1910.

WESTERN AUSTRALIA.

ANNUAL REPORT

OF THE

WOODS AND FORESTS DEPARTMENT

FOR THE

YEAR ENDED 30TH JUNE, 1910.

BY

C. G. RICHARDSON,

ACTING INSPECTOR GENERAL OF FORESTS.

Presented to both Houses of Parliament by His Excellency's Command.

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WOODS AND FORESTS DEPARTMENT.

REPORT BY THE ACTING INSPECTOR GENERAL OF FORESTS.

To the Hon. J. Mitchell, Minister for Lands.

Woods and Forests Department,
Perth, 20th July, 1910.

Sir,

I have the honour to submit my eleventh Annual Report upon the operations of the Woods and Forests Department, for the financial year ended 30th June, 1910.

I have, etc.,
C. G. RICHARDSON,
Acting Inspector General of Forests.

REVENUE AND EXPENDITURE.

The following statement shows the revenue and expenditure of the Department since its inception in 1895:—

Year.	Revenue. £ s. d.	Expenditure. £ s. d.
1st January to 31st December, 1895	3,175 5 2	1,108 5 5
1st January to 31st December, 1896	4,838 11 2	2,020 11 5
1st January to 31st December, 1897	12,320 6 4	3,489 14 4
1st January to 31st December, 1898	30,150 6 3	3,356 5 7
1st January to 31st December, 1899	16,999 11 3	2,438 7 5
1st January to 31st December, 1900	15,525 19 2	2,648 11 10
1st January to 31st December, 1901	18,477 16 2	2,747 6 3
1st January to 31st December, 1902	18,752 11 7	4,301 6 1
1st January to 31st December, 1903	20,478 9 1	3,789 3 4
1st January to 31st December, 1904	20,018 19 4	4,192 16 9
1st January to 31st December, 1905	18,479 18 6	5,089 18 6
(6 months) 1st January, 1906, to 30th June, 1906	10,973 18 4	3,385 1 9
1st July, 1906, to 30th June, 1907	22,783 1 5	6,270 15 2
1st July, 1907, to 30th June, 1908	23,498 13 3	8,801 14 3
1st July, 1908, to 30th June, 1909	29,484 3 8	9,030 12 6
1st July, 1909, to 30th June, 1910	31,549 6 11	8,531 0 9
	297,506 17 7	71,201 11 4

From the foregoing statement it will be seen that to the 30th June, 1910, the revenue exceeded the expenditure by the large amount of £226,305 6s. 3d.

Revenue and Expenditure for the year ended 30th June, 1910.

The revenue derived from the forests of the State for the year under review amounted to the large sum of £31,549 6s. 11d., and is an increase of £2,065 3s. 3d. over that for the previous year. The details of the revenue are as follows:—

	£	s.	d.
Rents of Timber Leases	10,525	6	4
Timber Licenses, Royalty on Timber and Sandalwood	17,180	1	3
Timber Inspection Fees	3,843	19	4

The total expenditure of the Department amounted to £8,531 0s. 9d., being a saving as compared with the previous year of £499 11s. 9d.

THE STAFF.

The staff is comprised of the following officers:—

Head Office:

C. G. Richardson, Acting Inspector General of Forests; F. U. Palmer, clerk; F. A. Goerke, clerk (junior); R. Cooper, clerk and typist; E. O. Barry, messenger; R. R. Marshall; H. S. Brockman, Inspecting Forest Ranger.

Forest Rangers:

R. C. Mackay, Marrinup; J. J. Fitzgerald, Waroona; F. Doust, Bridgetown; G. F. Griffiths, Noggerup; G. Singleton, Sawyers' Valley; E. Kelso, Coolgardie; A. Stevenson, Collie; P. E. Port, Donnybrook; D. Milligan, Muja; H. G. Yelverton, Newlands; W. M. Cusack, Collie; D. McVicar, Greenbushes; F. E. S. Willmott, Bridgetown; W. Donovan, Nannup; T. Steedman, Lunenberg.

Caretaker, Point Walter Reserve, T. W. Allen.

Nurseryman, State Nursery, Hamel, A. McFarlane.

Caretaker Pine Plantation, Ludlow, W. Pennell.

With reference to the work of the Department, I may here state that the officers comprising the staff have, notwithstanding the increased pressure of business, made every effort to keep the work up to date, and it gives me pleasure to be able to place on record in this Report my appreciation of the manner in which they have carried out their various duties.

PINE PLANTING.

Clearing for pine planting on an extensive scale is now in full swing at Ludlow. A camp of 30 men, 40 bullocks, and two traction engines being at work,

and it is hoped that 60 or 70 acres will be ready for this season's planting.

The following is a brief description of the pines that are being planted:—

The Corsican Pine (*Pinus Laricio*).—This tree is a rapid grower, attaining a height of from 100 to 150 feet, with proportionate girth of trunk. It is a very hardy and accommodating tree as regards soil and situation, and it is acknowledged to be in all respects adapted to become valuable for timber production. It forms a handsome, open branched, pyramidal-shaped tree, growing very rapidly and attaining maturity at a comparatively early age. The timber of the Corsican pine is of a whitish colour, coarse in the grain, and well impregnated with resin, very durable and of considerable elasticity. From the experience gained by planters in the Eastern States, this pine holds out great sylvicultural possibilities of being a valuable timber tree in Australia, and may be specially recommended for planting on soils that are below the average in quality.

The Remarkable Pine (*Pinus insignus*).—This very interesting pine is a native of California, throughout which it is found growing in various parts. It was introduced into this State some 20 years ago, principally on account of its very graceful habit, and several fine specimens are to be seen in the neighbourhood of Perth. It is a hardy tree of very rapid growth, and attains a height of from 90 to 120 feet, and forms boles from two to four feet in diameter.

This pine has been largely planted in South Australia, Victoria, and New South Wales, and in these States the demand for the timber, which is used for packing cases, weatherboards, flooring, mouldings, fruit cases, etc., far exceeds the supply. Under ordinary conditions timber fit for milling has been produced in 20 years after planting, and as much as £200 per acre has been obtained for the timber.

The Cluster Pine (*Pinus Pinaster*).—This pine is a large handsome tree, closely resembling the Black Pine in general appearance, and attains a height of from 80 to 100 feet, with trunks of from two to three feet in diameter. No tree of the pine genus is better suited for growth as a crop in coastal districts. In such situations it can withstand the blasting influences of the strongest sea-breeze, and in this respect it is one of the most useful trees. This pine has been largely used in France in covering immense tracts of barren, sandy land, especially the waste country situated to the South of Bordeaux. These areas are composed of drifting sands, and have been covered by thriving plantations of this tree, which are now said to be very valuable, both for the timber and on account of the resin and tar produced from them. The wood is largely used for boards, scantling, packing boxes, and fruit cases.

STATE NURSERY, HAMEL.

The stock of plants raised at the Nursery has, as in previous years, turned out splendidly.

The various kinds and numbers raised for distribution are shown in the subjoined list:—

List of Trees and Shrubs raised in the State Nursery.

Agonis flexuosa		Peppermint (W.A.)	317
Acacia Baileyana		Silver Weeping Wattle (N.S.W.)	1,824
Acacia decurrens		Black Wattle (N.S.W.)	640
Acacia dealbata		Silver Wattle (Queensland)	1,520
Acacia pycnantha		Golden Wattle	1,866
Araucaria Bidwilli		Queensland Pine	225
Araucaria excelsa		Norfolk Island Pine	4,008
Ceratonia siliqua		Carob Bean	2,300
Cupressus (of sorts)		Cypress	5,560
Eucalyptus citriodora		Lemon-scented Gum (Queensland)	—
Eucalyptus corynocalyx		Sugar Gum (S.A.)	6,080
Eucalyptus ficifolia		Red-flowering Gum	2,278
Ficus Australis		Pt. Macquarie Fig	4,016
Ficus macrophylla		Morton Bay Fig	3,160
Lagunaria Pattersonii		Pyramid Tree	1,513
Phoenix dactylifera		Date Palm	430
Pittosporum undulatum		Cheese Wood	950
Schinus molle		Pepper Tree	7,476
Grevillea robusta		Silky Oak	260
Thuya occidentalis		Northern White Cedar (Arbor vitae)	1,608
Laurus Camphora		Camphor Laurel	1,640
Sterculia		Kurrajong	2,140
Robenia Psuedo Acacia		False Acacia	4,216
Melia Adzedarach		Pride of India	—
Salix Aurea		Basket Willow	400
Populus fastigata		Lombardy Poplar	—
Platanus orientalis		Plane Tree	1,400
Populus Alba		Silver Poplar	600
Pinus insignis		Remarkable Pine	86,000
Pinus halipensis		Aleppo Pine	500
Corynocorpus laevigata		New Zealand Laurel	300
Frenella verucosa		Cypress Pine	100
Aberia Caffra		Kei Apple	8,610
		Texas Umbrella Tree	3,976
Acacia Melanoxylon		Blackwood	557
Morus Alba		White Mulberry	6,000
Salix Babylonica		Weeping Willow	200
Tamarix Gallica		Tamarisk	600
Sterculia Acerifolia		Queensland Flame Tree	460
		Total number raised	166,730

From the above it will be seen that during the 12 months ended 30th June, 1910, 166,730 trees were raised at Hamel. This shows an increase in number of 35,736 over the previous year.

DISTRIBUTION OF TREES.

During last season numerous applications were received for trees for planting in public parks, reserves, school grounds, streets, etc., etc., and from settlers for shade and shelter purposes.

The distribution of trees commenced in the year 1906, and since then something like 613,400 trees have been distributed throughout the State.

The following list shows the various public bodies to which the trees were presented and the number that were distributed:—

Agricultural Societies	670	
Caves Board	265	
Cemeteries	480	
Churches	396	
Churches (R.C.)	852	
Government Gardens	2,342	
Hospitals	320	
King's Park, Perth	900	
Lunatic Asylums	1,380	
Municipalities	10,044	
Orphanages	280	
Orphanages (R.C.)	140	
Police Department	118	
Progress Associations	2,365	
Railway Department	840	
Recreation Grounds	930	
Road Boards	16,241	
Schools	7,446	
Settlers' Associations	20,471	
Zoological Gardens	1,090	
		67,570
GOLDFIELDS.		
Churches (R.C.)	94	
Cemeteries	100	
Hospitals	40	
Municipalities	2,010	
Police Department	36	
Road Boards	6,610	
Schools	1,340	
Water Supply Department	3,526	
Progress Associations	721	
		14,477
Total number of trees distributed		82,047

TIMBER INDUSTRY.

The business of the year under review shows a considerable improvement over that of the previous one. All the mills working throughout the South-West are fully occupied, and as there is an increasing demand, at remunerative prices, for our timbers, there appears to be every prospect of a prosperous future for the timber industry of the State.

The construction of the Pinjarra-Marrinup railway line has opened up some fine timber country, and large areas of it have been taken up under saw-mill permit.

The construction of the line from Jarrahwood to Nannup has also opened up a big tract of forest country, and a large area of timber has been taken up under saw-mill permit in this district as well.

The jetty at Busselton, which is the natural outlet for this country, is being extended and strengthened, and it is expected that large quantities of timber will be shipped from this port during the early part of next year.

The building of the railway line from Bridgetown to Manjinup is also responsible for the opening up of a very considerable tract of forest, and in this district, too, some large areas have been taken up under saw-mill permit.

This line will open up some very fine karri forest, and render the belts of this magnificent timber on the Donnelly and Warren Rivers available for the saw-miller.

A notable feature of this year's operations is that large areas of cut-over forest have been taken up under saw-milling permits, thus showing that although large tracts of country have been cut over, they have not been absolutely cut out, as is the popular impression, and that they still contain sufficient timber to justify the erection of mills. The taking up and working of these areas ought to be encouraged in every way by the Government, as in this manner all the timber left behind by the first cutters will be utilised, and the bush cleaned up to the best advantage.

The following table, showing the number of Saw Mills in operation during the year 1909, the number of men employed, the wages paid, and the quantity and value of the timber, sawn and hewn, gives an idea of the magnitude and importance of the industry:—

Number of Mills.	Hands employed.	Wages and Salaries paid.	Quantity of Timber sawn.	Quantity of Timber hewn.	Value of Timber sawn.	Value of Timber hewn.
		£	Super. feet.	Super. feet.	£	£
31	3,406	497,724	133,217,775	38,511,216	475,284	149,762

TIMBER IMPORTS.

The value of the imports of timber of various sizes into Western Australia during the year ended the 30th June, 1909, amounted to £73,364, and for the year ended the 30th June, 1910, the value of the imports amounted to £86,452, thus making an increase of £13,088.

TIMBER EXPORTS.

The following statements, kindly supplied by the Collector of Customs, show the quantity and value of the timber exported beyond the Commonwealth during the years ended 30th June, 1909 and 1910 respectively, and the various countries to which same was exported.

Owing to the fact that no record is kept by the State Customs Department of the different shipments to the Eastern States, I am unable to give these exports in detail for the years under review.

I am informed, however, on reference to the Customs Department in Melbourne, that 29,890,719 super. feet of timber, valued at £203,711, were exported from Western Australia to the Eastern States during the year ended the 30th June last. In addition to this, timber to the value of £742 was similarly exported, the quantity of which was not recorded; thus bringing the total value of the timber exports to the East up to the large amount of £204,453.

Statement showing Quantity and Value of Timber exported during the year ended 30th June, 1909.

Countries to which Exported.	1908–9. Quantities in super feet.	Value £.
TIMBER, UNDRESSED:		
To United Kingdom	18,063,726	119,216
Ceylon	2,231,461	14,851
India	47,914,855	314,296
Mauritius	240,915	1,606
Natal	13,399,938	7,531
New Zealand	14,982,116	99,181
Singapore	261,794	1,746
Argentine	..	..
Belgium	1,500,507	9,853
Egypt	7,842,546	52,284
France	30,480	203
Germany	967,937	6,393
Holland	70,896	472
Java	..	..
Philippines	1,642,992	10,952
Portuguese East Africa	623,916	4,159
Uruguay	4,098,516	27,323
	101,812,595	670,066
TIMBER—LOGS NOT SAWN:		
Germany	984	6
Total	101,813,579	£670,072

As this statement only includes the timber exported beyond the Commonwealth (*vide* preceding paragraph) the value of the shipments to the Eastern States, which amounted to £163,638, must be added to it. This brings the total value of the exports for the year 1909 up to £833,710.

Statement showing Quantity and Value of Timber Exported during the Year ended 30th June, 1910.

Countries to which Exported.	Quantities in Super. feet.	Value. £
Timber—Undressed—Other.		
United Kingdom	9,684,592	64,556
Cape Colony	2,208,709	13,568
Ceylon	183,822	946
India	51,329,365	34,256
Mauritius	289,848	1,932
Natal	2,564,634	15,835
New Zealand	11,435,299	75,911
Singapore	534,324	3,561
Argentine	3,891,708	25,696
China	55,308	369
Belgium	919,125	6,118
Brazil	2,207,664	14,718
Egypt	11,203,661	74,691
France	—	—
Germany	283,339	2,360
Java	2,400	31
Philippines	79,968	534
Portuguese E. Africa	4,190,460	27,937
Uruguay	5,788,848	38,592
Total	106,853,074	708,611
Timber—Logs not sawn.		
India	685,891	4,403
Argentine	75,000	500
Portuguese E. Africa	51,600	344
Total	812.491	5,247
Grand Total	..	713,858

From a comparison of the foregoing returns, it will be seen that during the year ended the 30th June, 1909, the value of the timber exported amounted to £833,710, and that for the same period ended 30th June, 1910, the exports, including those to the Eastern States, amounted to £918,311; thus showing an increase of £84,601.

SANDALWOOD INDUSTRY.

During the early portion of the period under review, the sandalwood industry experienced a serious decline, prices falling to below £6 per ton f.o.r. Fremantle. As this price only barely covered expenses, the production became very limited until a marked revival took place towards the end of the year and still continues, consignments of good quality fetching over £8 per ton.

Two new areas have been made available, in addition to those opened last year, at Cardunia and Wallowrie, by the extension of the timber tramways operating on the Eastern Goldfields; the wood is of high standard of quality and averages well with that obtained off the previously culled areas.

Although heavy consignments have been railed, the demand is still active and there is every indication of good prices being sustained, prices for forward delivery being about £8 per ton.

In comparison with last year the prospects of the industry appear more promising, as at the close of last year a very serious fall had taken place, which was carried to the period under review.

The royalty of 5s. per ton, although producing a fair revenue, could with advantage be increased, as this State produces a very large portion of the world's supply, and although at the time the present royalty was imposed an outcry was raised, subsequent events have proved it to be uncalled for.

The following statement shows the quantity and value of the Sandalwood exported from the State during the years ended the 30th June, 1909 and 1910 respectively:—

Countries to which exported.	Year ended 30th June, 1909.		Year ended 30th June, 1910.	
	Quantity. cwts.	Value. £	Quantity. cwts.	Value. £
India	5,942	2,273	3,943	1,815
Hong Kong	78,160	30,853	70,396	30,647
Singapore	2,498	968	12,768	4,949
China	31,244	11,796	26,510	9,870
Totals	117,844	45,863	113,617	47,281

From the above statement it will be seen that for the year ended the 30th June, 1909, the value of the sandalwood exported from Western Australia amounted to £45,863, while the exports for the year ended the 30th June, 1910, amounted to £47,281; thus showing an increase of £1,418.

The revenue derived from royalty on sandalwood is still satisfactory, and this year amounted to £1,185 6s.

Although large areas of sandalwood country have been cut out as regards all trees capable of providing wood of marketable dimensions, large areas of fresh country are being opened up by the construction of either State railways or timber tramways, and I do not think we need fear any great falling off in the supply of this valuable wood for many years.

When inspecting the cut-out areas on the Coolgardie Goldfields recently, I was much impressed with the manner in which sandalwood is reproducing itself by natural regeneration, a great number of healthy young trees being seen in all directions.

I am quite convinced, from what I have seen, that the cut-out country will, within a comparatively few years, re-afforest itself by natural means, and provided that it is not too heavily stocked, will produce a valuable crop of sandalwood for the use of future generations.

MALLET BARK EXPORTS.

The following statement shows the quantity and value of mallet bark exported during the years ended 30th June, 1909 and 1910. No record being kept by the State Customs Department of shipments to the Eastern States, this statement only shows what was exported beyond the Commonwealth. On reference, however, to the Customs Department in Melbourne, I find that 27,239 hundredweight of bark, valued at £12,894, was exported to the Eastern States during the year ended 30th June last; thus bringing the total exports for the year referred to up to the large sum of £83,488.

Countries to which Exported.	Year ended 30th June, 1909.		Year ended 30th June, 1910.	
	Quantity.	Value.	Quantity.	Value.
	cwts.	£	cwts.	£
United Kingdom	21	13	201	111
Belgium	9,050	3,393	32,710	12,307
Germany	116,101	43,498	150,008	58,176
Total	125,172	46,904	182,919	70,594

From the above statement it will be seen that the export of mallet bark is on the increase. The value of the exports for the year ended 30th June, 1909, amounted to £46,904, while the exports for the year ended 30th June last, including those to the Eastern States, amounted to £83,488; thus showing an increase of £36,584.

MANGROVE BARK.

The utilisation of the bark of the mangrove for tanning purposes is now attracting attention, and an endeavour is about to be made by a syndicate to turn it into a marketable commodity.

This tree is found growing in large quantities along our North-West coast, and is said to extend from Exmouth Gulf to Wyndham in a strip varying from a quarter to three miles in breadth. If this is so, it is estimated there must be something like half a million tons of bark awaiting the stripper.

In Queensland the bark of a species of mangrove has been proved to be of considerable value for tanning purposes, and a large industry has arisen out of the bark obtained from it, large quantities having been shipped to Germany.

If the tree which has been discovered in the northern portion of this State is the same kind as that found in Queensland, it will prove a valuable additional asset and assist in the development of the northern portions of the State.

Should this bark turn out to be of marketable value, steps should be taken to regulate the stripping, and a royalty of so much per ton should be imposed. This would be the fairest charge, and could easily be collected before loading at the port of shipment. In order to regulate the stripping, a stripper's license of a nominal fee should also be charged.

FIREWOOD AND MINING TIMBER INDUSTRY ON THE GOLDFIELDS.

On the Eastern Goldfields a slight decrease in the consumption of firewood on the Kalgoorlie-Boulder mines, as compared with last year, has taken place. This is attributed to the fire at the Perseverance Gold Mine, in November last, which destroyed all the treatment plant, and caused a temporary decline in the demand of nearly 180 tons of firewood per day.

The consumption of firewood on the mines within the Golden Mile, for the year under review, was 474,434 tons, of the value of £292,753.

The importance of the Timber and Firewood Industry on our Goldfields is shown in the following table:—

Table showing Timber Tramway Companies in operation during year under review, hands employed, wages paid, quantity and value of timber.

Name of Timber Tramway.	Hands employed.	Wages and Salaries paid.	Miles of Rails laid during year.	Total Mileage.	Quantity of Timber cut (in tons).	Value.
		£				£
Gwalia	70	13,000	11	20	31,154	16,778
Lancefield	120	26,600	26	32	47,895	37,397
Lakeside	240	46,000	25	37	113,095	72,019
Westralia Timber & Firewood Co.	246	45,860	10	48	113,112	73,063
W.A. Goldfields Firewood Supply	562	112,200	62	64	226,227	143,082
	1,238	243,660	134	201	531,483	342,339

The above table does not include the firewood required for domestic purposes, which at a rough estimate must amount to about 23,500 tons per annum for Kalgoorlie and Boulder district.

The consumption of mining timber for the period under review was approximately 12,400 tons, for all sizes and classes of local salmon and gimlet gum.

Outside the Boulder belt of mines, the centres that call attention as consumers of firewood are as follows:—

Gwalia Group.—These mines continue to draw their timber supplies from the country operated on by a narrow gauge tramway extending in a general S.S.W. direction from Gwalia for about 20 miles into the mulga forest. The consumption of firewood for the year is 31,154 tons, and for the previous year 29,578 tons; showing an increase of 1,576 tons.

The supply from the zone now under operations will satisfy the present demand for over three years. After which time a more comprehensive scheme of supply will have to be entered upon.

The smaller mines around this district mostly draw their timber supplies by road from the country north of Leonora.

Lancefield.—A light tramway, 24in. gauge, 22lbs. rails, running in general easterly direction, is the means of transport from the forest to the mine. The consumption of fuel is the largest on any individual mine outside the Boulder mines. The country is poorly timbered; mulga (*A. Aneura*) is the dominant species, with a few scattered mallees (*E. prosopis*). The average cut is a little over 800 tons per square mile, and as the consumption is 47,895 tons, an area of 59 square miles is cut over annually to maintain this supply.

Southern Cross and Norseman.—These are two mining centres that, in the near future, are likely to considerably increase their consumption of both mining timber and firewood. Both centres are connected with the State railway system, and at the present time the Norseman mines draw a large proportion of their supplies from a siding along the line. The Southern Cross mines are scattered over a much larger auriferous area, extending 30 miles south and 30 miles north of the railway; thus having a larger forest area to cut over, supplies are not likely to be restricted for many years. Both these districts are heavily timbered, and when present supplies fall short it only becomes a question of putting the mines into railway communication with the adjacent forest.

Murchison Goldfields: Cue and Day Dawn.—These mines are the largest consumers of firewood and mining timber on the Murchison Goldfields. They are supplied from the timber tramway extending Eastward from Nallan for about 22 miles. About 26,000 tons are brought into the mines by rail, and a small quantity is also brought in by teams. The forest is poor and cuts out rapidly. Visible supplies are, however, ample for the requirements of several years ahead.

Sandstone-Black Range.—The construction of the railway line joining this centre with the State rail-

way system has provided for an ample source of supply for the fuel and timber requirements of this district, besides considerably reducing the cost of these two most necessary adjuncts to the mining industry. The railway traverses a belt of heavy mulga forest, which ensures a reliable source of supply.

Meekatharra.—This centre has considerably increased its consumption, and there is every indication of this being still further increased. The railway now under construction will be the means of providing a constant supply of firewood, which under the old conditions of haulage by road was becoming expensive and unreliable. Big mining timber at this centre, as well as most of the centres on the Murchison, is very scarce and will have to be brought from the State Forest reserves at Three Springs and Mullewa. This now becomes possible, as railway communication between these State Forests and the principal mining centres is an accomplished fact, and it may thus be expected that much heavier drain will in future be made on these forests for that class of timber.

The supplies of timber and firewood for the other mining districts on the goldfields call for no special comment, no developments of any marked importance having taken place, with the exception of Wiluna and Lawlers, which may in the near future find it necessary to follow the example of Lancefield and Gwalia, and provide tramway facilities for maintaining their supplies.

The continual alienation of State forests and timber country for agricultural purposes causes some anxiety as regards the future supplies of mining timber. Firewood supplies, however, are greatly dependent upon the advance of science towards obtaining a maximum of power from a minimum of fuel, as the production and use of natural oil, gas, and electricity are coming more into use every day and taking the place of wood. The utilisation of the sun's energy, radium, the tides, etc., opens up great possibilities of new sources of power, and there is every reason to expect in the future a decrease in the use of wood for fuel. In fact, in parts of America where large plantations have in the past been formed for firewood, it is now considered unwise to go in for further plantings with the sole idea of growing wood for fuel.

RE-AFFORESTATION.

This important question is now receiving the attention of the Department, and an area of typical Jarrah country, which has been reserved for the purpose near Waroona, on the South-Western Railway line, is now being treated.

The following extract from a recent New South Wales Forest Commission's Report on this subject is so applicable to this State that I quote a portion of it. The re-afforestation methods now being carried out in this State are upon the same lines as those mentioned in the second paragraph of the report quoted:—

"Hitherto the conditions under which the forests in the State have been worked have led to the depreciation of their standard value and permitted only a small proportion of that natural reproduction which would have ensued under more intelligent treatment. These conditions allowed the best trees of each class to be felled and removed, leaving the crooked, overmatured, and other useless growths to remain standing as breeding places for white ants; the forest floor meanwhile being littered with confused masses of fallen trees and debris to act as feeders of bush fires; at the same time unrestricted grazing, even at the critical periods of seedling growth, has been permitted, and many acres of land better suited for forestry than for settlement have been alienated. A continuance of this state of affairs can only lead to the practical extinction of such timbers, world-renowned for engineering and other purposes, as ironbark, tallow wood, grey gum, etc.

"Fortunately for the State, however, practically the whole of the hard woods and the inland Cypress pine, which form a large percentage of the valuable timbers indigenous to New South Wales, possess in a striking manner the characteristic of natural reproduction, so that the problem of re-afforestation is to a large extent economically simplified. All that is required, in the majority of instances, is to aid natural re-afforestation and improve the forests, and the treatment we recommend would comprise the destruction of overmatured and inferior trees, the judicious thinning of superabundant growths, and the cleaning up and burning off of debris, together with reasonable restriction of grazing during the initial stages of re-afforestation. We are of opinion that if this treatment were vigorously and continuously applied, the timber yield of the forests would eventually be at least eight times that which would ensue under unaided natural conditions.

"No re-afforestative treatment, however, will prove a success unless the permanent establishment of our forest reserves is decided upon, and to be fully successful it is, we are convinced, essential that the control of these lands, particularly in matters relating to grazing, and the regulation and use of fire, should be vested in the Forestry Department or organisation. In this connection we would invite attention to the evidence of the Acting Chief Forester (see 11925-35) in which a number of cases are illustrated showing that forest reserves, after being subjected to improved treatment, at considerable expense to the State, have been revoked and alienated in the interests of settlement. It is, we think, of the utmost importance that re-afforestative work should be continuous, and that the forests should not be partially dealt with and then left without any subsequent care and attention."

From the foregoing, it will be seen that the question of re-afforesting the cut-out forests of the Eastern States is a simple one, and as the hardwoods of this State also possess in a remarkable degree the powers of natural reproduction, the question of re-afforestation here is equally simple, and really resolves itself into a matter of mere funds and the protection of the areas treated from fires.

RE-AFFORESTATION ON THE GOLDFIELDS.

The question of experimental re-afforestation on the Eastern Goldfields is now receiving consideration, and it is the intention of the Department to commence operations on a small and inexpensive scale in the vicinity of Coolgardie and Kalgoorlie.

Fortunately for the Goldfields all the trees indigenous to them possess, in a remarkable degree, the powers of natural regeneration, so that the problem of re-afforestation is a comparatively simple one.

All that is necessary is to aid natural regeneration by desuckering the old stumps, thinning out the belts and patches of seedlings which have grown too thickly, and to prevent unrestricted grazing.

On all the cut-out areas which I have inspected during the last few years, the evidences of natural regeneration are very marked, a healthy, vigorous growth of seedlings and saplings having sprung up on all sides. This young growth, within a comparatively few years, promises to provide a much larger and better supply of firewood than that which existed before, as instead of a large percentage of the wood being rotten and hollow through being overmatured, it will all be solid and sound.

No re-afforestative measures will, however, prove successful if the unrestricted grazing of goats and sheep is permitted, and in the immediate vicinity of the Goldfields towns the harm caused by grazing is only too apparent, all the seedling growth having been completely destroyed. I think, however, little harm need be anticipated to the Goldfields timber areas as a whole from the grazing of goats, as these appear to confine their operations to the immediate vicinity of the towns, but the unrestrained grazing of large numbers of sheep throughout the areas in question will, without doubt, prove most disastrous to successful re-afforestation.

In the treeless prairie States of America, the various Eucalypts are very largely planted, and owing to their extraordinary rapidity of growth, yield an early supply of fuel. When planted for this purpose, the young trees are usually set either 8 by 8 or 6 by 10 feet apart, and cultivated for about two years after being set out.

At about seven years old the trees are cut to the ground for firewood, and may be cut every six or eight years afterwards for the same purpose. The yield from each plantation is usually 50 to 75 cords of four-foot wood per acre. One 17-acre groove formed in 1880 and cut for the third time in June, 1900, produced 1,360 cords, an average of 80 cords of four-foot wood per acre, the price received by the owner being $2.50 per cord at the stump. The dimensions attained in good soil a short time after being cut are often remarkable. In one grove planted in 1885 and cut in 1893, there were in July, 1900, some trees two feet in diameter, and many over 100 feet in height.

From this system of coppicing, it will be seen that the yield per acre is very great, and as most species of Eucalypts, including those indigenous to the Goldfields, possess in a remarkable degree the power of throwing out shoots when cut to the ground, it would be a very simple method of producing timber for fuel on the fields. The only difficulty, in fact, would be in making the cutters fell the trees close to the ground, so as to induce the growth of sprouts from the collar of the stump and the root. These shoots would make very rapid growth owing to the fact that they would have an already developed root system, capable of supplying large quantities of nourishment.

INSPECTION OF FOREST COUNTRY BEFORE SELECTION.

The inspection of timber country before the land is allowed to be selected is one of the most important functions of the Department.

This is the only way to prevent large areas of forests being alienated and the timber destroyed.

In the early days of selection, before there was any inspection as regards timber, large areas of valuable forest lands were taken up under Conditional Purchase, Homestead Farm, etc., and the timber ruined by ring-barking.

During the year under review five hundred and fifty applications were examined and reported on by the various Forest Rangers.

This entails a great amount of careful inspection and travelling on the part of the field staff, but it is the only way to protect a large percentage of our forests from being alienated.

CYPRESS PINE FORESTS.

The discovery of large areas of Cypress Pine forests in the Kimberleys promises to open up great possibilities for the Northern portions of the State, and to add to the timber wealth of Western Australia.

This pine which is, no doubt, of the same species as that found in Queensland, viz., *Callitris robusta*, is a very valuable timber.

It attains a height of from 70 to 100 feet, with a diameter of from 18 to 24 inches. The wood is distasteful to the generality of insects that attack timber, and is said to be white-ant resisting. It is hard, heavy, light-coloured, pleasantly scented and fit for building purposes, furniture, flooring, etc., etc. The specific gravity is about 0.691 when dried, and it weighs about 43lbs. to the cubic foot. In Queensland it is considered to be one of the most durable timbers, and it neither warps, twists, nor shrinks in seasoning. Experiments made at Port Darwin prove it to be one of the most valuable teredo-resisting timbers to be found in Australia.

It is reported that there are no engineering difficulties to overcome in exploiting this forest, as the character of the country is said to be almost entirely flat. It extends to a salt water arm of Cambridge Gulf, about 12 miles away, which is said to be 2½ to 6 fathoms deep, and provides a suitable site for a wharf. The class of timber found in this forest is alleged to be very fine. In fact, in the report of Mr. Stock Inspector Halley, who reported thereon, he states that he is acquainted with all the Cypress Pine forests on the Warrego River in South-Western Queensland, but has never seen any approaching in extent or carrying the same wealth of timber as this one. He also adds that he has had experience of the white-ant resisting properties of this wood, and states that this insect pest will not touch it. All the buildings and stockyards, he adds, on the Warrego are built of this timber, as no other would withstand the ravages of the white ants.

On this account, if from no other, the Cypress Pine forests in question should prove of great value to the Government for use in the construction of the public buildings, stock yards, etc., in this part of the State.

RESERVATION OF FOREST AREAS.

Recognising that it is most necessary and important that in every country extensive reserved areas of forests should be dedicated to forestry, and retained by the State for all time, the Hon. the Minister for Lands has had large areas recently set apart. Such areas should be preserved intact, and therefore settlement should not be permitted within their boundaries. Wherever possible, these reserves should embrace the sources of rivers and water courses, and where possible natural boundaries, especially those afforded by

creeks, should be secured. This provision would leave the State the control of our rivers and streams. Such reserved areas might, under proper restrictions, be leased out to pastoral tenants, and thus obtain a revenue without injury to forest interests.

The most serious menace to the existence and permanency of our forests is the present rush for land, and the difficulty in preventing settlement from slowly but surely encroaching upon the forest areas.

The hewer and the saw-miller combined will not cause a tithe of the damage to our forests as the selector, for although the former's methods of cutting may be wasteful, they at least after having cut what timber they require, relinquish the land and allow Nature to re-afforest it; whereas the latter not only denude the land of timber, but their descendants prevent timber from ever growing upon it again.

In my opinion, no timber country, even if it is cut out or is only a third class bush, should be alienated, for if land is allowed to be selected because it happens to be denuded of marketable timber to-day, there will, in the course of time, be no lands belonging to the State for our forests to grow on.

Once Jarrah country always Jarrah country should be our policy, and unless this is adhered to and the land suitable to the growth of Jarrah guarded with the most jealous care, a large percentage of our forests will gradually be selected and become private property.

The time has now arrived when our forest lands should be subjected to a careful classification survey, all the land suitable for selection excluded therefrom, and the remaining country suitable to the growth of timber dedicated to forestry for all time.

The following return shows the existing Saw-mill Permits that have been granted under "The Land Act, 1904."

No.	Name.	Area. Acres.	District.
1/11	Whittaker Bros.	20,000	Murray.
3/11	J. M. Ferguson, Ltd.	2,370	Wellington.
8/11	Bunning, Robert	4,700	Wellington.
9/11	Bunning Bros.	10,000	Wellington.
10/11	Sexton, W. B., & Drysdale, S.	21,500	Nelson.
12/11	W.A. Jarrah Saw Mills, Ltd.	120,000	Nelson.
13/11	Swan Saw Mills, Ltd.	2,633	Preston.
14/11	Swan Saw Mills, Ltd.	9,000	Preston.
15/11	Bunning, Robert	5,300	Wellington.
16/11	Adelaide Timber Co,. Ltd.	12,000	Wellington.
19/11	Swan Saw Mills, Ltd.	1,000	Wellington.
21/11	Elkin, John George	5,300	Wellington.
25/11	Bunning Bros., Ltd.	10,000	Wellington.
26/11	South-West Timber Hewers' Co-operative Society, Ltd.	17,000	Collie.
27/11	South-West Timber Hewers' Co-operative Society, Ltd.	20,000	Marrinup.
30/11	Wheatley, Thos.	9,000	Nelson.
33/11	Young, Chas.	75,000	Kimberley.
34/11	Port, Honey, & Co., Ltd.	10,000	Murray.
35/11	The Timber Corporation, Ltd.	9,000	Nelson.
36/11	Bunning Bros.	10,000	Wellington.
37/11	Lewis & Reid	6,000	Wellington.
39/11	The Timber Corporation, Ltd.	75,000	Nelson.
40/11	Ferguson, Duncan	20,000	Kimberley.
41/11	Thompson, R. A., & John de Baun	75,000	Kimberley.
42/11	Lyall, John W.	20,000	Nelson.

INSPECTION OF TIMBER FOR EXPORT.

The following table shows the quantity of railway sleepers and other timber inspected and branded by the various inspectors of the Department during the year ended 30th June last, and the countries to which same were sent.

During the year above-mentioned inspection fees to the amount of £3,843 19s. 4d. were collected by the Department.

Country to which exported.	Sleepers (number of).	Piles, Beams, Scantling, etc., in Loads.
Ceylon	61,045	
Karachi	501,589	
Bombay	362,095	2,497
South America	21,212	
New Zealand	173,643	2,728
Soudan and Egypt	13,941	
South Africa	278,679	
South Australia	224,676	3,197
Suakim	28,152	
Singapore	20,575	
Madeira	78,198	
United Kingdom	72	
Calcutta	4,010	
Manilla	667	
Antwerp	2,442	
Mauritius		202
	1,770,996	8,624

RE-PLANTING JARRAH FORESTS.

It has been urged of late by some that the modern scientific methods of forest conservation should be applied to our forests, and that they should be replanted when cut out. Supposing it were practicable to do this, the outlay would be enormous and the result very problematical. First of all, our forests are never cut out in the usual acceptance of the term, they are merely cut over, a log being taken out here and there, and therefore a sufficient clearance is not made for young plantations to be formed. Again, assuming that a large tract of country had been replanted at considerable expense, how is it to be protected from devastation by bush fires. It is impossible to do this. No fire breaks that might be made would protect them, as burning pieces of bark, etc., are frequently carried long distances by the wind.

Again, at the present time, when the Crown lands of the State are being rapidly changed from virgin bush to cultivation, forestry, upon scientific lines, if not altogether impracticable, is at least, extremely premature. It is not a business proposition for the Government to expend thousands of pounds in thinning, pruning, replanting, and protecting forest lands and then alienate them at a nominal sum per acre, as has been done in the Eastern States. In years to come when the forests of Western Australia have narrowed down to certain clearly defined areas, out of which all

the land suitable for cultivation has been selected, then forest reserves could be set apart, dedicated to forestry for all time, and the modern scientific methods of conservation applied to them. Even then, with high-priced labour, it would not be a business proposition, for the cost would be so great that the country in order to recoup itself, would have to put such a price on its timbers as would exclude them from the markets of the world, or sell at figures much below the cost of production. Of course, this argument does not apply to European forests or the forests of countries where there is a large peasant population, and labour is cheap and the timber more valuable than here.

Another point to be remembered is that, at the present time and for years to come, the popular cry will be for the development of our agricultural and mineral resources. This will entail the expenditure of large sums in building railway lines to open up our farm lands and aid in the development of mining, etc., and I do not believe the public of Western Australia would allow large sums of money to be spent on experimental work in our forests when these more pressing works are desired.

The cheapest improvement work that can be done in our forests is to remove the very large percentage of useless timber in them, viz., the dead and dying trees and those of faulty and branching growth, which will never develop into marketable timber and are only fit for firewood. These are, at present, while worthless, in occupation of the land, whereas if they were removed, room would be made for successional growth. Even such work, however, cannot be done for nothing, and as I have said before, the position is this—is the State, with all its lands being greedily sought after by the selector, prepared at the present time to expend large sums of money annually in improving its forest lands, and then afterwards alienate them under the Conditional Purchase clauses of the Land Act, at a nominal sum per acre. The work suggested is the cheapest that could be done in the interests of our forests, and if one reflects for a moment and realises the vast areas to be treated, I think the conclusion must be arrived at, that, if even this simple work will cost so much, the more elaborate methods of forest conservation are simply impracticable at present.

The proper way to save our forests is to protect them, and restrict the cutting of those which now exist. In fact, the protection of our timber areas is the solution of the whole question, for experience in the Eastern States has proved that Nature, if given a chance, is so lavish in the reproduction of the Eucalypts, that replanting is unnecessary, and this protection can be done with the aid of an efficient staff of forest rangers. The European methods of scientific forestry would be as much out of place in Western Australia as our methods would be in Germany or France. What we should do is to combine the general principles of forestry, which are true all the world over, with the methods applicable to the Australian bush.

WASTE OF TIMBER.

Timber is required for a great variety of purposes, is one of the things that man cannot do without, and trees must be cut down to supply it. It would not only be wrong but useless to stop the cutting of timber, as it could not be stopped without causing considerable injury—not only to those engaged in an important industry, but to the State as a whole. The question is not one of hoarding trees up for all time, for every tree must eventually die, but of saving the forest by restricting the cutting of the trees. If we wish to retain our forests, the timber as it arrives at maturity should be cut in such a manner as to make certain of future crops following. It is true, no doubt, that the existing methods of falling are wasteful, but this is not because those engaged in the industry are more rapacious or less careful of public interests than others, but because there is so much timber in this State as compared with the population that it does not pay the timber man to take more than the best of the timber felled. He cannot ply his calling unless at a profit, and consequently although there is considerable waste in falling, it is, in many instances, impossible to avoid it altogether. No doubt, however, as population and the demand for timber increase, the waste will decrease, and more consevative methods of falling will come into general use in our forests.

With regard to the waste at the mills, I think, taking everything into consideration, that it is not so great as may appear to the casual observer or the uninitiated.

It must be remembered that the various saw mills are now cutting up the product of primeval forests, which contain a very considerable proportion of timber that matured many years ago, and which has been deteriorating ever since, and which, when felled, is found to be pipey, shaken, and faulty in a variety of ways. Consequently, when it is cut up at the mills, there is a considerable amount found to be valueless, which would not be so had the forest been exploited when in its prime, and which would appear as waste in any forest. Also in the production of all sawn eucalyptus timber, a certain proportion of waste is inevitable, namely, the face-cuts, edgings, sap, heartwood, etc., which could only be used for firewood or charcoal, and if there is no demand for these, it can, of course, only go into the fire heap.

A large proportion of the timber burnt is, therefore, only stuff that is unsaleable at present, and as there is little or no local demand for it, and it is considered too faulty for export, it has to be got rid of.

It seems to me that this is a question that will right itself as population increases and new industries are established, and that in the future there will be a local demand for much of the timber that has now to go into the fire-shoot.

The various timber companies at present operating in this State are fully alive to the advisability of minimising the waste of timber as much as possible, but as neither a large market at home nor abroad can be found for small scantlings, pickets, etc., the waste is unavoidable, and cannot be prevented.

FOREST FIRES.

In this State the forest fires are not so exceedingly destructive as in other parts of the world, nor do they, as there, destroy vast numbers of standing trees. Nevertheless, they cause considerable injury to the seedling and sapling growth, and there is no doubt that the injury caused to trees in their early youth by fire is mainly the cause of the various faults and defects that are found in the matured timber.

One great injury caused by fire is that re-afforestation by natural means, which is always going on in our forests, is very much checked by the young seedlings and saplings being burnt down. The recuperative powers of the eucalypts, however, are so wonderful that it only requires time to rectify the damage done, and although the young growth may have been

burnt down to the ground, Nature will soon re-assert herself, and reproduce the species by sending out fresh shoots and suckers from the remaining roots. In this way, although considerable injury is done, Nature is always striving to repair the damage, and to any one who travels through our forests there is ample evidence of the success which has attended her efforts.

The reproductiveness of our indigenous timbers is one of the great advantages, in addition to that of climate, which Australian forests possess over those of Europe and America. The coniferous and broad-leaved trees of the old world do not possess in such a remarkable degree the wonderful recuperative powers of our eucalypts, and consequently fire has a much more disastrous effect, devastating large areas and killing the timber outright. If fires could be kept down altogether, the fertility of the soil would be improved, and the rate of growth would be much more rapid, the reproduction of timber would be more successful, the final stand of trees and yield per acre in loads would be higher, and the quality of the timber would be better.

In districts where fires are likely to break out, and would prove hard to stop when once started, steps should be taken to confine them to the smallest possible area. In order to do this it would be necessary to make fire-breaks, but it is questionable whether in our forests breaks will of themselves stop fires from spreading. They may make it possible, however, to confine a fire to a certain area, and they can be used to burn back on to. The breaks should be about one chain in width, and everything inflammable removed and the ground made as clear as possible. These breaks could be best made along old disused tracks and abandoned timber tram lines, and should be constructed in the early spring, when the danger from the fire spreading would be least.

The prevention of bush fires is a big and difficult undertaking at the best, and one that would require the expenditure of very large sums of money. Forest fires have been prevalent ever since the earliest days of settlement, when it used to be the custom of the blacks to set fire to the bush in order to facilitate hunting. Now settlers keep up the practice in order to improve the grazing, and the fact that the selectors throughout our timber areas have an actual incentive to fire the forest renders the work of fire prevention doubly difficult.

It would be difficult to formulate a scheme of fire protection which would apply to our forest areas as a whole. To be practicable, a scheme of protection would require to be suited to local conditions, such as the character of the country, closeness to settlement, and the attitude of the local settlers. In any scheme, the general idea should be to strictly enforce the Bush Fires Act, and to enlist the sympathies of the settlers, who might then be relied upon to assist in the case of an emergency.

By Authority: FRED. WM. SIMPSON, Government Printer, Perth.