

1933.
NEW ZEALAND.

STATE FOREST SERVICE.

ANNUAL REPORT OF THE DIRECTOR OF FORESTRY FOR THE YEAR ENDED 31st MARCH, 1933.

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

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

SIR,—

Wellington, 27th September, 1933.

I have the honour to submit herewith the annual report of all operations of the State Forest Service for the year ended 31st March, 1933, as required by section 64 of the Forests Act, 1921-22.

I have, &c.,

A. D. MCGAVOCK,

Director of Forestry.

Hon. E. A. Ransom,

Commissioner of State Forests.

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REPORT.

INTRODUCTION.

A FEW of the major operations which concern the Service are briefly reviewed hereunder. In most instances the subjects dealt with are mentioned more fully in the report.

Afforestation.—The severe financial crisis through which the Dominion, in company with most parts of the world, has been passing, is reflected in the decreased area of new plantations established during the year. This aggregated slightly under 16,000 acres, the lowest since 1925.

The total plantation establishment (in round figures) is 363,700 acres. As nearly all the South Island plantations are now fully planted up, future planting will of necessity be confined to the North Island.

The projected planting programme for the coming season is 35,000 acres, of which approximately 30,000 acres are located in the North Island.

Labour.—Practically all the work of planting, making access roads, &c., was carried out by relief labour recruited by the Labour Department under Scheme 6c of the Unemployment Board. In many cases, however, the type of labour sent forward was quite unsuited to cope with the work and with the rigorous climatic conditions under which it has frequently to be carried out. In this connection I desire to remove the popular impression that forestry is light work suited to partially fit men. Such is not the case. On the contrary, when it is pointed out that tree-planting is a winter occupation, that the weather is usually cold and severe, that the land to be planted is generally high and undulating, covered with bracken, manuka, &c., and that the plantations are located in remote parts of the Dominion, making it necessary for the workmen to live under canvas, it will be readily recognized that this is work which can only be efficiently carried out by active, vigorous men below middle age. Notwithstanding what has been said, however, I wish to place on record the fact that, with a few exceptions, the labour engaged was of good type, and whilst the work performed was naturally not so efficient as when carried out by skilled and experienced men it must, in the circumstances, be regarded as reasonably satisfactory.

Kiln Drying.—It is pleasing to note that sawmillers generally are gradually beginning to realize the necessity for kiln drying their timber. This is indicated by the fact that four new kilns have been constructed within recent months, and the construction of a number of others is under consideration.

It is well known that kiln drying is extensively practised in America and Europe, and unless New Zealand timber-merchants are prepared to adopt similar methods in marketing their timbers they cannot possibly hope to compete with the foreign article on level terms.

Timber Statistics.—Figures relating to the exports, imports, and production of timber for the years 1930–32 appear in the latter portion of the report. From these tables it will be noted that the quantity exported in 1932 exceeded the 1931 total by nearly 10,000,000 ft. board measure with an excess in value of over £80,000. On the other hand, the imports for the same period showed a shrinkage of over 60 per cent. The same factors which have militated so severely against the timber industry in the Dominion are probably also responsible for the marked decline in imports. It is satisfactory to note that the import of box-shooks has substantially declined, and as the local consumption has simultaneously increased it would appear that diminishing imports spell increased employment in the Dominion.

Export of Silver-beech.—In pre-war days the export of silver-beech from Otago and Southland averaged about 500,000 ft. board measure per annum, but during the war years the quantity fell as low as 100,000 ft. board measure. The export trade gradually returned, however, until it exceeded 3,000,000 ft. board measure in 1929. After that year the demand for silver-beech for motor-body building overseas fell away to such an extent that only 740,000 ft. were exported in 1931. A revival in 1932 in the wood-consuming industries in Australia brought the export trade back to 1,500,000 ft. for that year. It is very probable that as a result of the visit to England of the Timber Delegation (referred to in last year's report) a profitable export trade will be developed with the Mother-country. Already initial orders have been booked for over 500,000 ft.

Mining Privileges in State Forests.—The increase in mining activities in State forests throughout the Dominion has added greatly to the work of certain regions, particularly Auckland, Nelson, and Westland. Many areas applied for were located in State or provisional State forests, and this necessitated very many inspections on the ground, preparation of plans, reports, &c. In Westland alone over six hundred such applications were received and dealt with during the year under review.

General.—To sum up, the year's work has been varied and arduous. In the field the reductions in staff have thrown additional responsibilities upon those remaining, but officers one and all have discharged their duties—often in difficult circumstances—in a manner deserving of the utmost praise.

CHAPTER I.—MANAGEMENT.

1. AREAS OF STATE FORESTS AS AT 31ST MARCH, 1933.

TABLE 1.

Region.	State Forests.		Provisional State Forests.		Totals.	Percentage of Total Area in Region under Reservation.
	Ordinary.	National Endowment.	Ordinary.	National Endowment.		
	Acres.	Acres.	Acres.	Acres.	Acres.	
Auckland ..	159,874	23,041	261,246	72,370	516,531	6·01
Rotorua ..	318,326	227,881	151,721	92,414	790,342	15·72
Wellington ..	812,757	28,583	141,064	43,606	1,026,010	6·86
Nelson ..	195,774	29,836	1,293,373	717,903	2,236,886	31·82
Westland ..	455,357	54,340	661,159	539,734	1,710,590	44·27
Canterbury ..	332,746	3,647	..	..	336,393	3·39
Southland ..	277,844	..	879,808	67,034	1,224,686	7·19
Totals ..	2,552,678	367,328	3,388,371	1,533,061	7,841,438	11·81

A comparison of the figures in this table with those of last year discloses a net increase of 14,050 acres in the total area under forest control, which brings the grand total to 7,841,438 acres.

It also shows that the permanent forest area has been increased by some 704,000 acres, with a corresponding decrease in the area now under provisional State forest reservation. In other words, 704,000 acres previously set apart as provisional State forests are now permanently dedicated to forestry purposes. Work in this connection will be continued until the major forest areas in all regions have been reviewed and examined with a view to determining which areas should be released for settlement purposes when the milling-timber has been removed and which should be permanently reserved for forestry.

The new area of indigenous forests proclaimed totalled 27,029 acres, while 1,622 acres were acquired for plantation purposes. On the other hand, 14,601 acres were withdrawn from reservation, of which 14,230 acres were released for settlement, and the remainder, 371 acres, for miscellaneous purposes.

The largest area withdrawn from any one forest was in Wellington region, where 5,880 acres were made available to the Prisons Department for farm-development by prison labour.

2. PROTECTION FORESTS.

It should here be pointed out that the greater portion of the 704,000 acres mentioned comprises mountain-tops and hilly, broken country, and the bush thereon can only be classed as protection forest.

Pending the completion of the forest inventory, work on which has unfortunately been delayed for reasons of economy, it is difficult to quote the total area of protection forests under State control in the Dominion, but it is probably in the vicinity of 5,000,000 acres. It has been emphasized in many previous reports, but cannot be stressed too often, that, although they have little or no commercial value, the question of control, protection, and management of these protection forests is of the greatest importance. It is realized that expenditure on this work will not return any direct revenue to the State, but by applying proper forest treatment these lands can be made to exercise a wonderful influence on the productivity of the lower-lying farming country; to do this, however, it is a *sine qua non* that the forest-cover should be unmolested and held inviolate to perform the functions ordained by nature. Failure to observe this natural law has resulted in great national loss in many parts of the Old World and the American Continent. Indeed, it is not too much to say that the serious floods, land-erosions, and river-siltings which periodically occur in our own Dominion are primarily attributable to the same cause.

It is equally important that the forest-floor should not be disturbed in order to properly regulate stream-flow and prevent rapid run-off. On the question of protection forests the following extract from the annual report of the United States Forest Service for the fiscal year ended 30th June, 1932, is of particular interest:—

“Forest management and protection investigations seek better knowledge of the many forces which together determine forest productivity. In the virgin forest these forces are in a certain balance. As soon as this balance of nature is disturbed corresponding changes begin to show themselves in the character of the forest growth. They may be relatively temporary or far-reaching. Their character and extent depend not only on the kind and amount of disturbance but also on the natural conditions. To apply forestry it is necessary to know how to control and direct the life of the forest.”

3. FOREST RECONNAISSANCE, DEMARCATION, AND SURVEYS.

Indigenous Forests.

Forest Inventory.—Inventory work was carried out over 7,800 acres of indigenous forests. It is expected that most of the work will be completed by 1937.

Forest Reconnaissance.—Owing to the curtailment of field operations only 7,500 acres were dealt with.

Demarcation.—1,659 chains of State forest boundary-lines were defined.

Timber Cruising.—In State and provisional State forests 6,410 acres were cruised. The total quantity of timber on these areas was estimated to be 36,200,000 ft. board measure. Cruises were also made for various Government Departments.

Afforestation Areas.

Topographical and Layout Surveys.—Plane-table topographical surveys were made over 20,000 acres; 7,000 acres was divided into compartments; and 20,000 acres of minor triangulation was completed.

Roads and Tracks.—Access roads for a total distance of 2,000 chains and 450 chains of tracks were constructed.

Species Surveys.—A total area of 15,958 acres was surveyed in locating newly planted areas.

General.—Inspections and reports were made for local bodies and a survey made of an area planted in trees by an afforestation company. A special survey was made of an area of 63 acres of trees burnt at Hanmer Plantation.

4. FOREST ATLAS.

During the year 99 general purpose plans were recorded, and 204 tracings, 14 graphs and 13 miscellaneous plans were prepared, while 338 lithographs were coloured.

Additions to the Forest Atlas totalled 554, and to the Forest Register 99; 2 atlas sheets were renewed and 296 plans were mounted.

In connection with plantation records 4 new topographical plans (Kaingaroa, 2; and Tairua, 2) and 4 new species plans (Kaingaroa, 1; Tairua, 2; and Eyrewell, 1) were prepared, and additions made to the species plans of Riverhead, Maramarua, Tairua, Kaingaroa, Whakarewarewa, Waiotapu, Erua, Karioi, Hanmer, Balmoral, Eyrewell, Westland, Greenvale, Pebbly Hills, Naseby, and Blue Mountains Plantations. Forty-six species plans (white prints) coloured to indicate the species planted were prepared, while the recording of cleaning and thinning operations was continued.

The Public Works and Railway Departments prepared for Forest Service use 699 white prints and 491 photostat prints respectively, while 34 lithographs were obtained from the Lands and Survey Department.

5. STATE AFFORESTATION.

As forecasted in the 1931–32 report, the area of new plantations for the year just closed shows a marked decrease when compared with many previous years—the approximate total being 16,000 acres, or nearly 60 per cent. less than the area planted during the 1931 season.

This phenomenal drop is due partly to the economic crisis through which the Dominion has been passing, but is mainly the result of the decision to gradually reduce large-scale planting operations for the next few years.

It may be mentioned, however, that if the present tentative plantation programme be put into effect the total area afforested during the 1933 season will probably be much greater than the figures quoted above.

Detailed figures are appended from which it will be seen that the net area of State plantations is now in the vicinity of 363,700 acres; the total area available for future planting exceeds 143,000 acres.

TABLE 2.
SUMMARY OF OPERATIONS IN PLANTATIONS AS AT 31ST MARCH, 1933.

Plantation.	Year of Establishment.	New Area planted, 1932.	Total Net Area established.	Gross Area of Plantation.
		Acres.	Acres.	Acres.
Waipoua	1925	..	292	12,600
Puhipuhi	1904	..	835	1,559
Riverhead	1926	61	10,808	11,948
Maramarua	1928	144	12,097	14,146
Tairua	1930	422	8,009	54,400
Whakarewarewa	1898	..	7,591	10,100
Waiotapu	1901	..	7,079	8,003
Kaingaroa	1913	11,395	209,957	329,063
Erua	1930	921	1,923	2,835
Karioi	1927	138	14,873*	33,689
Golden Downs	1927	1,796	15,476	22,525
Westland	1922	111	2,790	8,006
Hanmer	1901	77	7,761	10,308
Balmoral	1916	48	20,621	23,986
Eyrewell	1928	188	17,985	19,267
Blue Mountains	1925	..	8,650	9,560
Dusky Hill	1893	..	4,382	6,790
Conical Hills	1903	..	3,551	3,746
Naseby	1900	..	3,308	4,032
Pukerau	1915	..	565	628
Pebbly Hills	1930	620	4,380	5,867
Minor Areas .. .. .	..	37	744	2,565
Totals .. .. .	..	15,958	363,677*	595,623

* 1,163 acres direct sown in 1932 excluded.

6. PLANTATION CLEARING AND THINNING.

In Southland Region thinning operations were not carried out on the same scale as in the previous year, but were continued as part-time employment for semi-permanent employees.

Areas in the various plantations were thinned as follows:—

Conical Hills.—24½ acres was underscrubbed and thinned; while at *Pukerau* similar action was taken over a total area of 17 acres. The thinning was heavy “C” grade. At *Dusky Hill* 42½ acres was thinned, and 6 acres was completely underscrubbed and cleared as high as possible. The remaining stands in the compartments thinned at Conical Hills now represent 58 per cent. and 54 per cent. respectively of the original planting.

Hanmer Plantation.—At Hanmer Plantation (Canterbury Region) 8 acres of *Pinus Laricio* was thinned, and 100 acres of selected trees was underscrubbed to a height of 16 ft.; at *Balmoral* 182 acres of *Pinus radiata* was partially thinned, whilst at both stations the cutting-out of diseased and wind-blown trees was conducted at intervals as opportunity permitted.

7. TIMBER-SALES.

Timber-sales for the year showed a marked increase over the previous year's figures. For comparison purposes figures for the past three years are appended:—

Year.	Number.	Quantity.	Sale Price.
		Board Feet.	£
1930-1931	56	42,118,024	41,883
1931-1932	30	12,240,000	16,435
1932-1933	51	32,314,955	35,693

As mentioned in my last report, several concessions were made to the sawmillers to help them to tide over the depression; ground rents and interest on overdue promissory notes in certain cases were abolished, and a special rebate of 10 per cent. on all cash royalty payments was made for twelve months. This latter concession will be continued until such time as there are definite signs of a return of the industry to more normal conditions.

In order to assist in the establishment of an overseas market for silver beech, arrangements have been completed whereby concessions will be made with respect to royalty, railway freights, and shipping charges on all consignments for the Mother-country. These concessions, coupled with the 25 per cent. favourable exchange rate with British currency, give reason to hope for a further improvement in the sawmilling business this year.

The present exchange rate also provides the exporters of timber to Australia with better prices and more latitude when competing with foreign timber in that market. The chief timber for export to Australia is white pine, and areas containing this species are being much sought after, but it is hoped that rimu will again take its place in the export trade, as it is the universal building timber on which practically every sawmiller in the Dominion depends for his business.

8. VOLUME TABLES FOR EXOTIC TIMBERS.

At convenient opportunities, officers of the Service have for some time been engaged in collecting data for the compilation of volume tables and conversion factors.

Measurements of trees and mill conversion studies have been carried out in Auckland, Rotorua, Wellington, Canterbury, and Southland Regions, where sawmills are handling exotic timbers.

CHAPTER II.—PROTECTION.

1. FIRES AND FIRE DISTRICTS.

Generally speaking, the fire hazard in most parts of the Dominion was favourable, with the exception of Canterbury Region where during the summer and autumn months the plains were extremely dry and the fire risk correspondingly high. It is therefore all the more pleasing to report that, notwithstanding these conditions, no fires actually spread into or originated in either the indigenous forests or the plantations in that locality, although about 145 acres of plantation established by various local bodies was destroyed. The estimated value of these trees was £550.

In Auckland Region two small fires occurred in the plantations with negligible damage.

In Rotorua district four fires were reported during the year, two of which were in Kaingaroa Plantation and two in native forests. One of the latter fires was caused by a splitter cutting under permit, and resulted in the loss of ten cords of tawa firewood. Of the two plantation fires one was responsible for the loss of 50,000 newly planted Douglas fir, while the other destroyed 1 acre of 354 six-year-old insignis pine.

In Wellington Region the extent of the fire damage was confined to two small fires which were discovered in State forests, but were extinguished without serious damage.

In Nelson-Marlborough Region the fire damage in State forests was also negligible, although a fire attended by serious loss occurred in a fifteen-year-old privately-owned plantation.

In Westland Region no damage was caused in the native forests by fire, but unfortunately 11 acres of exotic trees were destroyed by two fires which apparently originated outside the plantation boundary. The fullest inquiries by the police authorities have failed to discover those responsible for lighting the fires.

In the Otago-Southland Region it is satisfactory to report that despite an extremely dry period of two months before Christmas no fires were reported in State forests.

Fire Districts.

One new private fire district was constituted during the year; this was done at the request of the Dunedin City Council to protect the City's extensive plantations at Waipori, and embraces an area of 29,000 acres. The only other change under this head was the extension of Hammer Plantation Fire District. The total number of districts is now forty-three, of which nine are privately controlled.

The system of settlers "burning off" under permit issued by, and operated under the supervision of a Forest Officer, continues to work well, and has without doubt contributed very largely to the great reduction in serious forest fires which has been accomplished over the last decade. The education of the general public to "be careful with fire" is also bearing fruit, as evidenced by the fact that although the State forests are being visited by increasing numbers of trampers each year, serious fires are being progressively reduced.

2. FOREST PARASITE BIOLOGY.

The restricted personnel described in last year's report was maintained without further retrenchment, but with reduced appropriations which distinctly hampered work in the field.

Unfortunately, climatic conditions during the year were such as to be particularly favourable to insect epidemics, and in two districts, conditions hitherto unrecorded arose. In the Southern Lakes District a native defoliator appeared in epidemic numbers in some of the beech forests in mid and late summer. *Nothofagus cliffortioides* suffered particularly, and extensive areas were completely defoliated, although the leafage was regrown by the end of autumn.

In one North Canterbury exotic State forest two small areas of *Pinus radiata* were similarly defoliated by a native moth, *Hybernaria indocilis*, hitherto unimportant and known only as an inconspicuous species on native xerophytic shrubs. Identifications, &c., were done by the Entomologist from material sent in by the field staff and significant data duly recorded from field reports, the budgetary provisions unfortunately preventing the Entomologist from making more than one short field trip. It is possible that neither outbreak is of great economic significance, as the beech condition was caused by a well-known regular denizen of those forests, local tradition placing the last such defoliation thirty years back; whilst the pine-defoliator, although changing his host, has not yet shown signs of extending his natural geographical range. Preparations, however, have been made for the incoming season to check any similar small-area outbreak of *Hybernaria* with arsenical sprays, although it is hoped that a more normal summer season will cause the species to resume its former insignificant role.

The Forest Entomologist, in addition to issuing directions on the above matters, has continued his usual laboratory studies, particularly in relation to *Sirex*, its parasites, and its apparently symbiotic accompanying fungus. He has published in the *Journal of Science and Technology*:—

(a) "The Pine-Bark Beetle (*Hylastes ater*) in New Zealand."

(b) "Insects infesting *Pinus radiata* in New Zealand."

Limited numbers of reprints of the above-named articles are available for free distribution to adults interested technically in these matters; as well as reprints of an article entitled "Fumigation of Douglas Fir Seed," which details the results of an experiment in seed storage and transport carried out in co-operation with the Long Bell Lumber Co., of Washington, United States of America.

Mycological research which, at the time of writing the last report, had barely got beyond the preliminary and formative stage, has proceeded steadily; and useful surveys of all of the exotic State forests have been made. It has been established that four major conditions are prevalent in different areas, although causal organisms have not all been isolated. They may be tabulated thus:—

Pine Wilt (*Phomopsis Strobi*).—Widespread but significant chiefly at high altitudes on *Pinus radiata*, *P. muricata*, and *P. canariensis*; not so far of any significance in the South Island.

Dieback (*Diplodea pinea*).—Universally distributed as a saprophyte, its parasitic condition significant only in areas unsuitable for species. There is a secondary effect that this often weakly parasitic fungus badly discolours timber even where it has no marked ill effect on tree-health.

Root Rot (*Armillaria* species).—A native "shoestring" fungus attacking exotic pines planted in cut-over indigenous forests areas. Not of major importance.

Needle-fusion.—Cause not known. A condition well known in Australia in exotic pines, but found in New Zealand only recently in Auckland District, and very occasionally in Nelson.

3. FOREST-PROTECTION.—ANIMAL-DESTRUCTION.

The recorded tally of animals destroyed on State forests was 49,000, as against 32,000 for the preceding year. The increase was necessitated by the depressed skin and fur market, which offered small inducement to trappers. The rabbit population in particular is in many districts showing an alarming increase. Fortunately, the grant of funds from the Unemployment Board made it possible to increase the scale of the campaign of destruction with the result shown above, and with probably a much-increased untallied kill of poisoned animals.

Apart from the rabbits, the most interesting item was an exceptionally large kill of rats, which invaded the seed-beds at Waipoua Nursery immediately after sowing. Eighty rats, stated to be "practically all black rats," and an even larger though untallied number of mice were trapped in this very small nursery in a very short time. Evidence from plots sown in the forest with kauri-seed appears to indicate that these animals feed freely on germinating kauri-seed, and probably constitute an important factor adverse to regeneration of any large seeded species.

CHAPTER III.—RESEARCH AND EXPERIMENTS.

1. ECOLOGY AND SILVICULTURE.

These phases of forestry investigation have suffered most severely from the necessity for economy of expenditure. Work of an experimental nature in the kauri forest at Waipoua was brought to a close at the end of the fiscal year; and as this was foreshadowed during the year no new work was inaugurated. Records of current work were brought as far as possible to a stage where they can later be resumed; but efforts were centred at the station mainly on preparation for planting with "Southern pines" a large block of the open fern country adjoining the forest proper.

The due quinquennial remeasurement of rimu regeneration plots in Westland was also deferred for lack of funds.

2. FOREST UTILIZATION.

During the year relatively few forest products research investigations were undertaken, projects investigated being almost entirely in connection with the use of timber in wood-using industries. Increased attention was, however, given to applying the results of researches made during the previous twelve years to problems confronting the timber industry and to means of utilizing exotic plantation forests.

Indigenous Forests.

Practical wood-utilization tests in course of progress included split silver-beech (*Nothofagus Menziesii*) for beer-barrels, white-pine (*Podocarpus dactyloides*) for battery separators, totara (*Podocarpus totara*) for lead-pencils, tawa (*Beilschmiedia tawa*) for clothes-pegs, hard beech (*Nothofagus truncata*) and silver-beech for manufacture of bobbins, spools, and shoe-heels, maire (*Olea Cunninghamhamii*) for shoe-heels, and northern rata (*Metrosideros robusta*) for golf-heads.

The possible utilization of northern rata for golf-heads aptly illustrates the value of fundamental research. The standard timber used throughout the world for this purpose is persimmon, but in investigating the possibility of using a New Zealand timber, it was found that northern rata and persimmon have almost identical physical and strength properties. As the latter were investigated under the same international working-plan, the results are strictly comparable, and if northern rata is marketed to the specification required, New Zealand should be able to secure an export trade in the species.

Observations of butter-boxes used in the export trade were made and co-operation with the Dairy Division of the Department of Agriculture and the Fruit Control Board in developing regulations for export butter-boxes and fruit-cases respectively continued. An opportunity was also taken by an officer of the Service to examine New Zealand boxes arriving in Great Britain and to confer with graders of New Zealand dairy-produce in that country. The officer reports that the consensus of opinion is that the unwired or unstrapped standard box is a failure, and that reinforcements either in the form of stitched wire binding, as in the case of the "Saranac" box, or of tension applied wire or strapping, as in the case of substandard box, are essential if the butter is to arrive in good condition. Splitting away from nails, often leading to the complete loss of a part of the box, is a typical failure in the unreinforced box. The necessity for having as few types of boxes as possible is also stressed.

A major project during the year was the investigation made by the Chairman of Directors, Southland and Otago Co-operative Timber Co., Ltd., and an officer of the State Forest Service, into the possibility of marketing New Zealand timber in Great Britain. While the main object of the delegation was to study possible markets for silver-beech, attention was also given to the utilization of matai (*Podocarpus spicatus*), rimu (*Dacrydium cupressinum*), tawa, white-pine, and kauri (*Agathis australis*). Very successful work was completed in connection with silver-beech, and trial orders amounting to over 500,000 ft. board measure were placed before the delegation left Great Britain. In this connection thanks are due to the Advisory Committee on Timbers of the Imperial Institute, to the Empire Marketing Board, and to the Forest Products Research Laboratory of the Department of Scientific and Industrial Research at Princes Risborough, for assistance in promoting the sale of silver beech on the British market, and in kiln drying the trial shipments for experimental use by various consumers. The marketing of the other timbers was not studied so intensively, nor were orders able to be secured readily, due to many cheaper competitive timbers generally being available. Small trial orders, however, were placed in rimu and matai, while good trade appears possible in tawa, provided it is efficiently kiln-dried green off the saw. The delegation was profoundly impressed with the manner in which foreign competitive timbers were cut, docked, and graded, and trial shipments forwarded from New Zealand compared very unfavourably in these respects. The timber industry must realize that to successfully capture a portion of the large trade offering in Great Britain it is necessary to cut the timber sufficiently full to stand up to dimensions when seasoned, to cut the timber so that width and thicknesses do not vary throughout the length of a board, to see that the timber is well up to grade, and that no unsightly saw-marks appear on the timber shipped, and to neatly dock each board. Unless all these matters are given careful attention, New Zealand cannot hope to build up a market in Great Britain.

The Service continued to advise operators installing dry kilns, a State Forest Service officer visiting four kilns and instructing operators in modern dry-kiln practices. Schedules were developed for the drying of white-pine and insignis pine at William Cook and Sons, Palmerston North. Three trial shipments of silver-beech forwarded to Great Britain for trade extension purposes were successfully kiln dried by the Forest Products Research Laboratory, Princes Risborough, Great Britain.

The fire-tube apparatus purchased jointly by the Dominion Federated Sawmillers' Association and the Service has arrived in New Zealand, and an early opportunity will be taken to ascertain the relative fire-resistant properties of untreated and treated native timbers.

Service test lines of creosoted fencing-posts and telegraph-poles continue to yield valuable data as to the efficiency of the various treatments. Posts and poles which were properly conditioned and treated as far back as 1925 are still sound after eight years, and appear likely to remain so for many more years yet, whereas untreated posts of the same species have all long since been replaced.

Exotic Forests.

Attention was drawn in last year's annual report to the properties of exotic species widely propagated throughout New Zealand, to the markets available for such species, and to the methods which will logically be adopted for their utilization.

Tentative methods of sawing and manufacturing small size plantation logs were developed, and plans submitted to machinery manufactures specializing in equipment for the handling of logs of the size and type available. The problem was further investigated by an officer of the Service in Great Britain and Sweden, and his survey of the methods used indicates that their successful utilization will be secured if the special methods appropriate to the conversion of small-sized timber are used.

Following successful local experiments with European larch for butter-boxes, a trial shipment of butter packed in similar boxes was forwarded to Great Britain, but under the more vigorous conditions existing in the export tests, it was found that surface taint developed on the butter. It is intended at a later date to repeat the experiments with kiln-dried and treated timber.

Experimental bleeding of European larch trees was continued, but, as explained last year, the yield of resin was small, and owing to the possibility of procuring low-priced substitutes for the purposes for which it is used the bleeding of the species appears to offer little attraction.

In co-operation with the Dairy Research Board, plans have been discussed for a series of tests of insignis-pine butter-boxes treated to prevent wood-taint on butter contained therein, and preliminary experiments already commenced. These are being made under the direction of Professor Riddett, Massey College.

That the older plantations are already returning quite a substantial revenue to the State will be seen from a perusal of the following brief details of the year's operations.

From Whakarewarewa Plantation 160 *Eucalyptus risdoni* poles 32 ft. long by 9 in. mean diameter were extracted and disposed of for power-line poles, and from Waiotapu Plantation a number of *Pinus Laricio* and *Pinus Murrayana* trees which fell as a result of thermal activity were cleared and offered for sale as cord-wood. The trees averaged twenty-eight years old and produced ninety-three cords. At Hanmer a steady trade for cord-wood has been built up, and hundreds of cords of firewood were disposed of during the year, in addition to 63,000 ft. of various classes and sizes of sawn timber for fruit-cases, building material, &c. *Larix decidua* is very suitable for trellis-work, and twenty-five cords of thinnings were sold for this purpose, besides enough wood of the same species to construct a log cabin. From a plot of 1 acre in Dusky Hill Plantation (Otago) fifty Douglas-fir poles suitable for wireless masts were extracted.

At the time of going to press with the report, negotiations were in train for the disposal of thinnings from some of the older stands in Dusky and Conical Hills Plantations, and prospects for a sale on a fairly large scale are bright. The wood will be used for conversion into cases, crates, &c., and it is expected that the purchaser will be able to use even the thinnings of small dimensions for the purpose.

CHAPTER IV.—THE TIMBER TRADE.

GENERAL.

The timber produced in the Dominion for the year ended 31st March, 1933, amounts to approximately 154,000,000 ft., or practically the same quantity as for the previous year.

The result of the year's working must be regarded as satisfactory, and bears out the opinion expressed in my last Annual Report—viz., that the timber trade had touched rock bottom.

The main activities which contribute to the sustaining of the cut are in the white-pine and *Pinus radiata* species, both of which are utilized in the box and container industry.

In regard to white-pine, I mentioned in my last report that small isolated lots of this species were in demand, but even greater activity has been observed during the last twelve months. In fact, North Island interests are exploring every possible channel to secure supplies of this timber in South Westland, and one syndicate is reported to have secured options over many acres of native and privately-owned bush lands. Access and extraction comprise the greatest difficulties to be overcome in connection with the logging of this timber, which is remote from any reliable harbour at the present time. The building trade has been very slack, and this is reflected in the surplus supply of rimu, matai, and totara. A hopeful sign, however, is the prospect of an increased trade in rimu and silver beech, owing to the possibility of a demand from overseas.

Sawmills operating in the Dominion as recorded by the Forest Service now number 527. Of these, 465 are working exclusively in indigenous forests and 62 exclusively in exotic plantations. There are also 32 mills included in the total which cut both native and exotic timbers. Of the total mills 30 per cent. are closed down, 43 per cent. are working part time only, and 27 per cent. are working full time, an improvement on last year's figures.

1. MARKETS.

No improvement was shown in domestic markets during the year, and although exports increased considerably, they amount to only 17 per cent. of production, and thus have little effect on the industry, which continued to cut at less than 30 per cent. of capacity.

The progressive fall in the number of new dwellings erected annually during recent years again occurred during the current year, when only 1,000 building permits were issued in the principal towns for new dwellings, compared to 1,100 in the previous year.

As explained in previous reports, the present rate of building is insufficient to house the natural increase of population, but due to subdivision of existing dwellings a house shortage has not occurred. A return to normal times, however, would again, in general, result in fewer people occupying each existing residence and a house shortage would again quickly be apparent.

Following the trend of the last few years, local box and crate manufacturers continue to supply the greater portion of New Zealand's demand for both domestic and export containers. While imported spruce butter-boxes were still used to a limited extent, cheese-crates are now almost wholly manufactured from local insignis and white-pine. Insignis pine (*Pinus radiata*) continues to be used in increased quantities for the manufacture of fruit-cases, cheese-crates, and motor-spirit cases, and now finds more favour than any other timber in New Zealand for these purposes.

Imports during the year were the lowest reported during the present century, and amounted to only 7,000,000 ft. board measure or less than 9 per cent. of the peak figures of 1925. As explained last year, decreased demand for timber, international exchange, and internal price and wage adjustments have all aided in allowing the local miller to compete with the imported wood.

2. INDUSTRIAL TECHNIQUE.

Mills in general again operated at such a low percentage of capacity that only those engaged in box-manufacture operations were encouraged to invest in new equipment, among which accurate high-grade planing-machines and resaws were noticeable. Sawmillers and box-makers in particular are also appreciating the value of artificial seasoning to supply bright dry timber and to obviate the necessity of carrying large stocks. During the year a modern kiln installed by William Cook and Sons, Ltd., Palmerston North, was placed in operation, while three natural-draught kilns were installed by Poole and Sons, Invercargill, Birch and McCreath, Tuatapere, and Kilkelly Bros., Motu, the latter two firms, it is understood, using their kilns almost entirely to dry box-timbers. At the present time there appears good prospects of at least two modern kilns being installed shortly for box plants in Westland. In view of this general interest in dry kilns, I again wish to emphasize the danger of attempting artificial seasoning with inefficient equipment and control, and a noticeable feature of some of the poorer types of kilns installed has been an insufficiency of heating-pipes and lack of control system, the former tending to unduly prolong the drying-time and make conditions suitable for mould development, and the latter leading to case-hardening and uneven drying.

3. STATISTICS.

Following the practice of the past two years, the use of footnotes has been extended to replace the usual text accompanying the following tables relating to timber production, imports, and exports.

TABLE 3.
REPORTED PRODUCTION OF ROUGH-SAWN TIMBER.
(From information supplied by the Government Statistician. All figures refer to the years ended 31st March, 1930-32.)

Species.	1930.				1931.				1932.			
	Quantity.	Total Mill Value.	F.o.r. Mill Value, 100 ft. b.m.	Percentage of Total Quantity.	Quantity.	Total Mill Value.	F.o.r. Mill Value, 100 ft. b.m.	Percentage of Total Quantity.	Quantity.	Total Mill Value.	F.o.r. Mill Value, 100 ft. b.m.	Percentage of Total Quantity.
Rimu	163,293,000	£ 1,384,540	s. d. 16 11	57.8	Ft. b.m. 124,999,000	£ 996,060	s. d. 15 11	54.5	Ft. b.m. 71,082,000	£ 478,910	s. d. 13 6	46.3
White-pine	58,506,000	485,880	16 7	20.7	49,000,000	380,210	15 6	21.3	43,161,000	323,900	15 0	28.1
Matai	17,972,000	182,460	20 4	6.4	13,917,000	124,950	17 11	6.1	7,475,000	51,920	13 11	4.9
Kauri	10,471,000	190,930	36 6	3.7	8,943,000	160,630	35 11	3.9	6,891,000	118,790	34 6	4.5
Totara	9,046,000	115,250	25 6	3.2	9,468,000	113,680	24 0	4.1	5,344,000	51,420	19 3	3.5
Beech	10,225,000	76,620	15 0	3.6	7,681,000	63,220	16 6	3.3	5,757,000	44,320	15 5	3.8
Insignis pine	10,382,000	79,700	15 4	3.7	12,740,000	95,470	15 0	5.6	13,405,000	88,490	13 3	8.7
Miro	959,000	6,970	14 6	0.4	1,078,000	8,260	15 4	0.5	228,000	1,510	13 3	0.1
Tawa	385,000	2,970	15 5	0.1	455,000	5,200	22 10	0.2	163,000	1,210	14 10	0.1
Rata	215,000	3,010	28 1	0.1	294,000	4,400	29 11	0.1	122,000	1,300	21 4	..
Other	951,000	5,560	11 8	0.3	893,000	13,420	30 0	0.4	..	..	..	..
Totals	282,405,000	2,533,890	17 11	100.0	229,468,000	1,965,500	17 2	100.0	153,628,000	1,161,770	15 2	100.0

TABLE 4.
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, 1930-32.)

Item.	1930.				1931.				1932.			
	Quantity.		Value.		Quantity.		Value.		Quantity.		Value.	
	Total.	Per 100 ft. b.m.	Total.	Per 100 ft. b.m.	Total.	Per 100 ft. b.m.	Total.	Per 100 ft. b.m.	Total.	Per 100 ft. b.m.	Total.	Per 100 ft. b.m.
White-pine ⁽²⁾	£ 206,030	s. d. 21 6	Ft. b.m. 19,187,000	£ 14,807,000	£ 136,450	s. d. 18 5	Ft. b.m. 22,264,000	£ 199,680	£ 22,264,000	s. d. 17 11	£ 199,680	s. d. 17 11
Rimu ⁽³⁾	30,690	17 7	3,501,000	929,000	6,860	14 9	2,061,000	14,230	14,230	13 10	14,230	13 10
Beech ⁽⁴⁾	26,070	26 5	1,974,000	740,000	9,510	25 8	1,475,000	15,210	15,210	20 8	15,210	20 8
Kauri ⁽⁵⁾	27,950	51 4	1,088,000	451,000	12,740	56 6	674,000	17,230	17,230	51 2	17,230	51 2
Other ⁽⁶⁾ —	9,850	21 3	926,000	607,000	7,070	23 4	818,000	7,670	7,670	18 9	7,670	18 9
New Zealand	210	20 0	21,000	19,000	280	29 5	..	..	..	..	..	..
Foreign ..	..	..	..	..	..	..	..	..	..	..	..	..
Totals	300,800	22 6	26,697,000	17,553,000	172,910	19 8	27,292,000 ⁽⁷⁾	254,020	27,292,000 ⁽⁷⁾	18 8	254,020	18 8
Kauri-gum	£ 189,840	Per Ton. £ 49 12 0	Tons. 3,818	3,058	£ 128,090	Per Ton. £ 41 17 9	Tons. 2,068	£ 62,410	£ 2,068	Per Ton. £ 30 1 0	£ 62,410	Per Ton. £ 30 1 0
Tanning-bark	1,250	12 12 5	99	55	690	12 10 11	..	..	..	..	..	..
Fungus ..	11,400	126 13 7	90	92	9,990	108 11 9	67	5,944	..	88 14 4	..	88 14 4

⁽¹⁾ 96 per cent. exported to Australia; remainder to Pacific Islands and United Kingdom.

⁽²⁾ Exported for butter-boxes, shelving, whitewood furniture, &c.

⁽³⁾ For floorings and linings.

⁽⁴⁾ For motor-bodies, agricultural implements, and wood-turnery.

⁽⁵⁾ For flooring, linings, tanks, vats, &c.

⁽⁶⁾ Includes material for flooring and linings for Australia, and insignis pine for fruit-cases for Pacific Islands.

⁽⁷⁾ Increase due mainly to heavy imports by Australia of white-pine to replenish depleted stocks.

TABLE 5.

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, 1930-32. Value represents value in country of export, plus 10 per cent.)

Item.	1930.			1931.			1932.		
	Quantity.	Value.		Quantity.	Value.		Quantity.	Value.	
		Total.	Per 100 ft. b.m.		Total.	Per 100 ft. b.m.		Total.	Per 100 ft. b.m.
Hardwoods—	Ft. b.m.	£	s. d.	Ft. b.m.	£	s. d.	Ft. b.m.	£	s. d.
Australian hardwoods	33,943,000	501,910	29 7	9,707,000	118,850	24 6	2,883,000 ⁽¹⁾	35,040	24 4
Oak ..	2,329,000	62,990	54 0	716,000	17,870	50 0	893,000 ⁽²⁾	13,010	29 2
Ash, hickory, &c.	169,000	7,150	84 7	57,000	1,690	59 4	42,000 ⁽²⁾	1,200	57 2
Totals..	36,441,000	572,050	31 5	10,480,000	138,410	26 5	3,818,000	49,250	25 10
Softwoods—									
Douglas fir	12,807,000	87,760	13 9	2,950,000	13,590	9 3	1,181,000 ⁽³⁾	8,000	13 7
Redwood	9,345,000	100,910	21 7	1,028,000	11,320	22 0	292,000 ⁽³⁾	4,080	27 11
Hemlock and spruce	6,142,000	51,010	16 7	662,000	5,710	17 3	29,000 ⁽⁴⁾	280	19 4
Butter-boxes	4,691,000	63,620	27 2	2,879,000	38,160	26 6	1,473,000 ⁽⁵⁾	19,070	25 11
Cheese-crates	1,774,000	18,240	20 7	732,000	6,830	18 9	175,000 ⁽⁶⁾	1,510	17 3
Cedar ..	637,000	7,210	22 8	52,000	620	23 10	7,000 ⁽³⁾	80	22 10
Totals..	35,396,000	328,750	18 7	8,303,000	76,230	18 4	3,157,000	33,020	20 10
Other ..	257,000	6,170	48 0	90,000	3,920	87 2	31,000	1,370	88 6
Grand totals	72,094,000	906,970	25 2	18,873,000	218,560	23 2	7,006,000	83,640	23 11
Laths, palings, shingles, &c. ..	Number. 7,777,000	£ 10,540	Per 1,000. 27 1	Number. 1,727,000	£ 4,120	Per 1,000. 47 9	Number. 1,800,000	£ 2,110	Per 1,000. 23 5
Tanning bark ..	Tons. 2,531	£ 30,080	Per Ton. £ s. d. 11 17 9	Tons. 1,166	£ 11,933	Per Ton. £ s. d. 10 4 8	Tons. 2,552	£ 28,303	Per Ton. £ s. d. 11 1 10
Wood-pulp ..	3,762	40,520	10 15 2	3,814	31,814	8 6 10	3,100	23,235	7 9 11

(1) Decrease due to small extent of Public Works activities.
(2) Low imports owing to general business conditions.
(3) Decrease is in sympathy with reduced building activities.
(4) The active competition of insignis pine for export fruit-cases has accounted for this decrease.
(5) Mostly Scandinavian spruce. As a result of adverse experience on the London butter market the quantities used are decreasing in favour of white-pine.
(6) Mostly Pacific Coast hemlock, which is being replaced by insignis pine and white-pine.

CHAPTER V.—GENERAL.

1. LEGISLATION.

By subsection (9) of section 16 of the Finance Act, 1932, an amendment was made to subsection (3) of section 6 of the Forests Amendment Act, 1926. Revenues received by the Service in respect of the administration of land in the Buller Coalfield Reserve are now payable to the Consolidated Fund.

Section 60 of the Finance Act, 1932, provides for the adjustment of royalties payable under licenses granted by or on behalf of Natives to cut timber on land owned by them, and for the extension of such licenses for any period not exceeding four years. No concession regarding the payment of royalty shall extend beyond 11th November, 1933, on which date the powers granted by the statute shall cease.

The provisions of section 27 of the Forests Act, 1921-22, which are designed to protect forests from fire by the constitution of fire districts, have been adopted for the protection of flax and peat lands by the enactment of section 9 of the Land Laws Amendment Act, 1932.

Section 49, Block VI, Otara Survey District, Southland Land District, containing 315 acres, was changed from a State forest to a scenic reserve by section 10 of the Reserves and other Lands Disposal Act, 1932.

2. FINANCE.

Receipts.

Receipts from all sources for the financial year ended 31st March, 1933, amounted to £45,195. Details, together with comparisons with the previous two years, are appended.

TABLE 6.

Item.	1932-33.	1931-32.	1930-31.
Indigenous-forest receipts—	£	£	£
Timber-sales	27,129	36,320	56,391
Timber royalties and trespass	3,667	3,751	3,538
Leases—Grazing	1,637	1,704	2,093
Sawmill-sites, industrial, &c.	1,412	1,865	1,636
Miscellaneous	1,587	2,249	3,723
National Endowment Account allocation	6,221	6,391	9,866
Nurseries and plantations—			
Trees and seeds	3,542	3,278	5,271
Firewood and poles			298
Miscellaneous			1,899
Totals	45,195	55,558	84,715

The decrease in revenue compared with last year is attributed to the existing economic conditions. The position as to closed mills and mills working only part time mentioned in the last report has not changed.

Payments.

The net expenditure from the State Forests Account for the financial year ended 31st March last was £212,383. A summary showing payments under the main subdivisions is appended, together with the corresponding figures for years 1931-32 and 1930-31.

TABLE 7.

Item.	1932-33.	1931-32.	1930-31.
Fixed charges and staff salaries—	£	£	£
Interest and loan expenses	97,256	90,223	82,809
Staff salaries	34,232	40,974	49,526
Allocation of revenue—			
National Endowment Account	3,840	6,337	9,495
Local-body payments	3,259	6,416	10,346
Management, establishment, and development—			
Indigenous forests	9,501	12,893	32,331
Fire-fighting equipment and prevention	668	1,578	1,454
Educational—Reference library, &c.	411	276	742
Research and experimental equipment, &c.	1,017	1,199	4,867
Afforestation—Nurseries and plantations	49,348	107,795	194,556
Sand-dune reclamation .. .. .	..	110.	480
Land-purchase	12,646	6,874	6,361
Miscellaneous	205	502	98
Totals	212,383	275,177	393,065

Expenditure from Vote "State Forest Service" has decreased by £67,330, savings being effected mainly in the following subdivisions:—

	£
Staff salaries	6,742
Indigenous forests	3,392
Afforestation and land-purchase for plantations	52,675

3. UNEMPLOYMENT RELIEF.

In recent years the Service has assisted in alleviating the unemployment problem during the winter and early spring months by expanding its normal tree-planting programme, and thus providing additional employment. The expenditure incurred by these unexpected expansions affected the State Forests Account so adversely that some relief became necessary, and by arrangement with the Unemployment Board relief workers were engaged under the Board's single men's camp schemes—i.e., the Unemployment Board paid each man 10s. per week with free rations while the Service provided camp accommodation and paid all supervision charges.

During the peak period in July over 930 single men were so employed, and as the Service had a semi-permanent complement of 170 it will be observed that more than 1,100 men were given employment during midwinter.

Financial considerations have in past years precluded much very necessary work being done in connection with thinning, underscrubbing, &c., in the older plantations. Last year, however, advantage was taken of the camp schemes to retain numbers of the men and employ them in this silvicultural work, and during midsummer 450 relief workers were still employed.

It may be mentioned that similar arrangements have been made with the Unemployment Board for the 1933 season.

Speaking generally, the work performed was as reasonably efficient as could be expected in the circumstances, and, with a few exceptions, the camps were carried on for several months with little friction.

It is also pleasing to record that, although the bulk of the labour was recruited from the towns, no serious accidents occurred.

4. TREE-PLANTING BY LOCAL BODIES, AFFORESTATION COMPANIES, ETC.

During the year tree-planting by local bodies received considerable impetus by the issue of trees at a charge covering packing and carriage costs only. The aggregate area planted would not be of great magnitude, but an outstanding feature was the number of small projects widely distributed over the Dominion which were undertaken by local bodies, whose finances hitherto precluded afforestation operations.

Most local bodies have areas of land lying idle and unproductive which are suitable for tree-planting. In co-operation with the Unemployment Board these areas are now receiving attention by the bodies concerned, and are providing productive work for local unemployed workers.

If established with suitable trees there is no doubt that, apart from possible financial return, the amenity value to the districts in which they are situated is greatly increased. One hundred and twenty-seven local bodies took advantage of the policy of the Government to furnish free trees for projects for the relief of unemployment, and were supplied with 1,847,000 trees, valued at £6,642, from the State nurseries.

The usual free distribution of small quantities of trees and seeds was made to schools.

Commercial Tree Plantation.

From information furnished by "published" statistics it is estimated that up to 31st March, 1933, the total area established for the production of timber is 627,000 acres, being State forest plantations, 363,700 acres; private companies, 233,300 acres; and local bodies, 30,000 acres. In addition, approximately 62,000 acres has been planted by farmers and others, but, as this area is largely in the nature of shelter-belts, it is not included in the area considered to be established for timber-production. The fact cannot, however, be overlooked that these shelter-belts established as they are, largely in treeless country and widely distributed, must be regarded as a valuable asset, as they will furnish supplies of wood to the holders without the entire destruction of the protection afforded.

5. PHOTOGRAPHIC RECORDS.

The number of negatives added to the record during the year was 422, making a grand total of 12,292; 108 photographs were taken in this office, and the plates or films developed here, while 5 film-packs also were developed, and 286 prints, 46 enlargements, and 21 lantern-slides prepared.

Work done by the contractor comprised the developing of 14 spools and 4 film-packs, and the preparation of 940 prints and 10 lantern-slides.

6. RECREATION IN STATE FORESTS.

Tramping as an organized recreation has become increasingly popular during the last few years, and the rapid increase in the number who indulge in this healthy pastime has been phenomenal.

In Wellington City and its environs alone the total membership of tramping and mountaineering clubs exceeds 650, while similar conditions obtain in the other main centres. As the more active and enterprising trampers are constantly seeking fresh fields to conquer and scenes to explore, it naturally follows that many of our more remotely situated State forests, which, because of their isolation and

difficulty of access, were hitherto rarely visited except by Forest Officers, are now speedily becoming the playground of numerous visitors annually. Whilst this pastime has added to the responsibilities of local Forest Officers, it is very pleasing to report that the visiting public generally is becoming each year more careful in safeguarding the priceless forest heritage; and acts of vandalism, such as shooting of native birds, indiscriminate lighting of fires, destruction of young growth, &c., are becoming fewer and fewer.

The Service cannot, in the public interest, permit an unrestricted right of entry to the forest domain, but all visitors are welcomed thereto, provided they undertake to observe the very simple conditions which govern the permit to enter. It need hardly be stated that these conditions are imposed for the sole purpose of protecting and preserving our native flora and fauna.

7. HONORARY FOREST RANGERS.

The total number of honorary forest rangers on the roll at the 31st March, 1933, was 141. There were four resignations during the year and ten new appointments.

The thanks of the Service are tendered to these gentlemen for their gratuitous services and co-operation, particularly in respect to forests so situated that the costs of inspection by the permanent field staff would be almost prohibitive. Honorary rangers are generally appointed to exercise supervision over forests in the particular localities in which they reside, and they are therefore well situated to advise and promptly report on all local matters affecting the welfare of the forest.

APPENDIX.

SUMMARIZED REPORTS ON STATE AFFORESTATION.

AUCKLAND REGION.

Nurseries.—At Whangamata Nursery (Tairua Plantation) only a very small sowing programme was carried out last sowing season on account of the large stocks already in the nurseries. The late summer brought an abundant rainfall, and stocks in the nursery put on an abnormal growth.

No sowing was done at Riverhead or Maramarua, but a limited number of trees was carried over from last year for planting out next season. At Riverhead a small sowing will probably be necessary during the spring to raise stock to fully establish this plantation.

Plantations.—Afforestation operations were very considerably reduced, the total new establishment being 627 acres, distributed as follows: Tairua, 422 acres; Maramarua, 144 acres; Riverhead, 61 acres. A considerable area of blanking was carried out at Tairua and Riverhead. The planting season from a climatic point of view was the most unsatisfactory on record, weather conditions being so dry at times that planting could only be continued under the greatest difficulty. The most successful results were obtained at Maramarua, where a strike of upwards of 75 per cent. was recorded.

ROTORUA REGION.

Nurseries.—In spite of a very severe winter, the season generally was favourable for nursery operations, and the young stock made good growth. Seed-sowing at Rotorua Nursery was completed early in November, when a total sowing of 351 lb. was made; 11,000,000 trees were lined out, and 2,095,000 were sent out to Wairapakau Nursery to be lined in.

Tree Stocks.—The total estimated number of trees in all nurseries, including 54,000 poplar-cuttings, is 40,774,000. Of this total, 34,240,000 are available for future planting and are sufficient to establish at least 50,000 acres of new plantation.

Plantations.—The total area of new plantations established during the year was 11,395 acres, for which 7,568,400 trees were used, or an average of 664 trees per acre. Replanting was necessary on an area of 73 acres which was burnt, whilst blanking accounted for a further 1,367 acres.

Tree and Seed Sales.—Tree-sales to Government Departments, local bodies, and others amounted to 433,000, while the receipts for the sale of tree-seeds totalled £349, or £45 less than the previous year.

WELLINGTON REGION.

Nurseries.—At Karioi during the winter months over two and a half million trees were lifted for transfer to the plantations, while local bodies, schools, &c., absorbed another 174,000. No seed was sown in the nursery. 408,600 trees were lined out in the Homestead Nursery.

Plantations.—The principal activities at this station were blanking, replanting, and direct seeding; 138 acres were added to the planted areas, 1,163 acres were direct seeded, and 3,900 acres were reconditioned. Underplanting at Erua was continued, and the total area thus dealt with during the year was 921 acres, making a total to date of 1,923 acres. All projects were carried out by relief labour, and very satisfactory results were obtained with a minimum amount of trouble.

NELSON REGION.

Plantations.—At Golden Downs the rainfall was again below the average and frosts were prevalent from the beginning of April to the end of September. Planting operations were commenced towards the end of June, but the unfavourable weather somewhat retarded progress and the area planted failed to reach the arranged programme. The total area of new plantations was 1,796 acres, which brings the grand total at this station to 15,476 acres. The planting of 557 acres with *Pinus ponderosa* showed a survival of 95 per cent., while 772 acres planted with *Pseudotsuga taxifolia* was less successful, the survival being 76 per cent.

Nurseries.—The principal seed sown were *P. ponderosa*, *P. muricata*, *Pseudotsuga taxifolia* and *C. macrocarpa*; 270 lb. of seed being used. 1,340,000 trees were lifted and 576,000 lined out, the latter being mostly Douglas fir. The sale of tree-seeds realized £28 15s.

CANTERBURY REGION.

Nurseries.—From Balmoral Nursery 2,641,600 trees were made available for use by other Regions, by local bodies, Government Departments, &c.; the stock in the nursery at the end of the year was estimated to be 2,612,000, and the trees and cuttings raised during the year were estimated to total 587,200. From Eyrewell Field Nursery 224,000 trees were lifted and used in the plantation.

During the coming season trees will be available as follows:—

Station—	Own Use.	Disposal.
Balmoral	948,200	1,664,000
Eyrewell	68,400	51,000

making a grand total of 2,731,600.

Plantations.—The plantations are now all on a maintenance basis, and the year's afforestation work comprised mainly minor planting of waste lands, closed fire-breaks, &c. At Hanmer Springs 77 acres was planted, which included an area of 67 acres of plantation destroyed by fire in 1931; at Balmoral the planting was confined to 48 acres of closed fire-breaks, while at Eyrewell the new planting comprised a total area of 188 acres; this also was mainly areas of closed fire-breaks.

WESTLAND REGION.

Nursery.—No seed-sowing was undertaken at the nursery and the work of the year was mainly general maintenance. A total of 971,400 trees was lifted and transferred from the nursery; of these, 65,530 were required to supply local bodies and miscellaneous orders, while, of the remainder, 800,000 were transferred to Nelson Region.

Plantation.—The new area planted was 111 acres on dredge tailings at Rimu Flat. Previous planting on old dredge tailings show a survival of 60 per cent. It is proposed to plant a further 300 acres in compartments 4, 5, and 9 of the plantation.

SOUTHLAND REGION.

Nurseries.—With the lifting and bundling of 1,062,500 two- and three-year-old trees, large-scale nursery operations ceased in this Region. Of this total, 261,500 trees were distributed to local bodies, 306,000 to Nelson Region, and the rest were required for local use. At Beaumont from a sowing of 12 lb. 5 oz. of seed 112,500 seedlings were raised.

Plantation.—Planting took place at Pebbly Hills, where 620 acres were established, leaving a small balance of 190 acres at this station still unplanted. The new planted area absorbed 402,200 trees. The work was carried out very satisfactorily by relief labour, and the conduct of the men at the various camps was exemplary.

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