

Clerk-in-Charge.

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1928.

WESTERN AUSTRALIA.

REPORT

ON THE OPERATIONS OF

THE FORESTS DEPARTMENT

FOR THE

Year ended 30th June, 1928.

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

[THIRD SESSION OF THE THIRTEENTH PARLIAMENT.]

PERTH:

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

1928.

Forests Department,
Perth, 29th August, 1928.

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, 1928.

I have the honour to be,

Sir,

Your obedient servant,

S. L. KESSELL,

Conservator of Forests.

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MAP OF AREAS

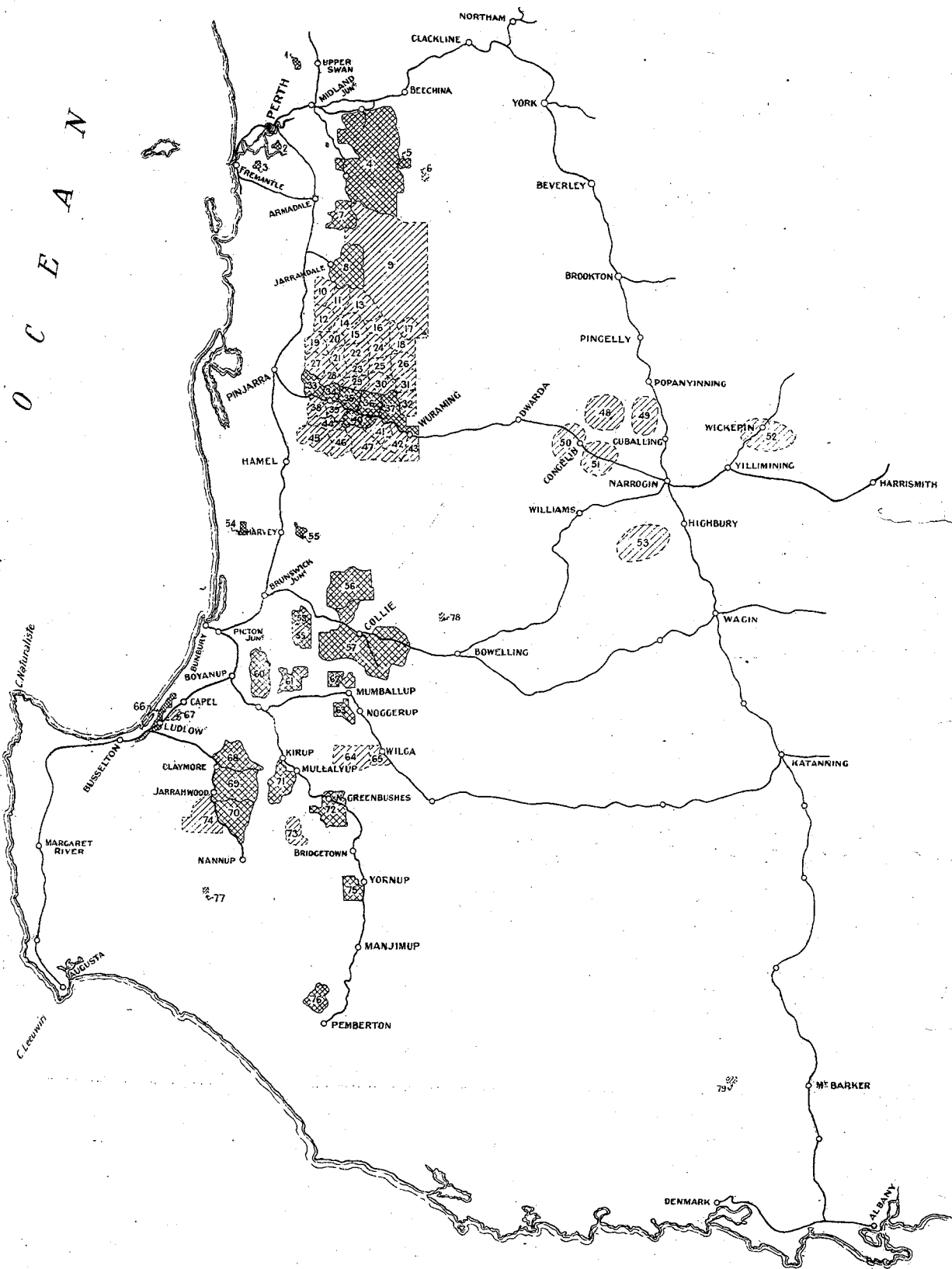
UNDER WORKING PLAN, OR FOR WHICH WORKING PLANS ARE IN COURSE OF PREPARATION.

(NOT TO SCALE.)

Reference.

Reference No.	Working Plan.	Working Circle.	Species.
1	Working Plan No. 8	Gnangara	Pines
2	Do. do. 10	Collier	do.
3	Do. do. 19	Applecross	do.
4	Do. do. 1	Mundaring	Jarraah and Pines
5	Do. do. 36	Beraking	Pines
6	...	Pattens	do.
7	Working Plan No. 38	Churchman's Brook	Jarraah
8	Do. do. 15	Jarrahdale (Concession)	do.
9	...	Jarrahdale	do.
10	...	Derk	do.
11	...	Hinton	do.
12	...	Myara	do.
13	...	Lang	do.
14	...	Foster	do.
15	...	Torrens	do.
16	...	Ryall	do.
17	...	Parsons	do.
18	...	Boonerring	do.
19	...	Whittaker	do.
20	...	Wilson	do.
21	...	Urrbrae	do.
22	...	White	do.
23	...	Scott	do.
24	...	O'Neil	do.
25	...	Cameron	do.
26	...	Yale	do.
27	...	Turner	do.
28	...	Nowra	do.
29	...	Banksiadale	do.
30	...	Kennedy	do.
31	...	Mundalup	do.
32	...	Mt. Wells	do.
33	Working Plan No. 17	Marrinup	do.
34	Do. do. 16	Dwellingup	do.
35	Do. do. 22	Holyoake	do.
36	Do. do. 23	Inglehope	do.
37	Do. do. 28	Pindalup	do.
38	...	Teesdale	do.
39	...	Holmes	do.
40	Working Plan No. 25	Plavins	do.
41	...	Amphion	do.
42	...	Curara	do.
43	Working Plan No. 26	Wuraming	do.
44	...	Park	do.
45	...	Upper Murray	do.
46	...	Nanga	do.
47	...	Yarragil	do.
48	...	Lol Gray	Mallet
49	...	Mantague	do.
50	...	Congelin	do.
51	...	Contine	do.
52	...	Wickepin	do.
53	...	Highbury	do.
54	Working Plan No. 21	Myalup	Pines
55	...	Harvey Weir	do.
56	Working Plan No. 35	Harris River	Jarraah
57	Do. do. 3	Collie	Jarraah and Pines
58	Do. do. 14	Worsley	Jarraah
59	Do. do. 13	Potter's Gorge	do.
60	Do. do. 41	Boyanup	do.
61	Do. do. 18	Lowden	do.
62	Do. do. 11	Mumballup	do.
63	Do. do. 12	Noggerup	do.
64	...	East Kirup	do.
65	...	Wilga	do.
66	Working Plan No. 2	Ludlow (Stirling Block)	Tuart and Pines
67	...	Ludlow (Coolilup Block)	Pines
68	Working Plan No. 29	Upper Capel	Jarraah
69	Do. do. 30	Harrington	do.
70	Do. do. 32	Sussex	do.
71	Do. do. 34	Mullalyup	do.
72	Do. do. 33	Greenbushes	do.
73	...	Ellis Creek	do.
74	...	Millbrook	do.
75	Working Plan No. 6	Yornup	do.
76	Do. do. 9	Big Brook	Karri
77	Experimental Area	Nannup	Pines
78	Do. do.	Bowelling	do.
79	...	Pardelup	do.

I N D I A N
O C E A N



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*).

Sandalwood (*Santalum spicatum*).

North-West Sandalwood (*Santalum lanceolatum*).

Brown Mallet (*Eucalyptus astringens*).

Blackboy (*Xanthorrhoea Preissii*).

Report of the Forests Department for the Year ended 30th June, 1928.

CHAPTER I.

SUMMARY.

STATE FORESTS.

During the year 907,286 acres were added to the area of State Forests. The total area of State Forest now dedicated is 1,356,524 acres.

REVENUE.

The gross revenue of the Department amounted to £228,614, of which £53,484 was derived from sandalwood.

The revenue of the Department is the highest on record, in spite of a decrease in output of timber.

REFORESTATION.

Five new Working Plans, covering 119,520 acres, were approved, making a total of 763,650 acres under Working Plans.

In the Jarrah bush, exploitation was carried out under tree-marking conditions at 29 centres. The area cut over under tree-marking control for sawmilling was 23,680 acres; and for hewing, 9,000 acres.

Eighty-seven hewers were kept in constant employment, under local hewing permits. These men chiefly worked up faulty and damaged trees in advance of regeneration cleaning. Large numbers of hewers were also employed on land released for group settlement.

Under the Group Selection System 3,989 acres of Jarrah forest were treated for regeneration. Preliminary work, including the opening of roads of access and establishment of firebreak belts, is now well advanced on new Working Circles, and the area treated for regeneration of Jarrah should be more than doubled next year.

For the production of mining timber at Collie 442 acres of Jarrah were treated under the Clear Felling System.

In the Mundaring, Jarrahdale and Dwellingup districts improvement and thinning operations extended over 1,478 acres, carrying good Jarrah regrowth. Improvement work in groups left during regeneration cleaning extended over 580 acres.

A further area of 1,604 acres of recently cut over Karri forrest was treated for natural regeneration under the Clear Felling System. The total area now treated for regeneration of Karri is 4,164 acres.

New methods of exploiting the over-mature trees in the Tuart forest at Ludlow were tried, with success.

In spite of an exceptionally dry summer, successful fire-control measures were maintained over all plantations and areas treated for regeneration. A few acres only suffered damage from fire. To assist in fire control, 290 miles of scraper tracks were made.

Throughout the Jarrah forest, top-disposal operations were continued, and 59,795 acres which had

been cut over under the Group Selection System were treated by clearing debris from around good piles and poles. Much valuable timber is thus saved from damage, and the burning of the individual tops reduces fire hazards considerably.

AFFORESTATION.

Approximately 650,000 young pines were planted out on 672 acres. Experimental plantings were made with several new species of pine in arboreta and plantations. 1,700 acres were cleared for pine planting.

56,084 young trees were distributed to the public from the State Nursery at Hamel.

Thinning was carried out in young stands of *Pinus pinaster* at Ludlow, 267 acres being so treated to date.

THE TIMBER TRADE.

The total production of sawn and hewn timber for the year was 18,828,115 cubic feet, a decrease of 12 per cent. on last year's output. The estimated value of this timber was £2,500,000.

Of the total, 8,443,331 cubic feet were used locally, and 10,384,784 cubic feet, valued at £1,274,462, were exported. Thirty-seven per cent. of the timber exported went to the Eastern States of Australia, and 32 per cent. to South Africa.

Seventy per cent. of the total output was obtained from Crown lands. Sixty mills operating on Crown Lands produced 12,803,951 cubic feet of sawn timber.

Four thousand men were employed in the various branches of the sawmilling industry.

The volume of hewn timber obtained from Crown Lands was 1,067,099 cubic feet, representing 20 per cent. of the total output of hewn timber.

The total area of Crown Lands held under timber concessions, timber leases, and permits for the cutting and removal of timber was 1,676,497 acres.

7,321,208 cubic feet of sawn and hewn timber were inspected by officers of the Department on behalf of purchasers.

The value of timber imported, principally softwood, was £183,196, an increase of 13 per cent. on last year.

SANDALWOOD.

The exports of sandalwood amounted to 4,829 tons, valued at £147,426. Further progress was made in the location, survey, and demarcation of reserves for sandalwood in the Eastern Goldfields. 23,500 acres were classified to obtain information regarding stocking of immature sandalwood, host plants, and soil conditions. Experimental sowings of sandalwood nuts were made on 968½ acres. Reserves for sandalwood now total 302,019 acres.

MALLET.

The value of Mallet Bark exported was £27,662, a big increase on last year's figure. The value of tanning material imported was £9,648. Assessment surveys of Mallet reserves and vacant Crown Lands proceeded throughout the year, and new areas of

valuable. Mallet regrowth were located. The area closely classified and reserved for Mallet is now 47,538 acres, and 21,745 acres were temporarily reserved pending closer classification. One hundred and fifteen acres were spot sown with Mallet seed, and an excellent germination resulted. Previous sowings have given good results, and the young trees have shown vigorous growth.

GENERAL.

Topographical surveys have been carried out over 13,000 acres of forest country, involving 128 miles of traverse. To form a skeleton for future topographical survey a licensed surveyor ran 243 miles of traverse lines along the more important features, covering an area of 190,000 acres. Three new lithographs have been published.

340,000 acres of forest have been classified to ascertain the volume and distribution of marketable timber, and the general topography of the country in the Lake Muir District. 50,000 acres of Mallet reserves were closely classified.

For the accommodation of resident staff 14 houses have been erected in the forests and one house purchased. The number of Departmental houses is now 70. A small village was established at Inglehope to provide housing for forest workmen.

Eleven huts were erected or purchased.

For purposes of fire control and general communication 195 miles of roads and tracks were opened up. Thirty-two and a half miles of telephone, principally tree line, were constructed. Divisional offices were erected at Dwellingup and Kirup.

During the year a bulletin was issued on "Seasoning of Western Australian Hardwood," setting out the results of research to date. The method of preservative treatment known as "Fluarising," which was patented by the Department, has worked satisfactorily, on a commercial scale. Research has been carried out on conditions affecting growth and survival of young pines planted on sandplain country.

CHAPTER II.

CONSTITUTION OF STATE FORESTS.

The dedication as State Forest of a further area of 907,286 acres of good quality Jarrah is a notable advance in this most important work, but it is still necessary to direct attention to the large areas of prime forest country which await dedication. Although other States have dedicated larger areas, none can claim to have carried out, on such an extensive scale as Western Australia, the same careful classification of possible timber country as a basis for the selection of State Forests. The detailed assessment of standing timber on 4,600,000 acres is one of the most important and extensive forest works carried out in Australia, and it is still hoped that this State may have the credit of being the first to complete the dedication of her agreed quota to the permanent timbered area of the Commonwealth.

The stock taking of our resources of marketable timber based on this detailed assessment shows a serious deficiency in growing stock, and the first step necessary to stabilise the timber industry and safeguard future timber supplies for internal development as wholesale clearing proceeds, in the drier portions of the State, is the permanent dedication

of good-quality forest and the temporary reservation, pending the economical removal of the standing timber, of low-quality forest. The disastrous effect on the timber market of recent wasteful cutting by large gangs of foreigners operating on private property has shown the futility of alienating extensive areas of poor land which will yield valuable supplies of sleepers in future years.

The shortage of timber for farming requirements, particularly fencing posts, which is already being felt in many of the older settled parts of the wheat belt, is evidence that sufficient attention has not been paid to the retention of timber reserves in these districts. Fortunately, these farming areas are not a very great distance from the State Forests of the South-West, and railway lines which bring the harvest to the coast pass through the timbered country; but such conditions will not apply to the new wheat provinces now being opened up. To a great extent it may be maintained that the retention of sufficient trees for shelter, shade, and farming requirements is the responsibility of the individual farmer, but past experience has shown that farmers in the pioneering days cannot be relied upon to save from the axe and the fire-stick even an odd shade tree in proximity to their own houses. The disastrous climatic effects which may follow this wholesale clearing remain to be seen, but it is evident that in the drier parts of the wheat belt the re-establishment of trees for local timber and fuel requirements will be a difficult and expensive undertaking. To meet the certain demands for this class of timber within the next few decades, the retention of a number of timber reserves, each several thousand acres in extent, wherever new surveys are being carried out, is clearly desirable. These reserves should be chosen where compact areas of heavy forest are available, and particular attention should be paid to the inclusion of jam and mallet species; the former on account of its special value for fencing timber, and the latter on account of the combined value of timber and bark rendering intensive management economically possible almost immediately. Past experience has also shown the necessity for dedicating these areas as State Forests, so that they may survive the intermediate period when no more land is available for subdivision in the district, and each farmer has still a portion of his own land uncleared and available to supply his immediate requirements. If it is found in 50 or 100 years' time that each farmer has started to cultivate and manage his own wood lot, provided always he can successfully re-establish a tree crop on portion of his holding, the wisdom of subdividing and alienating these timber reserves can then be further considered.

2. Alterations in area of State Forests and Timber Reserves:—

STATE FORESTS (FORESTS ACT, 1918).

	June, 1927.	June, 1928.	Increase,
	acres.	acres.	acres
Jarrah	923,801	1,836,087	907,286
Karri	7,200	7,200	...
Tuart	5,932	5,932	...
Other Species	7,305	7,305	...
Total	949,238	1,856,524	907,286

The increase is accounted for by the dedication of State Forests 22 to 30 inclusive, comprising a total of 839,320 acres, and by additions to State Forests 4, 11, 14, 15, 20 and 21, comprising 67,966 acres.

The areas of the new State Forests and the additions to other State Forests set out above are only approximate, and will require adjustment when acreages are correctly determined, after the certified plans have been deposited by the Surveyor General.

TIMBER RESERVES (FORESTS ACT, 1918).

	June, 1927.	June, 1928.	Increase.
	acres	acres.	acres.
Jarrah	36,515	36,515	...
Karri	1,807	1,807	...
Other Species (being mostly Eastern Goldfields)	637,458	1,312,340	674,882

The increase in the area of timber reserves is accounted for by the declaration of a number of timber reserves within two miles radius of existing railways and townsites on the Eastern Goldfields, for the protection of timber for firewood and mining requirements.

Timber Reserve '8/25, Hopes Hill, which was declared to protect the timber for mining purposes, was cancelled, and is being made available under the Land Act for wheat farming.

CHAPTER III.

REVENUE.

The gross revenue of the Department amounted to £228,614, an increase of £6,107 on the amount collected during the previous year.

The Log Royalties show an increase of £14,055, Sandalwood £7,410, and Sales £2,971, of which the sale of Tuart account for £1,387, whilst the Miscellaneous Royalties show a decrease of £11,517, and Inspection Fees £6,044, Rents £739, and Miscellaneous Revenue £30. The sale of sleepers produced by Departmental employees in connection with silvicultural operations realised £1,801.

Of the total revenue collected, £3,738 was paid to the Group Settlement Department in accordance with an existing arrangement under which 50 per cent. of the royalty derived from timber removed from certain Group areas is credited to that Department. To the end of this financial year the total amount transferred under this arrangement is £25,802.

£5,000 was credited to the Sandalwood Trust Fund in accordance with Forest Act Amendment Act, 1927, and £930 to the Mining Leases Royalty Account.

1.—THE TIMBER TRADE.

During the year under review 18 828,115 cubic feet of sawn and hewn timber were produced in this State, as compared with 21,377,317 cubic feet for the previous year. Although there has been such a marked decrease in the output of timber, the revenue of the

Department for the year is the highest on record, and shows an increase of £6,107 over last year.

Of the timber produced, 8,443,331 cubic feet were used locally, and 10,384,784 cubic feet, valued at £1,274,462, were exported. Thirty-seven per cent. of the timber exported went to the Eastern States of Australia, and 32 per cent. to the South African Union.

In view of the fact that Western Australia is removing from her forests a greater volume of timber annually than she is growing, the reduction in the quantity of timber exported during the past year is a move in the right direction. The compilation of figures relating to the jarrah timber remaining on Crown lands was completed during the year, and this indicates that, at the close of 1927, the volume of jarrah of merchantable size was 1,125.7 million cubic feet. Of this quantity it is estimated that 1,033.1 million cubic feet are suitable for sawmilling under present conditions. The volume of jarrah log timber taken into the mills during the past year totalled 35 million cubic feet, so that it will be seen that the existing mature stand of timber will only maintain the present output of mills for approximately 30 years. Failure to provide suitable conditions for regeneration and protection has resulted in a serious deficiency of older age classes of growing timber on country that has been cut over for the past 50 years. The immature timber now developing will be insufficient to meet the requirements for the balance of a 90-year rotation, and the only way to meet the position is to considerably reduce the output of mills. A general Working Plan extending over the Jarrah forests of the State has been prepared, in which provision has been made for reducing the mill log consumption during the next 10 years to a sustained yield basis, and the Plan is now receiving the consideration of the Government.

Owing to the fact that serious overcutting had taken place during the previous year, and the overseas demand for sleepers has been very limited, contracts have been taken at exceptionally low prices. Hewing operations have fallen off considerably, and, at the present time, there are a large number of hewers out of employment. The position has been aggravated by the introduction during the past three or four years of large numbers of Southern Europeans into the timber industry. Although these persons are not eligible for registration as hewers to operate on Crown lands, they have obtained most of the hewing on private property, and, by misrepresentation, attempts have been made to secure authority to operate on Crown lands.

There is a considerable decrease in the quantity of hewn jarrah timber obtained for the year. Only 4,388,596 cubic feet were produced, as compared with 6,597,398 cubic feet for the previous year. In addition to hewn jarrah, 830,520 cubic feet of wandoo sleepers were hewn, most of which were purchased by the West Australian Railway Department. A small quantity of tingle tingle was also hewn into sleepers for experimental purposes.

Sixty mills are operating on Crown lands, and 30 to 40 small mills work intermittently on private property. These mills are responsible for the employment of 4,000 men in the various branches of the sawmilling industry.

The quantity of log timber taken into the mills for the year amounted to just over 40,000,000 cubic feet, from which was produced 13,600,000 cubic feet of sawn timber.

The quantity of timber imported was valued at £183,196, and represents an increase of £21,000 on the previous year. Details of timber imports are set out in Appendix 2 H.

(a) *Concessions and Leases.*
(Royalty, £41,086.)

With the exception of the Jarrahdale Concession, all timber leases are now cutting on a royalty basis, as a result of which the royalty for the year from this source shows an increase of £15,278. One lease expired and one was surrendered during the past year. The last of these leases will run out in January, 1933.

(b) *Sawmilling Permits granted under Section 11 of the Land Act Amendment Act, 1904.*

(Royalties: Sawmilling, £49,323; Hewing, £964.)

Twenty-two permits remained in force on the 30th June last, and, with three exceptions, these permits are now subject to annual renewal. All permits renewed are subject to the same conditions as apply to permits granted under the provisions of the Forests Act.

(c) *Permits under the Forests Act, 1918.*

(Royalties: Sawmilling, £49,011; Hewing, £8,478.)

There were 38 sawmilling permits and 27 annual hewing permits, granted under the Forests Act, in force at the close of the year.

The policy of granting monthly hewing permits on Working Circles, in conjunction with regeneration operations, has been continued with success. By placing orders with the men employed in this way, the Railway Department and local timber companies have co-operated with the Department to keep these men in continuous employment throughout the year.

1,041 local hewing permits were granted during the year, and the number of men employed has averaged 87.

(d) *Minor Forest Produce.*

The piles and poles obtained amounted to 41,858 lineal feet, for which £354 royalty was received. Firewood and charcoal obtained under permits totalled 51,502 tons, and returned in royalty £978. Twenty-seven annual firewood permits were in operation at the end of the year; and for the twelve months, 434 monthly local firewood permits were granted within Working Circles.

The revenue received from 215,815 cubic feet of mining timber obtained at Collie amounted to £930. Fence posts returned in royalty £112, and Boronia £40.

2.—TIMBER INSPECTION.

(Inspection Fees, £15,559.)

Owing to the slackening off of the export trade, the revenue from this source is £6,044 less than for the previous year.

The volume of hewn sleepers inspected was 5,201,474 cubic feet. Sawn sleepers examined totalled 1,061,557 cubic feet, and other sawn timber 1,053,060 cubic feet.

There has been a steady increase during the past few years in the quantity of sawn timber submitted for inspection, due to the increasing demand in the Eastern States for jarrah flooring and scantling.

Piles and poles inspected amounted to 58,014 lineal feet.

The absence of serious complaints regarding the timber inspected speaks well for the manner in which the inspectors carry out their duties, particularly in view of the fact that immediately prior to shipments inspectors are working at high pressure to meet the urgent calls for inspections.

3.—THE SANDALWOOD TRADE.

(Revenue, £53,484.)

The unsettled conditions prevailing in China have seriously affected the market for sandalwood, but, fortunately, it has been possible, by reason of the regulations in force governing the sandalwood industry, to continue operations in this State without interruption or loss to the 400 sandalwood getters engaged in procuring the wood.

The formation during the year by the Licensees of a Sandalwood Merchants' Association, and the arrangements made by them with the Chinese merchants for marketing the accumulated stocks of wood at Fremantle and future supplies, should help considerably to establish the overseas trade in sandalwood on a better footing.

With the entrance of South Australia into the sandalwood trade, it was feared that the efforts of the Department over the past four or five years to limit the output of sandalwood to the quantity estimated to represent the annual consumption in China might be nullified, unless the co-operation of South Australia were secured. As the result of a conference with the South Australian Government in December last, at which this State was represented by the Hon. the Minister for Works and the Conservator of Forests, satisfactory arrangements were made to restrict the total output of wood from the two States to 6,935 tons during 1928, and 7,635 tons annually during 1929 and 1930. Of these quantities, Western Australia is to supply 4,935 tons per annum.

Sandalwood Getters and Prospectors' Orders.

No alteration in the system for the control of sandalwood getting from Crown lands has been necessary, and the distribution of orders amongst sandalwood getters and prospectors has been made on the recommendation of the Advisory Boards, as in the previous year.

Of the quantity of wood to be pulled in Western Australia (viz., 4,935 tons, plus approximately 700 tons of roots and butts for local oil distillation), 2,000 tons were made available for prospectors, and orders for the balance, less a reserve of approximately 100 tons to meet over-consignments, confiscations, etc., were issued to sandalwood getters.

The Sandalwood Getters' Board dealt with 225 applications, and of this number 170 were recommended and received orders. Applications from prospectors desirous of obtaining orders to assist them in their prospecting ventures totalled 243, and recommendations were made by the Prospectors' Board for the issue of 186 orders.

The following statement shows the orders recommended for the period of the current licenses:—

	QUANTITY OF ORDERS.												Total.	
	Tons.												Persons.	Tons.
	5	6	10	12	15	18	20	22	25	27	30	32		
Getters	1	...	2	1	21	61	18	31	1	21	1	12	170	3,498
Prospectors ... ..	...	26	...	160	...	...	...	...	...	...	...	...	186	2,076
													356	5,574

Daily inspections have been made, by an officer of the Department, of sandalwood arriving at Fremantle, and on the whole it has been found that the wood coming from Crown land has been of fair average quality. In some cases, the standard was lowered by faulty cleaning or the inclusion of shelly and brittle wood, which resulted in authorised reductions in the price to be paid to the getters. However, as reductions were only made in respect of

243 tons, or 5 per cent. of the wood pulled from Crown land, and as the average price received by the getters for logs was £15 18s. 10d. per ton, or only 1s. 2d. below the price payable for fair average quality wood, the position must be regarded as fairly satisfactory. The deductions made for sandalwood below fair average quality are set out in the following statement:—

Amount of Deductions per ton.	No deduction.	5s.	10s.	15s.	£1.	£1 5s.	£1 10s.	£2.	£2 10s.	£3.	£4.	Over £4.
Quantity on which deductions were made	tons.	tons.	tons.	tons.	tons.	tons.	tons.	tons.	tons.	tons.	tons.	tons.
...	4,722	17	87	20	38	10	30	9	4	16	3	9

Private Property Sandalwood.

The quantity of sandalwood obtained from private property during the year under review was 826 tons, as against 559 tons in the previous year. The majority of this wood was obtained from the Hampton Plains blocks and consisted of small, brambly and shelly, and brittle wood of inferior quality. Investigations have been carried out in respect of all private property operations, and in several instances illegal pulling was reported and action taken against the offenders.

There was an increase in the number of applications from Conditional Purchase Lessees for permission to pull the sandalwood on their holdings. Inspections were made of the operations on 29 locations and orders were placed for the wood pulled.

Illegal Pulling of Sandalwood.

During the year 22 tons of sandalwood pulled illegally were confiscated. Compassionate payments totalling £124 were made in a number of cases where it was evident there was no intention to avoid payment of royalty or defeat the objects of the Forest regulations.

Sandalwood for Oil Distillation.

Roots and butts amounting to 682 tons, obtained from sandalwood consignments received during the year, were taken over by the Department. Of these 276 tons were sold, together with 490 tons from accumulated stock in the Departmental Depot at Fremantle, to companies distilling oil in the State, and the balance of 406 tons were sold to the four licensees for export. The stocks of roots and butts at the Departmental Depot have now been exhausted, and, if the present demand of local distillers continues, it is doubtful whether the future supplies of roots and butts from a reduced output will be sufficient to meet their requirements.

In addition to roots and butts local distillers require regular supplies of sandalwood from the North-West for blending purposes. During the year 65 tons were obtained from this source, but as their requirements are estimated at from 200 to 300 tons per annum, and difficulty was being experienced in obtaining sufficient raw material, arrangements were made early in the year for Mr. G. E. Brockway to visit the North-West to investigate and report on the position. His report indicates that the quantity of wood obtainable from accessible country in the North-West is limited.

The quantity of sandalwood oil exported during the year was 50,371 lbs.

General.

Sandalwood obtained during the year from Crown lands totalled 5,647 tons, inclusive of roots and butts. The quantity of wood exported amounted to 4,829 tons, valued at £147,426. Particulars of sandalwood obtained from all sources for the period of report will be found in Appendix 2 d.

Mr. H. M. Ross tendered his resignation as the getters' representative on the Board dealing with the allotment of sandalwood getters' orders, and the Hon. C. B. Williams, M.L.C., was nominated to fill the vacancy. Mr. H. Herbert, the licensees' nominee, and Mr. G. E. Brockway, Chairman and Conservator's nominee, continued to act on this Board.

Mr. A. H. Telfer represented the Mines Department as Chairman of the Board for dealing with prospectors' orders, and Mr. C. A. McParlin and Mr. G. E. Brockway continued to act as Prospectors' and Conservator's nominees, respectively.

The thanks of the Department are due to these gentlemen for their services and the capable manner in which they carried out their duties.

4.—FOREST OFFENCES.

The number of forest offences reported during the year totalled 78. Proceedings were taken under the provisions of the Forests Act and Regulations against 40 offenders, and 39 convictions were obtained, resulting in fines amounting to £175 being imposed.

The majority of the cases brought under notice were for the illegal cutting and removal of forest produce from Crown land by foreigners employed in timber cutting on private property. Much of the trouble in this respect could be avoided if contractors exercised a little more supervision over the operations of their cutters, and indicated to them the boundaries of the properties over which they held cutting rights.

In addition to the fines imposed, timber illegally cut was confiscated and sold, the proceeds from which amounted to £377.

CHAPTER IV.

EXPENDITURE.

(Total expenditure from all Funds, £125,745.)

1.—GENERAL ADMINISTRATION AND COLLECTION OF REVENUE.

This is the only item which is charged against Consolidated Revenue Fund, the expenditure from which amounted to £24,081, an increase of £980 on the amount expended during the previous year.

2.—REFORESTATION FUND.

The following statements show the position of the Reforestation Fund (Section 41, Forests Act, 1918) at the close of the financial year:—

	£	£
Revenue for 1927-28 (excluding revenue from sandalwood)		171,044
<i>Less—</i>		
Consolidated Revenue (excluding sandalwood)	19,879	
Interest on Loan	2,913	
Sinking Fund	270	
Special Acts	960	
Audit Fees	322	
		24,344
Net Revenue		£146,700

Three-fifths of the above amount was placed to the credit of the Reforestation Fund, the position of which is shown hereunder:—

	£
<i>Reforestation Fund.</i>	
Balance at 1st July, 1927	115,046
3/5ths Net Revenue transferred	88,020
Sundry Recoups, 1927-28	232
	203,298
Less expenditure, 1927-28	86,242
Balance available for Reforestation Work, 1928-29	117,056

3.—SUMMARY OF DIVISIONAL REPORTS.

(a) Division No. 1.

(Ludlow, Busselton, Margaret River, and Yarloop Districts.)

District Notes.

Six mills operated on Crown lands in the Busselton and Margaret River Districts during the year. Twenty-one hewing permits are held in these districts, allowing for the employment of 600 men, but

towards the latter half of the year many permit holders applied for a period of exemption owing to lack of orders.

In the Yarloop District, five mills operated on Crown lands, cutting 125,000 loads of log timber. Mornington and Hoffman Mills accounted for 100,000 loads, representing an average yield of 23 loads per acre.

Top disposal operations extended over 4,390 acres.

Hewing was confined to private property, from which 6,730 loads of sleepers were cut. The hewers were chiefly foreigners.

Working Circle Reports.

Ludlow (Reforestation—Tuart; Afforestation—*Pinus pinaster*).

Reforestation.

In previous years it has been noted that natural regeneration of tuart survived only on ash beds resulting from the burning of old logs and tops. Experiments were carried out in which large heaps of debris were formed, in blank spaces, burnt, and the resulting ash beds sown with tuart seed.

Ten and a half miles of firelines were cleared, and 60 miles of firebreaks ploughed, and controlled burning was carried out along roads and breaks.

During November, 1927, the possibility of the more economic handling of large overmature tuart trees by hewing into timber for railway rolling stock requirements was investigated. These trees, although they may contain considerable volume of sound timber in the form of an outer shell, are difficult to handle in a small milling plant, and the recovery of sound timber is so low that the cutting of them by usual methods is a doubtful economic proposition.

Although it was found possible to hew this timber at a less rate than it could be sawn, it was impossible to secure the accuracy in cutting sizes required by the Railway Workshops. Consideration was then given to the question of breaking the large logs down into billets, from which standard sizes could be sawn with the minimum of handling and waste. For shorter lengths from large logs, this method has proved economical and satisfactory, but, in order to obtain the longer lengths of waggon scantling, it has been found advisable to haul in a certain percentage of round logs to the mill.

Eight men were employed in billeting logs, commencing early in December, and to the end of the year produced 238 loads in the square. Of this quantity 100 loads in the square were carted to the mill and sawn into railway waggon scantling. Log hauling commenced on 6th June, and 55 loads in the round were hauled.

The mill operated from 20th February to the end of the year, and produced 100 loads of squared timber.

Three grazing leases were held by local farmers on certain compartments carrying no regeneration.

The summer was abnormally dry and windy. Many outside fires threatened the forest and received attention. An area of 7,090 acres was afforded complete protection, at a cost of 5d. per acre. About 125 acres (1.7 per cent.) were burnt, but this was mainly swamp country. Two and a half acres of one-year-old plantation were burnt, but no other fire losses occurred.

Afforestation.

On Stirling Block the new nursery was sown with *Pinus pinaster* seed. Seventy-six acres were cleared for planting, some of this clearing being in conjunction with the removal of trees by men hewing billets for the mill.

In 1927 eight acres of *Pinus taeda* were planted on Compt. 34E, and Compts. 34b, 34c, and 34d were refilled with *P. pinaster*. Eucalypt suckers were bashed on compartments where they interfered with young pines.

On Coolilup Block the nursery was sown with *Pinus pinaster*, *P. caribaea*, and *P. taeda*. Thinning of young plantations continued; 103 acres were completed in 1926-27, and during the past year a further 164 acres were treated. Nearly six miles of firebreaks were ploughed, and areas to be planted in 1928 were ploughed or spot cultivated. In 1927, 37 acres were planted and sown as follows: planted, 7 acres *P. caribaea*, 14 acres *P. taeda*, 10 acres *P. pinaster*; broadcasted, 3 acres *P. pinaster*; spot sown, 3 acres *P. pinaster*. Small sample plots of *Taxodium distichum* and *P. caribaea* were also planted.

Myalup (Afforestation—P. pinaster).

A further portion of the nursery was cleared, grubbed, and ploughed. *Pinus pinaster* seed was sown in the older portion, and germinated satisfactorily.

One hundred and twenty-eight acres were cleared for planting, inclusive of necessary firebreaks.

In 1927, no fresh plantations were established, but 47,000 pines were used to refill misses in Compartments 1, 2, 12, 13, and 14. The spots replanted were first cultivated.

For the 1928 planting the area has been spot-cultivated, and 25 acres have also been ploughed and cross-ploughed. Strips five chains wide were burnt by controlled fires in waste country outside the plantation area.

Five and three-quarter miles of existing firebreaks were ploughed, and 219 chains of 15ft. strips cleared for ploughing.

Harvey Weir (Afforestation—P. insignis).

The new nursery close to the overseer's house was infected with soil from Hamel nursery. Fifty-four acres were cleared for planting, including necessary firebreaks.

During the 1927 planting season 58 acres were planted with *Pinus insignis*, Compt. 4 was refilled with *P. insignis*, and misses in the spot-sown area of *P. canariensis* were resown. Spot cultivation was carried out prior to planting.

In preparation for planting, in 1928, five acres were cleared up and ploughed, and the planting spots cultivated over the entire area.

Eucalypt suckers dominating pines were bashed off on four compartments. A hillside plough was purchased, and two portable huts were brought from Wonnerup Mill and erected. The road from the Harvey River bridge to the overseer's cottage was put in repair and the old track around the weir cleaned up. A certain amount of controlled burning was necessary in jarrah country adjoining the north and east boundaries of the plantation as a precaution against bush fires working in from the surrounding bush.

(b) *Division No. II.*

(Metropolitan and Mundaring Districts.)

District Notes.—Six small mills operated on private property and four on Crown lands. Top disposal operations were carried out over 7,300 acres in the bush being cut over by Jarrahdale mill, east of the Albany Road.

Hewing was chiefly carried out on private property, wandoo sleepers being the principal product.

Working Circle Reports.

Mundaring—(Reforestation, Jarrah; and Afforestation, various conifers.)

Reforestation—Jarrah.

Two mills operated on the Working Circle under tree-marking conditions, cutting over 4,315 acres for 3 loads per acre. 1,383 acres were cut over by hewers working under local hewing permits.

The average number of firewood cutters operating under local permits was 55. They produced 17,489 tons of firewood and 250 tons of charcoal, for use in the metropolitan area, and 6,346 cords for the use of No. 1 and No. 2 Pumps, Goldfields Water Supply and Wooroloo Sanatorium.

Top disposal operations were carried out on 3,628 acres on Barton's, Canning, Thomson's, and Illawarra Blocks.

Under the Group Selection system 596 acres were treated for regeneration, and blackboys chopped on 247 acres of firebelts. Regeneration cleaning was also completed on 574 acres previously started.

On Sawyer's, Zamia and Reservoir Blocks, where the present crop consists of saplings resulting from ring-barking on the Mundaring Weir catchment area 25 years ago, 255 acres of thinning and improvement work was carried out.

In the course of the work suitable wood was cut into firewood lengths and stacked to dry, about five cords of firewood per acre being produced.

Direct conversion was carried out on several blocks, ringbarked jarrah being worked up. A quantity of sheoak was also hewn and a trial load sent to Perth for making furniture and staves.

A regrowth classification was carried out on Reservoir and Sawyer's Blocks.

Afforestation.—Planting was carried out on three blocks, the total area planted being 295¼ acres.

A camp of two men was employed constantly on soil classification and subdivision of proposed pine-planting country. On Sawyer's, Zamia and Reservoir Blocks, and in the valleys of the Helena and Darkan Rivers, reconnaissance, survey and subdivision were carried out. The boundaries of Greystones and Mudros were blazed.

On Helena Block 117½ acres were planted during 1927, as follows:—*P. insignis*, 108½ acres; *P. pinaster*, 2 acres; *P. Banksiana*, 2 acres; *P. Jeffreyi*, 2 acres; *P. longifolia*, ½ acre; *P. echinata*, 1 acre. In addition, 10 compartments were refilled where necessary with *P. insignis*, *P. canariensis* and *P. muricata*.

On Greystones Block 104¼ acres were planted in 1927, with the following species:—*P. insignis*, 91 acres; *P. pinaster*, 7¼ acres, *P. echinata*, 3½ acres; *P. Coulteri*, ½ acre; *P. longifolia*, 2 acres. Where

blanks occurred in earlier plantations, they were re-filled with *P. pinaster*, *P. insignis*, and *P. muricata*.

On Mudros Block (formerly known as Darkan), 73½ acres were planted, as follows:—*P. insignis*, 52 acres; *P. pinaster*, 5 acres; *P. muricata*, 14½ acres; *P. Coulteri*, 1 acre; *P. Banksiana*, ½ acre; *P. echinata*, ½ acre. The spacings used were—*P. insignis*, *longifolia*, *Coulteri*, *Banksiana*, *echinata*, *Jeffreyi*, all 8ft. x 8ft.; *P. pinaster*, 6ft. x 6ft.; *P. muricata*, 7 ft. x 7ft.; the method being pit planting. All the areas planted were spot cultivated prior to planting.

Clearing for planting amounted to 776 acres:—Helena, 266 acres; Greystones, 161 acres; Mudros, 213 acres; Beraking, 111 acres; and Darkan, 25 acres. Some of this is clearing well in advance of requirements to allow a longer drying period before burning.

With a view to obtaining a better burn, black-boys are now being felled two years in advance of the large timber. Where possible, compartments on Helena, Greystones and Beraking Blocks were ploughed. Spot cultivation was carried out in preparation for planting in 1928.

On 806 acres of plantation large eucalypt suckers which were interfering with pines were bashed off. Towards the end of the exceptionally dry summer much damage was caused by quokkas eating the bark of young pines in the plantations, many stems being completely ringbarked. This was probably caused by the lack of green feed at the end of the summer. The nurseries at Headquarters were sown with seed of *P. insignis*, *muricata*, *ponderosa*, *Banksiana*, *Jeffreyi*, *laricio*, *echinata*.

Fire Control.—The area under control was 127,500 acres. By November 1st the bush would carry a running fire, and the first outbreak took place on November 29th. The summer proved one of the driest on record, only 239 points falling during November-April. No rain fell in February and only five points in March, during which months strong easterly winds were experienced.

Approximately 14,000 acres carrying no young re-growth were burned by controlled fires as a precautionary measure, 81 miles of scraper tracks being run to help control this burning.

Mt. Dale lookout was manned from November 21st to March 2nd, and Mt. Gungin was manned intermittently, heavy smoke from the east rendering this necessary—the heaviest smoke on record. At times it was not possible to locate fires from one or other of these two towers, and several substations were necessary to provide cross bearings.

Thirty-six fires occurred, mainly of small extent.

Area protected—127,500 acres.

Area burnt—467 acres.

Percentage burnt—.37 per cent.

Cost of protection per acre—1.3d.

Area of treated country (jarrah)—6,504 acres.

Area of treated country burnt—21 acres.

Percentage burnt—.3 per cent.

General.—Repairs and additions were made to the houses at headquarters. A paddock was also fenced off.

The telephone system was kept in repair, and minor improvements effected.

Existing roads and tracks were kept in repair and, in addition, 8¾ miles of road were formed and 7¾ miles of track were cleared.

(*Applecross—Afforestation, P. pinaster.*)

93½ acres were cleared and burnt, and 132 acres were felled only. Clearing has been simplified by the utilisation of felled timber for firewood. To assist the permit holder, compartments are being felled two years in advance of planting requirements, to ensure a supply of dry wood. Three compartments were ploughed once, and another compartment ploughed and cross-ploughed. Spot hoeing was carried out in advance of planting, 1928.

200,000 one-year old seedlings were raised in the nursery for 2s. 6d. per 1,000. In 1927 69 acres were planted with *P. pinaster*, and necessary refilling carried out.

18½ miles of firebreak strips were ploughed, and burning carried out to protect felled areas and those intended for felling in the near future.

To stop the root parasitism of *Nuytsia floribunda* (Christmas Tree) on young pines, it was found necessary to poison this parasitic tree on planted areas.

A stable was erected, and the paddocks sown with oats.

(*Gnangara—Afforestation, P. pinaster.*)

The nursery cleared near headquarters has not proved very successful, and it has been decided to make use of the swamp nursery again. This latter was netted, and sown with 25lbs. of *P. pinaster* seed, the ground having been treated with mycorrhiza infected soil from Mundaring.

145½ acres were clear-felled and burnt for ploughing. 107 acres were ploughed once, and 48 acres ploughed and cross-ploughed. Spot cultivation was carried out on four compartments for planting in 1928.

During 1927 planting season, 89½ acres were planted, mainly with *P. pinaster*. Small plots of *P. taeda*, *muricata* and *palustris* were planted.

Owing to the root parasitism of *Nuytsia floribunda* on young pines, causing heavy mortality, it has been necessary to poison trees of that species occurring on planted compartments.

During the year a series of experiments was carried out with various species of pine, fertilisers, and methods of cultivation.

Protective burning on the external boundaries of the Working Circle was carried out. Difficulty has been experienced in selling firewood resulting from clearing for planting. This is chiefly due to the heavy hauling required and, until a road is made into the area, the wood will not be readily saleable.

(*Collier—Afforestation, P. pinaster.*)

This Working Circle was previously known as South Perth.

Twenty-four acres were cleared and burnt for ploughing, and 33½ acres previously cleared were further treated to permit of ploughing. These two areas were then ploughed, and the former was cross-ploughed. Spot hoeing was carried out only on a small area of 10 acres.

In 1927 54½ acres were planted with *Pinus pinaster*, and blanks in earlier plantations refilled.

120,000 pines have been raised in the nursery at a cost of 3s. 10d. per 1,000. This nursery is now well infected with mycorrhiza.

Controlled burning was carried out on the Working Circle boundaries, and 8¼ miles of firebreaks were ploughed. As at Applecross and Gngangara, it was found necessary to poison *Nuytsia* trees occurring on planted areas, to reduce the mortality among the pines, due to root parasitism.

The overseer's house was connected to the metropolitan telephone system. The paddocks were cultivated and sown with grasses.

(c) *Division No. 3.*

(*Dwellingup and Wuraming Districts.*)

District Notes.

Nine mills operated during the year, three under tree-marking conditions, and six under minimum girth conditions.

Top disposal operations, following mill fallers, extended over 18,671 acres.

Hewing has been carried out on various Working Circles under local hewing permits, a limited number being issued.

During the early part of the year large quantities of wandoo sleepers were being hewn on private property on the eastern fringe of the prime jarrah belt, but with the filling of orders there has been a considerable decline in the industry.

Preparations were made for considerable extension of reforestation operations throughout the Dwellingup and Wuraming districts.

At Inglehope a forest settlement was established, eight houses and two huts being erected, paddocks cleared and fenced, a road formed through the village, a well sunk and provided with a windmill, water being laid on to each house. An arboretum was cleared up and ploughed.

At Dwellingup headquarters the erection of a new divisional office and one house was commenced, and various improvements to fences, stables, paddocks, and water supply carried out.

House sites and paddocks were cleared and tenders called for necessary houses, with a view to establishing overseers on Nowra, Banksiadale, Scott, Curara, Amphion, and Pindalup Working Circles.

Boring for water was carried out at each centre, and wells sunk at Curara and Pindalup. At North Marrinup, an area was cleared, fenced and cultivated for an orchard. Two houses purchased at Wuraming were renovated, a stable erected, and horse paddocks cleared.

Sixty-eight miles of tracks were cleared to render accessible various portions of the district. Thirty-one miles of telephone line were erected, connecting up the various Working Circles from North Marrinup to Wuraming, and seven telephones were installed.

A site for a fire lookout tower was cleared on Wourahming Hill (1,800 feet), and it is proposed to establish central fire control in this division in the near future. During the year a survey was carried out for the location of areas of good jarrah regrowth. Extensive areas of regrowth were located and

mapped and thinning operations commenced. These young stands are in the sapling stage. Although they have not yet suffered from the dominance of faulty overmature timber left after falling, frequently the dominants among the saplings themselves are bad forms resulting from successive fires, making thinning a necessity. During the year 1,050 acres were thinned in this Division. In the Jarrahdale Working Circle where the regrowth has reached the pile and pole stage, thinning was also carried out, over 173 acres. Provision is being made for disposal of thinnings as poles and firewood.

A survey of fresh formations and tracks was carried out in several centres, house sites for Working Circles were located, and proposed roads were traversed.

Working Circle Reports.

(*Jarrahdale—Reforestation, Jarrah.*)

Millars' Jarrahdale mill obtained portion of its log supplies from this Working Circle, 1,434 acres being cut over under tree-marking for an average yield of 9¾ loads per acre.

Top disposal operations extended over 1,500 acres, and burning in advance of fallers was carried out. To assist in controlled burning 16½ miles of scraper tracks were made.

Regeneration cleaning under the Group Selection System was carried out on both Mundlimup and 39-Brook Blocks, 290 acres being treated, blackboys being chopped down on 142 acres of firebreaks. 231 acres of treated country received a final burn.

On portions of the Working Circle there are good stands of regrowth which has reached the pile and pole stage, and which urgently need thinning. 173 acres on Mundlimup Block were given a crown thinning during the year, and a limited market is being found for poles removed in the process.

A horse paddock was cleared and fenced, and stables and a portable hut erected.

(*Holmes—Reforestation, Jarrah.*)

Five sleeper hewers operated under local hewing permits, cutting over 410 acres under tree-marking conditions, averaging one load of sleepers per acre. An overseer was engaged in working up trees ring-barked on Compartment 5.

Seventy-six acres were treated for regeneration under the Group Selection System, and 69 acres were given a final burn prior to being closed for regeneration.

In advance of thinning operations light controlled fires were run through the sapling stands. Following this 211 acres were treated by crown thinning, the resulting debris being burnt in heaps as far as possible.

Twenty-one miles of scraper tracks were formed around compartments to aid in the burning of fire-belt strips.

(*North Marrinup—Reforestation, Jarrah.*)

The Marrinup mill continued to obtain its log supplies from this Working Circle under tree-marking conditions, 1,488 acres being cut over for an average of 12 loads per acre. Two hewers were employed under local hewing permits, and cut over 124 acres for one-third load of sleepers per acre.

Two hundred and forty-eight acres were treated for regeneration, and 395 acres were finally burnt. Around compartments 18 miles of scraper tracks were run at a cost of £2 per mile, and controlled burning on fire-belt strips was carried out. Black-boys were cut on 126 acres of fire-belt.

The overseer was employed for some time hewing rough trees left behind on Compartment 1. A horse paddock was cleared, drained and ploughed, and a small area cleared for an orchard.

(Holyoake—Reforestation, Jarrah.)

Five hewers have operated under local hewing permits, over an area of 500 acres for one load of sleepers per acre. The overseer was employed on direct conversion, working up ringbarked trees until such time as the area worked over by hewers was large enough to start regeneration cleaning.

Two hundred and eighty-seven acres were treated for regeneration, and 313 acres received a final burn.

Controlled burning was carried out following the hewers, and in advance of thinning operations. Fire-belts around compartment boundaries were burnt, 30 miles of scraper tracks being made to assist the control of the fire.

Stem and crown thinning were started early in the year, but eventually crown thinning only was continued. During the year 442 acres were thinned.

(Inglehope—Reforestation, Jarrah.)

Under tree-marking conditions five hewers operated over 202 acres, the average yield being 3¼ loads of sleepers per acre.

Controlled burning was carried out under groups of immature timber and along fire-belts. 12 miles of scraper tracks were run to assist in controlling the burn.

Regeneration cleaning was carried out on 376 acres, and the major portion of the area treated for regeneration to date has now received a final burn.

Thinning amongst groups of regrowth was inaugurated, and 37 acres treated at a cost of 18s. 4d. per acre.

(Plavin's—Reforestation, Jarrah.)

The overseer was employed during the early part of the year on direct conversion of rough trees left by hewers. Five hewers operated under local hewing permits, cutting over 322 acres for 0.8 loads per acre.

Fifteen miles of scraper tracks were formed, and areas carrying regrowth were burnt by light controlled fires in advance of thinning operations. The regrowth on this Working Circle is the oldest and best in the district. 118 acres were thinned, the tops being disposed of by burning in heaps in open spaces. 251 acres were treated for regeneration under the Group Selection System at a cost of 5s. 3d. per acre.

(Wuraming—Reforestation, Jarrah.)

Three hewers operated under tree-marking conditions over 192 acres, which yielded five loads of sleepers per acre. Port and Company's sawmill at Pindalup cut over 1,212 acres under tree-marking conditions.

A light controlled fire was run through areas of good regrowth on the Working Circle. It is proposed to inaugurate thinning operations on the Working Circle during the forthcoming year.

(Pindalup—Reforestation, Jarrah.)

Messrs. Port and Company's sawmill cut over 750 acres of the Working Circle, and also on portion of Wuraming Working Circle, 1,962 acres gave an average yield of 4¼ loads per acre. 6¼ miles of scraper tracks were formed, and light controlled fires run through compartments carrying good regrowth as a preliminary to thinning operations. A crown thinning was given to 242 acres of splendid re-growth in the sapling stage.

(d) Division No. 4.

(Collie, Noggerup, Muja, and Worsley Districts.)

District Notes.

Nine jarrah mills were operating under tree-marking conditions on Crown lands during the year, and six on private property. Top disposal operations were carried out on prime jarrah forests from which mill logs were obtained.

Hewing was carried out to a limited extent on various Working Circles under tree-marking control, but on private property a large quantity of wandoo sleepers was hewn, mainly by foreign labour, in the Muja and Noggerup districts.

A track clearing gang was started in the Wellington Mills district, which in the past has been penetrable only on horseback or on foot. To open up this area main tracks and formations are being cleared of logs and debris, and formations ploughed and levelled off to remove corrugations after removal of old sleepers. 37¼ miles have been completed at a cost of £6 6s. per mile.

Working Circle Reports.

(Collie—Reforestation, Jarrah; Afforestation, various conifers.)

For a short period Bunning's wandoo mill operated on Shotts' Block, cutting over 156 acres for 3.3 loads per acre.

The average number of hewers operating on the Working Circle during the year was 31. An area of 1,373 acres was cut over for an average of one load of sleepers per acre.

Timber getters for the coal mines were confined to small coupes, and worked over 1,125 acres for 3.8 loads per acre, which is a higher recovery than last year's. An overseer carried out direct conversion by squaring of windy trees, "grooving" being necessary. This served as a demonstration of how to work such trees.

Top disposal was carried out over 1,543 acres, mainly in Lyall's Mill permit.

On Proprietary, Westralia, Cardiff and Shotts Blocks regenerating cleaning under the clear-felling system was carried out. 442 acres being treated. This includes the felling of dry trees on the five-chain fire-break belts. 292 chains of 12 feet wide fire-break strips were cleared and 360 chains of such strips disc-harrowed.

Ten miles of six-foot strips were cleared for scraper tracks.

On Arklow and Mungalup Blocks regeneration cleaning was carried out according to the Group Selection System, over 664 acres.

It has been found necessary as a precautionary measure to fell dry trees standing on the five-chain fire-belts separating compartments, to render possible the control of accidental fires and future controlled burning operations. On 725 acres of fire-break belts in Arklow and Mungalup Blocks dry trees were felled and blackboys chopped.

In addition 19 miles of scraper track strips were cleared, and the scraper run over 11½ miles of cleared strips.

Afforestation.

Sixty-five acres were clear felled and slashed for planting with *Pinus pinaster*.

During the 1927 planting season 15 acres of *Pinus pinaster* were planted on Proprietary Block, and several areas previously planted on Mungalup and Proprietary Blocks were refilled. Spot cultivation was carried out prior to planting.

Seeds of seven pine species were sown in the nursery to provide planting stock for Bowelling and Collie.

On Mungalup Block bashing of large eucalypt suckers was carried out on 44 acres of plantation.

Where necessary fire-breaks were ploughed and kept clear of debris.

Fire Control.

The summer was long and dry, broken by a heavy rain in January, the effects of which, however, were soon nullified by the previous long dry spell and the hot weather which followed.

Controlled burning was carried out over 23,000 acres of untreated forest, and absolute protection was afforded to 9,689 acres of treated country and plantations. Of this the area burnt was 209 acres, or 2.15 per cent.

Sixteen fires were reported within the confines of the fire protected area, seven of which were deliberately lit. The culprits were fined heavily.

The fire tower was manned on 15th November and vacated on April 18th. A strip of timber 2½ chains wide was cleared around the tower and surrounded with a scraper track as a precaution against fires.

General.

The clover paddocks at Mungalup were top-dressed; at Cardiff the horse and house paddocks were cleared and ploughed.

The horse paddock was harrowed, sown with grasses and top-dressed.

At Shotts a well was sunk and a pump installed; an area was cleared, fenced and ploughed for an orchard; the horse paddock was ploughed, re-sown with grasses, and top-dressed.

At Collie headquarters the horse paddock was re-sown and top-dressed.

Existing tracks were kept open on the various blocks.

The telephone line to Cardiff was extended half a mile from the camp to the overseer's house.

(Mumballup—Reforestation, Jarrah.)

During the first half of the year the Mumballup Mill obtained its log supplies from the Working Circle under tree-marking conditions. 430 acres were cut over for 3½ loads per acre up to the time it closed down.

Two hewers working under local hewing permits cut over 254 acres for three-fifths of a load of sleepers per acre.

Controlled burning was carried out on three compartments. 70 chains of scraper tracks being formed to assist in the control.

Top disposal operations extended over 368 acres.

Regeneration cleaning under the Group Selection System was carried out over 190 acres, and blackboys were cut on 169 acres of firebreak. 626 acres in Compartment 8 were given a final burn, following which the partially rung seed trees received a final ringbarking.

At the overseer's house a semi-rotary pump was installed. The paddocks were drained, ploughed and top-dressed. A deviation of the track to the main road was made to make the house more easy of access.

(Noggerup—Reforestation, Jarrah.)

An average of seven hewers operated under tree-marking conditions during the year, 617 acres being cut over for .8 loads of sleepers per acre. The overseer was employed on direct conversion by squaring, and obtained 32 loads of sleepers from rough timber and crown logs.

Regeneration cleaning under the Group Selection System was carried out over 490 acres. 942 acres of treated country received a final burn and final ringbarking. 475 chains of scraper track strips were cleared to assist in controlling the burn.

One thousand four hundred and fifty acres were burnt by controlled fires. Top disposal operations were carried out over 296 acres.

Paddocks at the overseer's house were further cleared, drained, ploughed and top dressed. An area was also cultivated for an orchard.

(Worsley and Potter's Gorge—Reforestation, Jarrah.)

These two Working Circles have been combined on account of their small area. Three mills operated during the year, cutting over 1,574 acres under tree-marking conditions for 20.455 loads, an average of 13 loads per acre. Actually two of the mills obtain about 16 to 20 loads per acre, and the third, working on cut-over bush, about four loads per acre.

Three hewers cut over 70 acres for .6 loads of sleepers per acre, under tree-marking conditions.

On 1,200 acres top disposal was carried out. 717 acres in Compartments 5, 8 and 9 were given a final burn, and are now closed for regeneration.

A house and stables were erected and a resident overseer appointed.

(Bowelling—Experimental Area for Pine Planting.)

In the 1927 planting season 16 acres were planted with the following species:—*P. pinaster*, *P. mairicata*, *P. Coulteri*, and *P. palustris*.

All except the *P. palustris* appear to be doing well after the very dry summer. Spot cultivation was carried out prior to planting.

Eighty-three chains of 12 feet strips and 39 chains of 15 feet strips were cleared on the fire-breaks, and 383 chains of such strips ploughed.

Eucalypt suckers were bashed on the compartments first planted at Bowelling. During the fire season a man was employed as a precautionary measure on hewing in the vicinity of the plantation. In preparation for the 1928 planting, spot cultivation was carried out.

(*Harris River—Reforestation, Jarrah.*)

This Working Circle has been started during the year. It has an area of 52,370 acres, divided into two blocks—Darrell and Fernbrook.

An overseer took up residence at the old Harris River mill in Darrell Block at the end of February.

The horse paddock was ploughed and sown with grasses, and an area cleared and ploughed for an orchard.

Two miles of tracks were cleared on compartment boundaries. 700 acres were burnt by controlled fires in advance of regeneration operations.

(*Wilga—Reforestation, Jarrah.*)

The Timber Corporation, Limited, secured supplies for their mill from this Working Circle under tree-marking conditions. 1,668 acres were cut over for an average of five loads per acre. Top disposal operations extended over 2,328 acres.

(*e*) *Division No. 5.*

(*Donnybrook, Nannup, Jarrahwood Districts.*)

District Notes.

Donnybrook District.—Owing to the building in which the district office was situated being burned down it was necessary to secure other premises, and a building in the main street at Donnybrook has been taken over from the Public Works Department.

Six mills operated on Crown land during the year, but two have now closed down. Five small mills operated intermittently on private property.

Tree-marking was carried out on 1,128 acres for two mills, and for hewers working under local hewing permits at Wellington 79 acres were marked.

Extensive hewing operations were carried out on private property, mainly by foreigners. Top disposal operations at Wellington and East Kirup extended over 3,439 acres, and 2,070 acres were burnt in advance of felling operations.

Nannup District.—One large mill at Nannup operated during the year. Hewing has been in progress on private property and on country which it was intended should be subdivided for Group Settlement. Top disposal operations were carried out over 1,288 acres following the mill fallers.

A river banksia permit was held by a local settler, who supplied logs of this species to the Railway Workshops at Midland Junction for use in coach building.

Valuable bridges over brooks in the State Forest, south of Barrabup, were kept clear of undergrowth and debris to protect them from fire.

In the Nannup arboretum, with the exception of *Tristania conferta*, all trees are doing well. This species has proved very frost tender, and has been replaced by *P. caribaea*.

Jarrahwood District.—At Jarrahwood Headquarters a pasture paddock was cleared, ploughed and top dressed, stable yards erected, and a 1,000-gallon tank installed. A hut was purchased for use as an office. Sites for two houses and stables were cleared on the boundary of the Harrington and Upper Capel Working Circles, where it is proposed to establish two overseers. Water was located by boring and the sinking of a well commenced. Three huts were purchased for the use of workmen.

Track Clearing.—A road following formations and tracks was cleared between Jarrahwood and Kirup. Formations, after the removal of old sleepers, are ploughed and graded and make good tracks. 46 miles of tracks were cleared in the Sussex, Harrington and Upper Capel Working Circles, providing means of access to the various portions of the district, and in particular a short route from Jarrahwood to Kirup.

Three mills operated in the Jarrahwood district during the year, particulars of which are given under the respective Working Circle reports.

Working Circle Reports.

(*Harrington—Reforestation, Jarrah.*)

Two thousand one hundred and forty-eight acres were cut over for log supplies under tree-marking conditions by the Claymore Mill. One hewer worked through the heavily cut over bush during the year under local hewing permit. The overseer was employed for a short period hewing sleepers from windy trees only by grooving, so that he would be conversant with the types of tree which could be marked for hewers.

Regeneration cleaning under the Group Selection System was carried out over 247 acres, and blackboys were cut on 357 acres of fire-break belts. Compartments 4 and 5 received a final burn, and the final ringbarking was commenced on Compartment 5. Three miles of scraper tracks were run around treated compartments, and 18 miles of fire lines cleared and ploughed.

Top disposal operations extended over 2,040 acres. Compartments 4, 5 and 6 were re-surveyed following slight alterations to boundaries, and the boundary of the Working Circle in that vicinity was slightly amended.

(*Lowden—Reforestation, Jarrah.*)

Four hewers operated under local hewing permit, working up windfalls and ringbarked trees during the first half year. Only two continued to the end of the year. 85 acres cut over yielded one load of sleepers per acre.

Blackboys were chopped on 48 acres of five-chain firebreaks around Compartment 1. Various improvements were effected on the overseer's house. An orchard was cleared, ploughed, and fruit-trees planted. The horse paddock was top-dressed.

(Upper Capel—Reforestation, Jarrah.)

Two mills obtain log supplies from this Working Circle, viz., Argyle and Claymore. Under tree-marking conditions they cut over 3,590 acres. Top disposal operations extended over 2,425 acres, and some 1,400 acres of bush were burnt by controlled fires in advance of falling operations.

Five and a-half miles of fire lines were cleared and ploughed, and blackboys cut on 90 acres of fire-belt.

(Sussex—Reforestation, Jarrah.)

The Sussex Mill continued to obtain its log supplies under control by tree-marking, cutting over 2,656 acres.

Two sleeper hewers operated under local hewing permits on Compartments 1 and 2, cutting out an area of 778 acres.

In addition a camp of four apprentices being trained in sleeper cutting cut over 140 acres.

Advance burning was carried out, and 2,420 acres were so treated.

Top disposal operations extended over 1,600 acres. 22¼ miles of fire lines were cleared and ploughed.

Regeneration cleaning extended over 274 acres in Compartments 2 and 4, and blackboys were chopped down on 241 acres of fire-belts. Compartments 1 and 2 were given a final burn over 845 acres.

Various compartment boundaries were revised and new portions of tramline surveyed.

(Millbrook—Reforestation, Jarrah.)

This new Working Circle includes Sawmill Permit 524, lying south-west of Jarrahwood. The Jarrahwood Mill drew its log supplies from this area during the year under a 90in. girth standard. At the close of the year 8,568 acres had been cut over by the mill for 10 loads per acre approximately. Controlled burning was carried out in advance of falling operations on 3,540 acres, and following timber removal the debris was cleared from around good piles and poles on 3,740 acres at a cost of 1s. 8d. per acre. A survey of newly constructed tramways was carried out.

(Ellis Creek—Reforestation, Jarrah.)

A new Working Circle was started with headquarters at the old Ellis Creek Mill site. The area is prime jarrah forest, and carried a heavy crop of timber in the past.

A cottage and stables at the mill site were purchased from the Kauri Timber Company for the use of the overseer. A horse paddock was fenced and partially cleared up.

Improvement work was carried out on 20 acres in Compartment 1.

(Nannup—Experimental Pine Plantation.)

In 1927 30 acres were planted as follows:—*Pinus pinaster*, 19.5 acres; *Pinus insignis*, 5.2 acres; *Pinus echinata*, 2 acres; *Pinus Coulteri*, .25 acres; *Pinus longifolia*, 1.15 acres; *Pinus canariensis*, 1.0 acre; *Pinus Jeffreyi*, .16 acre; *Pinus Banksiana*, .30 acre; *Pinus caribaea*, .36 acre.

Spot cultivation was carried out prior to planting.

Pinus insignis and *P. pinaster* were raised at Nannup for 1928 planting.

The remainder of the experimental area was burnt up, and 6.8 acres of firebreak cleared for ploughing. 71½ chains of fencing were erected along the outer boundary.

On the area planted in 1927 eucalypt suckers were bashed.

In preparation for planting in 1928 13,500 planting spots were cultivated at a cost of £1 13s. 5d. per 1,000, and 11.7 acres were ploughed.

*(f) Division No. 6.**Manjimup and Greenbushes District.**District Notes.*

In the Manjimup District five mills operated on Crown lands, two cutting jarrah only, two karri and jarrah, and one cutting karri only. A few small mills worked intermittently on private property.

The Pemberton mill cut 63,300 loads of karri in the round for a recovery of 30.8 per cent. of sawn timber.

During the year 118,827 loads of timber in the round were cut on Crown lands in this district.

Twenty hewers were employed on Blocks intended for Group Settlement; on private property there was a marked falling-off in hewing operations. Altogether less timber was hewn than in previous years.

There were further alienations of country for Group Settlement in the vicinity of Northcliffe, Jardee and Pemberton.

In the Greenbushes district, approximately 2,000 cords of wood were cut for the tin dredges and mines. Sleeper hewing on private property has been on the decline, but there are still about 200 hewers (mostly foreigners) operating in the district.

Twelve hewers have been employed on locations intended for alienation, and a few others have operated from time to time under local hewing permits on Crown lands.

Kirup Headquarters.

It was decided to establish a Divisional Headquarters at Kirup. The clearing of the necessary house sites and paddocks was carried out, and the following buildings erected, viz.; Divisional Office, a Divisional Forest Officer's house, a Forester's house, a two-roomed hut for the use of a single Assistant Forester, and a stable. Water was struck at 28 feet by boring, and a well will be sunk.

*Working Circle Reports.**(Big Brook—Reforestation, Karri; Afforestation, various Conifers.)**Reforestation.*

The State Sawmills at Pemberton ceased cutting on the Working Circle during the early part of the year, and are now obtaining log supplies from outside the Working Circle boundaries.

Regeneration operations were carried out under the clear felling system over 1,604 acres. Some of this work was revisionary in nature. A summary of the total area treated for regeneration to date gives 4,164 acres. Treatment consists chiefly of

ringbarking marri, felling sheoak, and slashing undergrowth ready for burning. A final burn was given to approximately 750 acres of the country first treated for regeneration, and to date 366 acres have been finally ringbarked. On some of the compartments burnt, where marri predominated, karri seed was broadcasted at the rate of $\frac{1}{2}$ lb. per acre. A further area of 10 acres was spot sown with karri seed.

One compartment of virgin karri was underplanted with Blackwood (*Acacia melanoxydon*), 1,800 trees being planted. Along the outer boundary of the Working Circle 223 chains of firebreak belt, 5 chains in width, have been clear felled of all species, with the exception of karri. Twelve and a half miles of firebreak strips were cultivated. A camp of apprentices was employed during the summer months collecting karri seed, a supply of 165 lbs. being secured.

Afforestation.

The new nursery was completed and sown with the following species: *Picea sitchensis*, *Pinus Lambertiana*, *P. laricio*, *P. Jeffreyi*, *P. ponderosa*, *P. strobus*, *P. sylvestris*, *P. taeda*, *P. caribaea*, *P. insignis*, *Pseudotsuga taxifolia*, and *Sequoia sempervirens*. All germinated well except *P. strobus*.

Thirty-nine acres of marri country were cleared for planting. A small area of river flat along Big Brook was cleared and planted with *Taxodium distichum* and *Sequoia sempervirens*.

Four acres of the arboretum were cleared up and burnt.

General.

The house paddock was cultivated and fruit-trees planted. Undergrowth was cleared from around culverts and bridges to protect them from fire, and the track to Channybearup Road was improved.

A fence line was cleared on the Working Circle boundary along Stirling and Channybearup Roads.

Yornup (Reforestation—Jarrah).

During the early part of the year Bunning's mill was closed while undergoing reconstruction. On starting again, it worked over an area of 430 acres under tree-marking conditions, removing eight loads per acre. Eight hewers worked over 819 acres, recovering half a load of sleepers per acre.

On Compartments 1 and 2 improvement work was carried out over 560 acres at a cost of approximately 3s. per acre. Large marri overtopping groups of jarrah were ringbarked, and earlier work completed according to the latest specification. Top disposal operations extended over 1,329 acres. Nine hundred acres were burnt by controlled fires, in advance of the mill fallers, and trees felled on the 5-chain firebelt around Compartment 1 were burnt. Eight hundred and seventy-five chains of scraper tracks were made around Compartments 1, 2, and 3.

The horse paddock was cleared and sown with clover seed.

Mullalyup (Reforestation—Jarrah).

An area of 702 acres was cut over for log supplies by Lewis and Stirk's mill, three and a half loads per acre being removed. Twelve hewers operating under local hewing permits worked over 528 acres for 1.2 loads of sleepers per acre. Both milling and hewing were carried out under tree-marking control.

Top disposal operations extended over 640 acres, while 580 acres were burnt by controlled fires in advance of hewing operations.

House and horse paddocks were cleared. Seven acres of the horse paddock were ploughed and half of it sown with subterranean clover.

Greenbushes (Reforestation—Jarrah).

This new Working Circle, comprising 22,300 acres around Greenbushes, in the past carried a very heavy crop of jarrah. Very little merchantable timber now remains on much of the area, owing to heavy exploitation for sawmilling, hewing, mining timber, and firewood. The headquarters of the Working Circle is at present located in Greenbushes township.

The first operations consisted of clearing tracks and formations to make all portions of the Working Circle readily accessible. Twenty-five miles were cleared at a cost of £4 13s. per mile, and one bridge was renewed.

One hundred and fifty-two chains of scraper tracks were cleared and made around Compartment 6, and the blackboys cut on the 5-chain firebelt strip, an area of 152 acres.

(g) Division No. 7.

Mallet Reforestation, 1927-1928.

District Notes.

During the year a classification survey of mallet country was in progress, in the course of which many new areas carrying mallet were located and reserved. Plans showing the vegetation types on each reserve are being prepared as the result of this survey. The following groups of reserves have been dealt with: Lol Gray, Montague, Congelin, Contine and Highbury—a total area of 50,000 acres, approximately. Preparations are being made to establish working circles on each of the above areas during the coming year.

Numerous fires threatened mallet reserves during the summer, and showed how great is the need for proper fire control if mallet is to survive.

At Lol Gray sowing of mallet-seed was continued. The 1926 and 1927 sowings made splendid growth during the year, and gave evidence that on suitable types of country complete clearing, followed by a good burn prior to sowing of seed, gives satisfactory results. Some of the two-year old seedlings have reached a height of seven feet, while many others are between three and four feet in height.

A half-chain break was cleared and burnt around the fine mallet stands on the Wickepin Water Reserve to protect this valuable area. Similar measures will be extended to other reserves as Working Circles are established.

During the year several farmers, whose holdings include areas of mallet country which are too rough and hilly for agricultural purposes, have handed these areas over to the Department for mallet growing. The effective supervision, fire protection and management of mallet reserves will lessen the fire risks which have threatened neighbouring farms, and will make productive, areas of country which have for years lain idle on account of their unsuitability for agricultural and pastoral pursuits.

During the early part of the year large quantities of wandoo sleepers were hewn on private property for the W.A.G.R. A large number of land inspections were carried out, mainly of land carrying wandoo. It is noteworthy that the applications for this land fell off when the wandoo sleeper boom finished, suggesting that the land was sought in many cases for its timber value, rather than for *bona fide* settlement.

Working Circle Reports.

Lol. Gray (Reforestation—Mallet).

For the 1928 sowing, 115 acres were cleared and burnt at a cost of £2 12s. per acre. In April, this area was sown with mallet seed at the rate of $\frac{1}{4}$ lb. per acre, and in spite of the long spell of dry weather an excellent germination resulted.

Fifteen acres were cleared for experimental pine planting, and for next year's sowing 55 acres have been clear felled to date, 941 chains of firebreaks were ploughed, and a start was made towards clearing one-chain breaks around every 200 to 300 acres, utilising waste country as far as possible.

On Compartment 17, sown in 1926, 45 acres were sucker-bashed to relieve the mallet seedlings from competition. Several tracks were opened up to give access to good mallet groups.

At the house an underground tank was constructed.

During the wandoo sleeper boom one hewer was employed on the Working Circle working up trees on areas set aside for clearing, and 13 loads of sleepers were produced.

Experimental sowings were conducted with sandalwood and jam on a suitable flat, and with mallet on an ironstone ridge near the house. A small plot was planted with *P. insignis*, *P. pinaster*, and *P. canariensis*. In spite of the very dry summer many pulled through. Indications are that *P. canariensis* will prove most suitable in this climate and locality.

(h) *Sandalwood Reforestation.*

General Reconnaissance.

Reconnaissance surveys were made in the vicinity of Uraryie Rock, Emu Rock and Bulla Bulling, and a classification was carried out on each area. The two latter areas proved unsuitable. An assessment was carried out over 23,577 acres at Hampton Plains.

Survey and Demarcation.

The external boundaries of the following reserves were surveyed by the Lands Department, viz.: Emu Rock, Coonaana, Wallaby Rocks, Bullock Holes. These reserves total 155,991 acres. Around Emu Rock reserve a strip of six feet in width has been cleared, and a similar strip 17 miles long around portion of Coonaana reserve. The purpose of these strips is to facilitate control and inspection, and eliminate the risk of unintentional trespass.

Fencing.

Four hundred and forty-four acres were enclosed with a rabbit-proof fence at Lakeside reserve, and 7,624 acres were surrounded by a cattle-proof fence.

At Bendinger a 6-acre paddock was netted against rabbits; at Coonaana two 12-acre plots were rabbit-netted, and also a 5-acre plot at Calooli.

Rabbit poisoning was carried out on Lakeside, Karramindie, and Bendinger reserves.

Road Clearing.

Two hundred and twenty-five miles of old tracks were cleared between Karramindie, Yellarie and Seahill reserves, with an outlet on to the 17-mile peg on the telegraph line. This makes it possible to visit the three reserves in one trip. A further five miles of track were cleared near Coonaana reserve.

Sowing.

On Lakeside reserve 946 acres were sown with sandalwood nuts. It has been found that, as only a limited percentage of seed becomes properly established, it is necessary to sow considerably more seed than previously. Two seeds are now sown in each hole.

Total seed used—5,045 lbs.

Quantity of seed per acre—5.3 lbs.

At Bendinger, the 6-acre rabbit-proof paddock was sown with sandalwood and jam seed. A further 20 acres were sown with jam on Compartment 1.

Nineteen new experimental plots were sown at Lakeside, Seahill, Calooli, and Coonaana—16 $\frac{1}{2}$ acres in all.

4.—TRAINING OF STAFF.

General Division.

No additional apprentices were indentured during the year.

Of the seven apprentices in training at the beginning of the financial year one was promoted to Forest Guard and one resigned.

Apprentices received training in sleeper cutting at a camp established for the purpose near Jarrahwood, and were also engaged in seed collection, pine planting and general district, nursery, and office work.

In addition to one apprentice promoted there were seven other Forest Guards employed at the beginning of the year. One of these resigned.

Since the conclusion of the year three senior Forest Guards were promoted to "C" Grade Assistant Forester on six months' probation.

Forest Guards received special training in sleeper cutting, timber and soil classification, district office work, and nursery work.

A number of transfers with a view to enabling Assistant Foresters to become conversant with phases of forest work with which they had previously not had experience were arranged, and a Forester's Manual for the guidance of field staff was published.

Professional Division.

Of the students nominated from this State to the Australian Forestry School, Canberra, one obtained his diploma in Forestry and has been appointed to a position on the staff, while the other nominee of the same year has, owing to a serious accident, been unable to gain his diploma as quickly as was expected.

The two students of the following year are attending the Forestry School, and obtained highly satisfactory results at the conclusion of their first year there.

Two additional students commenced their course at Canberra at the beginning of this calendar year, one of these being a graduate of the University of Western Australia in Engineering. It is anticipated that he will spend only one year at Canberra. The other student will be required to take at least a two years' course.

5.—RESEARCH AND INVESTIGATION.

The Research and Investigations Committee, consisting of Mr. S. L. Kessell (Chairman), Professor H. E. Whitfeld, and Professor N. T. M. Wilmore has continued to direct research work during the year.

Forest Utilisation.

Officer-in-Charge: S. A. Clarke, B.E., A.M.I.E.A.

Since the inauguration of forest management in Western Australia, it has become increasingly apparent that one of the most important factors in conservation is the efficient utilisation of the forest crop. The subjects of inspection standards and the standardisation of sizes, in association with milling practice, have received considerable attention of recent years. A study of the technique of the production and marketing of local timbers showed the need for an officer with a specialised knowledge of local conditions, and in order to give the recently appointed utilisation officer an opportunity to obtain the required experience, he has been placed in charge of the Departmental Tuart Mill at Wonnerup.

Seasoning Investigations.

(Officer-in-Charge: F. Gregson, B.E.)

During the year "The Seasoning of Western Australian Hardwood" was published. This bulletin is of a comprehensive nature, and was written not only with a view to setting out the results of the valuable experimental work in this State, but also to act as a handbook in the selection, design, construction and operation of seasoning plants for local timbers.

In the field of kiln seasoning it is pleasing to note that the question of rapid seasoning is arousing considerable interest, and although no new kiln installations have been made, one of the existing batteries has been enlarged over 50 per cent. As far as air seasoning is concerned, staff changes have prevented the completion of the second report on the air seasoning of jarrah flooring, although this has been drafted. The practical interest taken in this study is indicated by the request from sawmilling organisations for a technical inspection and a report on air-seasoning yards.

Chemical Investigation.

Tannin Extract Plant.

The semi-commercial tannin extract plant erected on the University grounds at Crawley by the Forests Department in conjunction with the Council for Scientific and Industrial Research, is now in full operation.

The major portion of the plant machinery was supplied by Blair, Campbell & McLean, of Glasgow, consisting of double-effect vacuum evaporator, condenser, pumps, heaters, and piping systems. The disintegrator for grinding raw material came from Van Gelder of Sydney, and a vacuum film drier for the preparation of solid extract was manufactured

by Kestners, London. An autoclave for pressure or vacuum work, together with vacuum pump, came from Bennett Sons & Shears, London. Six jarrah leaching vats were made locally and, with a few minor exceptions, the remainder of the plant was procured locally.

The power used is mainly electrical, but steam for power and heating purposes is drawn from Babcock & Wilcox boilers, the property of the University of Western Australia. As the water consumption of the plant is large, a well has been installed, together with pumping machinery, and an adequate supply is obtained.

In operation the raw material is first ground, and then extracted in the leaching vats under the necessary conditions. The weak liquor thus obtained passes through the vacuum evaporator, where it is concentrated to the consistency of "liquid tannin extract." As such it can then be sent direct to the tannery, or may be further treated in the drier to produce "solid tannin extract."

A laboratory has been included in the plant buildings, together with the necessary chemical equipment for proper control of all experimental work.

In addition, there are two storage sheds, as it is found necessary to store sufficient raw material to last through the wet season.

Operations commenced at the plant in December, 1927. Most of the work performed to date has been on Karri bark, and to a lesser extent with marri kino (red gum) and tuart wood.

The experiments are being conducted under the supervision of the Tannin Investigations Committee, consisting of Mr. S. L. Kessell (Chairman), Professor H. E. Whitfeld, and Professor N. T. M. Wilmore.

Preservation.

(Officer-in-Charge: C. R. Kent, B.Sc.)

The operation of the Fluorising process is being continued at Pemberton by the State Sawmills and, insofar as the process itself is concerned, is proceeding satisfactorily. Chemical supervision of the process is being maintained by the Forests Department. Difficulty is still being experienced, however, in the operation of both powellising and fluorising processes in the one plant.

The solution of this difficulty would depend on the complete acceptance of the fluorising process, which naturally rests with the consumers of treated timber. The fluorising process was introduced in the first instance on account of the failure of powellised karri due to rot, and the fluorising process can be claimed, on a scientific basis, to prevent the attack of rot as well as the attack of white ants. In short, fluorised karri possesses all the merits of powellised karri and the additional advantage of being resistant to the attacks of rot-producing agencies.

Botanical Investigations.

(Officer in Charge—W. E. Champion.)

Nomenclature of Sandalwood.

In the last annual report reference was made to the confusion which had arisen with regard to the nomenclature of Sandalwood.

Messrs. W. E. Champion and C. A. Gardner, in a paper published last year, adduced evidence in

favour of the name *Santalum spicatum*, whereas Messrs, Sprague and Summerhayes, in a paper which appeared in the Kew Bulletin, placed the species in a new genus Eucarya. Botanical material of *Santalum lanceolatum* and *Santalum spicatum* was forwarded to Professor Emile Perrot, of the University of Paris, who has now published a comprehensive treatise on "Les Santals D'Australie et Leurs Essences" in the "Bulletin des Sciences Pharmacologiques," the official organ of the French Codex Commission.

After reviewing Sprague and Summerhayes' paper, Perrot adopts de Candolle's nomenclature, as recommended by Campion and Gardner. Perrot says, "Because the density and optical rotation vary slightly, this by no means implies that the Australian oils cannot find a place clinically beside the Mysore essence." After discussing further medical tests, Perrot accepts the superiority of Western Australian sandalwood oil over Mysore oil for medical use.

Thermo-Soil Tests.

A few thermo-soil tests were made with regard to soil temperatures under bush fire conditions.

Preliminary tests appear to show that sand is remarkably uncondutive, it being necessary to have a heavy fire burning for three and a half hours before temperature at 4 inches' depth reaches over 60° C. In a loam soil, however, while leaf litter and ordinary scrub when burnt will not affect soil temperature at 4 inches, a dead limb burning on the ground quickly raises the temperature at 4 inches to over 70° C. It is extremely improbable that soil temperatures at 1 foot are ever seriously affected by bush fires.

Soil-Moisture Tests.

Soil-moisture tests were carried out on the coastal sandplain soils at South Perth (Collier) and Hamel throughout the summer months at depths of 4 inches, 6 inches, 1 foot, and 2 feet. At Collier, plantations of *Pinus pinaster* are being established on deep sands of which the top 12 inches is a white bleached sand, and below that a deep yellow sand. The upper layer consists almost entirely of silica (quartz grains), while the yellow sand is about 80 per cent. silica, 19 per cent. limonite, 1 per cent. clay.

Drought conditions exist at Collier Plantation when soil moisture falls below 2.5 per cent. at 2 feet below the surface. Death occurs when soil moisture falls below 1 per cent. for any length of time. The roots of newly planted pines do not reach a greater depth than 2ft. 6 in. until after the first summer, and do not get below the 2-foot level until after December.

During the past summer drought conditions set in on both ploughed and unploughed land about the middle of November, and existed until about the beginning of May. On the other hand, the soil moisture on ploughed land remained above the wilting co-efficient during the whole period, but on unploughed land it passed below 1 per cent. from the beginning of December right through till the end of April, sometimes being as low as 0.2 per cent. The value of ploughing prior to planting, under such conditions, is obvious.

Parasitism of *Nuytsia Floribunda* on *Pinus Pinaster*.

Numbers of dead *Pinus pinaster* were noticed in the plantations at Collier, and investigations showed that in many cases this was due to root parasitism of Christmas Tree (*Nuytsia floribunda*), which tree suckers strongly after the felling for planting. The haustoria appear to eat through the woody tissues of the tap-root, cutting it completely in two at about one foot or less from the surface, thereby preventing the plant from obtaining moisture during the summer, for, as explained in the previous paragraph, the soil moisture above the 2-foot level is below the wilting co-efficient throughout the summer at Collier Plantation. Steps have been taken to poison any Christmas trees on plantation areas.

6.—WORKING PLANS AND TOPOGRAPHICAL SURVEYS.

Working Plans.

The total area under Working Plans at 30th June last was 763,650 acres. During the year five new Working Plans, covering an area of 119,520 acres, were approved. In addition, the general Working Plan referred to in last year's report, covering the permissible cutting operations only in the Karri belt, received the approval of the Governor in Executive Council. The area covered by the Jarrahdale Concession Working Plan was reduced to 21,300 acres, and approval was given to the first revision of the Big Brook Working Plan.

Towards the end of the year the compilation of figures relating to the present mature stand of jarrah timber remaining on Crown lands was completed, and a general Working Plan governing the future sawmilling operations in the Jarrah belt, on the basis of a sustained yield, has been prepared and will be submitted for approval at an early date.

The Working Plans approved during the year are as follows:—

No. 18—Lowden	11,010 acres
No. 33—Greenbushes	22,300 "
No. 35—Harris River	52,370 "
No. 38—Churchman's Brook	16,000 "
No. 41—Boyanup	17,840 "
	<hr/>
	119,520 "
No. 40—General Working Plan for Karri	390,000 acres.
First Revision, No. 9, Big Brook	7,750 "

Topographical Surveys.

Topographical compass surveys were carried out over 13,000 acres of jarrah forest, including 128 miles of traverse lines, at a total cost of £128, or £1 per mile.

During September a licensed surveyor was engaged to survey log lines and formations from which the log lines had been removed and being over country where, owing to the lack of existing survey lines, insufficient ties were available for compass survey work. These accurate surveys will form a skeleton and basis for more intensive compass survey work in the future.

In this way 243 miles of traverse lines were surveyed at a total cost of £1,416 11s. 10d., or £5 16s. 7d. per mile, and covering 190,000 acres of jarrah forest.

Three new lithographs have been published during the year, two on a scale of 80 chains to an inch and one on a scale of 20 chains to an inch.

A Vegetation Map and a Forests Zone Map were also published during the year.

Classification of Forest Country.

An area in the vicinity of Lake Muir was classified, containing 340,000 acres at a total cost of £1,293 14s.

An area of 50,000 acres of mallet country was also classified, at a total cost of £460 19s. 8d.

7.—ARBORICULTURE.

During the season which ended on 31st August, 1927, 228,211 trees were distributed by the Hamel Forest Nursery. Of these 53,482 were sold to the public at cost price, 2,602 were supplied free of cost to public bodies, charitable institutions, etc., and 172,127 were distributed among the various departmental plantations and arboreta.

Pinus insignis again proved the most popular tree for planting, followed by *Pinus Pinaster*, Sugar Gum, Lemon Scented Gum, Red Flowering Gum, Cyresses, Pepper-trees, Kurrajongs and wattles, in that order.

Cupressus macrocarpa was the most favoured of the Cyresses, but although it is hardier than *C. lusitanica* it is not so long lived.

One of the problems of the nursery is to supply trees suitable for the low rainfall areas of the State. Trees indigenous to these localities have been added to the list of species raised at the nursery, e.g., Manna Wattle, Salmon Gum, and the very ornamental *Eucalyptus Lehmanni*; while such trees as Jam (*Acacia acuminata*), Sheoaks, Mallet (*Euc. astringens*), and Kurrajong (*Sterculia Gregorii*) have been raised for some years. However, these native trees have not yet been rightly appreciated by the public, and the demand for them is limited.

CHAPTER V.

1.—SILVICULTURAL NOTES.

(a) Jarrah.

Attention has been given to the considerable areas of sapling and young pole growth which occur in the cut-over bush throughout the jarrah belt and on the ringbarked country in the Helena Reservoir catchment area.

These stands of young jarrah have occurred naturally following the cutting described above, and have been untended since their inception. The result has been that "forked" and "malformed" stems, caused chiefly by severe fires, form a considerable proportion of the dominant members of these young stands and now require removal in order that a crop of trees of good form may be ensured.

In the stands that will be formed in consequence of the regeneration cleaning now being carried out by the Department it is expected that, with adequate fire control from the commencement, the number of malformed stems will be fewer, and that before the necessity for thinning arises, sample plots recently established will give some indication of the financial soundness of the operation.

Throughout the jarrah forest marri occurs in mixture, forming in the prime bush about 10 per cent. of the total stems. Even though the trade cutting was confined entirely to the jarrah, thus increasing the proportion of marri to jarrah in the seed trees remaining, the marri form no greater proportion of the regrowth than of the original crop. In rate of height-growth both species develop equally, and the removal of dominant marri constitutes a useful crown thinning in these young stands.

(b) Exotics.

On the coastal sand-plain on which Perth is situated *Pinus pinaster* has shown itself to be thoroughly at home, once established. Clearing of the stunted tree growth is easy, but a burn does not prove sufficient set-back to the woody shrubs which form a dense, low undergrowth. The root competition for moisture during the summer months becomes too intense for survival of the pine unless the land is ploughed prior to planting. The following record of rainfall for the six months of last summer gives some idea of the severity of summer conditions, which are associated with constant low humidities and absence of clouds:—

—	Nov.	Dec.	Jan.	Feb.	Mar.	Apl.	Total.	
							Inches.	Points.
Rainfall	0.43	0.19	0.85	0.01	0.10	0.89	2	47

The winter rains are regular, but dry spells even in midwinter are not infrequent. Frosts are rare, and snow unknown.

—	May.	June.	July.	Aug.	Sept.	Oct.	Total.	
							Inches.	Points.
Rainfall	4.85	7.98	6.23	6.49	3.93	2.67	32	15

The above figures give a total rainfall for the 1927-1928 period of 34 inches 62 points. The endurance shown by *Pinus pinaster* to summer drought on deep sand following thorough cultivation prior to planting is remarkable; for example, losses last year on Collier plantation were 4.6 per cent. The seed was sown in August, lifted direct from the nursery lines for planting out in the following June, planted out on ploughed ground 6 feet x 6 feet, and given no further attention. The count referred to above was made over 50 acres in April, at the end of six months during which less than 2½ inches of rain fell. A well recently sunk on this plantation went down through sand 60 feet, at which depth permanent water was struck. A series of soil-moisture determinations, carried out at weekly intervals last summer to ascertain the effect of different

methods of soil cultivation prior to planting on coastal sand-plain country, would appear to indicate that moisture becomes a limiting factor in the growth of *Pinus pinaster* at 2.5 per cent., and death occurs rapidly in young pines when the moisture in the layer in which the roots are developing drops below 1 per cent.

(c) *Sandalwood.*

Owing to a series of disappointing seasons the results of extensive experimental work in the artificial regeneration of sandalwood in the 8 to 10-inch rainfall belt in the Eastern Goldfields have been inconclusive.

It would appear that in order to secure satisfactory germination, and allow young plants to parasitise freely, a rainfall of over one inch per month for three consecutive months at the end of the summer is necessary. Between 1900 and 1918 these conditions occurred in eight years out of the 18, but since 1918 the only satisfactory year was 1925, when seed supplies were scarce, owing to the drought immediately preceding. A serious handicap in considering the problem is the short period for which meteorological data are available.

It has been determined, however, that sandalwood nuts buried in the ground will retain their germinating capacity for four years, despite heavy storms which may occur sporadically.

Another new factor which may seriously prejudice the results following a series of good seasons is the rabbits, which in this locality do not burrow extensively, but shelter under the spreading bushes which form the best host-plant for the germinating sandalwood, and in consequence, as the grass dries off, the chances of young sandalwood surviving are greatly reduced. It has been noted that tan wattle (*Acacia Graffiana*), although an excellent host-plant for a strongly growing sandalwood plant, is a deep-rooted species, which the newly germinated sandalwood finds considerable difficulty in attacking.

2.—FIRE CONTROL NOTES.

Controlled burning is not necessarily a cheap and easy method of solving or dodging the fire problem. The difficulties associated with the work depend largely on the class of undergrowth and the intensity with which it is possible to allow a fire under control to develop. In dealing with grass country, extensive burning is possibly cheap and easy to control, but in regions where the undergrowth is composed of woody shrubs, as in the jarrah forest, the work requires considerable judgment and experience. In a jarrah forest of mixed age classes, satisfactory conditions for controlled burning may occur only at long intervals, despite the fact that during such period a serious fire hazard will develop in midsummer. Similarly, areas which have been scorched by a light running fire in early summer may carry a serious fire later in the same season. Experience under these conditions in Western Australia has shown that, as a distinct operation on which gangs of men are employed, controlled burning has limited application, and the solution of this, as with most other fire control problems, is the establishment of resident forest workmen, each responsible for a defined area. A man may learn to know an area of 7,500 to 10,000

acres thoroughly, and choose the times when various portions may be safely burnt to advantage, especially when he is constantly on the job and in a position to take advantage of a few days' or even a few hours' suitable weather at any time of the year.

To provide reasonably safe conditions so that a strong surface fire may be run through the 5 or 10 chain strip, "scraper tracks" are cleared along the outer edges. By the use of a triangular steel implement of local design, drawn by one horse, many miles of track, a couple of feet in width, can be cleared of leaves and shrubs in a day by one man.

The real effect of frequent light surface fires on the forest crop is one of the most difficult silvicultural problems which follows the introduction of more intensive systems of management of certain forest types in Australia. Such forests lend themselves to the practice of periodic burning by controlled surface fires without showing any apparent set-back to growing trees which have reached a sufficient height for the foliage to escape damage from the fire. A careful study of the economics of the position and the hazards involved will indicate, in most cases, that controlled burning must be considered on its merits as a fire control measure, rather than as a silvicultural problem, for many years to come. Despite this state of affairs, the forester cannot ignore the possible effect of frequent burning of leaf litter on soil fertility and plant growth. Sample plots, measured periodically, will undoubtedly assist; but there is a much wider field for original research. Many issues can be raised tending to suggest divergence in sound forestry practice between regions where light and heat are limiting factors of plant growth and regions where soil moisture is apparently the more important limiting factor. Soil chemists, plant physiologists and ecologists have made valuable contributions to our knowledge during recent years, but few foresters are equipped, or have the time, to consider the application of these researches in the realm of plant nutrition to the forest crop. The establishment of at least one forest research station in Southern Australia, staffed with scientific workers equipped to investigate problems of a fundamental nature, is one of the urgent needs of Australian forestry to-day.

CHAPTER VI.

1.—LEGISLATION.

Forests Act, 1918.

An Act to continue, for a further twelve months, the operations of section forty-one of the *Forests Act, 1918*, as amended by the *Forests Act Amendment Act, 1924*, was assented to on the 6th December, 1927. The amending Act of 1924 provided for the exclusion of Sandalwood revenue from the provisions of Section 41 (2) of the principal Act, and for the payment of 10 per centum of the net revenue from Sandalwood, or the sum of £5,000, whichever sum shall be the greater, to a special account at the Treasury to be applied to the regrowth of Sandalwood. The amending Act of 1927 extended the application of this fund to the improvement and reforestation of Sandalwood reserves and the development of the Sandalwood industry.

Amendments to Forests Regulations.

A number of amendments to the Forest Regulations were gazetted during the year, the most important of which are dealt with hereunder.

Timber Tramways.—Tramway construction has an important bearing on the work of the Department. With more systematic control of trade cutting operations, the necessity for placing the construction of timber tramlines on a proper footing became increasingly evident. Spasmodic decisions as to the direction and extent of tramway extensions render top disposal work unsatisfactory and, at times, ineffective. Controlled burning during the spring or autumn months of country to be worked over during the ensuing twelve months is impossible unless prior decision has been made regarding tramway extensions. The Department must see that companies take advantage of the best grades and most economical methods if the bush is to be systematically cleaned up.

To meet the position, regulations were gazetted on the 5th August, 1927, which provide for annual application by the permit holder for permission to construct and use tramways. The application must be accompanied by a plan showing for the ensuing twelve months—

- (1) constructed tramlines which the permit holder desires to retain;
- (2) new tramlines which he proposes to construct;
- (3) the area over which he desires to conduct felling operations.

Provided the proposals are approved by the Conservator, a permit for a twelve months' period, giving the necessary authority to construct and use the tramways, is issued on payment of a rental of 5s. per mile.

Spark Arresters.—With a view to preventing the outbreak of fires caused by the falling of sparks and cinders from steam engines, regulations were gazetted in March last enabling the Conservator to direct persons engaged in sawmilling operations involving the use of locomotives or stationary steam engines on Crown lands to fit such engines with approved spark arresters during the period from the 1st day of October in any one year until the 30th day of April in the following year. The regulations also provide that permit holders must equip and maintain in good order the ashpans of any such engines to prevent live cinders escaping therefrom.

Apiary Sites.—It was found that the regulations introduced in April, 1927, at the request of the Beekeepers' Association to deal with the granting of apiary sites and bee ranges, on similar lines to those adopted in New South Wales, did not altogether meet local requirements. Consequently, these were repealed in August, 1927, and new regulations more in keeping with local conditions were gazetted.

Other amendments of minor importance were—

The amendment of Regulation 18 to provide for the branding of one end of each section of timber before it is removed from the stump.

Amendments of the First Schedule to the regulations, increasing the royalty on boronia blossom from 1d. to 2d. per lb. and prescribing the royalty on piles and poles.

The inclusion of regulations to prevent the improper use of Departmental timber brands and Timber Workers' brands registered in the Department.

Amending Regulation 55 (d) by deleting the reference to "Geraldton wood" and making sandalwood from the Geraldton District subject to the same royalty as wood from other districts.

2.—ADMINISTRATION.

The following changes in staff took place during the year:—

(a) *Professional Division.*

Mr. A. D. Helms, Divisional Forest Officer, resigned.

Mr. G. W. Nunn obtained his diploma in Forestry at the Australian Forestry School, Canberra, and was appointed Assistant Divisional Forest Officer.

Mr. S. A. Clarke was promoted to the position of Forest Utilisation Officer.

(b) *Field Staff.*

One Assistant Forester, one Forest Guard and two apprentices resigned, and one Assistant Forester was appointed.

(c) *Head Office Staff.*

Five officers were appointed, and two resigned.

The staff of the Department now totals 114, and, in addition, there are 51 resident Overseers in charge of Minor Working Circles or Blocks where reforestation operations are in progress. All have shown great keenness in their work and interest in the operations of the Department generally.

Casual Workers.

During the year an Industrial Agreement for a term of three years, was entered into for the purpose of fixing the wages and conditions of employment of casual workers.

The scale of wages is based on the State Basic Wage of £4 5s. per week, subject to amendments made from time to time under the provisions of the "Industrial Arbitration Act, 1912-25."

S. L. KESSELL,

Conservator of Forests.

Forests Department,
Perth, 29th August, 1928.

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APPENDIX 1a.

General Statement of Revenue and Expenditure for the Year ended 30th June, 1928.

DR.				CR.	
30th June, 1928:		£	s. d.	£	s. d.
To Log Royalty from Permits granted under Section 11 of "The Land Act, 1898" ...	49,323	9	0		
„ Log Royalty from Permits granted under "The Forests Act, 1918" ...	49,010	13	11		
„ Log Royalty from Leases and Concessions ...	41,086	2	10		
				139,420	5 9
„ Sandalwood Revenue—					
Royalty ...	43,072	8	9		
Roots and Butts ...	9,626	7	5		
Confiscated Wood ...	785	7	3		
				53,484	3 5
„ Miscellaneous Royalties—					
Piles and Poles ...	353	16	6		
Hewn Sleepers (Forest Act) ...	8,478	6	1		
„ Hewn Sleepers (Land Act) ...	964	8	11		
Firewood ...	978	0	2		
Posts ...	111	13	1		
Illegally cut Timber ...	225	17	2		
Mining Timber ...	929	14	4		
Boronia ...	40	9	10		
Sundries ...	36	6	7		
				12,118	12 8
„ Inspection Fees—					
Hewn Sleepers (Crown lands) ...	2,065	18	2		
Hewn Timber ...	167	11	3		
Sawn Sleepers (Crown lands) ...	2,019	10	8		
Sawn Timber (Crown lands) ...	2,632	5	2		
Hewn Sleepers (Private Property) ...	7,715	1	0		
Sawn Sleepers (Private Property) ...	144	10	10		
Sawn Timber (Private Property) ...	247	11	0		
Piles and Poles ...	432	14	4		
Beams ...	106	1	1		
Miscellaneous ...	27	16	2		
				15,558	19 8
„ Rents—					
Tramways ...	797	8	4		
Sawmill Sites ...	179	10	0		
Forest Leases ...	135	4	0		
Cottages ...	507	12	1		
				1,619	14 5
„ Sales—					
Tuart ...	1,689	19	1		
Trees and Seeds ...	607	2	3		
Branding Hammers ...	130	0	3		
Illegally cut Timber ...	151	3	1		
Sleepers (Direct Conversion) ...	1,800	17	2		
Pine Logs ...	820	10	8		
Miscellaneous ...	31	10	7		
				5,231	3 1
„ Miscellaneous Revenue—					
Registration Fees ...	399	1	11		
License Fees ...	394	7	1		
Exemption Fees ...	49	10	6		
Agistment Fees ...	108	11	0		
Sundries ...	230	0	9		
				1,181	11 3
Total Collections ...				228,614	10 3
„ Less amounts transferred—					
Group Settlement Department, 50 % Royalty from Group Areas ...	3,737	16	5		
Sandalwood Trust Fund ...	5,000	0	0		
Mining Leases Royalty Account ...	929	14	4		
				9,667	10 9
Net amount credited to Consolidated Revenue Fund ...				£218,946	19 6
					£218,946 19 6

APPENDIX 1b.

Statement of Forests Improvement and Reforestation Fund for the Year ended 30th June, 1928.

DR.		£ s. d.		£ s. d.		CR.	
30th June, 1928:							
To Reforestation Operations—							
„ Division No. 1:							
Ludlow Working Circle	...	4,285	19 9				
Harvey Weir Working Circle		889	14 8				
Myalup do. do.		197	12 9				
Top Disposal Operations	...	468	6 7				
General	...	435	3 10				
				6,276	17 7		
„ Division No. 2:							
Mundaring Working Circle	...	13,641	5 1				
Gnangara do. do.		227	15 0				
Collier do. do.		584	18 1				
Applecross do. do.		1,101	9 0				
General do. do.		816	0 1				
				16,371	7 3		
„ Division No. 3:							
Jarrahdale Working Circle	...	1,288	5 4				
Dwellingup do. do.		12,794	2 1				
Wuraming do. do.		3,948	0 3				
Lol Gray do. do.		972	13 1				
Top Disposal Operations	...	159	16 7				
General	...	1,658	9 9				
				20,821	7 1		
„ Division No. 4:							
Collie Working Circle		4,632	8 5				
Mumballup do. do.		382	13 4				
Noggerup do. do.		437	8 7				
Potter's Gorge do. do.		785	2 2				
Wilga do. do.		122	17 2				
Harris River do. do.		124	9 0				
General	...	1,707	17 8				
				8,192	16 4		
„ Division No. 5:							
Lowden Working Circle	...	288	16 7				
Upper Capel do. do.	...	1,036	18 1				
Harrington do. do.	...	1,165	7 7				
Sussex do. do.	...	679	5 7				
Millbrook do. do.	...	321	10 0				
Top Disposal Operations	...	271	19 2				
General	...	2,972	19 7				
				6,736	16 7		
„ Division No. 6:							
Yornup Working Circle		339	0 1				
Big Brook do. do.		2,027	5 1				
Greenbushes do. do.		223	7 2				
Mullalyup do. do.		1,143	19 9				
Ellis Creek do. do.		355	7 6				
Top Disposal Operations	...	149	1 3				
General	...	879	4 6				
				5,117	5 4		
„ Training of Staff	...			1,969	16 2		
„ Research and Investigation	...			3,365	12 3		
„ Preparation of Forest Working Plans and Topographical Surveys	...			4,855	17 7		
„ General Silviculture, Arboriculture and Forest Protection	...			1,025	17 10		
„ Salaries and Allowances	...			6,359	14 8		
„ General Equipment and Incidentals	...			5,148	18 6		
„ Balance carried forward	...			117,056	1 6		
				£203,298	8 8		
						£203,298	8 8
1st July, 1928:							
By Balance brought forward						117,056	1 6

APPENDIX 1c.

Statement of General Loan Fund for Year ended 30th June, 1928.

DR.		£ s. d.		£ s. d.		CR.	
30th June, 1928:							
o Purchase of Land				7,422	7 11		
„ Pine Planting—							
Gnangara	...	1,204	13 1				
Myalup	...	1,345	4 5				
				2,549	17 6		
				£9,972	5 5		
30th June, 1928:							
By Loan Provision						9,972	5 5
						9,972	5 5

APPENDIX 1d.

Mining Leases Royalty Account for Year ended 30th June, 1928.

Dr.				Cr.	
30th June, 1928 :		£	s. d.	1st July, 1927 :	£ s. d.
To General Equipment	7 19 1			By Balance brought forward	2,009 19 0
„ Paddocks	25 16 2			30th June, 1928 :	
„ Water Supply	33 12 10			By Royalties collected during year	929 14 4
„ Maintenance, Buildings, etc.	1 13 0				
„ Road and Track Maintenance	1 3 4				
„ Telephone Line Maintenance	4 0 11				
„ Central Fire Control	46 7 0				
„ Grazing Control, Ranging	8 0 0				
„ Salaries	7 5 8				
„ Leave for Casuals	40 5 6				
„ Upkeep of Departmental Horses	29 19 3				
„ Special Services	2 15 1				
„ Regeneration Cleaning	312 17 4				
„ Controlled Burning	51 9 11				
„ Fire fighting, Patrol, etc.	60 16 6				
„ Raising Plants in Nursery	2 5 3				
„ Clearing Land for Planting	119 17 1				
„ Preparation of Soil	64 11 0				
„ Formation of Firebreaks	16 12 6				
„ Balance carried forward	2,102 5 11				
	<u>£2,939 13 4</u>			1st July, 1928 :	£2,939 13 4
				By Balance brought forward	2,102 5 11

APPENDIX 1e.

Sandalwood Trust Fund for Year ended 30th June, 1928.

		£	s. d.	£	s. d.			£	s. d.
30th June, 1928 :						1st July, 1927 :			
To Administration and General Supervision		655	5 8			By Balance brought forward		6,730	14 2
„ General Reconnaissance		165	18 0			30th June, 1928 :			
„ Survey, External Boundaries—						By Receipts in accordance with Forests Act		5,000	0 0
Coonana	672 12 2					„ Sundry Recoups		9	4 6
Wallaby Rock	145 5 2			817	17 4				
„ Fencing				723	17 7				
„ Demarcation—Coonana				206	9 11				
„ Road Clearing				18	0 0				
„ Sowing				799	16 9				
„ Experimental Work				135	4 11				
„ Rabbit Poisoning—Karramindie	10 5 11								
Lakeside	79 18 9			90	4 8				
„ Patrol				334	15 6				
„ Bending—Supervision	36 7 6								
Sowing Sandalwood	3 3 7								
Rabbit Poisoning	3 1 1								
Fencing	88 17 11			131	10 1				
„ Workers' Compensation Fund									
Premiums				57	10 10				
„ General Equipment				1	11 8				
„ Incidentals				265	10 0				
„ Research				209	2 10				
„ Balance carried forward				7,127	2 11				
				<u>£11,739 18 8</u>				<u>£11,739 18 8</u>	
						1st July, 1928 :			
						By Balance brought forward		£7,127	2 11

APPENDIX 1f.

Statement of Timber Inspected by the Inspection Branch of the Forests Department during the year ended 30th June, 1928.

Timber Inspected.	Inspection Fees.	
	Cubic Feet.	Amount.
Sawn Sleepers	1,061,557	£ 2,164 1 6
Hewn Sleepers	5,201,474	9,780 19 2
Sawn Timber	1,053,060	2,879 16 2
Piles and Poles	*58,014	432 14 4
Beams	5,117	106 1 1
Miscellaneous Timbers ... ..	...	195 7 5
	...	<u>£15,558 19 8</u>

* Lineal feet.

APPENDIX 1g.

Revenue and Expenditure.

The following statement shows the Revenue and Expenditure of the Department since its inception in 1895:—

Year.	Gross Revenue.	Expenditure.					Total.
		Consolidated Revenue Fund.	General Loan Fund.	Reforestation Fund.	Mining Leases Fund.	Sandalwood Trust Fund.	
1st January to 31st December, 1895 ...	£ 3,175	£ 1,108	£ ...	£ ...	£ ...	£ ...	£ 1,108
1st January to 31st December, 1896 ...	4,839	2,021	...	...	...	...	2,021
1st January to 31st December, 1897 ...	12,320	3,490	...	...	...	...	3,490
1st January to 31st December, 1898 ...	30,150	3,356	...	...	...	...	3,356
1st January to 31st December, 1899 ...	17,000	2,438	...	...	...	...	2,438
1st January to 31st December, 1900 ...	15,526	2,649	...	...	...	...	2,649
1st January to 31st December, 1901 ...	18,478	2,747	...	...	...	...	2,747
1st January to 31st December, 1902 ...	18,753	4,301	...	...	...	...	4,301
1st January to 31st December, 1903 ...	20,478	3,789	...	...	...	...	3,789
1st January to 31st December, 1904 ...	20,019	4,193	...	...	...	...	4,193
1st January to 31st December, 1905 ...	18,480	5,090	...	...	...	...	5,090
6 months, 1st January to 30th June, 1906 ...	10,974	3,385	...	...	...	...	3,385
1st July, 1906, to 30th June, 1907 ...	22,783	6,208	20	...	...	...	6,228
1st July, 1907, to 30th June, 1908 ...	23,499	8,802	443	...	...	...	9,245
1st July, 1908, to 30th June, 1909 ...	29,484	9,031	584	...	...	...	9,615
1st July, 1909, to 30th June, 1910 ...	31,549	8,531	1,833	...	...	...	10,364
1st July, 1910, to 30th June, 1911 ...	37,477	8,863	2,888	...	...	...	11,751
1st July, 1911, to 30th June, 1912 ...	44,561	10,469	3,135	...	...	...	13,604
1st July, 1912, to 30th June, 1913 ...	48,237	11,463	3,842	...	...	...	15,305
1st July, 1913, to 30th June, 1914 ...	53,039	12,093	4,432	...	...	...	16,525
6 months, 30th June to 31st December, 1914 ...	22,906	5,469	1,063	...	...	...	6,532
1st January to 31st December, 1915 ...	45,726	8,870	1,399	...	...	...	10,269
1st January to 31st December, 1916 ...	29,821	9,575	911	...	...	...	10,486
1st January, to 31st December, 1917 ...	36,129	10,263	842	...	...	...	11,105
6 months, 1st January to 30th June, 1918 ...	22,113	6,199	268	...	...	...	6,467
1st July, 1918, to 30th June, 1919 ...	42,051	10,873	594	...	...	...	11,467
1st July, 1919, to 30th June, 1920 ...	59,220	12,962	...	7,241	...	...	20,203
1st July, 1920, to 30th June, 1921 ...	75,469	16,128	11,742	*50,673	...	...	78,543
1st July, 1921, to 30th June, 1922 ...	88,530	16,439	2,324	27,794	965	...	47,522
1st July, 1922, to 30th June, 1923 ...	87,658	15,246	1,779	21,563	238	...	38,826
1st July, 1923, to 30th June, 1924 ...	127,253	15,835	873	31,625	...	...	48,333
1st July, 1924, to 30th June, 1925 ...	182,764	17,816	1,000	165,497	778	1,648	86,739
1st July, 1925, to 30th June, 1926 ...	227,061	23,191	2,349	71,780	732	3,269	101,321
1st July, 1926, to 30th June, 1927 ...	222,507	23,192	2,958	72,645	1,053	3,471	103,319
1st July, 1927, to 30th June, 1928 ...	228,614	24,081	9,972	86,242	837	4,613	125,745
Totals ...	1,978,643	330,166	55,251	435,060	4,603	13,001	838,081

* This amount includes the sum of £15,448 paid to liquidate the advances made to the Department from Land Improvement-Loan Fund.

‡ Includes £9,316 recouped to Treasury on account of Sandalwood Trust Fund.

It will be seen from the above statement that to the 30th June, 1928, the revenue exceeded the total expenditure by the sum of £1,140,562.

APPENDIX 2a.

Production of Mill Logs for Year ended 30th June, 1928.

Species.	Crown Lands.								*Private Property.		Total.	
	Concessions.		Leases.		Permits.		Total.		In Log.	In square.	In Log.	In square.
	In Log.	In Square.	In Log.	In square.	In Log.	In square.	In Log.	In square.				
Jarrah ...	2,981,970	1,043,690	8,549,220	2,992,227	22,114,889	7,740,211	33,646,079	11,776,128	1,372,503	480,376	35,018,582	12,256,504
Karri	3,775,947	1,019,506	3,775,947	1,019,506	1,197,875	323,426	4,973,822	1,342,932
Tuart	245	86	245	86	951	333	1,196	419
Wandoo	1,375	481	1,375	481	2,047	716	3,422	1,197
Banksia	1,541	539	1,541	539	...	...	1,541	539
Sheoak	6,991	2,447	6,991	2,447	...	...	6,991	2,447
Redgum	217	76	217	76	...	...	217	76
Blackbutt	335	117	2,357	825	2,692	942	...	...	2,692	942
Pine	10,703	3,746	10,703	3,746	...	...	10,703	3,746
Totals ...	2,981,970	1,043,690	8,549,555	2,992,344	25,914,265	8,767,917	37,445,790	12,303,951	2,573,376	804,851	40,019,166	13,608,802

NOTE.—Percentages of recovery of sawn timber from the round are:—Jarrah, 35 per cent.; Karri, 27 per cent.; and other timbers, 35 per cent.

* Reported to Forests Department.

APPENDIX 2b.

Heum Timber obtained during Year ended 30th June, 1928.

Species.	Crown Lands.			Private Property.	Total.
	Concessions.	Permits.	Total.		
Jarrah	cubic feet. 42,933	cubic feet. 997,260	cubic feet. 1,040,193	cubic feet. 3,348,403	cubic feet. 4,388,596
Wan oo ... ..	...	26,709	26,709	803,811	830,520
Tingle Tingle ... ..	...	197	197	...	197
Total	42,933	1,024,166	1,067,099	4,152,214	5,219,313

NOTE.—The average recovery by the hewer is 20 per cent. of the log. The above total represents 26,096,565 cubic feet in the round.

APPENDIX 2c.

Total Production of Timber for Year ended 30th June, 1928.
(Exclusive of Mining Timber, Firewood and Piles and Poles.)

Appendix Reference.	Crown Lands.		Private Property.		Total.	
	In the Log.	In the Square.	In the Log.	In the Square.	In the Log.	In the Square.
Total Mill Logs (Appendix 2a) ...	cubic feet. 37,445,790	cubic feet. 12,803,951	cubic feet. 2,573,376	cubic feet. 804,851	cubic feet. 40,019,166	cubic feet. 13,608,802
Total Hewed Timber (Appendix 2b)...	5,335,495	1,067,099	20,761,070	4,152,214	26,096,565	5,219,313
Tot l	42,781,285	13,871,050	23,334,446	4,957,065	66,115,731	18,828,115

APPENDIX 2d.

Softwood pulled during the Year ended 30th June, 1928.

Locality.	Quantity in Tons.
From Crown Lands, South of 26th Parallel of South Latitude	*5,647
From Crown Lands, North of 26th Parallel of South Latitude	†65
From Private Property	826
Total	6,538

* Includes 682 tons roots and butts.

† For oil distillation within the State.

APPENDIX 2e

Forest Produce, not elsewhere included in production tables, obtained under permit or license from Crown Lands during the Year ended 30th June, 1928.

Description of Forest Produce.	Number.	Lin Feet.	Cubic Feet.	Weight.
Barks ... ..	...	...	...	Tons. 2
Blackboy ... ..	...	...	...	120
Fencing Posts and Rails	21,804	...	...	...
Firewood and Charcoal ... ..	...	...	...	51,502
Mining Timber (Collie) ... ..	...	...	215,815	...
Piles and Poles ... ..	...	41,858	...	...
Pine Thinnings ... ..	...	...	...	525
Total	21,804	*41,858	*215,815	*52,149

* Includes only South-West Division of State.

APPENDIX 2f.

Mining Timber and Firewood Consumed during Year ended 30th June, 1928.

Locality.	Wood Fuel Consumed.	† Mining Timber Consumed.		
	tons.	tons.	cubic ft.	lineal ft.
Greenbushes Mining Field	3,000	...	...	...
Collie Coal Fields ... ..	...	...	215,815	...
Metropolitan Area	172,000	...	...	...
Golden Mile, Coolgardie, Norseman, Kunanalling, Kanowna, Mt. Monger, St. Ives and Carbine	156,262	4,688	...	...
Northern Goldfields, Broad Arrow, Ora Banda, Comet Vale, Menzies, Kookynie, Laverton, Mt. Morgans, Leonora, and Mt. Magnet Districts	25,432	15	3,195	24,463
Southern Cross, Marvel Loch, Mt. Rankin, Burbidge, Westonia, Manxman, and Bullfinch Districts	1,376	10	...	...
Goldfields Water Supply Pumping Stations, Nos. 1 to 8	18,100	...	...	...
Railway Pumping Stations (Northern Line)	260	...	...	...
Eastern Goldfields Districts (household)	14,576	...	...	...
Eastern Goldfields (bakers)	815	...	...	...
Eastern Goldfields Breweries, Cordial, Confectionery, Soap Factories, and Saltworks	2,010	...	...	...
Eastern Goldfields Batteries	425	...	...	...
Eastern Goldfields Electric Power and Light	70,708	...	...	...
Eastern Goldfields Producer Plants and Blacksmiths (as charcoal)	183	...	...	...
Engine Wood (used on Wood Lines)	15,000	...	...	...
Sleepers for Goldfields Firewood Lines	35,000*	...	...	...
Total	480,147	4,713	219,010	24,463

* Number of Sleepers not included in total of volumes. † Exclusive of Mining Timber and Firewood consumed on the Murchison and other Distant Goldfields not mentioned above.

APPENDIX 2g.

Exports of Timber, Tanning Barks, Sandalwood and Essential Oils for the Year ended 30th June, 1928.

Item and Country of Destination.	Quantity.	Value.	Item and Country of Destination.	Quantity.	Value.
<i>Timber, Dressed, N.E.I.—</i>	cubic feet.	£	<i>Staves, Undressed—</i>		£
Commonwealth of Australia	20,420	3,530	Commonwealth States ... ..	...	312
United Kingdom	16,708	4,102	Total, Timber Exports ... ..	...	1,274,462
British Malaya	2,575	1,562	<i>Sandalwood—</i>	cwt.	
Sweden	67	2	British Malaya	7,942	13,610
South African Union	1,017	254	Ceylon	260	470
Total	40,787	9,450	Hong Kong	66,527	98,516
<i>Timber, Undressed—</i>			India	5,502	9,900
Commonwealth of Australia	3,857,106	423,078	China	15,430	23,888
United Kingdom	586,750	72,551	Java	440	752
British Malaya	403,316	49,879	Japan	471	290
Egypt	29,583	3,782	Total	96,572	147,426
Ceylon	556,567	67,656	<i>Tanning Barks—</i>		
India	912,175	119,192	Commonwealth of Australia	28,892	17,347
Mauritius	114,967	13,796	Germany	15,360	10,061
New Zealand	407,475	50,693	Belgium	507	254
South African Union	3,334,967	438,183	Total	44,759	27,662
Belgium	5,233	608	<i>Essential Oils—</i>		
Germany	133,141	16,050	Commonwealth of Australia	...	4,586
Holland	1,000	185	United Kingdom ... ..	...	21,710
China	417	72	British Malaya ... ..	...	92
France	233	28	Canada ... ..	...	157
Africa, Portuguese East	1,067	180	Hong Kong ... ..	...	1,839
Total	10,343,997	1,255,933	China ... ..	...	1,336
<i>Casks and Shooks—</i>			Netherlands East Indies ... ..	...	2,077
*Commonwealth of Australia	...	2,819	Germany ... ..	...	4,234
<i>Wood Manufactures, N.E.I.—</i>			Japan ... ..	...	1,464
*Commonwealth of Australia	...	4,533	United States of America ... ..	...	1,190
United Kingdom ... ..	...	79	France ... ..	...	195
New Zealand ... ..	...	20	South African Union ... ..	...	39
Total ... ..	...	4,632	Total ... ..	...	38,919
			Total, all Exports ... ..	...	1,488,469

*A very large proportion of this amount represents empty returns.

APPENDIX 2h.

Imports of Timber, Tanning Substances and Essential Oils for the Year ended 30th June, 1928.

Item and Country of Origin.	Quantity.	Value.	Item and Country of Origin.	Quantity.	Value.
<i>Timber, Dressed, N.E.I.—</i>	cubic feet	£	<i>Barrels, Casks, etc.:</i>		£
United Kingdom	22	12	Commonwealth of Australia	...	4,183
British Malaya	56	48	United Kingdom ... ..	...	3
Norway	36,366	3,543	Total ... ..	...	4,186
Sweden	97,800	8,586			
United States of America ...	567	141	<i>Brushmaker's Woodware and</i>		
Total	134,811	12,330	<i>Wood Tool Handles—</i>		
<i>Timber, Undressed, N.E.I.—</i>			Commonwealth of Australia	...	3,232
Commonwealth of Australia	149,307	27,480	Austria ... ..	...	1
British Malaya	877	192	Germany ... ..	...	1
United Kingdom	11	11	Norway ... ..	...	265
New Zealand	60,245	7,674	Sweden ... ..	...	47
India	15,156	6,745	United States of America ...	...	9,462
Borneo, British	337	80	Total ... ..	...	13,008
Siam	600	295			
Norway	1,855	220	<i>Clothes Pegs—</i>		
Russia	4,311	669	Commonwealth of Australia	...	2,823
Sweden	9,423	1,374	United Kingdom ... ..	...	26
New Caledonia	1,219	446	Sweden ... ..	...	37
Japan	8,259	1,629	United States of America ...	...	25
Philippine Islands	2,772	748	Total ... ..	...	2,911
United States of America ...	384,497	39,493			
Total	638,869	87,056	<i>Doors of Wood—</i>	No.	
<i>Timber for making Boxes and</i>			Commonwealth of Australia	1,435	1,524
<i>Doors—</i>			United States of America ...	2,975	2,190
Commonwealth of Australia	18,560	2,162	Total	4,410	3,714
United Kingdom	322	68			
New Zealand	1,000	99	<i>Oars and Sculls—</i>		
Malaya, British	16,378	1,102	Commonwealth of Australia	...	259
Germany	134	97	Norway ... ..	...	4
Holland	433	378	Japan ... ..	...	25
Norway	5,044	614	United States of America ...	...	160
Sweden	24,534	3,124	Total ... ..	...	448
Latvia	5,055	490			
Total	71,460	8,134	<i>Picture and Room Mouldings—</i>		
<i>Architraves and Mouldings—</i>			Commonwealth of Australia	...	1,490
United Kingdom ... ..	...	58	United Kingdom ... ..	...	155
<i>Laths for Blinds—</i>			Germany ... ..	...	118
United States of America ...	...	112	Total ... ..	...	1,763
<i>Logs not sawn, and Spars in the</i>					
<i>rough—</i>			<i>Wood Manufactures, N.E.I. —</i>		
Peru	56	43	Commonwealth of Australia	...	12,686
<i>New Zealand Pine—</i>			United Kingdom ... ..	...	4,783
New Zealand	20,288	5,087	British Malaya ... ..	...	23
<i>Plywood and Veneers—</i>			Canada ... ..	...	533
Commonwealth of Australia	...	14,067	India ... ..	...	61
United Kingdom ... ..	...	548	Austria ... ..	...	17
France ... ..	...	614	Ceylon ... ..	...	2
Germany ... ..	...	419	Belgium ... ..	...	4
Sweden ... ..	...	118	Czecho Slovakia ... ..	...	26
Japan ... ..	...	5,917	France ... ..	...	64
Philippine Islands ... ..	...	337	Germany ... ..	...	766
United States of America ...	...	730	Holland ... ..	...	12
Total ... ..	...	22,750	Italy ... ..	...	29
<i>Spokes, Dressed—</i>	No.		Norway ... ..	...	15
Commonwealth of Australia	7,018	212	Sweden ... ..	...	221
United States of America ...	2,950	100	Switzerland ... ..	...	7
Total	9,968	312	Java ... ..	...	1
			Palestine ... ..	...	2
			Japan ... ..	...	58
			United States of America ...	...	1,974
			Total ... ..	...	21,284
			Total, Timber Imports ...	...	183,196

APPENDIX 2h—continued.

Item and Country of Origin.	Quantity.	Value.	Item and Country of Origin.	Quantity.	Value.
<i>Tanning Barks—</i>			<i>Essential Oils—</i>		
Commonwealth of Australia	cwts. 1,677	£ 1,237	Commonwealth of Australia		£ 3,281
<i>Tanning Extracts—</i>			United Kingdom ...		208
Commonwealth of Australia	...	673	Ceylon ...		122
United Kingdom ...	...	409	India ...		3
British Malaya ...	...	1,784	British Malaya ...		6
India ...	...	361	British West Indies ...		43
Java ...	...	16	Bulgaria ...		7
Italy ...	...	424	France ...		428
France ...	...	225	Switzerland ...		30
Norway ...	...	124	Germany ...		5
Argentina ...	...	2,313	Italy ...		1,345
Turkey ...	...	70	Brazil ...		1
Paraguay ...	...	1,050	Spain ...		29
United States of America ...	...	149	Holland ...		69
Dutch Borneo ...	...	156	Netherlands East Indies ...		4
Jugo Slavia ...	...	474	China... ..		28
Germany ...	...	127	Japan ...		501
Uruguay ...	...	56	United States of America ...		838
Total ...	...	8,411	West Indies ...		3
			Paraguay ...		4
			Total ...		6,955
			Total, All Imports ...		199,790

APPENDIX 2i.

Summary of Exports of Forest Produce since 1836.

Year.	Timber.		Sandalwood.		Tanning Bark.	Essential Oils.*	Year.	Timber.		Sandalwood.		Tanning Bark.	Essential Oils.*
	cub. ft.	Value.	Tons.	Value.	Value.	Value.		cub. ft.	Value.	Tons.	Value.	Value.	Value.
1836a...	10,000	£ 2,500		£	£	£	1883 ...	997,000	79,760	7,081	56,250		
37 ...							1884 ...	861,700	68,936	2,620	20,960		
38 ...							1885 ...	848,150	67,850	4,527	36,216		
39 ...							1886 ...	626,150	50,092	3,431	27,450		
40 ...							1887 ...	354,800	28,384	4,317	34,533		
41 ...							1888 ...	525,750	42,060	4,470	33,525		
42 ...							1889 ...	788,500	63,080	6,385	57,465		
43 ...							1890 ...	1,172,200	82,052	5,136	51,355		
44 ...	b	163					1891 ...	1,273,950	89,179	3,760	37,600		
45 ...			4	40			1892 ...	1,082,650	78,419	5,716	42,870		
46 ...	2,550	255	32	320			1893 ...	512,950	33,888	3,893	32,160		
47 ...	12,200	1,120	370	4,444			1894 ...	1,063,700	74,804	2,784	23,430		
48 ...	3,350	333	1,335	13,353			1895 ...	1,255,250	88,146	3,851	30,863		
49 ...							1896 ...	1,545,600	116,420	6,848	65,800		
50 ...	10,500	1,048					1897 ...	2,393,300	192,451	5,852	49,480		
51 ...	1,250	268	219	1,593			1898 ...	4,086,150	326,195	4,349	31,812		
52 ...	7,050	806					1899 ...	6,913,550	553,198	4,084	29,719		
53 ...	52,200	5,220					1900 ...	5,725,400	458,461	5,095	39,088		
54 ...	58,500	7,023					1901 ...	7,150,600	572,354	8,864	73,931		
55 ...	76,900	12,076					1902 ...	6,256,750	500,533	7,995	61,771		
56 ...	70,500	9,671					1903 ...	7,748,450	619,705	4,406	37,913		859
57 ...	69,200	9,449	280	2,524			1904 ...	8,072,300	654,949	4,510	25,417		32,876
58 ...	29,250	2,940	745	7,455			1905 ...	8,709,500	689,943	5,521	38,817		154,087
59 ...	67,250	6,051	1,278	17,259			1906 ...	8,830,700c	708,993	8,848	70,958		140,720
60 ...	54,800	4,932	1,687	16,860			1907 ...	6,409,550c	511,923	9,212	65,999		98,773
61 ...	27,750	2,497	2,558	24,945			1908 ...	9,869,500c	813,591	9,564	76,668		79,934
62 ...	68,800	7,151	2,393	21,541			1909 ...	10,830,450c	867,419	4,805	37,456		59,633
63 ...	32,900	2,963	2,807	25,265			1910 ...	12,074,100c	972,698	8,228	70,775		93,733
64 ...	58,800	5,508	2,724	24,520			1911 ...	12,449,500c	986,341	6,907	65,506		83,470
65 ...	183,950	15,693	1,686	13,490			1912 ...	11,297,100c	903,396	3,154	27,533		49,094
66 ...	85,650	8,849	2,965	23,722			1913 ...	13,619,850c	1,089,481	6,260	47,589		47,377
67 ...	56,750	4,541	2,305	18,442			1914d...	6,279,750c	502,153	4,702	39,800		18,197
68 ...	8,000	688	3,256	26,045			1915e...	9,968,500c	808,392	8,375	78,926		6,127
69 ...	179,900	14,273	4,124	32,998			1916e...	5,432,100	441,991	6,271	61,381		10,208
70 ...	157,200	17,561	6,112	48,890			1917e...	3,890,650	310,893	7,230	72,669		18,959
71 ...	218,500	15,304	3,366	26,926			1918e...	3,436,250	274,141	6,504	81,834		16,886
72 ...	37,000	2,590	3,942	31,536			1919e...	4,135,750	344,119	8,998	117,072		18,875
73 ...	68,150	4,771	6,292	62,916			1920e...	5,065,300	487,666	14,355	240,579		22,121
74 ...	345,600	24,192	7,057	70,572			1921e...	9,816,250	1,162,735	10,839	181,801		23,073
75 ...	342,350	23,965	6,646	66,465			1922e...	8,309,750	1,063,475	3,990	54,769		10,107
76 ...	219,050	23,743	6,577	65,772			1923e...	7,911,310	1,009,831	7,705	103,958		6,878
77 ...	336,150	36,979	4,247	31,851			1924e...	11,126,861	1,379,022	14,081	348,713		21,161
78 ...	580,900	63,902	4,675	35,064			1925e...	11,844,303	1,491,925	6,243	186,775		29,607
79 ...	627,250	69,742	4,667	35,001			1926e...	12,001,384	1,533,030	7,771	238,203		40,136
80 ...	662,550	66,252	5,197	51,970			1927e...	12,580,282	1,659,876	6,821	199,746		15,056
81 ...	792,750	79,277	7,716	77,165			1928e...	10,384,784	1,274,462	4,829	147,426		15,818
82 ...	936,500	93,650	9,605	96,050			TOTAL	284,079,754	26,773,698	398,004	4,529,005	1,137,770	247,273

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 2j.

Summary of Imports of Timber, Tanning Materials and
Essential Oils, since 1848.

Year.	Timber, Wood- ware, etc. (not including furni- ture, bamboo, cane, etc.)	Tanning	Essential
		Materials.	Oils.
	Value £	Value £	Value £
1848	464	...	...
1849	...	...	...
1850	189	...	...
1851	3,216	...	...
1852	2,479	...	...
1853	790	...	...
1854	831	...	...
1855	1,464	...	...
1856	1,124	...	...
1857	774	...	...
1858	1,528	...	...
1859	690	...	...
1860	2,095	...	...
1861	1,459	...	...
1862	1,920	...	...
1863	1,568	...	...
1864	894	...	...
1865	548	...	...
1866	1,442	...	...
1867	1,727	...	...
1868	1,451	...	...
1869	1,408	...	...
1870	1,518	...	...
1871	736	...	...
1872	1,660	...	...
1873	1,008	...	...
1874	1,774	...	...
1875	2,707	...	...
1876	3,098	...	...
1877	2,036	...	...
1878	2,947	...	...
1879	2,340	...	...
1880	3,061	...	...
1881	3,639	...	...
1882	3,692	...	...
1883	6,667	...	...
1884	2,930	...	...
1885	11,479	...	...
1886	17,888	...	...
1887	8,136	...	...
1888	4,461	...	...
1889	7,686	...	...
1890	14,979	...	...
1891	18,406	...	...
1892	26,713	...	...
1893	14,493	...	...
1894	17,964	...	...
1895	47,128	...	...
1896	5,381	...	...
1897	164,552	...	...
1898	55,566	...	...
1899	45,689	...	...
1900	56,266	1,416	1,105
1901	80,134	1,740	1,546
1902	97,810	3,418	1,751
1903	102,383	3,556	1,348
1904	157,856	1,322	2,122
1905	98,494	582	1,592
1906	95,229	1,412	1,915
1907	122,016	2,767	1,549
1908	93,205	2,392	4,584
1909	90,502	4,129	4,003
1910	171,280	3,531	3,686
1911	152,133	2,912	4,938
1912	167,244	3,089	4,598
1913	202,640	2,651	5,392
1914	78,736	629	2,823
1914-15	107,763	2,082	4,988
1915-16	76,849	3,313	4,788
1916-17	75,681	2,848	3,484
1917-18	58,305	2,020	4,358
1918-19	62,824	1,181	4,168
1919-20	100,083	3,748	10,043
1920-21	171,654	*4,899	6,106
1921-22	92,448	5,865	6,577
1922-23	109,428	6,991	4,033
1923-24	133,893	2,790	3,301
1924-25	161,898	2,670	4,429
1925-26	144,989	5,826	4,449
1926-27	162,193	8,971	4,254
1927-28	183,196	9,648	6,955
Totals	3,935,527	98,398	114,885

*This and subsequent years include Tanning Extracts,
not previously recorded.

APPENDIX 3a.

Timber Concessions in Force as at the 30th June, 1928.

Concessionaire.	No.	Locality.	Term.	Present Area.
Millars' T. & T. Co., Ltd.	12/0	Cockburn Sound	1-1-1889 to 31-12-1929	acres. 244,568

APPENDIX 3b.

Timber Leases in Force as at the 30th June, 1928.

Lessee.	No.	District.	†Original Term, under Land Act, 1898.	Expiration of extension under Forests Act, 1918.*	Present Area.
Millars' T. & T. Co., Ltd.	227/113	Yarloop	1- 1-1901 to 31-12-1925	31-12-1929	acres. 2,743
Millars' T. & T. Co., Ltd.	228/113	Yarloop	1- 1-1901 to 31-12-1925	31-12-1929	4,130
Millars' T. & T. Co., Ltd.	229/113	Yarloop	1- 1-1901 to 31-12-1925	31-12-1929	3,962
Millars' T. & T. Co., Ltd.	230/113	Yarloop	1- 1-1901 to 31-12-1925	31-12-1929	4,480
Good, Frederick Daniel	244/113	Dwellingup	1- 7-1899 to 30-6-1924	15-7-1929	13,259
Good, Frederick Daniel	257/113	Donnybrook	1-10-1899 to 30-9-1924	31-8-1929	28,876
Millars' T. & T. Co., Ltd.	261/113	Yarloop	1-10-1899 to 30-9-1924	15-10-1929	25,316
Wittenoom, Edward Horne	269/113	Yarloop	1-10-1899 to 30-9-1924	30-9-1928	2,080
Ainslie, James	291/113	Donnybrook	1- 1-1901 to 31-12-1925	30-11-1930	17,308
Millars' T. & T. Co., Ltd.	296/113	Yarloop	1- 1-1900 to 31-12-1924	31-12-1928	3,868
Millars' T. & T. Co., Ltd.	297/113	Yarloop	1- 1-1900 to 31-12-1924	31-12-1928	13,219
Ainslie, James	299/113	Dwellingup	1- 7-1900 to 30-6-1925	15-7-1930	25,580
Wittenoom, Edward Horne	322/113	Yarloop	1- 4-1902 to 31-3-1927	15-4-1932	22,024
Wittenoom, Edward Horne	325/113	Yarloop	1- 4-1902 to 31-3-1927	31-3-1931	1,197
Smith, Henry Teesdale	331/113	Dwellingup	1- 1-1903 to 31-12-1927	15-1-1933	3,953
			Total ... ..	...	171,995

* On royalty basis. † On rental basis.

APPENDIX 3c.

Saw Mill Permits in Force as at the 30th June, 1928 (Granted under Section II. of the Land Act Amendment Act, 1904).

Permit Holder.	No.	Locality.	Term.	Present Area.
				acres.
Port & Co., Ltd.	34/11	Pindalup	1- 7-1910 to 30-6-1931	31,405
Wilgarrup Karri and Jarrah Co., Ltd.	42/11	Jarnadup	1- 4-1910 to 31-3-1930	14,948
Buckingham Bros.	44/11	Muja	1- 7-1910 to 30-6-1928	18,019
Commissioner of Railways	60/11	Yourdanning	1- 4-1912 to 31-3-1929	37,710
The Kauri Timber Co., Ltd.	61/11	Nannup	1- 1-1912 to 31-12-1928	72,146
Trees, Ltd.	71/11	Yarloop	1- 4-1914 to 31-12-1928	20,028
McGibbon, Sinclair James (Whittaker Bros.)	76/11	North Dandalup	1- 7-1915 to 30-6-1928	20,000
Commissioner of Railways	78/11	Dwellingup	1- 7-1915 to 30-6-1928	80,719
State Saw Mills	79/11	Wuraming	1-10-1915 to 30-9-1928	36,760
Minister for Works and Industries	80/11	Bingham River	1-10-1915 to 30-9-1928	21,260
State Saw Mills	81/11	Wourahming Hill	1-10-1915 to 30-9-1928	21,386
State Saw Mills	82/11	Worsley	1-10-1915 to 31-3-1929	9,790
Buckingham Bros.	83/11	Bingham River	1- 7-1916 to 30-6-1928	20,130
McGibbon, Sinclair James (Whittaker Bros.)	84/11	North Dandalup	1- 1-1916 to 31-12-1928	14,620
Minister for Works and Industries	85/11	Pemberton	1- 7-1916 to 30-6-1928	81,693
Minister for Works and Industries	86/11	Manjimup	1- 7-1916 to 30-6-1928	146,105
Westralian Powell Wood Process, Ltd.	87/11	Donnelly River	1- 1-1919 to 31-12-1929	15,000
Wandoo Timber Co., Ltd.	89/11	Muja	1-10-1916 to 31-5-1929	50,359
Bunning Bros., Ltd.	94/11	Collie	1-10-1916 to 30-6-1928	10,123
Preston Valley Saw Mills, Ltd.	95/11	Noggerup	1- 1-1917 to 31-12-1928	9,464
Bunning Bros., Ltd.	97/11	Collie	1- 4-1917 to 30-6-1928	11,160
Bunning Bros., Ltd.	99/11	Collie	1- 7-1918 to 30-6-1928	9,960
			Total	752,785

APPENDIX 3d.

Sawmilling Permits in Force as at the 30th June, 1928 (Granted under Forests Act, 1918).

Permit Holder.	No.	Locality.	Term.		Area.
			From.	To.	
Adelaide Timber Co., Ltd.	57-	Wilga	28-11-18	31-7-28	acres.
Swan Saw Mills, Ltd.	91	Quilergup	22-8-19	21-8-29	18,677
Buckingham Bros.	106	Muja	25-11-19	30-6-28	19,660
Collie Land & Timber Co., Ltd.	107	Bingham River	29-11-19	30-6-28	5,039
Nicholson, John	145	Barabup	1-9-21	31-8-28	8,143
Timber Corporation, Ltd.	216	Greenbushes	1-4-21	31-3-31	13,780
Miller, E. E.	243	Donnybrook	1-12-21	30-11-28	7,240
State Saw Mills	310	Bridgetown	14-7-22	30-6-28	50
Adelaide Timber Co., Ltd.	380	Benjinup... ..	1-8-23	31-7-28	10,300
State Saw Mills	387	Pindalup	1-10-23	30-9-28	4,240
Wood, F. S., Receiver for debenture holders of Australian Lumber Co., Ltd. (in Liquidation)	390	Palgarup	1-11-23	31-10-28	16,038
W. A. Jarrah Forests, Ltd.	403	Margaret River	22-10-23	31-10-28	6,970
Trees, Ltd.	422	Collie	7-12-23	31-12-28	16,245
Harper, A. J.	427	Marbellup	1-2-24	30-4-29	3,750
Bunning Bros., Ltd.	451	Claymore	1-6-24	31-5-29	2,540
Collie Land and Timber Co., Ltd.	456	Collie	1-7-24	30-6-28	5,720
The Mumballup Timber Syndicate	492	Mumballup	1-9-24	31-8-28	1,135
Carrigg, John	496	Northcliffe	1-9-24	31-8-28	6,699
Busselton Saw Mills, Ltd.	508	Quindalup	1-10-24	30-9-28	828
Millar's Timber & Trading Co., Ltd.	524	Jarrahwood	1-1-25	31-12-28	6,956
Timber Corporation, Ltd.	552	Wilgarrup	1-4-25	3- -3-29	19,419
Millar's Timber & Trading Co., Ltd.	571	Marrinup	1-6-25	31-5-29	6,260
Harnett, P.	581	Worsley	1-7-25	31-12-28	9,465
Bentley, J. L.	616	Capel	1-1-26	31-12-28	820
Millar's Timber & Trading Co., Ltd.	617	Barton's Mill	16-12-25	31-12-28	2,738
Scott W. J. R.	625	Capel	1-3-26	28-2-29	6,840
Wood, F. S., Receiver for debenture holders of Australian Lumber Co., Ltd. (in Liquidation)	637	Harvey	10-7-26	31-7-28	2,400
Millar's Timber & Trading Co., Ltd.	650	Lowden	14-8-26	13-8-28	3,920
Lewis, J., and Stirk, F.	658	Mullalyup	1-11-26	31-10-28	2,335
Curtis & Co.	664	Bedforddale	18-12-26	31-12-28	4,866
Waroona Saw Mills, Ltd.	668	Waroona	1-3-27	31-8-28	2,600
Bonola, T. D.	676	Witchcliffe	20-4-27	30-4-29	649
Bunning Bros., Ltd.	677	Yornup	1-4-27	31-3-29	3,844
Adelaide Timber Co., Ltd.	683	Wilga	13-7-27	31-7-28	8,125
McClure, W.	685	Walliston	1-8-27	31-7-28	9,500
Adams, W. F.	689	Ludlow	1-8-27	31-7-28	185
Smailes, S.	717	Pickering Brook,	1-3-28	28-2-29	55
Thompson, G. P.	720	Donnybrook	11-5-28	31-5-29	1,700
				Total ...	241,406

APPENDIX 3e.

Hewing Permits in Force as at 30th June, 1928.

Permit Holder.	No.	Locality.	Term.		Area.
			From.	To.	
Aubin, L.	326	Margaret River ...	1-11-22	31-10-28	605
W.A. Jarrah Forests, Ltd.	399	Margaret River ...	22-10-23	31-10-28	8,125
W.A. Jarrah Forests, Ltd.	400	Margaret River ...	22-10-23	31-10-28	5,175
W.A. Jarrah Forests, Ltd.	401	Margaret River ...	22-10-23	31-10-28	4,770
Bonola, T. D.	404	Margaret River ...	22-10-23	31-10-28	14,380
Bonola, T. D.	411	Margaret River ...	1-12-23	30-11-28	16,840
Bonola, T. D.	412	Margaret River ...	1-12-23	30-11-28	3,000
Bonola, T. D.	413	Margaret River ...	1-12-23	31-8-28	7,803
Bonola, T. D.	490	Busselton ...	11-8-24	10-8-28	5,984
Ryan, P. D.	656	Busselton ...	1-10-26	30-9-28	3,620
Ryan, P. D.	657	Busselton ...	1-10-26	30-9-28	12,330
Munt, C. A., Under Secretary for Works and Labour	660	Albany ...	15-11-26	30-11-28	75,280
Munt, C. A., Under Secretary for Works and Labour	670	Albany ...	1-3-27	28-2-29	4,940
Bonola, T. D.	688	Busselton ...	10-8-27	31-8-28	4,128
Ryan, P. D.	690	Carbunup ...	27-8-27	31-8-28	15,400
Ryan, P. D.	691	Carbunup ...	27-8-27	31-8-28	12,280
Bonola, T. D.	697	Augusta ...	1-10-27	30-9-28	4,193
Payne, P. C.	701	Hester ...	10-12-27	31-12-28	2,078
Bonola, T. D.	703	Hester ...	10-12-27	31-12-28	1,972
Payne, P. C.	704	Cowaramup ...	1-12-27	30-11-28	2,400
Payne, P. C.	705	Cowaramup ...	1-12-27	30-11-28	3,865
Payne, P. C.	706	Margaret River ...	1-12-27	30-11-28	2,270
Wilson, G. N. and Galvin, J.	707	Margaret River ...	1-12-27	30-11-28	4,405
Bonola, T. D.	713	Witchcliffe ...	1-3-28	28-2-29	1,337
Payne, P. C.	714	Margaret River ...	21-3-28	31-3-29	3,600
Davies, J.	715	Hester ...	1-4-28	31-3-29	1,736
Payne, P. C.	716	Hester ...	1-4-28	31-3-29	2,020
				Total ...	224,536

APPENDIX 3f.

Firewood Permits in Force as at 30th June, 1928.

Permit Holder.	No.	Locality.	Term.		Area.
			From.	To.	
Hunter, C. H.	205	Clackline ...	1-5-21	30-4-29	600
Georgeff, M.	244	Balcatta ...	1-12-21	30-11-28	1,180
Dean, G.	264	Nannup ...	1-4-22	31-3-29	945
Gordin, A. A.	385	Byford ...	1-9-23	31-8-28	1,091
Gableish, A.	389	Albany ...	1-11-23	30-4-29	1,100
Shanhun, A. V.	434	Albany ...	1-3-24	30-9-28	495
Harvey, A. R.	458	Albany ...	1-7-24	30-4-29	940
Mollison, G.	553	Wanneroo ...	1-5-25	30-4-29	850
Fisher, G. W.	557	Albany ...	1-5-25	30-4-29	385
Sexton, Robt.	573	Bedforddale ...	1-7-25	30-6-29	160
Martin, G. H.	596	Kelmscott ...	1-9-25	31-8-28	912
Mollison, G. J.	600	Wanneroo ...	1-10-25	30-9-28	230
Kirwan, W. A.	632	Jarrahdale ...	1-5-26	30-4-29	1,060
Viles, F.	636	Byford ...	1-7-26	31-12-28	1,450
Trew, S. G.	644	Mundaring ...	1-8-26	...	12,600
Considine, J. R.	645	Mundaring ...	1-8-26	...	6,400
Page, J. E.	647	Albany ...	1-8-26	31-7-28	700
Shanhun, A. H.	675	Albany ...	1-4-27	31-3-29	750
Dale, C. H.	678	Applecross ...	1-7-27	31-1-29	110
Jones, F. T.	682	Woorloo ...	1-7-27	30-6-28	3,500
Powell, A. G.	686	Redmond ...	1-7-27	30-6-29	660
Bassett, J.	693	Jandakot ...	1-9-27	31-8-28	89
Groat, A. G.	709	Balcatta ...	1-1-28	31-12-28	180
Dunn, T.	710	Armadale ...	1-1-28	31-12-28	2,530
Ramsay, W. R.	718	Bedforddale ...	1-5-28	30-4-29	350
Metropolitan Lime, Stone and Firewood Co., Ltd.	719	Wanneroo ...	1-5-28	30-4-29	770
Battel, G.	722	Byford ...	1-6-28	31-5-29	1,170
				Total ...	41,207

APPENDIX 3g.

Miscellaneous Permits in Force as at 30th June, 1928.

Permit Holder.	No.	Locality.	Term.		Forest Produce.
			From.	To.	
Hall, W. R....	104	Kalgoorlie	1-10-19	31-7-29	Tanning Barks
Blackboy Tanning, and By-Products, Ltd.	568	Collie	1-7-25	30-6-29	Blackboy
Rimmer, W.	696	Wanneroo	1-10-27	30-9-28	do.
Head, J. C.	699	Holyoake	1-11-27	31-10-28	Removal of used sleepers
Lawson, S. E.	700	Mungalup	1-12-27	30-11-28	Piles
Reganwool, Ltd.	711	North of Perth	1-1-28	31-12-28	Removal of bark of Prickly Banksia
Reganwool, Ltd.	712	Mundaring and Metropolitan Districts	1-1-28	31-12-28	Bull Banksia
Barlow, G. A.	721	Wanneroo	15-5-28	31-5-29	Cones Blackboy

APPENDIX 3h.

Summary of Appendices 3a to 3g.

Number in Force.	Class of Holding.	Area.
		acres.
1	Timber Concessions (Appendix 3a) ...	244,568
15	Timber Leases (Appendix 3b) ...	171,995
22	Sawmill Permits (Appendix 3c) ...	752,785
38	Sawmilling Permits (Appendix 3d) ...	241,406
27	Hewing Permits (Appendix 3e) ...	224,536
27	Firewood Permits (Appendix 3f) ...	41,207
8	Miscellaneous Permits (Appendix 3g) ...	...
138	Total ...	1,676,497

APPENDIX 4.

Table showing the number of various Timber Workers' Registration Certificates issued from 1st July, 1927, to 30th June, 1928, as compared with those issued during the year ended 30th June, 1927.

Class of Registrations.	Number issued for year ended 30th June, 1927.	Number issued for year ended 30th June, 1928.
Hewers	340	305
Fallers	904	636
Haulers, Teamsters, etc.	202	209
Carters	82	45
Managers and Bush Foremen	58	65
Swampers	186	186
Firewood Cutters and Carters	218	307
Charcoal-burners and Carters	2	1
Mining Timber Cutters *	16	19
Barrel Stave and Billet Splitters	...	...
Ropemen	1	1
Whistle Boys	3	7
Shoemen	1	2
Beam Squarers	1	1
Engine Drivers	1	4
Hookmen	3	17
Mill Hands	...	...
Chaser	1	1
Winchmen	6	14
Lorry Drivers	2	...
Signalmen	...	...
Permit Holders	6	7
Sandalwood Getters	629	554
Fencepost Splitters	22	...
Pole Cutter	...	1
Totals	2,684	2,382

*Working on Coal Mining Leases.

APPENDIX 5.

Table showing the number of Licenses issued from 1st July, 1927, to 30th June, 1928, as compared with those issued during the year ended 30th June, 1927.

License.	Number issued for year ended 30th June, 1927.	Number issued for year ended 30th June, 1928.
Firewood	1,958	1,881
Mining Timber	58	46
Fence Posts	22	31
Sandalwood	42	30
Pile and Pole ... ..	...	22
Other	26	24
Totals	2,106	2,034

APPENDIX 6.

Summary of Prosecutions for Year ended 30th June, 1928.

Charge.	Number of Prosecutions.	Number of Convictions.
Unlawfully cutting and removing Forest Produce	24	23
Unlawfully lighting fires	4	4
Illegally defacing brands	1	1
Employing unregistered Timber Workers	1	1
Total	30	29

**APPENDIX 7.
LIST OF SAWMILLS.**

Name of Sawmill Owner and District.	Date of Erection of Mill.	Saw Mill Site, Timber Lease or P.P. Location No.	Horse-power of Mill.	Length of Tramway connecting Mill with Main Line Siding.	Output in loads of Squared Timber per day.	Remarks.
ALBANY DISTRICT.						
Douglas, J. R., Denmark ...	1912 ...	P.P. Town Lot 302	14	M. O.	1	Cutting Karri, Banksia, Yellow Tingle Tingle from P.P. for general wheelwright work. Works intermittently.
Drage, J. E., Effiedale ...	Nov., 1913 ...	P.P. Loc. 79 ...	10	...	1 1/2	Cutting Jarrah from P.P. for fruit cases. Works intermittently.
Edgley, A., Redmond ...	April, 1921 ...	P.P. Loc. 2698 ...	12	...	1 1/2	Cutting Jarrah from P.P. for fruit cases. Works intermittently.
Fitch, F. W., Millbrook ...	April, 1925 ...	P.P. Loc. 1379 ...	25	...	...	Cutting Sheoak from P.P. for fruit cases. Closed down June, 1925.
Harper, A. J., Marbellup ...	May, 1923 ...	Railway Property, Marbellup	12	...	1	Cutting Jarrah and Sheoak from Permit 427 for barrel staves, furniture, fruit cases and firewood. Works intermittently.
Haynes, A. G., Nornahup Glen ...	Jan., 1927 ...	P.P. Loc. 464 ...	5-7	...	1	Cutting Karri and Tingle Tingle from P.P. for scantling.
Keith, A. E., Hay River ...	1910 ...	P.P. Loc. 2685 ...	5	...	1	Cutting Jarrah from P.P. for fruit cases. Closed down 1922.
Livesey, S. C., Napier River ...	Sept., 1923 ...	P.P. Loc 1939 ...	12	...	1 1/2	Cutting Jarrah from P.P. for fruit cases for own use. Works intermittently.
Parsons & Sons, Numigup ...	May, 1926 ...	P.P. Loc. 1156 ...	18	...	1	Cutting Wandoo and Jarrah from P.P. for sleepers and timber for own use. Works intermittently.
Steele, H., Albany ...	May, 1921 ...	P.P. Town Lot 43 ...	6	...	1	Cutting Sheoak from Permit 198 for fruit cases, staves, and firewood. Works intermittently.
Steinke Bros., Forongorups ...	June, 1913 ...	P.P. Loc. 1855 ...	18	...	1	Cutting Karri and Jarrah from P.P. for fruit cases and scantling. Works intermittently.
BRIDGETOWN DISTRICT.						
Bunning Bros., Ltd., Yornup ...	Nov., 1927 ...	S.M. Site 69/33 ...	50	...	12	Cutting Jarrah from Permit 677.
Flint, S. F., Scott's Brook ...	Jan., 1925 ...	P.P. Loc. 5263 ...	6-10	...	...	Cutting Jarrah from P.P. for small orders and fruit cases. Closed down.
Holdsworth, C. J. H., Hester ...	Mar., 1921 ...	P.P. Loc. 11 ...	10	...	1	Cutting Jarrah and Karri for fruit cases from waste ends from various mills.
Lewis & Scirk, Mullaup ...	Jan., 1927 ...	S.M. Site 66/33 ...	16	...	5	Cutting Jarrah from Permit 658.
Machin, H. J., Glentulloch ...	July, 1922 ...	P.P. Loc. 767 ...	18	...	...	Cutting Jarrah from P.P. for fruit cases for own use.
Morrison, A., Tamar Gully ...	June, 1923 ...	P.P. Loc. 9663 ...	6	...	1 1/2	Cutting Jarrah from P.P.
BUSSELTON DISTRICT.						
Bentley, J. L., Capel ...	Nov., 1924 ...	P.P. Loc. 26 ...	8	...	1 1/2	Cutting Jarrah from Permit 616 and P.P.
Busselton Saw Mills, Ltd., Yallingup ...	May, 1927 ...	S.M. Site 65/33 ...	20	...	5	Cutting Jarrah from Permit 508. Closed down.
Donald, R. & Sons, Yallingup ...	1924 ...	P.P. Loc. 461 ...	10-12	...	1	Cutting Jarrah from P.P. for own use.
Forests Department, Wonnerup ...	June 30, 1921 ...	State Forest, No. 2 ...	40	...	25	Cuttin, Tuart. Bulk of output for W.A.G.R.
Scott, W. J. R., Capel ...	July, 1926 ...	S.M. Site 61/33 ...	10	...	2	Cutting Jarrah from Permit 625 for fruit cases and building timber.
COLLIE DISTRICT.						
Bunning Bros., Ltd., Lyall's Mill ...	1918 ...	P.P. Loc. 2519 ...	75	6 0	25	Cutting Jarrah from Permits 94/11, 95/11, 97/11 and 99/11.
Collie Land & Timber Co., No. 2, Shotts ...	Jan., 1925 ...	P.P. Loc. 755 ...	40	...	15	Cutting Jarrah from private property. Closed down, Nov. 1927.
MUJA SUB-DISTRICT.						
Buckingham Bros., Buckingham's Siding ...	1911 ...	S.M. Site 30/33 ...	40	0 60	18	Cutting Jarrah from Permits 44/11, 83/11, and 106.
Bunning Bros., Ltd., Muja ...	Jan., 1914 ...	P.P. Loc. 1676 ...	32	0 65	15	Cutting Jarrah and Wandoo from Permit 89/11.
Collie Land & Timber Co., No. 1, Shotts ...	May, 1921 ...	S.M. Site 8/33 ...	14	...	8	Cutting Jarrah from Permits 107 and 456. Closed down Sept., 1925.

WORSLEY SUB-DISTRICT.	July, 1927 ...	P.P. Loc. 56 ...	...	18	10	Cutting Jarrah from private property.
Connell, R. C.	July, 1927 ...	P.P. Loc. 56 ...	...	18	10	Cutting Jarrah from private property.
Harnett, P. J., Worsley	1928 ...	S.M. Site 70/33	...	16	4	Cutting Jarrah from Permit 581.
State Saw Mills, No. 6, Potter's Gorge	1925 ...	S.M. Site 57/33	...	30	4 1/2	Cutting Jarrah from Permit 82/11.
State Saw Mills, No. 6, "D" Worsley	1928 ...	S.M. Site 72/33	...	36	14	Cutting Jarrah from Permit 82/11 (Part 2).
Worsley Timber Co., Ltd.	Sept., 1927...	P.P. Loc. 56 ...	...	25	10	Cutting Jarrah from private property.
DONNYBROOK DISTRICT.						
Bendall, W.A., Donnybrook	July, 1920 ...	P.P. Locs. 988 and 989...	...	10	1 1/2	Cutting Jarrah from P.P. for sleepers and fruit cases.
Bownan, J. H., Orange Grove	1921 ...	P.P. Loc. 109 ...	...	12	3/4	Cutting Jarrah from P.P. for fruit cases for own use.
Bunning Bros., Ltd., Argyle	1904 ...	P.P. Loc. 2354 ...	...	80	20	Cutting Jarrah from Permit 451.
Martin, R. M., Inglewood Park	1917 ...	P.P. Loc. 3249 ...	...	16-22	...	Cutting Jarrah from P.P. for fruit cases for own use.
Millars' Timber & Trading Co., Ltd., East Kirup	1910 ...	S.M. Site 53/33	...	60	36	Cutting Jarrah from Timber Lease 257/113.
Millars' Timber & Trading Co., Ltd., Wellington Mills, No. 6	Jan. and Feb., 1926	P.P. Loc. 1904	...	32	12	Cutting Jarrah from Permits 650.
Miller, W. K., Charley Creek	1927 ...	P.P. Loc. 62 ...	...	30	2	Cutting Jarrah from P.P. for fruit cases and scantling.
Miller, E. E., Beelerup	1923 ...	P.P. Loc. 168 ...	...	6	1 1/4	Cutting Jarrah from Permit 243 for fruit cases and timber for own use.
Slattery, B., Ferguson	1921 ...	P.P. Loc. 2468 ...	...	4	1 1/4	Cutting Jarrah from P.P. for fruit cases.
Thompson, G. P., Boyanup	June, 1928	S.M. Site 73/33	...	8	2	Cutting Jarrah from Permit 720.
DWELLINGUP DISTRICT.						
Edgeworth & Co., Pinjarra	1920 ...	P.P. Lot 14 ...	...	10	2	Cutting fruit cases from waste Jarrah from other mills.
Forsyth, W. C., Murray River	July, 1928 ...	P.P. Loc. 531 ...	...	20	9	Cutting Jarrah from P.P.
Millars' Timber & Trading Co., Ltd., Mannrup	1910-1911 ...	S.M. Site 55/33	...	35	18-20	Cutting Jarrah from Permit 571.
Millars' Timber & Trading Co., Ltd., Nanga Brook	1909 ...	Timber Lease 261/113...	...	80	50	Cutting Jarrah from Timber Leases 244/113, 261/113 and 299/113.
Port & Co., Ltd., Duncan's No. 8, Holyoake	April, 1925	S.M. Site 47/33	...	40	23	Cutting Jarrah from Permit 34/11 (Part 1).
Railway Department, No. 2, Dwellingup	1912 ...	P.P. Loc. 1037	...	200	50	Cutting Jarrah from Permit 78/11.
Rosenthal, C. H. A., Meelon	1922 ...	Railway Property	...	12	1	Cutting fruit cases from waste jarrah from other mills.
State Saw Mills, No. 5, Holyoake	1910 ...	S.M. Site 12/33	...	66	31	Cutting Jarrah from Permit 81/11 and private property.
Whittaker Bros. (S. J. McGibbon, Receiver and Manager), North Dandalup	1901 ...	S.M. Site 56/33	...	120	30	Cutting Jarrah from Permits 76/11 and 84/11.
JARRAHWOOD DISTRICT.						
Millars' Timber & Trading Co., Ltd., Jarrahwood	...	P.P. Loc. 361 ...	...	40	23	Cutting Jarrah from Permit 524 and private property.
Nicholson, J. (Sussex Timber Co., Ltd.), Dellerton	Oct., 1923 ...	P.P. Loc. 3898	...	32	15	Cutting Jarrah from Permit 145.
Swan Sawmills, Ltd., Claymore	1921 ...	S.M. Site 4/33 ...	...	45	20	Cutting Jarrah from Permit 91.
MANJIMUP DISTRICT.						
Carrigg, J., Northcliffe	Dec., 1924 ...	S.M. Site 43/33	...	26	6	Cutting Jarrah from Permit 496 and Group Settlement Blocks. Ceased cutting, March, 1928.
Edwards, R. H., Balbarrup	Sept., 1920	P.P. Loc. 2200 ...	...	8	1 1/2	Cutting Jarrah from P.P. for fruit cases and own use.
Johnson, J., Balbarrup	1906 ...	P.P. Loc. 1098	...	12	...	Cutting Jarrah from P.P. for fruit cases and own use.
Ralph, W., Balbarrup	Oct., 1910	P.P. Loc. 2383	...	7 1/2	30	Cutting Jarrah and Karri from Permits 86/11 and 310.
State Saw Mills, No. 1, Manjimup	July, 1926	Reserve 1655 ...	...	50	30	Cutting Karri from Permit 85/11 and private property.
State Saw Mills No. 2, Pemberton	1914 ...	Reserve 16354 ...	...	400	52	Cutting Karri from Permit 85/11 and private property.
State Saw Mills No. 3, Pemberton	1914 ...	Reserve 16354 ...	...	280	31	Cutting fruit cases from waste timber from Nos. 2 and 3 Mills.
State Saw Mills, Fruit Case Mill	...	...	...	...	...	...
Timber Corporation, Ltd., Palgarup	May, 1923 ...	P.P. Loc. 1024	...	41	20	Cutting Jarrah from Permit 562.
Wilgarrup Karri & Jarrah Co., Ltd., Jardee	Nov., 1911	S.M. Site 7/33 ...	...	75	30	Cutting Jarrah and Karri from Permit 42/11 and private property.
Wood, F. S., Receiver for debenture holders of Australian Lumber Co., Ltd., Alcoa	Aug., 1924	S.M. Site 35/33	...	45	15	Cutting Jarrah from Permit 390. Closed down.

APPENDIX 7.—LIST OF SAWMILLS—continued.

Name of Sawmill Owner and District.	Date of Erection of Mill.	Saw Mill Site, Timber Lease or P.P. Location No.	Horse-power of Mill.	Length of Tramway connecting Mill with Main Line Siding.	Output in loads of Squared Timber per day.	Remarks.
MARGARET RIVER DISTRICT. Bonola, T. D. ... W.A. Jarrah Forests, Ltd., Pilgrim's Mill	1927 June, 1925	Group Block 1017 S.M. Site 48/33	10 312	M. C. ... 1 40	5 30	Cutting Jarrah from Permit 676. Cutting Jarrah and Karri from Permit 403.
METROPOLITAN DISTRICT. Buckingham, W. S., Kelmscott ... Curtis & Co., Bedfordale ... Dennis, H. J., Wanneroo ... Howard, J., Kelmscott ... McKenna, Bros., Cardup ... Millars' Timber & Trading Co., Ltd., No. 1, Jarrahdale Millars' Timber & Trading Co., Ltd., No. 2, Jarrahdale Millars' Timber & Trading Co., Ltd. (Board Mill), Mundijong Turner, W. H., Aintree ... Railway Department, Midland Junction...	1900 July, 1927 June, 1922 Jan., 1927 July, 1927 July, 1913 Mar., 1922 July, 1918 Mar., 1928 1904	P.P. Loc. 33 ... P.P. Loc. 483 ... P.P. Loc. 2737 Kelmscott Town Site ... P.P. Loc. 33 ... P.P. Cockburn Sound Loc. 282 P.P. Cockburn Sound Loc. 282 P.P. Cockburn Sound Loc. 524 P.P. Loc. 218 ... Midland Junction Work-shops	15 14 25 20 12 75 55 20 10 80	... ... ... ... ... 7 0 7 0 1 0	$\frac{1}{4}$ 2 3 $\frac{3}{4}$ $\frac{1}{2}$ 50 27 16 1 10	Cutting Jarrah and Red Gum from private property. Cutting Jarrah from Permit 664. Cutting Jarrah and Red Gum from P.P. for fruit cases. Cutting Jarrah from private property for fruit cases and pickets. Cutting Jarrah from P.P. Cutting Jarrah from Concession 12/0. Cutting Jarrah from Concession 12/0. Cuts boards only from fitches supplied by other mills on Concession 12/0. Cutting Jarrah from private property. Cuts Tuart, Wandoo and Banksia for own use.
MUNDARING DISTRICT. Millars' Timber & Trading Co., Ltd., New Canning Waters, A., Sawyers Valley Smalles, S., Pickering Brook Walliston Orchardist Co., Walliston	Aug., 1924 1921 Feb., 1926 1924	S.M. Site 59/33 P.P. Loc. 297 ... Railway Property P.P. Town Lot 82	40 6-8 14 12	8 20	14 $\frac{3}{4}$ 7 1	Cutting Jarrah from Permit 617. Cutting Jarrah from Permit 363. Closed down, August, 1927. Cutting Jarrah from Permit 717. Cutting Jarrah from Permit 685 for fruit cases.
NANNUP DISTRICT. Kauri Timber Co., Ltd., Nannup	1926	S.M. Site 28/33	100	0 25	55-60	Cutting Jarrah from Permit 61/11.
NOGEEBUR DISTRICT. Adelaide Timber Co., Ltd., Wilga Colmer, R. J. Mumballup Timber Syndicate, Mumballup Timber Corporation, Ltd., Wilga ...	1908 ... April, 1925 Sept., 1925	S.M. Site 14/33 ... S.M. Site 42/33 S.M. Site 49/33	44 16 20 16	0 7	15 2 8-10 10	Cutting Jarrah from Permit 57 and private property. Cutting Wandoo timber from P.P. Cutting Jarrah from Permit 492. Cutting Jarrah from Permit 216.
WURAMING DISTRICT. Port & Co., Ltd., No. 1, Pindalup Port & Co., Ltd., No. 2, Pindalup State Saw Mills, No. 4, Wuraming	1911 1923 1926	S.M. Site 13/33 S.M. Site 27/33 S.M. Site 45/33	40 24 80	0 25 ... 11 10	5 15 30	Cutting Jarrah from Permit 34/11. Cutting Jarrah from Permit 34/11. Cutting Jarrah from Permits 79/11 and 387

YARLOOP DISTRICT.	1921	...	...	...	51	18 0	27	Cutting Jarrah from Leases 261/113 and 322/113.
Millars' Timber & Trading Co., Ltd., Hoffman	...	...	...	Timber Leases 261/113 and 322/113 do.	32	18 0	11	do.
Millars' Timber & Trading Co., Ltd., Hoffman (Bandmill)	...	...	...	do.	...	...	...	do.
Millars' Timber & Trading Co., Ltd., No. 1, Mornington	1898	...	...	P.P. Loc. 1 ...	120	7 0	85	Cutting Jarrah from Leases 297/113 and 322/113.
Millars' Timber & Trading Co., Ltd., No. 2, Mornington	...	...	...	...	...	...	...	...
Trees, Ltd., Treosville	Sept., 1920	...	...	S.M. Site 36/33	30	31 0	20	Cutting Jarrah from Permits 71/11 and 422.
Waroona Saw Mills, Ltd.	Feb., 1928	...	...	S.M. Site 71/33	16	...	7	Cutting Jarrah from Permit 668.
Wood, F. S., Receiver for debenture holders of Australian Lumber Co., Ltd.	1927	S.M. Site 62/33	34	...	10	Cutting Jarrah from Permit 637.

NOTE—P.P. denotes Private Property, S.M. denotes Sawmill.

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