hedges were planted of *Berberis aristata*. This plant, considering the season, has done remarkably well.

Fencing, &c.—The boundary-fences have been considerably strengthened and improved; serviceable entrance-gates have been hung on strong concrete pillars, this substantial work adding considerably to the appearance of the nursery. The main entrance road has been formed and metalled. Good horse-paddocks, well watered and securely fenced, have been enclosed.

Water-supply.—A steady supply of good, pure water is obtained from a spring in the nursery grounds. A thorough efficient service has been laid both for tree-growing purposes and the general requirements of the nursery. A reservoir with a capacity of 3,500 gallons was constructed at an elevation of 120 ft., from which a splendid working-pressure is obtained, and should supply every need in this direction for some time to come.

Buildings.—The old sheep-station outbuildings, men's hut, stable, and store-room were in a very bad state of repair; the whole have been completely renovated, and altered to suit the requirements of the Department. These buildings are now comfortable and in every respect suitable.

Seed-frames.—To protect the young seedlings 195 seed-frames 18 ft. by 6 ft. were constructed during the year.

Great credit is due to the workmen for the intelligence and energy displayed during the heavy work of the past year. The whole of the improvements have been carried out by the handy men of the staff, no professional mechanics being employed.

One-year-old Trees.—Seed-sowing commenced on the 28th September and finished on the 8th October. All the seeds germinated well, but a great number of the young plants soon succumbed to the dry and unfavourable season. The plants are weak and have made poor growth.

Lined-out Trees.—Lining out was begun on the 7th August and completed on the 15th September. The growth is very poor, the plants never having a chance to get a hold of the ground. Little or no rain fell during the planting-season, the long drought and the great heat experienced during the summer being entirely responsible for the poor results. The total number of trees lined out was 545,000.

The total for the year of trees raised is 176,000; value, £178. Total number of trees in nursery at 31st March, 297,600; value, £447 17s. Estimated number of trees available for planting out in plantation, 118,600.

The following is a record of the rainfall and temperature for the year:—

| Month. | Rainfall. | Number of Days Rain fell. | Maximum Tempera- ture. | Date. | Minimum Tempera- ture. | Date. |
|------------------|-----------|---------------------------------|------------------------------|-------|------------------------------|-------|
| 1906. | Inches. | | Degrees. | | Degrees. | |
| March | 0.29 | 6 | 77 | 11th | 26 | 30th |
| April | 2.06 | 7 | 78 | 21st | 26 | 2nd |
| May | 1.35 | 10 | 68 | 3rd | 26 | 5th |
| June | 2.09 | 3 | 64 | 21st | 20 | 26th |
| July | 0.96 | 8 | 59 | 13th | 19 | 30th |
| August | 0.36 | 5 | 66 | 20th | 20 | 7th |
| September | 2.16 | 5 | 75 | 29th | 22 | 17th |
| October | 0.47 | 6 | 75 | 19th | 25 | 1st |
| November | 0.79 | 7 | 87 | 24th | 28 | 15th |
| December | 1.77 | 6 | 97½ | 25th | 34 | 10th |
| 1907. | | | | | | |
| January | 0.39 | 7 | 95 | 22nd | 36 | 20th |
| February | 1.28 | 10 | 91 | 25th | 42 | 8th |
| Totals | 13.97 | 80 | ... | ... | ... | ... |

Statement of Accounts.

| | Expenditure. | £ | s. | d. |
|---------------------------------|--------------|--------|----|----|
| Amount at the 31st March, 1906 | ... | 750 | 0 | 0 |
| Tree-growing | ... | 401 | 3 | 1 |
| General maintenance and repairs | ... | 34 | 6 | 3 |
| Nursery-formation | ... | 234 | 7 | 7 |
| Horse-feed | ... | 17 | 13 | 8 |
| Manures | ... | 3 | 5 | 4 |
| Tree-seeds | ... | 41 | 18 | 8 |
| Tools, implements, &c. | ... | 256 | 9 | 7 |
| Seed-frames | ... | 247 | 19 | 11 |
| Water-supply | ... | 132 | 3 | 7 |
| Buildings | ... | 186 | 10 | 3 |
| Fencing | ... | 124 | 13 | 11 |
| Miscellaneous works | ... | 38 | 10 | 8 |
| Supervision | ... | 22 | 0 | 0 |
| | | £2,491 | 2 | 6 |

| Values of Stock. | | | | | £ | s. | d. |
|--------------------------------|-----|-----|-----|-----|--------|----|----|
| Amount at the 31st March, 1906 | ... | ... | ... | ... | 750 | 0 | 0 |
| Trees, as per Schedule 1 | ... | ... | ... | ... | 178 | 0 | 0 |
| " " " 2 | ... | ... | ... | ... | 269 | 17 | 0 |
| Tools, implements, &c. | ... | ... | ... | ... | 256 | 9 | 7 |
| Water-supply | ... | ... | ... | ... | 119 | 6 | 11 |
| Seed-frames | ... | ... | ... | ... | 242 | 19 | 11 |
| Nursery-formation | ... | ... | ... | ... | 180 | 0 | 11 |
| Fencing | ... | ... | ... | ... | 117 | 10 | 7 |
| Buildings, Improvements to | ... | ... | ... | ... | 172 | 3 | 7 |
| Horse-feed in stock | ... | ... | ... | ... | 41 | 2 | 6 |
| Improved value | ... | ... | ... | ... | 188 | 3 | 4 |
| | | | | | £2,515 | 14 | 4 |

| Summary. | | | | | £ | s. | d. |
|---|-----|-----|-----|-----|-------|----|----|
| Value of present stock and general improvements | ... | ... | ... | ... | 2,515 | 14 | 4 |
| Expenditure to date | ... | ... | ... | ... | 2,491 | 2 | 6 |
| Credit balance | ... | ... | ... | ... | £24 | 11 | 10 |

Stock in Hand.

SCHEDULE 1.—Details of One-year-old Trees, grown in 1906-7. (First Crop.)

| Name of Trees. | Number in Seed-beds. | Height in Inches. | Seed sown. | Value per Thousand. | Total Value. | Remarks. |
|---------------------------------|----------------------|-------------------|------------|---------------------|-----------------|----------------|
| <i>Larix Europæa</i> | 100,000 | 1 to 2 | Lb. 168 | £ s. d. 1 0 0 | £ s. d. 100 0 0 | } Poor growth. |
| <i>Pinus Laricio</i> | 36,000 | 1 to 2 | 21 | 1 0 0 | 36 0 0 | |
| " <i>muricata</i> | 8,000 | 1 to 2 | 4 | 1 0 0 | 8 0 0 | |
| " <i>Austriaca</i> | 24,000 | 1 to 2 | 21 | 1 0 0 | 24 0 0 | |
| " <i>Pseudo-tsuga taxifolia</i> | 8,000 | 1 to 2 | 7 | 1 5 0 | 10 0 0 | |
| Totals | 176,000 | .. | .. | .. | 178 0 0 | |

SCHEDULE 2—Two-year-old Trees.

| Name of tree. | Number in Nursery Lines. | Height in Inches. | Value per Thousand. | Total Value. | Remarks. |
|--------------------------|--------------------------|-------------------|---------------------|------------------|-------------------------------|
| <i>Larix Europæa</i> | 58,000 | 6 to 12 | £ s. d. 2 5 0 | £ s. d. 130 10 0 | } Done badly. Poor growth. |
| <i>Pinus Laricio</i> | 47,000 | 1½ to 3 | 2 5 0 | 105 15 0 | |
| " <i>Austriaca</i> | 7,700 | 2 to 4 | 2 5 0 | 17 6 6 | |
| " <i>ponderosa</i> | 2,400 | 2 to 4 | 2 5 0 | 5 8 0 | |
| " <i>muricata</i> | 3,500 | 2 to 4 | 2 5 0 | 7 17 6 | |
| <i>Berberis aristata</i> | 3,000 | 12 to 15 | 1 0 0 | 3 0 0 | |
| Totals | 121,600 | .. | .. | 269 17 0 | |

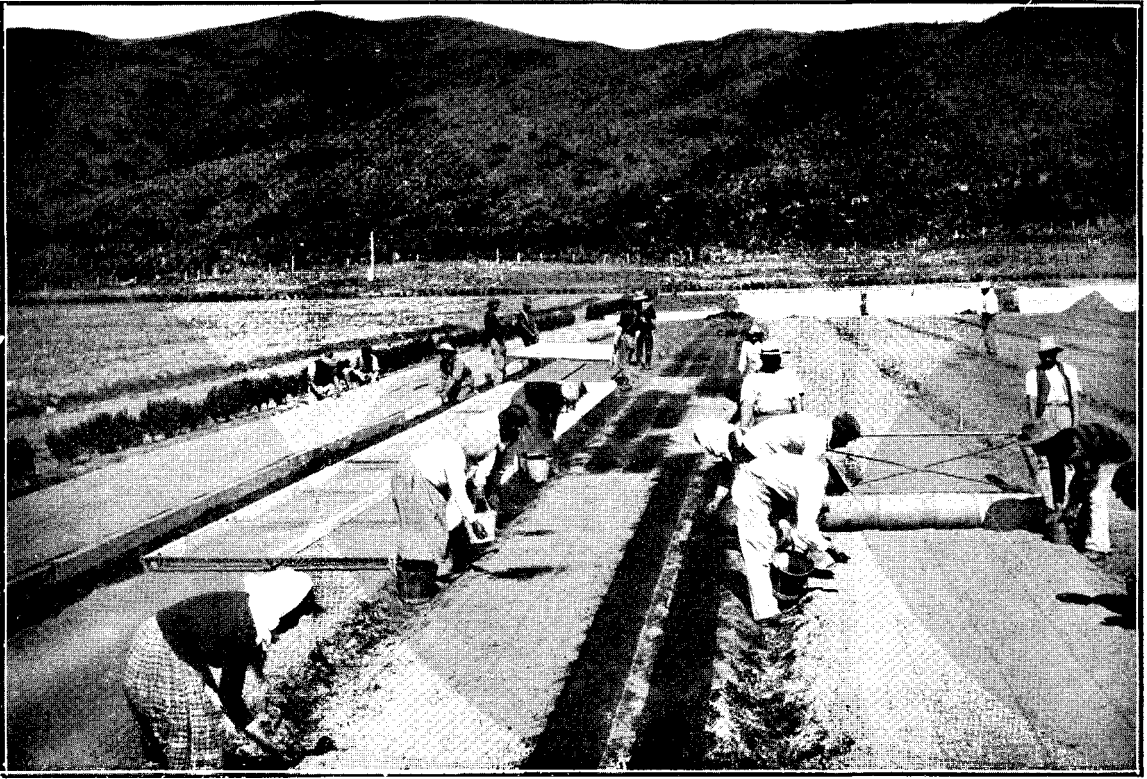
N. CRAIG,
Nurseryman in Charge.

ROTORUA NURSERY.

(Approximate area, 85 acres; approximate altitude, 1,000 ft.)

This district, in common with the rest of the north, experienced an exceptionally heavy rainfall during the past year, and although no serious loss has occurred among the nursery stock from "damping off," the excessive rain occasionally interfered considerably with the work, and the general growth of trees is greater than usual.

Rain fell on 174 days during the year, with a total of 69.03 in., the records for the previous year being 169 days with a total of 49.67 in. The thermometer records show a minimum temperature for the year of 19 deg. Fahr., or 13 deg. of frost, on the 6th August, while the maximum temperature was 84 deg. Fahr. on the 25th January.



SEED-SOWING AT ROTORUA NURSERY.



CALIFORNIAN REDWOOD, 7 YEARS OLD, ROTORUA NURSERY.

The sowing of conifers occupied the greatest part of October, which month, as will be seen by referring to the records of rainfall attached, chanced to be the driest one during the year. The weather conditions were excellent for the sowing of seeds, and the work on that account progressed expeditiously. Quantities and varieties of seeds sown are embodied in Schedules. The crops on the whole are very good. The several species of pines germinated well and evenly, and have since made good progress. Larch is not as thick a crop as was grown the previous year, but this is accounted for by the seed being poorer in quality than usual.

The two species of Eucalypti which were sown in December made splendid progress, the crop from 6 lb. of seed being estimated at 250,000. Owing to the difficulty in procuring seed of *Acacia melanoxylon*, this was not sown until January, and the crop is consequently rather backward. This tree, however, is very hardy, and it is hoped that they will be large enough to transplant by next spring.

The wet weather experienced during November, December, and January caused much labour in removing seed-frames from seed-beds, and in weeding, in order to prevent the seedlings from "damping off," and although the efforts made in this direction were not entirely successful yet no serious loss of trees occurred. The pines suffered the most in this direction, although the larch were also affected to a small extent.

Amongst the lined-out trees remarkably fast growth was obtained owing to the almost continuous rains. Larch is especially noticeable in this respect. This crop numbers over a million trees, and it is estimated that they have made an average vertical growth of 1 ft., and many of them over that.

The two-year-old trees in seed-beds have also made such good growth that it was found necessary to "wrench" these on three occasions in order to retard their growth. In consequence of this, these trees have splendid roots, and a large number of them can be safely transferred to the plantations during the coming winter. A few beds of larch were attacked with grub, as well as a brown beetle, which has retarded the growth somewhat besides causing the loss of a considerable number of trees, but with this exception the two-year-old seedlings are very healthy.

Owing to the autumn of 1906 being somewhat cold, the crop of Eucalypti and *Acacia melanoxylon* did not make their usual good growth, and in consequence the number of these trees which were fit to moss was comparatively small. From April to September the number of trees mossed was 86,500 Eucalypti and 18,000 *Acacia melanoxylon*. As the spring of 1906 advanced, however, the trees started into growth, and a start was made to moss them in December. The results were not encouraging in the case of the Eucalypti, and it would appear that "mossing" these cannot be done successfully when the sap is active. With the *Acacia melanoxylon*, however, the results were better, and very few deaths occurred.

The total of trees mossed during the year was 169,750, and the cost per thousand was 12s. 6d.

During winter the sizing of seedling trees was proceeded with continuously for about three months. The number of trees thus dealt with was about three millions, and the work of sizing and counting these and bundling about 50 per cent. for sending direct to the plantations cost on the average 2s. 3d. per thousand. The lining-out of the smaller trees was proceeded with in August, and occupied the whole of that month; the number lined out being a million and a half, and the cost on an average 2s. 4d. per thousand. Of the number lined out, about a million were larch which had been lifted out of the one-year-old seed-beds, these being nice sturdy plants from 4 in. to 6 in. in height.

The general improvement scheme has progressed fairly well during the year. The whole of the original enclosure is now broken up for nursery purposes, the remaining portion of 1 acre having been graded during the year. Water-pipes were laid through an area of $2\frac{1}{4}$ acres in order to extend the seed-sowing plots. The main entrance road, which is the outlet for the surface water on a catchment-area of about 10 acres, was provided with concrete channels and several culverts in order to prevent "scouring" during heavy rain. These so far have been very effective, having mitigated the trouble previously experienced in keeping this piece of road in order.

In November last the temporary occupation was obtained of about 30 acres of land divided from the original block by the Puarenga Stream. Some 12 acres of this was laid off for nursery purposes and partly fenced, while of the remaining portion, about 8 acres, was cleared of the heavy growth of manuka and fern and sown down in grasses and clovers for the horses. It is intended to lay off the remainder of this land for the horses next spring, as hitherto the want of grass has been much felt; besides this, a danger of fire will always exist as long as the natural growth is left in its present condition, and a paddock of grass will insure safety for the plantation on that side.

This experiment of autumn-sown paddocks has been attended so far with encouraging results; the seed germinated well, and grasses and clovers have since made good headway.

Much information has been given in previous reports about the *Catalpa speciosa* or hardy Catalpa, and the merits of this tree have interested many farmers throughout the colony. The difficulty of obtaining seeds or young plants of this species true to name, and the disappointment caused to many planters through spurious and inferior varieties having been sold as the true hardy Catalpa, was overcome by the Government deciding to dispose of the stock of *Catalpa speciosa* from this nursery to farmers and others last winter. The price charged for them—viz., 2s. 6d. per hundred—was imposed merely to cover the cost of lifting, packing, and carting to the railway-station; and parcels of trees were despatched to 195 persons in various parts of the colony. 47,120 trees were thus disposed of, and the revenue received for same was £58 18s.

That the Catalpa will thrive in certain districts throughout the colony is highly probable, and when the results are obtained from those persons who secured supplies from here last winter the Department will then be in a position to give reliable advice to those who contemplate planting this reputedly valuable tree. So far only two letters have been received since the trees were distributed, and both are very encouraging. One of these was from a gentleman in Pukerau, Southland, who stated that the Catalpa had grown nicely with him, except in exposed situations, and requesting a further

supply. From Eltham, in Taranaki, another gentleman writes that "the Catalpa have made a miraculous growth of fully 4 ft. in one season. A few of them were planted in the Ngaire swamp, but they have not made much growth there; but I am getting some splendid fences on this swamp from seedless gorse, after trying without success almost everything, such as Berberis, box-thorn, &c."

It might be again pointed out that the only obstacle met with in the Rotorua district in growing the Catalpa was unseasonable frosts. The trees have successfully withstood 15° Fahr. in the winter, but frosts occurring in December have cut them back to the ground. During last winter a surplus stock of larch in this nursery was offered to the public, tenders being asked for through the medium of most of the weekly newspapers in the colony. One lot of a thousand was disposed of, this being the only application received.

Buildings.—When the sizing of seedlings and mossing of trees was in progress last winter, it was found that the sizing-shed was too small to accommodate all the workers, and it became necessary to leave the implements out of doors and use a portion of the implement-shed for that purpose. In order, therefore, to increase the accommodation of the sizing-shed, the studs were lengthened and the building converted into a two-storied one, thus giving twice as much room as before. The office, which was partitioned off in the sizing-shed, was also done away with, and a detached and more commodious building erected.

The number of trees of all ages in the nursery at 31st March, 1907, was 6,565,050, valued at £8,871 12s. 8d.

Trees sent out to plantations during the year number 3,282,361, and their value £7,000 17s. 9d.; and the number of trees sent out to date is 12,987,932, valued at £28,510 9s. 2d.

The number of trees grown since the initiation of the nursery is 19,552,982, valued at £37,382 1s. 8d.

Schedules of trees in stock and sent out, and details of expenditure and values, are appended.

Average number employed during the year: Men, 23·95; women, 5·54: total, 29·49.

Following is a record of rainfall and temperature for the year:—

| Month. | Rainfall. | Number of Days Rain fell. | Highest Reading of Thermometer. | Date. | Lowest Reading of Thermometer. | Date. |
|------------------|-----------|---------------------------|---------------------------------|---------------|--------------------------------|---------------|
| 1906. | Inches. | | Degrees. | | Degrees. | |
| April | 4·06 | 17 | 79 | 21st and 26th | 31 | 24th |
| May | 5·36 | 14 | 75 | 2nd | 29 | 5th |
| June | 2·41 | 8 | 72 | 1st | 23 | 11th |
| July | 8·42 | 24 | 69 | 19th and 25th | 24 | 31st |
| August | 3·05 | 12 | 72 | 22nd | 19 | 6th |
| September | 9·45 | 18 | 77 | 20th | 24 | 13th |
| October | 1·53 | 9 | 77 | 30th | 28 | 2nd and 3rd |
| November | 3·91 | 14 | 79 | 21st and 22nd | 30 | 11th |
| December | 3·29 | 14 | 81 | 16th | 36 | 10th |
| 1907. | | | | | | |
| January | 13·85 | 15 | 84 | 25th | 33 | 21st |
| February | 8·61 | 13 | 83 | 12th | 42 | 22nd |
| March | 5·09 | 16 | 77 | 25th | 42 | 20th and 21st |
| Totals | 69·03 | 174 | ... | ... | ... | ... |

Statement of Accounts.

| | Expenditure. | £ | s. | d. |
|---|--------------|---------|----|----|
| Amount at the 31st March, 1906 | ... | 17,763 | 7 | 2 |
| Tree-growing | ... | 2,200 | 15 | 6 |
| General maintenance and repairs | ... | 292 | 16 | 9 |
| Nursery-formation | ... | 540 | 7 | 1 |
| Horse-feed | ... | 52 | 17 | 8 |
| Manures | ... | 63 | 12 | 5 |
| Tree-seeds | ... | 177 | 9 | 9 |
| Tools, implements, &c. | ... | 30 | 19 | 2 |
| Water-supply, Extension of... | ... | 26 | 13 | 6 |
| Buildings—office, additions to workshop, and men's quarters | ... | 413 | 4 | 11 |
| Miscellaneous works | ... | 11 | 6 | 6 |
| Supervision | ... | 38 | 14 | 0 |
| | | £21,612 | 4 | 5 |

NOTE.—Revenue amounting to £64 8s. 8d. was received during the year, chiefly from sale of trees.

Values of Stock.

| | £ | s. | d. | £ | s. | d. | £ | s. | d. |
|---|--------|-----|-----|--------|----|----|---------|----|----|
| Amount at the 31st March, 1906 | ... | ... | ... | 22,690 | 0 | 1 | | | |
| Less value of trees | 16,976 | 1 | 2 | | | | | | |
| " horse-feed | 15 | 0 | 0 | | | | | | |
| | | | | 16,991 | 1 | 2 | | | |
| Trees, as per Schedule 1 | ... | ... | ... | | | | 5,698 | 18 | 11 |
| " " 2 | ... | ... | ... | | | | 2,818 | 5 | 0 |
| " " 3 | ... | ... | ... | | | | 4,848 | 15 | 0 |
| Tools, implements, &c. | ... | ... | ... | | | | 1,204 | 12 | 6 |
| Water-supply, Extension of | ... | ... | ... | | | | 30 | 19 | 2 |
| Nursery-formation | ... | ... | ... | | | | 21 | 13 | 6 |
| Buildings—new and additions to old ones | ... | ... | ... | | | | 491 | 16 | 6 |
| Horse-feed in stock | ... | ... | ... | | | | 373 | 4 | 11 |
| Improved value | ... | ... | ... | | | | 46 | 0 | 0 |
| | | | | | | | 193 | 14 | 0 |
| | | | | | | | £15,727 | 19 | 6 |

Summary.

| | | | | | | |
|---|-----|-----|-----|---------|----|----|
| Value of present stock and general improvements | ... | ... | ... | £ | s. | d. |
| Value of trees sent out since initiation of nursery | ... | ... | ... | 15,727 | 19 | 6 |
| | | | | 28,510 | 9 | 2 |
| | | | | 44,238 | 8 | 8 |
| Expenditure to date | ... | ... | ... | 21,612 | 4 | 5 |
| Credit balance | ... | ... | ... | £22,626 | 4 | 3 |

Stock in Hand.

SCHEDULE 1.—Details of One-year-old Trees, grown 1906-7. (Eighth Crop.)

| Name of Tree. | Number in Seed-beds. | Height in Inches. | Amount of Seed sown. | Value per Thousand. | Total Value. | Remarks. |
|-----------------------------|----------------------|-------------------|----------------------|---------------------|--------------|---------------------------------|
| | | | Lb. | £ s. d. | £ s. d. | |
| Larix Europæa | 2,000,000 | 1-6 | 722 | 1 0 0 | 2,000 0 0 | Fair crop. |
| Pinus Laricio | 400,000 | 2 | 56 | 1 0 0 | 400 0 0 | |
| " ponderosa | 75,000 | 2 | 28 | 1 0 0 | 75 0 0 | |
| " ponderosa, var. Benthiana | 30,000 | 2 | 14 | 1 5 0 | 37 10 0 | Good, even crop; strong growth. |
| " strobus | 30,000 | 1 | 14 | 1 0 0 | 30 0 0 | |
| " Austriaca | 83,000 | 2 | 14 | 1 0 0 | 83 0 0 | |
| " Torreyana | 600 | 3 | 14 | 1 5 0 | 0 15 0 | Sparse; mice-riddled seed-beds. |
| Juglans nigra | 3,000 | 18 | 8 bush. | 3 0 0 | 9 0 0 | Very strong. |
| Petula alba | 5,000 | 3 | 2 | 1 0 0 | 5 0 0 | Good. |
| Acacia melanoxylon | 17,000 | 1 | 4 | 1 0 0 | 17 0 0 | Rather weak. |
| Eucalyptus amygdalina | 100,000 | 4 | 8 | 0 10 0 | 50 0 0 | Splendid crop. |
| " Stuartiana | 150,000 | 4 | 8 | 0 10 0 | 75 0 0 | |
| Sequoia sempervirens | 9,000 | 2-6 | 28 | 4 0 0 | 36 0 0 | Good. |
| Totals | 2,902,600 | .. | .. | .. | 2,818 5 0 | |

SCHEDULE 2.—Two-year-old Trees, grown 1905-6. (Seventh Crop.)

| Name of Tree. | Number in Seed-beds. | Number in Nursery Lines. | Height in Inches. | Value per Thousand. | Total Value. | Remarks. |
|------------------------------|----------------------|--------------------------|-------------------|---------------------|--------------|----------|
| | | | | £ s. d. | £ s. d. | |
| Larix Europæa | 1,000,000 | 700,000 | 9-18 | 1 5 0 | 2,825 0 0 | |
| Pinus Laricio | 1,000,000 | .. | 5 | 2 5 0 | 1,250 0 0 | |
| P. ponderosa | 300,000 | .. | 5 | 1 5 0 | 375 0 0 | |
| P. Austriaca | 130,000 | .. | 5 | 1 5 0 | 162 10 0 | |
| P. ponderosa, var. Benthiana | 37,000 | .. | 5 | 1 10 0 | 55 10 0 | |
| P. Murrayana | 16,000 | .. | 6 | 1 5 0 | 20 0 0 | |
| P. muricata | .. | 7,000 | 12 | 2 5 0 | 15 15 0 | |
| Sequoia sempervirens | .. | 3,000 | 9-15 | 6 0 0 | 18 0 0 | |
| Acacia melanoxylon | 12,000 | .. | 6-12 | 1 0 0 | 12 0 0 | |
| Eucalyptus amygdalina | .. | 50,000 | 4-6 | 2 0 0 | 100 0 0 | |
| " .. | .. | 10,000 | 4-6 | 1 10 0 | 15 0 0 | |
| Totals | 2,495,000 | 770,000 | .. | .. | 4,848 15 0 | |

SCHEDULE 3.—Three-year-old Trees, grown 1904-5. (Sixth Crop.)

| Name of Tree. | Number in Nursery Lines. | Height in Inches. | Value per Thousand. | Total Value. | Remarks. |
|---------------------------------------|--------------------------|-------------------|---------------------|--------------|--------------------------------|
| | | | £ s. d. | £ s. d. | |
| Pinus Laricio | 40,000 | 6 | 3 0 0 | 120 0 0 | } Strong and sturdy. |
| " Austriaca | 43,000 | 6 | 3 0 0 | 129 0 0 | |
| " rigida | 4,000 | 9 | 3 0 0 | 12 0 0 | } Good growth. |
| " contorta | 5,000 | 9 | 3 0 0 | 15 0 0 | |
| " strobilus | 5,000 | 4 | 3 0 0 | 15 0 0 | } Fair growth; healthy plants. |
| " ponderosa | 13,000 | 4 | 3 0 0 | 39 0 0 | |
| " ponderosa, var. Benthamiana | 5,000 | 4 | 3 5 0 | 16 5 0 | } Very good. |
| Pseudo-tsuga taxifolia | 40,000 | 12 | 3 5 0 | 130 0 0 | |
| Thuja gigantea | 600 | 9 | 4 10 0 | 2 14 0 | } Very satisfactory. |
| Larix Europæa | 240,000 | 9-18 | 3 0 0 | 720 0 0 | |
| Liriodendron tulipiferum | 250 | 24 | 3 10 0 | 0 17 6 | } Extra strong. |
| Pinus resinosa | 1,600 | 6 | 3 0 0 | 4 16 0 | |
| Totals | 397,450 | .. | .. | 1,204 12 6 | Good. |

SCHEDULE 4.—Trees, &c., transferred from Rotorua Nursery to Forest Plantations, &c., 1906-7.

| Where sent. | Name of Tree. | Number. | Height in Inches. | Value per Thousand. | Total Value. | Remarks. |
|--|--------------------------------------|-----------|-------------------|---------------------|--------------|----------|
| | | | | £ s. d. | £ s. d. | |
| Whakarewarewa Plantation | Acacia melanoxylon | 16,800 | 6 | 2 0 0 | 33 12 0 | |
| | Eucalyptus amygdalina | 68,400 | 4 | 1 10 0 | 102 12 0 | |
| | " pauciflora | 28,350 | 4 | 1 10 0 | 42 10 6 | |
| | Larix Europæa | 948,075 | 20 | 1 10 0 | 1,422 2 3 | |
| | Picea excelsa | 195,025 | 9 | 3 0 0 | 585 1 6 | |
| | " sitchensis | 91,175 | 9 | 3 5 0 | 296 6 5 | |
| | Pinus densiflora | 2,325 | 9 | 2 10 0 | 5 16 3 | |
| | " muricata | 2,550 | 6 | 1 0 0 | 2 11 0 | |
| | " taeda | 1,100 | 9 | 2 10 0 | 2 15 0 | |
| | " Thunbergi | 700 | 9 | 2 10 0 | 1 15 0 | |
| | " sabiniana | 25 | 9 | 2 10 0 | 0 1 3 | |
| | Pseudo-tsuga taxifolia | 33,600 | 9 | 3 5 0 | 109 4 0 | |
| | Ornamental shrubs | 475 | .. | £5 per 100 | 23 15 0 | |
| | | 1,388,600 | | | 2,628 2 2 | |
| Waiotapu Plantation | Larix Europæa | 54,250 | 18 | 1 5 0 | 67 16 3 | |
| | " | 811,300 | 9-18 | 3 0 0 | 2,433 18 0 | |
| | Pinus Austriaca | 177,725 | 6 | 1 5 0 | 222 3 1 | |
| | " | 260,175 | 6 | 3 0 0 | 780 10 6 | |
| | " Jeffreyi | 3,675 | 6 | 1 10 0 | 5 10 3 | |
| | " Lambertiana | 1,250 | 6 | 1 10 0 | 1 17 6 | |
| | " Laricio | 212,300 | 6 | 1 5 0 | 265 7 6 | |
| | " muricata | 12,250 | 6 | 1 0 0 | 12 5 0 | |
| | " ponderosa | 43,850 | 6 | 1 5 0 | 54 16 3 | |
| | " var. Ben- | 13,225 | 6 | 1 10 0 | 19 16 9 | |
| | " thamiana | 22,900 | 4 | 3 0 0 | 68 14 0 | |
| Ruatangata Nursery | Robinia pseudo-acacia | 15,300 | 18 | 2 10 0 | 38 5 0 | |
| | Thuja gigantea | 13,975 | 12 | 2 0 0 | 27 19 0 | |
| | | 1,642,175 | | | 3,998 19 1 | |
| | Pseudo-tsuga taxifolia | 135,500 | 9 | 1 10 0 | 203 5 0 | |
| Ruatangata Nursery | Picea sitchensis | 65,200 | 6 | 1 10 0 | 97 16 0 | |
| | | 200,700 | | | 301 1 0 | |
| | | 1,388,600 | | | 2,628 2 2 | |
| Whakarewarewa Plantation | As per details above | 1,388,600 | .. | .. | 2,628 2 2 | |
| Waiotapu Plantation | " | 1,642,175 | .. | .. | 3,998 19 1 | |
| Ruatangata Nursery | " | 200,700 | .. | .. | 301 1 0 | |
| Native School, Papamoa | Hedge-plants | 400 | .. | .. | 4 0 0 | |
| Native School, Waitahuna | Hedge and shelter trees | 300 | .. | .. | 2 10 0 | |
| Stock Department, Waerenga | Catalpa speciosa | 2,000 | .. | .. | 2 10 0 | |
| Stock Department, Kirikiriroa | Pines, assorted | 128 | .. | .. | 1 5 0 | |
| Stock Department, Bickerstaffe | Catalpa speciosa | 500 | .. | .. | 0 12 6 | |
| Native School, Rotoiti | " | 200 | .. | .. | 0 5 0 | |
| Native School, Opakura | Ornamental and shelter trees | 114 | .. | .. | 1 7 0 | |
| 195 persons in various parts of the colony | Ditto | 124 | .. | .. | 1 8 0 | |
| | Sale of Catalpa speciosa | 47,120 | .. | 2s. 6d. per 100 | 58 18 0 | |
| Totals | | 3,282,361 | .. | .. | 7,000 17 9 | |

H. A. GOUDIE,
Nurseryman in Charge.

RUATANGATA NURSERY, NEAR WHANGAREI, AUCKLAND.

(Area, 65 acres; altitude, 350 ft.)

Rain fell on 184 days during the year, with a total fall of 73.97 in. The maximum temperature was 88 deg., and the minimum temperature 28 deg.

This has been an exceptionally wet season, the floods experienced during the months of July, 1906, and January and February, 1907, were the heaviest for years, causing considerable loss amongst Oregon pines. The tideland spruce also suffered considerably, but withstood the excessive rains much better than the Oregon pine, although the latter were in a drier situation. Both of these species were sent from Rotorua for experimental purposes, but this year's experience cannot be accepted as a criterion, as until January the trees did remarkably well.

During the spring trees to the number of 408,300 were lined out in nursery rows 1 ft. apart, at a cost of 3s. 1d. per 1,000. This work commenced on the 15th August and finished on the 16th October, being greatly retarded by boisterous weather and the heavy condition of the soil.

One hundred and twenty pounds of *Podocarpus totara* seed was sown on the 16th and 17th August, and germinated fairly well, resulting in a fine crop of 200,000 sturdy plants. Seven pounds of *Sequoia sempervirens* and 15 lb. of *Juniperus Virginiana* were also sown, yielding a very thin crop of strong, healthy plants.

During December the following varieties of Eucalypti were sown: *E. amygdalina*, *E. obliqua*, *E. Stuartiana*, *E. rostrata*, *E. resinifera*, and *E. redunca*. With the exception of *E. obliqua* these germinated very well, and have made splendid plants.

The number of trees of all ages in the nursery at 31st March was 738,390.

During the winter months trees to the number of 177,245, valued at £389 11s. 4d., were transferred to Puhipuhi Plantation.

The approximate number of trees available for the plantation during this season is 520,915.

The total number of trees raised at this station since May, 1903, is 1,091,022, valued at £2,488 14s., and the number of trees transferred from the nursery to the plantation since its initiation is 461,005, valued at £1,267 6s. 8d.

A substantial four-stall stable and workshop has been erected, and is fitted with a 4-horse power Crossley oil-engine and chaff-cutter. This is a decided improvement upon the old water-power leased from an adjoining settler. A shed was also erected for the wagon, dray, implements, &c.

Owing to the increased output of trees and additional labour required, it was found necessary to erect a cottage, 46 ft. by 12 ft., for the accommodation of the workmen. This will shortly be finished, and should prove a great convenience to the employees.

For the purpose of draining a swamp in the nursery, 20 chains of stone drains were formed, proving very satisfactory; the stone utilised for this work was obtained from outcrops in the horse-paddock. The main road was formed and partly metalled with scoria obtained from the Railway Department's ballast-pit.

Four acres of land has been graded, ploughed, and subsoiled ready for lining out next season's crop of trees. Two hundred flax-sets were planted in a moist situation as a supply of tying material. Four acres of hillside land was thoroughly worked and sown down with a mixture of permanent grass-seeds for a horse-paddock, resulting in a fine even sward.

The various species of Eucalypti grown on the nursery plantation for experimental purposes have made good growth, some attaining a height of 14 ft., with a girth of 13 in., in four years. *Sequoia sempervirens* planted on poor soil four years ago have done exceedingly well, averaging 7 ft. The *Catalpa speciosa* have made practically no growth. Isolated specimens of *Quercus suber* (three years) are doing well, but the majority have made poor growth, whilst 200 raised in paper pots in the nursery and transferred to the plantation have made vigorous growth.

Owing to the difficulty of obtaining flax for mossing Eucalypti and bundling trees, &c., it is desirable that immediate steps be taken by the Department to acquire a sufficient area of flax land to insure a steady supply. A suitable block of land containing totara-trees should also be acquired, and fenced to prevent cattle, &c., from straying among the trees and destroying the seed and seedlings.

One hundred and thirty thousand Eucalypti of different species were mossed at a cost of 12s. 8½d. per 1,000, including gathering and carting moss and flax, lifting and heeling in trees, &c. The special moss (*Sphagnum*) required for this work will not be procurable in this district two years hence. The coming season's supply will be limited, and if this station is to continue mossing Eucalypti the supply of moss will have to be procured elsewhere.

Seven tons of oaten sheaves was grown, and also about 2 tons of carrots, for horse-feed.

The average number of persons employed during the year was seven men and 3.77 boys.

The following is a record of rainfall and temperature for the year :—

| Month. | Rainfall. | Number of Days. | Maximum Tempera- ture. | Date. | Minimum Tempera- ture. | Date. |
|------------------|-----------|--------------------|------------------------------|------------|------------------------------|------------|
| 1906. | | | | | | |
| | Inches. | | Degrees. | | Degrees. | |
| April | 2·69 | 11 | 74 | 12th | 33 | 16th |
| May | 4·77 | 15 | 69 | 20th | 30 | 5th |
| June | 3·68 | 9 | 65 | 23rd | 30 | 11th |
| July | 11·98 | 22 | 64 | 5th, 22nd | 31 | 20th |
| August | 5·86 | 21 | 68 | 28th | 28 | 6th |
| September | 8·60 | 23 | 68 | 14th | 29 | 11th |
| October | 2·44 | 13 | 78 | 21st, 31st | 30 | 4th |
| November | 3·97 | 12 | 80 | 23rd | 33 | 11th |
| December | 2·69 | 12 | 88 | 20th | 36 | 15th |
| 1907. | | | | | | |
| January | 11·41 | 14 | 79 | 12th | 40 | 20th, 21st |
| February | 11·30 | 15 | 75 | 18th, 20th | 46 | 21st |
| March | 4·58 | 17 | 77 | 24th | 47 | 15th |
| Totals | 73·97 | 184 | ... | ... | ... | ... |

Statement of Accounts.

Expenditure.

| | £ | s. | d. |
|--|---------------|----------|----------|
| Amount at the 31st March, 1906 | 2,891 | 2 | 10 |
| Tree-growing | 561 | 15 | 10 |
| General maintenance and repairs | 74 | 12 | 0 |
| Nursery-formation | 200 | 17 | 2 |
| Horse-feed purchased and grown | 130 | 1 | 3 |
| Manures | 12 | 9 | 9 |
| Tree-seeds purchased and collected | 42 | 3 | 6 |
| Tools, implements, &c. | 137 | 1 | 9 |
| Water-supply | 7 | 7 | 1 |
| Buildings—men's quarters, stable, and workshop | 263 | 9 | 0 |
| Maintenance of experimental plantation | 20 | 18 | 9 |
| Miscellaneous works | 20 | 17 | 4 |
| Supervision | 21 | 6 | 0 |
| | <u>£4,384</u> | <u>2</u> | <u>3</u> |

Values of Stock.

| | £ | s. | d. | £ | s. | d. | £ | s. | d. |
|--|-------|-----|-----|--------------|-----------|----------|---------------|-----------|----------|
| Amount at the 31st March, 1906 | ... | ... | ... | 3,553 | 8 | 2 | | | |
| Less value of trees | 1,625 | 18 | 2 | | | | | | |
| " horse-feed | 136 | 0 | 0 | | | | | | |
| | | | | <u>1,761</u> | <u>18</u> | <u>2</u> | | | |
| Trees, as per Schedule 1 | | | | | | | 1,791 | 10 | 0 |
| " " 2 | | | | | | | 672 | 7 | 0 |
| Tools and implements | | | | | | | 761 | 18 | 10 |
| Water-supply | | | | | | | 137 | 1 | 9 |
| Nursery-formation | | | | | | | 7 | 7 | 1 |
| Buildings—men's quarters, stable, and workshop | | | | | | | 200 | 17 | 2 |
| Horse-feed in stock | | | | | | | 263 | 9 | 0 |
| Value of one foal | | | | | | | 54 | 0 | 0 |
| Improved value | | | | | | | 5 | 0 | 0 |
| | | | | | | | <u>80</u> | <u>5</u> | <u>6</u> |
| | | | | | | | <u>£3,973</u> | <u>16</u> | <u>4</u> |

Summary.

| | £ | s. | d. |
|---|--------------|----------|----------|
| Value of present stock and general improvements | 3,973 | 16 | 4 |
| Value of trees sent out since initiation of nursery | 1,267 | 6 | 8 |
| | <u>5,241</u> | <u>3</u> | <u>0</u> |
| Expenditure to date | 4,384 | 2 | 3 |
| Credit balance | <u>£857</u> | <u>0</u> | <u>9</u> |

Stock in Hand.

SCHEDULE 1.—Details of One-year-old Trees, grown 1906-7. (Fourth Crop.)

| Name | Number in Seed-beds. | Height in Inches. | Seed sown. | Value per Thousand. | Total Value. | Remarks. |
|---------------------------------|----------------------------|-------------------------|------------|---------------------------|--------------|--|
| | | | Lb. oz. | £ s. d. | £ s. d. | |
| <i>Podocarpus totara</i> .. | 205,500 | 4 | 120 0 | 2 10 0 | 513 15 0 | Fine, sturdy trees; medium growth |
| <i>Juniperus Virginiana</i> .. | 600 | 4½ | 15 0 | 1 10 0 | 0 18 0 | Poor crop; healthy plants. |
| <i>Sequoia sempervirens</i> .. | 675 | 10 | 7 0 | 4 0 0 | 2 14 0 | Ditto; splendid growth. |
| <i>Eucalyptus amygdalina</i> .. | 60,000 | 3 | 2 0 | 0 10 0 | 30 0 0 | With the exception of <i>E. obliqua</i> all of these have done well. |
| <i>obliqua</i> .. | 20,000 | 3 | 2 0 | 0 10 0 | 10 0 0 | |
| <i>Stuartiana</i> .. | 60,000 | 3 | 2 0 | 0 10 0 | 30 0 0 | |
| <i>rostrata</i> .. | 60,000 | 3 | 1 0 | 0 10 0 | 30 0 0 | |
| <i>resinifera</i> .. | 60,000 | 3 | 2 0 | 0 10 0 | 30 0 0 | |
| <i>redunca</i> .. | 50,000 | 3 | 1 11 | 0 10 0 | 25 0 0 | |
| Totals .. | 516,775 | .. | .. | .. | 672 7 0 | |

SCHEDULE 2.—Details of Two-year-old Trees, grown 1905-6. (Third Crop.)

| Name. | Number in Nursery Lines. | Height in Inches. | Value per Thousand. | Total Value. | Remarks. |
|-------------------------------------|--------------------------------|----------------------|---------------------------|--------------|--|
| | | | £ s. d. | £ s. d. | |
| <i>Podocarpus totara</i> .. | 144,900 | 15 | 4 5 0 | 615 16 6 | Fine crop; excellent growth. |
| <i>Pseudo-tsuga taxifolia</i> .. | 30,000 | 10 | 2 10 0 | 75 0 0 | Received from Rotorua; large number died owing to very wet season; those remaining are good, strong trees. |
| <i>Picea sitchensis</i> .. | 41,175 | 7 | 1 10 0 | 61 15 3 | Received from Rotorua; poor growth. |
| <i>Podocarpus dactyloides</i> .. | 5,050 | 10 | 1 10 0 | 7 11 6 | Good growth. |
| <i>Sequoia gigantea</i> .. | 290 | 9 | 2 0 0 | 0 11 7 | Strong, healthy trees. |
| Varieties of Japanese trees, &c. .. | 200 | 10 | 6 0 0 | 1 4 0 | Going very well. |
| Totals .. | 221,615 | .. | .. | 761 18 10 | |

SCHEDULE 3.—Details of Trees transferred from Ruatangata Nursery to Puhipuhi Plantation, 1906-7.

| Name of Tree. | Number. | Value per Thousand. | Total Value. | Remarks. |
|--------------------------------------|---------|------------------------|--------------|---|
| | | £ s. d. | £ s. d. | |
| <i>Podocarpus totara</i> .. | 44,800 | 4 5 0 | 190 8 0 | Slow growth; healthy plants. |
| <i>Fraxinus Americana</i> .. | 300 | 1 10 0 | 0 9 0 | Doing well. |
| <i>Sequoia sempervirens</i> .. | 500 | 8 0 0 | 4 0 0 | " |
| <i>Eucalyptus corynocalyx</i> .. | 125 | 1 10 0 | 0 3 9 | All these varieties have done well with the exception of <i>E. siderophloia</i> . |
| <i>leucoxydon</i> .. | 16,300 | 1 10 0 | 24 9 0 | |
| <i>marginata</i> .. | 4,950 | 1 10 0 | 7 8 6 | |
| <i>obliqua</i> .. | 4,200 | 1 10 0 | 6 6 0 | |
| <i>paniculata</i> .. | 900 | 1 10 0 | 1 7 0 | |
| <i>rostrata</i> .. | 77,370 | 1 10 0 | 116 1 1 | |
| <i>resinifera</i> .. | 6,600 | 1 10 0 | 9 18 0 | |
| <i>siderophloia</i> .. | 10,200 | 1 10 0 | 15 6 0 | Good growth. |
| <i>Pinus muricata</i> .. | 11,000 | 1 5 0 | 13 15 0 | |
| | 177,245 | .. | 389 11 4 | |
| <i>Juglans nigra</i> .. | 1,000 | 3 0 0 | 3 0 0 | Planted <i>in situ</i> ; slow growth. |
| Ten tons chaff, valued at £4 per ton | .. | .. | 40 0 0 | Sent to Rotorua Nursery. |
| Total .. | .. | .. | 432 11 4 | |

A. GORDON,
Nurseryman in Charge.

STARBOROUGH NURSERY (MARLBOROUGH).

(Area, 104 acres; altitude, 100 ft.)

The rainfall for the year was 21.28 in., rain being recorded on 102 days, as against 33.14 in. on 115 days last year. The maximum shade temperature occurred on the 18th December and the 1st January, when 95 deg. were registered, the minimum being 21 deg. on the 28th July. Frost occurred on seventy nights during the year.

During the months August to December (inclusive) this district experienced the driest season for a number of years, the rainfall for those months being only 5.99 in., as compared with an average of 10.45 in. for the corresponding months of the five previous years. An idea of the dryness of the season may be gathered from the fact that in the shrubberies and shelter-belts surrounding the nursery quite a number of trees and shrubs which were planted five years ago, and were fully 6 ft. high, have died. The losses are principally *Chamaecyparis Lawsoniana*, *Cryptomeria elegans*, *Retinospora ericoides*, *Melicotus lanceolatus*, and *Pinus radiata*.

The year cannot be said to have been a good one for tree-growing; still, under the adverse weather conditions experienced, nursery stock has done remarkably well.

Seed-sowing was commenced on the 3rd October, and finished on the 8th of the same month. "Watering" had to be done almost continually every evening from immediately after sowing until about the middle of January. The crop as a whole is good; *P. ponderosa*, *P. Benthiana*, and *P. strobus* were much slower in germinating than the other species sown, and are rather thin.

The work of transplanting was commenced on the 1st August and completed on the 21st September, the number of trees lined out being 1,055,000, over an area of $7\frac{1}{2}$ acres, at a cost of 2s. 6 $\frac{1}{2}$ d. per thousand. Trees made but little growth during the three months after being transplanted, and some of the species—viz., *Abies Douglasii*, *A. Menziesii*, *P. strobus*, and *P. Torreyana*—suffered from the very drying wind prevailing at that time, fully two-thirds of those dying off. In October and November larch were attacked in several places by the grass-grub (*Odontia Zealandia*), about 25 per cent. being destroyed by this insect. All other species have done well, and have grown remarkably the past two months.

It is estimated that about 500,000 trees will be available for plantation purposes for the coming season.

During the year 1,292,175 trees, valued at £2,329 8s. 9d. were sent to the following nurseries, plantations, &c.: Dumgree Pantation, 561,175; Kurow Nursery, 541,500; Tapanui Nursery, 84,000; Mackenzie County Council, 100,000; Nelson Agricultural and Pastoral Association, 2,000; Wellington Tree-planting and Scenery Society, 500; Agricultural Department, Wellington, 3,000. (For details, see Schedule 4.)

The total number of trees sent out since the initiation of the nursery is 1,923,850, valued at £4,099 13s. 6d.

The estimated number of trees raised during the year is 750,500, valued at £714. The number of trees of all ages in the nursery at 31st March was 1,357,700, valued at £2,054 11s. (See Schedules 1-3.)

The total number raised since the initiation of nursery is 3,281,550, valued at £6,154 4s. 6d.

The expenditure for the year was £1,107 10s. 7d., and the total to the 31st March, 1907, £7,630 19s. 5d.

The value of trees, improvements, &c., for the year is £2,423 2s. 5d., and the total to the 31st March, 1907, £6,712 9s. 2d.

Five acres of new ground is being prepared for lining-out purposes; this has been partly formed, and will be used the coming season. This addition will give sufficient lining-out ground to allow that a year may intervene between each crop of trees.

Horse-feed (oaten sheaf) estimated at 30 tons was grown during the year, valued at £90; and hay and chaff to the value of £57 sent to other nurseries.

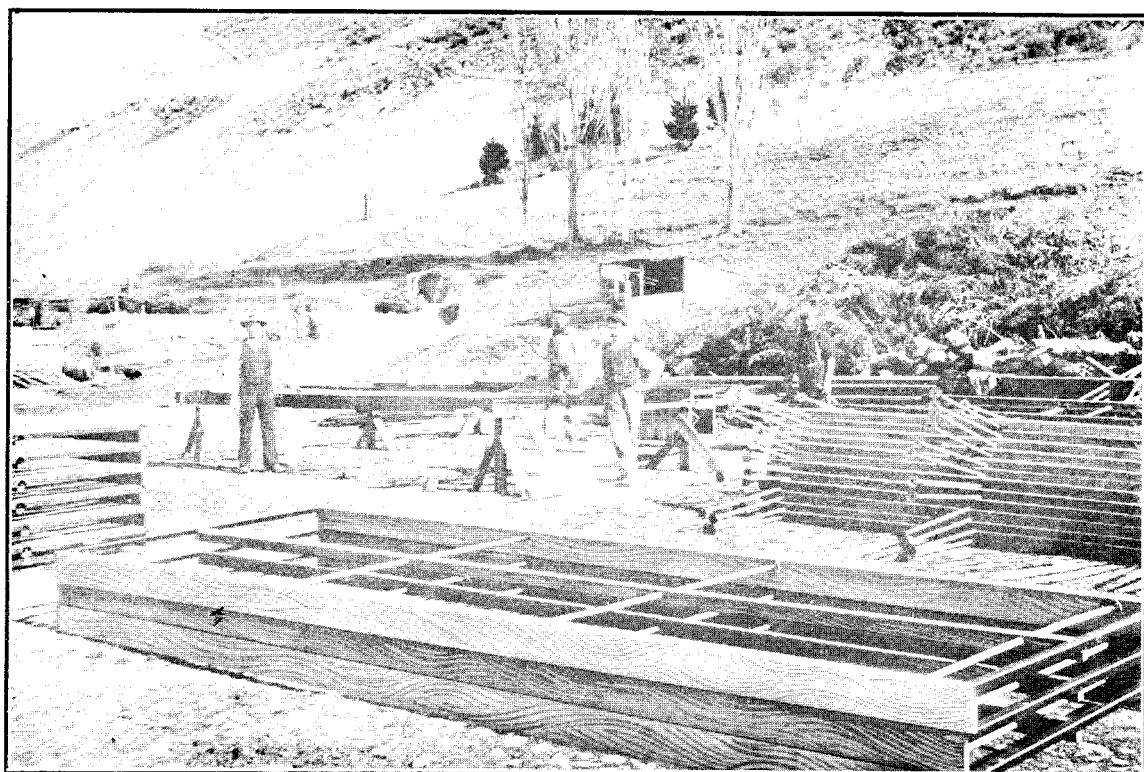
As more land is required for horse-paddock accommodation and for growing horse-feed it is proposed to resume about 45 acres adjoining the nursery.

A small plantation of gums situated close to the railway-line was destroyed by fire. The gums were immediately cut back, and nearly all have put up fresh shoots.

The daily average number of men employed during the year was eight.

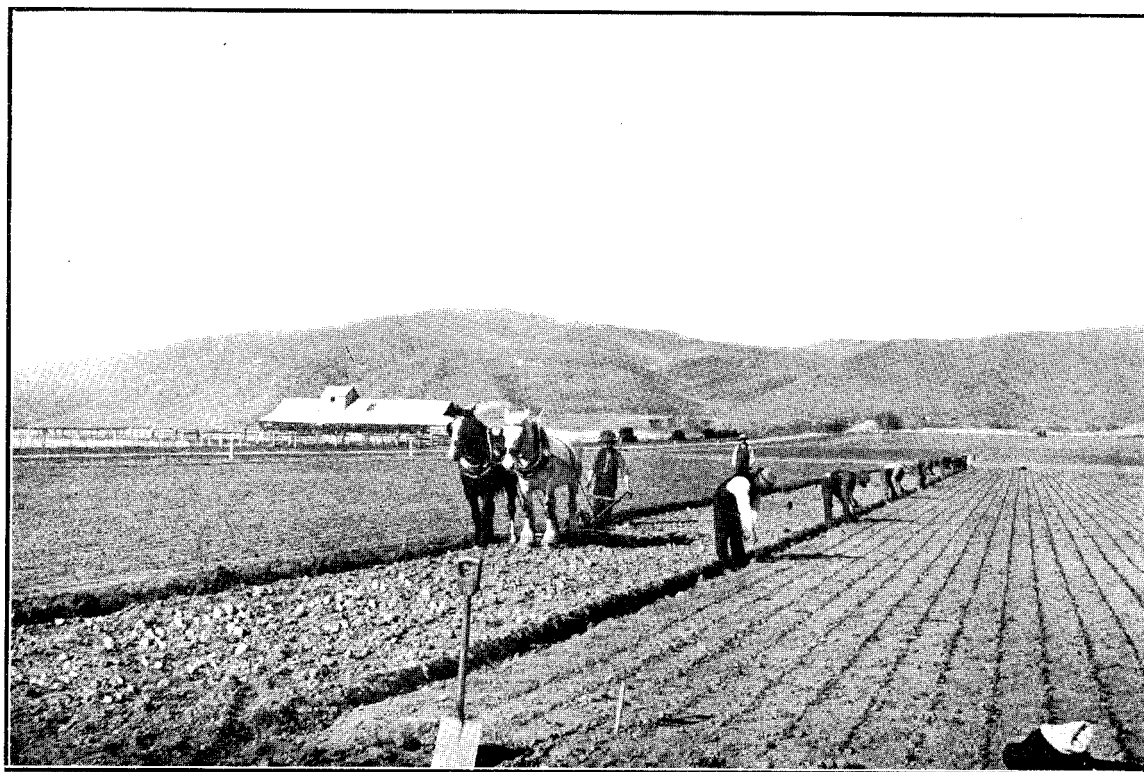
The following is a record of rainfall and temperature for the year:—

| Month. | Rainfall. | Number of Days Rain fell. | Highest Reading of Thermometer. | Date. | Lowest Reading of Thermometer. | Date. |
|---------------|-----------|---------------------------|---------------------------------|---------------------|--------------------------------|------------|
| 1906. | Inches. | | Degrees. | | Degrees. | |
| April ... | 1.05 | 8 | 82 | 21st | 29 | 11th |
| May ... | 2.43 | 8 | 74 | 2nd | 25 | 4th |
| June ... | 1.37 | 8 | 70 | 20th, 22nd | 23 | 11th, 25th |
| July ... | 2.31 | 16 | 63 | 5th | 21 | 28th |
| August ... | 0.98 | 5 | 73 | 20th | 23 | 7th |
| September ... | 2.21 | 13 | 79 | 29th | 27 | 16th |
| October ... | 0.41 | 3 | 84 | 28th, 30th | 28 | 2nd |
| November ... | 2.29 | 10 | 85 | 22nd | 31 | 9th |
| December ... | 0.10 | 4 | 95 | 18th | 35 | 14th |
| 1907. | | | | | | |
| January ... | 1.53 | 9 | 95 | 1st | 33 | 28th |
| February ... | 2.91 | 7 | 79 | 4th, 17th, and 20th | 41 | 7th, 26th |
| March ... | 3.69 | 11 | 78 | 10th | 38 | 25th |
| Totals ... | 21.28 | 102 | ... | ... | ... | ... |



BUILDING SEED-FRAMES, KUROW NURSERY.

[N. Craig, photo.]



LINING-OUT TREES AT KUROW NURSERY.

[N. Craig, photo.]

Statement of Accounts.

| Expenditure. | | | | £ | s. | d. |
|---------------------------------|-----|-----|-----|--------|----|----|
| Amount at the 31st March, 1906 | ... | ... | ... | 6,523 | 8 | 10 |
| Tree-growing | ... | ... | ... | 640 | 4 | 5 |
| General maintenance and repairs | ... | ... | ... | 200 | 19 | 3 |
| Nursery-formation | ... | ... | ... | 15 | 6 | 7 |
| Horse-feed | ... | ... | ... | 88 | 9 | 8 |
| Tree-seeds | ... | ... | ... | 48 | 14 | 3 |
| Tools, implements, &c. | ... | ... | ... | 3 | 7 | 8 |
| Buildings | ... | ... | ... | 12 | 12 | 7 |
| Miscellaneous works | ... | ... | ... | 75 | 3 | 2 |
| Supervision | ... | ... | ... | 22 | 13 | 0 |
| | | | | £7,630 | 19 | 5 |

Values of Stock.

| | £ | s. | d. | £ | s. | d. | £ | s. | d. |
|--|-------|-----|-----|-------|----|----|--------|----|----|
| Amount at the 31st March, 1906 | ... | ... | ... | 8,230 | 13 | 0 | | | |
| Less value of trees | 2,808 | 6 | 3 | | | | | | |
| " horse-feed | 133 | 0 | 0 | | | | | | |
| | | | | 3,941 | 6 | 3 | | | |
| Trees, as per Schedule 1 | | | | | | | 4,289 | 6 | 9 |
| " " 2 | | | | | | | 714 | 0 | 0 |
| " " 3 | | | | | | | 1,229 | 11 | 0 |
| Tools, implements, &c. | | | | | | | 111 | 0 | 0 |
| Nursery-formation | | | | | | | 3 | 7 | 8 |
| Buildings—completion of men's quarters | | | | | | | 15 | 6 | 7 |
| Value of one foal | | | | | | | 12 | 12 | 7 |
| Horse-feed in stock | | | | | | | 10 | 0 | 0 |
| Improved value | | | | | | | 125 | 0 | 0 |
| | | | | | | | 202 | 4 | 7 |
| | | | | | | | £6,712 | 9 | 2 |

Summary.

| | £ | s. | d. |
|---|--------|----|----|
| Value of present stock and general improvements | 6,712 | 9 | 2 |
| Value of trees sent out since initiation of nursery | 4,099 | 13 | 6 |
| | 10,812 | 2 | 8 |
| Expenditure to date | 7,630 | 19 | 5 |
| Credit balance | £3,181 | 3 | 3 |

Stock in Hand.

SCHEDULE 1.—Details of One-year-old Trees, grown 1906-7. (Sixth Crop.)

| Name of Tree. | Number in Seed-beds. | Height in Inches. | Seed sown. | Value per Thousand. | Total Value. | Remarks. |
|-----------------------------|----------------------|-------------------|------------|---------------------|-----------------|--------------------------------|
| Larix Europæa | 250,000 | 2-6 | Lb. 168 | £ s. d. 1 0 0 | £ s. d. 250 0 0 | Good. |
| Pinus Laricio | 340,000 | 2 | 42 | 1 0 0 | 340 0 0 | Very good crop. |
| Austriaca | 60,000 | 2 | 7 | 1 0 0 | 60 0 0 | |
| ponderosa | 2,500 | 2-3 | 12 | 1 0 0 | 2 10 0 | Good plants; germination poor. |
| ponderosa, var. Benthamiana | 1,500 | 2-3 | 7 | 1 5 0 | 1 17 6 | |
| strobilus | 4,000 | 1-2 | 7 | 1 0 0 | 4 0 0 | Fair. |
| Torreyana | 500 | 2-4 | 3 | 1 5 0 | 0 12 6 | Strong plants. |
| Pseudo-tsuga taxifolia | 12,000 | 2-4 | 8 | 1 5 0 | 15 0 0 | Satisfactory crop. |
| Robinia pseudo-acacia | 80,000 | 12-36 | 56 | 0 10 0 | 40 0 0 | Very good. |
| Totals | 750,500 | .. | .. | .. | 714 0 0 | |

SCHEDULE 2.—Details of Two-year-old Trees, grown 1905-6. (Fifth Crop.)

| Name of Tree. | Number in Nursery Lines. | Height in Inches. | Value per Thousand. | Total Value. | Remarks. |
|-----------------------------|--------------------------|-------------------|---------------------|-----------------|--|
| Larix Europæa | 240,000 | 8-18 | £ s. d. 2 5 0 | £ s. d. 540 0 0 | Good plants; killed in patches by grass-grub |
| Pinus Laricio | 150,000 | 3 | 2 5 0 | 337 10 0 | |
| Austriaca | 30,000 | 3-4 | 2 5 0 | 67 10 0 | Have done fair. |
| ponderosa | 35,000 | 3-5 | 2 5 0 | 78 15 0 | |
| ponderosa, var. Benthamiana | 25,000 | 3-5 | 2 10 0 | 62 10 0 | Strong and healthy. |
| contorta | 1,200 | 4-7 | 2 5 0 | 2 14 0 | |
| muricata | 7,000 | 4-10 | 2 5 0 | 15 15 0 | Very poor; suffered severely from drought. |
| strobilus | 400 | 2 | 2 5 0 | 0 18 0 | |
| Torreyana | 200 | 3-7 | 2 5 0 | 0 9 0 | Very good. |
| Picea sitchensis | 800 | 2-8 | 2 10 0 | 2 0 0 | |
| Pseudo-tsuga taxifolia | 600 | 3-6 | 2 10 0 | 1 10 0 | |
| Robinia pseudo-acacia | 80,000 | 24-48 | 1 10 0 | 120 0 0 | |
| Totals | 570,200 | .. | .. | 1,229 11 0 | |

SCHEDULE 3.—Details of Three-year-old Trees, grown 1904-5. (Fourth Crop.)

| Name of Tree. | Number in Nursery Lines. | Height in Inches. | Value per Thousand. | Total Value. | Remarks. |
|-------------------------|--------------------------|-------------------|---------------------|-------------------|-----------------------|
| Pinus Austriaca | 19,000 | 4-10 | £ s. d. 3 0 0 | £ s. d. 57 0 0 | } Good strong plants. |
| " ponderosa | 18,000 | 4-10 | 3 0 0 | 54 0 0 | |
| Totals | 37,000 | .. | .. | 111 0 0 | |

SCHEDULE 4.—Trees transferred from Starborough Nursery to Plantations, Nurseries, &c., 1906-7.

| Where sent. | Name of Tree. | Number of Trees. | Value per Thousand. | Total Value. | Remarks. |
|--|---|------------------|---------------------|---------------------|--|
| Dumgree Plantation | Pinus Austriaca .. | 170,500 | £ s. d. 3 0 0 | £ s. d. 511 10 0 | } Have done fair. } Did well after planting, but suffered severely afterwards from the drought. } All dead. } Fair on terrace where not exposed to winds. } Did well up to December, when fully 50 per cent. died the following two months from drought. |
| | " ponderosa .. | 2,275 | 3 0 0 | 6 16 6 | |
| | " strobilus .. | 2,900 | 3 0 0 | 8 14 0 | |
| | " Laricio .. | 58,950 | 2 5 0 | 132 12 9 | |
| | " muricata .. | 8,500 | 2 5 0 | 19 2 6 | |
| | " halepensis .. | 500 | 2 5 0 | 1 2 6 | |
| | Larix Europæa: .. | 193,200 | 2 5 0 | 434 14 0 | |
| | Robinia pseudo-acacia .. | 16,950 | 1 10 0 | 25 8 6 | |
| | Pseudo-tsuga taxifolia .. | 92,000 | 4 0 0 | 368 0 0 | |
| | " .. | 15,400 | 2 10 0 | 38 10 0 | |
| | | 561,175 | | 1,546 10 9 | |
| Kurow Nursery | Larix Europæa .. | 200,000 | 1 0 0 | 200 0 0 | |
| | Pinus Laricio .. | 297,000 | 1 0 0 | 297 0 0 | |
| | " Austriaca .. | 24,000 | 1 0 0 | 24 0 0 | |
| | " muricata .. | 9,000 | 1 0 0 | 9 0 0 | |
| | " ponderosa .. | 4,000 | 1 0 0 | 4 0 0 | |
| | " Benthamiana .. | 1,000 | 1 5 0 | 1 5 0 | |
| | Berberis aristata .. | 6,500 | 1 0 0 | 6 10 0 | |
| | | 541,500 | | 541 15 0 | |
| Mackenzie County Council, Fairlie | Larix Europæa .. | 10,000 | 2 5 0 | 22 10 0 | |
| | Pinus Laricio .. | 80,000 | 1 5 0 | 100 0 0 | |
| | " .. | 10,000 | 1 5 0 | 12 10 0 | |
| | | 100,000 | | 135 0 0 | |
| | Cost of lifting, packing, and cartage of above .. | .. | .. | 14 3 0 | |
| | | | | 149 3 0 | |
| Dumgree Plantation .. | As per details above .. | 561,175 | .. | 1,546 10 9 | |
| Kurow Nursery .. | " .. | 541,500 | .. | 541 15 0 | |
| Mackenzie County Council .. | " .. | 100,000 | .. | 149 3 0 | |
| Tapanui Nursery .. | Larix Europæa .. | 84,000 | 1 0 0 | 84 0 0 | |
| Nelson Agricultural and Pastoral Association | Pinus halepensis .. | 2,000 | 2 5 0 | 4 10 0 | |
| Wellington Tree-planting & Scenery Society | Robinia pseudo-acacia .. | 500 | 1 0 0 | 0 10 0 | |
| Agricultural Department, Wellington | Berberis aristata .. | 3,000 | 1 0 0 | 3 0 0 | |
| Rotorua Nursery | 12½ tons hay, at £2 per ton .. | .. | .. | 25 0 0 | |
| | 16 tons chaff, at £2 per ton .. | .. | .. | 32 0 0 | |
| Total .. | | 1,292,175 | .. | 2,386 8 9 | |

W. CROMB,
Nurseryman in Charge.

TAPANUI NURSERY, NEAR GORE, SOUTHLAND.

(Area, 120 acres; altitude, 500 ft.)

During the year 30-37 in. of rain fell on 134 days, the maximum monthly fall being 5.44 in., recorded in April. The minimum shade temperature of 21 deg. was registered on the 29th July, and the highest, 88 deg., on the 6th January.

A mild winter was succeeded by an unprecedented dry spring and summer; in consequence, the result of our year's labour at this station has not reached the usual standard of success. Creeks in the vicinity, which have hitherto yielded a constant supply of water, ceased running, and for an extended period great difficulty was experienced in obtaining sufficient water for seedlings.

Hardwood-seed sowing was carried on during the latter part of June, when small quantities of oak, ash, and sycamore were sown in drills with satisfactory results. A trial sowing of *Acer saccharum* was also made, and, although germination freely followed, the seedlings have not retained a healthy appearance, and further tests may prove the unsuitability of this species of maple for this climate.

Conifer-seed sowing was commenced on the 15th of October, and completed four days later under favourable conditions, and, as in the previous year, *Picea sitchensis* and *Pseudo-tsuga taxifolia* were the only varieties which failed to germinate favourably. Special attention may be directed to the success of *Pinus Laricio* and *Betula alba* sowings. From 56 lb. of the former seed 422,000 trees resulted, and 12 lb. of birch-seed produced an estimate of 90,000 seedlings.

The two-year-old trees in beds, being well established, did not apparently feel the effects of the dry season, and have developed into the usual class for transferring to plantations, with a small proportion of overgrown larch, but these will receive careful treatment and be planted in sheltered spots.

Lining out of one- and two-year-old seedlings was commenced on the 17th August and completed on the 3rd October, and during that period 1,212,420 trees were transferred from seed-beds to nursery lines at a cost of 2s. 8½d. per thousand. The soil being of a strong, loamy nature here, and subject to cracking when moisture is withheld from the surface for even a short space of time, it was necessary to apply foot-pressure at the base of young trees throughout the whole transplanted area. This labour had the desired effect, but a number of the abies and pines failed to resist the influence of the drought.

The grub (*Odontria Zealandia*), which has previously caused much anxiety here, appeared in increasing numbers, devouring the bark of larch and pine-roots, either killing many of the trees outright or so injuring them as to render the young trees useless for plantation purposes. Different measures for exterminating the grubs have for the most part hitherto proved unavailing, but another attempt will be made during the ensuing year, when the affected area will be planted with hardwood trees (the bark of which appears to be ignored by the pest) and special attention paid to the eradication of weeds growing in the vicinity, in order that no nourishment for the growth of the grubs may be available.

A "break" of *Fraxinus Americanus* is very noticeable for the healthy, vigorous growth made, and, this class of timber being very valuable, a further sowing of the variety is desirable.

The total number of trees of all ages in the nursery at present is estimated at 2,852,790, valued at £4,971 3s. 6d.

During the winter and early spring months 709,733 trees (as per Schedule 4), valued at £2,090 17s. 3d., were transferred to the following plantations, domains, &c.: Conical Hills Plantation, 632,708; Dusky Hill Plantation, 27,000; Waitahuna Plantation, 26,825; Hanmer Springs Nursery, 11,500; Kurow, 10,000; Lauder Domain Board, 1,200; Waiau Domain Board, 500.

Eighty-four thousand two-year-old larch seedlings for lining-out purposes were received from Starborough Nursery, but owing to the prolonged confinement in cases the seedlings did not arrive in very good condition, and the past dry season has not been conducive to the recovery of those that would probably have developed into desirable plantation-trees if a reasonable amount of moisture had been received.

The total number of trees grown to the 31st March is 7,524,855, valued at £18,434 17s. 2d., and the total number of trees transferred to plantations, &c., since the initiation of nursery is 4,832,063, representing a value of £15,734 1s. 8d.

Building Improvements.—A small outlay only was necessary to erect a substantial shed in horse-paddock to provide shelter for the foals during the winter months, and the method of feeding the young animals in an open shed has been chiefly responsible for their present docility. A much-needed bath-room was attached to men's quarters, and other minor improvements effected.

Draining.—An area of about 5 acres of land, overgrown with rushes and previously used as a horse-paddock, was tilled at a cost of £12 10s., and it is expected to raise a few crops of horse-feed before the area is finally sown down in grass.

Shelter and ornamental plantations continue to make excellent progress, and extension-work in this direction was confined to the planting of swamps with alder and poplar.

The native scale disease (*Polyaspia media*), which is accompanied with the black fungus "honey-dew," has proved very destructive to a portion of our *Pittosporum tenuifolium* hedges, and a considerable amount of labour was entailed in checking the spread of the pest by spraying with an insecticide, which had the desired effect for the time being, but owing to the density of the foliage application of mixture is very difficult, and the treatment will have to be repeated at intervals.

The expenditure for the year amounted to £1,517 14s. 4d., providing employment for an average of thirteen men.

About 20 tons of oaten sheaves was harvested from 16 acres, and 10 tons of chaff transferred to other nurseries, as per Schedule 4.

Stock in Hand.

SCHEDULE 1.—Details of One-year-old Trees, grown 1906-7. (Tenth Crop.)

| Name of Tree. | Number in Seed-beds. | Height in Inches. | Seed sown. | Value per Thousand. | Total Value. | Remarks. |
|-------------------------------------|----------------------|-------------------|------------|---------------------|--------------|----------------------------|
| | | | Lb. | £ s. d. | £ s. d. | |
| <i>Pseudo-tsuga taxifolia</i> | 14,000 | 1 | 14 | 1 5 0 | 17 10 0 | Poor results. |
| <i>Picea sitchensis</i> | 12,000 | 1 | 6 | 1 5 0 | 15 0 0 | |
| <i>Pinus Austriaca</i> | 58,000 | 2 | 7 | 1 0 0 | 58 0 0 | Excellent crops. |
| <i>Laricio</i> | 422,000 | 2 | 56 | 1 0 0 | 422 0 0 | |
| <i>ponderosa</i> | 8,000 | 2 | 18 | 1 0 0 | 8 0 0 | Sturdy plants. |
| <i>Benthamiana</i> | 3,800 | 2 | 7 | 1 5 0 | 4 15 0 | |
| <i>Torreyana</i> | 600 | 2 | 3 | 1 5 0 | 0 15 0 | Germinated fairly. |
| <i>Jeffreyi</i> | 500 | 2 | 1 | 1 5 0 | 0 12 6 | |
| <i>Larix Europæa</i> | 238,000 | 4 | 168 | 1 0 0 | 238 0 0 | Extra strong growth. |
| <i>Fraxinus excelsior</i> | 4,000 | 2 | 3 sacks | 1 0 0 | 4 0 0 | Strong plants. |
| <i>Acer pseudo-platanus</i> | 29,000 | 5 | 1 sack | 0 10 0 | 14 10 0 | |
| <i>Acer saccharum</i> | 3,000 | 2 | 14 | 1 0 0 | 3 0 0 | Germinated well but weakly |
| <i>Quercus pedunculata</i> | 75,000 | 3 | 300 | 1 0 0 | 75 0 0 | |
| <i>Betula alba</i> | 90,000 | 4 | 12 | 1 0 0 | 90 0 0 | Excellent results. |
| <i>Alnus glutinosa</i> | 15,250 | 4 | 6 | 0 15 0 | 11 8 9 | |
| Totals | 973,150 | .. | .. | .. | 962 11 3 | |

SCHEDULE 2.—Details of Two-year-old Trees, grown 1905-6. (Ninth Crop.)

| Name of Tree. | Number in Seed-beds. | Number in Nursery Lines. | Height in Inches. | Value per Thousand. | Total Value. | Remarks. |
|-------------------------------------|----------------------|--------------------------|-------------------|---------------------|--------------|------------------------|
| | | | | £ s. d. | £ s. d. | |
| <i>Picea excelsa</i> | 235,000 | .. | 3 | 1 5 0 | 293 15 0 | Well-grown plants. |
| <i>Pseudo-tsuga taxifolia</i> | 50,000 | .. | 8 | 1 10 0 | 75 0 0 | |
| <i>Picea sitchensis</i> | 82,000 | .. | 4 | 1 10 0 | 123 0 0 | Excellent seedlings. |
| <i>Pinus Austriaca</i> | 43,000 | .. | 4 | 1 5 0 | 53 15 0 | |
| <i>Laricio</i> | 94,000 | .. | 3 | 1 5 0 | 117 10 0 | Fair growth. |
| <i>ponderosa</i> | 88,000 | .. | 3 | 1 5 0 | 110 0 0 | |
| <i>Benthamiana</i> | 30,000 | .. | 3 | 1 10 0 | 45 0 0 | Medium crop. |
| <i>muricata</i> | .. | 30,000 | 5 | 2 5 0 | 67 10 0 | |
| <i>Jeffreyi</i> | .. | 200 | 3 | 2 10 0 | 0 10 0 | Poor results. |
| <i>Torreyana</i> | .. | 50 | 3 | 2 10 0 | 0 2 6 | |
| <i>Larix Europæa</i> | 260,000 | .. | 15 | 1 5 0 | 325 0 0 | Vigorous plants. |
| <i>Acer pseudo-platanus</i> | .. | 71,000 | 14 | 1 10 0 | 106 10 0 | |
| <i>Fraxinus excelsior</i> | 6,250 | .. | 8 | 1 5 0 | 7 16 3 | Strong, healthy trees. |
| <i>Betula alba</i> | .. | 1,000 | 9 | 2 5 0 | 2 5 0 | |
| <i>Quercus pedunculata</i> | .. | 5,000 | 12 | 2 5 0 | 11 5 0 | Satisfactory results. |
| Assorted trees and shrubs | .. | 6,500 | .. | 2 5 0 | 14 12 6 | |
| Totals | 888,250 | 113,750 | .. | .. | 1,353 11 3 | |

SCHEDULE 3.—Details of Three-year-old Trees, grown 1904-5. (Eighth Crop.)

| Name of Tree. | Number in Nursery Lines. | Height in Inches. | Value per Thousand. | Total Value. | Remarks. |
|--------------------------------------|--------------------------|-------------------|---------------------|--------------|---|
| | | | £ s. d. | £ s. d. | |
| <i>Picea excelsa</i> | 261,300 | 5 | 3 0 0 | 783 18 0 | Only fair results. |
| <i>Pseudo-tsuga taxifolia</i> | 41,500 | 4 | 3 5 0 | 134 17 6 | |
| <i>Picea sitchensis</i> | 67,350 | 3 | 3 5 0 | 218 17 9 | Attacked by grub. |
| <i>Pinus Austriaca</i> | 58,800 | 5 | 3 0 0 | 176 8 0 | |
| <i>Laricio</i> | 89,200 | 4 | 3 0 0 | 267 12 0 | Medium growth. |
| <i>ponderosa</i> | 36,800 | 4 | 3 0 0 | 110 8 0 | |
| <i>radiata</i> | 300 | 12 | 3 0 0 | 0 18 0 | These trees have resisted the drought, and made excellent progress. |
| <i>Larix Europæa</i> | 248,320 | 15 | 3 0 0 | 744 19 2 | |
| <i>Betula alba</i> | 9,360 | 14 | 3 0 0 | 28 1 7 | Only fair results. |
| <i>Fraxinus excelsior</i> | 31,720 | 12 | 3 0 0 | 95 3 2 | |
| <i>Americanus</i> | 12,940 | 11 | 3 0 0 | 38 16 4 | Attacked by grub. |
| <i>Robinia pseudo-acacia</i> | 2,100 | 21 | 1 10 0 | 3 3 0 | |
| <i>Alnus glutinosa</i> | 200 | 12 | 3 0 0 | 0 12 0 | Medium growth. |
| <i>Acer pseudo-platanus</i> | 10,400 | 18 | 2 15 0 | 28 12 0 | |
| <i>Acer saccharum</i> | 1,000 | 7 | 3 0 0 | 3 0 0 | These trees have resisted the drought, and made excellent progress. |
| <i>Quercus pedunculata</i> | 5,000 | 7 | 3 0 0 | 15 0 0 | |
| <i>Pittosporum tenuifolium</i> | 350 | 20 | 3 10 0 | 1 4 6 | Only fair results. |
| Ornamental and native trees | 1,000 | 15 | 3 10 0 | 3 10 0 | |
| Totals | 877,640 | .. | .. | 2,655 1 0 | |

SCHEDULE 4.—Trees transferred from Tapanui Nursery to Plantations, Domains, &c., 1906-7.

| Where sent. | Name of Tree. | Number. | Height in Inches. | Value per Thousand. | Total Value. | Remarks. |
|-------------------------------|-------------------------------|---------|-------------------------|------------------------|---------------------|--|
| Conical Hills Plan- tation | Pinus Austriaca .. | 113,875 | 12 | £ s. d. 3 0 0 | £ s. d. 341 12 6 | Satisfactory results. |
| | " Laricio .. | 25,750 | 10 | 3 0 0 | 77 5 0 | |
| | " muricata .. | 5,375 | 15 | 3 0 0 | 16 2 6 | Failure. |
| | " radiata .. | 1,808 | 14 | 3 0 0 | 3 18 5 | |
| | " strobilus .. | 75 | 9 | 3 0 0 | 0 4 6 | Fair growth. |
| | " rigida .. | 75 | 10 | 3 0 0 | 0 4 6 | |
| | Picea excelsa .. | 189,800 | 10 | 3 0 0 | 567 18 0 | These trees have made fair progress, but the general death- rate amounts to about 5 per cent. |
| | Pseudo-tsuga taxifolia .. | 18,050 | 12 | 3 5 0 | 58 13 3 | |
| | Larix Europæa .. | 131,800 | 15 | 3 0 0 | 395 8 0 | |
| | Fraxinus excelsior .. | 49,925 | 15 | 3 0 0 | 149 15 6 | |
| | " Americanus .. | 1,475 | 12 | 3 0 0 | 4 8 6 | |
| | Quercus pedunculata .. | 13,200 | 12 | 3 0 0 | 39 12 0 | |
| | Acer pseudo-platanus .. | 23,950 | 15 | 2 15 0 | 65 17 3 | |
| | " saccharum .. | 2,050 | 12 | 3 0 0 | 6 3 0 | |
| | Betula alba .. | 50,600 | 18 | 3 0 0 | 151 16 0 | |
| | Juglans regia .. | 1,300 | 14 | 4 5 0 | 5 10 6 | |
| | Robinia pseudo-acacia .. | 1,375 | 15 | 2 5 0 | 3 1 10 | |
| | Populus (vars.) .. | 2,825 | 20 | 1 10 0 | 4 4 9 | |
| | Trees and shrubs (vars.) .. | 400 | 12 | 3 0 0 | 1 4 0 | Sown <i>in situ</i> ; germin- ated well. |
| | Quercus pedunculata .. | 236,500 | .. | 1 5 0 | 295 12 6 | |
| | | 869,208 | | | 2,188 12 6 | |
| Dusky Hill Planta- tion | Pinus Austriaca .. | 2,500 | 12 | 3 0 0 | 7 10 0 | These trees were des- troyed by fire. |
| | Picea excelsa .. | 1,000 | 15 | 3 0 0 | 3 0 0 | |
| | Larix Europæa .. | 500 | 18 | 3 0 0 | 1 10 0 | |
| | Fraxinus excelsior .. | 1,500 | 18 | 3 0 0 | 4 10 0 | |
| | Acer pseudo-platanus .. | 21,500 | 20 | 2 15 0 | 59 2 6 | |
| | Quercus pedunculata .. | 15,050 | .. | 1 5 0 | 18 16 3 | |
| | | 42,050 | | | 94 8 9 | |
| Waitahuna Planta- tion | Pinus Austriaca .. | 3,500 | 12 | 3 0 0 | 10 10 0 | With the exception of P. muricata and Acer saccharum, all these varieties pro- mise to be a success. |
| | " ponderosa .. | 300 | 10 | 3 0 0 | 0 18 0 | |
| | " strobilus .. | 50 | 9 | 3 0 0 | 0 3 0 | |
| | " muricata .. | 1,000 | 15 | 3 0 0 | 3 0 0 | |
| | Picea excelsa .. | 4,375 | 15 | 3 0 0 | 13 2 6 | |
| | Pseudo-tsuga taxifolia .. | 2,500 | 15 | 3 5 0 | 8 2 6 | |
| | Larix Europæa .. | 3,000 | 18 | 3 0 0 | 9 0 0 | |
| | Fraxinus excelsior .. | 3,000 | 15 | 3 0 0 | 9 0 0 | |
| | Quercus pedunculata .. | 2,000 | 14 | 3 0 0 | 6 0 0 | |
| | Betula alba .. | 3,000 | 15 | 3 0 0 | 9 0 0 | |
| Hamner Springs Nursery | Acer pseudo-platanus .. | 3,000 | 15 | 2 15 0 | 8 5 0 | For plantation pur- poses. |
| | " saccharum .. | 1,000 | 12 | 3 0 0 | 3 0 0 | |
| | Alnus glutinosa .. | 100 | 14 | 3 0 0 | 0 6 0 | |
| | | 26,825 | | | 80 7 0 | |
| | Betula alba .. | 10,000 | 12 | 2 5 0 | 22 10 0 | |
| Kurow Nursery .. | Alnus glutinosa .. | 1,500 | 15 | 2 0 0 | 3 0 0 | Small, for lining-out seedlings |
| | Five tons chaff at £3 5s. ton | .. | .. | .. | 25 10 0 | |
| | | .. | .. | .. | 16 5 0 | |
| Conical Hills Planta- tion | | | | | 41 15 0 | |
| | | | | | 30 0 10 | |
| Conical Hills Planta- tion | As per details above | 869,208 | .. | .. | 2,188 12 6 | |
| Dusky Hill Planta- tion | " | 42,050 | .. | .. | 94 8 9 | |
| Waitahuna Planta- tion | " | 26,825 | .. | .. | 80 7 0 | |
| Hamner Springs Plantation | " | 11,500 | .. | .. | 41 15 0 | |
| Kurow Nursery .. | " | 10,000 | .. | .. | 30 0 10 | |
| Lauder Domain Board | Trees and shrubs | 1,200 | .. | .. | 4 7 9 | |
| Waiau Domain Board | " | 500 | .. | .. | 2 0 0 | |
| Totals .. | .. | 961,283 | .. | .. | 2,441 11 10 | |

R. G. ROBINSON,
Nurseryman in Charge.

CONICAL HILLS PLANTATION, NEAR TAPANUI, OTAGO.

(Area, 3,672 acres; altitude, 400 ft.)

The past unusually dry season has not been at all conducive to satisfactory results in tree-planting operations, although it is pleasing to note that trees established not only resisted the influence of the drought, but in many cases made excellent progress. Such success, however, did not attend last season's planting, when the death-rate was estimated at about 5 per cent.

There were 632,708 trees planted by day-labour, at a cost of 13s. 4½d. per thousand, and occupying an area of 232½ acres, and the preparation of ground and planting of 236,500 acorns was carried on at a cost of 11s. 11d. per thousand. The area planted for the year amounted to 281½ acres, making a total of 946½ acres, containing 2,943,379 trees.

For tree-planting 431,350 pits were made by contract at a cost of £1 5s. per thousand, but on apportioning the Forester's salary this cost per thousand works out at £1 6s. 11d.

There were also 43,034 grubber pits prepared, at £1 per thousand; actual cost, £1 2s. 8d. per thousand.

Tree-planting with bar will be introduced at this station during the coming year, and for that purpose 8,000 spots were prepared by simply "scuffing." Ploughing of roads and fire-breaks with nursery team occupied about four weeks, and as planting extends and more roads and breaks are required, it will probably be found that the one team will have difficulty in working the three stations at required periods. Roads ploughed were allowed to remain in their rough state for some months, and then received a few strokes with the harrows.

A strip of ground about a quarter of a chain wide and 150 chains long, on the outside of boundary-fence, was also ploughed, and tussocks burnt back from this point to lessen risk of encroaching fires.

The whole of the fenced area is now pitted, and the Department have resumed for extension purposes four small grazing-runs adjoining, with a total of 2,622 acres. A dwellinghouse and outhouses and four small huts are included in the property, which has been leased temporarily at a half-yearly rental of £73 7s. 10d.

Fencing operations are now progressing, and it is hoped to have the work completed before the winter.

The nursery wagon again requiring complete overhauling, authority has been given for the purchase of a new one of heavier type, which should enable the cartage of trees to be carried out more economically and expeditiously.

General Maintenance.—Unseasonable frosts are frequently responsible for the sudden checking of growth in young trees, which invariably results in double shoots issuing from the apex of leaders, necessitating the removal of one of them. This work occupied a portion of the time, and cleaning around trees, rabbiting of newly acquired area, cutting scrub, and removal of noxious weeds were also undertaken by day-labour.

Arrangements are being made for the planting of 400,000 trees here during the coming spring.

The expenditure for the year amounted to £2,782 11s. 5d., providing employment for an average of seventeen men.

| <i>Expenditure.</i> | | | | £ | s. | d. |
|--|-----|-----|-----|--------|----|----|
| Amount at the 31st March, 1906 | ... | ... | ... | 5,500 | 10 | 3 |
| Cost of acquiring 2,622 acres for extension purposes | ... | ... | ... | 750 | 0 | 0 |
| Pitting— | | | | | | |
| 431,350 pits | ... | ... | ... | 580 | 11 | 3 |
| 43,034 grubber pits | ... | ... | ... | 48 | 15 | 7 |
| Preparing 8,000 spots for planting with bar | ... | ... | ... | 6 | 17 | 9 |
| Tree-planting—632,708 trees | ... | ... | ... | 423 | 7 | 6 |
| Preparing ground and planting 236,500 acorns | ... | ... | ... | 141 | 1 | 3 |
| Cartage of trees from Tapanui Nursery | ... | ... | ... | 18 | 0 | 0 |
| General upkeep of plantation | ... | ... | ... | 314 | 11 | 7 |
| Fencing—material and part labour | ... | ... | ... | 341 | 14 | 10 |
| Tools, implements, &c. | ... | ... | ... | 17 | 15 | 2 |
| Road-formation | ... | ... | ... | 26 | 8 | 6 |
| Tree-seeds—acorns, and railage | ... | ... | ... | 7 | 10 | 0 |
| Miscellaneous works | ... | ... | ... | 52 | 2 | 0 |
| Nurseryman's salary, Proportion of | ... | ... | ... | 31 | 0 | 0 |
| Supervision | ... | ... | ... | 22 | 16 | 0 |
| | | | | £8,283 | 1 | 8 |

NOTE.—Revenue received: Half-yearly rental amounting to £73 7s. 10d., for the lease of extension property for grazing purposes, from 1st January to 30th June, 1907.

H. HOWE, Forester.

R. G. ROBINSON, Nurserymanⁿ in Charge.

DUMGREE PLANTATION, MARLBOROUGH.

(Area, 881 acres; altitude, 100 ft.)

Free and prison labour was again employed on this plantation, but owing to a much larger number of trees having to be dealt with, free labour had to be greatly increased, and the larger portion of the work has been done by free men.

During the year prisoners planted 76,950 trees, and the free men 484,225, making a total of 561,175. Of this number 525,575 were planted on an area of 193½ acres, 35,600 being used to fill up blanks in previous years' plantings. The cost of planting was £1 7s. 8½d. per thousand. The area planted to date is 385½ acres, with a total of 1,061,661 trees.

Pits to the number of 602,258 were dug; prisoners digging 181,614 and free men 420,644, at a cost of £3 0s. 4d. per thousand. 116,800 blank pits were also reopened, the cost being £1 2s. 6d. per thousand.

The area pitted and planted during the year was very much more stony than that done in former years, which accounts for the higher rate of cost per thousand than in the previous years.

Fire-breaks.—172 chains was chipped and cleared, this work being done by both classes of labour.

Rabbiting was done periodically, and no damage has resulted from this pest. The cost of this work for the year was £6 17s. 7d.

The daily average number of men employed during the year was 21·79.

Prison Labour.—The daily average number of prisoners employed was 17·28, the value of the work done being £675 6s. 11d., or an average of £39 2s. 9d. per man for the year. The work done was very creditable and satisfactory.

Owing to the severe drought experienced during the spring and summer months, a very large death rate has to be recorded all over the plantation. Planting operations were commenced in May and completed in August. At the end of September mostly all species planted appeared to be going to do well, but during the next three months, owing to drying winds and a meagre rainfall, considerable numbers began to die, and the death rate is estimated at 50 per cent. Those that suffered most were larch and Oregon and Corsican pines, the deaths among the larch being only where planted on the flats; those on the terraces, where not exposed to the north-west winds, have done well.

False acacia also suffered considerably, but a number of these are putting up fresh shoots from the root.

Among former years' plantings a considerable number have also succumbed, chiefly larch, and Oregon, Weymouth, and pitch pines. After the experience of the past season, an idea can now be formed as to which of the various species planted are best adapted for this locality. *P. Austriaca*, *P. Laricio*, *P. ponderosa*, and *P. Benhamiana* will probably be found to be the best. Larch, except on southern slopes, cannot be recommended as compared with the four above-mentioned pines. This is strongly demonstrated where mixed planting was done in 1904-5; for every one of these pines found dead probably twenty larches would be got. It is therefore worthy of consideration whether or not this tree should be planted here so extensively as it has been.

During the year £22 19s. was received for rent, and £37 19s. for flax, which was duly paid to the credit of State Forest Account.

The total revenue received from this plantation to date is £145 6s.

The expenditure for the year was £2,556 3s., the total to date being £8,796 18s.

| <i>Expenditure.</i> | | | | £ | s. | d. |
|---------------------------------------|-----|-----|-----|--------|----|----|
| Amount at the 31st March, 1906 | ... | ... | ... | 6,240 | 15 | 0 |
| Pitting— | | | | | | |
| 420,634 pits | ... | ... | ... | 1,270 | 1 | 3 |
| Reopening 116,800 pits | ... | ... | ... | 131 | 6 | 5 |
| Tree-planting—484,225 trees | ... | ... | ... | 701 | 7 | 3 |
| Cartage of trees | ... | ... | ... | 19 | 19 | 6 |
| General upkeep of plantation | ... | ... | ... | 92 | 6 | 3 |
| Tools, implements, &c. | ... | ... | ... | 69 | 1 | 2 |
| Miscellaneous works | ... | ... | ... | 66 | 7 | 0 |
| Supervision of free and prison labour | ... | ... | ... | 159 | 3 | 6 |
| Nurseryman's salary, Proportion of | ... | ... | ... | 28 | 16 | 8 |
| Supervision | ... | ... | ... | 17 | 14 | 0 |
| | | | | £8,796 | 18 | 0 |

NOTE.—Revenue amounting to £60 18s. was received during the year, making a total of £145 6s. received to date.

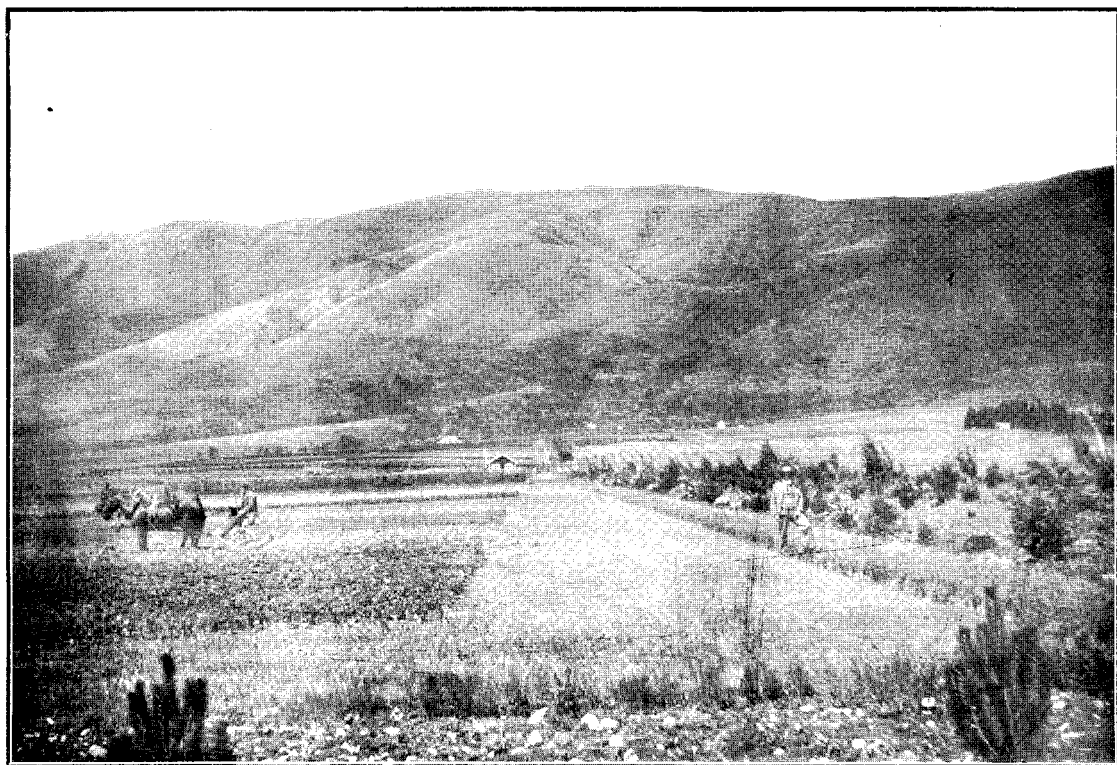
W. G. MORRISON, Assistant Forester.

W. CROMB, Nurseryman in Charge.

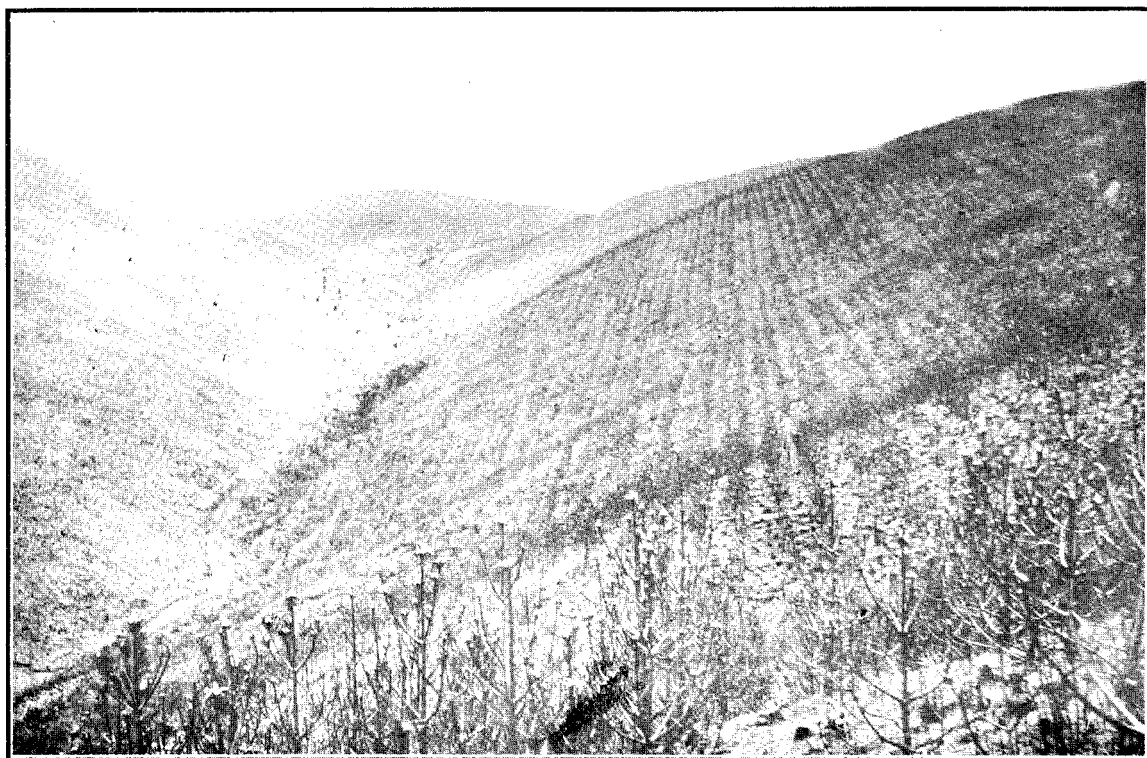
DUSKY HILL PLANTATION, OTAGO.

(Area, 845 acres; altitude, 400 ft. to 800 ft.)

It is with extreme regret that we have to report a disastrous fire which occurred on this plantation on the 27th October, 1906, resulting in the destruction of two-thirds of the area under trees. It appears that a fire lit by a fisherman for the purpose of boiling a billy of water got beyond control, and aided by a terrific gale blowing directly across the plantation, and also the unusual dryness of all undergrowth at the time, soon enveloped the greater portion. Volunteers were available and rendered all possible assistance, but it was not until heavy rain fell that the conflagration was finally extinguished. Fire-breaks on this occasion had very little influence in checking the spread, as the flying debris was oftentimes seen flying across breaks and creating fresh fires many chains distant. The Pomahaka River, which for a considerable distance forms a natural boundary to the plantation, attracts numbers of fishermen annually, and access through the lower portion of property is available and frequently used by picnickers; and unless this reserve and road are closed, tree-planting operations must be continued with extreme risk of future fire, as the rocky faces extend almost to the river-edge in places, and fire-breaks on this side are quite impracticable. A number of hands were employed immediately after



GENERAL VIEW OF TAPANUI NURSERY.



EFFECTS OF DISASTROUS FIRE AT DUSKY HILL PLANTATION.

the fire in cutting back deciduous trees to ground-surface, and much success has attended this treatment—many of the oak and ash in sheltered situations having made a vertical growth of fully 3 ft. On cutting back the trees sap quickly promoted numbers of small shoots, and a great amount of labour was required in disbudding all but necessary leaders. Nearly the whole of the acorn blocks have been totally destroyed, and this area, which is confined to the steep hill-sides, will be scuffled with grubbers and planted with the aid of a newly designed “planting-bar,” which should enable tree-planting to be carried on with greater facility, less expense, and probably equally good results.

In expectations of replanting the greater portion destroyed, a number of men have been engaged cutting and removing burnt trees, and 97,675 pits were made at a cost of 18s. 9d. per thousand. 6,500 spots for planting with bar were also prepared at a cost of 15s. 1d. per thousand.

The following works were carried on previous to the fire: Planting 27,000 trees at 18s. 7½d. per thousand; preparing ground and planting 11,500 acorns at 18s. 3¾d. per thousand; formation of tracks; ploughing of roads and fire-breaks; general maintenance.

For the approaching planting-season preparations are being made for planting about 450,000 trees, to be delivered from Tapanui Nursery.

The expenditure for the year amounted to £582 4s. 9d., providing employment for an average of six men.

| <i>Expenditure.</i> | | | | £ | s. | d. |
|---|-----|-----|-----|---------------|----------|----------|
| Amount at the 31st March, 1906 | ... | ... | ... | 8,017 | 4 | 4 |
| Pitting— | | | | | | |
| 98,675 pits | ... | ... | ... | 92 | 10 | 3 |
| Preparing 6,500 spots for planting with bar | ... | ... | ... | 4 | 18 | 5 |
| Tree-planting— | | | | | | |
| 27,000 trees | ... | ... | ... | 25 | 3 | 6 |
| Preparing ground and planting 11,500 acorns | ... | ... | ... | 10 | 10 | 8 |
| Clearing | ... | ... | ... | 8 | 10 | 3 |
| Cartage of trees from Tapanui Nursery | ... | ... | ... | 2 | 5 | 0 |
| General upkeep of plantation | ... | ... | ... | 192 | 19 | 6 |
| Tools, implements, &c. | ... | ... | ... | 10 | 18 | 6 |
| Tree-seeds, acorns, and railage | ... | ... | ... | 1 | 10 | 0 |
| Formation of tracks | ... | ... | ... | 5 | 8 | 0 |
| Cutting back and disbudding burnt deciduous trees | ... | ... | ... | 87 | 0 | 2 |
| Cutting down and burning trees destroyed by fire | ... | ... | ... | 54 | 12 | 10 |
| Miscellaneous works | ... | ... | ... | 37 | 15 | 8 |
| Nurseryman's salary, Proportion of | ... | ... | ... | 24 | 0 | 0 |
| Supervision | ... | ... | ... | 24 | 2 | 0 |
| | | | | <u>£8,599</u> | <u>9</u> | <u>1</u> |

F. BENFELL, Assistant Forester.

R. G. ROBINSON, Nurseryman in Charge.

GIMMERBURN PLANTATION RESERVE, NEAR NASEBY, OTAGO.

(Area, 1,200 acres; altitude, 1,200 ft.)

The trees at the above plantation have not done very well, owing to the prolonged drought, this being the third season in succession.

Trees that have taken hold have made very fair growth, especially the first year's larch.

There have been a great many deaths in this season's planting, and probably there will be two-thirds of these to replace.

An experiment is to be tried this season by planting in the autumn, and, as the ground keeps fairly dry in winter here, there should not be a great risk of the plants being thrown out by the frost.

An area of about 90 acres was sown down in oats, but the season was against success, and there was only about 2 tons to cut.

Oats (from the previous season's crop) to the value of £258 11s. 1d. were transferred to nurseries, and the value of oats in stock is £48 18s. 10d.

[7] The number of trees planted during the year was 243,500, but of this 51,580 blanks had to be replaced.

The area covered to date is 164½ acres, and the area planted for the past season is 70½ acres.

The cost of planting and digging (half-holes) was £1 2s. 4¾d. per thousand.

The average number of hands employed was nine.

| <i>Expenditure.</i> | | | | £ | s. | d. |
|-----------------------------------|-----|-----|-----|---------------|----------|----------|
| Amount at the 31st March, 1906 | ... | ... | ... | 977 | 3 | 3 |
| Tree-planting | ... | ... | ... | 288 | 12 | 10 |
| Cartage of trees | ... | ... | ... | 33 | 3 | 9 |
| General upkeep of plantation | ... | ... | ... | 76 | 14 | 6 |
| Horse-feed purchased and grown | ... | ... | ... | 159 | 11 | 1 |
| Proportion of Nurseryman's salary | ... | ... | ... | 46 | 0 | 0 |
| Supervision | ... | ... | ... | 4 | 0 | 0 |
| | | | | <u>£1,605</u> | <u>5</u> | <u>5</u> |

A. W. ROBERTS, Assistant Forester.

HANMER SPRINGS PLANTATION.

(Area, 1,488 acres, approximate; altitude, 1,225 ft.)

Trees to the number of 502,500 were planted during the year, 19,000 of this number being used to replant blanks in former plantings. The area of new plantation formed was 177 acres.

The total number of trees planted to date is 1,271,770, occupying an area of 462 acres.

Tree-planting by free labour cost 7s. per thousand; marking pits by free labour cost 7s. 10d. per thousand; and digging pits cost 19s. 3d. per thousand.

The total number of pits dug during the year was 162,160, and 221,000 spots were marked and scuffled for planting with bar. The total number of pits and spots available for planting during the coming season is 274,200.

An area of 61 acres was cleared and burnt for tree-planting, and an additional area of 20 acres was cleared, grubbed, and burnt for horse-paddock.

Fencing Extension Area.—140 chains of rabbit-proof fencing was erected, and 22 chains of fence repaired and converted into rabbit-proof fencing.

Buildings.—A galvanised-iron cart-shed was erected to replace the building formerly used for that purpose, which was converted into an additional stall for stable.

A medium-draught horse was purchased during the year for plantation use.

Trees of all ages and species throughout the plantation have made good growth during the year, although the rainfall recorded was little more than half of the previous year.

The trees planted during the year have also, without exception, done well, and the percentage of deaths since transplanting is small.

The expenditure for the year was £683 1s. 6d., and the total expenditure on the plantation since its initiation has been £3,250 10s. 9d.

The fire-breaks and roads throughout the plantation were cleared of growth and ploughed where possible; a half-chain fire-break was ploughed round boundary-fence to prevent spread of fire from adjoining land.

The average daily number of free men employed during the year was two.

The work done by prison labour during the year has been entirely satisfactory; the total value being £755 3s. 10d., and the average value of work done for the year by each of the 14·50 men employed daily was £52 1s. 5d. per man.

Particulars of the various works undertaken are as follows:—Pitting, 383,160 pits; clearing, 81 acres; fencing, 162 chains; tree-planting, 483,000 trees. Maintenance—clearing round trees, clearing fire-breaks, and repairing tools. Buildings—erection of cart-shed, and alterations to stable.

| <i>Expenditure.</i> | | | | | £ | s. | d. |
|-----------------------------------|-----|-----|-----|-----|--------|----|----|
| Amount at the 31st March, 1906 | ... | ... | ... | ... | 2,567 | 9 | 3 |
| Pitting | ... | ... | ... | ... | 70 | 18 | 11 |
| Tree-planting | ... | ... | ... | ... | 25 | 2 | 0 |
| Cartage of trees and freight | ... | ... | ... | ... | 3 | 10 | 6 |
| General upkeep of plantation | ... | ... | ... | ... | 98 | 18 | 5 |
| Horse-feed purchased and grown | ... | ... | ... | ... | 10 | 11 | 0 |
| Fencing | ... | ... | ... | ... | 309 | 1 | 1 |
| Tools, implements, &c. | ... | ... | ... | ... | 56 | 12 | 9 |
| Buildings | ... | ... | ... | ... | 12 | 14 | 10 |
| Proportion of Nurseryman's salary | ... | ... | ... | ... | 77 | 10 | 0 |
| Supervision | ... | ... | ... | ... | 18 | 2 | 0 |
| | | | | | £3,250 | 10 | 9 |

T. B. CURLE, Assistant Forester.

KAINGAROA PLAINS PLANTATIONS (FOUR), NEAR WHAKAREWAREWA.

(Altitude, 2,000 ft.; total area, 25 acres.)

Apart from the general upkeep of these four experimental areas, no work has been done during the year. The fire-breaks were kept ploughed. Pruning was done where necessary, and the fences kept in repair.

One of the enclosures, which is planted with Lawson's cypress (*Chamaecyparis Lawsoniana*), will be replanted with some other species during the coming winter, as the Lawson's cypress has been a failure.

The expenditure for the year was £35 2s. 6d., and the total expenditure to date was £357 15s. 6d.

Two men were employed for about six weeks.

| <i>Expenditure.</i> | | | | | £ | s. | d. |
|---|-----|-----|-----|-----|------|----|----|
| Amount at the 31st March, 1906 | ... | ... | ... | ... | 322 | 13 | 0 |
| General upkeep of plantation | ... | ... | ... | ... | 30 | 2 | 6 |
| Nurseryman's salary, Proportion of, and travelling-expenses | ... | ... | ... | ... | 5 | 0 | 0 |
| | | | | | £357 | 15 | 6 |

R. MACRAE, Assistant Forester.

H. A. GOUDIE, Nurseryman in Charge.

NASEBY SURVEY PADDOCK PLANTATION, OTAGO.

(Area, 175 acres; altitude, 1,900 ft.)

The trees at the above plantation have made very satisfactory growth, notwithstanding the very dry season, and do not seem to have been greatly affected, except that the growth is not quite so strong.

Owing to the risk of fire it has been decided to place a man here permanently, and sufficient work can be found to fully occupy his time, such as pruning, hoeing, and keeping down hares and rabbits. As there have been a large number of hares, &c., in the enclosure lately, it has been decided to wire-net the fence up to the top barb, which, I think, will prevent any further trouble in that respect.

Fire-breaks have been ploughed around the fence-line, and hoeing, weeding, &c., have been carried out satisfactorily.

Trees to the number of 6,500 were planted, at an average cost of £1 9s. 3½d. per thousand.

As the above were used for blanks, the area remains at 132½ acres and the number of trees at 360,185.

Average number of hands employed, 0·45 (wages).

| Expenditure. | | | | £ | s. | d. |
|-----------------------------------|-----|-----|-----|--------|----|----|
| Amount at the 31st March, 1906 | ... | ... | ... | 1,756 | 18 | 11 |
| Tree-planting | ... | ... | ... | 9 | 10 | 6 |
| General upkeep of plantation | ... | ... | ... | 38 | 12 | 0 |
| Buildings—workmen's quarters | ... | ... | ... | 5 | 2 | 0 |
| Proportion of Nurseryman's salary | ... | ... | ... | 20 | 0 | 0 |
| Supervision | ... | ... | ... | 2 | 0 | 0 |
| | | | | £1,832 | 3 | 5 |

A. W. ROBERTS, Assistant Forester.

PUHIPUHI PLANTATION, NORTH AUCKLAND.

(Area, 10,000 acres—1,701 acres fenced; altitude, 1,000 ft.)

During the season trees to the number of 178,245 were planted permanently, 8 ft. apart, occupying an area of 248½ acres, making the total of trees planted to date 461,005, and approximate area 700 acres. The average cost of planting trees per thousand was 17s. 10d., including packing trees from heeling-in ground to planters. 34,650 pits were opened at a cost of 10s. per thousand, 14,950 grubber pits at a cost of 15s. per thousand, and 76,700 spade pits at £1 per thousand, making a total of 224,850 pits for the season. The number of pits available for this season's planting is 111,350.

The area of land cleared of scrub and standing timber (dry) was 550 acres, at a cost of 10s. per acre. One thousand *Juglans nigra* were planted *in situ*, and are making slow growth. Sixty-six chains of boundary and dividing fence was erected at 7s. 10d. per chain, and 42 chains of two-wire fence for horse-paddock was erected at a cost of 4s. 4d. per chain. Eighty-eight chains of boundary-fence were purchased from James Bell at 4s. per chain, and 61 chains from William Hay at 5s. per chain.

The pigs belonging to the Natives adjoining the plantation have caused considerable damage by grubbing for fern-roots on newly pitted area, and steps will have to be taken to either prosecute the owners or else destroy the pigs, as threats are of no avail.

The different species of Eucalypti planted here have done fairly well, with the exception of *E. corymbosa* and *E. siderophloia*, which have grown poorly. *E. crebra* is also making slow growth. Some specimens of *E. rostrata* and *E. redunca* have reached a height of 14 ft. in three years. *Podocarpus totara* are making slow but sturdy growth. *Fraxinus Americana* have taken well.

The average number of persons employed during the year was 9·16 men and one boy.

The following is a record of rainfall and temperature for the year:—

| Month. | Rainfall. | Number of Days Rain fell. | Maximum Temperature. | Date. | Minimum Temperature. | Date. |
|---------------|-----------|---------------------------|----------------------|------------------------|----------------------|------------|
| 1906. | Inches. | | Degrees. | | Degrees. | |
| April ... | 1·66 | 10 | 76 | 1st | 38 | 15th, 17th |
| May ... | 5·13 | 12 | 68 | 2nd, 29th | 34 | 2nd, 6th |
| June ... | 4·20 | 12 | 62 | 7th, 9th, 23rd, 25th | 28 | 11th |
| July ... | 11·08 | 22 | 62 | 19th, 29th, 23rd, 24th | 32 | 31st |
| August ... | 11·08 | 15 | 70 | 30th | 32 | 31st |
| September ... | 11·08 | 15 | 68 | 14th | 29 | 11th |
| October ... | 2·67 | 11 | 82 | 31st | 32 | 1st |
| November ... | 3·93 | 10 | 82 | 23rd | 34 | 11th |
| December ... | 4·69 | 10 | 88 | 26th | 40 | 16th |
| 1907. | | | | | | |
| January ... | 18·20 | 15 | 88 | 18th | 40 | 20th |
| February ... | 11·69 | 11 | 88 | 1st | 46 | 21st |
| March ... | 6·87 | 15 | 86 | 24th | 48 | 15th |
| Totals ... | 92·28 | 158 | ... | ... | ... | ... |

| | | | | <i>Expenditure.</i> | | | £ | s. | d. |
|--------------------------------|-----|-----|-----|---------------------|-----|-----|--------|----|----|
| Amount at the 31st March, 1906 | ... | ... | ... | ... | ... | ... | 1,866 | 0 | 1 |
| Pitting | ... | ... | ... | ... | ... | ... | 227 | 10 | 7 |
| Tree-planting—178,245 trees | ... | ... | ... | ... | ... | ... | 159 | 1 | 3 |
| Clearing, &c. | ... | ... | ... | ... | ... | ... | 277 | 2 | 0 |
| Freight and cartage on trees | ... | ... | ... | ... | ... | ... | 15 | 19 | 3 |
| General upkeep of plantation | ... | ... | ... | ... | ... | ... | 273 | 14 | 8 |
| General repairs | ... | ... | ... | ... | ... | ... | 8 | 4 | 8 |
| Horse-feed purchased and grown | ... | ... | ... | ... | ... | ... | 8 | 9 | 7 |
| Fencing—material and labour | ... | ... | ... | ... | ... | ... | 102 | 11 | 1 |
| Tools, implements, &c. | ... | ... | ... | ... | ... | ... | 32 | 3 | 0 |
| Miscellaneous works | ... | ... | ... | ... | ... | ... | 8 | 4 | 2 |
| Buildings | ... | ... | ... | ... | ... | ... | 103 | 17 | 5 |
| Water-supply | ... | ... | ... | ... | ... | ... | 4 | 8 | 11 |
| Supervision | ... | ... | ... | ... | ... | ... | 16 | 3 | 0 |
| | | | | | | | £3,103 | 9 | 8 |

CHAS. HOOPER, Assistant Forester.
A. GORDON, Nurseryman in Charge.

WAIOTAPU PLANTATION, AUCKLAND DISTRICT.

(Approximate area, 6,700 acres; approximate altitude, 1,200 ft.)

The rainfall for the year ending 31st March, 1907, amounted to 58·22 in., falling on 137 days, the heaviest monthly fall being registered in January, when 10·14 in. fell on fourteen days. The lowest shade temperature was 16 deg. Fahr., or 16 deg. of frost, on the 10th June, and the highest temperature was 85 deg. Fahr., on the 21st and 24th January.

An average daily number of 35·62 prisoners performed work to the value of £2,978, thus showing an average value of £83 12s. 1d. per man for the year.

Tree-planting was commenced at the beginning of May and completed in September. During that period trees to the number of 1,642,175 were planted, 114,650 of which were used in replacing deaths in former plantings. The area planted during the year was 561 acres, and the number of trees on new area 1,527,525. The plantation now contains 4,341,704 trees, and the area planted is 1,776½ acres. Except in the Eucalypti area the deaths were all replaced. In this area it is intended to replace the deaths with larch, as the Eucalypti have on the whole been a failure. All the trees planted during the year have done well, with the exception of *Pinus Laricio*, and these had a bad start owing to three weeks' dry weather, with frost, at the time of planting.

Pinus ponderosa and *Pinus Benthamiana* did fairly well. Larch and *Pinus strobus* made very vigorous growth. *Pinus Austriaca* also did well.

Amongst the older trees many of the *P. Austriaca* have not developed leaders, thus necessitating a lot of pruning. The Oregon pine, which fared so badly since being planted five years ago, have done much better this year owing to the shelter of the other trees that are growing up around them, and the absence of frost during the summer months.

Pinus strobus, which were frosted so severely in 1903, are fully recovered, and some of them made a vertical growth of 2 ft. during the past season. The following trees, placed in the order named, appear to be the most suitable for planting in this district: Larch is the hardiest of all, only being affected by frost in the early stages of growth when planted in gullies or moist flats. It has done exceedingly well in pure pumice and on very poor land, and is easily transplanted, as the young trees do not appear to suffer by exposure of their roots to the sun and wind. Last winter a hundred of these trees were accidentally dropped from the wagon and lay exposed to the sun and wind for about three weeks, during which time they were nightly subjected to very severe frosts—on one occasion 14 degs. When found they were soaked in water for a few hours and then planted, and out of the hundred trees only ten died. The foregoing facts explain to a certain degree the reason of the low death-rate which we have always had in planting larch here.

Pinus ponderosa and *Pinus Benthamiana* have never been damaged by frost here. These species transplant well and make good annual growth. *Pinus Laricio* is very easily injured by frost for the first few years until it attains a height of from 5 ft. to 6 ft., when the growth of the leaders are slower and the frost injures the side-shoots only. In the early stages of growth the leaders are frequently cut back by frost, with the result that a considerable amount of pruning is required for a couple of years to bring the tree back to the desired shape.

Pinus Austriaca is similar to *P. Laricio* in constitution, but seems, if anything, more hardy when it has attained a height of about 6 ft. *Pinus strobus* makes good growth even in land which is very poor, but this species has frequently been badly injured by frost, and has entailed a lot of work in pruning to single leader. Menzies' spruce, Oregon pine, Lawson's cypress, and English birch require good soil and shelter by other trees. Planted in exposed situations they simply exist for a few years, and if more hardy trees are not grown to shelter them they eventually die.

Amongst the oldest trees pruning has been in progress during the summer months. Prisoners who are industrious and trustworthy are selected for this work, and, with few exceptions, the work has been intelligently and carefully done.

The formation and upkeep of fire-breaks has been a very considerable item during the year, and this work is increasing annually.

On the original block and the extension area eleven miles of fire-break 1 chain wide, a mile and a half $\frac{1}{2}$ chain wide, and three miles 15 ft. wide was ploughed, and four miles 15 ft. wide was scuffled by hand.

Of the fire-breaks formed, one mile a chain in width was ploughed on the dividing-line between the plantation and the Tourist reserve. This reserve is thickly covered with manuka and dense undergrowth, and, as it is open to tourists and unprotected on the sides of the public roads, it will always be a menace to the plantation, as the reserve contains many thermal wonders and is largely visited by tourists. The natural growth of manuka and other native shrubs adds a beauty to the reserve which could scarcely be produced by artificial planting in a dozen years, and for this reason efforts should be made to protect the area from fire by erecting notice-boards relative to the danger of throwing down lighted matches, and further, by keeping the growth burnt off around the fence-line. Failing such precautions being taken, it will be necessary, for the safety of the plantation, to clear off all growth adjoining the plantations for a distance of at least 3 chains.

The internal fire-breaks are all formed along the roads which were laid off for carting trees and general purposes throughout the plantations, thus making them 1 chain wide with the additional width of the road, viz., 12 ft. Around the inside of the boundary-fences 15 ft. was ploughed, but in addition to this the growth between the fence and the public roads—where such exist—was kept burnt off. In many places on the fence-line the land is too steep to plough, and all that could be done to make the boundary fireproof was to keep down the growth—which is fortunately not thick—by hand. In country of this description, where fires are of frequent occurrence, all blocks of land reserved for tree-planting should be safeguarded from fire before any trees are planted. Next summer there will be about fifteen miles of fire-breaks to be gone over twice with the cultivator and harrows, and probably five miles of new fire-breaks to plough and form before the fire-breaks on the present enclosures are completed.

For the six summer months there is plenty of work to keep four horses constantly employed, and it will therefore be necessary to purchase two more horses before next spring, in order to form and maintain effective fire-breaks around and through the young plantations.

Prison Labour.—Notwithstanding that the work was a considerable distance from the camp, the value of work done by each man was £26 5s. 4d. more than that of the previous year. To account for this a number of reasons are apparent. Capes were supplied by this Department for each prisoner, and these enabled the men to go to and from their work without getting wet during showery weather. Much time was thus worked between the showers when otherwise the time would have been lost in camp. The class of prisoner, too, has been more suitable for these camps, and, with few unavoidable exceptions, none of the undesirable class have been sent from the town gaols. To the Prisons Department's officers much credit is due for the value of work performed. The officers have taken a live interest in the work, and assisted in every possible way by carrying out the various works as instructed. The prisoners who do the pruning and the replacing of deaths in the plantation often get very wet among the undergrowth and the branches after rain, and it is necessary that this should be remedied. A few suits of waterproof overalls would probably meet the case.

Extension of Plantation.—The survey-pegs were located on the Maungakakamea Reserve, and the lines for the fence cleared. The material for fencing the block is on order, and a start will shortly be made to erect the fence. It is intended to remove the prison camp to this reserve after the planting is finished next September. Preparations are well in hand for the planting of a million and a half trees during the coming winter. During the year 689 acres of land was cleared for tree-planting, and on this 2,228,562 pits prepared, of which 1,327,525 are available for the coming winter. It is proposed to plant a large block with larch without digging pits, as the small area planted in this manner two years ago has proved very successful.

A shed of some description is required for sheltering the implements, as exposure to the weather, combined with the sulphur in the atmosphere, soon causes the iron to corrode. A lean-to to the present stable would meet this requirement, and should be erected at the same time as the camp is shifted.

The following is a record of rainfall and temperature for the year :—

| Month. | Rainfall. | Number of Days Rain fell. | Highest Reading of Thermometer. | Date. | Lowest Reading of Thermometer. | Date. |
|------------------|-----------|---------------------------|---------------------------------|------------|--------------------------------|------------|
| 1906. | Inches. | | Degrees. | | Degrees. | |
| April | 3.70 | 15 | 66 | 20th | 23 | 23rd |
| May | 5.74 | 14 | 64 | 29th | 20 | 24th |
| June | 2.43 | 7 | 64 | 19th | 16 | 10th |
| July | 7.24 | 21 | 63 | 26th | 24 | 31st |
| August | 3.51 | 10 | 64 | 25th | 20 | 6th |
| September | 5.76 | 8 | 66 | 24th | 27 | 18th, 19th |
| October | 1.89 | 7 | ... | ... | ... | ... |
| November | 4.25 | 12 | 79 | 22nd | 30 | 11th |
| December | 2.99 | 7 | 83 | 18th | 36 | 16th |
| 1907. | | | | | | |
| January | 10.14 | 14 | 85 | 21st, 24th | 31 | 20th, 28th |
| February | 6.97 | 12 | 83 | 12th | 40 | 21st |
| March | 3.60 | 10 | 78 | 1st | 44 | 19th |
| Totals | 58.22 | 137 | ... | ... | ... | ... |

| <i>Expenditure.</i> | | | | | £ | s. | d. |
|---|-----|-----|-----|-----|--------------------|----|----|
| Amount at the 31st March, 1906 | ... | ... | ... | ... | 3,157 | 11 | 3 |
| Carting trees | ... | ... | ... | ... | 33 | 11 | 6 |
| General repairs | ... | ... | ... | ... | 74 | 5 | 6 |
| Tools, implements, &c. | ... | ... | ... | ... | 54 | 8 | 8 |
| Horse-feed | ... | ... | ... | ... | 63 | 0 | 2 |
| Supervision of prison labour | ... | ... | ... | ... | 233 | 18 | 6 |
| Nurseryman's salary, Proportion of, and travelling-expenses | ... | ... | ... | ... | 20 | 0 | 0 |
| Supervision | ... | ... | ... | ... | 25 | 4 | 0 |
| | | | | | <u>£3,661 19 7</u> | | |

R. MACRAE, Assistant Forester.
H. A. GOUDIE, Nurseryman in Charge.

WAITAHUNA PLANTATION, OTAGO.

(Dredged area, 11 acres ; altitude, 331 ft.)

Tree-planting operations were resumed on this area, and on completion of the boundary-fence 27,825 pits were opened up by day-labour, at a cost of 19s. 7½d. per thousand, and allowed to remain in this state until spring.

It was deemed advisable to delay tree-planting until September, when the soil removed from pits would have received the mellowing influence of frosts. This method has proved entirely satisfactory, and of the 26,825 trees planted, at a cost of 13s. 3½d. per thousand, only a very small percentage of failures resulted.

The object being purely of an experimental nature, thirteen species of trees were included, and although a drought prevailed in this district success was pronounced with every species planted, with the exception of *Pinus muricata*, which pine has been unfavourably reported on from other local plantations this season.

It is, of course, impossible at the present stage to single out with any degree of accuracy particular species as being the most suitable for dredged areas, but present indications would tend to show the adaptability of the old tailings for the growing of larch, birch, alder, *Pinus Austriaca*, and spruce.

Heavy rain in May caused the Waitahuna River to rise suddenly and overflow its banks, inundating the plantation to the depth of 6 in. Fortunately, no strong current accompanied the rising, which gradually subsided without doing any damage beyond detaching the netting from fence in hollows.

An expenditure of £16 6s. 3d. was necessary in grubbing gorse before tree-planting could be carried out, and, although it is a difficult matter to effectively remove this scrub at the first attempt, it is interesting to note that scarcely any sign of the reappearance of gorse is noticeable on the planted area.

The required trees were railed from Tapanui in ten straw bundles, and arrived in good condition.

It will be necessary during the coming spring to plant an additional thousand trees, replant failures, and remove strong growth from around a number of the smaller-sized plants ; but the estimated cost of this labour will not exceed £12.

The expenditure incurred on the plantation for the year amounted to £115 4s. 10d., providing employment for two men for two months, making a total expenditure since its initiation of £154 14s. 5d.

| <i>Expenditure.</i> | | | | | £ | s. | d. |
|------------------------------------|-----|-----|-----|-----|------------------|----|----|
| Amount at the 31st March, 1906 | ... | ... | ... | ... | 39 | 9 | 7 |
| Pitting—27,825 pits | ... | ... | ... | ... | 27 | 6 | 0 |
| Tree-planting—26,825 trees | ... | ... | ... | ... | 17 | 17 | 0 |
| Clearing gorse | ... | ... | ... | ... | 16 | 6 | 3 |
| Freight and cartage on trees | ... | ... | ... | ... | 3 | 12 | 6 |
| Fencing—material and part labour | ... | ... | ... | ... | 32 | 3 | 6 |
| Draining | ... | ... | ... | ... | 3 | 10 | 0 |
| Miscellaneous works | ... | ... | ... | ... | 6 | 9 | 7 |
| Nurseryman's salary, Proportion of | ... | ... | ... | ... | 5 | 0 | 0 |
| Supervision | ... | ... | ... | ... | 3 | 0 | 0 |
| | | | | | <u>£154 14 5</u> | | |

D. RISK, Foreman.
R. G. ROBINSON, Nurseryman in Charge.

WAITAKI PLANTATION, OTAGO.

(Area, 728 acres ; altitude, 700 to 1,400 ft.)

A few weeks prior to the end of the financial year the Department began work on the above area. The immediate and most important work was the boundary-fences ; the total length—five and a half miles—requires considerable repairs, and the erection of hare- and rabbit-proof netting. This work will be pushed on as quickly as possible, nearly all the necessary material being already on the ground.

The land is all fine, rolling country, every foot of which is plantable, and from a forester's point of view, no better land could be found in North Otago.

| | <i>Expenditure.</i> | £ | s. | d. |
|--|---------------------|------------|----------|----------|
| Fencing | ... | 26 | 2 | 9 |
| Tools, implements, &c. | ... | 5 | 0 | 0 |
| Proportion of Nurseryman's salary | ... | 3 | 0 | 0 |
| Supervision | ... | 10 | 5 | 0 |
| | | <u>£44</u> | <u>7</u> | <u>9</u> |

N. CRAIG, Nurseryman in Charge.

WHAKAREWAREWA PLANTATION, AUCKLAND.

(Approximate area, 8,912 acres ; approximate altitude, 1,000 ft.)

Tree-planting operations have been attended with satisfactory results at this station during the past year, the exceptionally wet weather experienced being responsible to a certain extent for the low death-rate amongst the trees planted. The number of trees dealt with was 1,388,600 ; of this number, 1,205,375 were planted on a new area of 450 acres, while the remainder, 183,225, were used to replace deaths in former plantings. This reserve now contains 3,391,436 trees, which occupy an area of 1,668½ acres.

Prison Labour.—The work done by prisoners has been performed in a very satisfactory manner, and thanks are due to the Prisons Department's officers for the assistance given in carrying out the works as directed. The number of prisoners employed during the year, however, leaves much to be desired, as it is impossible to map out a course of work with any certainty when the number varies so much. An average of 11·50 prisoners was employed daily during the year, but the number varied from seventeen men in March to seven men in November. This camp has accommodation for thirty-three men (twenty-five for forestry-work and eight for prison-work), showing that the camp was on the average only half-full during the whole year.

The work done by prisoners is valued at £762 11s., or an average of £66 6s. 2d. for each of the 11·50 men employed. The details are as follows : Clearing for tree-planting, 90 acres at £1 1s. 8d. per acre, £97 10s. ; pitting, 84,900 at 10s. per thousand, £42 9s. ; planting, 533,810 trees at 8s. per thousand, £213 10s. 5d. ; heeling in and distributing trees, £2 11s. 6d. ; road-formation, 200 chains at 9s. 7½d. per chain, £96 4s. 6d. ; formation of fire-breaks, clearing, burning, and stumping 357½ chains, at 7s. 3½d. per chain, £130 10s. ; draining, 10 chains at 5s. per chain, £2 10s. ; making harness, horse-covers, &c., £29 0s. 7d ; general upkeep of plantation—planting blanks, £31 9s. 7d., and pruning, &c., £8 1s. ; general repairs and miscellaneous works, £108 14s. 5d : total, £762 11s.

Free Labour.—An average daily number of 20·52 free men were employed, and the cost of the various works undertaken was as follows : Pitting, 10s. 0½d. per thousand ; planting, 7s. 8½d. per thousand ; reopening pits where deaths occurred, 11s. 11d. per thousand, and these were replanted at a cost of 12s. 9d. per thousand ; the cost of forming of 130 chains of road was 7s. 11d. per chain, and 130 chains of fire-breaks were formed at 6s. 3½d. per chain ; the cost per chain of erecting 129 chains of fencing was 8s. 6d ; clearing 187 acres cost £1 11s. 3½d. per acre.

A considerable amount of work has been done in the formation and maintenance of fire-breaks. This work is annually increasing, and in the future will be a big item in the expenditure, as only by continued ploughing and cultivating can they be kept in a state of efficiency.

This plantation is bounded on the eastern side by the Wairoa Road, and on the western side by the Waiotapu Road, and as both of these roads are largely traversed by coaches bearing tourists to the Wairoa and Waimangu sights, it has been necessary to devote much time in keeping the fire-breaks along these roads in order. Much of the boundary is too steep to plough, and hand-hoeing has been necessary. In other places all the growth alongside the road has been kept down, while the fairly level portions were ploughed. On the Wairoa Road boundary a piece of native land, known as Tiki-tapu Bush, intersects the plantation reserve, and renders the continuation of the fire-break alongside the road impossible unless it is formed on Native land. This land is triangular in shape and it is impossible in forming the fire-break to follow the correct boundary, as this passes over rough, precipitous country thickly clad with large native trees, to the top of the Moerangi Mountain, and from there down to the road-line again over a line that it would be impossible to follow on foot.

If the vegetation on this hill was burned, one of the most attractive pieces of scenery on this tourist route would be destroyed, and both for the safety of the plantation and the preservation of this beauty-spot, a fire-break should be formed alongside the road-line. This can be done either with the permission of the Native owners or by purchasing the land outright.

It is proposed to erect a fence alongside this road in order to keep stock from wandering on to the plantation reserve.

Length of fire-breaks formed and ploughed were as follows: 130 chains by $\frac{1}{2}$ chain, 357 $\frac{1}{2}$ chains by $1\frac{1}{2}$ chains; ploughed, 65 chains by 2 chains, 267 chains by $1\frac{1}{2}$ chains, and 155 chains by $\frac{1}{2}$ chain.

Pruning was necessary amongst the older pines and larch, in order to suppress double leaders. All the pines and the greater portion of the larch have now been gone through, and the work, which requires a great deal of care and discretion, has been carried out in a very satisfactory manner.

In maintenance work clearing growth round the young trees has been the chief item. The fern and tutu grow exceedingly fast, and requires to be kept cut down for several seasons—until the trees are of sufficient size to hold their own.

Good results have been obtained with the trees planted during the year, and of these the larch has on the whole made very good growth, with a very small percentage of deaths. A considerable amount of damage was done to the previous season's planting of this species in the Waipa Valley by a severe frost which occurred in November. Many of the young trees had the points of the leading shoots destroyed by the frost, but have since made a good recovery and are developing new leaders, although a considerable amount of pruning will be necessary in order to suppress some of the strong side-growth.

Oregon pine has not made good growth, although those planted the previous year are making good headway. Norway spruce and Menzies' spruce have done fairly well in the lower ground, but have made little or no growth on the tops of hills and exposed ridges, where a number of deaths have occurred. *Acacia melanoxylon*, although planted very late, has made splendid growth, many of the trees being now 4 ft. in height. *Pinus densiflora*, *Pinus muricata*, *Pinus taeda*, *Pinus Thunbergi*, and *Pinus Sabini* were planted for shelter purposes near the prison-camp, and have all done well, *P. taeda* being deserving of special mention.

E. amygdalina and *E. pauciflora* were the only species of Eucalypti planted, and were used principally to replace failures; both have done fairly well, *E. amygdalina* having made slightly the better growth.

For the coming season preparations are in hand for planting about a million trees. Owing to the frequent rains it has been an extremely difficult matter to get a good burn, and, in consequence, the work has been retarded somewhat.

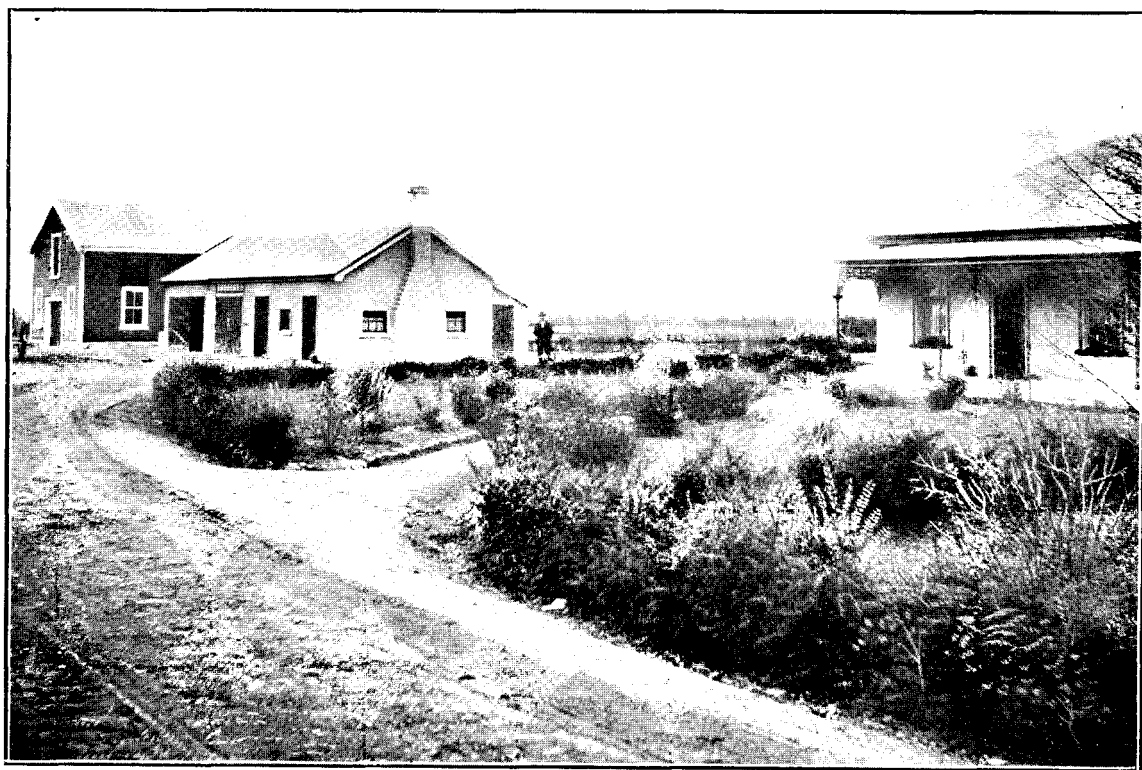
| <i>Expenditure.</i> | | | | £ | s. | d. |
|---------------------------------------|-----|-----|-----|--------------------------|----|----|
| Amount at the 31st March, 1906 | ... | ... | ... | 7,856 | 19 | 11 |
| Pitting—1,120,475 pits | ... | ... | ... | 525 | 1 | 7 |
| Tree-planting—671,565 trees | ... | ... | ... | 268 | 7 | 2 |
| Clearing 187 acres | ... | ... | ... | 349 | 2 | 4 |
| Cartage of trees | ... | ... | ... | 18 | 11 | 0 |
| General upkeep of plantation | ... | ... | ... | 880 | 19 | 4 |
| Horse-feed | ... | ... | ... | 92 | 7 | 9 |
| Fencing—new | ... | ... | ... | 59 | 2 | 6 |
| Tools, implements, &c. | ... | ... | ... | 38 | 9 | 2 |
| Road-formation | ... | ... | ... | 50 | 9 | 8 |
| Supervision of free and prison labour | ... | ... | ... | 144 | 7 | 8 |
| Proportion of Nurseryman's salary | ... | ... | ... | 30 | 0 | 0 |
| Supervision | ... | ... | ... | 26 | 0 | 0 |
| | | | | <hr/> £10,339 18 1 <hr/> | | |

D. J. BUCHANAN, Assistant Forester.

H. A. GOUDIE, Nurseryman in Charge.



LARCH PLANTATION, WAIOTAPU (7-YEAR-OLD TREES).



NURSERYMAN'S COTTAGE AND OUTBUILDINGS, EWERUPU.

REFERENCE-LIST OF FOREST TREES AND SHRUBS GROWN AT THE VARIOUS NURSERIES AND PLANTATIONS, 1906-7. (E, EVERGREEN; D, DECIDUOUS.)

| Name of Tree. | Synonym. | Common Name. | Habitat. |
|--|--|----------------------------------|---|
| <i>Acacia melanoxylon</i> (E) .. | .. | Blackwood .. | South-east Australia. |
| <i>Acer saccharum</i> (D) .. | <i>Acer saccharinum</i> .. | Sugar maple .. | North America. |
| " <i>pseudo-platanus</i> (D) .. | .. | Sycamore .. | Europe and Asia. |
| <i>Æsculus hippocastanum</i> (D) .. | .. | Horse-chestnut .. | South-east Europe. |
| <i>Alnus glutinosa</i> (D) .. | .. | Alder .. | Europe and Asia. |
| <i>Betula alba</i> (D) .. | .. | Silver-birch .. | Europe. |
| <i>Berberis aristata</i> (D) .. | .. | Barberry .. | Northern India. |
| <i>Castanea sativa</i> (D) .. | <i>Castanea vesca</i> .. | Sweet or Spanish chestnut .. | Europe and Asia. |
| <i>Catalpa speciosa</i> (D) .. | <i>Bignonia catalpa</i> .. | Hardy catalpa .. | United States. |
| <i>Chamaecyparis Lawsoniana</i> (E) | <i>Cupressus Lawsoniana</i> | Lawson's cypress, or white-cedar | Northern California. |
| <i>Cordyline Australis</i> (E) .. | " <i>Australis</i> .. | Ti, or cabbage-tree .. | New Zealand. |
| " <i>indivisa</i> (E) .. | " <i>indivisa</i> .. | Toi .. | South Island, New Zealand. |
| <i>Eucalyptus amygdalina</i> (E) | .. | Almond-leaved peppermint-gum | Victoria, New South Wales, and Tasmania. |
| " <i>calophylla</i> (E) .. | .. | Red-gum .. | South-west Australia. |
| " <i>capitellata</i> (E) .. | .. | Head-flowered stringy-bark | New South Wales and Gippsland. |
| " <i>corymbosa</i> (E) .. | .. | Bloodwood .. | New South Wales and South-Queensland. |
| " <i>coccifera</i> (E) .. | .. | Mountain-peppermint .. | Alpine districts of Tasmania. |
| " <i>corynocalyx</i> (E) .. | .. | Sugar-gum .. | South-east Australia. |
| " <i>orebra</i> (E) .. | .. | Narrow-leaved ironbark .. | New South Wales and Queensland. |
| " <i>ficifolia</i> (E) .. | .. | Scarlet-flowering gum .. | South-west Australia. |
| " <i>globulus</i> (E) .. | .. | Blue-gum .. | Tasmania and Victoria. |
| " <i>Gunnii</i> (E) .. | .. | Cider-gum .. | Victoria, New South Wales, and Tasmania. |
| " <i>hæmastoma</i> (E) .. | .. | Gum-topped stringy-bark .. | Tasmania and Victoria. |
| " <i>leucocylon</i> (E) .. | <i>Eucalyptus sideroxylon</i> | Victorian red ironbark .. | South Australia. |
| " <i>macrorhyncha</i> (E) .. | .. | Stringy-bark of Victoria | Victoria. |
| " <i>marginata</i> (E) .. | .. | Jarrah .. | South-west Australia. |
| " <i>Muellerii</i> (E) .. | .. | Mountain red-gum .. | Mountains of Tasmania. |
| " <i>maculata</i> (E) .. | .. | Spotted gum .. | New South Wales and Queensland. |
| " <i>obliqua</i> (E) .. | .. | Stringy-bark or messmate .. | Victoria, New South Wales, Tasmania. |
| " <i>pauciflora</i> (E) .. | <i>Eucalyptus coriacea</i> .. | White or drooping gum .. | Ditto. |
| " <i>paniculata</i> (E) .. | " <i>fasciculosa</i> | Red ironbark .. | New South Wales and South-west Australia. |
| " <i>pilularis</i> (E) .. | .. | Blackbutt .. | New South Wales, Queensland, and Gippsland. |
| " <i>regnans</i> (E) .. | .. | Swamp-gum .. | Tasmania and Victoria. |
| " <i>saligna</i> (E) .. | .. | Grey or flooded gum .. | New South Wales and South-Queensland. |
| " <i>Stuartiana</i> (E) .. | .. | Apple-scented gum .. | Tasmania and South-east Australia. |
| " <i>Sieberiana</i> (E) .. | <i>Eucalyptus virgata</i> .. | Yowut, mountain ash .. | Ditto. |
| " <i>siderophloia</i> (E) .. | " <i>persicifolia</i> | Sydney ironbark .. | Eastern Queensland and Port Jackson. |
| " <i>teretecornis</i> (E) .. | .. | Red-gum of Queensland .. | New South Wales and Gippsland |
| " <i>urnigera</i> (E) .. | .. | Urn-bearing gum .. | Tasmania. |
| " <i>redunca</i> (E) .. | .. | The wando or white-gum .. | Western Australia. |
| " <i>resinifera</i> (E) .. | .. | Red or forest mahogany .. | New South Wales and Queensland. |
| " <i>viminalis</i> (E) .. | .. | Swamp or manna gum .. | Tasmania and Victoria. |
| <i>Fraxinus Americana</i> (D) .. | <i>Fraxinus Acuminata</i> , F. alba | White American ash .. | Eastern United States. |
| <i>Fraxinus excelsior</i> (D) .. | .. | English ash .. | Europe and Asia. |
| <i>Fagus sylvatica</i> (D) .. | .. | Beech .. | Europe. |
| <i>Hikora ovata</i> (D) .. | <i>Carya alba</i> .. | Shagbark, hickory .. | Eastern North America. |
| " <i>pecan</i> (D) .. | " <i>olivæformis</i> .. | Pecan-nut .. | " |
| <i>Juglans cineria</i> (D) .. | .. | Butternut .. | " |
| " <i>nigra</i> (D) .. | .. | Black walnut .. | " |
| " <i>regia</i> (D) .. | .. | Walnut .. | Europe and Asia. |
| <i>Juniperus Virginiana</i> (E) .. | <i>Juniperus Barbadensis</i> | Red cedar .. | North America. |
| <i>Larix Europæa</i> (D) .. | <i>Pinus larix</i> .. | European larch .. | Europe. |
| <i>Liriodendron tulipiferum</i> (D) | .. | Tulip-tree, basswood .. | United States. |
| <i>Laburnum vulgare</i> (D) .. | <i>Cytisus laburnum</i> .. | Laburnum .. | Europe. |
| <i>Phormium tenax</i> (E) .. | .. | Flax .. | New Zealand. |
| <i>Picea excelsa</i> (E) .. | <i>Abies excelsa</i> .. | Norway spruce .. | Europe. |
| " <i>sitchensis</i> (E) .. | " <i>Menziesii</i> .. | Tideland spruce .. | Alaska, Northern Canada. |
| " <i>Canadensis</i> (E) .. | .. | White-spruce .. | North-east United States. |
| <i>Pinus Austriaca</i> (E) .. | .. | Austrian pine .. | Southern Europe. |
| " <i>Canariensis</i> (E) .. | .. | Canary pine .. | Canary Islands. |
| " <i>contorta</i> (E) .. | <i>Pinus Murrayana</i> , <i>Pinus Bolanderi</i> | Twisted pine .. | Alaska to California. |
| " <i>Coulterii</i> (E) .. | <i>Pinus macrocarpa</i> .. | Great-coned pine .. | California. |
| " <i>excelsa</i> (E) .. | " <i>pendula</i> .. | Himalayan pine .. | Himalayan Mountains. |
| " <i>flexilis</i> (E) .. | .. | Limber pine .. | Rocky Mountains, Sierra Nevada. |
| " <i>halepensis</i> (E) .. | .. | Aleppo pine .. | Levant. |
| " <i>Lambertiana</i> (E) .. | .. | Sugar-pine .. | Northern California, Oregon. |
| " <i>Laricio</i> (E) .. | .. | Corsican pine .. | Southern Europe. |
| " <i>muricata</i> (E) .. | .. | Prickly-coned or Bishop's pine | California. |
| " <i>ponderosa</i> (E) .. | .. | Heavy or bull pine .. | North-west America. |
| " <i>ponderosa</i> , var. <i>Benthamiana</i> (E) | .. | Bentham's yellow-pine .. | British Columbia. |

REFERENCE-LIST OF FOREST TREES AND SHRUBS GROWN AT THE VARIOUS NURSERIES AND PLANTATIONS, 1906-7. (E, EVERGREEN; D, DECIDUOUS)—*continued*.

| Name of Tree. | Synonym. | Common Name. | Habitat. |
|---|--|-------------------------------------|-------------------------------------|
| <i>Pinus pinaster</i> (E) .. | <i>Pinus maritima</i> .. | Cluster-pine .. | Southern Europe. |
| " <i>radiata</i> (E) .. | " <i>insignis</i> .. | Monterey pine .. | California. |
| " <i>rigida</i> (E) .. | " .. | Pitch-pine .. | New England to Virginia. |
| " <i>Sabiniana</i> (E) .. | " .. | Nut-pine .. | California. |
| " <i>strobus</i> (E) .. | " .. | Weymouth pine .. | North America. |
| <i>Piptanthus Nepalensis</i> (E) .. | " .. | Evergreen laburnum .. | Himalayas. |
| <i>Pittosporum crassifolium</i> (E) .. | " .. | Karo .. | New Zealand. |
| " <i>eugenoides</i> (E) .. | " .. | Matipo, tarata .. | " |
| " <i>tenuifolium</i> (E) .. | " .. | " tawhiri .. | " |
| " <i>Buchananii</i> (E) .. | " .. | " tawhiwhi .. | " |
| <i>Populus deltoides</i> (D) .. | <i>Populus monolifera</i> , <i>Populus Canadensis</i> | Canadian or black Italian poplar .. | North America. |
| <i>Populus nigra pyramidalis</i> (D) .. | <i>Populus dilatata</i> , <i>Populus fastigata</i> | Lombardy poplar .. | Europe and Northern Asia. |
| <i>Podocarpus dactyloides</i> (E) .. | " .. | Kahikatea .. | New Zealand. |
| " <i>totara</i> (E) .. | <i>Nageia totara</i> .. | Totara .. | " |
| " <i>Hallii</i> (E) .. | " <i>Hallii</i> .. | Large-leaved totara .. | " |
| <i>Pseudo-tsuga taxifolia</i> (E) .. | <i>Abies Douglasii</i> .. | Oregon pine .. | British Columbia, Pacific Coast &c. |
| <i>Pyrus aucuparia</i> (D) .. | <i>Sorbus aucuparia</i> .. | Rowan-tree, mountain-ash .. | Europe and Asia. |
| <i>Quercus coccinea</i> (D) .. | " .. | Scarlet oak .. | Eastern North America. |
| " <i>macrocarpa</i> (D) .. | " .. | Burr oak .. | " |
| " <i>pedunculata</i> (D) .. | <i>Quercus robur</i> .. | British oak .. | Europe and West Asia. |
| " <i>palustris</i> (D) .. | " .. | Pin-oak .. | South-east of North America. |
| " <i>suber</i> (D) .. | " .. | Cork-oak .. | Southern Europe. |
| <i>Robinia pseudo acacia</i> (D) .. | " .. | Black locust or false acacia .. | Pennsylvania Mountains. |
| <i>Salix Caprea</i> (D) .. | " .. | Goat willow .. | Europe (Britain). |
| " <i>viminialis</i> (D) .. | <i>Salix longifolia</i> .. | Common osier .. | " |
| " <i>vitellina</i> (D) .. | " .. | Golden osier .. | Britain. |
| <i>Sequoia sempervirens</i> (E) .. | <i>Taxodium sempervirens</i> | Redwood .. | California. |
| <i>Sophora tetraptera</i> (E) or (D) .. | <i>Edwardsia microphylla</i> | Kowhai .. | New Zealand. |
| <i>Vitex lucens</i> (E) .. | " .. | Puriri .. | North New Zealand. |

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