
ANNUAL REPORT

OF THE

SUB-DEPARTMENT OF FORESTRY

FOR THE

YEAR 1939-40.

Report of the Director of Forests for the Year ended 30th June, 1940.

The Hon. the Minister for Lands.

SIR,—I have to present herewith my report for the year ended 30th June, 1940.

Introduction.

For ten months of the past financial year, we have been at war. Immediately after the outbreak of war, this Department was represented at a conference at Melbourne called by the Minister of Supply and Development to consider the timber supply problem of Australia in view of the anticipated serious reduction in import of softwoods from overseas, normally of the order of 300,000,000 to 400,000,000 super. feet per annum.

Queensland was supplying its own softwood needs, and was, in addition, exporting quantities of softwood to the other States in the form of plywood and sawn timber.

The virgin stands of hoop, bunya, and kauri pine are rapidly disappearing. Before the outbreak of war, the question of reducing the cut of these species, with a view to extending the supply for certain special purposes, was under consideration. On the outbreak of war, however, it was decided not only to postpone such action, but also to increase softwood output during the period of national emergency, with the object of assisting in supplying the softwood deficiency in other States, due to anticipated serious reductions in softwood imports.

Despite logging interruptions due to wet weather in South Queensland and a prolonged wet season in North Queensland, an extended coal strike, and heavy enlistment of timber workers, sale of softwood species for 1939-40 was 157,304,000 super. feet, compared with 140,297,000 super. feet for 1938-39—an increase of 17,007,000 super. feet.

As a result, Queensland's timber industry not only maintained this State's timber requirements, but also exported considerable quantities of sawn and plied hoop, bunya, and kauri pine to the other States. There is reason to believe that the Queensland hoop pine supply has been adequate for those essential war purposes for which its high grade and special properties make it the most suitable species.

Seven million three hundred and thirteen thousand square feet of plywood was exported to England during the year, whilst plywood for the manufacture of 85,000 tea and coconut chests was exported to the East, and orders for further tea and rubber chests were on hand. This was all new business, replacing part of supplies previously obtained from the Baltic countries.

Hoop pine has a long fibre and is capable of producing a very high grade paper pulp. Thousands of tons of hoop pine mill waste have been sent to a Southern paper mill to replace imported paper pulp.

The whole of Australia's butter export is now encased in Queensland hoop pine.

The present war has emphasised the urgent necessity for the establishment of an adequate softwood resource in Australia. Of all the States, Queensland originally possessed the outstanding softwood forests. The high quality of hoop, bunya, and kauri pine has been brought prominently under notice during the war emergency.

As has already been demonstrated by the Forest Service, forests of these species can be successfully and rapidly established by plantation.

It has been estimated that Queensland needs an area of at least 100,000 acres of plantation of these species for her own permanent needs, without considering the supply of special-quality material to other States during a period of war.

In the past year the record area of 3,953 acres of plantation was established, of which 3,835 acres were softwoods. This brings the total area planted to 25,972 acres, 23,557 acres being softwood species. The rate of planting should be further increased until at least 100,000 acres of softwood plantation have been established.

Extensive work was also carried out on the protection and treatment of the natural hardwood and cypress pine forests. The area of these forest types now reserved for the permanent production of timber is definitely inadequate, and every opportunity must be taken to increase this deficient acreage.

Another aspect of Departmental work arising out of the war is the experimental work carried out by the Investigations Section of this Department in charcoal production and utilisation in producer gas units, with a view to assisting the general development of the use of the latter.

SILVICULTURE AND MANAGEMENT.

The outstanding feature of the year's work was the largely increased softwood planting. A total planting of 3,953 acres was made for the year (3,835 acres being softwoods), this being 1,173 acres more than the previous highest annual programme.

In addition, an area of 70,750 acres of natural hardwood or cypress pine forests were subjected to improvement treatments. This is also a larger operation than that of 1938-39.

Total expenditure on reforestation works, however, decreased from 1938-39 by £5,079 to £276,677.

As a result, it was necessary to reduce the rate of expansion of the fire-protection system. Nevertheless, after complete maintenance of existing breaks, it was possible to add 384 miles of new breaks to the total, while the policy of break improvement work initiated last year was pushed further ahead by the preparation for grading of over 500 miles, and the grading of 600 miles of breaks.

Six additional fire towers and three lookout cabins were added to the fire-detection system, but other constructional works were limited to the completion of four nurseries on scrub sites and several cottages put in hand the previous year. One new cottage only was built.

Several major changes in routine procedures were adopted.

Plantation thinning work was suspended in view of the large softwood demand occasioned by the war and the possibility of utilisation of the small trees which previously have not been merchantable. The plantations, generally, are not of sufficient age to yield any large thinning product.

Prescriptions for the pruning of hoop pine and *Pinus taeda* plantations were improved.

Fertilising (phosphate addition) has been adopted as a routine operation on areas deficient in phosphates planted with exotic species at Beerwah and Glasshouse Mountains, the degree of application being determined beforehand by careful survey. Further reference to these matters is made below.

The permanent line plot method for inventory surveys on the hardwood and cypress pine forests was initiated for the first time in this State.

Permanent yield plots were established in the plantations of *Pinus taeda* and *Pinus caribaea*, and at the same time, on the basis of existing data, the yield in merchantable thinnings for the next three years was determined. It is proposed to utilise the information collected in directing the sale of thinnings from these plantations.

PLANTATIONS.

Details of the total planting for the year are as follows:—

Working Plan Area.	Area in Acres.						Total.
	Hoop Pine.	Kauri Pine.	Bunya Pine.	Euc. spp.	Pinus spp.	Other.	
Brisbane Valley..	1,054.2	..	6.0	24.0	158.5	..	1,242.7
Gympie ..	311.0	56.0	7.0	57.0	..	..	431.0
Kilkivan ..	347.0	..	4.8	25.9	11.0	..	388.7
Kilcoy ..	261.3	..	1.5	2.0	48.2	..	313.0
Many Peaks ..	194.0	..	..	..	..	..	194.0
Mary Valley ..	753.6	139.5	29.9	..	..	..	923.0
North Coast ..	..	..	..	..	253.7	..	253.7
North Queensland ..	78.1	17.5	..	..	..	8.3	103.9
Warwick ..	..	..	..	..	103.0	..	103.0
Totals ..	2,999.2	213.0	49.2	108.9	574.4	8.3	3,953.0

The most striking feature is the large increase in hoop pine planting, the figure for this year being in excess of any previous total planting. An appreciable increase in the kauri pine acreage has also been effected.

A return to almost normal climatic conditions in the hoop pine areas assured establishment on the new areas, but, compared with the previous two severe seasons, illustrated to what extent the present establishment technique with hoop pine is independent of seasons.

Winter plantings of *P. taeda* and *P. caribaea* at Glasshouse Mountains were also attended by good results. *P. patula* at Passchendaele still continues to be a problem. Whilst 85 per cent. establishment may be secured from July plantings and survival may continue at this figure for up to six months, a dry period then may result in 50 per cent. loss.

As indicated above, all plantation thinnings were suspended this year. Pruning of all areas in line for the work was carried out over 1,903 acres, as follows:—

Working Plan Area.	Area Pruned (Acres).
Brisbane Valley	778
Kilkivan	51
Mary Valley	716
North Coast	228
North Queensland	130
Total	1,903

NURSERIES AND SEED.

Twenty-one nurseries (an increase of two) were in production at the close of the year, carrying at 30th June, 1940, a total of 5,143,000 trees. Of the eight new nurseries put under construction last year, only four were completed this year, these being those on scrub sites.

Output to plantations was 2,760,000 tree-lings.

No crop of hoop pine seed occurred again this year, though indications are favourable for a crop next year. Practically no seed has been available for collection since December, 1936. All sowings since have been carried out with cold-stored seed, and recent germination tests for spring sowing indicate an almost complete retention of viability.

A collection of over 300 lb. of seed of the northern kauri pine (*A. palmerstoni*) was made.

Cold storage of the southern kauri pine seed (*A. robusta*) is also proving very successful. No collection was made.

SCHOOL PLOTS.

A further fourteen plots were established, raising the total to 130.

NATURAL FORESTS.

An area of 70,750 acres of natural hardwood and cypress pine forests were treated, raising the total area subjected to at least one treatment to 369,470 acres.

Details are:—

Working Plan Area.	Eucalypts.		Cypress Pine.		Total.	
	First Treatment.	Other.	First Treatment.	Other.	First Treatment.	Other.
	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.
Brisbane	616	3,613	..	..	616	3,613
Brisbane Valley	273	150	..	..	273	150
Bundaberg	2,042	1,780	173*	..	2,215	1,780
Clermont	5,780	3,231	..	..	5,780	3,231
Dalby	2,872	125	7,608	282	10,480	407
Fraser Island	20	1,113	..	..	20	1,113
Gympie	1,566	2,066	..	..	1,566	2,066
Inglewood .. .. .	..	..	1,310	1,350	1,310	1,350
Kilcoy	1,168	..	..	..	1,168	..
Kilkivan	1,420	5,127	..	..	1,420	5,127
Many Peaks	611	..	..	..	611	..
Maryborough	9,899	9,012	16*	..	9,915	9,012
North Coast	3,804	2,324	..	..	3,804	2,324
North Queensland	477	..	..	..	477	..
Warwick	922	..	..	..	922	..
Totals	31,470	28,541	9,107	1,632	40,577	30,173

* Hoop Pine.

This is an increase of almost 20,000 acres over the 1938-39 figure.

The point of note is the large increase in the blackbutt regeneration burn on Fraser Island.

SILVICULTURAL RESEARCH.

Silvicultural research work was continued throughout the year in accordance with the research plans. The investigations on hoop pine and associated species were furthered at Imbil and Yarraman. Research on the coastal hardwoods was advanced on the North Coast; additional experiments were carried out in the cypress pine-hardwood areas of the Dalby and Inglewood districts; and research on the *Pinus taeda* and *Pinus caribaea* was extended at Beerwah and Glasshouse Mountains. Further knowledge was gained of the northern species by the continuation of experimental work at Atherton, and in other districts silvicultural investigations were carried out as opportunity offered.

Pruning experiments with hoop pine and *Pinus taeda* were summarised during the year, and on that basis modified prescriptions for routine pruning were drawn up. The new prescriptions should be effective in decreasing the loss of growth attendant on green pruning, and ensuring the maintenance of a consistent knot core with the individual tree. In addition, the procedures for marking for pruning are considerably simplified.

The extensive hoop pine spacing experiments referred to the two previous reports show for the first time this year increment trend, varying in accordance with the space

allotted to the individual tree. This applies both to increment in d.b.h. and in height. The trend of increment in volume per acre is not considered material at this early stage.

Hoop pine thinning experiments continue to show that a response is secured from early thinning, but the problem of controlling the associated weeds in the case of heavy thinning counteracts the results to some degree.

The outstanding results in the case of *Pinus taeda* were secured from a series of "free growing control" plots. These indicate that early thinnings previously considered to be heavy were actually conducted in the "suppression zone." The plots for future determinations have been reduced to 160 stems per acre at the age of six years. Other heavily thinned plots lend additional weight to the results secured.

A result of some importance secured from repeated experiments in plantations of grey ironbark (*Eucalyptus paniculata*) is to the effect that coppicing of malformed stems at an early age does not effect an improvement in average form, as the coppice growth resulting has no better form than the parent stems. This may indicate that form defects in the species are inherited. Routine procedures have been modified accordingly.

Experiments on the tending of blackbutt regeneration following regeneration treatment also reached the stage where it was possible to prescribe a routine procedure, which embodies two tendings, and should, in the majority of cases, obviate further tending.

The results from cypress pine thinning experiments continue to show a very definite response to heavy thinning. Not only is the increment in g.b.h. and height greater, but this increase is so substantial that the volume increment per acre is also greater with the wider spacings. The results strongly support the routine procedures adopted in thinning cypress pine.

A bulletin was compiled during the year embodying the results of investigations on the fused needle disease of *Pinus taeda* and *Pinus caribaea*.

On the basis of the work conducted, a phosphate survey was commenced at Beerwah and Glasshouse Mountains with the object of determining the fertiliser applications necessary to ensure healthy growth of previously unsatisfactory stands. The results of this survey showed a close correlation with the result of previous research work determining the minimum quantity of P_2O_5 required by both species.

Investigations in connection with chlorosis in hoop pine nurseries were advanced further, and there is evidence that the quality of water used may have a bearing on the development of the chlorotic condition. In such cases either frequent applications of sulphur or neutralising of the water before application is called for.

PROTECTION.

The number of fires on reservations and on adjoining lands totalled 190 for the season. Of these, only one occurred within the plantation area, the loss being confined to 10 acres. Except also for one fire which destroyed about 700 acres of treated hardwood forest, the total loss of treated and protected natural forest did not exceed 200 acres.

Protection works were maintained on a similar basis but reduced scale to those of last year.

FIREBREAKS.

The work carried out under this heading is as follows:—

- Cleared Breaks (Western hardwood and cypress pine forests).**
 - Construction—** Miles.

Falling and stacking	84.7
Burning	112.3
Grubbing break roads	500.7
Grading break roads	600.3
Green breaks	598.0
Auxiliary roads	35.4
 - Maintenance—**

Suckering and/or brushing	263.0
Ploughing	235.1
Burning	149.5
Roads	56.2
- Cleared breaks (Plantation areas).**
 - Construction—**

Temporary breaks for scrub burn	22.3
Clearing up to 20 feet	13.6
Clearing over 20 feet	12.0
 - Maintenance—**

Chipping, ploughing and/or grading	140.0
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- Green Breaks (Coastal hardwood areas).**
 - Construction—**

Falling dangerous trees	251.0
Stacking	177.5
Burning	143.2
Chipping side lines	131.1
Brushing	112.0
Road construction	142.1
 - Maintenance—**

Chipping or ploughing side lines	740.5
Burning	633.6
Brushing	628.9
Roads	246.0

In the past two years a total of 1,176 miles of break roads have been cleared, grubbed, and prepared for grading. Of this, the patrol graders put into operation this year have converted 600 miles to graded roads for speedy access.

ANIMALS.

Netting fences against wallaby attack in plantations were further dispensed with this year, and on only two areas is this now practised. The length of stockproof fence erected for plantation protection was 22.6 miles. Apart from rabbits at Pusschendacle, little damage is suffered from other animals, and here the damage is kept low by the use of large planting stock.

CONSTRUCTIONAL WORKS.

Constructional works were kept down to a minimum this year. Four of the nurseries commenced last year were completed. Only one new standard cottage was built, though a number uncompleted at 30th June, 1939, were finished and paid for this year.

The major constructional works were the erection of six fire towers and three lookout cabins, raising the number erected to date to sixteen and nine respectively.

A total of 81½ miles of telephone lines were erected, chiefly linking up these new protection points with headquarters.

Smaller items of construction comprised:—

Offices	1
Garage and tool shed	4
Tool and feed sheds	19
Horse paddocks	13
Bunkhuts	6
Fire huts	2
Field shelter huts	11

EXPENDITURE, LABOUR, &C.

Expenditure for the year on reforestation works was £276,677—a small decrease on last year's figure. This was distributed to the major headings as follows:—

Plantations	57,232
Natural regeneration	19,880
Nurseries	10,488
Research	2,699
Protection	87,665
New construction	19,789
Maintenance improvements	4,677
Surveys	4,790
Wet time, holidays, sick and recreation leave	28,610
Tools, fodder, cartage, supervision, &c.	30,261
Workers' compensation	6,303
Miscellaneous	4,283
Total	£276,677

In addition, salaries of officers engaged on reforestation amounted to £11,689, making a total expenditure of £288,366.

The number of men in full-time employment on reforestation works at the close of the year was 884.

ANALYSIS OF FIRE REPORTS.

The following is a summary of fire reports received from Forest Officers during the year:—

Magnitude of Fires.

½ Acre or less.	½ Acre to 10 Acres.	Over 10 Acres and Under 100 Acres.	100 Acres and Over.
29	43	69	49

Point of Origin.

On Forest Reserves.	On Private Lands.	Confined to Outside Areas.
104	50	36

Causes.

Lightning.	Camp Fires.	Smokers	Debris burning.	Deliberate Firing.	Railways.	Misc.	Unknown Origin.
1	4	7	49	7	4	16	102

In dealing with fires, the policy has been to seek co-operation wherever possible, and individual letters were sent to neighbours with this in view.

In three cases it was necessary to prosecute, and in a number of others warnings were issued.

Every assistance was rendered by the Commissioner of Police in investigating fires, and the opportunity is taken here to express the Department's appreciation.

FOREST SURVEYS.

Ten fully equipped camps operated during the financial year, whilst smaller camps were organised to carry out required miscellaneous surveys.

The total expenditure for survey and assessment work was £10,387 3s. 6d.

As a result, 23,000 acres were closely inspected; 264,170 acres were assessed; 6,956 acres were subjected to either type or soil survey, whilst a considerable area of planting land was demarcated on important reservations.

Summary of mileage completed by all camps is given hereunder:—

	Mls.	Chns.
Compass and chain	1,077	28
Strip survey	1,966	12
Scrub edge and trial traverse, &c.	196	60

Detailed particulars in each working plan area are given in Appendix "G."

NATIONAL PARKS.

During 1939-40 the sum of £16,021 was expended in improvement and protection work on Lamington, Springbrook, Tamborine, Bunya Mountains, Cunningham's Gap, Lakes Barrine and Eacham, Tully Falls, The Crater, and Green Island National Parks. The total so expended to date has been £38,905.

The principal work was construction of 40 miles of graded paths, making a total of nearly 100 miles constructed to date. Other work included erection of directional signs, provision of fireplaces, lavatory accommodation, and water supply, removal of noxious plants, and improvement of roads.

HARVESTING AND MARKETING.

GENERAL:

Due to the war, there was in some districts a reduced demand for timber for the building trade, but this was more than offset by the heavy demand for Defence purposes, so that timber sales showed record quantities in practically all classes.

During the year it was necessary to adjust the logging rate from time to time below the maximum possible to the available railway wagon supply. A strike of coalminers towards the end of February until the latter part of April, as well as flood conditions, undoubtedly contributed to this dislocation of traffic. At the same time unfavourable weather conditions for one month of the period of the strike also reduced the log output.

The total Crown mill log cut and gross and nett revenues were the highest recorded. Figures for the year and the previous highest figures recorded in 1937-38 are:—

	1939/40.	1937/38.
Crown mill log cut	212,449,000 s. ft.	196,000,000 s. ft.
Nett Revenue	£397,652	£375,490
Gross Receipts	£888,360	£835,311

The total quantity of logs from private and Crown lands cut by Queensland sawmills and plymills for the last three years is as follows:—

Species.	Cut (1,000 s. ft.).		
	1937/38.	1938/39.	1939/40.
Softwoods (Hoop, Bunya, Kauri, Cypress Pine)	171,364	154,786	(Estimated.) 175,486
Hardwoods (principally Euc. species)	107,032	110,755	111,969
Other timbers	34,093	32,883	35,944
Total	312,489	298,424	323,399

The cut of hoop and bunya pine from Crown lands—138,000,000 super. feet—was the highest yet recorded, being about 6,000,000 super. feet greater than the previous highest in 1937-38.

The quantity of plywood sold through the Plywood and Veneer Board during the twelve months under review was as follows:—

Sold in—	South Queensland.		North Queensland.	
	Square feet 3/16" basis.	Value.	Square feet 3/16" basis.	Value.
Queensland	7,531,000	£60,240	788,000	£5,910
Interstate	28,637,000	229,256	13,566,000	101,740
Overseas	6,827,000	54,616	2,453,000	18,397
	43,015,000	£344,112	16,807,000	£126,047

(The above table includes mainly pine plywood.)

The total production of veneer and plywood, including the output of mills in Northern Queensland, was:—

Logs treated—25,944,000 super. feet, producing 81,334,000 square feet of plywood 3/16 inch basis, and 12,739,000 square feet of veneers 1/16 inch basis.

The quantity of hoop and bunya pine ply logs supplied by the Department's logging contractors during 1939-40 was 7,843,000 super feet.

The quantity of hardwood marketed during the year was the highest recorded, being 32,980,000 super. feet, the previous highest being 29,300,000 super. feet in 1938-39.

There was an improvement in the sale of cypress pine from Crown areas during this year compared with 1938-39, the figures being nearly 6,000,000 super. feet, as against 5,200,000 super. feet.

In spite of the Sino-Japanese War at the commencement of the financial year, indications were that the market in China was absorbing small quantities of sandalwood, and prospects of increasing sales were brighter. After war was declared between the British Empire and Germany, a heavy increase in shipping freights and a reduction in demand resulted in shipments being withheld.

The only shipment during the year was a small trial quantity to Rangoon, with a view to opening a market there.

During the financial year nearly 42 tons was taken into stock, making the total stocks at 30th June, 1940, about 70 tons.

North Queensland Timbers.—In spite of unfavourable weather conditions in Northern Queensland, heavy supplies of logs of all species were marketed, but these did not meet the demand.

Deliveries were generally about the 1937-38 level, except for silky oak, of which nearly double the quantity was marketed.

The following table shows the quantities of various species cut:—

Species.	1939/40. super. ft.
Kauri Pine	12,283,554
Maple	4,333,955
Walnut	2,534,262
Silky Oak	8,625,523
Hickory	898,310
Other cabinet woods (including cedar) ..	1,970,207
Scrubwoods	3,552,472

Constructional Timbers.—Operations on constructional timbers during the year have been exceptionally brisk on the better-class timbers, such as girders, piles, and headstocks, whilst orders for the smaller and cheaper timbers have been inclined to lag.

Departmentally arranged contracts resulted in the following major deliveries:—

Specification.	Quantity.
Sleepers	224,048 pieces
Crossings	77,070 super. feet
Transoms	170,191 super. feet
Bridge Timbers	113,647 lineal feet

The year's operations were marked by a £22,000 order from the Falmouth Dock and Engineering Company, England, for long-length turpentine piles, squared girders, and decking.

Orders have also been fulfilled for the Railway Department, Main Roads Commission, and several Local Authorities, Harbour Boards, and private companies.

To assist in complete utilisation under tree-marking rules, arrangements have been made with the Railway Department for orders for sleepers in the areas concerned.

During the year there were 439 men employed under Forestry orders for hewn and round timbers placed by the Department, and most of these have been continuously employed.

The Railway Department's sleeper mill at Birimgan was again opened for supplies of blocks, and sufficient blocks to cut 112,000 sleepers were delivered to the mill during the twelve months. Operations are still proceeding.

In Appendix A is shown the total quantity of constructional timbers sold by this Department both at stump and from operations of Departmental contractors for the year.

Logging.—The quantities hauled by and payments to Departmental logging contractors are as follows:—

In Southern Queensland—		
Hoop and bunya pine ..	92,821,532 s. ft.	} £237,682
Other timbers	1,677,681 s. ft.	
In Northern Queensland—		
Kauri pine	6,557,543 s. ft.	} £79,419
Other timbers	13,934,433 s. ft.	

Roads.—The expenditure on logging roads, both in new construction to make accessible further areas and in the maintenance of existing roads, amounted to £53,409 3s. 4d., made up as follows:—

	£	s.	d.
Harvesting and Marketing Fund	22,448	11	10
Special Employment Works Fund	30,960	11	6
	£53,409	3	4

This amount excludes roads constructed for this Sub-department by the Public Estates Improvement Branch, on which expenditure amounted to £88,515 0s. 1d.

Payment of £6,755 15s. 4d. was made to Local Authorities and the Main Roads Commission for road construction and improvement work.

OFFENCES.

During the year ended 30th June, 1940, 144 cases of offences against Acts and Regulations administered by the Department were reported. Proceedings were instituted in 20 of these cases and fines totalling £89 imposed, whilst a number of prosecutions are pending.

In all cases revenue to the extent of £605 was recovered.

FOREST PRODUCTS INVESTIGATIONS:

The main feature of the year has been work related to charcoal and producer gas.

The question of producer gas as a satisfactory substitute for petrol has attracted nation-wide attention, and this Department has been represented on the Queensland Government Producer Gas Committee and several subcommittees operating under the chairmanship of the Co-ordinator-General of Public Works.

This Department has also been engaged in research work in charcoal production and testing. An experimental kiln was purchased; charcoal was made from twenty-seven different species, and most of the charcoals were tested out on a truck fitted with producer gas unit. The results have been published.

Nine other producer gas units have been purchased for use on Departmental trucks in the forests.

With increasing public interest in producer gas, and the large number of outfits being used, a very keen demand for charcoal set in, and the Department, to assist in meeting this, purchased further kilns, and also towards the end of the year used pits to supplement production.

Glasshouse Mountains State Forest was the centre for charcoal-burning operations on a commercial scale; here the work was combined with the clearing of areas for plantation purposes.

It is not the Department's desire or intention to undertake large-scale commercial charcoal production, and everything possible is being done to encourage private individuals to produce charcoal.

Occupation of a large part of the time and energy of the Investigations Section staff in producer gas work has necessarily restricted other activities, but services of assistance to the public and research in other directions have been maintained as far as possible.

In the field of *wood preservation*, activities embraced advice to homeowners on anti-borer treatment, experiments with preservation of fence-posts, poles, and piles, against destructive agencies, control of termites and white ants, and investigation of depletion of starch content of certain woods as a means of reducing susceptibility to borers. Investigations into marine borers have been continued.

It is interesting to record that the effective and economical boric acid tank treatment for prevention of borer attack has been adopted at eight leading Queensland plywood mills.

Seasoning work embraced air-seasoning tests of sixteen Queensland species, research into reabsorption of moisture by kiln-dried timbers, advice and assistance to millers regarding installation of seasoning kilns, and testing of samples for moisture content, while ten charges of different species have been dried in the Department's experimental kilns. Nine hundred and fifty moisture content determinations were made, and the results showed an increase in the percentage of properly dried timbers, thus indicating an improvement in trade practice in this direction.

At 30th June there were ninety-eight timber-drying kilns and thirty-one veneer and plywood driers installed at saw-mills and veneer and plywood mills in Queensland.

Utilisation of timbers was furthered in several directions.

Pamphlet No. 1 ("North Queensland Building Timbers and Specifications for Their Use") was published. A series of lectures for correspondence courses in woodworking was prepared for the Central Technical College.

Assistance has been rendered in tests of timbers for paper-making, cooperage, aircraft, tool handles, &c., and the Department has also been represented on the Standards Association in the drawing-up of grading rules for sawn timber.

Studies of relative strengths and properties of plantation and bush grown timbers were continued, and the Department's wood identification service was maintained.

CONCLUSION.

My thanks are due to the staff for loyal and efficient service during the year.

I have, &c.,

V. GRENNING,

Director of Forests.

APPENDIX A.

RETURN OF TIMBER, ETC., REMOVED FROM CROWN LANDS FOR THE YEAR ENDED 30TH JUNE, 1940.

Milling Timbers—		
Hoop and Bunya Pine Ply	7,842,944 superficial feet	
Hoop and Bunya Pine Logs	76,774,332 superficial feet	
Hoop and Bunya Pine Tops	53,311,541 superficial feet	
Kauri Pine	12,386,010 superficial feet	
Cabinet Woods	19,413,797 superficial feet	
Scrubwoods	3,749,275 superficial feet	
Hardwoods	32,981,913 superficial feet	
Cypress Pine	5,988,880 superficial feet	
	212,448,692 superficial feet	
Other Classes—		
Sleepers	332,164 pieces	
Sleeper Blocks	105,950 pieces	
Headstocks, Transoms, and Crossings	524,586 superficial feet	
Girders, Corbels, Piles, and Sills	257,306 lineal feet	
Poles	236,025 lineal feet	
House blocks	265,432 lineal feet	
Fencing Material	152,896 pieces	
Fencing Material	83,753 lineal feet	
Hewn and Bridge Timbers	300,566 superficial feet	
Hewn and Bridge Timbers	3,972 lineal feet	
Mining Timbers	364,849 lineal feet	
Mining Timbers	36,539 pieces	
Fuel	78,920 tons	
Rosewood	103½ tons	
Sandalwood	42 tons	
Mangrove Bark	12 tons	
Sand	7,433 cubic yards	
Gravel	4,680 cubic yards	
Soil	151 cubic yards	
Stone	318 cubic yards	
Charcoal	25,153 bags	
Mulga	10 tons	
Plants	419	

APPENDIX B.

REVENUE COLLECTED UNDER THE STATE FORESTS AND TIMBER AND QUARRY REGULATIONS FOR THE YEAR ENDED 30TH JUNE, 1940.

Districts.	Total.
	£ s. d.
Group 1—South Queensland (Brisbane, Bundaberg, Gympie, Ipswich, Maryborough, Toowoomba, Warwick)	667,255 14 2
Group 2—Goondiwindi, Inglewood, St. George, Stanthorpe	1,342 1 0
Group 3—Dalby	5,388 8 4
Group 4—Charleville, Cunnamulla, Roma	634 18 9
Group 5—Barcaldine, Blackall, *Jundah, Longreach	475 2 5
Group 6—Clermont, Emerald, Springsure	612 17 3
Group 7—Gayndah, Gladstone, Monto, Taroom, Theodore	494 0 11
Group 8—Rockhampton	974 16 9
Group 9—Mackay	1,899 4 2
Group 10—Bowen	1,146 18 8
Group 11—Townsville	1,518 15 11
Group 12—Charters Towers, Ravenswood	509 11 11
Group 13—Hughenden	111 19 9
Group 14—Cloncurry, Boulia, Kynuna, McKinlay	334 15 11
Group 15—North Queensland (Atherton, Herberton, Cooktown, Pt. Douglas, Cairns, Innisfail, Ingham)	200,831 15 10
Group 16—Burketown, Coen, Croydon, Georgetown, Normanton, Thursday Island	49 11 1
Totals	£883,580 12 10
*Muttburra, Stonehenge, Winton	258 2 4
Sandalwood Sales	814 0 3
Sales of Plants, Material, &c.	4,243 3 8
Rents and Grazing Dues	76-10-2
State Sawmills	
	£888,972 9 3
Less Treasury Refunds	612 15 1
	£888,359 14 2
Comparative Totals for Previous Years—	
1936-37.	1937-38.
£669,457	£835,311
	1938-39.
	£764,557 5 4

APPENDIX C.

EXPENDITURE, YEAR ENDED 30TH JUNE, 1940.

Item.	From 1st July, 1939, to 30th June, 1940.				
	Revenue.	Loan.	Trust.	Total.	Per cent.
	£	£	£	£	
Administrative Expenses—					
Salaries	37,144	11,689	..	48,833	..
Extra Living Allowances	678	..	..	678	..
Travelling and Incidentals	5,019	..	..	5,019	..
Total—Administrative Expenses	42,841	11,689	..	54,530	6.3
Reforestation	143,965	132,712	..	276,677	31.9
National Parks	10,567	5,454	..	16,021	1.9
Harvesting and Marketing Operations—					
Log Timber	..	..	382,293	382,293	..
Hewn, Split, and Pole Timber	..	..	82,357	82,357	..
Roads	20,098	10,863	22,449	53,410	..
Total—Harvesting and Marketing	20,098	10,863	487,099	518,060	59.9
Totals	217,471	160,718	487,099	865,288	100

APPENDIX D.

ANALYSIS OF REFORESTATION EXPENDITURE.

Heading.	Expenditure 1939-40.	Expenditure 1st July, 1919, to 30th June, 1940.
	£	£
Plantations	57,232	338,764
Regeneration Areas	19,880	124,351
Nursery Working and Maintenance	10,488	104,137
Forestry Experimental Work	2,699	27,802
Construction of Nurseries, Buildings, &c.	19,763	128,123
Maintenance Capital Improvement	4,677	30,351
Forest Protection	87,665	356,235
Supervision, Miscellaneous Stores, Fodder, &c.	30,261	168,892
Wet Time, Holidays, Recreation Leave, Sick Leave	28,610	127,763
Workers' Compensation and Unemployment Insurance	7,553	31,929
Surveys	4,759	52,018
Purchase of Land and Improvements	26	12,473
Salaries	11,689	48,524
Miscellaneous	3,064	9,515
	288,366	1,560,877

APPENDIX E.

AREA OF PLANTATIONS ESTABLISHED AND NATURAL FORESTS TREATED.

Working Plan Area.	Plantations.				Natural Forests.			
	1939-40.		Total to 30th June, 1940.		1939-40.		Total to 30th June, 1940.	
	Softwoods.	Other.	Softwoods.	Other.	Softwoods.	Other.	Softwoods.	Other.
	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.
Brisbane	..	..	..	..	..	4,220	..	7,676
Brisbane Valley and Nanango	1,218.7	24	8,127.2	472.5	..	423	1,441	9,123
Bundaberg	..	..	..	..	173	3,822	8,725	11,614
Clermont	..	..	..	..	..	9,011	..	24,620
Dalby	..	..	..	..	7,890	2,997	73,095	31,342
Fraser Island	..	..	749.5	161	..	1,133	2,310	12,677
Gympie	374	57	1,272.2	440	..	3,632	..	11,182
Inglewood	..	..	..	..	2,660	..	62,307	24,296
Kilcoy	310.5	2.5	423.7	145	..	1,168	..	3,010
Kilkivan	362.8	25.9	1,295.2	33.9	..	6,547	905	12,891
Mackay	..	..	30.5	..	..	..	..	..
Many Peaks	194	..	599.8	..	..	611	..	611
Maryborough	..	..	..	..	16	18,911	512	44,243
Mary Valley	923	..	6,492.1	6	..	..	347	214
North Coast	253.7	..	2,785.2	584.5	..	6,128	..	20,492
North Queensland	95.1	8.8	839.5	539.6	..	477	..	2,215
Warwick	103	..	855	18.8	..	922	..	3,622
Experimental Areas	..	..	87.3	13.7	..	..	..	..
Totals	3,834.8	118.2	23,557.2	2,415.0	10,739	60,011	149,642	219,828
	Total Planted 1939-40,		Total Area Planted to 30th June, 1940,		Total Treated during 1939-40,		Total Treated to 30th June, 1940,	
	3,953.0 acres.		25,972.2 acres.		70,750 acres.		369,470 acres.	

APPENDIX F.

ASSISTANCE TO LOCAL AUTHORITIES FOR THE CONSTRUCTION OF AND REPAIRS TO ROADS AND BRIDGES.

SUBSIDIES PAID DURING YEAR ENDING 30TH JUNE, 1940.

Shire Council.	Road.	Amount Paid.		
			£	s. d.
(Main Roads Commission)	160/99 Mulgowie-Townson Main Road	45 12 0		
(Main Roads Commission)	159/1 Kilcoy—Kilcoy-Goomeri Main Road Section beyond Jimma	1,000 0 0		
(Main Roads Commission)	159/1 Kilcoy—Kilcoy-Goomeri Main Road—Toll on Timber, Jimma-Kilcoy Section	1,148 13 1		
(Main Roads Commission)	160/6 Eungella Range Road—Toll on Timber	12 17 6		
(Main Roads Commission)	160/58 Toll on timber hauled over McHugh Bridge	77 0 10		
Nanango	160/34 Barker's Creek Road	180 1 10		
Nanango	160/67 Middle Creek Road	80 15 7		
Nanango	160/93 East Nanango Road—Nanango to R. 299, Parish of Avoca	67 7 1		
Nanango	160/93 East Nanango Road—Mt. Stanley Branch	58 17 4		
Nanango	160/96 Upper Yarraman-Maldenwell Road—Nanango Shire Section	106 17 11		
Esk	160/37 Mount Stanley Roads—Maintenance	109 2 3		
Esk	160/37 Mount Stanley Roads—Extension of Western Branch	60 16 7		
Rosalie	160/46 Upper Cooyar Road	91 10 0		
Rosalie	160/48 Mount Binga Road	48 10 0		
Rosalie	160/51 Yarraman-Tarong Road	44 0 0		
Crow's Nest	160/49 Nukku-Crow's Nest Road	70 2 6		
Murilla	159 Dalby—Wongongera to Boorthkoi Road	4 6 11		
Noosa	160/27 Road to R. 392 Como (Wages expenditure by Department in clearing on Shire Road)	34 5 6		
Widgee	160/33 Mary's Creek Road	20 0 0		
Widgee	160/28 Yabba Creek Road	172 13 2		
Widgee	160/17 Amamoor Creek Road	65 0 0		
Widgee	160/25 Coonongibber Creek Road	10 9 6		
Widgee	160/110 Road from Portion 39v to R. 435	10 0 0		
Kilcoy	159/4 Kilcoy—Road to R. 434, Conondale	100 0 0		
Kilcoy	160/107 Monsildale Road	1,974 14 3		
Kilcoy	160/87 Yabba Road	64 19 10		
Caboolture	159/6 Kilcoy—Road from Neurum to R. 1152, Byron	15 0 0		
Tiaro	160 Tiaro—Repairs to Bridge—Road from R. 50 to Gundiah	2 15 0		
Maroochy	160/88 Bell Creek Bridge	71 13 0		
Kilkivan	159/1 Kilkivan—Grongah Road—Dividing Creek Section	119 4 6		
Kilkivan	159/1 Kilkivan—Grongah Road—Maintenance	107 3 0		
Kilkivan	160/31 Planted Creek Road	175 14 10		
Kilkivan	160/38 Manumbar-Kinbombi Road—Main Section	116 4 9		
Kilkivan	160/38 Manumbar-Kinbombi Road—Kabunga Branch	112 11 10		
Kilkivan	160/38 Manumbar-Kinbombi Road—Branch Road to R. 99	83 0 0		
Kilkivan	160/39 Lower Planted Creek Road	10 5 5		
Kilkivan	160/40 Kilkivan-Blacksnake Road	31 12 2		
Kilkivan	160/41 Oakview-Sinal Road	8 2 10		
Kilkivan	160/42 Old Boonara Road to Cinnabar	3 7 2		
Kilkivan	160/43 Reid's Road	7 19 4		
Kilkivan	160/77 Calgoa-Boowoogum Road—Kilkivan Shire Section	4 9 2		
Kilkivan	160/95 McKewen's Road	6 9 9		
Woocoo	160/77 Calgoa-Boowoogum Road—Woocoo Shire Section	12 0 0		
Woocoo	160/78 Old Gayndah Road	54 8 11		
Landsborough	160/15 Road from Curramore School to R. 736, Maleny	100 0 0		
Herberton	160/97 Bell's Crossing Bridge—Cashmere—Mount Garnet Road	30 0 0		
Cairns	160/104 Pine Creek—Road	25 0 0		
		£6,755-15 4		

APPENDIX H.

FOREST RESERVATIONS.

1ST JULY, 1939, TO 30TH JUNE, 1940.

State Forests.	No.	A.	R.	P.
At 1st July, 1939	308	3,054,768	0 14	
Proclaimed 1st July, 1939, to 30th June, 1940	29	97,413	3 14	
Total Reservations at 30th June, 1940	337	3,152,181	3 28	

Timber Reserves.	No.	No.	A.	R.	P.
At 1st July, 1939	305		3,204,074	2 35	
Cancelled	1	1,440	0 0		
Converted into State Forests	13	40,701	2 27		
Areas Selected	14	414	3 20		
Balance	291		3,161,518	0 28	
New Reserves	9		25,804	0 5	
Additions of Adjacent Crown Lands			7,869	0 13	
Totals at 30th June, 1940	300		3,195,191	1 6	

APPENDIX G.

SUMMARY OF FOREST SURVEY WORK—YEAR ENDING 30TH JUNE, 1940.
Class 1—Inspections of Vacant Crown Lands and Timber Reserves.

Reserve.	Parish.	Area in Acres.
Dotswood Holding (part) Vacant Crown Land	Blackfriars, Holborn, St. Giles Cairns	22,000 1,000
Total		23,000

Class 2—Assessment Surveys.

Reserve.	Parish.	Area in Acres.
State Forests 197, 35	Diamondy, Jingi, Jingi, Mannum	17,914
Craigmount Holding	Chahpingah	13,614
Munduram Holding	Targinnie	8,960
State Forest 60	Rundle (proceeding)	
State Forest 117	Apsley	16,080
State Forest 1	Clyde, Moorlands (proceeding)	102,000
Vacant Crown Lands	Tahiti	28,480
Portions 6, 13, 14, 17 to 20	Palmerstone	1,955
Portions 113, 238 to 256, 259 to 262	Rockingham	9,320
Portions 36, 42, 68/9, 74/5, 82, 93/4, 97, 103, 114 to 121, 132 to 141, 143, 150/1, 160, 167/8, 170 to 181, 189, 190 to 195, 197, 198/9, 206 to 209	Japoon	9,427
Portions 379 to 381, 383	Hull	1,030
Timber Reserve 785	Trinity, Sophia	23,053
National Park 226	Bellenden Ker (proceeding)	5,000
Portions 3 ^A , 4 ^A , 4 ^V	Monsildale	231
State Forest 221	Kilkivan	6,400
State Forest 424, 427	Manumbar, Widgee	20,706
		264,170

FIREBREAK SURVEYS.

Reserve.	Parish.	Logging Area.
State Forest 137	Yabba	Foxlowe, Winch, Exchange, Jimna
State Forest 207	Monsildale	Marumba, Davies, Occupation
State Forest 589	Berwah	
State Forest 561	Bribie	
State Forest 3	Fraser Island	
State Forest 258	Cooyar	
State Forest 151	Neumgna	East and West Barker
State Forest 329	Avoca	King, Ryan, Bunya, Central, Camp, North Bunya, Gate, Rocky, Wombi
State Forest 245	Monsildale	East, Wombi West, Gibber, River, Camp, Range, Small, White, Palm, Possum
State Forest 392	Como	Glasgow
State Forest 298	Gallangowan	Porter, Pungun
State Forest 12	Cherbourg	
State Forest 21	Chinchilla	
State Forest 154	Gallangowan	German, Gooroomjam, Camp, Bank, Bunya
State Forest 505	Manumbar	Mynya, Baranbah
State Forest 427	Manumbar	Talamy, A Flat
State Forest 283	Colinton	Claney

TYPE OR SOIL SURVEYS.

Reserve.	Parish.	Area in Acres.
State Forest 154	Vignoles and Brigalow (proceeding)	
State Forest 120	Greenup, Bracker	4,155
State Forest 638	Berwah	2,080
State Forest 589	Berwah (Comps. 14, 18, 19)	220
State Forest 561	Bribie (proceeding)	
Portions 2V, 55A	Bribie	501
Total		6,956

National Parks.

	No.	A.	R.	P.
At 1st July, 1939	146	447,029	2 0	
Proclaimed 1st July, 1939, to 30th June, 1940	32	89,932	3 24	
Total at 30th June, 1940	183	536,962	1 24	
Grand Total of Reservations at 30th June, 1940		6,384,335	2 48	

APPENDIX I.

DISTRIBUTION OF PERSONNEL—SUB-DEPARTMENT OF FORESTRY.

	30th June, 1939.	30th June, 1940.
Salaried Officers	192	196
Other Employees	1,718	1,187
Total	1,910	1,383