

1936.

—
WESTERN AUSTRALIA.

REPORT

ON THE OPERATIONS OF

The Forests Department

FOR THE

YEAR ENDED 30th JUNE, 1936

BY

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CONSERVATOR OF FORESTS.

PERTH :

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LIST OF BOTANICAL NAMES OF LOCAL SPECIES REFERRED TO IN THIS REPORT.

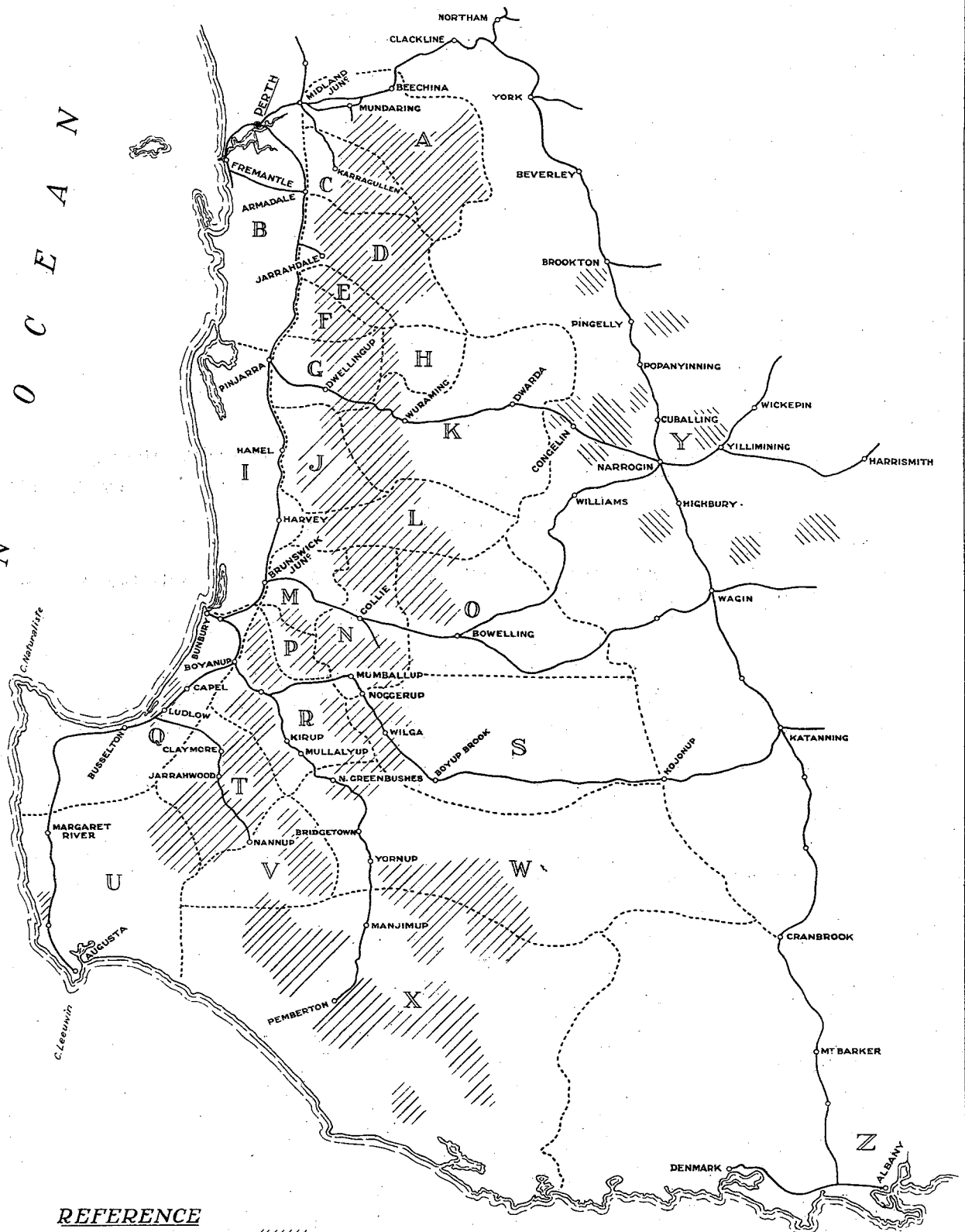
- Jarrah (*Eucalyptus marginata*).
- Karri (*Eucalyptus diversicolor*).
- Wandoo (*Eucalyptus redunca*, var. *elata*).
- Tuart (*Eucalyptus gomphocephala*).
- Marri (*Eucalyptus calophylla*).
- Blackbutt (*Eucalyptus patens*).
- Sandalwood (*Santalum spicatum*).
- Sheoak (*Casuarina Fraseriana*).
- Bullich (*Eucalyptus megacarpa*).
- Banksia (*Banksia verticillata*).
- Brown Mallet (*Eucalyptus astringens*).
- Blackboy (*Xanthorrhoea Preissii*).

KEY TO DISTRICTS AND SUB-DISTRICTS.


Division.	District or Sub-district.
I.	Q Busselton.
	U Margaret River.
II.	A Mundaring.
III.	G Dwellingup.
	F Huntly.
	K Wuraming.
	H Duncan's.
IV.	N Collie.
	M Worsley.
	O Muja.
	P Wellington.
V.	R Kirup.
	S Noggerup.
	W Bridgetown.
	Y Nannup.
	T Jarrahwood.
VI.	X Manjimup.
VII.	Y Narrogin and balance of Crown Lands in Agricultural Area.
VIII.	D Jarrahdale.
	C Karragullen.
	E Solus.
IX.	B Metropolitan.
	Z Albany.
X.	J Willowdale.
	I Hamel.
	L Mornington.


(See map on opposite page.)


I N D I A N O C E A N



REFERENCE

State Forests ——— shown thus 

Timber Reserves - Mallet " " 

District Boundaries ——— " " 

4

Forests Department,
Perth, 7th September, 1936.

The Honourable Minister for Forests.

Sir,

I have the honour to transmit herewith my Report on the operations of the Department for the year ended 30th June, 1936.

I have the honour to be,

Sir,

Your obedient servant,

S. L. KESSELL,

Conservator of Forests.

Annual Report on the Operations of the Forests Department for the year ended 30th June, 1936.

INTRODUCTORY REMARKS.

Steady improvement in the condition of the timber industry and very considerable advances made in reforestation work as a result of large Unemployment Relief grants are important features of this Report for the year ended June 30th, 1936.

The volume of sawn and hewn timber produced amounted to 13,133,000 cubic feet, valued at £1,700,000. This represents an increase of 18 per cent. over the production of the previous year. At the end of the year there were 53 sawmills drawing their log supplies from State Forests and other Crown lands, with a total log intake for the twelve months period of 28,010,000 cubic feet. In addition there are over 30 mills, mostly small fruit case mills, operating on private property, with an estimated total log intake of 2,500,000 cubic feet per annum.

The intake capacity of existing mills is sufficient to handle the total volume of log timber which may be removed annually from our forests within the limits of sound forest management, and, apart from certain adjustments of cutting between districts, for which provision is made under approved Working Plans, there is no scope for the erection of further sawmilling plants in our main forest regions. With a vigorous policy of reforestation and efficient fire protection measures, the State may look forward to the maintenance of the steady production of timber for internal requirements and a balance of special sizes for export for very many years to come, but any attempt to increase the rate of exploitation beyond the calculated permissible cut of the forests must lead in a comparatively short time to a disorganisation of markets and serious unemployment problems in the industry through inability to maintain the output.

It is interesting to note that 86 per cent. of the increase of 1,976,000 cubic feet of timber produced during the year has been absorbed within the State. Even with the improved local demand for scantling sizes for building and other similar purposes, existing markets for small cross sections and short length timber are not able to absorb at profitable rates the quantity being produced. With improved milling practice and better supervision at many mills, the production of this class of material from waste which goes into firewood or over the fire chute might be increased considerably. Developments in the more general use of short length end matched flooring boards is a move in the right direction and indicates what sawmillers and timber merchants may accomplish by co-operative effort in finding new uses and extended markets for good timber which to-day is regarded practically as offal.

The extensive export trade carried on in poles, piles and hewn beams in the years prior to the war, and the lack of any adequate reforestation measures until recent years, have left our Jarrah forests seriously deficient in immature trees which will be needed to supply mill logs in the comparatively near future, and it is becoming a problem of increasing difficulty to find poles and piles for necessary Public Works within the State without further depleting our understocked forests. Supplies on private property are becoming exhausted rapidly, and in future contractors will have to be prepared to rail the bulk of their requirements from the extreme South-West.

Seventy-six per cent. of the total production of hewn sleepers for the year were obtained from private property. It is questionable how much longer this source of supply will last, and suitable areas for the operation of sleeper cutters on land under the control of the Department are very limited indeed. A recent development which promises to assist considerably in maintaining the sleeper output and in finding work for men who have followed the hewing industry for many years past is the establishment of small portable milling plants specially designed for the production of sawn sleepers. These plants have proved their capacity to work up logs unsuitable for hewing and, for this reason alone, are able to obtain a very much greater recovery of sleepers per acre than is possible by the use of the broad axe, both in Jarrah and Wandoo forest. In many instances they are able to work over sparse forest cut out by hewers. Motor transport has solved the problem of bringing in to central plants of this type from considerable distances logs cross-cut in the bush to sleeper lengths, but the design of special benches and log handling gear under the mill roof is a technical problem deserving more attention than it has received to date. This would appear a matter worthy of attention by the large sawmilling companies purchasing the output of these small sleeper mills.

Another aspect of the timber industry which has attracted some public attention during recent months is the production of Jarrah and Karri cases for the export fruit industry. The value of cases used last year for fruit sent overseas amounted to £40,000. Apart from the goodwill and advertising

value of the red hardwood case to the fruit grower, this business represents to the sawmiller an important avenue for the disposal of short length and small size material, much of which would otherwise find its way over the fire chute. In order that sawmillers may be able to reorganise their plants to cope with the greatly increased demand for export fruit cases made from seasoned timber, it is essential that growers and exporters of fruit decide, in consultation with sawmilling interests, on a standard design of case for some years ahead, and, if this is done, there is no reason why the whole of the anticipated case requirements should not be produced in existing mills largely from waste material.

Reforestation operations have been extended during the past twelve months on a considerably larger scale than during any previous period in the history of the Department. Of the £180,750 made available for this work from Relief Funds during the year, the Commonwealth contributed £80,000. As a result of this expenditure approximately 1,000 men have been provided with work in the forests throughout the year on the usual relief work basis. The main work undertaken has been the regeneration of cut over Jarrah forest, and 95,830 acres have been given silvicultural treatment which will secure a vigorous growth of young Jarrah by natural regeneration. Associated with this work it has been necessary to open up some 670 miles of roads and tracks for access and fire control purposes. The total area of Jarrah forest regenerated amounts now to 349,600 acres.

The fire control organisation of the Department has been extended and improved. Two new look-out towers were erected, 109 miles of telephone line constructed, and 32 additional houses built for the accommodation of resident staff and workmen in the forest. Practically all important centres are now equipped with motor transport, and the latest type of fire-fighting equipment. New methods of detection and suppression have been evolved by specially equipped research stations, and fire weather forecasting has been brought to a considerable degree of efficiency. Despite a long dry season fire losses were again negligible, the area burnt being only 0.05 per cent. of the area under protection. No losses were sustained on any of the plantation areas, which now extend over 20,000 acres in eight different districts.

In the Narrogin District an additional area of 1,570 acres was sown with the seed of Brown Mallet (*Eucalyptus astringens*). These plantations, which now extend over 8,180 acres, continue to show very rapid and healthy growth, and recent reports indicate that this species will produce valuable timber as well as tannin bark. The wood is the most promising substitute for American hickory yet tested in Australia.

The area of softwood plantations was increased by 1,056 acres during the year, bringing the total area up to 10,260 acres. Research work to determine the most satisfactory and economical methods of pine establishment, the soils best suited to different species, and methods of correcting unsatisfactory growth on certain sites has yielded a number of important positive results during the past twelve months, which will lead to considerably improved planting and tending technique on all plantations.

The area of regenerated and planted forest carrying a crop of young trees in seedling to sapling stage is now approaching 400,000 acres. In this, the State has a growing asset of great value, but its care and protection is a serious responsibility. While the young forest is growing to a merchantable size, the revenue derived from a careful regulation of the log output from the depleted reserves of mature trees remaining may be expected to pay the cost of protecting and tending the immature areas. It is desirable that the Government and the people of the State should realise the contingent liability that these young forests represent, particularly in their very early years, and some adjustments with regard to claims by the Treasury on account of mounting interest charges on relief funds expended by the Department will be necessary in the near future if the amount credited annually to the Reforestation Fund, being three fifths of the net revenue of the Department, is to prove sufficient to meet these liabilities.

The resignation of the Hon. P. Collier, M.L.A., from the Cabinet has meant the loss to the Department of a Minister who has played a very large part in shaping the forest policy of the State during the past 20 years. Mr. Collier took a keen interest in the framing of the "Forests Act, 1918," which established the Department. Since 1919 he has held the portfolio of Minister for Forests in four Governments covering a period of over nine years. During his various terms of office many important developments have taken place and his sympathetic and far-seeing guidance in these matters has played a very large part in establishing forest management on a sound basis in Western Australia.

CHAPTER I.

THE FOREST AREA.

(1)—*State Forests (Forests Act, 1918)*.

One new State Forest comprising 3,372 acres in the Mallet habitat was dedicated during the year. State Forests previously dedicated were amended by the addition of 762 acres and by the excision, with the approval of Parliament, of 403 acres. The total area of State Forests, therefore, shows an increase of 3,731 acres when compared with the area as at 30th June, 1935.

Particulars of the areas dedicated are set out in the following statement:—

	June, 1935.	June, 1936.	Increase.
	acres.	acres.	acres.
Jarrah	2,556,971	2,557,163	192
Karri	151,782	151,782	...
Jarrah and Karri (Mixed)	369,922	370,089	167
Tuart	5,939	5,939	...
Tingle Tingle	10,774	10,774	...
Karri and Tingle (Mixed)	13,895	13,895	...
Sandalwood	1,930	1,930	...
Pine Planting	4,842	4,842	...
Mallet	18,876	22,248	3,372
Total	3,134,931	3,138,662	3,731

(2)—*Timber Reserves (Forests Act, 1918).*

One additional timber reserve, comprising 3,280 acres, around Palmer's Find townsite, was declared during the year, and an amendment to figures previously given in connection with the reserve at Reedys increased the area of that reserve by 4,240 acres. The total area of timber reserves has, therefore, been increased by 7,520 acres to 1,764,605 acres.

The following statement sets out the present position of the reserves:—

	June, 1935.	June, 1936.	Increase.
	acres.	acres.	acres.
Jarrah	36,956	36,956	...
Wandoo	9,669	9,669	...
Sandalwood	27,105	27,105	...
Pine Planting	25,951	25,951	...
Mallet	677	677	...
Mining Timber, Firewood, etc.	1,656,727	1,664,247	7,520
Total	1,757,085	1,764,605	7,520

CHAPTER II.

REVENUE.

The Revenue of the Department amounted to £143,158, compared with £119,232 for the previous year.

The rebates of 20 per cent. on royalties payable on log timber and 5s. per load in the square on sawn timber exported beyond Australia were continued. In addition, inspection fee rebates of 25 per cent. on all sawn timber, including sleepers, and 25 per cent. on hewn sleepers for export were allowed. The amount so rebated =

On Log Timber	£	19,483
„ Sawn Timber exported	£	11,452
„ Inspection Fees	£	1,856
		<u>£32,791</u>

Log royalty amounted to £88,479, an increase of £20,409 on the amount received from this source last year. Sandalwood revenue showed an increase of £2,867 over last year's figure.

PRINCIPAL SOURCES OF REVENUE FOR THE PAST TWO YEARS.

Year.	Royalties.		Inspection Fees.	Sandalwood.	Firewood and Fence Posts.	Miscellaneous.	Total.
	Logs for Sawmilling.	Hewn Timber.					
1934-35	£ 68,070	£ 9,683	£ 6,598	£ 19,713	£ 4,589	£ 10,579	£ 119,232
1935-36	£ 88,479	£ 8,930	£ 6,376	£ 22,580	£ 5,556	£ 11,237	£ 143,158

TIMBER PRODUCTION.

PRODUCTION OF TIMBER FOR YEAR ENDED 30TH JUNE, 1936 (EXCLUSIVE OF MINING TIMBER, FIREWOOD AND PILES AND POLES).

No. of Division.		MILL LOGS.					HEWN TIMBER.				Grand Total.	
		Jarrah.	Karri.	Other.	Total.		Jarrah. In Square.	Wandoo. and Blackbutt In Square.	Total.			
					In Log.	Recovery of Sawn Timber.			In Log.	In Square.	In Log.	In Square.
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)		
1	Crown Lands ...	621,508	18,511	1,802	636,821	221,806	110,005	550,025	110,005	1,186,846	331,811	
	Private Property	128,682	...	24,902	153,584	53,754	59,166	295,830	59,166	449,414	112,920	
2	Crown Lands ...	43,831	...	44,014	87,845	30,746	...	...	...	87,845	30,746
	Private Property	...	...	1,125	1,125	394	9,145	3,060	61,025	12,205	62,150
3	Crown Lands ...	7,854,936	...	16,855	7,871,791	2,755,127	44,010	220,050	44,010	8,091,841	2,799,137	
	Private Property	...	...	175,190	175,190	61,317	82,696	27,325	550,105	110,021	725,295
4	Crown Lands ...	2,294,863	...	66,797	2,361,660	826,581	159,031	44,068	1,015,495	203,099	3,377,155	
	Private Property	554,297	...	6,343	560,640	196,224	160,331	30,663	954,970	190,994	1,515,610	
5	Crown Lands ...	3,721,726	4,246	19,847	3,745,819	1,310,697	137,736	3,510	706,230	141,246	4,452,049	
	Private Property	11,019	...	19,350	30,369	10,629	416,535	98,200	2,573,675	514,735	2,604,044	
6	Crown Lands ...	1,151,542	4,934,170	...	6,085,712	1,735,265	64,816	...	324,080	64,816	6,409,792	
	Private Property	...	142,020	...	142,020	38,345	604,185	11,428	3,078,065	615,613	3,220,085	
7	Crown Lands ...	...	...	100,440	100,440	35,154	180	6,998	35,890	7,178	136,330
	Private Property	...	...	...	...	...	23,211	60,902	420,565	84,113	420,565
8	Crown Lands ...	1,134,543	...	62,592	1,197,135	418,997	109	...	545	109	1,197,680	
	Private Property	930,957	...	921	931,878	326,157	177,037	...	885,185	177,037	1,817,063	
9	Crown Lands ...	66,795	337	57,884	125,016	43,729	51,327	4,499	279,130	55,826	404,146	
	Private Property	463,257	19,025	10,874	493,156	171,083	200,724	192,249	1,964,865	392,973	2,458,021	
10	Crown Lands ...	5,729,254	...	69,002	5,798,256	2,029,390	51,736	...	258,680	51,736	6,056,936	
	Private Property	...	...	...	...	...	32,776	...	163,880	32,776	163,880
Totals	Crown Lands ...	22,618,998	4,952,264	439,233	28,010,495	9,407,492	618,950	59,075	3,390,125	678,025	31,400,620	
	Private Property	2,088,212	161,045	238,705	2,487,962	857,903	1,765,806	423,827	10,948,165	2,189,633	13,436,127	
Grand Totals	...	24,707,210	5,113,309	*677,938	30,498,457	10,265,395	2,384,756	†482,902	14,338,290	2,867,658	44,836,747	

Figures in columns (1), (2), (3), (4), (8), and (10) are in the round, based on full volume measure. Figures in columns (5), (6), (7), (9), and (11) are the volumes of sawn or hewn timber measured in the square.

* Includes 337,991 cubic feet Wandoo; 133,464 cubic feet Sheoak; 85,403 cubic feet Blackbutt; 59,450 cubic feet Pine; 58,679 cubic feet Tuart; 2,951 cubic feet Marri. † Includes 481,186 cubic feet Wandoo; 1,716 cubic feet Blackbutt.

SAWMILLING AND HEWING.

During the past twelve months the timber industry in this State has shown a very substantial improvement. The volume of sawn and hewn timber produced amounted to 13,133,000 cubic feet, the value of which is estimated at £1,700,000. This represents an increase of 18 per cent. over the production for the previous year. Two of the large mills that had been closed down for some time, owing to the trade depression, re-opened during the year, and a number of new mills for the cutting of fruit cases and sleepers commenced operations. There are now 53 saw mills drawing log supplies from Crown lands and from 30-40, principally fruit case mills, operating on private property. The quantity of log timber taken to the mills during the year was 30,498,000 cubic feet, or approximately 5,689,000 cubic feet more than for the previous year. Of the mill log intake 28,010,000 cubic feet came from Crown lands and 2,488,000 cubic feet from private property.

Approximately eight hundred hewers were employed throughout the year in the production of sleepers and produced 2,867,600 cubic feet of hewn timber, being 47,500 cubic feet in excess of the previous year's production. Seventy-six per cent. of the hewn output came from private property. Included in the production of hewn timber were 481,186 cubic feet of Wandoo. This timber is becoming increasingly popular for local railway sleepers and bridge timbers, owing to its durability, and some idea of the increasing demand for hewn Wandoo can be gathered from the following figures showing the annual production during the past four years:—1932-33, 5,687 cubic feet; 1933-34, 88,219 cubic feet; 1934-35, 284,948 cubic feet; and 1935-36, 481,186 cubic feet. There has also been a similar increase in the production of sawn Wandoo and several small mills are now exclusively engaged in cutting wandoo sleepers.

The respective quantities of sawn and hewn timber, measured in the square, obtained from Crown lands and private property for the past two years are set out in the following statement:—

Year.	From Crown Lands.			From Private Property.		Estimated Value of Timber obtained.
	Sawn Timber other than Sleepers.	Sawn Sleepers.	Hewn Timber.	Sawn Timber, including Sleepers.	Hewn Timber.	
1934-35	cub. ft. 6,794,190	cub. ft. 852,099	cub. ft. 927,567	cub. ft. 690,503	cub. ft. 1,892,533	£ 1,450,000
1935-36	7,788,648	1,618,844	678,025	857,903	2,189,633	1,700,000

TIMBER EXPORTS.

The overseas demand for our hardwoods has been maintained, and timber amounting to 5,598,180 cubic feet, the declared value of which was £679,522, was exported during the past year. Although these figures show a slight increase on the export trade for the previous year, it would appear that the bulk of our increased production has gone into local consumption.

Exports of railway sleepers and dressed timber show a slight falling off, but this has been offset by an increase of 405,000 cubic feet in undressed timber.

The Eastern States of the Commonwealth were again the principal buyers of our hardwoods, and took timber to the value of £176,462. This amount is considerably below their purchases for the previous year (£221,654), but on this occasion it includes sleepers to the value of only £5,857, whereas during the previous year sleepers to the value of £84,710 were obtained from this State. The principal overseas buyers are set out hereunder, the figures in brackets representing the value of the timber acquired by them during the previous year:—

	£	£
South African Union	125,375	(83,938)
United Kingdom	119,025	(104,797)
Egypt	86,388	(32,878)
China	58,309	(77,980)
New Zealand	29,218	(22,706)
Iraq	21,608	(15,447)

A detailed statement of the timber exports is given in Appendix 2a of this report. This statement does not take into account the quantity of timber required in connection with the fruit export trade, which during the past year used fruit cases to the value of £40,000.

TIMBER IMPORTS.

The value of timber and wood manufactures imported during the year amounted to £228,451, details of which are given in Appendix 2b. Compared with the imports for the previous year there has been an increase of £17,395. Dressed and undressed timber amounted to only £79,180, the remainder representing plywoods and veneers, furniture and other wood manufactures which account for the whole of the increased value of imports. Sixty-seven per cent. of the timber and wood manufactures imported are stated to have been of Eastern States origin.

TIMBER INSPECTION.

The quantity of sawn and hewn timber submitted to the Department for inspection was 3,992,875 cubic feet, which is slightly less than the quantity inspected during the previous year. This is probably due to the export of a smaller quantity of railway sleepers.

Piles and poles totalling 67,262 lineal feet were also inspected.

The system introduced towards the end of 1934 for the grading of flooring for the Metropolitan market was continued, but it is regretted that full advantage has not been taken by all sawmillers of this arrangement. The quantity of merchantable flooring inspected and branded by the Department during the year was 567,900 lineal feet.

The revenue received from this branch of the service amounted to £6,376.

SANDALWOOD.

The Sandalwood Export Committee appointed in 1932 to manage and regulate the sandalwood export business in the States of South Australia and Western Australia, and the selling policy and prices in China, has functioned very satisfactorily, with the result that during the past four years regular though limited pulling operations have been maintained, excess stocks have been gradually liquidated, and the market in China has been stabilised. Towards the end of the year Mr. E. J. Field, Director of Lands, South Australia, a member of the Committee, visited China to investigate a number of matters affecting sandalwood marketing problems.

The quantity of sandalwood pulled annually for export is now governed by the actual deliveries of wood from the "go-downs" in China, and as a result of the decreased consumption of wood in China due to the general depression in the country, disastrous floods, and other trading difficulties, the quantity of sandalwood pulled in this State for export last year was slightly below that obtained for the previous year.

During the year under review 169 orders were issued for the supply of 1,574 tons of sandalwood, including 85 tons of logs for oil distillation purposes. The wood supplied was of fairly good quality, and although a number of small reductions in the price to the getters were authorised, principally for poor cleaning, the price paid for export logs averaged £15 17s. 7d. per ton f.o.r. Fremantle.

Thirty licenses were issued under the provisions of "The Sandalwood Act, 1929," for the disposal of approximately 100 tons of wood from 82 private property locations.

The quantity of sandalwood obtained from all sources during the year ended 30th June, 1936, is set out in the following statement:—

Locality.	For Oil Distillation.	For Export
From Crown Lands, South of 26th parallel of South Latitude	tons. 317	tons. 1,176
From Crown lands, North of 26th parallel of South Latitude	66	...
From Private Property ... .. .	...	71
Total	383	1,247

Sandalwood exported for the year amounted to 1,592 tons, valued at £44,916.

Sandalwood for Oil Distillation.

The sandalwood used locally for oil distillation consisted chiefly of roots and butts sawn from the logs pulled for export. Three hundred and seventeen tons of these roots and butts were delivered to distillers, and 66 tons of logs from Crown lands North of the 26th parallel of South latitude were used for oil distillation. The quantity of sandalwood oil exported during the year was 27,010 lbs.

OTHER FOREST PRODUCE.

Mining Timber and Firewood.

The increased demand for firewood and mining timber for both domestic and mining requirements and the reservation of suitable areas of timber for pastoral requirements made it necessary for the Department to undertake extensive reconnaissance work to locate timber and firewood supplies in goldfields areas, and to more closely supervise and regulate operations with a view to protecting the interests of all parties concerned, while insuring that timber is being cut and utilised in the most economical manner.

Early in March a Forester was appointed with headquarters at Wiluna, where a commencement on this classification work was made. At this centre the work was of an urgent nature owing to the decision of the Wiluna Mines to treat ore from certain leases by a smelting process estimated to require about 600 tons of charcoal per month, which the company desired to obtain locally from mulga timber.

In addition to supervising the work of timber getters, 275,000 acres of country has been classified around Wiluna. This work has shown that there is a large area of country carrying from $\frac{1}{2}$ to 1 ton of mulga per acre, which, if systematically worked over, will provide supplies of charcoal and firewood for some years ahead without interfering in any way with pastoralists' operations or requirements.

A similar classification has been carried out over approximately 150,000 acres in the Menzies, Comet Vale, Broad Arrow and Laverton districts.

The system of issuing forest produce licenses over definite areas on a royalty basis has been continued, and action was recently taken to bring the royalties payable under such licenses throughout the goldfields on to a uniform basis. Although in some instances this adjustment of royalties may have resulted in comparatively small immediate increases in the cost of production of firewood and mining timber, the work now being carried out by the Department in closely supervising the operations of timber getting and eliminating wasteful methods should tend to keep down the cost of future supplies, and greatly extend the life of the firewood and mining timber business in many localities.

To assist the holders of mining leases whose operations are on a small scale, and who desire to cut their own mining timber, a form of quarterly license was introduced. This license can be obtained at a fee of 10s. by any lessee of a mining lease requiring for his own use not more than 900 running feet of mining timber per quarter.

The consumption of mining timber and firewood on the goldfields for the past year amounted to 16,722 tons and 459,312 tons respectively. Compared with the previous year these figures show increases of 3,000 tons of mining timber and 51,000 tons of firewood. Approximately 800 men are engaged at the present time in supplying mining timber and firewood on the Goldfields.

Piles and Poles.

The supply of piles and poles for essential public works in this State is becoming an increasingly difficult problem. In the past contractors have been able to obtain their supplies to a large extent from private property, but this source of supply is becoming exhausted, particularly for long length piles, and contractors are now looking to Crown lands for this class of timber.

While the supply of piles and poles for local requirements must be met, any pile getting in the immediate future may be expected to conflict with the principal objective of the Department, which is the maintenance of log supplies for the sawmilling industry. The position is serious, owing to the shortage of age classes nearing maturity in the Jarrah forest. Particularly in those more accessible districts where pile getting was extensively followed in past years, it will be many years before the cut-over forest can be worked over again by saw mills other than small case mills. The position is at present being closely investigated by the Department, to ascertain the extent and location of pile supplies on Crown lands. From Crown lands last year 8,361 piles and poles totalling 184,392 lineal feet were obtained, the number being 677 greater than for the previous year.

Mallet Bark.

Two thousand seven hundred and thirty-three tons of Mallet bark were obtained last year from Crown lands and private property. The quantity exported amounted to 1,271 tons valued at £12,237. Of the bark exported 86 per cent. went to the Eastern States of Australia.

FOREST OFFENCES.

Eighty-eight forest offences were reported by officers of the Department during the year, most of which were of a minor nature. Proceedings were taken under the Forests Act in 11 cases, and in each instance a conviction was recorded. Fines, costs and damages amounting to £110 were imposed. The remainder of the offences were dealt with by the collection of royalties, damages, or the confiscation of the forest produce. Royalties, etc., recovered in this way amounted to £321.

Approximately 17 tons of sandalwood, valued at £483 were confiscated and sold for various breaches of the Regulations. After making compassionate payments amounting to £137 to cover cost of carting, loading, freight and other charges, the balance of the proceeds from the sale was paid into Consolidated Revenue.

FOREST PRODUCE NOT ELSEWHERE INCLUDED IN PRODUCTION TABLES, OBTAINED DURING YEAR ENDED 30TH JUNE, 1936, AND REPORTED TO THE DEPARTMENT.

Description of Forest Produce.	SOUTH-WEST DIVISION AND AGRICULTURAL AREAS.										Northern, Central and Eastern Goldfields.	Total.
	Forest Division No.											
	1	2	3	4	5	6	7	8	9	10		
Mining Timber tons	...	...	...	1,233	...	...	...	...	...	...	16,722	17,955 tons
Sleepers for Goldfields Wood Lines cubic ft.	...	...	...	...	...	...	...	...	...	...	60,114	60,114 c. ft.
Firewood including Charcoal tons	152	14,063	259	117	147	28	41	40,474	14,686	1,045	173,262	244,274 tons
Mining Firewood tons	...	...	...	...	825	...	...	...	...	...	286,050	286,875 tons
Piles and Poles * lin. ft.	8,779	65	23,390	11,418	76,686	4,978	16,590	26,428	14,533	47,471	...	230,338 lin. ft.
Fencing Posts and Rails No.	639	...	...	400	1,600	1,042	500	7,291	100	308	...	11,880 No.
Blackboy tons	...	...	...	...	...	...	...	3	173	...	...	176 tons
Mallet Bark * tons	...	...	...	...	...	...	2,733	...	...	...	...	2,733 tons
Marri Kino... .. tons	...	...	...	...	...	...	...	1	...	...	...	1 ton.
Stone c. yds.	...	...	...	...	...	...	...	241	...	...	...	241 c. yds.

* From Crown lands and private property.

NOTE.—Except where otherwise stated, this statement includes only forest produce obtained from Crown lands under permit or license.

CHAPTER III.

(1).—EXPENDITURE.

The expenditure on general administration, which includes both office and field work arising out of the enforcement of the Forests Act and Regulations and such direct revenue-producing activities of the Department as timber inspection, amounted to £22,289 compared with £18,524 last year.

The expenditure on reforestation works carried out as unemployment relief measures during the year amounted to £181,751, and of this amount £80,000 was contributed by the Commonwealth Government under the Commonwealth Aid to Forestry Scheme. A sum of £11,798 was spent on "C" Class relief work. Under these various schemes over 1,000 men were provided with employment in the forest throughout the year.

Three-fifths of the net revenue of the Department, exclusive of revenue from sandalwood, produced £41,997 during the financial year under review, and this has been credited to the Reforestation Fund in accordance with the provisions of Section 41 of the Forests Act, 1918.

The following statement shows the position of the Fund at 30th June, 1936:—

	£
Revenue for Year 1935-36	143,158
Less Sandalwood	22,580
	120,578
	£
Consolidated Revenue Fund Expenditure	22,289
Less Expenditure on Sandalwood	2,589
	19,700
Interest on Loans	28,692
Sinking Fund	1,417
Special Acts	1,037
Audit Fee	93
	50,939
Net Revenue	£69,639
Reforestation Fund—	
Balance at 30th June, 1935	52,251
Three-fifths Revenue transferred	41,784
Direct Credits	3,615
Adjustment A/c Interest rebated	214
	45,613
	97,864
Expenditure 1935-36	19,500
Balance	£78,364

(2).—REFORESTATION OPERATIONS.

(A)—FOREST MANAGEMENT.

SUMMARY OF WORK CARRIED OUT DURING YEAR.

Division and District.	Topographical Survey.	Assessment Survey.	Roads and Tracks cleared.	Telephone Lines constructed.	Houses built.
	miles.	acres.	miles.	miles.	
DIVISION 1— Busselton Margaret River ... ..	... }	... }	1	6½	1
DIVISION 2— Mundaring ... ..	... }	12,850	7½	6	8
DIVISION 3— Dwellingup Wuraming Huntly Duncans ... ..	... }	... }	67¾	18	1
DIVISION 4— Collie Muja Worsley Wellington	165 }	... }	138½	14¼	5
DIVISION 5— Kirup Noggerup Bridgetown Nannup ... ..	... }	3,500	30¾	26	2
DIVISION 6— Manjimup	40	20,700	67½	17¼	3
DIVISION 7— Narrogin ... ..	... }	... }	18½	2	5
DIVISION 8— Jarrahdale Karragullen Solus	490 }	22,800	226	10	6
DIVISION 9— Metropolitan Albany ... ..	... }	... }	...	...	1
DIVISION 10— Hamel Willowdale Mornington	299 }	5,500	118	9¼	...
Totals	994	65,350	675¼	109¼	32

FOREST SURVEYS.

Three survey camps operated during the year in Divisions 4, 8 and 10, using the Forester's compass and 5 chain band. In Division 6, co-operation with the surveyor attached to State Saw Mills was maintained. Surveys of compartment boundaries, base line, fire lines and general topographical features necessitated the running of 994 miles of traverse lines.

PERMANENT ESTABLISHMENTS.

During the year four new forest settlements were built, these were at Mundaring Weir, Dryandra, Gleneagle and Wellington. There are now ten forest settlements in existence. Additional houses were erected at Keenan Plantation, Applecross Plantation, Hakea, Wuraming, and in the Manjimup and Kirup Districts. In all 32 houses were built.

To assist in the protection of the large area of forest now regenerated, two additional fire lookout towers were erected—at Dryandra in the Mallet area and at East Kirup in the Jarrah forest. The latter tower, 112ft. high, was specially designed and built under the supervision of the Division of Forest Products of the Council for Scientific and Industrial Research. In its construction use was made of the latest development in metal connector design.

The telephone system connecting forest stations, fire lookout towers and Divisional offices was extended by 109¼ miles. The network of roads and feeder tracks now covering the main forest belt was added to by the clearing of a further 675¼ miles of old bush tramlines and hauling tracks.

ASSESSMENT SURVEY.

Assessments, soil surveys and type mapping were carried out over 65,350 acres; 32,700 acres in the Mundaring and Jarrahdale Districts were assessed for milling timber; 19,200 acres in the Manjimup District were type mapped. On the remaining 13,450 acres more detailed survey and assessment in connection with soil studies on plantation areas and stocktaking and assessment of the Jarrah bush was carried out.

(B)—SILVICULTURE.

(a) Jarrah.

SUMMARY OF OPERATIONS FOR THE YEAR.

Division and District.	Top Disposal.	Treatment for Regeneration.	Tree-marking.									
			Sawmilling.	Hewing.								
Division 2— Mundaring	acres. ...	acres. ...	acres. 591	acres. ...								
Division 3— Dwellingup Wuraming Huntly Duncans	} 13,226	29,013	13,983	2,009								
Division 4— Collie Muja Worsley Wellington					} 10,472	11,275	5,733	7,766				
Division 5— Kirup Noggerup Bridgetown Nannup									} 15,238	14,350	3,427	979
Division 6— Manjimup ... ..													} 5,188	21,115	4,418	...
Division 8— Jarrahdale Karragullen Solus	} 5,042	17,844	5,974	1,619								
Division 10— Willowdale Morningson					} 5,042	17,844	5,974	1,619				
Totals									49,836	95,832	34,126	12,373

The year 1935-36 was in one important sphere of silvicultural operations a record one—a very much greater area of Jarrah forest was regenerated than in any previous year in the history of the Department. The record established in the previous year was more than doubled, as indicated in the figures hereunder for the past four years:—

1932-33	.. .. .	30,920 acres
1933-34	.. .. .	29,411 acres
1934-35	.. .. .	44,586 acres
1935-36	.. .. .	95,832 acres

This very large increase was rendered possible by (1) the grant on a £ for £ basis of £100,000 by the Commonwealth Government towards the work; (2) the fact that during the previous year comparatively costly treatment in areas carrying heavy stands of malformed sapling growth was practically completed; and (3) the introduction without loss in efficiency of slight modifications in the details of treatment.

Steady progress is being made towards the achievement of the provisions of the General Working Plan for Jarrah laid down in 1929, and reforestation work in all centres is considerably ahead of schedule, but owing to the serious shortage of age classes from 30 to 90 years, this work can only affect yield calculations in the immediate future to a very limited extent. Since the Working Plan was approved in 1929 the area treated for regeneration has exceeded the area cut over for sawmilling by more than 126,000 acres.

The area logged over under treemarking control was 34,126 acres, compared with 30,402 acres for 1934-35. A decrease was shown in the area worked over by sleeper cutters—12,373 acres against 18,182 acres in 1934-35. The area on which the disposal of lop and top following sawmilling and hewing took place showed a marked increase, rising from 33,512 acres in 1934-35 to 49,836 acres during the current year.

The total area of Jarrah forest, which, following silvicultural treatment, has been restocked by a vigorously growing young crop and brought under intensive fire control measures, now amounts to 349,606 acres.

344871
(1937)
see page 13

(b) *Karri.*

Although during the year no additional Karri forest was treated for natural regeneration, the system of fire protection was consolidated and extended by the clearing of 62 miles of firelines. On 127 acres where natural seed fall had been insufficient to stock the area, spot sowing with Karri was carried out.

The total area of Karri forest reforested and placed under fire control amounts to 16,102 acres.

(c) *Mallet.*

Along the Great Southern Railway, chiefly in the Narrogin District, poor poison lands unsuitable for agricultural purposes are being utilised for the propagation of mallet.

The area sown last year amounted to 1,574 acres, bringing the total area of plantation now established to 8,183 acres.

Apart from sowing, the main items of work during the year were the establishment of a settlement for forest workmen at Dryandra, the reconditioning and extension of the firebreak and fireline system, and the clearing of land for future sowing; 1,552 acres were cleared during the year, 103½ miles of firelines and firebreaks opened up, and 687lb. of mallet seed collected.

(d) *Planting of Marram Grass.*

The problem of the fixation of drift sands in the vicinity of the mouth of the Warren River was given attention during the year. On the south bank of the river, near Calcup ford, some 650 acres of dunes encroaching on good agricultural land and forest country were, in conjunction with the Lands Department, planted with seedlings obtained from areas of grass established in the neighbourhood some years ago. Use was made of unemployed labour on the work, and the cost was charged to Lands Department, Development of Agriculture vote.

(C).—FIRE CONTROL.

District.	Area under Fire Control.	Area afforded Complete Protection.					
		Indigenous Forest.			Pine Plantation.		
		In course of Treatment.	Regenerated and tended to 15th June, 1935.	Fire Losses.	Being Cleared for Planting.	Planted Area.	Fire Losses.
DIVISION 1— Busselton ... Maragret River ...	acres. 11,000	acres. ...	acres. 2,366	acres. ...	acres. 450	acres. 1,996	acres. ...
DIVISION 2— Mundaring ...	45,000	...	4,466	1	230	2,246	...
DIVISION 3— Dwellingup ... Wuraming ... Huntly ... Duncans ...	200,000	29,013	63,879	10	...	...	...
DIVISION 4— Collie ... Muja ... Worsley ... Wellington ...	155,000	11,275	46,386	95	30	467	...
DIVISION 5— Kirup ... Noggerup ... Bridgetown ... Nannup ...	160,000	6,646	72,641	488	250	398	...
DIVISION 6— Manjimup ...	37,200	*2,235	22,990	2	...	229	...
DIVISION 7— Narrogin ...	80,000	†1,500	†9,105	...	...	...	...
DIVISION 8— Jarrahdale ... Karragullen ... Solus ...	210,000	21,115	41,875	16	...	...	...
DIVISION 9— Metropolitan ... Albany ...	5,200	...	...	...	750	3,629	...
DIVISION 10— Hamel ... Willowdale ... Mornington ...	250,000	17,394	23,427	...	75	1,225	...
Totals ...	1,153,400	89,178	287,135	612	1,785	10,260	...

* Jarrah only, † Mallet.

Although during the summer of 1935-36 temperatures were moderate and comparatively cool weather was experienced, from the point of view of fire hazard, the season was the most dangerous encountered for some years. It was one of the driest summers on record, and that the long drought offset any advantage gained from cool conditions was well borne out by the fact that in April severe fires occurred in comparatively mild weather.

In spite of these adverse conditions losses from fire were low, which is more noteworthy when it is remembered that the area under complete protection was increased by approximately 90,000 acres during the year. Losses were .16 per cent. of treated or planted country, and .05 per cent. of the area under fire control. The only considerable area of regenerated forest burnt over was several hundred acres in one isolated centre, and was due to a series of fires lit by an incendiary. As much of this area was burnt under fairly cool conditions, it was not a complete loss.

Factors which influenced successful control during the year were the extension of the lookout system by the erection of two additional fire lookout towers at East Kirup and Dryandra, and the extended use in each Division of mobile fire-fighting units using water as a means of suppression. It is apparent from the rapid extension of silvicultural operations that the lookout system must be further augmented, and it is proposed to build four additional towers during the coming year, and as two of these will be in the southern portion of the Jarrah belt where no high hills afford extensive views, towers 100 feet high will be necessary.

A speedy and efficient means of fire suppression was provided by the establishment in each Division of fire-fighting gangs, using as transport light utility trucks carrying water and equipped with modern fire fighting equipment in the form of pack sprays, etc.

The system of fire detection from lookout towers and the equipment of the towers was standardised during the season. The use of panoramic plans was introduced to assist in the location of outbreaks.

The fire hazard research station at Dwellingup continued to collect valuable information in the relationship of weather conditions to fire hazard. A useful innovation in this connection was the daily broadcast from Perth National Station in the early morning of the fire weather forecast for the day, as supplied by the Dwellingup Station.

A heavy programme of main road, feeder track and fire line clearing was carried out during the year, thus providing for fire-fighting gangs quick and easy access to the scenes of outbreaks.

(3).—AFFORESTATION.

AREAS OF CONIFERS ESTABLISHED DURING THE MONTHS OF JUNE, JULY, AND AUGUST, 1935.

District.	Plantations.	Area established prior to 1935.				Area established, 1935.				Grand Total.
		<i>Pinus radiata.</i>	<i>Pinus pinaster.</i>	Other conifers.	Total.	<i>Pinus radiata.</i>	<i>Pinus pinaster.</i>	Other conifers.	Total.	
DIVISION 1— Busselton ...	Coolilup ...	7	771	23	801	...	...	...	...	801
	Stirling ...	64	441	20	525	16	216	...	232	757
Margaret River	Boranup ...	33	12	...	45	4	4	...	8	53
	Keenan ...	160	60	...	220	97	68	...	165	385
DIVISION 2— Mundaring ...	Helena ...	477	130	45	652	...	77	...	77	729
	Greystones ...	437	192	57	686	...	...	...	...	686
	Beraking ...	143	65	92	300	...	...	...	...	300
	Mudros ...	141	110	29	280	...	...	...	...	280
	Darkin ...	115	132	4	251	...	...	...	...	251
DIVISION 4— Collie ...	Mungalup	59	5	3	67	...	...	...	...	67
	Proprietary	...	316	4	320	...	15	...	15	335
DIVISION 5— Kirup ...	East Kirup	169	22	2	193	42	99	...	141	334
DIVISION 6— Manjimup ...	Big Brook...	254	...	45	299	...	...	...	...	299
DIVISION 9— Metropolitan ...	Applecross	...	778	...	778	...	100	...	100	878
	Gnangara ...	...	1,225	7	1,232	...	48	...	48	1,280
	Collier ...	...	666	...	666	...	85	...	85	751
	Scaddan ...	...	210	...	210	...	...	...	...	210
Albany ...	Pardelup ...	280	103	1	384	...	112	...	112	496
DIVISION 10— Hamel ...	Myalup ...	2	672	21	695	8	65	...	73	768
	Harvey Weir	282	90	25	397	...	...	...	...	397
	Hamel ...	18	40	2	60	...	...	...	...	60
EXPERIMENTAL AREAS ...	Nannup ...	14	32	18	64	...	...	...	...	64
	Bowelling ...	9	29	27	65	...	...	...	...	65
	Albany ...	1	4	9	14	...	...	...	...	14
Totals ...	...	2,665	6,105	434	9,204	167	889	...	1,056	10,260

During the ten-year period in which a planting programme has been in force, the annual acreage aimed at, namely 1,000 acres, has been maintained, there now being 10,260 acres established on 24 plantations and experimental areas in the South-Western Division. The major portion of the planted area lies within a 40-miles radius of the Metropolitan Area.

The principal planting centres are the Metropolitan District, Busselton-Margaret River District, and Mundaring District, where 3,119 acres, 1,996 acres and 2,246 acres respectively have been planted.

Pinus pinaster and *Pinus radiata* still remain the chief species planted. During the winter of 1935 889 acres of *Pinus pinaster* and 167 acres of *Pinus radiata* were established, bringing the total acreages planted to 6,994 acres and 2,832 acres respectively.

On all classes of afforestation operations relief workers still continue to be employed, and up to 200 men were engaged during the planting season.

During the year 59,450 cubic feet of pine timber was removed from Crown lands and private property, an increase of 18,697 cubic feet on the previous year's figure of 40,753 cubic feet. Practically all this increased output came from Crown lands, the quantity cut on private property showing little fluctuation.

Of the total amount cut 44,014 cubic feet was produced at Mundaring Weir, where thinning operations in the older stands are supplying logs to a small local case mill. Forty acres were thinned and 15 acres clear felled at this centre. The remaining Crown land cutting took place on small areas at Hamel, Harvey Weir and Ludlow.

(4).—RESEARCH AND INVESTIGATION.

(a) *Silviculture.*

An area of 14,000 acres was covered by soil surveys in connection with a number of projects. Existing plantations and country proposed for planting with exotic conifers comprised half of this area, and the investigations thereon were of a very detailed nature, while less intensive surveys were conducted on the remaining 7,000 acres.

Analyses of chemical and mechanical properties of a large number of soils have been continued throughout the year, by arrangement with the Government Analyst and Mineralogist.

Further studies of the composition of the Jarrah forest were carried out, and local and regional characteristics defined. The aims of this investigation are to determine—

1. The composition of the forest (height variance, diameter classes and their distribution, basal areas, log length and volumes for the principal crop and associated species).
2. The range and distribution of quality classes.
3. Crown development distribution and relation to breast-high diameter.
4. The correlation of soil type with crop quality and ground vegetation types.
5. Methods of establishment of satisfactory regrowth under varying conditions, and its rate of development.

A large amount of valuable information regarding the timbered areas has been accumulated, much of which has been of immediate and direct value to officers in the field.

Experimental work in pine establishment has been continued at all plantations. The requirements of field trials with adequate replications and statistical reduction of results have been strictly observed, and in many cases the experiments have been repeated over a sufficiently long period to render them conclusive.

Experimental work in connection with the subsequent development of plantations after establishment has been continued and elaborated, considerable attention being directed to "sick" areas, or areas on which the trees have not maintained a satisfactory rate of growth.

A number of experimental plots were laid down to determine methods of satisfactorily establishing Jarrah and Karri on poorly stocked areas, the main lines of investigation embracing the use of seed and seedlings under various cultural and manurial treatments.

(b) *Fire Protection.*

Investigations in fire weather research were carried out at Dwellingup during the year, and data confirming previous observations concerning the relation of certain meteorological conditions to the rate of spread of forest fires was obtained. A daily forecast of fire weather conditions was prepared and transmitted from Perth National Broadcasting Station early each morning for the particular benefit of field officers.

The standardisation of methods of detection, description and recording of smokes, and the transmission of messages to the co-ordinating officer at each Divisional office was continued throughout the summer months. A new type of direction finder and sets of panorams were introduced on lookout towers.

Methods of fire fighting have been the subject of special study, with the result that considerable improvement in fire-fighting equipment, suppression technique, and organisation has resulted. The training of men in the special requirements for this work has been a valuable innovation.

(c) *Utilisation.*

The absence of the Utilisation Officer on long service and annual leave for four months, followed by the loss of the Assistant Utilisation Officer to the Division of Forest Products, Melbourne, has considerably affected the ground covered by the utilisation section in the past twelve months.

The outstanding work carried out during the year was the design and supervision of erection of a battery of seasoning kilns with the necessary yard layout and handling equipment for one of the milling companies. This plant has an estimated capacity of 1,800,000 super feet per annum in inch boards and on operations to date, the output for the first twelve months should easily reach this figure. This work was undertaken as part of the general plan for encouragement and assistance to the industry in adoption of modern methods of kiln seasoning. Prior to commencement of operations and for the first few months of running, the plant was managed by an officer of this Department temporarily on loan to the firm concerned.

Mechanical tests on Mallet (*Euc. astringens*) carried out by the Forest Products Division of the Council for Scientific and Industrial Research have shown that this timber should prove for general purposes to be a very satisfactory substitute for hickory.

Although less resilient and of greater weight than hickory, it is almost its equal in shock resistance and considerably stronger. For such purposes as handles it appears superior to those Eastern States timbers at present used in this manufacture.

(5).—ARBORICULTURE.

During the distributing season, which closed on August 31, 1935, 156,957 trees were disposed of from Hamel Nursery.

Of these 42,981 were sold to the public, 2,686 were supplied free to other Government Departments, public bodies, charitable institutions, etc., and 111,290 were consigned to the various Departmental plantations and arboreta.

The sales showed a slight increase (approximately 10 per cent.) on the figures for the previous year.

The order of popularity among the trees was the same as for the previous year, *Pinus pinaster* heading the list with sales of 10,200 and being followed by *Eucalyptus cladocalyx* (Sugar Gum) 6,840, and *Pinus radiata* (Monterey Pine) 5,200.

CHAPTER IV.

(1).—LEGISLATION.

"Forests Act Amendment Act, 1935."

An Act to amend Section 41 of the "Forests Act, 1918," was assented to on the 15th October, 1935. This amendment has been annually enacted since 1930, and excludes from the provisions of subsection (2) of Section 41 of the principal Act for a period of twelve months ending 30-6-1936 the whole of the revenue derived from sandalwood and provides for its transfer to Consolidated Revenue.

"Native Flora Protection Act, 1935."

An Act to provide for the protection of the Native Flora of Western Australia was assented to on the 7th January, 1936, and came into operation by proclamation on the 3rd April, 1936. This Act repeals the "Native Flora Protection Act, 1912."

The Minister for Forests is charged with the administration of this Act, and Forest Officers appointed under the "Forests Act, 1918" as well as officers of the Police Force are authorised to act as inspectors under the Act.

(2).—ADMINISTRATION.

The following staff changes were made during the year:—

(a)—*Professional Division.*

Mr. G. W. Wright, Assistant Utilisation Officer, resigned to take up a position with the (Commonwealth) Council for Scientific and Industrial Research, Melbourne.

(b)—*General Division.*

In connection with the Reclassification of the Service on the 1st January, 1936, nine "C" Grade Foresters became "B" Grade Foresters, one "C" Grade and four "D" Grade Assistant Foresters became "C" Grade Foresters and four "D" Grade Assistant Foresters became "C" Grade Assistant Foresters. Also one "B" Grade Forester was appointed and one "C" Grade Forester resigned, whilst four "D" Grade Assistant Foresters were appointed and one reverted to the position of Overseer.

During the year the appointment of a Workmen's Inspector under the Timber Industry Regulation Act was approved, and the former occupant of the position, which had been vacant for some years during the depression in the industry, was re-elected.

(c) *Head Office Staff.*

Only minor changes were effected in the staff at Head Office.

(d) *Goldfields.*

Owing to the increased demand for timber for fuel and development purposes in connection with the gold mining industry, a Forester and Assistant Forester (included in the above list) have been stationed at Wiluna, and a junior clerk has been added to the staff at Kalgoorlie.

In conclusion, I desire to place on record the loyal and efficient service rendered by officers of all branches of the Department during a busy and successful year.

Perth, 7th September, 1936.

S. L. KESSELL,
Conservator of Forests.

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APPENDIX 2b.

Imports of Timber, Tanning Substances and Essential Oils for the Year ended 30th June, 1936.

Item and Country of Origin.	Quantity.	Value.	Item and Country of Origin.	Quantity.	Value.
TIMBER—			WOOD MANUFACTURES—contd.		
<i>Timber, Dressed :</i>	cubic ft.	£	<i>Furniture—contd.</i>	cubic ft.	£
<i>Architraves, Mouldings, etc. :</i>			China ... ..	...	57
Commonwealth of Australia	...	1,002	Czecho-Slovakia ... ..	...	1
United Kingdom ... ..	...	35	Egypt ... ..	...	21
	...	1,037	Esthonia ... ..	...	33
<i>Tongued and Grooved :</i>			France ... ..	...	8
United Kingdom	2	2	Germany ... ..	...	118
Finland	468	39	Japan ... ..	...	453
Norway	11,602	858	Poland ... ..	...	9
Sweden	1,358	117	Sweden ... ..	...	2
	13,430	1,016	Switzerland ... ..	...	1
			United States of America ...	...	649
				...	25,368
<i>(a) Timber, Dressed, N.E.I. :</i>			<i>Plywood and Veneers :</i>		
Commonwealth of Australia	328	173	Commonwealth of Australia	...	39,301
United Kingdom	3	5	United Kingdom ... ..	...	202
Germany ... ..	...	50	Canada ... ..	...	231
Norway	630	44	Japan ... ..	...	453
Sweden	1,352	106	Norway ... ..	...	78
	2,313	378	Philippine Islands ... ..	...	11
			United States of America ...	...	146
<i>Timber, Undressed—</i>				...	40,422
<i>(b) Timber for making Boxes :</i>			<i>Spokes, Rims, and Felloes :</i>	No.	
Commonwealth of Australia	...	2,509	Commonwealth of Australia	2,756	230
United Kingdom	18	7			
Canada	119,250	6,970	<i>Tool Handles (including Axe) :</i>		
British Malaya	8,802	594	Commonwealth of Australia	...	3,630
New Zealand ... ..	...	2,306	United Kingdom ... ..	...	111
Finland	1,859	135	Canada ... ..	...	1,725
France	3	2	Germany ... ..	...	2
Netherlands	245	173	United States of America ...	...	3,507
Norway	990	92		...	8,975
Sweden	63,570	5,179			
	194,737	17,967	<i>Wood Manufactures, N.E.I. :</i>		
			Commonwealth of Australia	...	18,856
<i>Timber, Undressed, N.E.I. :</i>			United Kingdom ... ..	...	1,392
Commonwealth of Australia	212,637	35,013	Canada ... ..	...	299
British Malaya	42	3	British Malaya ... ..	...	3
Canada	132,892	12,762	Hong Kong ... ..	...	1
India	173	112	Belgium ... ..	...	1
New Zealand	18,382	3,878	China ... ..	...	4
Finland	13,561	702	Czecho-Slovakia ... ..	...	10
French Indo China	100	39	Finland ... ..	...	20
Norway	917	124	France ... ..	...	30
Philippine Islands	11,606	1,052	Germany ... ..	...	205
Siam	133	63	Hungary ... ..	...	6
Sweden	21,250	1,259	Japan ... ..	...	155
United States of America ...	99,206	13,775	Latvia ... ..	...	1,488
	510,899	68,782	Lithuania ... ..	...	2,113
			Soviet Union ... ..	...	1
WOOD MANUFACTURES—			Sweden ... ..	...	8,045
<i>Barrels and Casks :</i>			United States of America ...	...	460
Commonwealth of Australia	...	28,789		...	33,089
<i>Clothes Pegs :</i>			Total, Timber Imports...	...	228,451
Commonwealth of Australia	...	2,371			
United Kingdom ... ..	...	1	TANNING BARK—	cwt.	
Germany ... ..	...	2	Commonwealth of Australia	5,843	3,586
Sweden ... ..	...	24			
	...	2,398	TANNING EXTRACTS—		
<i>Furniture :</i>			Commonwealth of Australia	...	217
Commonwealth of Australia	...	21,081	United Kingdom ... ..	...	757
United Kingdom ... ..	...	2,769	British Borneo ... ..	...	168
British Malaya ... ..	...	22	British Malaya ... ..	...	139
Hong Kong ... ..	...	116	India ... ..	...	96
India ... ..	...	11	Paraguay ... ..	...	293
Palestine ... ..	...	2	United States of America ...	...	41
Austria ... ..	...	15	Yugo-Slavia ... ..	...	104
				...	1,815

(a) Value includes £50 for which no quantity is shown. (b) Value includes £7,280 for timber imported via Commonwealth States, and for which no quantity is shown.

APPENDIX 2b—continued.

Imports of Timber, Tanning Substances and Essential Oils, etc.—continued.

Item and Country of Origin.	Quantity.	Value.	Item and Country of Origin.	Quantity.	Value.
ESSENTIAL OILS—			ESSENTIAL OILS—continued.		
Commonwealth of Australia	...	1,917	Italy ...	...	£ 407
United Kingdom	...	89	Japan ...	...	174
British East Indies	...	1	Madagascar ...	...	1
British West Africa	...	52	Netherlands	...	368
British West Indies	...	12	Netherlands East Indies	...	4
Ceylon	...	159	Soviet Union	...	2
India	...	2	Spain	...	19
Austria	...	2	Switzerland	...	3
China	...	18	United States of America	...	207
France	...	433			
Germany	...	4			3,921
Guiana, French	...	46			
Hungary	...	1			
			Total, All Imports	...	237,773

APPENDIX 2c.

Summary of Exports of Forest Produce since 1836.

Year.	Timber.		Sandalwood.		Year.	Timber.		Sandalwood.		Tanning Bark.	Essential Oils.*
	cu. ft.	Value.	Tons.	Value.		cu. ft.	Value.	Tons.	Value.	Value.	Value.
1836 ^a	10,000	2,500	...	...	1886	626,150	50,092	3,431	27,450	...	...
1837	...	...	...	...	1887	354,800	28,384	4,317	34,533	...	...
1838	...	...	...	...	1888	525,750	42,060	4,470	33,525	...	...
1839	...	...	...	...	1889	788,500	63,080	6,385	57,465	...	...
1840	...	...	...	...	1890	1,172,200	82,052	5,136	51,355	...	...
1841	...	...	...	...	1891	1,273,950	89,179	3,760	37,600	...	...
1842	...	...	...	...	1892	1,082,650	78,419	5,716	42,870	...	...
1843	...	...	...	...	1893	512,950	33,838	3,893	32,160	...	...
1844	b	163	...	...	1894	1,063,700	74,804	2,784	23,430	...	...
1845	...	...	...	...	1895	1,255,250	88,146	3,851	30,863	...	...
1846	2,550	255	32	320	1896	1,545,600	116,420	6,848	65,800	...	...
1847	12,200	1,120	370	4,444	1897	2,393,300	192,451	5,852	49,450	...	...
1848	3,350	333	1,335	13,353	1898	4,086,150	326,195	4,349	31,812	...	...
1849	...	...	...	...	1899	6,913,550	553,198	4,084	29,719	...	...
1850	10,500	1,048	...	...	1900	5,725,400	453,461	5,095	39,038	...	...
1851	1,250	268	219	1,593	1901	7,150,600	572,354	8,864	73,931	...	...
1852	7,050	806	...	...	1902	6,256,750	500,533	7,995	61,771	...	...
1853	52,200	5,220	...	...	1903	7,748,450	619,703	4,408	37,913	859	...
1854	58,500	7,023	...	...	1904	8,072,300	654,949	4,510	25,417	32,876	...
1855	76,900	12,078	...	...	1905	8,709,500	689,943	5,521	38,817	154,087	...
1856	70,500	9,671	...	...	1906	8,330,700	708,993	8,848	70,958	140,720	...
1857	69,200	9,449	280	2,524	1907	6,409,550	511,923	9,212	65,999	98,773	...
1858	29,250	2,340	745	7,455	1908	9,869,500	813,591	9,564	76,668	79,934	...
1859	67,250	6,051	1,278	17,259	1909	10,830,450	867,419	4,805	37,456	59,633	...
1860	54,800	4,932	1,687	16,360	1910	12,074,100	972,698	8,228	70,775	93,733	...
1861	27,750	2,497	2,558	24,945	1911	12,449,500	986,341	6,907	65,506	83,470	...
1862	68,800	7,151	2,393	21,541	1912	11,297,100	903,396	3,154	27,533	49,094	...
1863	32,900	2,963	2,807	25,265	1913	13,619,850	1,089,481	6,260	47,589	47,377	...
1864	58,300	5,508	2,724	24,520	1914 ^d	6,279,750	502,153	4,702	39,800	18,197	...
1865	183,950	15,693	1,686	13,490	1915 ^e	9,968,500	808,392	8,375	78,926	6,127	5
1866	85,650	6,849	2,965	23,722	1916 ^e	5,432,100	441,991	6,271	61,381	10,208	381
1867	56,750	4,541	2,305	18,442	1917 ^e	3,890,650	310,893	7,230	72,669	18,959	1,102
1868	8,000	638	3,256	26,045	1918 ^e	3,436,250	274,141	6,504	81,334	16,836	2,060
1869	179,900	14,273	4,124	32,998	1919 ^e	4,135,750	344,119	8,998	117,072	18,875	3,995
1870	157,200	17,551	6,112	48,890	1920 ^e	5,065,300	487,666	14,355	240,579	22,121	3,987
1871	218,500	15,304	3,366	26,926	1921 ^e	9,816,250	1,162,735	10,839	181,801	23,073	10,107
1872	37,000	2,590	3,942	31,536	1922 ^e	8,309,750	1,063,475	3,990	54,769	13,328	6,878
1873	68,150	4,771	6,292	62,916	1923 ^e	7,911,310	1,009,831	7,623	102,912	21,161	20,075
1874	345,600	24,192	7,057	70,572	1924 ^e	11,126,861	1,379,022	14,081	348,713	29,606	39,877
1875	342,350	23,965	6,646	66,465	1925 ^e	11,844,303	1,491,925	6,243	186,775	40,136	42,057
1876	219,050	23,743	6,577	65,772	1926 ^e	12,001,384	1,533,030	7,771	238,203	15,056	47,819
1877	336,150	36,979	4,247	31,851	1927 ^e	12,580,262	1,659,876	6,821	199,754	15,818	26,454
1878	580,900	63,902	4,675	35,064	1928 ^e	10,384,784	1,274,482	4,829	147,426	27,662	39,181
1879	627,250	69,742	4,667	35,001	1929 ^e	7,635,237	967,038	7,582	225,208	35,850	63,307
1880	662,550	66,252	5,197	51,970	1930 ^e	6,579,743	812,112	943	22,228	40,628	77,510
1881	792,750	79,277	7,716	77,165	1931 ^e	4,127,856	533,997	1,606	43,790	35,333	56,170
1882	936,500	93,650	9,605	96,050	1932 ^e	3,062,873	447,188	1,386	40,546	42,016	59,301
1883	997,000	79,760	7,031	56,250	1933 ^e	2,235,540	342,949	3,068	88,846	33,352	26,331
1884	861,700	68,936	2,620	20,960	1934 ^e	4,060,830	563,355	2,508	75,424	20,904	26,720
1885	843,150	67,850	4,527	36,216	1935 ^e	5,326,117	701,960	2,223	66,474	15,284	35,363
					1936 ^e	5,598,180	730,187	1,592	44,916	12,237	27,526
					TOTAL	322,705,930	31,872,504	418,830	5,135,399	1,373,373	619,860

^a The exports up to the year 1834 consisted only of supplies to shipping of which no record is kept. ^b Not available. ^c Approximate figures only. ^d Six months ended 30th June. ^e Year ended 30th June. * Principally Sandalwood Oil.