

1936.
NEW ZEALAND.

STATE FOREST SERVICE.

ANNUAL REPORT OF THE DIRECTOR OF FORESTRY FOR THE YEAR ENDED 31st MARCH, 1936.

*Presented to both Houses of the General Assembly pursuant to Section 64 of the
Forests Act, 1921-22.*

The DIRECTOR OF FORESTRY to the Hon. the COMMISSIONER OF STATE FORESTS.

SIR,—

Wellington, C. 1, 21st August, 1936.

I have the honour to submit herewith the annual report of the operations of the State Forest Service for the year ended 31st March, 1936, as required by section 64 of the Forests Act, 1921-22.

A preface to the report mentions the outstanding features of general interest over the past seventeen years, together with summarized special proposals for the next five years.

I have, &c.,

A. D. MCGAVOCK,

Director of Forestry.

Hon. Frank Langstone,

Commissioner of State Forests.

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PREFACE.

REVIEW OF PERIOD 1919–1936.

THE outstanding features of the past seventeen years are:—

- (1) The control by the State Forest Service in 1936 of 7,910,172 acres of forest land, as compared with 1,654,214 acres in 1919.
- (2) The dedication as permanent State forests of 4,043,693 acres, as compared with 2,196,033 acres four years ago and 1,654,214 acres seventeen years ago.
- (3) The systematic prevention of fire losses in State forests.
- (4) The protection of Native-owned forests, securing to the Maori owner his full equity.
- (5) The planting of 385,536 acres of exotic forests.
- (6) The cleaning and underscrubbing of 23,000 acres and thinning of 12,000 acres of the earlier-planted exotic forests.
- (7) A commencement with establishment and assessment surveys, working plans, thinnings, and minor utilization projects in the older exotic forests.
- (8) The experimental underplanting of exotics in the indigenous cut-over forests.
- (9) The adoption of general working plans to regulate the cutting of kauri timber on a sustained-yield basis, and the application of similar plans to the rimu pole-type forests of Westland.
- (10) A substantial reduction in forest wastage and a marked improvement in the utilization of both exotic and indigenous timbers, by the establishment of modern timber-grading and kiln-drying practices.
- (11) Numerous demonstrations of the suitability of New-Zealand-grown timbers for creosoted posts, poles, &c., including the manufacture of pulp and paper products.

Credit for these achievements must be given not only to the State Forest Service, but also to numerous other Departments—*e.g.*, the Lands and Survey, Public Works, Internal Affairs, and Native—for valuable co-operation.

PROPOSALS FOR PERIOD 1936–1940.

A five-year programme of forest works should include the following essential features:—

- (1) Extension of fire-protection methods.
- (2) Further planting of exotics to be limited to consolidation and blanking of existing forests.
- (3) Further experimental underplanting of indigenous cut-over forests with exotics.
- (4) Placing the major kauri forests, portions of the silver-beech forests of Southland, the rimu pole-type forests of Westland, and the mixed rimu forests of the North Island under working-plan management, and substituting log sales for block sales of standing timber wherever practicable.

REPORT.

INTRODUCTION.

THE following brief notes on a few of the major activities of the Service are quoted here for general information. For fuller and more detailed data the reader is referred to the pages which follow.

Afforestation.—As planting operations have practically ceased in all regions except Rotorua, and are being continued there only on a minor scale, the new planted area—12,090 acres—is the smallest for many years. In round figures the exotic State forests of the Dominion now aggregate 419,500 acres.

Sales of Timber.—The figures for the year show an increasing demand for milling-areas, and field officers have had their energies fully taxed to keep pace with the insistent requests of sawmillers in this respect. The volume of timber sold—102,219,800 ft. board measure—exceeded the previous year's figures by more than 36,000,000 ft., while the value was £60,204 greater; and at the time of going to press the demand continues unabated.

Production of Timber.—The quantity of timber cut from all sources—*i.e.*, State, Native, and privately owned land was approximately 300,000,000 ft., an increase of 50,000,000 ft. compared with the 1934–35 period. The proportion cut from State forests remains the same as the previous year—*viz.*, 28 per cent.

Exports of Timber.—Exports for the calendar year 1935 were the highest for nearly a decade, and totalled (in round figures) 39,642,000 ft. board measure, or 5,000,000 ft. more than for the year 1934. Matai showed the greatest proportional increase—*i.e.*, from 800,000 ft. to 2,800,000 ft., but as this comprised very largely o.b. timber, which is almost unsaleable in the Dominion, the extra overseas demand was of distinct benefit to the milling industry.

Another interesting feature of the year's trading was an increase of 900,000 ft. in the export to the Pacific Islands of insignis pine for fruit-cases, boxing, &c.

Imports of Timber.—The timber imported for the same period exceeded the 1934 imports by approximately 14,000,000 ft. in volume and £165,300 in value, the figures being 31,356,000 ft., valued at £394,400.

Sawmills.—As was anticipated, the grand total of sawmills recorded at the 31st March, 1936, had risen from 568 to 596; those operating in indigenous forests alone numbered 507, and in exotic forests eighty-nine, but of the latter forty-three were at different periods cutting both indigenous and exotic timber.

Mills working full time numbered 315, a gratifying increase of sixty; mills cutting in State forests totalled 142 as against 135 in 1935.

Mining Privileges in State Forests.—The Service again handled well over a thousand applications for mining privileges, all of which required investigation, and many of which were located in State forests. A reduction in the number of applications was noticeable, however, when compared with the previous year, and this may have been due to the revival of other industries attracting workers from prospecting, &c., to more stable and lucrative employment.

Forest Finance.—The receipts from all sources amounted to £106,978, an increase of £34,000 over last year's figures, and the highest received for eight years.

Work done for other Departments.—The Service continues to co-operate closely with other Government Departments, and particularly with the Lands and Survey and Native Departments in regard to measurement and appraisal of blocks of standing timber, and in more than one instance has been instrumental in securing for Native owners prices more in keeping with current market values, and much higher than they themselves were willing to accept. It may not be generally known that in terms of the Forests Act, 1921–22, neither the Native Land Court nor a Maori Land Board shall grant any right to cut timber without the previous consent in writing of the Commissioner of State Forests.

General.—With difficulties to be faced and new problems to be solved the Service enters upon the new year with optimism and confidence. The year just closed was a busy and arduous one, and for the successful results reported in the pages which follow thanks are accorded to all members of the staff for loyal and ungrudging service on all occasions.

CHAPTER I.—MANAGEMENT.

1. AREAS UNDER CONTROL.

The total area under the control of the State Forest Service at the close of the fiscal year as shown by the appended table is 7,910,172 acres, made up of State forests, 4,043,693 acres, and provisional State forests, 3,866,479 acres. Bearing these figures in mind, it is interesting to compare the present position with that which existed when the Service was first established as a separate Department of State. In the report for the year ended 31st March, 1921, the total area under control was 6,802,970 acres, or 1,107,202 acres less than it is to-day. Even more arresting are the figures showing the area of permanent State forests at the date last mentioned. This was 1,668,319 acres; to-day the total (4,043,693 acres) shows an increase of nearly 2,400,000 acres, and the figures under this head are now nearly two and a half times greater than at the close of the year 1921. On the other hand the total acreage of provisional State forests in 1921—viz., 5,134,651—has decreased by 1936 to 3,866,479, a reduction of 1,271,172 acres.

The work of examining and classifying provisional State forests was continued during the year, with the result that a further 152,000 acres, in round figures, were proclaimed permanent State forests; the bulk of this area—approximately 93,000 acres—is located in Auckland Region, and about 50,000 acres are in Westland. State and provisional State forests now comprise nearly 12 per cent. of the total area of the Dominion, and, while the position in this respect has improved by nearly 2 per cent. since 1921, a much greater increase is necessary to ensure that the future forestry needs of the Dominion will be adequately met.

TABLE 1.
AREAS OF STATE FORESTS AS AT 31ST MARCH, 1936.

Forest Conservation Region.	Permanent State Forests.		Provisional State Forests.		Totals.	Percentage of Total Area of Region under Reservation.
	Ordinary.	National Endowment.	Ordinary.	National Endowment.		
	Acres.	Acres.	Acres.	Acres.	Acres.	
Auckland ..	310,118	81,646	111,153	14,016	516,933	6·01
Rotorua ..	342,608	235,948	130,996	84,365	793,917	15·80
Wellington ..	951,404	63,318	37,691	10,222	1,062,635	7·10
Nelson ..	309,632	121,615	1,180,932	627,169	2,239,348	31·96
Westland ..	622,195	172,019	522,299	422,992	1,739,505	45·02
Canterbury ..	332,806	3,647	..	..	336,453	3·38
Southland ..	440,963	55,774	710,904	13,740	1,221,381	7·19
Totals ..	3,309,726	733,967	2,693,975	1,172,504	7,910,172	11·91

A schedule of the areas withdrawn from forest reservation (see Table II) shows that the total is 8,260 acres, of which 7,951 acres were made available for settlement. Two hundred and ninety-eight acres were set aside under the Scenery Preservation Act, and 11 acres were reserved as a resting-paddock for travelling stock. For the year 1934-35 the total area withdrawn was 56,786 acres, but of this 48,440 acres were added to the Sounds National Park.

TABLE 2.
SUMMARY OF AREAS WITHDRAWN FROM PERMANENT AND PROVISIONAL STATE FOREST RESERVATION, 1ST APRIL, 1935, TO 31ST MARCH, 1936.

Region.	For Settlement Purposes.		For Scenic Reserve.	For Stock Reserve.	Totals.
	Permanent State Forest.	Provisional State Forest.	Permanent State Forest.	Permanent State Forest.	
	Acres.	Acres.	Acres.	Acres.	
Auckland	37	846	218	..	1,101
Rotorua	396	368	..	..	764
Wellington	252	8	64	11	335
Nelson	..	5,554	..	..	5,554
Westland	..	475	..	..	475
Canterbury	15	..	16	..	31
Southland	..	..	..	..	..
Totals	700	7,251	298	11	8,260

Table III, which follows, summarizes the new areas proclaimed under the Forests Act during the year, and requires little or no explanation. The total in this respect shows a considerable reduction over last year's total—55,253 acres.

TABLE 3.

SUMMARY OF AREAS ADDED TO PERMANENT AND PROVISIONAL STATE FORESTS, 1ST APRIL, 1935, TO 31ST MARCH, 1936.

Region.	Permanent State Forest.		Provisional State Forest.		Total.
	Ordinary.	National Endowment.	Ordinary.	National Endowment.	
	Acres.	Acres.	Acres.	Acres.	Acres.
Auckland	420	..	2,993	..	3,413
Rotorua	1,343	18	2,869	..	4,230
Wellington	660	..	842	..	1,502
Nelson	..	..	805	80	885
Westland	6,004	20	..	1,446	7,470
Canterbury	66	..	..	..	66
Southland	10,247	..	1,607	..	11,854
Totals	18,740	38	9,116	1,526	29,420

2. PROTECTION FORESTS.

Judging by the numerous paragraphs, articles, and letters which have appeared in the press over the past twelve months, it would appear that the public is at last beginning to realize the great part played by our hill-country forests in tempering climatic conditions, regulating stream-flow, conserving water-supply, preventing rapid run-off, erosion, landslides, &c., and the great importance to our national welfare of preserving such forests in their virgin state. The influence which forests exercise upon climate has been the subject of research and investigation the world over for many years past, and even at the present day sharp differences of opinion exist amongst experts on this debateable subject. It may therefore be of interest to the lay reader to quote briefly from the findings of a Committee set up by the Fourth British Empire Forestry Conference which assembled at Durban, South Africa, on 2nd September, 1935.

The Committee in question, comprising ten of the leading foresters of the Empire, were asked to report on "Forests in Relation to Climate, Water Conservation, and Erosion," and, in their report, dealt with the subject under the three separate heads mentioned.

Under the subheading "Temperature" the Committee made the following statement:—

"The physiological and physical processes attendant upon plant-growth reduce the temperature of the air—firstly, because plants transpire water, and secondly, because the sun's heat is absorbed in the process of evaporation. By reason of its composition the living plant substance cannot become heated to the same extent as bare rock or soil. Moreover, the ground under plants cannot become greatly heated by the sun's rays owing to the interception of the latter by the canopy of vegetation. It follows that the effect of forests during the growing-season is to lower the temperature of the air in and above them and, by reducing the absorption of heat by the earth's surface, to lower the soil temperature and correspondingly reduce evaporation. Observations have also shown that forests not only moderate the extremes of heat in summer, but that as a general rule they also modify the extremes of cold in winter. Keeping in mind the fact that it is at the maximum and minimum extremes of temperature that the more serious damage from heat and cold occur it is patent that, apart from any benefits which may accrue from forests in other directions, their effects upon the temperature of a region are highly beneficial to man and beast."

In summing up under "Climate" the Committee said, *inter alia*,—

"Climate has without doubt seriously deteriorated over large portions of the earth by reason of the destruction of the forest. While afforestation may have only slight bearing on the climatic conditions of a country, the progressive destruction and degradation of vast areas of natural forest result in increasing aridity, the dessication of the soil, and the impoverishment of mankind."

And, under "Erosion," they commenced their report thus:—

"It is unnecessary for us to recapitulate all that has been stated on this aspect of the subject during the debate. It is admitted by all authorities on erosion that one of the greatest calamities which have overtaken mankind has been the destruction of the forest and the consequent erosion of the land surface. This has already destroyed the fertility of many lands, and is at the present day exercising a powerful influence on the destiny of the peoples.

"Erosion results from the misuse of the surface-covering of the earth, whether it be by the destruction of the forest which covered it, by the misuse of arable or pasture land, by bad methods of cultivation, by burning, or by overgrazing."

One is tempted to quote further extracts from this very interesting report, but enough has been said to show that this Dominion must be unceasing in its efforts to protect and conserve its remaining protection forests; if fires—the worst enemy of the forest—and herbivorous animals—the second worst danger—be kept out, nature may be relied on to do the rest. Failure to take adequate and prompt measures to combat these two enemies can have only one result; the history of many of the older countries of the world will be repeated here—the turning of many thousands of acres of smiling country into arid desert wastes. In concluding this portion of the report it seems appropriate that one should quote the resolution adopted by the Conference under the heading "Forest Influences." It reads as follows:—

"The Conference approves the report of the Committee on Forests in Relation to Climate, Water Conservation, and Erosion (Appendix No. III).

"In view of the important and beneficial influence of forests on water conservation, on soil erosion, and on the maintenance of equable climatic conditions, the Conference urges on the Governments of the Empire the necessity of maintaining under forest cover catchment areas and lands particularly liable to erosion or dessication.

"The Conference also urges the importance of scientific investigation of all aspects of the subject, both in South Africa and in other parts of the Empire, and recommends that a copy of the Committee's report and its enclosures be submitted for the special consideration of the Government of the Union of South Africa."

3. FOREST RECONNAISSANCE, TIMBER CRUISING, SURVEYING, ETC.

Indigenous Forests.

Forest Reconnaissance and Forest Inventory.—Field work was carried out as follows:—

- (1) In the kauri areas of Herekino and Omahuta State Forests.
- (2) In Westland 10,000 acres were explored.
- (3) In Southland areas totalling 8,741 acres, containing 49,000,000 board feet, were examined.
- (4) In Rotorua Region 4,000 acres of timber were explored in order to obtain valuations for the Native Land Court.

Demarcation.—A statutory survey was made of some 3,952 acres, having fifteen miles of boundary-lines in the Rotorua Region.

Statutory surveys were also made of three small areas in the Auckland Region.

Forest Roads.—A total of 272 chains of roads were constructed in the indigenous forests.

Timber Cruising.—In State and provisional State forests 12,900 acres containing 113,180,000 board feet were cruised. Cruises of 5,640 acres, containing 37,600,000 board feet, were made for other Government Departments, and 1,586 acres carrying 9,130,000 board feet were cruised for private owners.

Topographical Surveys.—Special topographical surveys comprising some 8,000 acres were made in Omahuta and Herekino forests. The object of these surveys apart from determining contours, creeks, &c., was to fix the positions of forest types in the kauri forests in order to facilitate the preparation of forest working plans for the permanent management of these forests.

Exotic Plantations.

Topographical Surveys.—Some 11,000 acres were topographically surveyed in Rotorua and Nelson Regions.

Road Construction.—Approximately twenty-one miles of roads were constructed. These roads will serve as future extraction routes for forest produce.

Preliminary Management Surveys of Exotic Forests.—Owing to the pressure of other urgent field work, no further progress has been made, but sixty field plans of Balmoral and Hanmer Plantations have been prepared in order that officers can proceed with the field inspection when a suitable opportunity occurs.

4. FOREST ATLAS.

The Draughting Branch of the Service was fully engaged during the year in preparing new plans, renewing old ones, compiling atlas sheets, and recording information disclosed by later surveys, &c., particularly with respect to plantation operations and topographical surveys. New work included the making of fifty-eight tracings and three plans, the mounting of 143 plans, the compilation of six compartment survey plans, the colouring of thirty-two species plans to show the various species planted, and the preparation of new atlas sheets for lithographing. Routine work in connection with the recording of sawmilling activities and the changes rendered necessary by the proclamation of new forest areas, &c., was kept well up to date.

5. STATE AFFORESTATION.

It will be seen from the table which follows that, with the exception of Rotorua Region, State tree-planting on a large scale has ceased throughout the Dominion; as mentioned in former reports this is due to the fact that the existing areas available for afforestation have been completely planted except for blanking and miscellaneous planting here and there. The total new area afforested during the year was 12,090 acres—slightly lower than last year's figures and the lowest for many years. The area of artificially created State forests in the Dominion now approaches, in round figures, 420,000 acres. Planting on a reduced scale will be continued in Rotorua Region.

The gross area of the plantations (see extreme right-hand column of the table) differs slightly from the figures published last year; but this is due to the correction of certain errors discovered by recent surveys, &c.

TABLE 4.
SUMMARY OF OPERATIONS IN PLANTATIONS AS AT 31ST MARCH, 1936.

Plantation.	Year of Commencement	New Area planted, 1935.	Total Net Area planted.	Gross Area of Plantation.
		Acres.	Acres.	Acres.
Waipoua	1925	9	1,070	12,600
Puhipuhi	1904	..	871	1,558
Riverhead	1926	..	11,029	11,956
Maramarua	1928	4	12,303	14,087
Tairua	1930	173	10,604	54,400
Waio tapu	1901	..	7,051	7,974
Whakarewarewa	1898	..	8,033	10,076
Kaingaroa	1913	11,152	253,752	327,931
Erua	1930	185	2,703	5,392
Karioi	1927	..	17,196	33,689
Golden Downs	1927	64	19,245	22,527
Westland	1922	..	3,005	8,006
Hanmer	1901	..	7,737	10,309
Balmoral	1916	105	20,757	24,000
Eyrewell	1928	155	18,306	19,266
Dusky	1898	..	4,364	6,829
Conical Hills	1903	..	3,619	3,765
Naseby	1900	..	3,008	4,032
Pukerau	1915	..	565	628
Blue Mountains	1925	23	8,775	9,661
Pebbly Hills	1930	14	4,353	5,330
Minor areas	1875-1935	206	1,207	4,576
Totals	..	12,090	419,553	598,592

6. WAITANGI ENDOWMENT.

By authority of the Waitangi Endowment Act, 1932-33, the Service planted a further area of 94 acres of the Waitangi Endowment during the year under review, making a total of 181 acres planted to date.

The primary object of these afforestation operations, which were commenced in 1934, is to reclothe a treeless area to form a scenic background for the area known as the Waitangi National Trust, and not the establishment of timber-trees as a source of revenue.

7. TIMBER SALES.

Although the figures recorded under this head last year showed, when compared with those for several previous years, that the sawmilling industry had completely recovered from the economic ills which afflicted it during the slump period, still further indications of improvement will be noticed by comparison with the figures shown hereunder. The number of sales and volume and value of timber sold during the year all show an appreciable increase, and it may be predicted with confidence that the existing keen demand for milling bush will continue until at least the present shortage of houses is overcome.

The demand for fencing timber—posts, stays, battens, &c.—and other classes of miscellaneous forest-produce, power-poles, house-blocks, sleepers, firewood, &c., still continues keen, and many bushmen have found employment in this way.

Relative statistics of timber sales for the past four years are—

Year.			Number of Sales.	Quantity sold.	Sale Price.
				Board Feet.	£
1932-33	..	..	51	32,314,954	35,633
1933-34	..	..	83	49,026,302	52,118
1934-35	..	..	117	65,302,700	71,243
1935-36	..	..	130	102,219,800	131,447

The quantity of timber cut from State forests, including Wardens' areas, was approximately 84,000,000 ft. board measure, or nearly 13,750,000 ft. greater than for the year 1934-35.

The volume of timber cut from all sources for the year is estimated to be 300,000,000 ft. board measure, so that 72 per cent. was cut from private and Native-owned forests and 28 per cent. from State forests.

8. WEST TAUPO TIMBER LANDS.

The regular patrol of these lands at the request of the Native and Lands and Survey Departments, as outlined in last year's report, was continued throughout the year. It is satisfactory to report that the vandalism and unauthorized cutting of timber hitherto prevalent in this remote forested country has been entirely suppressed.

CHAPTER II.—FOREST PROTECTION.

1. GENERAL.

The year under review has been climatically one of the most extraordinary of the recent decade at least. Widely distributed summer rains and bad weather occurred in most districts which normally suffer acute fire hazard, whilst Westland and Southland, the two conservancies with normally a minimum fire hazard, experienced very dry spring and summer weather, demanding intensified patrolling and vigilance. Auckland maintained its high rainfall of the previous year, and it is worthy of note that Waipoua State Forest for the third year in succession achieved the distinction of recording fewer hours of sunshine than any other meteorological recording-station in New Zealand. For the calendar year 1935, its total amounted to 1,487 hours only; whilst for the initial quarter of this calendar year it has shown sixty-seven hours fewer than for the corresponding quarter of 1935. In the fiscal year, therefore, as covered by this report, its sunshine-hours were but 1,420, a fact which, coupled with a rainfall of over 80 in., explains the complete absence of fire danger from that district; whilst at Puhipuhi on the eastern coast of the peninsula the even more remarkable rainfall of 114 in. guaranteed similar security. These factors of super-abundant rain distributed over the whole year, and minimum exposure to sunshine, are somewhat contrary to the popular conception of the climate of far-northern areas; and are here dwelt on at some length not only because of their relationship to fire hazard, but because of their suggestiveness as to the climatic tolerances, if they be not, indeed, the demands of kauri as a forest species. The continuous minimum sunshine record over a period of years may prove to be of great significance.

Another outstanding climatic episode of the year under review was the wind experienced on 2nd February, 1936. The southern and the central areas of the North Island bore the brunt of this storm. Its recorded wind velocity at the Meteorological Station at Wellington was 54 m.p.h.; but, judging from tree and forest damage elsewhere, this velocity was much exceeded in remote districts where no records are kept. Swathes of considerable width were carved through primitive montane forest in the Tararua Mountains; and many areas of indigenous forest in the lower foothills and valleys had the overstory of mature podocarps levelled to the ground. Shelter-belts and farm wood-lots of exotic species in private ownership suffered severely in the district of greatest intensity of the storm (Central Manawatu), but it so happened that there were no exotic State forests in that district. In the Rotorua district the severity of the storm was slightly modified, although broken and fallen farm-lot and roadside trees bear witness to its unusual violence even there, and there is a certain amount of wind damage in tall podocarp forest in the indigenous areas. Such damage, however, is in the nature of breakage of individual trees on certain faces rather than of the "wide-swathe" damage of farther south.

Particular anxiety was felt for the exotic forests in Rotorua district, as adverse critics have always stressed the wind danger both to areas where thinning has been deferred too long, and to newly-thinned areas. Breakages to crutched and marginal trees did occur, but to a very minor extent; and, without going into detailed cases, it will be sufficient to cite the extreme case of an exposed face carrying tall thirty-year-old larch and Douglas fir, heavily thinned for the first time the season before the gale. This compartment (Block 5, Whakarewarewa State Forest) came through without a single windfall. In the light of the immunity of this extremely critical area, the uninjured condition of the rest of the Rotorua group of exotic forests may be accepted without further description here.

2. FOREST FIRES.

The fire season passed almost without even alarm. There was the usual crop of small fires on the outskirts of fire districts, but not penetrating into State forests; and the usual difficulty of securing adequate evidence of origin of the fire. No damage was done and no convictions were obtained from these fires.

In Nelson district three fires occurred in State forests and resulted in the loss of 17 acres of eight-year-old *P. radiata*, 20 acres of *Sequoia sempervirens* of indifferent growth, and 1 acre of beech regeneration.

In Westland Region extremely dry weather made it necessary to exercise great caution to prevent fires entering the plantation, and numerous small locomotive fires occurred despite a careful patrol. On the evening of 11th January a locomotive fire entered for about 18 chains into Compartment 7 and destroyed about 15½ acres of *P. radiata*, 1926 planting. The affected area was densely covered with scrub, old rotten logs, and high bracken, which made a slow hot fire dangerous and difficult to extinguish.

In Naseby State Forest (Southland Conservancy) a fire set by the Forest Service staff to clear boundary firebreaks in readiness for a settler's burn adjoining, got out of hand, and, aided by a sudden and adverse wind, swept over 300 acres of five-year-old plantings.

3. FIRE DISTRICTS.

So much has been said in previous reports regarding the effectiveness of fire districts in reducing the number of forest fires that it should not be necessary to stress the point here; suffice it to say that the fact of private fire districts increasing in number so rapidly can safely be accepted as definite evidence in support of the fire-district principle. Six such districts were constituted during the year, covering an area of 325,000 acres and one State forest district. Private fire districts now number sixteen, and have been created in response to requests from local bodies, private afforestation companies, &c. The total number of fire districts constituted in terms of the Forests Act, 1921-22, and its amendments is fifty-two, and the area embraced by these districts approximates 2,900,000 acres.

4. ANIMAL DESTRUCTION.

The usual campaign of animal-pest destruction was maintained, the total recorded kill (exclusive of uncounted poisoned rabbits) being 52,568 animals of all species. The gross cost of animal destruction was £3,988.

5. PARASITE BIOLOGY.

The year under review witnessed no alarming new appearances of detrimental parasites. The work of the forest entomologist and the forest mycologist continued at their respective stations.

The nursery at Wairapukao gave some concern in late summer owing to an unusual attack of *Pestalozzia funerea* on a crop of line-sown *P. radiata* stock. The very wet summer already referred to undoubtedly set the stage for this unusual manifestation; but fortunately the actual losses were small, and the bulk of the crop recovered after the end of the period under review.

6. THINNING-WORK IN EXOTIC FORESTS.

The planting gangs of the winter season were retained in most districts throughout the year by the assistance of subventions from the Unemployment Fund. In all older exotic forests underscrubbing of coniferous stands emerging from the thicket stage was the principal work, with a certain amount of pruning of selected trees in pole stands, and management road formation in anticipation of more intensified thinning-work in the future. A total area of 1,507 acres was underscrubbed and 889 acres thinned, while 115 acres were thinned for a second time. In this matter, a new and possibly heterodox development deserves record. In South Otago, certain stands of *P. radiata* still in the thicket stage suffered fairly severely from snowfall in the previous year. The long and pliant branches of this species bend readily under a load of snow; but do not recover when the snow has melted. Even the main trunks of weaker saplings bend completely over and retain this bent form. After a few months had elapsed it became evident that this deformation was permanent, and that remedial measures were essential if the stands were to be saved. Green pruning of stands still in the thicket stage was therefore introduced, and will probably become a routine operation for this heavily branched species in districts where snowfall is a menace. Twenty-four acres of Blue Mountains State Forest were green-pruned in this fashion, and will serve as an observation ground to illustrate the consequences of such work.

The following produce was sold or utilized from exotic forests: Firewood, 3,761 cords; pitprops, 71,750 pieces; poles, 520; rails, 2,750; posts, 2,600; sawn timber, 98,000 cubic feet. The total cash return was £2,066 (exclusive of the value of that portion of the above list which was used for Forest Service purposes).

CHAPTER III.—UTILIZATION.

1. GENERAL.

Owing to the absence of one of the utilization staff on overseas leave, field investigations during the year have been strictly limited to the servicing of kilns, to the inspection of test lines of creosoted fence-posts, poles, &c., and to the examination of projected utilization developments under the programme of national forest works for the period 1936-40. The perfection of this programme has been the major project for the period under review, and in respect to utilization this national forest plan has two important objectives—

- (1) The refinement of manufacturing practices which will expand the uses of exotic timbers; and
- (2) The integration of various forest industries which will ensure a more balanced scheme of utilization for all classes of forest products, ranging from mining-timbers to pulp-board.

2. LOGGING.

The adaptation of North American tractor and logging arch equipment to local forest conditions proceeds apace both in the North and South Islands. Motor road haulage of logs likewise continues to find an ever-increasing application due to substantial cost reductions made possible by the use of Diesel power units and of trailers equipped with extra low pressure tires. The tractive efficiency of such units has now been improved to a point where they can be used over soft ground previously impassable to anything but vehicles fitted with caterpillar tracks.

3. SAWMILLING.

Although the low prices of the depression period provided a strong incentive for cost reductions by improved sawmilling methods and resulted in the redesign of some plants and in the installation of new machinery, little real progress has been achieved. The relatively high degree of efficiency which is so apparent in the logging operations is far from paralleled in milling activities. This has been reflected more particularly in the rebuilding of mills recently destroyed by fire. Not infrequently the new mills are a copy-book pattern of the milling practices of fifty years ago, and in some cases do not include a single modern machine. The old single-sash breakdown, supplemented by a twin-saw breakdown, both with flat-topped carriages, the travelling bench, breast bench, and deal frame constitute all too often the alpha and omega of indigenous sawing practice, and are in such ill-balanced operation that both fixed and operating costs are excessive. While numerous factors combine to perpetuate the use of such equipment, ranging from capitalization difficulties to technical and operating problems, there is little doubt that considerable room for improvement exists, and under the shelter of a virtually prohibitive tariff and exchange barrier, the industry is under an obligation to reduce costs accordingly.

4. DRYING OF TIMBER.

The shortage of supplies of well-dried imported building-timbers has concentrated more attention than ever before in the history of the industry upon the problem of drying the indigenous timbers, more particularly as both producers and merchants have allowed their stocks to become depleted below a level at which the normal demand for dry timber could be met. While there is considerable room for improvement in air-drying practices both as regards the rate and quality of drying, great difficulty is experienced in effecting the desired reforms, and for this reason work has been concentrated upon kiln-drying as offering a better field for achieving immediate results. Every opportunity has therefore been taken during the year, not only of starting up and servicing new installations and instructing new operators, but of inspecting operations throughout the Dominion. These studies have demonstrated the prevalence of a number of weaknesses in operation and design which have resulted in poor kiln-drying and created much prejudice against the process.

Too often owners have been persuaded to adopt wide piling—a practice which the State Forest Service has condemned over a long period of years. An actual investigation of the influence of this factor shows that a high degree of uniformity in drying is almost impossible in the case of stacks 8 ft. and more in width, the variations in final moisture content amounting to as much as 20 per cent. Cross-shaft kilns also have been found to give non-uniformity of drying owing to the development of end-wise drift unless corrected by opposing fans as in the simpler longitudinal-shaft kiln. The preparation and placement of kiln samples a day or more prior to the charging of the pile into the kiln have resulted likewise in serious repercussions. These samples, by virtue of being placed on the edge of the piles, have been subjected to relatively rapid air-drying before charging into the kiln, with the result that when the kiln-drying is stopped because the control samples have reached the desired moisture content, the whole charge is anything from 20 per cent to 30 per cent. above the moisture content indicated by the samples. Such timber when delivered to consumers has been used with disastrous results, and, where block-stacked for future use, has been irretrievably damaged by stain, &c. Equally disastrous results have followed the drying of mixed species, qualities, and thicknesses. Excessive steaming also has darkened the timber and left sticker marks sufficiently prominent to depreciate the value of the finished product. The basic cause of this defect is the failure of operators to realize that steaming must be limited to the absolute minimum consistent with relieving any internal stresses which may have been developed in the timber due to rapid drying. Generally speaking, intermittent steaming of New Zealand softwoods is not ordinarily required during the run which, if controlled in accordance with State Forest Service recommendations, should not necessitate even at its conclusion a longer steaming-period than four hours per inch of thickness.

The greatest practical improvement in kiln-drying effected by the State Forest Service during the year was the application of the dual dry-bulb recorded controller to facilitate circulation reversals without damage to the timber, and it is anticipated that this instrument will become standard equipment almost immediately. A publication embodying the results of these studies is now in course of preparation, and copies will be circulated for the information of operators as soon as available.

Generally speaking, it is advisable where servicing and training work by the State Forest Service is required that intending owners should first submit their proposals for the erection of kilns.

5. WOOD PRESERVATION.

Detailed inspections of the service lines of creosoted fence-posts and poles, &c., were made during the year and have added to our store of knowledge regarding the relative effectiveness of various treatments. Except, possibly, in one or two areas of low rainfall and low humidity, all non-durable posts and poles appeared to require a full-length treatment with creosote, as most butt treated timbers have failed by decay of the tops and their breaking-off just above the ground-level. The larch and eucalypt fence-posts full length creosoted at Rotorua in 1920 still show negligible signs of decay, and the same comment applies to the beech and kamahi posts treated at Dunedin in 1925 and the rimu poles treated at Westland in 1930. Similar results have been secured with a number of creosoted pine posts, the results, however, indicating that great care must be exercised in the handling of these timbers before treatment and in securing sufficient penetration and absorption of the preservative.

Further timbers were treated and new service lines installed during the year, a total of two thousand fence-posts of larches and pines having been creosoted during the last two years and about four hundred already placed in use. Further investigations also have been made into the incidence of sap-stain of exotic timbers. Such stains are the principal source of prejudice against the use of exotic timbers, but with negligible exceptions are traceable to bad logging and seasoning practices. The underlying difficulty is that saw-millers either will not realize that the exotic timbers cannot be abused in the same way as the indigenous timbers or are content to disregard the complaints of their customers.

6. MISCELLANEOUS.

Amongst the general utilization projects undertaken during the year were investigations into the identification and expanded use of the silver-pines and the beeches, the control and prevention of borer attack, the standardization of butter-boxes, the use of locally grown timbers for handle and clothes-peg manufacture, and the development of markets for rustic work.

CHAPTER IV.—THE TIMBER TRADE.

1. GENERAL.

The annual cut of sawn timber for the year ended 31st March, 1936, is estimated at approximately 300,000,000 ft. board measure, or over 50,000,000 ft. board measure more than the previous year, and almost twice the record low cut of 154,000,000 ft. board measure for the year ended 31st March, 1932. The predicted cut of 250,000,000 ft. board measure for the year ended 31st March, 1935, agreed closely with the Government Statistician's reported cut of 243,782,000 ft. board measure.

Any prediction of the annual cut for the forthcoming year is naturally of a speculative character, but the four-weekly railway returns of timber loadings are indicative of the present trend and the March, 1936, figure of 42,113 tons is the largest since May, 1930. Judged by building permits, railway loadings, depleted yard stocks, and the inauguration of a Government housing scheme, an increase in annual production to at least 325,000,000 ft. board measure might be expected, but it is difficult to assess the demand for timber for private building activities.

While the greater part of the increased production for the year ended 31st March, 1936, will be accounted for by rimu, it is anticipated that other building-timbers will show a proportionately large increase in production. Insignis pine, which alone of all timbers registered a consistent increase of production throughout the depression period, attained a new reported record of over 27,000,000 ft. board measure during the year ended 31st March, 1935, and is expected to reach 35,000,000 ft. board measure during the period under review.

2. DOMESTIC MARKETS.

The firming prices and increasing demand characteristic of the 1934-35 period continued to gather momentum during the year ended 31st March, 1936. Continuation of the building-subsidy scheme of the Unemployment Board is reflected in a further increase in building activities, the dwelling permits for the larger towns and cities as reported by the Government Statistician numbering 3,181 for the year ended 31st March, 1936, as compared with only 2,173 and 1,981 for the two previous periods.

Comparatively little improvement was effected during the year in the stock position both in sawmillers' and merchants' yards, and only as a result of an expansion in kiln-drying capacity have producers been able to avoid an exceedingly critical shortage of dry finishing lines. Even so, an excessive amount of insufficiently dried timber is being used in buildings, and, with a virtually prohibitive tariff against supplies of well-dried timber from abroad, producers are under a heavy obligation to offer a better drying service to the community.

Imported softwoods, such as Douglas fir, redwood, &c., have shared only to a negligible extent in the increased demand for timber owing largely to tariff and exchange barriers and to the restriction upon their use in buildings qualifying for the unemployment subsidy, the annual consumption of these timbers now representing less than 3 per cent. of all building-timbers as compared with about 15 per cent. in the immediate pre-depression years. Accelerated constructional activities largely of a maintenance character resulted in increased importation of Australian hardwoods for both Government and local-body use, and, although local substitutes are used wherever possible, the supply is woefully inadequate and still larger importations will probably be required in the near future. In the boxing and crating industry imports remained at a negligible level, representing less than 2 per cent. of the total consumption. Insignis pine continues to find an ever-increasing use for many types of packages, and, except in the case of butter-boxes and tallow-cases, dominates the boxing markets.

Several increases in the wholesale price of timber occurred during the year ended 31st March, 1936, representing an added mill realization for rimu of about 1s. per 100 ft. board measure above the closing 1935 prices. Based upon current wage-levels and operating-ratios, efficient producers should now be in a position to obtain a fair return upon their investment in the industry. Retail prices advanced in sympathy with wholesale prices.

3. EXPORTS.

Exports for the calendar year 1935 totalled 39,642,000 ft. board measure, representing the highest annual export since 1926. The 5,000,000 ft. board measure increase over the 1934 record of 34,517,000 ft. board measure was accounted for largely by increased shipments of rimu, matai, insignis pine, and beech. The growth of rimu exports from 7,000,000 ft. to 9,000,000 ft. board measure, however, continues to reflect the reluctance of Commonwealth buyers to purchase anything but clean-grade timber, the shipments of merchantable grade still tending to complicate the domestic marketing problem. Matai registers a still larger proportional increase, from less than 800,000 ft. board measure to over 2,800,000 ft. board measure, but inasmuch as practically the whole of the export shipments are composed of sap or so-called "O.B." grades, which are a drag on the local market, this trade is of distinct advantage to the industry. An increase in the export of insignis pine box-shooks for the island fruit trade from 700,000 ft. board measure to 1,600,000 ft. board measure also reflects the increasing popularity of exotic-pine timbers for boxing and crating work. Exports of silver-beech to Australia increased from 2,191,000 ft. board measure to 2,548,000 ft. board measure, but those to Great Britain continued at a low level, attaining a total of only 218,000 ft. board measure, although the completion of a new contract with the English buyers augers well for an acceleration of this trade.

By the Products Export Amendment Act, 1935 (No. 10) "timber" was included in the definition of "products" in the Products Export Act, 1908 (No. 15). While empowering the Government to control the grading and marketing of all timber for export, the present intention is to make the regulations applicable only to silver-beech.

Following a recurrence of the agitation by dairying interests and boxmakers for the control or prohibition of export of white-pine as an essential raw material of the butter industry, the white-pine position was reviewed during the year, and as a result of this investigation the following policy was recommended to and adopted by the Government:—

- (1) The conservation of all State-owned supplies of white-pine for local essential uses, such as butter-boxes, tallow-casks, &c.; and
- (2) The limitation of exports of white-pine to essential Australian requirements for butter-boxes, &c.

As regards the conservation of State-owned supplies, it has been the policy to refrain from opening up the white-pine resources of South Westland until such time as they are required for the local market, and all sales in this area, which contains 70 per cent. of the total remaining supplies, and of which the State owns over four-fifths, are conditional upon the use of the timber for New Zealand requirements. As in the past, every encouragement also will be offered for the use of exotic-pine timbers as substitutes for white-pine for cheese-crates, fruit-cases, &c., so that the white-pine supplies may be conserved for the more essential purposes of butter-box and tallow-cask manufacture, &c.

The limitation also of white-pine exports has engaged considerable attention, but a renewal of formal Government control of export has been avoided by the producers agreeing to voluntarily and progressively restrict shipments to 15,000,000 ft. board measure per annum within the next three years, and to continue their agreement that local requirements will receive preference.

TABLE 5.

REPORTED PRODUCTION OF ROUGH-SAWN TIMBER. BY SPECIES.

(From information supplied by the Government Statistician. All figures refer to the years ended 31st March, 1933–1935.)

Species.	1933.		1934.		1935.	
	Quantity.	Percentage of Total Quantity.	Quantity.	Percentage of Total Quantity.	Quantity.	Percentage of Total Quantity.
	Ft. b.m.		Ft. b.m.		Ft. b.m.	
Rimu	76,193,000	45·8	96,125,000	48·6	125,488,000	51·4
White-pine	47,998,000	28·9	47,949,000	24·3	52,294,000	21·5
Matai	8,161,000	4·9	10,760,000	5·5	13,880,000	5·7
Kauri	5,410,000	3·3	4,946,000	2·5	5,553,000	2·3
Totara	6,347,000	3·8	7,197,000	3·6	8,867,000	3·6
Beech	5,781,000	3·5	6,972,000	3·6	7,725,000	3·2
Insignis pine	14,676,000	8·8	21,494,000	10·9	27,311,000	11·2
Miro	441,000	0·3	671,000	0·3	915,000	0·4
Tawa	290,000	0·2	214,000	0·1	746,000	0·3
Rata	72,000	..	97,000	0·1	92,000	..
Other	900,000	0·5	1,230,000	0·5	911,000	0·4
Totals	166,269,000	100·0	197,655,000	100·0	243,782,000	100·0

TABLE 6.

REPORTED PRODUCTION OF ROUGH-SAWN TIMBER, BY PROVINCIAL DISTRICTS.

(From information supplied by the Government Statistician. All figures refer to the years ended 31st March, 1933–1935.)

Provincial District.	1933.		1934.		1935.	
	Quantity.	Percentage of Total Quantity.	Quantity.	Percentage of Total Quantity.	Quantity.	Percentage of Total Quantity.
	Ft. b.m.		Ft. b.m.		Ft. b.m.	
Auckland	74,261,000	44·7	83,915,000	42·5	100,780,000	41·3
Hawke's Bay	7,647,000	4·6	9,683,000	4·9	11,867,000	4·9
Taranaki	1,980,000	1·2	1,839,000	0·9	2,291,000	0·9
Wellington	15,157,000	9·1	21,312,000	10·8	22,731,000	9·3
Marlborough	3,374,000	2·0	4,041,000	2·0	2,954,000	1·2
Nelson	5,651,000	3·4	6,461,000	3·3	11,198,000	4·6
Westland	38,773,000	23·3	42,316,000	21·4	57,543,000	23·6
Canterbury	2,817,000	1·7	4,391,000	2·2	5,085,000	2·1
Otago	2,969,000	1·8	5,682,000	2·9	5,489,000	2·3
Southland	13,640,000	8·2	18,015,000	9·1	23,844,000	9·8
Totals	166,269,000	100·0	197,655,000	100·0	243,782,000	100·0

TABLE 7.

IMPORTS OF SAWN TIMBER AND OTHER FOREST PRODUCE.

(From information supplied by the Comptroller of Customs. All figures refer to the years ended 31st December, 1933–1935. Value represents value in country of export, plus 10 per cent. expressed in terms of New Zealand currency.)

Item.	1933.		1934.		1935.	
	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.
Hardwoods—	Ft. b.m.	£	Ft. b.m.	£	Ft. b.m.	£
Australian hardwoods ..	7,149,000	90,070	10,350,000	142,200	23,416,000	298,000
Oak	1,040,000	17,060	1,655,000	29,760	1,550,000	24,760
Totals	8,189,000	107,130	12,005,000	171,960	24,966,000	322,760
Softwoods—						
Douglas fir	1,338,000	10,820	3,128,000	24,780	3,472,000	25,790
Butter-boxes	1,815,000	30,610	849,000	15,250	756,000	13,160
Redwood	461,000	5,830	752,000	8,540	1,255,000	15,980
Totals	3,614,000	47,260	4,729,000	48,570	5,483,000	54,930
Other	121,000	3,180	266,000	8,610	907,000	16,710
Grand totals ..	11,924,000	157,570	17,000,000	229,140	31,356,000	394,400
Laths, palings, shingles, &c.	..	2,230	..	2,900	..	4,110
Tanning-bark	Tons.		Tons.		Tons.	
Wood-pulp	1,850	20,630	1,739	18,030	2,173	21,880
	4,270	38,180	3,641	32,540	4,246	37,150

TABLE 8.

EXPORTS OF SAWN TIMBER⁽¹⁾ AND OTHER FOREST PRODUCE.

(From information supplied by the Comptroller of Customs. All figures refer to the years ended 31st December, 1933–1935.)

Item.	1933.		1934.		1935.	
	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.
	Ft. b.m.	£	Ft. b.m.	£	Ft. b.m.	£
White-pine ⁽²⁾	19,533,000	181,030	22,791,000	213,290	22,709,000	214,240
Rimu ⁽³⁾	3,642,000	24,560	7,151,000	51,470	9,009,000	69,820
Beech	1,375,000	12,710	2,410,000	25,410	2,766,000	29,350
Matai ⁽⁴⁾	..	..	..	..	2,842,000	22,810
Kauri ⁽⁵⁾	411,000	10,660	679,000	18,490	627,000	18,050
Insignis pine box-shooks ⁽⁶⁾	692,000	7,120	712,000	5,620	1,607,000	9,660
Other—						
New Zealand	177,000	1,420	787,000	6,250	25,000	430
Foreign	11,000	120	40,000	290	57,000	830
Totals	25,841,000	237,620	34,570,000	320,820	39,642,000	365,190
	Tons.		Tons.		Tons.	
Kauri-gum	3,089	77,970	3,209	86,920	2,872	79,110
Tanning-bark	18	90	32	240	..	..
Fungus	56	3,400	64	3,790	76	5,370

⁽¹⁾ 96 per cent. exported to Australia; 2 per cent. to Western Samoa; remainder to other Pacific Islands and United Kingdom. ⁽²⁾ Exported for butter-boxes, shelving, whitewood furniture, &c. ⁽³⁾ For flooring, linings, and joinery. ⁽⁴⁾ Prior to 1935, exports of matai were small, and included in "Other—New Zealand." Principally used for floorings and linings. ⁽⁵⁾ For floorings, linings, tanks, and vats, &c. ⁽⁶⁾ Principally for Pacific Island fruit-cases.

CHAPTER V.—GENERAL.

1. LEGISLATION.

The only legislation affecting State forests enacted during the year was section 3 of the Mining Act, 1935, which restricts the operation of section 66 (f) of the Mining Act, 1926, by providing that no body corporate shall be entitled to exercise the authority to cut timber conferred on the holder of a miner's right except with the consent of the Minister of Mines and the Commissioner of State Forests, and subject to such terms and conditions as may be imposed.

It has always been recognized that a miner's right gives the holder thereof the right to cut and remove timber free of charge from unalienated Crown land (including State forests) for mining and his own domestic use—*i.e.*, for firewood, fencing, and the building of a house for occupation by him.

In addition to the individual miner, however, this right was hitherto enjoyed by commercial organizations.

The individual miner is not affected by this legislation.

2. FINANCE.

Receipts.

The increase in receipts over last year's figures—approximately £34,000—is convincing evidence that the milling industry is again in a flourishing condition. The gross receipts were £106,978, being the highest total recorded for eight years. Detailed figures are given in the attached schedule:—

TABLE 9.

Item.	1935-36.	1934-35.	1933-34.	1932-33.
Indigenous-forests receipts—	£	£	£	£
Timber-sales	74,828	47,179	31,017	27,129
Timber royalties and trespass	5,006	5,449	3,164	3,667
Leases, grazing	1,757	1,646	1,816	1,637
Sawmill-sites, industrial, &c.	957	1,417	1,348	1,412
Miscellaneous	2,844	2,125	2,206	1,587
National Endowment Account allocation ..	15,712	10,990	6,612	6,221
Nurseries and plantations—				
Trees and seeds	5,874	4,094	6,546	3,542
Firewood and poles				
Miscellaneous				
Totals	106,978	72,900	52,709	45,195

Payments.

The year's expenditure shows an increase of £19,000 over last year's total, but this is accounted for mainly by increases in salaries and wages and additional payments to local bodies and National Endowment Account. Expenditure on the indigenous forests also shows a slight increase. Rigid economy and careful supervision over projects were responsible for keeping the expenditure down to the minimum under all heads consistent with efficiency.

TABLE 10.

Item.	1935-36.	1934-35.	1933-34.	1932-33.
Fixed charges and staff salaries—	£	£	£	£
Interest and expenses of raising loans ..	525	172	269	97,256
Staff salaries	41,374	34,155	32,901	34,232
Allocation of revenue—				
National Endowment Account	7,117	3,436	3,893	3,840
Local-body payments	9,243	5,903	3,508	3,259
Management, establishment, and development—				
Indigenous forests	14,763	11,735	8,817	9,501
Fire-fighting equipment and prevention ..	415	805	820	668
Educational: Reference library, &c. ..	260	445	120	411
Research and experimental equipment, &c. ..	836	528	1,022	1,017
Afforestation: Nurseries and plantations ..	60,642	59,136	54,292	49,348
Land-purchase	70	..	10,542	12,646
Miscellaneous	500	343	202	205
Sand-dune reclamation	..	..	..	..
Totals	135,745	116,658	116,386	212,383

3. UNEMPLOYMENT RELIEF.

During the year under review the smallest number of registered unemployed men engaged in the operations of this Service was 700 (in April, 1935), and the greatest 1,070 (in March, 1936). Practically all these men were employed at the exotic plantations, where they lived under camp conditions. Until November, 1935, they were paid a small weekly wage and granted free food. In November it was decided to dispense with the grant of rations and pay them at the rates of 9s. per day for single men and 12s. per day for married men.

4. GRANTS OF TREES FROM SURPLUS STOCKS.

Some years ago when it was decided to discontinue State tree-planting on a large scale the Service undertook to supply trees from its surplus stocks for planting by local bodies through the Unemployment Board and by Government Departments, &c., at nominal cost—i.e., lifting and packing—and during the year under review 452,260 trees were distributed in this way at a total charge of £307 7s. Based on the 1930 prices (the last year of sales to the public) the value of these trees was £1,815.

Details are as follows:—

Number of Trees.	To whom issued.	Value.
		£
184,400	Local bodies	750
164,800	Canterbury Progress League .. .	690
97,850	Government Departments .. .	352
5,210	Miscellaneous	23

Figures showing the trees supplied to local bodies over the previous three years are—

Year.	Number of Orders.	Number of Trees.	Value.
			£
1932	127	1,847,180	6,643
1933	73	751,020	3,654
1934	53	406,950	2,154

In the early part of the 1935 planting season the maximum number of trees supplied to each applicant was fixed at 5,000, and this accounts for the marked reduction in the total.

The principal species granted were *P. radiata* (175,000), *C. macrocarpa* (97,300), *P. muricata* (54,100), and varieties of eucalypts (48,900).

As stocks are now exhausted, no free trees can be granted to local bodies this year.

5. HONORARY FOREST RANGERS.

The protection of State forests in remote localities is a difficult problem, and were it not for the gratuitous services of local honorary forest rangers and others who regularly visit certain State forests it would be practically impossible to prevent serious damage by vandalism and fire.

The Service is consequently fortunate in having a widely distributed band of 157 honorary forest rangers, and their voluntary support in the protection of our indigenous forest heritage is again gratefully acknowledged.

During the year there were twenty new appointments and one resignation.

Forest Service local officers are grateful for assistance in the protection of the State forests in their care, and appreciate advice of offences under the Forests Act, 1921–22, and particularly the start of fires, and notification in these respects always receives prompt attention.

Honorary forest rangers who immediately report any such cases which come under their notice perform an important public service.

APPENDIX.

SUMMARIZED REPORTS ON STATE AFFORESTATION.

AUCKLAND REGION.

The year with its evenly distributed rainfall was a good one for tree-growth, but tropical rains at frequent intervals did considerable damage to plantation roads, culverts, &c.

Maramarua Plantation.—General maintenance was carried on, 62 chains of new roads were formed, 1,820 chains were graded and repaired, and 1,400 chains of telephone-lines damaged by storms were overhauled and repaired. Clearing, ploughing, burning, &c., of firebreaks covered 6,490 chains.

Five acres of underplanting with redwood (*Sequoia sempervirens*) was tried as an experiment. In this plantation *P. radiata* and *P. ponderosa* are making good progress, but many blocks of *P. Laricio* are unfortunately not true to type, and may require to be replanted with a more suitable species.

Riverhead Plantation.—In addition to routine maintenance work 7 chains of fencing and the cultivation of 473 chains of firebreak were completed. Other work included repairs to roads, bridges, telephone-lines, &c., as a result of damage from floods and heavy rain.

Tairua Plantation.—At this station 173 acres of new planting and 610 acres blanking were completed. Here again much repair work to roads, bridges, culverts, &c., was necessary owing to flood damage.

The pines from the southern States of the United States of America are doing well here, and *P. ponderosa* and *P. Laricio* are also thriving. After slow beginnings *P. radiata* makes rapid growth later on.

Waipoua Plantation.—Of the various tree species planted at this station the semi-tropical pines of the southern American States seem most suited to the locality, and *P. palustris*, *P. Taeda*, *P. echinata*, and *P. caribaea* are all doing fairly well, while blocks of *P. radiata* are of a spindly nature but are putting on fair growth. Maintenance work was kept well up to date.

ROTORUA REGION.

At Kaingaroa Plantation a total area of 11,152 acres was planted with 7,655,500 trees—an average of about 680 trees per acre. The species used were *P. ponderosa* 60 per cent., *Pseudo-tsuga taxifolia* 28 per cent., *P. Murrayana* 9 per cent., the remainder being made up of *P. Laricio* and *P. Strobilus*. In some shelter-belt planting 11,450 trees—*P. radiata* (1,450) and *Alnus rubra* (10,000)—were used. Most of the planting-work was carried out by relief labour, which, on the whole, proved satisfactory, the average daily planting being 580 trees per man, a slight improvement on the previous year.

The stocktaking at Whakarewarewa Plantation was completed, and similar work at Waiotapu Plantation was commenced in January, 1936.

Nurseries.—Work was confined to the nurseries at Wairapukao (Kaingaroa Plains) and at Rotorua. At the former station 5,620,400 trees were lifted, and at the latter 5,029,100, making a total of 10,649,500. Present tree stocks are—Rotorua: 1,167,200 available for new season's planting, 1,298,500 to carry over for next season, and 23,700 for transfer to other regions. At Wairapukao the figures under the same heads are 3,621,300, 4,148,700, and 1,393,900. The grand total is 11,653,300.

WELLINGTON REGION.

Weather conditions at Karioi throughout the year were generally favourable to tree-growth in the plantation, but a dry spell and severe flooding in February did much damage to nursery beds. No new planting was done, but 291 acres were blanked with *P. Laricio*, *Larix decidua*, and *P. ponderosa*. Repairs to four bridges render necessary as a result of flood damage were carried out, and general maintenance work was kept up.

At Erua 185 acres were planted with 56,000 *Thuya plicata* and 47,550 *Cup. Lawsoniana* trees, and the strike generally was very good. The total area planted at this station is now 2,703 acres. In the open country 50 chains of new road formation was completed, and old roads and tracks were reconditioned where necessary.

NELSON REGION.

At Golden Downs the total area now in growing trees is 19,245 acres, which includes 64 acres of new planting. The growing-season was remarkably good, excepting in the nursery, where just as germination was required it was delayed by frost and lack of moisture.

A variety of species was used in the new planting, and the strike is approximately 84 per cent., which must be considered quite satisfactory. The total blanked area was 396 acres, 185,670 trees being used. Here again the strike was very good.

In the nursery 1,313,200 trees were lifted, and 634,700 were lined out; 354 lb. of seed was sown.

WESTLAND REGION.

Tree-cleaning was commenced in 152 acres of *Thuya plicata*, 1931 planting. Opossums again were numerous in the plantation, and 118 were caught during the winter months. The usual maintenance work was necessary—repairs to fences, painting of buildings, cleaning of creeks, ditches, &c.

CANTERBURY REGION.

In this Region new planted areas were Balmoral, 105 acres; Eyrewell, 155 acres: total 260 acres. Number of trees used was 139,200. These areas comprised firebreaks and odd corners here and there in the plantations.

Owing to favourable weather conditions after planting a good strike of about 90 per cent. was obtained. Tree-growth generally was exceptionally good, thanks to beneficial rains, which were well distributed throughout the season. A second growth commenced in February, and was particularly noticeable in the *P. radiata* stands.

SOUTHLAND REGION.

At Pebbly Hills Plantation the only new planting was about 14 acres of a former swamp which had been drained, and at Blue Mountains Plantation 23 acres comprising small detached areas lying along the Clutha River; 19,500 trees were planted.

Blanking was carried out at Naseby and Beaumont, 121 acres and 26 acres respectively being dealt with, and 68,500 trees being used. At Pebbly Hills Nursery about 87 lb. of seed was sown, producing 256,000 seedlings, the species being mainly *P. Murrayana*, *P. radiata*, *P. ponderosa*, and *P. Strobilus*.

Of the trees lifted (316,000) 172,000 were used for planting, 44,000 were lined out, and 100,000 despatched to other stations.

Approximate Cost of Paper.—Preparation, not given; printing (1,634 copies), £28 10s.

By Authority: G. H. LONEY, Government Printer, Wellington.—1936.

Price 9d.]

