

1938

WESTERN AUSTRALIA

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# REPORT

on the operations of

# The Forests Department

for the

YEAR ENDED 30th JUNE, 1938

BY

S. L. KESSELL, M.Sc. (Adel.), Dip. For. (Oxon.), I.F.A.,  
CONSERVATOR OF FORESTS.

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PERTH:

BY AUTHORITY: FRED. WM. SIMPSON, GOVERNMENT PRINTER.

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

Jarraha (*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*).

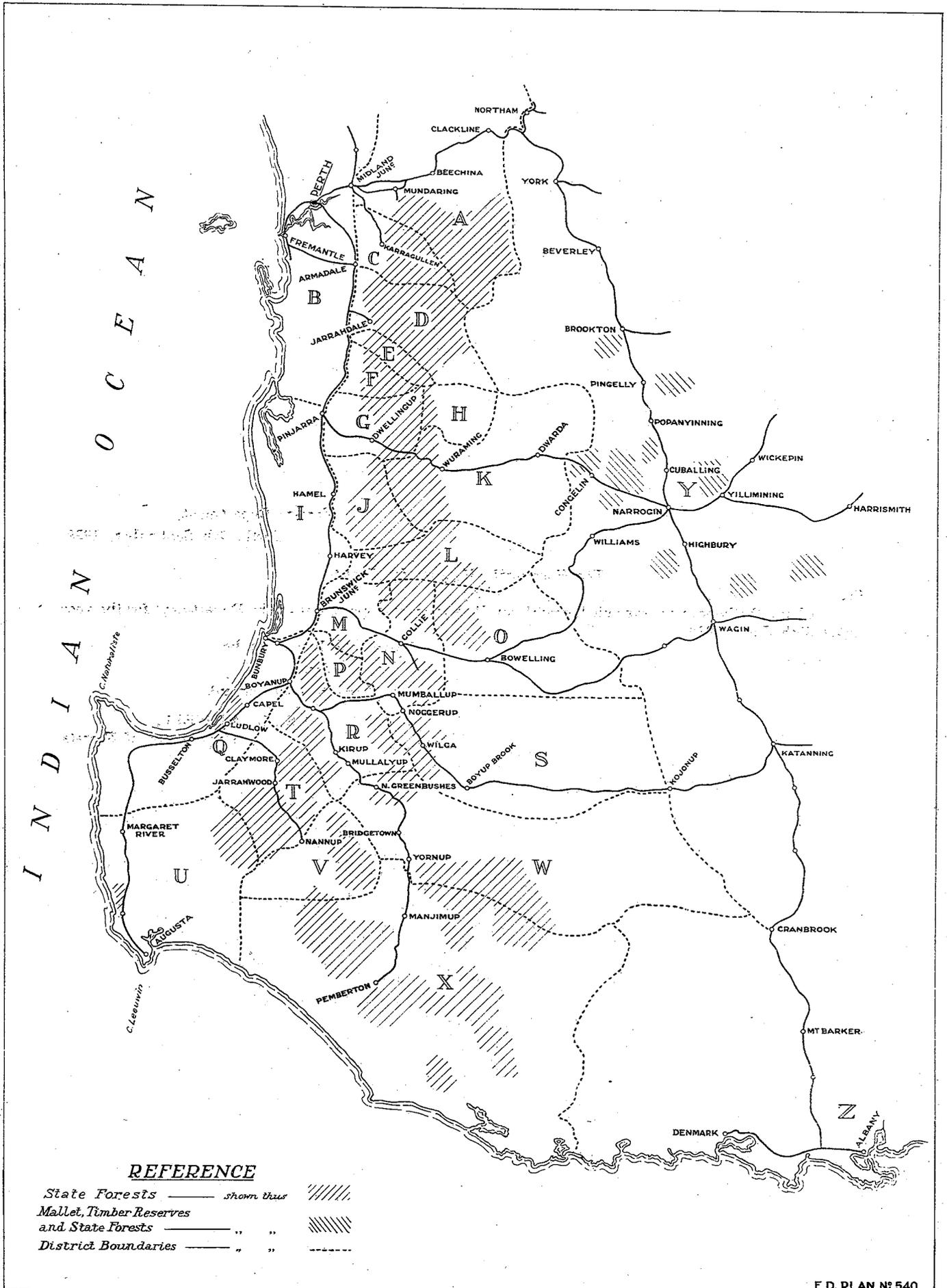
Brown Mallet (*Eucalyptus astringens*).

Blackboy (*Xanthorrhoea Preissii*).

### KEY TO DISTRICTS AND SUB-DISTRICTS.

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

(See map on opposite page.)



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Forests Department,  
Perth, 7th September, 1938.

*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, 1938.

I have the honour to be,

Sir,

Your obedient servant,

S. L. KESSELL,  
Conservator of Forests.

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## Annual Report on the Operations of the Forests Department for the year ended 30th June, 1938.

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### INTRODUCTORY REMARKS.

The quantity and value of timber exported to the Eastern States of Australia and overseas last year was the highest since 1928, and amounted to 7,545,744 cubic feet, valued at £932,420. This quantity represented a little over half the gross production, the balance being used locally.

Sawmills operating on State Forest absorbed the whole of the permissible cut for the year, amounting to 23,149,000 cubic feet of Jarrah logs and 5,248,000 cubic feet of Karri logs. An increase of 7 per cent. in the gross production of sawn timber was due principally to the establishment of a considerable number of small semi-portable sawmilling plants cutting Jarrah sleepers on private property.

Ten years have elapsed since the General Working Plan for Jarrah was approved by the Governor in Council, and the first periodic revision is now under consideration. This Working Plan was designed primarily to stabilise the Jarrah sawmilling industry on a sustained yield basis and, as a result of its provisions, a steady reorganization of the industry has been effected during the ten-year period, bringing the distribution and capacity of mills within the limits set out in the Plan. The achievement of this objective without any dislocation of trade has been made possible by the sympathetic co-operation of sawmilling companies who have been prepared to take the long view in all matters affecting the present and future welfare of the timber industry and to give practical assistance in the development of a successful technique for the regeneration and protection of the forests on which they are dependent for their future supplies.

Owing to generous grants from Unemployment Relief Funds during the past six years, the reforestation programme projected in the Jarrah Working Plan has been greatly exceeded and, insofar as regeneration operations and fire protection organization are concerned, practically all arrears of work has been overtaken and a new crop of Jarrah established on some 382,690 acres. The loss of increment owing to the neglect of this work prior to the last decade has caused a serious diminution in the timber assets of the State, which time only can make good. As a consequence the growing stock in our forests is in a very unbalanced condition owing to a serious shortage of age classes approaching maturity, and any increase in employment and production in the immediate future can be looked for only from the establishment of industries capable of converting into marketable products thinnings from regenerated areas.

To prevent further depreciation of the limited growing stock of mature and semi-mature trees remaining, the early establishment of fire control measures over all areas of virgin Jarrah and Karri forests is an urgent matter of great practical importance. Experience gained in fire protection measures in forests where regeneration operations have been carried out is being used as a basis for more extensive systems of fire control organization in State Forests in the extreme South-West. In this work it will be necessary to depend very largely on a labour force recruited from local settlers for carrying out both preventive measures such as early controlled burning, and for actual fire fighting. The Department will establish the necessary road systems for access, build telephone lines connecting District Offices, fire towers and settlers, and construct and man lookout towers. An organization on these lines was established for the protection of 240,000 acres of State Forest to the north and west of Manjimup last year, and work is now in hand to establish a similar organization for the protection of 500,000 acres of State Forest lying between Manjimup and Lake Muir.

The results of fire control work last summer were very satisfactory. Although temperatures were not excessive the season was not an easy one from the point of view of fire control as practically no rain fell between early December and late March over the major portion of the forest region of the South-West. The area under complete fire protection was increased to 885,000 acres, and the fact that only 190 acres, representing .02 per cent. of this area, suffered fire damage is a splendid tribute to the keenness and efficiency of the field staff in this most important phase of the Department's activities. Numerous fires arising from preventable causes were reported by the lookout towers and attended. Efforts are being directed towards reducing the number in future years and, if educational methods now being tried do not secure satisfactory results, stronger measures will have to be taken to enforce the severe penalties provided in the Bush Fires Act, 1937, for the careless or improper use of fire in the open during the summer months.

As an indication of the increasing efficiency of the Department's fire detection methods and fire-fighting organization and appliances, it is interesting to note, in connection with summer fires reported on and around State Forests under management, that the average time taken between smoke first rising and the arrival of the fire gang on the scene of the fire was 40 minutes, and the average area burnt before suppression was under two acres. These figures show the importance of rapid communication and transport in dealing with forest fires, which are slow to develop in the very early stages, but costly and difficult to suppress when they have burnt over a few acres and developed a "head fire."

Karri reforestation has kept pace with logging operations and a new crop was established on 1,720 acres by natural regeneration.

1,500 acres were cleared and sown with Brown Mallet, bringing the total area of plantation of this species in the Narrogin Division up to 11,170 acres.

During the winter of 1937, 525 acres of pines were planted, consisting of 306 acres of *Pinus radiata* and 220 acres of *Pinus pinaster*, making the total area of effective softwood plantations 11,245 acres.

In the goldmining areas extending from the Murchison in the North to the Esperance District in the South a uniform system of control has been extended to deal with the operations of all firewood and mining timber contractors. Licenses have been issued over defined areas, and regular inspections carried out to ensure that the bush is worked systematically with a minimum of waste, and that regulations designed to protect seed and shade trees, in the interests of the pastoral industry, are observed. To locate suitable bush for various classes of firewood and mining timber, 2,006,000 acres have been examined and belts of timber mapped and assessed by strip survey. During the year the mines situated in this region consumed 511,000 tons of firewood and used 22,400 tons of mining timber.

Owing to the conditions arising out of the Sino-Japanese conflict, the quantity of sandalwood exported was the smallest during any year since 1858. The Interstate and overseas organization for the regulated marketing of this commodity has been maintained intact during this most difficult period in the history of the industry and is in a position to take immediate advantage of all opportunities which occur to forward supplies to consuming centres in the interior of China. An extensive examination of reputed sandalwood-bearing country in the North-West proved disappointing, and from information now available, it would appear that the industry must rely for future supplies on districts already opened up.

## CHAPTER I.

### THE FOREST AREA.

#### (1) State Forests (Forests Act, 1918).

During the year one new State Forest, comprising 1,750 acres of pine plantation at Ludlow, was dedicated. Existing State Forests were amended by the addition of 24,281 acres and by the excision, with the approval of Parliament, of 1,062 acres. The additions included 16,286 acres of Jarrah country taken over from the Commissioner of Railways and 7,167 acres for the propagation of Mallet. The total area of State Forests is now 3,196,999 acres, particulars of which are set out in the following statement:—

	June, 1937.	June, 1938.	Increase.
	acres.	acres.	acres.
Jarrah ... ..	2,561,379	2,577,379	16,000
Karri ... ..	151,782	151,782	...
Jarrah and Karri (Mixed) ... ..	370,018	370,071	53
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	6,592	1,750
Mallet ... ..	51,470	58,637	7,167
Total ... ..	3,172,029	3,196,999	24,970

#### (2) Timber Reserves (Forests Act, 1918).

The total area of timber reserves was increased by 5,220 acres as the result of the declaration of a reserve around the new Agnew townsite in order to protect the natural growth within a two-mile radius of the township.

Particulars of the existing reserves are set out hereunder:—

	June, 1937.	June, 1938.	Increase.
	acres.	acres.	acres.
Jarrah ... ..	37,816	37,816	...
Wandoo ... ..	9,669	9,669	...
Sandalwood ... ..	27,105	27,105	...
Pine Planting ... ..	25,951	25,951	...
Mallet ... ..	677	677	...
Mining Timber, Firewood, etc. ... ..	1,665,467	1,670,687	5,220
Total ... ..	1,766,685	1,771,905	5,220

## CHAPTER II.

### REVENUE.

The gross revenue of the Department for the financial year ended 30th June, 1938 amounted to £176,201, as compared with £164,888 for the previous year.

The rebate of 20 per cent. on royalties payable on log timber was continued until the 31st December, 1937, and was then reduced to 16 per cent.

The rebate of 25 per cent. on inspection fees on all sawn timber, including sleepers, and on hewn sleepers for export, was continued.

The amounts so rebated were as follows:—

	£
On Log Timber .....	20,973
„ Inspection Fees .....	2,909
Total .....	£23,882

Log royalty for the year amounted to £110,002, an increase of £11,820 over the previous year's figures.

Owing to the unsettled conditions in China and consequent loss of markets, Sandalwood revenue realised only £24,051, a drop of £5,036 as compared with the receipts for the previous year.

#### PRINCIPAL SOURCES OF REVENUE FOR PAST TWO YEARS.

Year.	Royalties.		Inspection Fees.	Sandalwood.	Firewood, Piles and Poles, etc.	Miscellaneous.	Goldfields Revenue.	Total.
	Logs for Sawmilling.	Hewn Timber.						
1936-37 ... ..	£ 98,182	£ 9,216	£ 6,913	£ 29,087	£ 5,700	£ 6,239	£ 9,551	£ 164,888
1937-38 ... ..	110,002	8,480	8,116	24,051	4,974	8,648	11,930	176,201

#### TIMBER PRODUCTION.

PRODUCTION OF TIMBER FOR YEAR ENDED 30TH JUNE, 1938 (EXCLUSIVE OF MINING TIMBER, FIREWOOD AND PILES AND POLES).

Forest Division No.		MILL LOGS.					HEWN TIMBER.				Grand Total.	
		Total.			Jarrah.	Other.	Total.					
		Jarrah.	Karri.	Other.			In Log.	Recovery of Sawn Timber.	In Square.	In Square.	In Log.	In Square.
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)		
1	Crown Lands ...	924,798	175	8,418	933,391	326,673	131,852	...	659,260	131,852	1,592,651	458,525
	Private Property ...	88,535	19,484	242	108,261	36,333	83,209	...	416,045	83,209	524,306	119,542
2	Crown Lands ...	12,626	...	...	43,187	15,115	...	...	...	...	43,187	15,115
	Private Property ...	33,175	...	...	33,175	11,611	...	...	...	...	33,175	11,611
3	Crown Lands ...	5,234,948	...	14,783	5,249,731	1,837,406	49,859	877	253,680	50,736	5,503,411	1,888,142
	Private Property ...	811,704	...	85,024	896,728	313,855	126,421	6,547	664,840	132,968	1,561,568	446,823
4	Crown Lands ...	3,673,467	...	79,442	3,752,909	1,313,518	78,571	3,346	409,585	81,917	4,162,494	1,395,435
	Private Property ...	655,115	...	93,477	748,592	262,007	48,441	11,491	299,660	59,932	1,048,252	321,939
5	Crown Lands ...	3,919,210	196,024	4,590	4,119,824	1,426,256	117,798	12,644	652,210	130,442	4,772,034	1,556,698
	Private Property ...	1,277,219	...	37,941	1,315,160	460,306	591,921	97,011	3,444,660	688,932	4,759,820	1,149,238
6	Crown Lands ...	1,856,345	5,050,083	...	6,936,428	2,023,743	110,781	...	553,905	110,781	7,490,333	2,134,524
	Private Property ...	351,308	424,299	...	775,607	237,518	631,002	...	3,155,010	631,002	3,930,617	868,520
7	Crown Lands ...	...	...	59,265	59,265	20,743	...	...	14,818	74,090	133,355	35,561
	Private Property ...	...	...	25,242	25,242	8,835	...	2,179	8,597	53,880	10,776	19,611
8	Crown Lands ...	2,086,920	...	42,680	2,129,609	745,363	10,428	...	52,140	10,428	2,181,749	755,791
	Private Property ...	203,739	...	...	203,739	71,309	19,500	...	650	100,750	20,150	304,489
9	Crown Lands ...	87,760	1,785	24,765	114,310	39,866	51,520	18,139	348,295	69,659	462,605	109,525
	Private Property ...	1,508,917	44,227	206,831	1,819,975	633,453	193,047	113,161	1,531,040	306,208	3,351,015	939,661
10	Crown Lands ...	5,323,153	...	72,445	5,395,598	1,888,459	...	...	...	...	5,395,598	1,888,459
	Private Property ...	124,256	...	13,697	137,953	48,283	39,584	146	198,650	39,730	336,603	88,013
Totals	Crown Lands ...	23,149,236	5,248,067	336,949	28,734,252	9,637,142	550,809	49,824	3,003,165	600,633	31,737,417	10,237,775
	Private Property ...	5,053,968	488,010	522,454	6,064,432	2,083,510	1,735,304	237,603	9,864,535	1,972,907	15,928,967	4,056,417
Grand Totals	...	28,203,204	5,736,077	*859,403	34,798,684	11,720,652	2,286,113	†287,427	12,867,700	2,573,540	47,666,384	14,294,192

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 502,977 cubic feet Wandoo; 151,821 cubic feet Sheoak; 80,284 cubic feet Tuart; 74,874 cubic feet Blackbutt; 44,866 cubic feet Pine; 1,634 cubic feet Red Tingle Tingle; 1,536 cubic feet Marri; 1,174 cubic feet York Gum; 397 cubic feet River Banksia; 340 cubic feet Bullich.

† Includes 286,300 cubic feet Wandoo; 566 cubic feet Yellow Tingle Tingle; 561 cubic feet Red Tingle Tingle.

#### SAWMILLING AND HEWING.

Normal production in the timber industry has been maintained. Sixty sawmills were engaged in cutting timber from Crown Lands and a similar number of small mills operated during the year on private property.

Last year's intake of mill logs amounted to 34,799,000 cubic feet and the production of sawn timber therefrom was 11,721,000 cubic feet or 7 per cent. more than the production for the previous year. Practically the whole of this increase came from private property and represents principally sawn sleepers produced by the portable sleeper mills which have recently become an important feature of operations on cut over bush. There were as many as forty of these mills operating during the year.

No increased production of Jarrah mill logs can be looked for from Crown Lands in view of the fact that the present intake of logs from this source is 23,000,000 cubic feet, which is the maximum annual intake permitted under the General Working Plan governing sawmilling operations on Crown Lands. The average number of men engaged in sawmilling operations during the year was 3,200.

The quantity of hewn timber produced totalled 2,573,500 cubic feet and is slightly less than the production for the previous year. This is due partly to the difficulty experienced in finding suitable bush for hewing operations and to the completion of most of the overseas sleeper orders before the end of the year. An average of approximately 720 hewers and carters were engaged throughout the year.

The estimated value of the total production of sawn and hewn timber is £1,900,000.

The respective quantities of sawn and hewn timber, measured in the square produced from Crown Lands and private property for the past two years is 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 other than Sleepers.	Sawn Sleepers.	Hewn Timber.	
1936-37 ...	cub. ft. 8,242,417	cub. ft. 1,220,294	cub. ft. 608,575	cub. ft. *1,464,918	cub. ft. †	cub. ft. 2,174,378	£ 1,800,000
1937-38 ...	8,590,815	1,046,327	600,633	1,088,493	995,017	1,972,907	1,900,000

\* Includes Sawn Sleepers.

† Included with Sawn Timber.

#### TIMBER EXPORTS.

During the year under review 7,545,744 cubic feet of timber valued at £932,420, and wood manufactures to the value of £47,934 were exported from the State. The timber exported represented 53 per cent. of the total production of sawn and hewn timber for the year and included 3,849,678 cubic feet of sleepers and 3,688,031 cubic feet of other undressed timber. The value of timber exported shows an increase of £232,736 on the previous year's operations and is the best year since 1928. The overseas sleeper trade is largely responsible for this improvement and shows an increase of £210,432 on figures for the previous year.

The principal markets during the past two years and the value of the timber exported to each are set out hereunder :—

	Year ending 30th June, 1938.	Year ending 30th June, 1937.
	£	£
Eastern States of Commonwealth ...	210,502	222,602
United Kingdom ...	176,774	147,878
Iraq ...	141,034	27,791
South African Union ...	124,058	89,350
Egypt ...	83,761	25,672
China ...	71,878	95,236
Ceylon ...	43,392	35,272
New Zealand ...	26,850	24,192
Belgium ...	24,228	7,117
Mauritius ...	16,063	7,535

Details of timber exports are given in Appendix 2a.

#### TIMBER IMPORTS.

The total value of timber (including wood manufactures) imported was £270,126. Of this amount £165,183 represents wood manufactures, 86 per cent. of which are of Eastern States origin.

Two of the principal items included under wood manufactures are plywood and veneers, and furniture. During the last five years the imports of these items have steadily increased from £20,708 and £13,757 to £56,437 and £35,808, respectively.

Dressed and undressed timber imported was valued at £104,943, the principal countries of origin being Eastern States of Australia £46,412, Canada £26,777, United States of America £13,863 and Sweden £7,579.

A detailed statement of imports is given in Appendix 2b to this report.

#### TIMBER INSPECTION.

The quantity of timber (excluding piles and poles) inspected amounted to 4,914,000 cubic feet, representing an increase of 13 per cent. on last year's operations. Of this quantity 89 per cent. consisted of railway sleepers. The greater proportion of the timber inspected is for the export market and inspection in most cases is made to standard specifications published by the Department. Apart from sleepers supplied to the West Australian Government Railways and piles and poles, there was practically no timber inspected for local requirements. Thirty-eight officers carried out the inspection in conjunction with their other duties.

Piles and poles for use in Government works within the State, totalling 61,116 lineal feet were also inspected.

The revenue received from timber inspection amounted to £8,116.

## SANDALWOOD.

Prior to July, 1937, there had been a steady improvement in the Sandalwood trade, and conditions in China, which is the only large market for the wood, gave promise of further improvement during the ensuing year, but with the commencement of the Sino-Japanese war the outlook changed. Practically all the important transport routes with the interior were closed and the main Sandalwood consuming provinces became the principal centres of war.

Despite chaotic conditions in China the Sandalwood organisation for the distribution of Sandalwood has been maintained and advantage has been taken of any trade opportunities offering with the result that small deliveries have been made from time to time, although these have been very far below normal. The future of the industry, however, is very obscure and depends upon the duration of hostilities and general economic conditions.

Orders were placed on the Goldfields at the beginning of the year for 726 tons of wood, but on completion of these orders it was found necessary to cease further pulling as stocks were accumulating at Fremantle. Owing to the long distance pullers have to go to obtain good average quality Sandalwood the payment to them as from the 1st July, 1937, was increased by £1 per ton to cover the increased haulage costs.

The quantity of Sandalwood exported for the year amounted to 747 tons valued at £22,884. This is the smallest quantity exported in any one year since 1858 and is only the second occasion since that date when the quantity has been less than 1,200 tons.

The following statement shows the quantity of Sandalwood obtained from all sources during the year ended 30th June, 1938:—

Locality.	For Oil Distillation within the State.	For Export.
	tons.	tons.
From Crown Lands South of 26th parallel of South Latitude ...	179	1,197
From Crown Lands North of 26th parallel of South Latitude ...	7	...
From Private Property ... ..	...	14
Total ... ..	186	1,211

### *Sandalwood for Oil Distillation.*

One hundred and eighty-six tons of Sandalwood were used locally in the distillation of oil. Of this quantity 179 tons consisted of roots and butts sawn from the export logs upon their arrival at Fremantle and 7 tons of logs obtained from the extreme North-West of the State. The quantity of Sandalwood oil distilled amounted to 13,923 lbs. and 25,327 lbs. were exported.

## OTHER FOREST PRODUCE.

### *Piles and Poles.*

Five thousand two hundred and thirty-two piles and poles totalling 117,239 lineal feet were obtained from Crown Lands. In addition 149,990 lineal feet were reported to the Department as having been obtained from private property but the figures are incomplete as the Department is not advised of all poles and piles obtained from this source. The use of Wandoo for telegraph poles and for bridge timbers is becoming increasingly popular owing to its durability. During the past year 5,100 Wandoo telegraph poles and 715 piles, stringers and corbels, the majority from private property, were obtained for use in local works.

### *Tanning Barks and Extracts.*

The quantity of Mallet bark stripped last year on Crown Lands and private property was 2,433 tons, which is slightly more than that obtained during the previous year. Of this quantity 1,428 tons, valued at £13,865, were exported.

The factories established about three years ago by Industrial Extracts, Ltd. at Belmont and Bodington for the manufacture of a tanning extract from Wandoo timber, operated throughout the year, using 31,567 tons of timber, representing nearly twice the quantity of raw material put through the plants during the previous year.

### *Firewood and Mining Timber.*

Five hundred and eleven thousand tons of firewood and 22,400 tons of mining timber were consumed on the Goldfields during the year. The supplying of this timber gives employment to approximately 850 men, who operate under permits and licenses issued by the Department.

The bulk of the firewood and mining timber used in Kalgoorlie and Boulder is supplied by the W.A. Goldfields Firewood Supply, Ltd., which until recently operated from Kurrawang. This Company has now transferred its headquarters and plant to Lakeside, and has constructed 60 miles of tramway to tap virgin bush south-east of Boulder from which the whole of its requirements are now being obtained.

In the Murchison District most of the firewood used is Mulga, which is obtained from pastoral areas. As this is a valuable fodder plant steps have been taken to ensure that a number of healthy growing trees are left on each square chain over which cutting operations are conducted. During a recent inspection of this country it was reported that as a result of a series of exceptionally dry seasons a large number of the Mulga trees had died in certain localities.

In the coal mines at Collie 11,429 tons of mining timber were used. Investigations carried out concerning the future supplies of mining timber at Collie are referred to on page 18 under the heading "Utilisation."

Approximately 65,000 tons of firewood for the Metropolitan Area, apart from sawn blocks obtained from mill waste, were obtained from Crown Lands during the year. Figures relating to the quantity of firewood obtained from private property for this market are not available.

Particulars are given in the following statement of minor forest produce obtained during the year :—

FOREST PRODUCE NOT ELSEWHERE INCLUDED IN PRODUCTION TABLES, OBTAINED DURING YEAR ENDED 30TH JUNE, 1938, 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* .....	...	...	...	11,429	...	...	...	...	158	...	22,400	33,987 tons
Sleepers for Goldfields Wood Lines .....	...	...	...	...	...	...	...	...	...	...	26,610	26,610 c. ft.
Firewood, including Charcoal .....	190	15,328	106	27	238	195	9	50,651	10,384	1,289	188,403	266,820 tons
Mining Firewood, including Charcoal .....	...	...	...	...	825	...	...	...	...	...	322,900	323,725 "
Piles and Poles* .....	3,026	9,369	35,744	12,795	71,688	5,249	9,633	33,825	78,924	11,977	...	267,230 lin. ft.
Fencing Posts and Rails .....	820	...	1,163	600	5,809	580	900	1,350	8,301	2,400	...	21,923 No.
Blackboy .....	...	...	...	...	...	...	...	3	365	...	...	363 tons
Mallet Bark* .....	...	...	...	...	...	...	2,433	...	...	...	...	2,433 "
Wattle Bark* .....	2	...	...	...	...	...	15	...	...	...	...	17 "
Stone .....	...	...	...	...	...	...	...	4,106	...	...	...	4,106 c. yds.
Boronia Megastigma* .....	...	...	...	...	...	161	...	...	1,876	...	...	2,037 lbs.
Wandoo Timber for Tanning Extract .....	...	...	...	...	...	...	...	...	...	...	...	31,567 tons

\* 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.

#### FOREST OFFENCES.

Ninety-one forest offences were reported to Head Office by field officers during the year, and in eleven cases proceedings were taken against the offenders. Convictions were recorded in nine cases, and fines, costs and damages amounting to £79 were imposed. Two cases were dismissed without any order as to costs being made by the Court, but royalty amounting to £11 11s. on the timber illegally cut was paid to the Department.

In 14 cases warnings were issued and the remainder were dealt with by the collection of royalty, damages, or the confiscation and sale of the timber illegally cut. The amount received by the Department in this way amounted to £263.

Sandalwood to the value of £241 plus royalty was confiscated and sold for breaches of the regulations. Where it was considered that the breach was unintentional and there was no attempt to evade royalty payments a compassionate payment was made to the puller to cover his out-of-pocket expenses. Amounts paid in this way totalled £105.

### CHAPTER III.

#### (1)—EXPENDITURE.

The Consolidated Revenue Fund expenditure on general administration, which includes both office and field work in connection with the administration of the Forests Act and Regulations, and such direct revenue-producing activities of the Department as timber inspection, amounted to £27,105, as compared with £22,453 for the previous year.

An amount of £64,862 was expended during the year on unemployment relief works, and of this amount £25,000 was contributed by the Commonwealth Government under the Commonwealth Aid to Forestry Scheme.

In addition to this an amount of £24,028 was made available by the State Government for the provision of light employment in the forests for unemployed men whose disabilities prevent them from engaging in heavy or arduous labour and who were consequently listed as "C" class workers.

The provision of these amounts enabled the Department to maintain an average number of 485 wages employees, inclusive of relief workers, in employment throughout the year.

Three-fifths of the net revenue of the Department, exclusive of revenue derived from Sandalwood, amounted to £54,765 for the year, and this amount was credited to the Reforestation Fund in accordance with the provisions of Section 41 of the Forests Act, 1918.

Recent developments in fire suppression technique and big extensions in the area under fire control in every Division have led to the increased use of motor vehicles. Departmentally-owned utility trucks now number 32, most of which have been purchased in the last three years. To cope with regular replacements without placing an undue strain on the Reforestation Fund in any one year, approval has been given to set aside an amount each year to a special account known as the "Motor Vehicle Depreciation Account," which will be used solely for the purchase and replacement of motor vehicles. The credit balance in this fund at the end of the year was £3,799 1s. 7d.

The following table sets out the position of the Reforestation Fund as at 30th June, 1938:—

	£	s.	d.	£	s.	d.	£	s.	d.
Revenue for Year 1937-38	...	...	...	...	...	...	176,200	16	7
Less Sandalwood	...	...	...	...	...	...	24,050	13	4
							152,150	3	3
Plus Adjustment—Recoup Salary	...	...	...	...	...	...	300	18	4
							152,451	1	7
Consolidated Revenue Fund Expenditure	...	...	...	27,104	11	2			
Less Sandalwood Expenditure	...	...	...	2,146	10	11			
„ Timber Industry Regulations—Salaries	...	...	...	662	4	9			
„ Timber Industry Regulations—Incidentals	...	...	...	427	0	6			
				3,235	16	2			
Interest on Loan Money	...	...	...	23,868	15	0			
Sinking Fund Contributions	...	...	...	34,309	13	5			
Special Acts	...	...	...	1,715	9	4			
Audit Fees	...	...	...	1,210	0	0			
				101	0	0			
							61,204	17	9
Net Revenue	...	...	...	...	...	...	£91,246	3	10
Reforestation Fund—									
Balance at 30th June, 1937	...	...	...	...	...	...	80,512	6	7
*Three-fifths Revenue transferred	...	...	...	54,764	16	11			
Direct Credits	...	...	...	4,226	9	3			
							58,991	6	2
							139,503	12	9
Expenditure for Year 1937-38	...	...	...	50,211	8	5			
Transfer to Motor Vehicle Depreciation Fund	...	...	...	3,799	1	7			
							54,010	10	0
Balance as at 1st July, 1938	...	...	...	...	...	...	£85,493	2	9

\* Expenditure understated by £28 11s. 3d. in Treasury books. To be adjusted July, 1938.

## (2.)—REFORESTATION OPERATIONS.

### (A)—FOREST MANAGEMENT.

#### SUMMARY OF PERMANENT ESTABLISHMENT AND NEW WORKS CARRIED OUT DURING YEAR.

No.	DIVISION.	Headquarters.	District.	ROADS.		FIRELINES.		TELEPHONE LINES.		HOUSES.		
				Cleared 1937-1938.	Total miles cleared & maintained.	Miles cleared, 1937-1938.	Total miles cleared & maintained.	Miles erected, 1937-1938.	Total mileage erected.	Built, 1937-1938.	Total No. built.	Topographical Survey.
1	Busselton	.....	Busselton	miles.	miles.	miles.	miles.	miles.	miles.	No.	No.	miles.
2	Mundaring	.....	Mundaring	69	130	18	18	23	23	.....	10	.....
3	Dwellingup	.....	Dwellingup	9	112	11	151	45	45	.....	15	.....
			Wuraming	45	86	34	245	.....	.....	.....	16	37
			Duncan's	12	85	21	280	.....	95	.....	7	41
			Huntly	26	94	5	244	.....	.....	.....	7	.....
4	Collie	.....	Collie	72	111	28	183	.....	.....	.....	4	.....
			Wellington	37	75	37	620	8	105	.....	11	.....
5	Kirup	.....	Kirup	58	300	36	274	.....	.....	.....	5	.....
			Nannup	27	70	5	926	.....	.....	.....	20	.....
			Greenbushes	.....	5	5	173	52	162	.....	5	.....
6	Manjimup	.....	Manjimup	135	179	19	74	.....	.....	.....	7	.....
			Pemberton	16	68	26	253	72	134	.....	5	52
7	Narrogin	.....	Narrogin	28	143	20	149	.....	.....	.....	5	.....
8	Kelmscott	.....	Kelmscott	25	120	49	410	.....	62	.....	10	.....
			Carinyah	42	198	65	289	.....	.....	.....	9	.....
			Gleneagle	8	125	63	507	13	125	.....	8	100
9	Perth	.....	Jarrahdale	.....	.....	.....	378	.....	.....	.....	4	.....
			Metropolitan	.....	.....	.....	.....	.....	8	.....	4	.....
			Albany	.....	.....	.....	.....	.....	.....	.....	1	.....
10	Harvey	.....	Harvey	.....	.....	.....	.....	.....	.....	.....	10	.....
			Willowdale	10	103	11	231	.....	108	.....	9	30
			Talbanalla	38	244	117	372	.....	.....	.....	8	.....
			Totals	657	2,258	570	5,780	145	867	1	175	260

## FOREST SURVEY.

Survey work was carried out as required by the various Divisional staffs using the Forester's compass and 5-chain band. Surveys of compartment boundaries, baselines, forest roads, firelines and general topographical features necessitated the running of 260 miles of traverse lines.

## PERMANENT ESTABLISHMENT.

During the year a new District Headquarters was established at Denmark and one house built. A total of 175 houses have now been built within forest districts and are occupied by officers of the Administrative staff, Foresters, Overseers and permanent employees.

With the extension of fire control organisation to embrace further areas of mixed Jarrah and Karri forests, two additional fire lookout towers, each 125 feet in height have been constructed in the Kirup and Manjimup Divisions.

The Departmental telephone system has been extended by the erection of a further 145 miles of earth circuit lines, a considerable portion of this having been erected in order to connect local farmers and settlers with District offices and resident staff. The telephone system now embraces 867 miles of lines operating between Divisional and District offices, lookout towers, resident staff, forest stations and farmers and settlers living in the vicinity of State Forest.

With the assistance of an allocation of £12,000 under the Federal Roads Grant, the Department has, during the past year, been able to continue the construction of roads of access and firelines in large areas of virgin forest now being brought under fire control. As most firelines are graded and available for use as emergency roads, the distinction between roads and firelines is no longer a definite one. A system of forest roads has therefore been delineated, which embraces main roads of access and management, while other roads established essentially as a means of access for fire control purposes, are included under the heading of firelines. During the year 657 miles of forest roads were cleared and graded for motor traffic and the necessary bridges and culverts constructed, while a further 570 miles of firelines were cleared. The system of forest roads and firelines which traverses the main forest areas of the State now includes 2,258 miles of forest roads and 5,780 miles of graded or ploughed firelines surrounding and further subdividing compartments.

## ASSESSMENT SURVEYS.

During recent years considerable attention has been given to soil survey work, both in established pine plantations and indigenous forests, and during the past year 43,700 acres of marginal Jarrah forest within the Kirup Division, were covered by soil surveys as a basis for the delineation of forest types. Of this area, 23,150 acres in the vicinity of Cambray, Sussex and Jarrahwood, and 10,000 acres in the Hester and Greenbushes District, were covered by a 15 chain strip assessment. The soil types were first determined from sample holes and the survey was based on the surface characteristics of these types.

At Cambray a detailed soil profile survey was carried out over an area of 550 acres.

The total area covered by soil surveys during recent years and up to June, 1938, includes :—

(1) Detailed soil profile surveys—	acres.
Pine Plantation areas	14,740
Forest Settlement areas	16,950
Jarrah Forest	11,130
	<u>42,820</u>
(2) Assessment surveys—	
Jarrah Forest	107,150

## (B)—SILVICULTURE.

(a) Jarrah.

## SUMMARY OF OPERATIONS FOR THE YEAR AND TOTAL AREA REGENERATED.

No.	Division.		District.	Area regenerated. 1937-1938.	Total area regenerated at 30th June, 1938.	Thinning. 1937-1938.	Tree-marking.		Top Disposal.
	Headquarters.						Saw-milling.	Hewing.	
				acres.	acres.	acres.	acres.	acres.	acres.
2	Mundaring	...	Mundaring	410	4,353	...	5	...	133
3	Dwellingup	...	Dwellingup	6,952	36,549	1,207	1,858	975	2,490
			Wuraming	6,270	32,356	116	3,591	...	2,531
			Duncans	1,940	29,506	762	2,143	857	595
			Huntly	2,044	21,956	...	1,380	...	1,052
4	Collie	...	Collie	4,200	39,945	...	7,543	1,023	7,460
			Wellington	3,266	13,072	813	...	...	1,319
			Muja	...	...	...	...	2,180	...
5	Kirup	...	Kirup	193	43,949	...	4,064	...	4,691
			Nannup	...	7,895	...	1,797	...	853
			Greenbushes	...	3,674	...	...	...	...
6	Manjimup	...	Manjimup	...	7,200	...	1,939	...	922
			Pemberton	...	...	...	...	...	...
8	Kelmscott	...	Carinyah	769	18,150	...	5,615	...	3,530
			Gleneagle	1,100	39,592	...	730	...	1,681
			Jarrahdale	6,617	33,029	...	6,385	...	11,564
10	Harvey	...	Willowdale	3,153	29,132	63	1,628	...	3,240
			Tallanalla	904	22,331	...	5,110	...	4,571
			Totals	37,818	382,689	2,961	43,788	5,035	46,632

## JARRAH.

Principally as a result of the large-scale reforestation operations made possible by grants from Unemployment Relief Funds during the past five years, practically all areas of good quality Jarrah forest requiring immediate silvicultural treatment have now received attention. For the most part, regeneration operations have been necessary to secure a full stocking of natural regrowth, partly from seed and partly from coppice from small stumps resulting from the cutting down of malformed advance growth. On limited areas where natural regrowth has escaped serious fire damage, thinning operations have been carried out.

As a consequence of the position outlined above, the area treated for regeneration during the year has been considerably smaller than in previous years and amounted to only 37,818 acres.

Attention is now being focussed on other aspects of reforestation work and, in particular, on problems dealing with the tending and general silvicultural requirements of the stands of young Jarrah now established and protected on some 382,690 acres. Experimental plots to investigate the growth and development of young Jarrah and its response to various types of thinning treatment have been laid down in several districts.

Pending the results of this investigational work thinning operations in areas of second growth Jarrah have therefore been carried out on a comparatively small scale only and during 1937-38, were restricted to an area of 2,961 acres.

Under the Jarrah Working Plan the permissible cut of mill logs from Crown Lands and State Forests was fixed at 23,000,000 cubic feet per annum, and the annual cut has been maintained at approximately this figure. For the year 1936-37, the figure of 22,565,600 was slightly below the allowable cut and during the past year 23,149,000 cubic feet of mill logs were removed from Crown Lands and State Forests. This volume was obtained from a total area of 75,274 acres which included:—

	Virgin Bush. acres.	Cut over Bush. acres.	Total acres.
Area cut over under Treemarking control ....	21,513	22,275	43,788
Area cut over under minimum girth restrictions	10,675	20,811	31,486
Total Area ....	32,188	43,086	75,274

## KARRI.

During the year 1,719 acres of cut over Karri forest in the Manjimup Division were treated for natural regeneration. The total area of Karri forest which, following trade cutting, has been reforested and placed under intensive fire protection, now amounts to 20,075 acres.

Provisions for the extension of operations in the mixed Jarrah and Karri forests of the Manjimup Division have been made, and a large program of subdivision and opening up of new areas has been carried out involving the construction of 151 miles of forest roads and 45 miles of firelines.

During the year 5,248,067 cubic feet of mill logs were removed from Crown Lands and State Forests, as compared with 5,356,956 cubic feet for the previous year. This timber was obtained from a total area of 2,089 acres which yielded an average of 50 loads or 2,500 cubic feet per acre.

## MALLET.

On unproductive country along the Great Southern Railway and chiefly within the Narrogin Division further areas of plantations of Brown Mallet were established. During the year 1,498 acres of open Wandoo forest with occasional patches of Brown Mallet and infested with poison plants of the genera *Gastrolobium* and *Oxylobium*, were clear felled, burnt and spot sown with Brown Mallet.

The total area of established plantation now amounts to 11,168 acres which is located in compact areas within a 30-mile radius of Narrogin. In addition, an area of 350 acres of Wandoo-Mallet forest has been spot sown with Mallet, amongst the standing timber following a burn.

For the management and protection of these plantations the system of roads and firelines was extended by the clearing of 28 miles of forest roads, 16 miles of plantation firebreaks and 20 miles of ploughed or graded firelines.

In the younger areas of established plantations, cleaning operations embracing the liberation of Mallet from competition with Wandoo suckers, were carried out over 1,415 acres.

To provide for future sowing operations in the establishment of new areas of plantation, 717 lbs. of Brown Mallet seed were collected from vigorous trees of good form.

## (3)—AFFORESTATION.

## AREAS OF CONIFERS PLANTED 1937, AND TOTAL AREA ESTABLISHED.

Division.	Plantation.	Area established, 1937.				Total Area established.			
		<i>Pinus radiata.</i>	<i>Pinus pinaster.</i>	Other conifers.	Total.	<i>Pinus radiata.</i>	<i>Pinus pinaster.</i>	Other conifers.	Grand Total.
No. 1—		acres.	acres.	acres.	acres.	acres.	acres.	acres.	acres.
Busselton ...	Coolilup ...	...	...	...	...	28.5	773	13	814.5
	Stirling ...	...	5.5	...	5.5	112	684.5	7	803.5
	Keenan ...	104	...	5.5	109.5	451.5	173.5	7.5	632.5
	Boranup ...	10	9.5	...	19.5	39	69	...	108
No. 2—									
Mundaring ...	Helena ...	3*	...	...	3*	496.5	210.5	38	745
	Greystones ...	20*	...	...	20*	396	176.5	46.5	619
	Beraking ...	...	...	...	...	147	57	91	295
	Mudros ...	4	...	...	4	168.5	120	16	304.5
	Darkin ...	...	...	...	...	108	157	3	268
No. 4—									
Collie ...	Proprietary	...	21.5	...	21.5	...	360	2	362
	Mungalup	...	...	...	...	52	12	2.5	66.5
	Bowelling ...	...	...	...	...	9.5	28.5	28	66
No. 5—									
Kirup ...	East Kirup	92.5	...	...	92.5	337.5	120.5	4	462
	Nannup ...	...	...	...	...	14	31.5	21.5	67
No. 6—									
Manjimup ...	Big Brook	...	...	...	...	267	2	41	310
No. 9—									
Metropolitan ...	Applecross	...	115.5	...	115.5	...	1,111.5	...	1,111.5
	Gnangara ...	...	30.5	...	30.5	...	1,313.5	7	1,320.5
	Collier ...	...	30	...	30	...	884.5	...	884.5
	Scaddan ...	...	...	...	...	...	210	...	210
Albany ...	Pardelup ...	...	...	...	...	279.5	215	1.5	496
	Albany ...	...	...	...	...	1	4.5	9	14.5
No. 10—									
Harvey ...	Myalup ...	...	...	...	...	9	742	23.5	774.5
	Harvey Weir	71	...	...	71	345.5	86	15	446.5
	Hamel ...	...	2.5*	...	2.5*	12.5	46.5	5	64
Totals ...	...	304.5	215	5.5	525	3,274.5	7,589	382	11,245.5

\*Replanting after clear felling of original stand.

In order to correlate crop quality with soil type, detailed soil surveys of established plantations have been carried out during recent years and, pending detailed surveys of further areas available for conversion to conifers, the annual pine planting programme has been considerably reduced.

During the winter months of 1937 pine planting was carried out over an area of 525 acres. This, however, included the replanting (following clear felling) of 25 acres of fire damaged plantation, so that the additional area of effective plantation established during the year was 500 acres.

The total area of established plantation now amounts to 11,245 acres. This figure does not agree with the corresponding figure quoted last year, as the figure now quoted is based on a revision of the progress plans, and unplanted areas (swamps and rocky outcrops) occurring within compartments have been excluded.

With the exception of small experimental areas, *Pinus pinaster* and *Pinus radiata* are the only species planted.

Considerable areas of pines established during the years 1923–25 have now reached a stage when a first thinning is desirable and during the year 39,151 cubic feet of pine timber, obtained mainly from thinnings, were sold. In addition, 5,215 cubic feet of pine logs obtained from private property were milled in country sawmills and city case factories. Of the total logs obtained from Departmental plantations the greater portion was obtained from thinning operations at Mundaring Weir and in stands of 11 to 14 years of age, of which 116 acres were thinned, yielding 30,561 cubic feet or an average of 265 cubic feet per acre. The balance of the volume cut was obtained from plantations in the Busselton and Harvey Divisions.

## (4)—FIRE CONTROL.

*The Fire Season.*

The recent Fire Season was characterised by comparatively mild temperatures and an exceptionally long drought period between early December and March. Although hazards were not extreme—a dangerous hazard being recorded on two occasions only—the general average was high and was sustained over a lengthy period. A particularly early break in the weather occurred during the second week of March when a general

fall of two to three inches of rain was received. This effectively minimised the normal March hazard, and although it was followed by comparatively dry weather, average summer hazard was reached on only six occasions. Temperatures were moderate and only once reached the century, while Relative Humidity was not abnormally low, only five days with readings lower than 20 per cent. being experienced. The summer was generally considered one of the mildest experienced for many years.

#### *The Area Protected.*

With the object of achieving some uniformity in Fire Control measures and to facilitate Fire Control organisation, arbitrary zones have been demarcated within State Forest boundaries. The degree of protection afforded any particular tract of country formed the basis of such subdivision and three separate zones have been recognised.

Zone A represents that area afforded complete protection and which receives particular attention in all prevention and suppression measures. Included within the boundaries of this zone are all reforested and afforested areas together with those listed for early inclusion in such programmes. Any fire reported within this area is immediately investigated and suppressed.

Zone B comprises areas of maiden bush, areas of cut-over bush not yet included in regeneration programmes, and areas of marginal forest or tracts of waste lands near the boundaries of valuable forests. Fires occurring within this zone are suppressed as early as the organisation will permit while still maintaining adequate protection for zone A. Within this zone extensive controlled burning, particularly in the flats and waste lands, is carried out in the Spring months in order to reduce as far as possible the severity of fires.

Zone C embraces those areas further removed from the protected forests and outside the scope of intensive organised fire suppression. Areas within this zone are subjected to extensive controlled burning in the Spring and early Summer months in order to minimise the possibility of the occurrence of fires, and to prevent the rapid spread and development of those likely to endanger valuable forest country. Fires in these areas are commonly allowed to burn to previously burnt patches or are suppressed when threatening to develop heavy smoke haze likely to impair detection from the lookout stations.

				<i>Area Protected.</i>		
Division.				Zone A.	Zone B.	Zone C.
				acres.	acres.	acres.
Busselton	....	....	....	11,000	....	....
Mundaring	....	....	....	36,000	16,000	250,000
Dwellingup	....	....	....	200,000	130,000	60,000
Collie	....	....	....	70,000	150,000	400,000
Kirup	....	....	....	120,000	90,000	51,000
Manjimup	....	....	....	34,000	160,000	80,000
Narrogin	....	....	....	10,000	60,000	....
Kelmscott	....	....	....	300,000	72,000	36,000
Metropolitan	....	....	....	4,000	....	....
Harvey	....	....	....	100,000	120,000	60,000
Totals				885,000	798,000	973,000

In the above table the areas included under Zones A, B and C are set out for each Division. The figures quoted for Zone C are only approximate as the limits of this zone are difficult to define.

As the organisation develops further, areas now included in Zone C will be absorbed into Zones A and B, which will eventually include all areas of State Forests.

#### *Fire Losses.*

Areas of managed forest burnt by uncontrolled fires totalled 485 acres, of which only 190 acres suffered any visible damage. Two fires occurred in cool weather in early May after the lookout towers had been vacated, and 225 acres were lightly burnt over before the fires were discovered and suppressed. A further fire covering 150 acres also occurred during cool weather when difficulties in detection precluded its location for some time, and of the area burnt over 80 acres suffered damage in the scorching of young sapling growth.

The portion of Zone A suffering visible damage was 190 acres or 0.02 per cent. of the area afforded complete protection, and that over which fires burnt was 687 acres or 0.07 per cent. of the area.

Several large fires occurred in Zone B and a total area of 4,745 acres was burnt over, representing 0.6 per cent. of the area afforded partial protection. Areas burnt in Zone C have not been assessed, but generally, fires in these areas were far less frequent and much less severe than has been the experience in the past when no steps were taken to reduce the extent and severity of fires.

#### *Causes of Fires.*

Records of the agencies responsible for the lighting of fires in forest country have been kept over a number of years with a view to directing the main prevention measures against the more prolific sources, and towards their eventual elimination. The total number of fires suppressed each year is gradually increasing as further areas are being included within the scope of Fire Protection organisations.

A consideration of the causes of these fires reveals a substantial reduction in the number of fires associated with sawmilling companies' locomotives, and this may be attributed to the early fitting and careful inspection of suitable fire prevention apparatus. Travellers in the forests are responsible for an increasing number of fires each year. Numerous settlers in and around forest areas continue to fire their clearing paddocks or scrub pastures in unsuitable weather or without having taken adequate precautions against the possible escape of fire on to State Forest or adjacent holdings. Eighteen per cent. of the fires attended last season were attributed to fires arising from the burning operations of private property owners. Co-operation between settlers in the South-West and the Department in this important matter is being fostered and encouraged, so that in many localities mutual assistance in fire suppression problems, the safe guarding of both forest and agricultural land, and a strict observance of the main provisions of the Bush Fires Act have already been achieved.

*Causes of Fires, 1937-38.*

Cause.	No. of Fires.
Burning off on private property	69
Bush locomotives	60
Travellers	33
W.A.G.R. locomotives	31
Hunters	28
Bush workers	22
Householders	18
Departmental employees	16
Deliberately lit	14
Picnickers	13
Children	9
Leaseholders (stock)	5
Mill employees	5
Mill management	3
Local bodies	2
Lightning	1
Navvies	1
Other known	22
Unknown	29
Total	381

An appreciation of the necessity and importance of organised fire control is being developed among the farming community in forest districts. The travelling public are using the forests to an increasing extent for recreational purposes and will represent a serious source of fire danger unless they are well trained in the careful use of fire, and the dangers incidental to its escape.

A "sound film" prepared by the Commonwealth Cinematographer depicting phases of forestry operations in the South-West, with particular emphasis on the Fire Control measures of the Department, was exhibited in city and country theatres during the summer months.

*Prevention Measures.*

Prior to the commencement of the fire season extensive prevention measures, designed to minimise the possibility of fires starting, and to check the rapid spread and development of those occurring, were carefully carried out. In addition to thousands of acres of dangerous hazards existing in large open flats and areas of submarginal forest land, many thousands of miles of firebreak belts in and around valuable forest country were burnt over in the cool spring months. The disposal of tops and debris following sawmilling and sleeper cutting operations was carried out over 46,632 acres. Established firelines were ploughed and cultivated and existing roads were graded and maintained for vehicular traffic.

Communication between lookout stations, local offices, Departmental cottages and working parties in the field was maintained by an earth return telephone system embracing 867 miles of lines. A total of 181 departmental connections are included in this system, while a further 67 connections and branch lines have been made to adjacent settlers who appreciate the advantages of telephonic communication and gladly return valuable assistance in fire control operations.

*Fire Weather Research.*

Investigations into local weather conditions and their relationship with Fire Hazard in the forest areas were advanced by the establishment of a further Fire Weather Research Station at Manjimup. Weather records were again taken from Dwellingup, and the variation in conditions between the two stations enabled the temporary recognition of an extreme south-west region as opposed to the main Jarrah Forest region. Records from Dwellingup reveal the season to have been one of the mildest for many years, and although only 18 points of rain were recorded from the first week in December to the end of February, no high temperatures were experienced. The recognition of Fire Hazard was again effected on an arbitrary

scale, in which seven readily appreciable degrees of hazard appear. A comparison of the number of days of the various degrees of hazard for the past four summers as recorded at Dwellingup, and for the past season at Manjimup, appear hereunder :—

Station.	Fire Season.	Nil.	Low.	Moderate.	Average Summer.	High Summer.	Severe.	Dangerous.	Average Hazard.	No. of Days.	Days above Moderate.
Dwellingup	1934-35	5	26	47	20	...	6	9	5.07	113	% 31.0
Do.	1935-36	2	20	43	40	...	18	4	5.95	127	48.8
Do.	1936-37	2	11	40	47	...	29	7	6.45	136	61.0
Do.	1937-38	10	15	35	33	33	12	2	5.87	140	57.2
Manjimup	1937-38	8	29	41	22	9	3	0	4.68	112	30.3

Although weather was mild, the cumulative drying of forest fuels was sufficient to give an average daily hazard comparable with previous summers and 57.2 per cent. of the days were "Average Summer" or worse, compared with 61 per cent. and 48.8 per cent. for the 1936-37 and 1935-36 seasons respectively.

During the latter part of the season the actual forecasting was carried out by the Commonwealth Meteorologist in Perth, whose willing co-operation has greatly assisted in the establishment and operations of the Fire Weather Research Stations. Throughout the summer, forecasts of anticipated fire weather were broadcast daily from the National Station 6WF.

With regard to the new station at Manjimup, it may be considered that the standards developed at Dwellingup will apply for similar degrees of hazard, and that as a result of its more southerly position milder weather should generally be experienced. Only on rare occasions should the hazard in the extreme south-west region exceed that of the Jarrah forest region.

#### *Suppression Measures.*

Despite the prevention measures completed during the spring months, 381 fires were reported by the look-out towers and attended by departmental employees. These men working in parties of four or five throughout the forest area are constantly in telephonic communication with the Divisional Organisation, so that no time may be lost in their despatch to an outbreak immediately a report from the look-out is received. Motor transport in the form of utility trucks is provided, and the equipment permits a direct attack on the face of the fire itself, without waiting for changes in weather conditions, or allowing the fire to burn out to a road or previously burnt firebreak. Such success has attended this method of suppression, that the average size of fire so treated was less than two acres in extent.

With intensified control over larger areas, the value of good arterial roads and subsidiary means of access to all parts of the forest is becoming more pronounced each year. During the past fire season the average time required to place a fire fighting gang at the scene of all fires occurring in Zones A and B was forty minutes from the time of detection by the lookout station. Throughout the areas under control, twenty-two departmental utility trucks were available for fire fighting. These trucks were fully equipped with water supplies and modern fire fighting appliances, and each manned by a gang of men specially trained in fire suppression.

In addition a number of both departmental and private motor trucks were available for immediate use if required.

In two divisions where ample water supplies are available, the use of power pumps in the suppression of large fires was further advanced, but apart from experimental use, serving mainly as a training ground for fire fighters, little opportunity occurred for testing their efficiency. These outfits, however, promise to be extremely valuable in suppressing large fires developing on areas outside the scope of the existing departmental organisation and fires which have not been reached in the early stages of development.

A further camp of instruction in fire suppression methods for field officers was held during the early summer. Training and coaching of employees by local staffs was continued in all divisions and towards the latter part of the summer three officers were employed solely on this work.

#### *Fire Detection.*

The detection of fires was effected from twenty major lookout stations established on high points within the main forest regions. These lookout towers which are manned constantly throughout the day in the fire season are located at approximately 15 to 20 mile intervals, and from observation platforms, ranging from 30 to 150 feet in height above ground level a direct view over a large proportion of the protected forests is obtained. In periods of extreme or dangerous weather, or of reduced visibility due to heavy smoke haze, subsidiary stations are manned for closer and more intensive observation. These subsidiary stations include a number of "tree lookouts" and houses situated on positions commanding a view over surrounding forest areas. Throughout the season valuable assistance was rendered by settlers in supplying information about "smokes" not directly visible from the lookouts.

While reasonably satisfactory detection was recorded from all towers, improvements are anticipated in the location of fires occurring in country not directly visible to the observers. Detection by single towers operating independently was investigated in the more southerly divisions, and it is hoped that improved knowledge of the country and greater familiarity with the requirements of the work will lead to increased efficiency in future years.

## (5)—RESEARCH AND INVESTIGATION.

(a) *Management and Silviculture.*

Substantial progress has been made in the past year in the field of management and silvicultural research in the Jarrah forest. During the year detailed soil and assessment surveys have been carried out over an area of a further 700 acres to obtain basic data for the different types within the Jarrah belt.

In the study the main objective of the work so far has been the accumulation of fundamental data for the whole range of the species before the interpretation of the information is commenced.

The present methods of obtaining information regarding the soil types for the whole soil profile are slow and comparatively expensive, but as it has been found that major groups at least of soil types can be defined by surface soil and vegetational characteristics soil surveys give promise of being of considerable assistance in the stock-taking.

Fundamental studies of the behaviour and development of Jarrah crowns in the sapling stages have been continued as being essential for the successful application of thinning practice in young Jarrah stands.

The form and branching habit of Jarrah regeneration have been studied both by observation and in a number of cleaning and thinning experiments and there is an accumulation of evidence that a more satisfactory development of the new crop is taking place in the smaller openings in the Jarrah forest.

Reduction tables of crown ratio have been applied in an exploratory study as a guide to thinning intensities and also to stocking in irregular silviculture.

In the field of afforestation the major projects have been nursery development, initial establishment, pine nutrition and thinning practice. The importance of the fertility factor in determining the value of Western Australian soils for *Pinus radiata* and *P. pinaster* has been shown and the value of the application of superphosphate and zinc salts has been demonstrated over a period of years.

(b) *Utilisation.*

Considerable progress has been made in a series of mill studies outlined for completion before the revision of the General Jarrah Working Plan in 1939, and increasing attention has been paid to the underlying causes of variation from mill to mill in the percentage recovery of sawn timber. The actual variation in the recovery from Jarrah logs ranges from 22 per cent. to 42 per cent. of the full volume, with a mean of 33 per cent., and while outstanding factors affecting the recovery are appreciated, the variations appear out of all proportion to the apparent causes.

Specifications prepared last year for the grading of Jarrah and Karri have been accepted by the Standards Association of Australia for publication as Australian Standards. These grading rules represent the first comprehensive series available for any Australian timber and their early publication is anticipated.

Following reports concerning an imminent shortage of supplies of mining timber for the Collie mines, an investigation of available supplies has been carried out. It is evident that supplies of split and round timber within a reasonable radius for direct hauling to the mines are limited, and trials are now being made with the use of sawn timber for purposes where its use is consistent with safe working. Several small sleeper mills in the district offer a potential source for the supply of approximately one-third of the requirements, and strength tests are being carried out at the University to determine the suitability of sawn Jarrah for such purposes. In these mills the method of production of sleepers from logs docked to length in the bush, ensures straightness of grain in the sawn output and subject to general inspection, as is now carried out with split timber, it is felt that considerable quantities of sawn timber can be supplied from this source.

Contact with the Division of Forests Products of the Council for Scientific and Industrial Research, Melbourne, has been maintained, and the collection of material necessary for a comprehensive series of strength tests of Jarrah, which is being carried out by the Division, was completed. The Division have a number of projects on hand dealing with Western Australian timbers, and have given very valuable assistance in connection with a number of local utilisation problems.

## (6)—ARBORICULTURE.

The distributing season, which closed on 31st August, 1937, was one of the busiest for many years and the number of trees sold from Hamel Nursery was the highest since 1930.

137,468 trees were distributed, and of these, 51,087 were disposed of by sale, 617 were supplied free to public bodies and charitable institutions, and 85,764 were supplied to departmental plantations and arboreta.

The number of trees sold represented an increase of 10,000 over the figure for the previous year, and the greater part of this increased demand was undoubtedly due to the successful effort of the Tree Planters' Association in reviving Arbor Day celebrations throughout the State.

The most popular tree for planting in the State, particularly in the lower rainfall areas, is the Sugar Gum (*Euc. cladocalyx*), 8,250 of which were sold during the season. There is also a good demand for *Pinus pinaster* (Maritime Pine), *Pinus radiata* (Monterey Pine), *Tristaria conferta* (Brush Box), *Leptospermum laevigatum* (Victorian Ti Tree), *Schinus molle* (Pepper Tree), and *Agonis flexuosa* (Native Peppermint). During the past few seasons there has been an increasing demand for native trees, and in particular, Salmon Gum (*Euc. salmonophloia*), Native Peppermint, and Bald Island Marlock (*Euc. Lehmanni*).

## CHAPTER IV.

## (1)—LEGISLATION.

*Forests Act Amendment Continuance Act, 1937.*

The provisions of the Forests Act Amendment Act, 1935, which provided that the whole of the revenue derived from Sandalwood should be excluded from the provisions of subsection (2) of Section 41 of the Forests Act, 1918, and be transferred to Consolidated Revenue, was further continued during the period from the 1st January, 1938, until the 31st December, 1938, by the Forests Act Amendment Continuance Act, 1937, assented to on the 8th December, 1937.

*Timber Industry Regulation Act Amendment Act, 1937.*

An act to amend the Timber Industry Regulation Act, 1926 was assented to on the 18th January, 1938, and provides for the provision which exists under the Factories and Shops Act, for the registration of sawmills being incorporated in the Timber Industry Regulation Act in view of the fact that the powers of inspection under the Factories and Shops Act, so far as sawmills are concerned, have been transferred to the Timber Industry Regulation Act.

## (2)—ADMINISTRATION.

The following staff changes were made during the year:—

*(a) Professional Division.*

Mr. J. L. d'Espeissis, Assistant Divisional Forest Officer, resigned to take up a position in the Commonwealth Forestry Service.

Miss Joan Hearman, Ph.D., D.Sc., resigned to take up a position as Plant Physicist in the Division of Plant Industry, Council for Scientific and Industrial Research at Canberra.

*(b) General Division.*

In order that they might be brought into line with officers subject to the Public Service Act who were reclassified as from the 28th January, 1937, officers of the general division of the field staff were classified into classes and grades as from the 1st July, 1937, under an agreement between the Civil Service Association of Western Australia and the Conservator of Forests made under the provisions of the Industrial Arbitration Act, 1912-1935.

Messrs. A. D. Couper, "B" Grade Forester, and J. E. Watson, "C" Grade Forester, resigned and two "D" Grade Assistant Foresters were retired.

The following promotions took place:—

One "C" Grade Forester to "B" Grade Forester.

Three "D" Grade Assistant Foresters to "C" Grade Assistant Foresters.

Two Overseers to "D" Grade Assistant Foresters and one Overseer to Forest Assistant.

Messrs. N. E. Hales and J. H. Harding were appointed Mill Examiner and Statistical Clerk, Research Branch, respectively.

*(c) Clerical Division.*

Only a few minor adjustments were made in Head Office Staff.

The loyal co-operation of all members of field and office staffs has resulted in steady progress being maintained in all phases of the Department's activities throughout the year.

Perth, 7th September, 1938.

S. L. KESSELL,  
Conservator of Forests.

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## APPENDIX 1a.

## CONSOLIDATED REVENUE FUND.

General Statement of Revenue and Expenditure for the Year ended 30th June, 1938.

DR.				CR.									
				£	s.	d.	£	s.	d.				
To Log Royalty ... ..	...	...	...	110,001	11	2	By Salaries ... ..	22,073	7	6			
„ Hewn Timber Royalty ... ..	...	...	...	8,480	3	10	„ Add Cash Order outstanding 1st July, 1937 ... ..	9	4	9			
„ Sandalwood Royalty ... ..	...	...	...	24,050	13	4		22,082	12	3			
„ Miscellaneous Royalties ... ..	...	...	...	9,562	1	8	„ Less Cash Order outstanding 30th June, 1938 ... ..	18	12	6			
„ Goldfields Revenue ... ..	...	...	...	11,930	0	9				22,063	19	9	
„ Rents ... ..	...	...	...	1,101	5	9	„ Postage and Telephones ... ..	173	8	6			
„ Inspection Fees ... ..	...	...	...	8,116	3	5	„ Stationery ... ..	174	5	2			
„ Sales ... ..	...	...	...	1,574	11	9	„ Travelling ... ..	239	16	11			
„ Miscellaneous Revenue ... ..	...	...	...	1,384	4	11	„ Freights and Fares ... ..	178	15	8			
							„ Material ... ..	119	7	6			
							„ Mileage Allowances ... ..	1,589	11	4			
							„ Miscellaneous ... ..	285	14	7			
							„ Sandalwood Expenses ... ..	718	16	10			
							„ Maintenance State Nursery ... ..	112	12	11			
							„ Allowances P.S. Regulation 76 ... ..	1	9	8			
							„ Workers' Compensation Premi- ums ... ..	655	13	0			
							„ Refunds from Revenue ... ..	17	17	9			
											4,267	9	10
							„ Timber Industry Regulations ... ..	...	...	...	427	0	6
							„ Pine Conversion Costs ... ..	...	...	...	346	1	1
							Total Expenditure ... ..	...	...	...	£27,104	11	2
							„ Excess Revenue over Ex- penditure ... ..	...	...	...	149,096	5	5
											£176,200	16	7

## APPENDIX 1b.

Statement of Afforestation and Reforestation Expenditure for the Year ended 30th June, 1938.

DR.				CR.		
	£	s. d.	£	s. d.	£	s. d.
To Division No. 1—						
Administration ... ..	10,087	11 10				
Ludlow ... ..	1,550	4 8				
„ Boranup ... ..	484	15 8				
„ Keenan ... ..	1,941	5 6				
			5,063	17 8		
„ Division No. 2—						
Administration ... ..	1,072	0 3				
Mundaring Weir ... ..	2,624	11 1				
			3,696	11 4		
„ Division No. 3—						
Administration ... ..	3,075	1 10				
Dwellingup, Huntly, Wura- ming, Duncan's ... ..	13,078	7 8				
			16,153	9 6		
„ Division No. 4—						
Administration ... ..	1,289	8 0				
Collie and Collie Outer ... ..	9,611	17 7				
			10,901	5 7		
„ Division No. 5—						
Administration ... ..	1,960	1 2				
Kirup, Nannup, Green- bushes ... ..	10,861	10 11				
			12,821	12 1		
„ Division No. 6—						
Administration ... ..	1,611	18 2				
Manjimup ... ..	11,835	6 0				
			13,447	4 2		
„ Division No. 7—						
Administration ... ..	1,517	8 5				
Narrogin ... ..	7,614	9 4				
			9,131	17 9		
„ Division No. 8—						
Administration ... ..	2,185	17 11				
Kelmscott ... ..	14,368	2 9				
			16,554	0 8		
„ Division No. 9—						
Administration ... ..	731	11 4				
Applecross ... ..	715	3 10				
Collier ... ..	419	7 9				
Gnangara ... ..	1,248	1 3				
Scaddan ... ..	147	10 4				
Pardelup ... ..	79	11 3				
			3,341	5 9		
„ Division No. 10—						
Administration ... ..	1,356	17 10				
Yarloop-Mornington ... ..	12,861	17 3				
Hamel ... ..	220	12 3				
Harvey Weir and Myalup	1,475	14 1				
			15,915	1 5		
Total Divisional Expend- iture ... ..			107,026	5 11		
„ Training of Staff ... ..	139	5 2				
„ Research and Investigation	3,477	8 1				
„ Preparation of Working Plans and Topo. Survey ... ..	2,196	0 7				
„ Salaries and Allowances ... ..	5,999	10 8				
„ General Equipment and In- cidentals ... ..	3,145	3 4				
„ Purchase of Land from Rail- way Department ... ..	5,410	0 0				
„ Depreciation on Motor Ve- hicles ... ..	3,799	1 7				
„ Cash Order Expenditure un- allocated at 30th June, 1938 ... ..	1,862	15 11				
			26,029	5 4		
			£133,055	11 3		
					£133,055	11 3

## APPENDIX 2a.

Exports of Timber, Tanning Barks, Sandalwood and Essential Oils for the Year ended 30th June, 1938.

Item and Country of Destination.	Quantity.	Value.	Item and Country of Destination.	Quantity.	Value.
<b>TIMBER—</b>			<b>WOOD MANUFACTURES—contd.</b>		
<i>Dressed, N.E.I.:</i>	cub ft.	£	<i>Other:</i>	cub ft.	£
Commonwealth of Australia ...	69	26	Commonwealth of Australia ...	...	8,287
United Kingdom ...	7,600	912	United Kingdom ...	...	48
	7,669	938	South African Union ...	...	38
<i>Undressed, Railway Sleepers:</i>				...	8,373
Commonwealth of Australia ...	331,837	36,511	Total, Wood Manufactures	...	47,934
United Kingdom ...	96,387	16,407			
Aden ...	2,502	300	Total, Timber and Wood Manufactures	...	980,354
Ceylon ...	312,513	37,499			
Mauritius ...	80,416	10,217			
South African Union ...	524,923	62,990			
Egypt ...	679,010	81,481			
China ...	598,769	71,853			
Iran ...	12,967	1,556	<b>SANDALWOOD—</b>	cwt.	
Iraq ...	1,206,641	141,034	British Malaya ...	2,316	3,560
Netherlands East Indies ...	1,283	154	Burma ...	40	66
Portuguese East Africa ...	2,430	291	Ceylon ...	220	349
	3,849,678	460,293	Hong Kong ...	4,704	7,313
<i>Logs, not Sawn, and Spars in the Rough:</i>			India ...	800	1,280
Ceylon ...	183	31	China ...	6,239	9,357
Netherlands East Indies ...	183	31	Egypt ...	100	155
	366	62	Japan ...	316	490
<i>Undressed, N.E.I.:</i>			Netherlands East Indies ...	200	314
*Commonwealth of Australia ...	1,399,655	173,965		14,935	22,884
United Kingdom ...	1,262,231	159,455	<b>TANNING BARK—</b>		
British West Africa ...	4,555	1,126	Commonwealth of Australia ...	21,716	10,751
British Malaya ...	502	60	Ceylon ...	30	21
Ceylon ...	47,099	5,862	Belgium ...	456	200
Cyprus ...	1,582	190	Germany ...	3,193	1,313
Mauritius ...	25,877	5,846	Netherlands ...	3,169	1,580
New Zealand ...	219,437	26,850		28,564	13,865
South African Union ...	503,979	61,068	<b>ESSENTIAL OILS—</b>		
Egypt ...	19,003	2,280	<i>Non-Spirituous, N.E.I.:</i>		
Portuguese East Africa ...	11,352	1,362	Commonwealth of Australia ...	...	7,169
Belgium ...	134,289	24,228	United Kingdom ...	...	21,807
China ...	208	25	Burma ...	...	92
Germany ...	6,561	1,011	British Malaya ...	...	327
Netherlands ...	51,701	7,799	Hong Kong ...	...	106
	3,688,031	471,127	India ...	...	19
Total, Timber Exports	7,545,744	932,420	South African Union ...	...	105
<b>WOOD MANUFACTURES—</b>			China ...	...	92
<i>Casks and Shooks:</i>			Germany ...	...	3,513
†Commonwealth of Australia ...	...	36,804	Japan ...	...	154
United Kingdom ...	...	1,313	Netherlands East Indies ...	...	1,652
	...	38,117	Philippine Islands ...	...	38
<i>Furniture:</i>			United States of America ...	...	38
Commonwealth of Australia ...	...	1,410		...	35,112
United Kingdom ...	...	34			
	...	1,444	<i>Eucalyptus:</i>		
			British Malaya ...	...	16
			Total, All Exports	...	1,052,231

\* Value includes £2,548 of staves for which no quantity is shown.

† Principally empty returns.

## APPENDIX 2b.

Imports of Timber, Tanning Substances and Essential Oils for the Year ended 30th June, 1938.

Item and Country of Origin.	Quantity.	Value.	Item and Country of Origin.	Quantity.	Value.
<b>TIMBER—</b>	cub. ft.	£	<b>WOOD MANUFACTURES—contd.</b>	cub. ft.	£
<i>Timber, Dressed :</i>			<i>Furniture—continued.</i>		
<i>Architraves, Mouldings, etc. :</i>			China ... ..	...	27
Commonwealth of Australia ...	...	1,506	Czecho-Slovakia ... ..	...	25
United Kingdom ... ..	...	55	Estonia ... ..	...	27
		1,561	Germany ... ..	...	50
<i>Tongued and Grooved :</i>			Japan ... ..	...	259
Norway ... ..	278	36	Netherlands East Indies ...	...	15
Sweden ... ..	4,044	549	Poland ... ..	...	61
	4,322	585	Sweden ... ..	...	87
			Switzerland ... ..	...	4
			United States of America ...	...	1,079
				...	35,808
<i>*Timber, Dressed, N.E.I. :</i>			<i>Plywood and Veneers :</i>		
Commonwealth of Australia ...	574	129	Commonwealth of Australia ...	...	55,381
United Kingdom ... ..	19	8	United Kingdom ... ..	...	32
Germany ... ..	...	40	France ... ..	...	101
United States of America ...	2	4	Japan ... ..	...	675
	595	181	Philippine Islands ... ..	...	164
			United States of America ...	...	84
				...	56,437
<i>†Timber, Undressed :</i>			<i>Spokes, Rims and Felloes :</i>	No.	£
<i>Timber for making Boxes :</i>			Commonwealth of Australia ...	2,663	118
Commonwealth of Australia ...	...	11,139			
Canada ... ..	81,796	7,232	<i>Tool Handles (including Axe) :</i>		
British Malaya ... ..	10,976	848	Commonwealth of Australia ...	...	3,063
New Zealand ... ..	...	893	United Kingdom ... ..	...	116
Finland ... ..	4,521	824	Canada ... ..	...	1,223
Netherlands ... ..	155	120	New Zealand ... ..	...	57
Sweden ... ..	39,173	5,976	France ... ..	...	1
United States of America ...	...	494	United States of America ...	...	3,764
	136,621	27,526		...	8,224
<i>Timber, Undressed, N.E.I. :</i>			<i>Wood Manufactures, N.E.I. :</i>		
Commonwealth of Australia ...	184,472	33,638	Commonwealth of Australia ...	...	22,137
United Kingdom ... ..	1,658	479	United Kingdom ... ..	...	1,991
British Borneo ... ..	2,479	182	Canada ... ..	...	319
British Malaya ... ..	125	44	New Zealand ... ..	...	54
Canada ... ..	137,237	19,545	Austria ... ..	...	4
Territory of New Guinea ...	51	18	China ... ..	...	8
New Zealand ... ..	2,137	758	Czecho-Slovakia ... ..	...	33
Czecho-Slovakia ... ..	24,833	2,333	Finland ... ..	...	28
Finland ... ..	1,710	176	France ... ..	...	12
Japan ... ..	40	25	Germany ... ..	...	227
Philippine Islands ... ..	30,300	3,163	Japan ... ..	...	297
New Caledonia ... ..	36	12	Lithuania ... ..	...	3,273
Norway ... ..	363	158	Netherlands ... ..	...	1
Siam ... ..	274	140	Sweden ... ..	...	5,162
Sweden ... ..	8,446	1,054	United States of America ...	...	747
United States of America ...	80,948	13,365		...	34,293
	475,109	75,090	<b>Total, Timber Imports ...</b>	...	<b>270,126</b>
<b>WOOD MANUFACTURES—</b>			<b>TANNING BARK—</b>	ewt.	£
<i>Barrels and Casks :</i>			Commonwealth of Australia ...	4,471	2,678
Commonwealth of Australia ...	...	27,647			
			<b>TANNIN EXTRACT—</b>		
<i>Clothes Pegs :</i>			Commonwealth of Australia ...	...	188
Commonwealth of Australia ...	...	2,644	United Kingdom ... ..	...	683
United Kingdom ... ..	...	1	British Borneo ... ..	...	29
Sweden ... ..	...	11	British Malaya ... ..	...	183
	...	2,656	India ... ..	...	87
			South African Union ... ..	...	253
<i>Furniture :</i>			Greece ... ..	...	27
Commonwealth of Australia ...	...	31,030	Italy ... ..	...	71
United Kingdom ... ..	...	2,549	Norway ... ..	...	5
British Malaya ... ..	...	66	Yugo-Slavia ... ..	...	573
Canada ... ..	...	460		...	2,099
Ceylon ... ..	...	2			
Hong Kong ... ..	...	65			
India ... ..	...	2			

\* Value includes £42 for which no quantity is shown.

† Value includes £14,968 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 ...	...	3,521	Hungary ...	...	4
United Kingdom ...	...	165	Italy ...	...	344
British East Africa ...	...	177	Japan ...	...	1,017
British West Indies ...	...	69	Netherlands ...	...	409
Ceylon ...	...	170	Netherlands East Indies ...	...	42
Austria ...	...	1	Spain ...	...	17
Bulgaria ...	...	5	United States of America ...	...	178
China ...	...	129	...	...	6,560
France ...	...	143			
French West Africa ...	...	64			
Germany ...	...	5			
Guiana, French ...	...	100	Total, All Imports ...	...	281,463

## APPENDIX 2c.

Summary of Exports of Forest Produce since 1836.

Year.	Timber.		Sandalwood.		Year.	Timber.		Wood	Sandalwood.		Tanning	Essential
	cub. ft.	Value.	Tons.	Value.		Manufactures.	cub. ft.	Value.	Value.	Tons.	Value.	Bark.
		£		£			£	£		£	£	£
1836a ...	10,000	2,500	...	...	1838 ...	525,750	42,060	...	4,470	33,525	...	...
1837 ...	...	...	...	...	1839 ...	783,500	63,080	...	6,385	57,465	...	...
1838 ...	...	...	...	...	1890 ...	1,172,200	82,052	...	5,136	51,355	...	...
1839 ...	...	...	...	...	1891 ...	1,273,950	89,179	...	3,780	37,600	...	...
1840 ...	...	...	...	...	1892 ...	1,082,650	78,419	...	5,716	42,370	...	...
1841 ...	...	...	...	...	1893 ...	512,950	33,838	...	3,893	32,160	...	...
1842 ...	...	...	...	...	1894 ...	1,063,700	74,804	...	2,784	23,430	...	...
1843 ...	...	...	...	...	1895 ...	1,255,250	88,146	...	3,851	30,363	...	...
1844 ...	b	163	...	...	1896 ...	1,545,600	116,420	...	6,848	65,300	...	...
1845 ...	...	...	4	40	1897 ...	2,389,300	192,451	...	8,582	49,480	...	...
1846 ...	2,550	255	32	320	1898 ...	4,083,150	326,195	...	4,349	31,312	...	...
1847 ...	12,200	1,120	370	4,444	1899 ...	6,913,550	553,198	...	4,084	29,719	...	...
1848 ...	3,350	333	1,335	13,353	1900 ...	5,725,400	458,461	...	5,095	39,038	...	...
1849 ...	...	...	...	...	1901 ...	7,150,600	572,354	...	8,864	73,931	...	...
1850 ...	10,500	1,048	...	...	1902 ...	6,256,750	500,533	...	7,995	61,771	...	...
1851 ...	1,250	268	219	1,593	1903 ...	7,748,450	619,705	...	4,406	37,913	859	...
1852 ...	7,050	806	...	...	1904 ...	8,072,300	654,949	...	4,510	25,417	32,876	...
1853 ...	52,200	5,220	...	...	1905 ...	8,709,500	689,943	...	5,521	38,317	154,037	...
1854 ...	58,500	7,023	...	...	1906 ...	8,330,700c	708,993	...	8,848	70,958	140,720	...
1855 ...	76,900	12,076	...	...	1907 ...	6,409,550c	511,923	...	9,212	65,999	98,773	...
1856 ...	70,500	9,671	...	...	1908 ...	9,869,500c	813,591	...	9,564	76,668	79,934	...
1857 ...	69,200	9,449	280	2,524	1909 ...	10,830,450c	867,419	...	4,805	37,456	59,633	...
1858 ...	29,250	2,340	745	7,455	1910 ...	12,074,100c	972,698	...	8,228	70,775	93,733	...
1859 ...	67,250	6,051	1,278	17,259	1911 ...	12,449,600c	986,341	...	6,907	65,506	83,470	...
1860 ...	54,800	4,932	1,687	16,360	1912 ...	11,297,100c	908,396	...	3,154	27,533	49,094	...
1861 ...	27,750	2,497	2,558	24,945	1913 ...	13,619,850c	1,089,431	...	6,260	47,589	47,377	...
1862 ...	68,800	7,151	2,393	21,541	1914d ...	6,279,750c	502,153	...	4,702	39,800	18,197	...
1863 ...	32,900	2,963	2,307	25,265	1915e ...	9,968,500c	808,392	...	8,375	78,926	6,127	5
1864 ...	58,300	5,508	2,724	24,520	1916e ...	5,432,100	441,991	...	6,271	61,381	10,208	...
1865 ...	183,950	15,693	1,686	13,490	1917e ...	3,890,650	310,893	...	7,250	72,669	18,959	1,102
1866 ...	85,650	6,849	2,965	23,722	1918e ...	3,436,250	274,141	...	6,504	81,834	16,886	3,995
1867 ...	56,750	4,541	2,305	18,442	1919e ...	4,135,750	332,584	11,535	8,998	117,072	18,875	3,987
1868 ...	8,000	638	3,256	26,045	1920e ...	5,065,300	465,731	21,935	14,355	240,579	22,121	3,704
1869 ...	179,900	14,273	4,124	32,998	1921e ...	9,816,250	1,137,819	...	10,839	181,801	23,073	10,107
1870 ...	157,200	17,551	6,112	48,890	1922e ...	8,309,750	1,041,047	...	3,890	54,769	13,328	6,878
1871 ...	218,500	15,304	3,366	26,926	1923e ...	7,911,310	997,454	...	7,623	102,912	21,161	20,075
1872 ...	37,000	2,590	3,942	31,536	1924e ...	11,126,861	1,367,517	...	14,051	343,713	29,606	39,877
1873 ...	68,150	4,771	6,292	62,916	1925e ...	11,844,303	1,477,997	...	6,243	186,775	40,136	42,057
1874 ...	345,600	24,192	7,057	70,572	1926e ...	12,001,384	1,522,958	...	8,727	6,821	15,581	26,451
1875 ...	342,350	23,965	6,646	66,465	1927e ...	12,580,262	1,651,149	...	4,829	147,426	27,662	39,131
1876 ...	219,050	23,743	6,577	65,772	1928e ...	10,384,784	1,265,383	7,783	7,582	225,208	35,850	63,307
1877 ...	336,150	36,979	4,247	31,851	1929e ...	7,635,237	960,435	...	943	22,228	40,628	77,510
1878 ...	580,900	63,902	4,675	35,064	1930e ...	6,579,743	807,425	4,687	...	...	...	...
1879 ...	627,250	69,742	4,667	35,001	1931e ...	4,127,856	507,382	26,615	1,606	43,790	35,333	56,170
1880 ...	662,550	66,252	5,197	51,970	1932e ...	3,062,673	361,700	85,488	1,386	40,546	42,016	59,301
1881 ...	792,750	79,277	7,716	77,165	1933e ...	2,225,540	262,617	80,332	3,068	88,846	33,352	26,331
1882 ...	936,500	93,650	6,605	96,050	1934e ...	4,080,830	487,248	76,107	2,508	75,424	20,904	26,720
1883 ...	997,000	79,760	7,031	56,250	1935e ...	5,326,117	636,466	65,494	2,223	66,474	15,284	35,363
1884 ...	861,700	68,936	2,620	20,960	1936e ...	5,598,180	679,522	50,665	1,592	44,916	12,237	27,526
1885 ...	848,150	67,850	4,527	36,216	1937e ...	5,673,903	699,684	52,338	2,513	75,670	14,491	38,185
1886 ...	626,150	50,092	3,431	27,450	1938e ...	7,545,744	932,420	...	747	22,884	13,865	35,128
1887 ...	354,800	28,384	4,317	34,533	Total ...	335,925,577	32,962,095	641,469	422,090	5,233,953	1,401,729	693,173

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.

## APPENDIX 3.

## TIMBER INDUSTRY REGULATION ACT, 1926.

*Annual Report for the Year ended 31st December, 1937.*

The average number of men engaged during the year on timber holdings subject to the provisions of the Act, exclusive of hewers, was 3,112, representing an increase of 12 per cent. on the figures for the previous year.

In accordance with the requirements of the Act 276 inspections were made of timber holdings by the District and Workmen's Inspectors, and it was found, with a few exceptions, that the conditions imposed under this Act were being carefully observed.

During the year 598 accidents, of which 9 proved fatal, were reported to the Department and investigated by the Inspectors. An endeavour is made by the Inspectors to determine the personal cause of the accidents and their reports indicate that 47 per cent. of the injuries were the result of want of care by the injured person. In only 2 per cent. of the accidents were they considered to be wholly or partly due to defects in plant. It was, however, not possible to determine the cause in 49 per cent of the cases reported.

The number of accidents that occurred to every 100 persons employed was 19.3 as against 24.4 for the previous year. The total period of incapacity as a result of injuries was 13,673 days, or an average of 23 days per injured person. These figures show an improvement on last year's operations when the average period of incapacity was 26.9 days per person.

Particulars of the fatal accidents are as follows:—

1. The owner of a small mill while operating a saw was struck by a small piece of pine coming off the tail of the saw. He died shortly after admission to Hospital.
2. When getting a log into position for hauling the log slipped away on green skids, hitting a dry tree which snapped off and fell on the driver of the tractor, killing him instantly.
3. While falling a tree the faller was struck on the head by a falling limb and killed instantly.
4. An employee engaged in shunting operations at a bush landing slipped when attempting to board a rake of trucks, and, falling between the trucks, received fatal injuries.
5. A hookman engaged at the mill landing slipped when attempting to move clear of a rolling log, was severely crushed and died shortly after admission to hospital.
6. An employee engaged in log hauling with a steam hauler was killed by a falling tree which broke off at the butt when struck by the log.
7. When moving a fitch down the skids an employee, losing his footing, came in contact with the tail of a revolving saw, and died in hospital a few hours later as a result of his injuries.
8. While working on a breaking down bench an employee, when attempting to get clear of a falling log, was crushed to death.
9. While riding on a rake of empty trucks a timber worker was thrown off on to the line and received fatal injuries.

The following returns have been prepared, but owing to the cost of printing have not been included in this report:—

1. Number of notifiable accidents reported in accordance with Section 14 of the Timber Industry Regulation Act, according to months, and indicating the nationality and age of the person injured, the period of incapacity, the number of occasions on which the first-aid outfit was used and the monthly fatigue symbol during the year ended 31st December, 1937.
2. The number of notifiable accidents reported during the year 1937, according to months and days of the week on which the accidents happened.
3. By months, the time at which the notifiable accidents occurred.
4. The number of hours worked on the day and up to the time of sustaining the accident by persons injured.
5. The number of accidents reported during the year 1937, classified according to the cause of accident and location of injury.
6. The number of accidents reported during the year 1937, classified according to the cause of accident and nature of injury.
7. The number of accidents reported during the year 1937, classified according to the location and nature of injury.
8. The personal cause of the accidents reported during the year ended 31st December, 1937, as determined by the District Inspector.

Perth, 7th September, 1938.

S. L. KESSELL,  
Controlling Officer.