1935.

NEW ZEALAND.

STATE FOREST SERVICE.

ANNUAL REPORT OF THE DIRECTOR OF FORESTRY FOR THE YEAR ENDED 31ST MARCH, 1935.

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, 2nd September, 1935.

I have the honour to submit herewith the annual report of all operations of the State Forest Service for the year ended 31st March, 1935, as required by section 64 of the Forests Act, 1921–22.

I have, &c.,

A. D. MCGAVOCK,
Director of Forestry.

Hon. Sir E. A. Ransom,
Commissioner of State Forests.

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REPORT.

INTRODUCTION.

A brief review of the major activities of the Service is given here. The items are dealt with in greater detail in the pages which follow.

Afforestation.—The area of new planted exotic forests—viz., 12,211 acres—is the smallest for nearly a decade, and gives point to the fact mentioned in recent reports that the Service will shortly cease large-scale tree-planting operations. The total area of the State exotic forests is now, in round figures, 406,200 acres.

Sales of Timber.—The keen demand for blocks of milling-bush is evidenced by the marked increase in the volume of timber sold during 1934–35 as compared with the three previous years. Indeed, if a comparison be made with the 1931–32 figures—the first year of the economic depression—the increase is 22 per cent. The demand is still unsatisfied, and at the time of going to press there is no falling off in this respect.

Timber-production.—A corresponding increase also occurred in the total quantity of timber cut from all sources, approximately 250,000,000 ft. board measure. Of this, the cut from State forests totalled 70,254,600 ft. board measure, or about 28 per cent. of the whole.

Sawmills.—The numbers of recorded sawmills show an increase from 534 to 568. Of these, 444 are operating solely in the indigenous forests and 78 solely in the exotic forests, while 46 cut both native and exotic timber. A pleasing feature is the fact that the number of mills working full time during the year 1933–34 has risen from 180 to 255. Mills working part time only number 171, while 142 were closed down.

Mining Privileges in State Forests.—Although applications for mining privileges showed a falling off in Auckland Region, the reverse was the case in Westland, where 1,149 applications were received and dealt with; the previous year's figures were 700. The high price of gold and the subsidy granted to miners by the Unemployment Board were no doubt responsible for the increased mining activity, and coping with this, in addition to ordinary duties, has severely taxed the energies of the local Forest Office staff.

Forest Finance.—The receipts for the year—£72,900—showed a gratifying increase of £20,000 over the previous period, whilst the gross expenditure was practically the same. That the financial position of the sawmilling industry has eased was proved by the fact that in the majority of cases operators met their commitments to the Department promptly and fewer postponements were applied for.

Work done for other Departments.—By arrangement with the Lands and Survey Department this Service now appraises for sale purposes all blocks of milling-timber on Crown land, and, upon request, carries out similar work for the Native Department and Maori Land Boards. At least fifty such cruises have been made during the year, and in consequence the field staff has been compelled frequently to work long hours in rough, bush-clad country and under trying climatic conditions to prevent work from falling into arrears.

General.—Officers of all ranks have again rendered yeoman service throughout another difficult period, and I wish here to place on record my sincere appreciation of the manner in which I have been assisted and supported on all occasions by every member of the staff.

FOREST POLICY.

General.—As the art of maintaining all non-agricultural soils in a state of maximum plant productivity, forestry may be credited during the period under review with substantial contributions to the attainment of the Government's long-term policy of land-utilization. They include:—

(1) The addition of 850,000 acres of State forests to the area permanently dedicated for protection against unfavourable climatic conditions, erosion, and drought:
(2) The decision of the Government to perpetuate the kauri forests by placing under regulation and management both the remaining virgin stands and those cut-over areas carrying regeneration and advance growth:
(3) The examination of typical silver-beech and rimu forests for the selection of demonstration management units, which by appropriate cutting-systems will maintain mills in permanent production.

Protection Forests.—Though to-day the national forestry effort owes its public support largely to the fears engendered by regional timber shortages, nevertheless it derives its greatest importance from the contribution of the forests to the well-being of the agricultural community. Immeasurable as it may be in tangible money terms, the influence of the forests upon stream-flow and soil stability, &c., is none the less real. To the average man in the street spasmodic floods here and there are naturally regrettable, but just as definitely they are accepted as natural phenomena, if not as acts of God, certainly as nothing of import to concern the public mind,

The same apathy characterizes every other phase of forest devastation and abuse. The attitude of even direct sufferers is little better, a state of mind, perhaps, resulting largely from an unfortunate element of instability in land-ownership. It is only a minority of the farming community which continues in sufficiently long occupation of any one area to appreciate fully the slow but sure effects of forest-devastation, to watch landslides develop one by one, to find springs ceasing and reducing their flow, and to see the rivers aggrading their beds and wandering across the rich bottom lands, carrying the best soil out to sea. All are long-time effects, and it is the exception rather than the rule to connect such occurrences directly with the odd scrub and forest fire, the ravaging deer, and other agencies of forest-destruction. These forest abuses continue to take an ever-increasing toll of practically every county in the Dominion, yet the limitations of the individual mind render it difficult to bring into public focus the cumulative effects of these individual experiences. Viewed in their proper perspective, however, the effects of forest-devastation constitute the largest single item of waste in the agricultural effort of the community and merit considerably more attention both from the public and more particularly from those directly affected.

Management of Indigenous Forests.—In accordance with the national policy of managing the indigenous forests to secure their maximum production of timber the Government has approved of plans for perpetuating the kauri forests and for regulating the supply of kauri timber to the local and export markets. Both the remaining virgin stands and the cut-over areas carrying regeneration and advance growth are being brought under forest-working plans which govern both the extraction of logs and the silvicultural treatment required to maintain the forest in a state of maximum productivity. The first forest to be so treated is the Omahuta State Forest, not far removed from Russell, and permanent extraction routes are now being constructed therein. Dead and over-mature trees will be extracted along with those large healthy trees which can be removed without endangering the subsequent regeneration of the area; and logs disposed of on the extraction routes. A minimum diameter-cutting limit of 27 in. breast-high has been imposed for virgin stands, which means that, generally speaking, only in the young forests where thinning is required will smaller trees be removed. The more recent examinations and inspections of the kauri forests indicate beyond all possible doubt the feasibility not merely of preserving to posterity those few magnificent monarchs which the State Forest Service most zealously guards in its forests as national monuments, but also of maintaining in their entirety the kauri forests in the full vigour of their growth to yield an everlasting supply of this world-famous wood.

Reconnaissances in the rimu pole-type forests of Westland are also being made to locate suitable demonstration-forest units which may be placed under working-plans, as in the case of the kauri forests, and so managed as to maintain mills in permanent production. A similar search for demonstration units is being conducted in the silver-beech forests of Southland, and it is anticipated that within two years working-plans for both rimu and silver-beech forests will be in active operation.

Exotic Forests.—The cessation of State exotic planting on a large scale now appears advisable. The country already possesses sufficient planted areas to supplement the indigenous forests and to ensure an adequate supply of timber, &c., for the next century. The extension of the exotic forests for the export of timber and other products cannot be justified on economic grounds. The post-war fears of a world timber famine have been definitely proved as groundless, and the following advantages enjoyed by the North European countries which dominate the international wood-goods trade cannot be lightly ignored:—

(1) The wages of both skilled and common labour being only from one-quarter to one-half of those in New Zealand, manufacturing as well as forest costs are very much lower, those for forest establishment and maintenance being less than one-tenth of those in New Zealand owing to natural regeneration and absence of forest weeds and pests.

(2) Lower unit capital investments for all types of wood-converting and power plants and cheaper engineering and chemical supplies than in New Zealand result from low wages and manufacture of machinery and supplies either in their own or immediately adjacent countries. Hydro-electric power is also generated at less than half the cost in New Zealand.

(3) Not only is inland transport by river-floating, &c., the cheapest in the world, but foreign freight-rates to the world's markets, including Australia, are for all classes of wood-goods lower than from New Zealand.

The Government exotic forest activities must therefore be concentrated upon the consolidation of those areas already planted. The large-scale planting of previous years has disclosed the limitations and weaknesses of various species, and experimental planting of new species is fundamental to the provision of possible alternatives should any further weaknesses develop at a later stage in the establishment of the exotic forests. For similar reasons, experimental planting of exotics in cut-over forests is also contemplated.

Forest Fires.—The possibility of planting up extensive areas of deteriorated farm lands with exotics, more especially in the vicinity of urban centres, continues to exercise the public imagination. Quite aside from the fact that in numerous instances the soil and climatic conditions are distinctly unfavourable, there is ever present the practical difficulty of securing suitable administrative units and consolidated areas which lend themselves to reasonable protection against fire. Fire ranks as the outstanding forest abuse of the country. If it could be adequately controlled, the whole of the deteriorated farm lands would re-establish themselves with valuable indigenous forest not only without any material cost, but with distinct direct and indirect advantage to the community.

Utilization.—No other feature of forestry work is so susceptible to exaggeration as the intensely practical problem of utilizing the growth of the indigenous and exotic forests. One writer estimates that the Dominion will have an exportable surplus of 500,000,000 ft. board measure of exotic timber within ten years. Another estimates that the insignis-pine forests alone will yield annually 1,200,000,000 ft. board measure of sawn timber. All these are fantastic calculations which do not take into account the already-failed areas of this species and the not unlikely failures of still other species, against which the Government has endeavoured to protect the general success of its own operations by the use of a wide diversity of species, most of them much slower-growing than the insignis pine. If, eventually, the whole of the planted areas of the Dominion produce an average mean annual growth of 100 cubic feet of wood per acre, the country will have achieved a result which has not been duplicated with exotics elsewhere in the world.

As indicated in previous reports, it is not anticipated that any difficulty will attend the utilization of such exotic softwoods as may be successfully grown. Even in the face of a poor utilization technique the demand exceeds the supply, and must continue to do so for many years. Actually, as the suitability of the exotic timbers for house-framing, sarking, sheathing, and sub-flooring, &c., becomes appreciated the markets will expand rapidly and absorb large quantities of wood at present obtained solely from the indigenous forests.

CHAPTER I.—MANAGEMENT.

1. Areas under Control.

If the total area under forest control as shown in the following table be compared with last year's figures, it will be seen that the net increase for the year is 6,711 acres, as against 40,136 acres for the previous twelve months. It should be explained, however, that actually the total area withdrawn exceeded the total of the new areas proclaimed by 1,533 acres (*vide* Tables 2 and 3), and that the apparent increase is due to the correction of errors in areas which were only discovered when a detailed examination was made of new plans of certain provisional State forests prior to their proclamation as permanent State forests. The comparison will also reveal the pleasing fact that the total area under permanent forest reservation was increased during the year by nearly 850,000 acres, and that a somewhat similar decrease occurred in the area of State forests provisionally reserved. In other words, the Service, in pursuance of the policy enunciated in the report published two years ago, has continued its examination of the remaining provisional State forest areas, with the result mentioned. About 4,000,000 acres still remain to be dealt with in this way, but it is possible, of course, in the final analysis that a fair proportion of this area may be classed as settlement land and be handed over to the Lands Department for that purpose.

Table 1 illustrates the areas under forest reservation in each forest conservation region.

TABLE 1.

Areas of State Forests as at 31st March, 1935.

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 ..	229,889	71,654	189,662	24,187	515,392	6·00
Rotorua ..	334,236	235,930	135,921	84,365	790,452	15·73
Wellington ..	951,072	63,318	36,857	10,222	1,061,469	7·09
Nelson ..	305,562	121,615	1,183,348	631,993	2,242,518	32·01
Westland ..	600,808	135,465	537,756	458,481	1,732,510	44·84
Canterbury ..	332,770	3,647	..	..	336,417	3·38
Southland ..	430,716	55,774	709,297	13,740	1,209,527	7·12
Totals ..	3,185,053	687,403	2,792,841	1,222,988	7,888,285	11·88

Table 2 shows the areas withdrawn from reservation and the reason therefor. It will be seen that the total of 56,786 acres comprises only 5,112 acres of permanent forest, of which 4,798 acres were released for settlement. The unusually large area of 4,327 acres made available for settlement in Southland Region comprises, in all, forty-five sections of open land scattered over central and northern Otago. With a few exceptions the sections are, in the main, narrow strips of country adjoining good farming-land, and were set aside as forest or plantation reserves at various times over the last fifty years, presumably with the intention of providing shelter-belts, wind-breaks, firewood, &c., for farmers. The areas are small and, in many instances, isolated, and to afforest them by the Forest Service was quite impracticable and uneconomic.

An area of 48,440 acres of provisional State forest in Southland Region has been incorporated in the Sounds National Park, which it adjoins. It lies along the Eglinton Valley – Milford Sound Road, and is clothed in very beautiful bush, which has made this locality such a popular scenic resort since it has been provided with such easy access. The area really forms an integral part of the Park, which is controlled by the Lands and Survey Department, and for obvious reasons it was desirable, in view of the recent development of the district as a tourist resort, that it be placed under one controlling authority.

TABLE 2.

SUMMARY OF AREAS WITHDRAWN FROM PERMANENT AND PROVISIONAL STATE FOREST RESERVATION, 1ST APRIL, 1934, TO 31ST MARCH, 1935.

Region.	For Settlement Purposes.		For Scenic Reserve.		For Public Domain.	For National Park.	Total.
	Permanent State Forest.	Provisional State Forest.	Permanent State Forest.	Provisional State Forest.	Permanent State Forest.	Provisional State Forest.	
	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.
Auckland	241	2	177	..	..	..	420
Rotorua	..	..	36	..	..	..	36
Wellington ..	..	70	..	..	101	..	171
Nelson	30	477	..	1,250	..	..	1,757
Westland	..	1,435	..	..	..	..	1,435
Southland	4,527	..	..	..	..	48,440	52,967
Totals ..	4,798	1,984	213	1,250	101	48,440	56,786

Table 3 is self-explanatory and requires little comment ; the total new area proclaimed (55,253 acres) exceeds last year's figures by nearly 17,000 acres. The major portions of this area are in the Southland and Westland Regions.

TABLE 3.

SUMMARY OF AREAS ADDED TO PERMANENT AND PROVISIONAL STATE FORESTS, 1ST APRIL, 1934, TO 31ST MARCH, 1935.

Region.	Permanent State Forest.		Provisional State Forest.		Total.
	Ordinary.	National Endowment.	Ordinary.	National Endowment.	
	Acres.	Acres.	Acres.	Acres.	Acres.
Auckland	850	..	201	..	1,051
Rotorua	8	..	..	..	8
Nelson	614	..	100	5,870	6,584
Westland	12,845	65	1,407	906	15,223
Canterbury ..	24	..	..	..	24
Southland	12,360	..	20,003	..	32,363
Totals ..	26,701	65	21,711	6,776	55,253

2. PROTECTION FORESTS.

The work of consolidating and extending the boundaries of the existing protection forests and of reserving new areas was vigorously pushed on during the year with such satisfactory results that when the year closed a further 850,000 acres of high-country forest land had been permanently set apart for the purpose mentioned. The total area thus dedicated over the past two years is 1,600,000 acres, which is an effective answer to any charge of neglecting this important phase of forest-conservation. The Department has also consistently refused to permit sawmillers to become established in essentially protection forests not because the bush is unsuitable for milling, but because it should be left in its virgin state to protect the rich farming downs and valleys of the lower-lying country. It should be further stressed that in ordinary circumstances no bush is allowed to be milled within 10 chains of a main-travelled highway, and that for many years past it has been a standing instruction to forest officers that clumps of bush of historic or scenic value adjacent to lakes or rivers, camping-places, &c., should be excluded from sale when boundaries of sawmill areas are being defined.

Reference to the importance of and the climatic influence wielded by protection forests was made at some length in last year's report and need not be repeated here ; but before this section of the report is concluded it seems fitting to mention the harmonious relations which exist between this Service and the Department of Lands and Survey. That Department is ever ready and willing to assist in the work of forest-conservation by giving sympathetic consideration to any reasonable request for the permanent reservation of bush-clad country not suitable for farming, and, needless to say, without such valuable and sympathetic co-operation the aforementioned results could not have been achieved.

Urewera Country.—In order that the formulation of a future policy of management and control of the Urewera country, which lies to the south of Whakatane in the Bay of Plenty, could be facilitated and the position viewed in its proper perspective, a joint inspection by officers of the Lands and Survey Department and the State Forest Service was made during the period under review. The total area dealt with was approximately 650,000 acres, of which 482,000 acres are Crown land, while the remainder is Native land. The matter is now under consideration by the Departments concerned, and it is hoped to come to an early decision respecting the future control and treatment of this forest.

3. Forest Reconnaissance, Demarcation, and Surveys.

Indigenous Forests.

Forest Inventory.—The necessity for observing the strictest economy in field expenditure has limited the extent of the work performed, but nevertheless preliminary surveys were carried out in the vicinity of Kaituna Gorge (Nelson) and in Okarito and Upper Ahaura Districts (Westland) for investigational purposes and to secure more reliable data with regard to the stands and quantities of timber in those localities. More work of this nature will be undertaken from time to time as finance and opportunity permit. The work of assembling and recording the data relating to the State kauri resources of the Dominion has been completed, and plans are now in train for placing the kauri forests under permanent forest-management.

Forest Reconnaissance.—Some 3,400 acres were explored and partly cruised, containing 15,500,000 ft. board measure of timber.

Demarcation.—Over 3,000 acres of State forest boundary-lines were cut and measured.

Timber-cruising.—In State and provisional State forests 10,000 acres, containing 67,015,000 ft. board measure were cruised. Cruises of 2,000 acres, containing 10,550,000 ft. board measure, were made for other Government Departments, and 630 acres, containing 4,940,000 ft. board measure, were cruised for private owners.

Afforestation Areas.

Topographical and Layout Surveys.—Over 8,800 acres were surveyed topographically with the plane-table and 7,000 acres were subdivided into compartments. A topographical survey was commenced of Whakarewarewa Plantation.

Preliminary Management Surveys of Exotic Forests.—This work was commenced early in 1934 (*vide* last year's report) and was advanced another stage during the year by completing the field-work of the exotic forests in the Wellington Conservancy. It is hoped to extend operations at an early date to embrace the South Island forests also.

4. Forest Atlas.

During the year forty-six general-purpose plans were added to this record, while 494 additions were made to the forest atlas and 102 to the forest register.

Additions to nineteen plantations plans were made ; eight new species plans and two topographical plans were prepared ; two species plans were renewed, while thirty-nine species plans were coloured to indicate the species planted.

A total of 102 compartment survey plans were prepared on a scale of 5 chains to an inch.

The Railway and Public Works Departments prepared for Service use 355 helio prints and 257 photostat prints.

For some months the draughting work of the Department was seriously disorganized by the fire which occurred in Head Office just before the close of the year 1933–34, and was further retarded by shortage of staff due to sickness and the sudden death of one officer.

5. State Afforestation.

Tree-planting was mainly confined to Kaingaroa Plains (Rotorua Region), where approximately 9,400 acres were planted, and to Golden Downs (Nelson Region), where the total new area planted was 1,424 acres. Owing to a variety of causes, the 1934 projected planting programme of 23,000 acres mentioned in last year's report could not be adhered to, and the season closed with a total new planted area of 12,211 acres, the lowest for many years.

As announced in several previous reports, State tree-planting on a large scale is being gradually reduced. This is inevitable, as no new afforestation areas are being acquired, while the existing ones are in most instances planted up. It is anticipated that about 17,000 acres will be afforested during the current planting season ; of this total, 16,000 acres are located in Rotorua Region. The grand total of the Dominion's exotic forests, in round figures, is now 406,100 acres, of which, roughly, three-fourths are in the North Island.

The appended table summarizes the position of afforestation as at the close of the financial year. Further information under this head will be found in the Appendix to the report.

TABLE 4.

SUMMARY OF OPERATIONS IN PLANTATIONS AS AT 31ST MARCH, 1935.

Plantation.	Year of Establishment.	New Area planted, 1934.	Total Net Area planted.	Gross Area of Plantation.
		Acres.	Acres.	Acres.
Waipoua	1925	246	1,057	12,600
Puhipuhi	1904	31	871	1,558
Riverhead	1926	29	11,029	11,956
Maramarua	1928	18	12,299	14,087
Tairua	1930	587	10,515	54,400
Whakarewarewa	1898	..	7,591	10,076
Waiotapu	1901	..	7,051	7,974
Kaingaroa	1913	9,429	242,600	327,931
Erua	1930	169	2,518	4,267
Karioi	1927	18	16,033*	33,689
Golden Downs	1927	1,424	19,181	22,527
Westland	1922	..	3,017	8,006
Hanmer	1901	..	7,737	10,243
Balmoral	1916	..	20,652	24,000
Eyrewell	1928	97	18,152	19,266
Dusky	1898	..	4,368	6,829
Conical Hills	1903	..	3,551	3,765
Naseby	1900	..	3,308	4,032
Pukerau	1915	..	565	628
Blue Mountains	1925	20	8,752	9,647
Pebbly Hills	1930	8	4,341	5,330
Minor Areas	1875–1934	135	991	4,340
Totals	..	12,211	406,179*	597,151

* 1,163 acres direct sown in 1932 excluded.

6. PLANTATION CLEANING AND THINNING.

Rotorua Region.—In Whakarewarewa and Waiotapu Plantations minor operations were carried out. In the latter plantation utilization thinning was proceeded with, and 194 cords of firewood and 187 poles were obtained. In the same plantation 64 acres of *P. Laricio* were underscrubbed, 44 acres of which were also lightly thinned, and dead and suppressed trees were removed.

Utilization thinning by two contractors in Whakarewarewa Plantation produced 33,317 mine-props, 8,745 of which were thinned from eucalypts and the remainder (24,572) from *P. austriaca;* twenty-six *E. tasmanica* power-poles were supplied to the Tourist Department. Other poles obtained from thinnings and used for various purposes numbered ninety-eight. Approximately 1,986 cords of firewood were obtained from various sources for fuel at plantation camps.

Canterbury Region.—At Hanmer Plantation 88 acres of the old stands were thinned, 42 acres being thinned for the first time. The trees thus removed produced 2,175 cords of firewood, 322 posts, 237 poles, 602 rails, and 5,463 ft. board measure sawn timber. The Health Department acquired 1,049 cords of this firewood for use at Queen Mary Hospital, Hanmer Springs, and large quantities were also taken by the Unemployed Relief Camp on Lewis Pass Road. Pruning was carried out over an area of 50 acres, the selected trees being cleaned to a height of 16 ft. to 20 ft.

At Balmoral Plantation 32 acres of the older age classes were thinned and yielded 322 cords of firewood, which was used at the tree-planting camps.

Pruning was effected over a total area of 64 acres, the branches being removed to a height of 4 ft. to 6 ft.

Southland Region.—The major silvicultural operations were conducted at Dusky Plantation, where heavy thinning and extraction for milling-purposes was completed over an area of 73 acres. The average degree of thinning was 54 per cent. of the original stand, 1,300 trees per acre being reduced to approximately six hundred. Light thinning for camp-fuel purposes was carried out on 16 acres in the same plantation. Similar treatment was accorded 138 acres at Conical Hills and 119 acres at Naseby; at the latter station the work was done by relief labour.

The material thinned from Dusky is being utilized for boxmaking by a sawmilling company, and 81,289 cubic feet were extracted during the year; in addition, 102 cords of firewood were sold to the Railway Department.

7. Timber-sales.

Not for eight years has the volume of timber sold by the State been so great as it was for the year just closed; local field officers state that the keen demand for new areas of milling-bush continues, and it may therefore be anticipated that the current year's sales will at least be equal to, if not greater than, last year's totals.

It is pleasing to record this revival in the sawmilling industry, as it undoubtedly indicates greater activity in house-building, joinery, and wood-using generally, which must result in the employment of an increased number of skilled workmen. The improvement in the industry is due mainly to increased house-building, discussed elsewhere in this report, coupled with the overseas demand for rimu and white-pine and a welcome restoration of financial stability in allied industries and business circles generally. Sales of miscellaneous forest produce—posts, poles, sleepers, stakes, props, house-blocks, firewood, &c.—also show an increase. In one region alone approximately 122,600 fencing-posts were sold from State forests. Statistics of sales of timber for the past four years are appended.

Year.	Number of Sales.	Quantity sold.	Sale Price.
		Board Feet.	£
1931–32	30	12,240,000	16,435
1932–33	51	32,314,954	35,633
1933–34	83	49,026,302	52,118
1934–35	117	65,302,700	71,243

The quantity of timber cut from State forests, including Wardens' areas, increased in proportion to the volume sold; the grand total was approximately 70,254,600 ft. (board measure) or, roughly, 28 per cent. of the total cut from all sources for the whole Dominion—viz., 250,000,000 ft.

8. Concessions to Sawmillers.

In view of the increased demand for timber, the rise in prices, and the all-round improvement in the industry generally it was decided, as from the 1st April, 1934, to reduce the special discount of 10 per cent. for prompt payment to 5 per cent., and this discount operated throughout the year.

The other general concessions mentioned in last year's report—(*a*) Abolition of payment of ground rent on sawmill areas, (*b*) waiving of interest-charges on overdue promissory notes, (*c*) refusal to offer blocks of milling-bush for sale unless definitely applied for—were continued. Other concessions which benefited those sawmillers who exported timber during the year were: A 20-per-cent. reduction in the price of silver-beech (*Nothofagus Menziesii*), rimu (*Dacrydium cupressinum*), matai (*Podocarpus spicatus*), and tawa (*Beilschmiedia tawa*) exported to England, and on such quantities of the three species last mentioned as are exported to Australia.

It should be mentioned that the reference to silver-beech limits the quantity to what is necessary to fill the initial orders placed in England by the Trade Delegation of 1932, and that the 20-per-cent. discount consists of a 10-per-cent. discount for prompt settlement plus refund of 10 per cent.

In addition to the foregoing, the freight concessions granted by the Railway Department, as outlined in last year's report, also continued to operate.

9. West Taupo Timber Lands.

By arrangement with the Native Department and the Lands and Survey Department this Service, during the year, undertook the supervision of the timbered lands formerly held by the Tongariro Timber Company.

This stand of millable timber, extending practically from the North Island Main Trunk Railway at Kakahi to Lake Taupo, and occupying approximately 82,000 acres, is the largest virgin forest remaining in the North Island, and must consequently be reckoned as an important factor in the available supplies of indigenous timber.

Hitherto the lack of supervision and the comparative isolation of the block were responsible for the trespassing, unauthorized cutting of timber, and vandalism generally that were prevalent.

Recent reports, however, indicate that the regular patrol instituted by the Service has effectively suppressed these misdemeanours.

CHAPTER II.—PROTECTION.

1. Forest Fires.

The forest-fire season climatically was one of the most remarkable for many years, and was characterized by an exceptionally high fire hazard in some parts, and in others by comparative immunity from danger owing to well-distributed rainfall at intervals during the months of January and February.

For example, in North Auckland where the fire risk, particularly in connection with the kauri forests, is normally high during the summer months, the constant rainfall eliminated all danger, while in the southern and eastern part of the province a very high risk obtained.

Again, in Rotorua and northern Wellington Districts the fire danger for the greater part of the summer was not abnormal and the same might be said in regard to Nelson during the latter part of the summer; on the other hand Canterbury had a different experience. There an exceptionally long spell of dry weather—it continued practically from November to March—created a very high fire hazard at Balmoral and Eyrewell State forests, although Hanmer Forest was not so badly affected, thanks to frequent and heavy rain showers. In Westland and Southland, too, the last five months of the year were very dry. The fire hazard created by the dry summer of the South Island was accentuated by the fact that the spring was wet and early, so that a rank growth of herbage was induced, which provided much inflammable material.

In view of what has been said it is all the more gratifying to record that the losses from fire were exceedingly small. In Auckland the only fire of any consequence occurred in a State forest in Thames District. Fires in this forest appear to have been lighted deliberately in no fewer than twelve places, and before all danger was past about 30 acres of cut-over bush and fern were burned. Although police inquiries were made sufficient evidence could not be obtained to warrant Court proceedings.

A small fire swept some 4 acres of bush workings in Omahuta forest, North Auckland, and several other fires occurred in fire districts where settlers were "burning off" without permission. As an illustration of the difficulty experienced in obtaining convictions in such cases, one instance is cited where legal proceedings were taken and, notwithstanding that the offender pleaded guilty, the presiding Justices of the Peace declined to enter a conviction and dismissed the charge on payment of £3 3s. 6d. Court expenses. Such an unusual course was freely commented on in the press, and it is hoped that the publicity thus gained will act as a deterrent to others. In Rotorua Region no fires took place in the exotic forests, and only one small one in an indigenous forest, when about 10 acres of young native growth and fern were destroyed. In Wellington Region the record is not so good; here, in all, eight fires occurred, and the most serious one scorched about 175,000 ft. board measure of standing timber; fortunately, however, it has been possible to sell this stand as salvage timber. (Two of these fires could be traced to sparks from railway locomotives and two or three others to fires on private land getting out of control.) The most serious loss from fire in Nelson Region was the destruction of 40 acres of unmerchantable forest. Some other fires entered State forests, but the damage done was negligible.

In Canterbury, the weather conditions notwithstanding, no fires were reported in State forests, but several settlers' fires were responsible for some serious losses on private lands.

A few small fires were reported from Westland Region; the only one of any consequence burned 31 acres of exotic and indigenous forests before it could be extinguished, but the loss was not serious.

Southland also had a favourable fire report; only one fire entered State forest, during the course of which about 150 acres of old workings were burnt.

2. Fire Districts.

The total number of forest fire districts constituted under the Forests Act and its amendments is now forty-six, and the area covered by these districts aggregates approximately 2,546,600 acres.

During the past twelve months two new private fire districts were constituted—viz., Waitangi (North Auckland), 12,100 acres, and Korokoro (Wellington), 2,500 acres.

It has taken several years to educate the general public to a realization of the value of fire districts as a means of preventing indiscriminate fire lighting and "burning off" except under expert supervision, but that this is gradually being recognized is given point to by the fact that fire districts constituted in the interests of local bodies and private companies now number ten.

The system continues to work smoothly and has undoubtedly contributed in no small measure to the comparative freedom from serious forest fires in State forests which has been the fortunate lot of the Dominion for almost the past decade. Its weakness is the difficulty, as in all fire-preventive matters, of obtaining acceptable evidence against those who infringe the fire law. When to this are added circumstances such as those already cited—viz., the dismissing of a charge against an offender who admits guilt—the law becomes almost impossible of enforcement.

3. Forest Protection against Herbivorous Animals.

A vigorous campaign against grazing and browsing animals in State forests was pursued by Forest Service workmen throughout the year and resulted in the known destruction of a grand total of 78,422, as against 48,000 for 1933. The total cost of this work was £4,275 (last year £3,250). Particulars of the kill are as follows: Rabbits and hares, 77,421; deer, 506; pigs, 74; horses (Kaingaroa Plains, Rotorua Region), 95; opossums (Westland and Southland), 315; and stoats, 11.

Rabbits were most troublesome in Rotorua, Canterbury, Nelson, and Southland Conservancies in that order; the total amount spent on rabbit-killing was £4,115, but portion of this sum will be recoverable from the sale of skins.

Throughout the year the Service co-operated closely with the Department of Agriculture in an endeavour to cope more adequately with the rabbit nuisance. That Department is charged with the administration of the Rabbit Nuisance Act, 1928.

Evidence that the opossum is far from harmless to exotic forests is gradually accumulating. In regeneration areas it is particularly fond of *Pinus ponderosa* leading shoots. In young sapling areas it gnaws large patches from the thinner bark of the upper stem of most pines (though there is as yet no reported case of such damage to *Pinus radiata*). The result is infrequently a killed leader; much more frequently a damaged leader which snaps off some years later with the wind. Quite recently, moreover, similar damage to larch was noted, when the leafless larch, if scattered in mixture amongst pines, appeared to attract the animal's attentions.

Deer were most numerous in Blue Mountains State Forest (Southland), but, owing to increased duties necessitated by the supervision of relief labour, forest employees were not able to engage in deer destruction on a comprehensive scale. In all, 424 fallow deer were destroyed at this station.

Forest Parasite Biology.

The vagaries of the climate referred to in a preceding paragraph were reflected in the parasite virulence. The absence of late frosts and the wet open spring were welcome changes from the past seasons. *Phomopsis* incidence was thus light in State forests, partly owing to weather conditions and partly owing to the hygienic measures that have been applied to critical areas over the past three years. On the other hand, *Diplodia pinea*, assisted by the drought conditions that prevailed in parts of the country, was extremely noticeable, particularly on light, shallow soils overlying compacted gravels. In similar situations the drought was directly responsible for the deaths of large areas of pines planted during the preceding winter.

No dangerous outbreak of insect pests was reported: but it was noticeable that the indigenous-forest insect population enjoyed a good brood year, and the polyphagous lepidopters, which always inhabit the forest edges, were more than usually noticeable on the exotic shade-bearing species which are being worked into recently exploited areas. Similarly, at least one exotic forest in Nelson encountered one of the periodic peak populations of the two native green chafer beetles, and some defoliation of small areas of exotic conifers was the result. No permanent damage seems likely to result. The most spectacular outbreak of insects was only indirectly connected with forestry. The native moth, *Mecyna maorialis*, completely defoliated hundreds of acres of *Lupinus arboreus*, particularly on the south-west coast of the North Island. The host plant is widely used as a secondary sand-collector on dune areas on the zone immediately behind the marram zone. For miles of the coast-line every plant of the lupin was completely defoliated and killed, and owners of dune properties were apprehensive of grave disaster. There is, however, an ample supply of natural seedlings of the lupin everywhere; and as the destroyer is a native moth normally common and with a wide food-range it is believed that the occurrence was merely that of a "plague-year," due perhaps in part to the very dry summer, and certainly not likely to be repeated before the lupin population has regained its former vigour.

Investigational work was continued with unchanged staff at the Cawthron Institute (entomology) and the Plant Research Station (mycology). The entomologist continued quarantine studies on parasites of eucalypt pests and inaugurated a new series of studies on native *Platypus* beetles ("pinhole borers"). Work on *Hylastes ater* and *Sirex noctilio* and their potential parasites was carried on; but, although there were reports of recapture of parasites from some field stations, no unqualified statements of marked success on a large scale can yet be made. The mycologist pursued mainly the work on *Phomopsis* disease of exotic conifers, and a bulletin on the disease was published (State Forest Service Bulletin No. 7). Systematic work on a similar nature on the other common conifer disease due to *Diplodia pinea* was begun and was carried to such a stage that a bulletin will be ready for publication in the incoming year. Work on this led into work on timber staining fungi, which will be the next subject of study. These studies will be correlated with entomological work on wood-boring insects, which will be undertaken by the entomologist simultaneously.

CHAPTER III.—UTILIZATION.

1. General.

The emphasis in forest-utilization work is primarily upon the practical application of available knowledge to the solution of current problems in the timber-producing and wood-using industries. The problem of developing a balanced scheme of utilization for the high-value virgin timber of the indigenous forests and the low-value product of the exotic forest dominates the whole field of forest economy in New Zealand.

2. Logging Technique.

Logging operations in the indigenous forests have, since the earliest days of the country, ranked as the most efficient branch of the timber industry, and though the Dominion has lagged behind North America in the use of tractor logging sawmills are now adapting tractor equipment to local conditions and effecting substantial cost-reductions.

The continued operation of small sawmills working on exotic thinnings is also developing an improved forest technique in the felling, trimming, and hauling of small logs. The indigenous-forest workers introduced to this class of work still prefer the axe to the saw for both felling and cross-cutting, but the experimental use of various types of European saws usually employed for such work is being persevered with. Although not as fast as the axe, they reduce waste to a minimum and merit exhaustive consideration.

In the hauling of logs within the forest the horse still ranks as an essential unit, while, external to the forest itself, investigations point to the adoption of trailer units equipped with low-pressure tires. Such vehicles are capable of haulage either behind show-moving tractors over forest roads or behind fast-moving vehicles over public roads.

3. Sawing Technique.

Continued experience in the grading of timber for export indicates that considerable room for improvement still exists in the accuracy of sawing in the native timbers. Further experience also with various types of small mills operating on exotic thinnings confirms the previous judgment of the Service that the introduction of North European sawing-equipment is essential to the efficient utilization of the small logs of the State exotic forests, and the sales policy thereof will be shaped in accordance with this conclusion.

4. Drying of Timber.

More than ever before in the history of the industry the proper drying of timber stands out as the most important practical problem of the trade, and considerable attention has therefore been directed to its solution. While undoubted opportunities exist for the improvement of air-seasoning practices, the ever-increasing adoption of central heating for both public and private buildings indicates that the only ultimate solution lies in the wider adoption of kiln-drying, and for this reason the investigation and improvement of current kiln-drying practices has constituted a major activity of the department.

The kiln-drying of rimu was studied in considerable detail. The work has demonstrated clearly that, in the internal-fan reversible-circulation type of kiln, 1 in. rimu, other than heart, can be kiln-dried green off the saw to 12-per-cent. moisture-content in five days, the heart timber requiring approximately twice this time. The two classes of timber cannot be dried together either efficiently or satisfactorily, and to obtain the best results it is essential that they be dried in separate charges. The kiln-drying of silver-beech was also studied and highly satisfactory results secured only from timber which had been air-dried previously to a moisture-content of 35 per cent., demonstrating, as on previous occasions, that the kiln-drying of silver-beech green off the saw is both uneconomical and unsatisfactory. Satisfactory drying of other timbers, including white-pine and insignis pine, was also recorded, both being regularly conditioned green off the saw down to 12-per-cent. moisture-content in four days.

In co-operation with the New Zealand Railways the State Forest Service serviced a pilot kiln at the Hutt Railway Workshops. This is an adaptation of the conventional design of internal-fan reversible-circulation compartment kiln recommended to the industry and in which a number of fans are installed on a longitudinal shaft running the complete length of the kiln either below or above the stacked timber.

The general practice in kiln-installations is for operators to erect the building and contract for the supply, erection, and servicing of all necessary equipment, the cost of this latter item, for a 32 ft. kiln of the internal-fan type automatically controlled, being within £1,000.

As regards the claims of individual manufacturers to any inherent superiority, either in speed or quality of drying, it should be realized that in any forced-draught kiln of approved design the speed of drying is determined solely by the rate of moisture-transfusion through the wood, which obviously is quite independent of the kiln. In the hands of a poor operator the best of kilns will produce the worst of kiln-dried timber, while even with poor kilns a good operator can produce relatively high-quality drying. It is for this reason that where wood-users submit their proposals for the erection and operation of kilns to the State Forest Service it is prepared to consider, under appropriate terms, the training of a suitable operator for the owner. It is unfortunate that considerable prejudice against kiln-drying continues to be created by the failure of new kiln-owners to take advantage of this service. It is also advisable for all intending owners of kilns to carefully check up, by reference to the State Forest Service, any statements attributed to it by word of mouth, or letter, or in any other than official publications.

5. Moisture-content of Timber.

The development of rapid methods for the determination of moisture-content of timber is fundamental to both the science and practice of wood-utilization. The usual method of oven-drying employed in kiln-drying work is not only slow but also dependent upon awkward sampling, and in an endeavour to test the efficiency of a recently developed electrical method of measurement an electric moisture-meter of the " Blinker " type was purchased during the year. Through the courtesy of the Division of Forest Products of the Commonwealth Department of Scientific and Industrial Research this instrument was calibrated for use with the principal commercial timbers of the Dominion, and practical experience in connection therewith indicates that it should have a wide range of usefulness amongst the wood-consuming industries. By means of this instrument it is possible to measure almost instantaneously the moisture-content of any individual piece of timber either without cutting off any section or otherwise damaging the wood. It should be noted, however, that it is not suitable for current-control work in kiln-drying on account of the surface moisture induced by sudden temperature changes during handling of the samples.

6. Wood-preservation.

Extensive replacements of building and constructional timbers, both native and imported, stress the importance of wood-preservation. Further inspections were made during the year of the 100 rimu poles creosoted in Westland in 1930 and placed in service lines in Canterbury and Greymouth by the Post and Telegraph Department. Although heavily checked since their erection, the treated poles still appear perfectly sound. Creosoted eucalypt poles in the North Island are also in good condition after six years' service. Having been only butt-treated, however, it is not anticipated that they will display as long a life as the full-length-treated rimu poles.

A commencement was made with the creosoting of 1,000 fencing-posts of larch and pines at both Hanmer and Conical Hills, the larch posts at Hanmer having already been treated and placed in use. This project has been undertaken as a result of the excellent results secured from the creosoted posts still under observation in test fencing-post lines after thirteen years of use. A leaflet dealing with the preservative treatment of fencing-posts was also printed and distributed.

Damage by sap-stain, &c., continues to rank as a major problem in the utilization of several commercial timbers. As a result of further experiments in the seasoning of silver-beech for export the conclusion has been reached that this timber should not be air-dried in the open for more than one winter owing to a tendency to develop serious sticker stain. Experiments with tawa were also continued during the year, a chemical treatment with an ethyl-mercury-chlorine dip being investigated as a possible means of overcoming the greyish discoloration so characteristic of this timber. The sticker rot which occurs with tawa when seasoned in the open proved to be entirely absent in both the untreated and treated stock seasoned completely under cover. Likewise the greyish discoloration was entirely absent in all 1 in. stock when seasoned under cover, but universally present in 4 in. stock, with little difference in occurrence between untreated and treated material.

Various stains continue to prejudice consumers against the use of exotic timbers and to depreciate their value. Generally speaking, however, all stains are traceable to bad logging and seasoning practices. Provided logs are sawn immediately after the trees are felled and the sawn timber likewise carefully open-stacked or kiln-dried immediately after sawing, there is little difficulty in producing bright, clear stock suitable for a large variety of uses.

7. Control and Prevention of Borer-attack.

In an effort to develop practical measures for the control and prevention of borer-attack numerous inspections and examinations of infested material were made throughout the year. While the common house-borer (*Anobium domesticum*) has undoubtedly been responsible for the greater part of the attack of the softwood timbers, it now appears that it has been erroneously credited with the attack of such hardwoods as tawa, taraire, &c., which are commonly infested with the powder-post beetles (*Lyctus* spp.). The insect now causing most damage, however, is undoubtedly the native two-toothed longhorn (*Ambeodontus tristis*), the ravages of which are being reported in increasing numbers from all parts of the Dominion. It cannot be emphasized too strongly that continual inspection of all woodwork is necessary if practical control-measures of this and other wood-boring insects are to be effected. To broadcast known means of control for wood-boring insects a leaflet dealing with the subject was published for free distribution.

8. General Utilization Projects.

No further progress has been recorded in the standardization of butter-boxes although the "Saranac" type of wire-bound box continues to grow in popularity, primarily owing to its lower cost. On the other hand, this type of package, manufactured from $\frac{1}{4}$ in. timber, has undoubtedly been responsible for the increased occurrence of mould, the rotary-peeled timber much more so than the sawn. Efforts are being made to eliminate this trouble by the development of a fibre-board liner, although the standardization of the existing sub-standard box manufactured from $\frac{3}{8}$ in. timber is probably the simplest and cheapest solution of the mould problem. The possibility of using sap-rimu butter-boxes for the export trade does not appear to be fully appreciated by the dairy industry. Small trial tests carried out in past years have indicated that untreated sap rimu does not taint butter, and it is hoped that a comprehensive export trial will shortly be undertaken with this timber. During the year the use of Scandinavian spruce (*Picea excelsa*) for butter-boxes was prohibited unless impregnated with paraffin.

Experiments with the use of split silver-beech stave billets for the manufacture of casks have been carried out with satisfaction by New Zealand Breweries, Ltd., but the development of a practical splitting industry in the forest offers considerable difficulty.

A number of locally-grown eucalypt timbers were tested by an Auckland handle-manufacturer, but with little success owing to the warping of the timber and its poor strength properties. Hoe and rake handles manufactured from tawa and slasher handles from manuka, however, have been giving satisfactory results under actual working conditions.

The products of the exotic forests continue to find more diversified uses every year. Round products include fencing-posts and rails, telegraph, power, and wireless poles, mine-props, and other timbers and firewood, while logs are sawn largely for box and crating timber, and also for building purposes to a minor degree.

It is natural, of course, that wood-identification should figure prominently in all utilization problems. Many imported wood products must first be identified before any search for a possible locally-grown substitute can be instituted. Likewise explanations of failures in the use of various products is impossible until the identity of the timber concerned has been established beyond all possible doubt, and it is for this reason that investigations are being made continually into the microscopic structure of both local and imported woods so that the timbers regularly submitted for examination and report may be adequately dealt with.

CHAPTER IV.—THE TIMBER TRADE.

1. Production.

The annual cut of sawn timber for the period ended 31st March, 1935, is estimated at approximately 250,000,000 ft. board measure, or over 50,000,000 ft. board measure more than the previous year and almost 100,000,000 ft. board measure more than the record low cut for the year ended 31st March, 1932. The predicted cut of 195,000,000 ft. board measure for the year ended 31st March, 1934, agrees closely with the Government Statistician's reported cut of 197,655,000 ft. board measure.

It is anticipated that the greater part of the increased production for the year will be accounted for by rimu, the demand for which has continued active both on the domestic and Australian markets.

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, 1932–1934.)

Species.	1932.		1933.		1934.	
	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	71,082,000	46·1	76,193,000	45·8	96,125,000	48·6
White-pine	43,161,000	28·0	47,998,000	28·9	47,949,000	24·3
Matai	7,475,000	4·8	8,161,000	4·9	10,760,000	5·5
Kauri	6,891,000	4·5	5,410,000	3·3	4,946,000	2·5
Totara	5,344,000	3·5	6,347,000	3·8	7,197,000	3·6
Beech	5,757,000	3·7	5,781,000	3·5	6,972,000	3·6
Insignis pine	13,405,000	8·7	14,676,000	8·8	21,494,000	10·9
Miro	228,000	0·1	441,000	0·3	671,000	0·3
Tawa	163,000	0·1	290,000	0·2	214,000	0·1
Rata	122,000	0·1	72,000	..	97,000	0·1
Other	565,000	0·4	900,000	0·5	1,230,000	0·5
Totals	154,193,000	100·0	166,269,000	100·0	197,655,000	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, 1932–1934.)

Provincial District.	1932.		1933.		1934.	
	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	63,222,000	41·0	74,261,000	44·7	83,915,000	42·5
Hawke's Bay ..	10,430,000	6·8	7,647,000	4·6	9,683,000	4·9
Taranaki	2,146,000	1·4	1,980,000	1·2	1,839,000	0·9
Wellington	15,183,000	9·8	15,157,000	9·1	21,312,000	10·8
Marlborough	5,031,000	3·3	3,374,000	2·0	4,041,000	2·0
Nelson	4,833,000	3·1	5,651,000	3·4	6,461,000	3·3
Westland	34,256,000	22·2	38,773,000	23·3	42,316,000	21·4
Canterbury	2,854,000	1·9	2,817,000	1·7	4,391,000	2·2
Otago	4,017,000	2·6	2,969,000	1·8	5,682,000	2·9
Southland	12,221,000	7·9	13,640,000	8·2	18,015,000	9·1
Totals	154,193,000	100·0	166,269,000	100·0	197,655,000	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, 1932–1934. Value represents value in country of export, plus 10 per cent.)

Item.	1932.		1933.		1934.	
	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.
	Ft. b.m.	£	Ft. b.m.	£	Ft. b.m.	£
Hardwoods—						
Australian hardwoods ..	2,883,000	35,040	7,149,000	89,890	10,325,000	141,900
Oak	893,000	13,010	1,040,000	13,650	1,655,000	23,950
Totals	3,776,000	48,050	8,189,000	103,540	11,980,000	165,850
Softwoods—						
Douglas fir	1,181,000	8,000	1,338,000	8,660	3,128,000	19,830
Butter-boxes	1,473,000	19,070	1,815,000	24,480	849,000	12,200
Redwood	292,000	4,080	461,000	4,660	752,000	6,830
Totals	2,946,000	31,150	3,614,000	37,800	4,729,000	38,860
Other	284,000	4,440	108,000	2,630	255,000	7,350
Grand totals ..	7,006,000	83,640	11,911,000	143,970	16,964,000	212,060
	Number.		Number.		Number.	
Laths, palings, shingles, &c.	1,800,000	2,110	1,400,000	2,040	2,300,000	2,480
	Tons.		Tons.		Tons.	
Tanning-bark	2,552	28,300	1,850	20,450	1,739	17,212
Wood-pulp	3,100	23,240	4,270	30,550	3,641	26,030

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, 1932–1934.)

Item.	1932.		1933.		1934.	
	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.
	Ft. b.m.	£	Ft. b.m.	£	Ft. b.m.	£
White pine(2)	22,264,000	199,680	19,533,000	181,030	22,793,000	213,350
Rimu(3)	2,061,000	14,230	3,642,000	24,560	7,165,000	51,720
Beech(4)	1,475,000	15,210	1,375,000	12,710	2,410,000	25,410
Kauri(5)	674,000	17,230	411,000	10,660	678,000	18,420
Insignis pine(6)	619,000	5,930	692,000	7,120	712,000	5,620
Other(7)—						
New Zealand	194,000	1,610	176,000	1,430	787,000	6,260
Foreign	5,000	130	11,000	120	40,000	290
Totals	27,292,000	254,020	25,840,000	237,630	34,585,000	321,070
	Tons.		Tons.		Tons.	
Kauri-gum	2,068	62,410	3,089	77,970	3,209	86,920
Tanning-bark	..	..	18	90	32	240
Fungus	67	5,944	56	3,400	..	..

(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 flooring and linings. (4) For motor bodies, agricultural implements, and wood turnery. (5) For floorings, linings, tanks, vats, &c. (6) Fruit-cases for Pacific Islands. (7) Mainly matai for flooring and linings for Australia and Great Britain.

2. Domestic Markets.

Firmer prices and an increased volume of business have characterized practically every timber market in the Dominion. This improved tone of the timber markets rests upon two bases. The first is the building subsidy scheme of the Unemployment Board; the second, the increased confidence in private building enterprise. For the year ended 31st March, 1935, the dwelling permits for the larger towns and cities as reported by the Government Statistician numbered 2,173, as compared with 1,981 for the previous period.

The opening of the year found the stocks of dry timber, both in sawmillers' and merchants' yards, almost completely exhausted, and the subsequent acceleration of building has stimulated production in an effort to build up adequate stocks for the first time since the advent of the depression. All building timbers have shared in the improved demand, the imported woods, however, to only a limited extent as regards actual volume, owing both to tariff barriers and to the restrictions upon their use in buildings erected by unemployment subsidy. With increasing dry-kiln facilities throughout the Dominion few occasions should arise where building requirements cannot be almost completely met by the use of local woods.

Renewed constructional activities by both Government Departments and local bodies also stimulated the demand for Australian hardwoods, for which the supply of local substitutes is strictly limited.

Local manufacturers continue to dominate the boxing and crating industry, the imports of box shooks being the lowest for many years. The outstanding feature of the trade is the ever-increasing importance of insignis pine as a boxing timber, the annual production having increased from 14,500,000 ft. board measure for the year ended 31st March, 1933, to 21,500,000 ft. board measure for the year ended 31st March, 1934. The greater part of this is absorbed for boxmaking purposes.

3. Exports.

A substantial improvement occurred in the export trade, the total export of 35,000,000 ft. board measure for 1934 representing an increase of 9,000,000 ft. board measure over the figures for the previous period and equalling the exports during the boom period of 1927–29.

The principal feature of note in the Australian export trade was the shipment of over 7,000,000 ft. board measure of rimu, this quantity being double that exported in 1933 and a record for the past ten years. The bulk of this timber was shipped from the West Coast of the South Island, where mills are admirably situated geographically. The only disquieting feature of the trade is the reluctance of Commonwealth buyers to purchase anything but clean grade timber, the shipments of "merchantable" grade having been so small as to complicate the domestic marketing problem. In contradistinction the increased export of sap matai is assisting materially in the local marketing of this timber. All other woods participated in the increased trade, the shipment of silver-beech in particular increasing from 1,375,000 ft. board measure for the calendar year 1933 to 2,410,000 ft. board measure for 1934.

The export of timber to Great Britain progresses slowly, and the shipment of only 219,000 ft. board measure of silver-beech and only 16,000 ft. board measure of rimu is disappointing. The fact that all timber for the English markets must not only be most carefully manufactured and seasoned, but also trimmed, graded, and trade-marked before shipment, has undoubtedly slowed up the trade in favour of the less discriminating local and Australian markets.

CHAPTER V.—GENERAL.

1. Legislation.

The most important legislation affecting State forests enacted during the year is section 23 of the Mining Amendment Act, 1934, which provides for payment to the Crown of compensation for damage resulting from mining operations to any land vested in the Crown. Such compensation in respect to State forests may from time to time, as damage is caused, be claimed by the Commissioner of State Forests.

Other legislation affecting State forests is contained in the Reserves and other Lands Disposal Act, 1934, section 12 of which cancelled the provisional State forest reservation over 1,250 acres situated in Blocks IV and VIII, Arnaud Survey District, and set the land apart as a scenic reserve.

Section 15 adjusts the boundaries between a State forest (Waiotapu Plantation) and a scenic reserve situated in Block VII, Paeroa Survey District. In this adjustment 9 acres 1 rood 20 perches of State forest land was exchanged for 7 acres 2 roods 30 perches of Section 5, Block VII, Paeroa Survey District.

Section 16 cancels the permanent State forest reservation over 26 acres 3 roods 37 perches situated in Blocks III and VII, Paeroa Survey District, and sets the land apart as a scenic reserve.

Section 20 cancels the provisional State forest reservation over approximately 18,000 acres in Hollyford, Caples, and Greenstone Survey Districts, and reserves the land as part of the Sounds National Park.

2. Finance.

Receipts.

The gross receipts for the year totalled £72,900, the highest for four years and approximately £20,200 greater than last year.

This fact may be regarded as an indication that the milling industry is now definitely on the highway to recovery from the economic ills which have affected it for some years.

A statement of the revenue received under various heads, and for comparison purposes the figures for the three previous years, appear below :—

TABLE 9.

Item.	1934–35.	1933–34.	1932–33.	1931–32.
	£	£	£	£
Indigenous-forests receipts—				
Timber-sales	47,179	31,017	27,129	36,320
Timber royalties and trespass	5,449	3,164	3,667	3,751
Leases, grazing	1,646	1,816	1,637	1,704
Sawmill-sites, industrial, &c.	1,417	1,348	1,412	1,865
Miscellaneous	2,125	2,206	1,587	2,249
National Endowment Account allocation ..	10,990	6,612	6,221	6,391
Nurseries and plantations—				
Trees and seeds	4,094	6,546	3,542	3,278
Firewood and poles				
Miscellaneous				
Totals	72,900	52,709	45,195	55,558

Payments.

It is satisfactory to record that, although the year's revenue showed a marked increase, the expenditure remained practically the same as that for the previous year.

In the main, the relatively low expenditure is due to the rigid economy and careful supervision of all expenditure exercised by officers over the period under review.

TABLE 10.

Item.	1934–35.	1933–34.	1932–33.	1931–32.
	£	£	£	£
Fixed charges and staff salaries—				
Interest and expenses of raising loans ..	172	269	97,256	90,223
Staff salaries	34,155	32,901	34,232	40,974
Allocation of revenue—				
National Endowment Account	3,436	3,893	3,840	6,337
Local-body payments	5,903	3,508	3,259	6,416
Management, establishment, and development—				
Indigenous forests	11,735	8,817	9,501	12,893
Fire-fighting equipment and prevention ..	805	820	668	1,578
Educational : Reference library, &c. ..	445	120	411	276
Research and experimental equipment, &c.	528	1,022	1,017	1,199
Afforestation : Nurseries and plantations ..	59,136	54,292	49,348	107,795
Land-purchase	..	10,542	12,646	6,874
Miscellaneous	343	202	205	502
Sand-dune reclamation	..	..	..	110
Totals	116,658	116,386	212,383	275,177

3. Unemployment Relief.

In continuance of the practice of previous years, the Service arranged with the Unemployment Board to obtain its required labour complement by employing registered unemployed men. The greatest number of relief workers employed during the year under review was 848 (in July, 1934), and the smallest 603 (in January, 1935).

4. Grants of Free Trees.

During the past planting season the following grants of free trees were made from State Forest Service nurseries :—

Supplied to	Number of Trees.	Value. £
(*a*) Local bodies (through Unemployment Board) ..	439,589	2,425
(*b*) Schools	26,643	141
(*c*) Other than (*a*) or (*b*) (mainly Lands and Survey Department)	23,615	98
	489,847	£2,664

Values are based on the price-list of 1930, the last year of sales to the public.

(*a*) *Local Bodies (through Unemployment Board).*—The value of the 439,589 trees—viz., £2,425—was borne by the State Forests Account, less an amount of £338 paid by the recipients to cover lifting and packing charges.

(*b*) *Schools.*—During the past ten years trees and seeds sufficient to plant more than 13,000 acres have been distributed free to the schools of the Dominion.

As the care and maintenance of such an area are certainly as much as the schools can satisfactorily manage, the first step in the abandonment of the policy of granting free trees and seeds to schools was made during the year. Grants of free seed were discontinued, and the limit of free trees obtainable by any one school was reduced from 200 to 100.

5. Recreation in State Forests.

Membership of clubs organized for tramping, ski-ing, camping, &c., in our indigenous forests continues to grow, and each year sees the formation of new bodies for these purposes; at the close of the year the total of such membership was well over 1,000. Indeed, in Wellington Region alone the Service has official cognizance of ten clubs with a recorded membership of 730, and another is at present being formed.

A sound forest "sense" inculcated in the minds of the younger generation is the best safeguard for the future preservation and protection of our forest heritage. Subject to certain restrictions, the Service permits the erection of huts at certain strategic points throughout the State forests to recognized tramping clubs, and already several huts have been built in both Islands.

6. Honorary Forest Rangers.

This report would not be complete without a reference to the good work carried on so enthusiastically and unobtrusively year by year by the honorary ranger corps, and the public are greatly indebted to these gentlemen for the supervision they exercise, in a strictly honorary capacity, over so many of the State forests of the Dominion.

The number of honorary forest rangers is 143, and to all the Service again extends its appreciation for services rendered.

APPENDIX.

SUMMARIZED REPORTS ON STATE AFFORESTATION.

Auckland Region.

Nurseries.—The nurseries in this Region are now confined to Wharekawa (Tairua Plantation), where from small sowings of *P. radiata* and *P. Pinaster* seed 55,000 and 30,000 trees respectively were raised; Waipoua, where the main seed-sowings were *P. caribaea* (28 lb.), *P. palustris* (17 lb.), *P. Pinaster* (5 lb.), and *P. echinata* (5 lb.), and a variety of eucalypts (a few ounces each); and at Waitangi, where *P. caribaea* (12 lb.), *P. palustris* (5 lb.), and *P. echinata* (2 lb.) were sown. At the last-mentioned station about 100,000 seedlings were raised.

Plantations.—It was not possible to adhere to the afforestation programme owing to difficulty in obtaining relief labour at Tairua Plantation. Not only did this shortage of hands reduce the volume of work done very considerably, but also compelled the destruction of a large number of trees which would be too large if carried over for another year. The following is a summary of the work done, the figures in brackets indicate the projected programme: tree-planting, 578 acres (765); blanking, 452 acres (1,556); underplanting, 24 acres (24); interplanting, 24 acres (30).

Better results have been obtained by pit-planting of *P. radiata* at this station than notch-planting. The pines from the Southern American States are also making good progress, and the same can be said for *P. ponderosa* and *P. Laricio*, but the growth of *Sequoia sempervirens* and *Thuya plicata* is somewhat disappointing.

Maramarua.—Stocktaking after planting was completed showed a strike of 96 per cent. of the blanked trees and from 60 per cent. to 78 per cent. of those underplanted.

Puhipuhi.—At this station an area of 31 acres of eucalypts was interplanted for experimental purposes with *Sequoia sempervirens*.

Riverhead.—At Riverhead about 30 acres were planted, while blanking was done over approximately 500 acres.

Rotorua Region.

Nurseries.—The two main nurseries are at Rotorua and Wairapukao (Kaingaroa Plains); at the latter 495 lb. of seed were sown, comprising *P. Murrayana*, 56 lb.; *P. ponderosa*, 280 lb.; *P. radiata*, 157 lb.; *Thuya plicata*, 2 lb.; and at the former 17 lb. of *P. radiata* and *P. Murrayana* in nearly equal proportions.

The total trees lifted numbered 8,114,500, of which approximately 5,000,000 came from Wairapukao. Grass grub destroyed 3 acres of lined-out stock at Rotorua Nursery, 730,000 *Pseudotsuga taxifolia* (Douglas fir) seedlings being lost. It is noticeable that this pest does not appear on land where blue lupin has been dug in.

Trees available for future planting are Wairapukao, 9,400,000; Rotorua, 6,900,000.

Plantations.—The total area planted was 9,429 acres, with an average of 702 trees per acre, and the planting-gangs were mostly relief workers. The absence of unseasonable frosts resulted in good growth amongst all species. The daily planting per man averaged 555 trees, or 282 trees per man fewer than the previous year. This drop is accounted for by the loss of time in handling, as larger trees were used than formerly. Blanking accounted for 145,700 *P. ponderosa* trees. A mortality count taken in February showed 31 per cent. loss of *P. Laricio* and 11 per cent. loss of *P. ponderosa*, due probably to the fact that three- and four-year-old stock was used and the dry weather set in before the trees were properly rooted.

Wellington Region.

A small sowing of *P. ponderosa*, *P. Murrayana*, and *P. Laricio* seed was made at Karioi Nursery, while 591,000 trees were lifted and used mainly for local planting. Nursery-tree stocks number 309,800, including 2,500 rooted cuttings of *Pop. fastigiata*. The predominating species are *Larix decidua*, five-year-old, 135,000, *P. Laricio*, five-year-old, 50,000.

Plantations.—Very little new area was planted at Karioi, but 1,350 acres were blanked with 310,200 *P. Laricio*, 40,000 *P. ponderosa*, and smaller quantities of *P. Murrayana* and *Pseudotsuga taxifolia*. Rain fell on 155 days at this Station, the three driest months being April, 1934, and January and March, 1935. At Erua Plantation 169 acres were underplanted and 80 acres were interplanted, the species used being *Cupressus Lawsoniana* and *Pseudotsuga taxifolia*. At this plantation *P. ponderosa* and *P. Murrayana* are making good growth in the open country, but in the burned-over bush land *Thuya plicata* shows poor results and was not nearly so successful as *C. Lawsoniana*.

Nelson Region.

At Golden Downs Plantation the planted area was increased during the year by 1,424 acres, which brings the net area of this plantation to 19,181 acres and the gross area to 22,527 acres.

Deer have caused some damage to the young trees, but this pest is kept in check by continuous shooting. The dense fern-growth in many of the gullies has rendered clearing necessary to give the young trees a chance in their early stages.

Westland Region.

The only nursery work was the formation of some small seed-beds in which were sown 4 lb. *Thuya plicata* and 2 lb. *C. Lawsoniana*. The first-mentioned seed failed to germinate, but good results were obtained from the latter. Trees transferred from the nursery during the year numbered 621,800 *P. ponderosa*, made up as follows: For local use, 2,000; transferred to Nelson and Southland Regions, 393,000 and 131,500 respectively; for local bodies, schools, &c., 95,300. The main nursery area is now closed, and arrangements are being made to put the land to some other use. In the plantation good growth was made and all species are looking healthy with the exception of the Douglas fir, which are stunted and bushy. Opossums were numerous in parts of the plantation and some damage was done to the *Thuya plicata*. General maintenance-work—clearing of tracks and fire-breaks, fire-patrol, &c.—was carried out.

Canterbury Region.

Nursery operations were confined to Balmoral, where the estimated stock at the end of the year was 868,800. During the year 1,444,200 trees were lifted and used for State afforestation, planting by local bodies, schools, &c. A crop of 605,300 trees was raised from 112 lb. of seed.

The only new planting was 97 acres at Eyrewell, 64,700 trees being used; certain areas at Hanmer Springs, Balmoral, and Eyrewell were reconditioned, 970,000 trees being used for that purpose. Tree-growth generally was good, but the extremely dry season played havoc with some of the young planted trees at Balmoral and Eyrewell.

Southland Region.

Nurseries.—At Pebbly Hills 60 lb. of seed were sown, which produced a crop of 143,000 seedlings, and 32,000 poplar cuttings were struck and lined out. The total tree stocks at this nursery is 388,000, of which 207,000 are available for use during the coming season. At Beaumont Nursery tree-growth was poor until late autumn, when the young stock came away much better; trees here number 128,000, of which 89,000 will be available for planting during the current season.

At Tapanui 17,500 poplars were lifted for planting in Blue Mountains Plantation, and 5,500 cuttings were lined out, but only a moderate strike occurred owing to drought conditions. The total stock in Naseby Nursery is 30,000 trees.

Afforestation.—Very little new planting was done—viz., Blue Mountains, 20 acres; Pebbly Hills, 8 acres—but blanking was carried out at Naseby, Blue Mountains, and Pebbly Hills, *P. Murrayana* and *P. ponderosa* being used.

Generally speaking, the planting as a whole showed satisfactory results.

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