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# Report

on the operations of the

# FORESTS DEPARTMENT

## WESTERN AUSTRALIA


for the

YEAR ENDED
30th JUNE, 1962

by

A. C. HARRIS, B.Sc. (Adel.) A.A.I.M.M.
CONSERVATOR OF FORESTS

COVER:— The State Forests of Western Australia.
The solid green area inside the map indicates
the approximate area of State Forest.

■ shows Pine Plantation Centres

□ shows Mallet Plantation Centres

Scale Approximately 32 miles to an inch

# REPORT

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*Conservator of Forests*

PRESENTED TO BOTH HOUSES OF PARLIAMENT

Forests Department,
PERTH,
30th September, 1962

TO 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, 1962.

Yours faithfully,
A. C. HARRIS,
Conservator of Forests.

Rail transport of karri logs from the bush to the mill. This method has been largely replaced by road haulage.

*Photograph by courtesy of Hawker Siddeley Building Supplies.*

# CONTENTS

## PRINCIPAL OFFICERS

| | |
|---|---|
| Conservator of Forests .... .... .... .... .... | A. C. HARRIS, B.Sc. (Adel.), A.A.I.M.M. |
| Deputy Conservator .... .... .... .... .... | W. R. WALLACE, Dip.For. (Canb.). |
| Superintendent (Research Arboriculture and the Interior) | G. E. E. BROCKWAY, B.Sc. (Adel.). |
| Superintendent (Pine Plantations and Forest Management) | G. W. M. NUNN, B.Sc. (For.), Dip.For. (Canb.), M.I.S. (Aust.). |
| Superintendent (Development and South-West) .... | D. W. R. STEWART, B.Sc. (For.), Dip.For. (Canb.), Dip.For. (Oxon.) |
| Fire Control Superintendent .... .... .... .... | A. J. MILESI, B.Sc. (Adel.). |
| Utilisation Officer .... .... .... .... .... .... | H. C. WICKETT, M.Sc. (Adel.), B.For.Sc. (N.Z.), A.M.I.E. (Aust.), Dip.For. (Canb.). |
| Regional Inspector .... .... .... .... .... .... | D. R. MOORE, B.Sc. (Adel.). |
| Secretary .... .... .... .... .... .... .... | E. S. BUDD. |
| Accountant .... .... .... .... .... .... .... | A. B. TENGER, A.A.S.A. |
| Registrar .... .... .... .... .... .... .... | R. K. REID. |

## LIST OF COMMON AND BOTANICAL NAMES OF TREES USED IN THIS REPORT

| | |
|---|---|
| Brown Mallet .... .... .... .... .... | *Eucalyptus astringens* |
| Jarrah .... .... .... .... .... .... .... | *Eucalyptus marginata.* |
| Karri .... .... .... .... .... .... .... | *Eucalyptus diversicolor.* |
| Marri .... .... .... .... .... .... .... | *Eucalyptus calophylla.* |
| Maritime Pine .... .... .... .... .... | *Pinus pinaster.* |
| Monterey Pine .... .... .... .... .... | *Pinus radiata.* |
| Sandalwood .... .... .... .... .... .... | *Santalum spicatum.* |
| Sheoak .... .... .... .... .... .... | *Casuarina fraseriana.* |
| Sugar Gum .... .... .... .... .... .... | *Eucalyptus cladocalyx.* |
| Tingle (Red) .... .... .... .... .... .... | *Eucalyptus jacksoni.* |
| Tingle (Yellow) .... .... .... .... .... | *Eucalyptus guilfoylei.* |
| Tuart .... .... .... .... .... .... .... | *Eucalyptus gomphocephala.* |
| Western Australian Blackbutt (Yarri) .... .... | *Eucalyptus patens.* |
| Wandoo .... .... .... .... .... .... | *Eucalyptus redunca var. elata.* |
| Yate .... .... .... .... .... .... .... | *Eucalyptus cornuta.* |

# FORESTS DEPARTMENT

## I. STATISTICAL SUMMARY OF MAJOR OPERATIONS

**Timber Production (in cubic feet).**

| | |
|---|---|
| Total Production Sawn Timber | 15,801,067 |
| Exports—Interstate | 2,674,387 (16·9 per cent.) |
| Overseas | 2,986,252 (18·9 per cent.) |
| Local Consumption | 10,140,428 (64·2 per cent.) |

**Recent Trends in Production and Consumption**

| Year | Production | | | Total Export | Local Consumption | Sawmills | Monthly Average of Men Employed |
|---|---|---|---|---|---|---|---|
| | Sawn | Hewn | Total | | | | |
| | cub. ft. | cub. ft. | cub. ft. | cub. ft. | cub. ft. | No. | No. |
| 1925–26 | 14,522,733 | 6,277,952 | 20,800,685 | 12,001,384 | 8,799,301 | .... | .... |
| 1937–38 | 11,720,642 | 2,573,540 | 14,294,192 | 7,545,744 | 6,748,448 | 134 | 3,112 |
| 1945–46 | 8,869,847 | 14,041 | 8,883,888 | 3,373,025 | 5,510,863 | 128 | 2,876 |
| 1950–51 | 12,571,635 | 1,183 | 12,572,818 | 2,342,492 | 10,230,326 | 256 | 4,047 |
| 1951–52 | 14,717,112 | .... | 14,717,112 | 2,373,553 | 12,343,559 | 280 | 4,708 |
| 1952–53 | 16,973,332 | 1,761 | 16,975,093 | 3,965,188 | 13,009,905 | 306 | 5,395 |
| 1953–54 | 18,343,974 | 1,454 | 18,345,428 | 3,858,956 | 14,486,472 | 299 | 5,724 |
| 1954–55 | 18,915,967 | 4,561 | 18,920,528 | 3,477,249 | 15,443,279 | 279 | 5,879 |
| 1955–56 | 19,213,771 | 5,308 | 19,219,079 | 4,568,034 | 14,651,045 | 274 | 5,804 |
| 1956–57 | 17,798,984 | 3,790 | 17,802,774 | 4,679,979 | 13,122,795 | 261 | 5,574 |
| 1957–58 | 17,487,573 | 742 | 17,488,315 | 5,671,712 | 11,816,603 | 268 | 5,227 |
| 1958–59 | 17,758,023 | 1,310 | 17,759,333 | 6,465,021 | 11,294,312 | 260 | 5,155 |
| 1959–60 | 16,625,475 | .... | 16,625,475 | 6,167,132 | 10,458,343 | 265 | 5,037 |
| 1960–61 | 15,783,370 | .... | 15,783,370 | 5,212,532 | 10,570,838 | 238 | 4,790 |
| 1961–62 | 15,801,067 | .... | 15,801,067 | 5,660,639 | 10,140,428 | 236 | 4,906 |

**Total Cut**

| | | | |
|---|---|---|---|
| Log Volumes (in cubic feet) | 49,032,820 | Jarrah | 37,271,221 |
| | | Karri | 7,115,907 |
| | | Wandoo | 2,664,674 |
| | | Pine | 1,511,333 |
| | | Other | 469,685 |

Made up as follows :—

| | |
|---|---|
| From State Forest and Crown Land | 39,243,552 (80 per cent.) |
| From Private Property | 9,789,268 (20 per cent.) |

**Value Produced**

| | |
|---|---|
| Total Value Sawn Timber | £10,892,800 |
| Total Value of Other Forest Products | £2,505,000 |

**Departmental Expenditure and Source of Funds**

| | £ | £ | £ |
|---|---|---|---|
| Gross Revenue :— | | | |
| Royalties—Timber, etc. | 958,760 | | |
| Departmental | 480,524 | | |
| | | 1,439,284 | |
| General Loan Fund | 125,000 | | |
| Federal Aid Road Grant | 76,000 | | |
| | | 201,000 | |
| | | | 1,640,284 |
| *Gross Expenditure* — | | | |
| Consolidated Revenue Fund | | 445,860 | |
| Reforestation Fund | | 930,203 | |
| General Loan Fund | | 125,000 | |
| | | | 1,501,063 |

(Detailed statements appear as appendices.)

**Forest Area**

| | | |
|---|---|---|
| Additions to State Forest | 6,226 | acres |
| Excisions from State Forest | 1,423 | ,, |
| Land Purchased for Pine Planting | 650 | ,, |
| Total area of State Forest | 4,347,956 | ,, |
| Area of National Parks (approx.) | 320,900 | ,, |

**Reforestation**

| | | |
|---|---|---|
| Cut-over area treated for regeneration | 59,400 | ,, |

**Afforestation**

| | | |
|---|---|---|
| Area planted with pine, 1961 | 2,494 | ,, |
| Area cleared for pines | 2,666 | ,, |
| Area soil surveyed for pines– | | |
| Detailed surveys | 3,676 | ,, |
| Reconnaissance surveys | 11,156 | ,, |
| Total area of pine plantation established | 33,433 | ,, |
| Total experimental area (additional) | 916 | ,, |

**Management**

| | | |
|---|---|---|
| Survey :— | | |
| Theodolite surveys | 142 | miles |
| Other surveys | 278 | ,, |
| Map sheet compilation | 4,700 | sq. miles |
| Assessment :— | | |
| Air Photo Interpretation | 1,775,950 | acres |
| Engineering, new works :— | | |
| Roads and Tracks | 390 | miles |
| Telephones | 38 | ,, |
| Houses and Buildings (no.) | 12 | |

**Protection**

| | | |
|---|---|---|
| Controlled burning | 1,199,820 | acres |
| Fire Outbreaks :— | | |
| Number | 463 | |
| Area burnt | 66,689 | acres |

**Nurseries**

| | | |
|---|---|---|
| Hamel and Dryandra :— | | |
| Trees produced for— | | |
| Forests Department | 190,884 | |
| Private buyers | 73,351 | |
| Plantation Nurseries :— | | |
| Pine Plantation Stock (approx.) | 2·5 | million |

**Sandalwood**

| | | |
|---|---|---|
| Quantity exported | 536 | tons |

## 2. REVENUE AND EXPENDITURE

The log royalty rate increase from 1/1/1961 was effective for the full year and revenue from royalties was £958,760 as compared with £838,691 for 1960/61.

Revenue from all sources was £1,439,284 (£1,274,530) for the year 1961-62 and Expenditure from the Consolidated Revenue Fund was £445,860 (£409,732). Of the net revenue, £897,949 (£780,263) was transferred to the Forests Improvement and Reforestation Fund. Expenditure charged against this Fund was £930,203 (£989,991) and the balance in the fund at 30/6/62 was £144,006 (£50,147) which included a Fire Fighting Reserve of £50,000.

Money available from General Loan Fund for Pine Planting was increased to £125,000 (£100,000) and £76,000 was again received from the Main Roads Department from Federal Aid Road Grant funds for road construction and maintenance in forest areas.

Thinning operations in Departmental pine plantations returned a profit of £60,048 (£51,527) for the year.

## 3. THE FOREST AREA

### State Forests (Forests Act, 1918–1954)

The total area of State Forest at 30/6/62 was 4,347,956 acres which is an increase of 4,803 acres compared with the total area at 30/6/61.

During the year, additions totalling 6,226 acres were made to State Forest and 1,423 acres were excised and reverted to the Lands Department.

| | June, 1961 Acres | June, 1962 Acres |
|---|---|---|
| Jarrah | 3,170,350 | 3,175,237 |
| Karri | 170,987 | 170,987 |
| Jarrah and Karri (mixed) | 654,113 | 654,050 |
| Jarrah and Wandoo (mixed) | 81,500 | 81,500 |
| Tuart | 5,995 | 5,995 |
| Tingle Tingle | 10,778 | 10,778 |
| Karri and Tingle (mixed) | 13,935 | 13,885 |
| Sandalwood | 1,930 | 1,930 |
| Pine planting | 174,526 | 174,555 |
| Mallet | 58,887 | 58,887 |
| Miscellaneous | 152 | 152 |
| | 4,343,153 | 4,347,956 |

### Timber Reserves (Forests Act, 1918–1954)

The area held under Timber Reserve at 30/6/62 was 1,785,246 acres, which is an increase of 5,665 acres on the area at 30/6/61.

| | June, 1961 Acres | June, 1962 Acres |
|---|---|---|
| Jarrah | 69,312 | 74,590 |
| Pine Planting | 5,521 | 5,908 |
| Mallet | 648 | 648 |
| Sandalwood | 23,100 | 23,100 |
| Mining Timber, Firewood, etc. | 1,681,000 | 1,681,000 |
| | 1,779,581 | 1,785,246 |

### Land Alienations, Etc.

During the year ended 30/6/62, 235 applications for land were received, covering a total of 211,530 acres.

The Department agreed to the release of land as follows :—

| Timber Zone | | Outside Timber Zone | Mineral Claims and Leases (Pastoral-Grazing) | | |
|---|---|---|---|---|---|
| | | | Timber Zone | | Outside Timber Zone |
| State Forest | Crown Land | | State Forest | Crown Land | |
| acres 627 | acres 13,582 | acres 34,662 | acres 7,262 | acres 7,825 | acres 22,007 |

## 4. SAWMILLING, TIMBER INSPECTION AND FOREST PRODUCE

### Timber Production and Distribution

The production of 15,801,067 cubic feet of sawn timber was an increase of 17,697 cubic feet on last year's figure. Of this total production, 3,154,102 cubic feet were obtained from private property, a decline of 360,923 cubic feet on last year.

During the year ended 31st December, 1961, 236 mills were registered, of them 122 operate on Crown land and 114 on private property.

Details of the intake of mill logs and production of sawn timber are given in the accompanying tables.

The annual intake of logs (1829–1962) is shown in Appendix 5.

Departmental plantations yielded 1,435,085 cubic feet of pine thinnings which was an increase of 2·7 per cent. on last year's figure.

The following quantities of logs were used in local plywood factories :—

| | Cubic feet |
|---|---|
| Karri .... .... .... .... .... .... .... .... .... | 41,296 |
| Jarrah .... .... .... .... .... .... .... .... .... | 313 |
| Pine .... .... .... .... .... .... .... .... .... | 76,906 |
| | 118,515 |

Sawn sleepers produced during the year amounted to 4,141,688 cubic feet of which 1,479,670 cubic feet was from private property. Of the sleepers produced, 4,006,567 cubic feet were inspected and a further quantity of 19,174 cubic feet was re-inspected during the year. Other sawn timber inspected during the year totalled 862,157 cubic feet. The distribution of timber was as follows :—

| Distribution | Sleepers | | Other Sawn Timber | | Total |
|---|---|---|---|---|---|
| | Karri | Jarrah and Other Species | Karri | Jarrah and Other Species | |
| | cub. ft. | cub. ft. | cub. ft. | cub. ft. | cub. ft. |
| Interstate .... .... .... .... .... | *Nil* | 669,316 | 752,462 | 1,252,609 | 2,674,387 |
| Overseas .... .... .... .... .... | *Nil* | 2,067,913 | 243,583 | 674,756 | 2,986,252 |
| Local .... .... .... .... .... .... | *Nil* | 1,404,459 | 1,332,361 | 7,403,608 | 10,140,428 |
| Total .... .... .... .... .... | *Nil* | 4,141,688 | 2,328,406 | 9,330,973 | 15,801,067 |

QUANTITY OF SAWN TIMBER PRODUCED FROM CROWN LANDS AND PRIVATE PROPERTY FOR THE PAST TWO YEARS

| Year | From Crown Lands | | From Private Property | | Total Quantity | Estimated Value of Timber Obtained |
|---|---|---|---|---|---|---|
| | Sawn Timber other than Sleepers | Sawn Sleepers | Sawn Timber other than Sleepers | Sawn Sleepers | | |
| | cub. ft. | cub. ft. | cub. ft. | cub. ft. | cub. ft. | £ |
| 1960–61 .... .... .... | 10,110,484 | 2,167,598 | 2,224,053 | 1,281,235 | 15,783,370 | 10,854,099 |
| 1961–62 .... .... .... | 9,984,947 | 2,662,018 | 1,674,432 | 1,479,670 | 15,801,067 | 10,892,800 |

### TIMBER PRODUCTION

PRODUCTION OF TIMBER FOR YEAR ENDED 30th JUNE, 1962 (EXCLUSIVE OF MINING TIMBER, FIREWOOD, PILES AND POLES)

| | Mill Logs | | | | | | | | | | | Totals | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Jarrah | Karri | Wandoo | Yarri | Sheoak | Pine | Marri | Tuart | Yate | Red Tingle | Yellow Tingle | In Log | Recovery of Sawn Timber |
| Crown Lands .... | 29,490,962 | 6,555,221 | 1,417,928 | 230,231 | 49,511 | 1,435,085 | 27,773 | 35,949 | 292 | 239 | 361 | 39,243,552 | 12,646,965 |
| Private Property | 7,780,259 | 560,686 | 1,246,746 | 113,878 | 6,510 | 76,248 | 298 | 4,294 | 349 | .... | .... | 9,789,268 | 3,154,102 |
| Total .... | 37,271,221 | 7,115,907 | 2,664,674 | 344,109 | 56,021 | 1,511,333 | 28,071 | 40,243 | 641 | 239 | 361 | 49,032,820 | 15,801,067 |

In addition to the above, 29,081 tons of wandoo logs were treated for Tannin extract.

## Firewood Production and Consumption

The firewood consumption for the State was estimated at 761,260 tons almost half of which was used for industrial and mining fuel. The quantity of sawdust burnt as fuel was 121,292 tons.

The following table accounts for approximately 51 per cent. of the firewood consumed, the balance being obtained from private property for which specific records are not available.

Of the total quantity consumed 46 per cent. was obtained from Crown land.

| | Crown Land tons | Private Property tons | Total tons |
|---|---|---|---|
| *Production* | | | |
| Domestic Firewood— | | | |
| Firewood Permits (South—West) .... .... .... | 61,519 | 97 | 61,616 |
| Mill Waste sold as firewood (estimated 50 per cent. of total) .... .... .... .... .... .... | 37,784 | 17,674 | 55,458 |
| Domestic use on Goldfields .... .... .... .... | 25,906 | .... | 25,906 |
| Total Domestic Firewood as shown by returns | 125,209 | 17,771 | 142,980 |
| Industrial Firewood— | | | |
| Supplied under License, Nos 3 to 8 Pumps .... .... | 17,167 | .... | 17,167 |
| Other Pumps .... .... .... .... .... .... | 638 | .... | 638 |
| Factories, etc. .... .... .... .... .... .... | 73,605 | 97 | 73,702 |
| Mill Waste sold as firewood (estimated 50 per cent. of total) .... .... .... .... .... .... .... | 37,785 | 17,673 | 55,458 |
| Mill Waste used as firewood .... .... .... .... | 65,783 | 6,925 | 72,708 |
| Total Industrial Firewood as shown by returns | 194,978 | 24,695 | 219,673 |
| Mining Firewood .... .... .... .... .... .... | 26,473 | .... | 26,473 |
| Total Firewood Produced (as shown by returns) | 346,660 | 42,466 | 389,126 |

| *Consumption* | tons | |
|---|---|---|
| Domestic (estimated) .... .... .... .... .... | 410,000 | (at 2 tons per dwelling) |
| Industrial .... .... .... .... .... .... .... | 306,982 | (ex Govt. Statistician) |
| Pumping Stations .... .... .... .... .... .... | 17,805 | (as per F.D. Returns) |
| Mining .... .... .... .... .... .... .... | 26,473 | (as per F.D. Returns) |
| Total .... .... .... .... .... .... .... | 761,260 | |

## Other Forest Produce

Piles and poles obtained from Crown Lands during the year amounted to 545,392 lineal feet compared with 310,420 lineal feet for the year 1960–61. Of this total 36,553 lineal feet were produced from Departmental operations. Returns from private property show a production 341,125 lineal feet and although this information is not complete the figure indicates a reduction on a comparative figure of 147,799 lineal feet for 1960–61.

There were approximately 618,580 strainers and posts cut from Crown Lands during the year of which 19,111 were produced by this Department. As private property owners do not supply returns these figures represent only a portion of the total production.

Of the total production of 194 tons of Mallet Bark, 127 tons came from thinnings on Departmental mallet plantations, 9 tons from Crown Land and Reserves and the remainder from private property. Nearly 19,000 tons of mining timber were used apart from timber supplied by sawmills. This was mainly supplied from Crown Lands, 13,123 tons being obtained from the inland forests.

There is a continued demand for Christmas trees. For the year under review 8,734 trees were supplied and the revenue from this source was £1,583.

The following table shows the quantities of minor forest produce obtained during the year. The estimated total value of this forest produce was approximately £2,505,000.

FOREST PRODUCE NOT ELSEWHERE INCLUDED IN PRODUCTION TABLES

OBTAINED DURING YEAR ENDED 30th JUNE, 1962

| Description of Forest Produce | South-West Division and Agricultural Areas | | | Northern, Central and Eastern Goldfields | Totals |
|---|---|---|---|---|---|
| | Supplied by Department | Other Crown Lands | Private Property* | Crown Lands | |
| Mining Timber .... .... .... .... .... tons | .... | 5,771 | 38 | 13,123 | 18,932 |
| Sleepers for Goldfields Wood Line .... .... cub. ft. | .... | .... | .... | 7,244 | 7,244 |
| Charcoal (includes 40,818 tons ex Wundowie) .... tons | .... | 40,919 | .... | .... | 40,919 |
| Piles and Poles .... .... .... .... .... lin. ft. | 36,553 | 508,839 | 341,125 | .... | 886,517 |
| Fence Posts and Rails .... .... .... .... No. | 17,846 | 143,301 | 14,541 | 216,525 | 608,738 |
| Strainer Posts .... .... .... .... .... No. | 1,265 | 8,577 | .... | .... | 9,842 |
| Mallet Bark .... .... .... .... .... .... tons | 127 | 9 | 58 | .... | 194 |
| Wandoo Timber for Tannin Extract .... .... tons | .... | 15,229 | 13,852 | .... | 29,081 |
| Bean, etc., Sticks .... .... .... .... .... No. | .... | 18,500 | .... | 5,436 | 23,936 |
| Boronia Blossom .... .... .... .... .... lb. | .... | 815 | 502 | .... | 1,317 |
| Stone .... .... .... .... .... .... .... cub. yds. | .... | 50,892 | .... | .... | 50,892 |
| Sand .... .... .... .... .... .... .... cub. yds. | .... | 345 | .... | .... | 345 |
| Loam .... .... .... .... .... .... .... cub. yds. | .... | 8 | .... | .... | 8 |
| Scout Staves .... .... .... .... .... No. | 144 | .... | .... | .... | 144 |
| Sawdust consumed as fuel, etc.† .... .... tons | .... | 121,292 | .... | .... | 121,292 |

* Complete figures for private property are not available. Only information furnished to the Department has been included.

† The apportionment between Crown land and private property is unknown.

### Sandalwood

The sandalwood stock position at Fremantle remains satisfactory and deliveries from the bush have been sufficient to meet export requirements.

A total of 729 tons were delivered during the year as compared with 1,205 tons for the year ended 30th June, 1961, and this quantity was made up as follows :—

| | Tons |
|---|---|
| Crown Lands— | |
| Logwood (included roots and butts) .... .... .... | 657 |
| Pieces .... .... .... .... .... .... .... | 62 |
| Private Property .... .... .... .... .... .... | 10 |
| Total .... .... .... .... .... .... | 729 |

Exports of sandalwood were 536 tons as compared with 672 tons for the previous year.

No orders for logwood were placed by the oil distillers but 114 tons of roots and butts severed from the logwood at Fremantle were delivered to them for distillation.

The quantity of sandalwood oil distilled was 10,662 lb. which was exported interstate and overseas.

## 5. TIMBER UTILISATION

### Strength Testing

The Commonwealth Scientific and Industrial Research Organisation, Division of Forest Products has completed the testing of Western Australian commercial species in the dry condition, and has supplied the results for Marri, W.A. Blackbutt, Tuart and Wandoo. Jarrah and Karri were tested several years ago, but are shown in the following table for comparison.

The dry tests confirm Marri as a Strength Group B species.

## Mechanical Properties of Jarrah, Karri, Marri, W.A. Blackbutt, Tuart and Wandoo

These data were obtained from small clear specimens in the **dry** condition, 12 per cent. moisture content.

| | Jarrah | Karri | Marri | W.A. Blackbutt | Tuart | Wandoo |
|---|---|---|---|---|---|---|
| *Density* | lb. cub. ft. 53·9 | lb. cub. ft. 56·9 | lb. cub. ft. 49·8 | lb. cub. ft. 54·0 | lb. cub. ft. 64·4 | lb. cub. ft. 68·3 |
| *Static Bending*— | lb./sq. in. | lb./sq. in. | lb./sq. in. | lb./sq. in. | lb./sq. in. | lb./sq. in. |
| Fibre stress at limit of proportionality | 10,200 | 11,600 | 11,300 | 9,440 | 10,600 | 13,900 |
| Modulus of rupture | 16,200 | 19,200 | 18,200 | 14,300 | 18,100 | 20,600 |
| Modulus of elasticity | 1,880,000 | 2,760,000 | 2,410,000 | 1,850,000 | 2,370,000 | 2,420,000 |
| *Compression Parallel to Grain*— | | | | | | |
| Stress at limit of proportionality | 4,120 | 7,260 | 5,860 | 5,790 | 5,850 | 7,740 |
| Maximum crushing strength | 8,870 | 10,400 | 9,590 | 9,480 | 10,400 | 11,900 |
| Modulus of elasticity | 1,990,000 | 2,980,000 | 2,660,000 | 2,210,000 | 2,390,000 | 2,700,000 |
| *Compression Perpendicular to Grain*— | | | | | | |
| Stress at limit of proportionality— | | | | | | |
| Radial | 1,600 | 1,280 | 1,330 | 1,480 | 2,040 | 3,040 |
| Tangential | 1,900 | 1,800 | 1,470 | 1,770 | 2,460 | 3,090 |
| *Hardness*— | lb. | lb. | lb. | lb. | lb. | lb. |
| Radial | 1,910 | 2,030 | 1,580 | 1,560 | 2,440 | 3,350 |
| Tangential | 1,920 | 2,030 | 1,620 | 1,550 | 2,360 | 3,240 |
| End Grain | 2,070 | 1,980 | 1,480 | 1,480 | 2,040 | 3,120 |
| *Shear*— | lb./sq. in. | lb./sq. in. | lb./sq. in. | lb./sq. in. | lb./sq. in. | lb./sq. in. |
| Radial | 2,100 | 1,810 | 1,890 | 1,980 | 2,230 | 2,720 |
| Tangential | 2,170 | 2,460 | 1,750 | 2,270 | 2,800 | 2,970 |
| *Cleavage*— | lb./in. | lb./in. | lb./in. | lb./in. | lb./in. | lb./in. |
| Radial | 427 | 236 | 389 | 306 | 391 | 425 |
| Tangential | 464 | 428 | 433 | 419 | 447 | 376 |
| *Izod Impact*— | ft./lb. | ft./lb. | ft./lb. | ft./lb. | ft./lb. | ft./lb. |
| Radial | 7·4 | 19·1 | 17·1 | 7·5 | 11·3 | 10·6 |
| Tangential | 8·1 | 17·0 | 17·4 | 8·3 | 11·7 | 13·0 |
| *Strength Group* | C | B | B | C | B | A |

### Marine Borer Tests

The second annual examinations made in November showed that creosote and copper-chrome-arsenic were maintaining high resistance to attack. All controls have now been riddled by teredine borers and many have disintegrated.

### Cooling Tower Tests

The second annual examination did not disclose any change in rating of the species, radiata pine treated with copper-chrome-arsenic still being pre-eminent.

### Tests of Treated Sleepers and Fence Posts

An inspection of these tests was made with an officer of the Division of Forest Products.

The sleeper tests at Bowelling and Merredin showed that karri sleepers treated with oily preservatives at 1,000 lb./sq. in. were in excellent condition after seven years.

The fence post tests at Pemberton, Wickepin and Ghooli, which have now been in progress for thirty-one years, show that simple preservative treatment applied without pressure, or at very low pressure, can give an average life of about twenty-five years to non-durable species, and indicate that it will not be unreasonable to expect average lives of forty or more years from posts treated by modern pressure methods.

### Seasoning of Karri Poles

Great difficulty is still being experienced in keeping surface checking within acceptable limits when drying karri poles for preservative treatment. A sample lot of green poles has been sent to the Division of Forest Products for further testing.

### Design and Construction

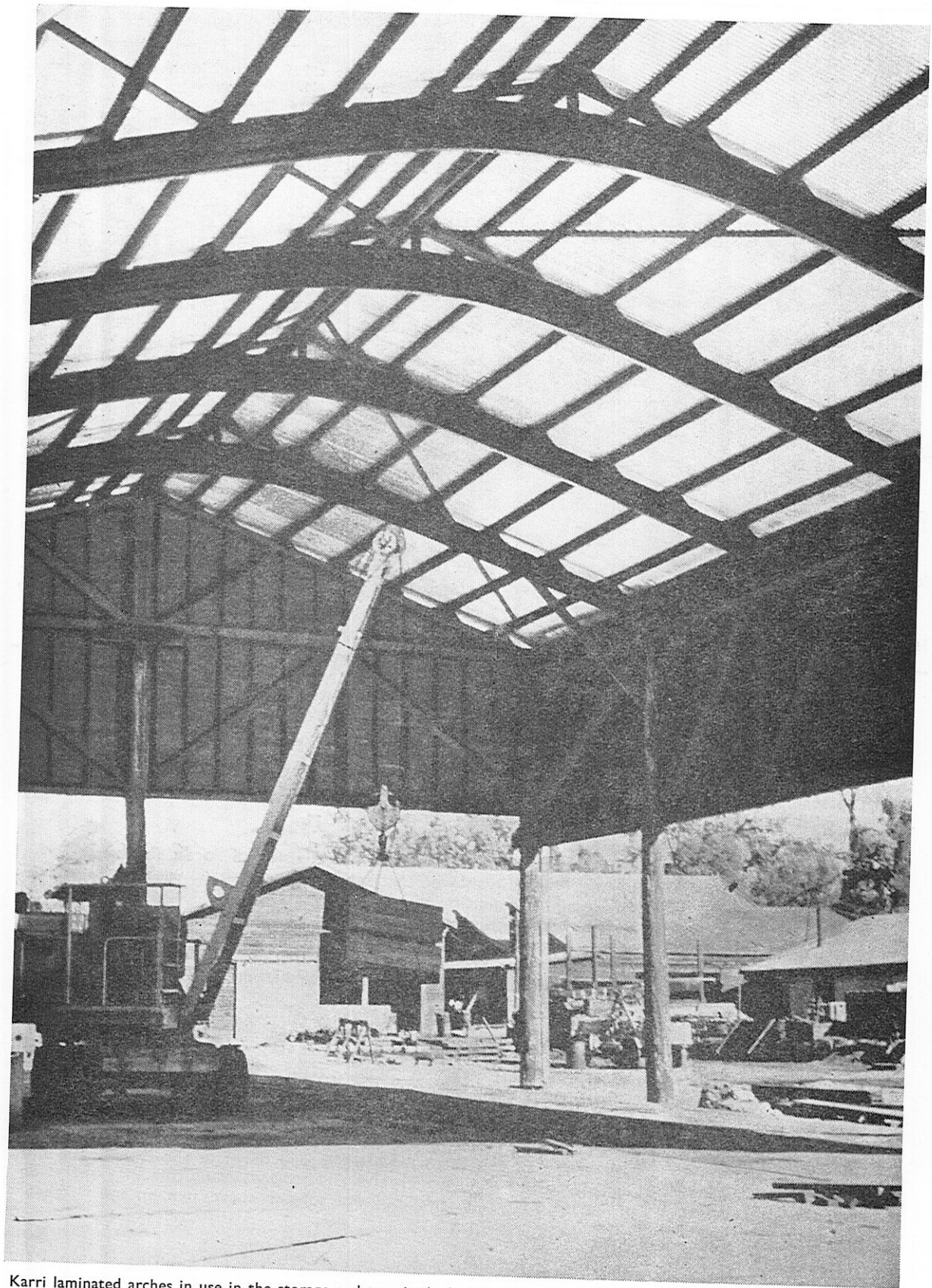
Drawings were prepared for a Divisional Office, a general store building, vehicle sheds and three cottages of modern style. Detailing of a small mill to replace the one burnt in the Dwellingup fire is well advanced. A size O McCashney waste burner was erected and brought into satisfactory operation at Keenan Sawmill. Erection procedure for 110 ft. fire look-out towers was drawn up and three of these towers have been built.

### Grading Rules

One meeting of the Western Australian Joint Timber Committee was held during the year at which it was decided to shelve work on the sleeper grading rule, in which an unexpected difficulty has been encountered, and to concentrate on the re-writing of those rules in Bulletin 56 for which there was a more general demand. A form of re-printing for A.S. Nos. 0, 14, 16, 17 and 19 was agreed upon and has been passed on to Standards Association.

## Industrial Safety

Three meetings of the AUS.T.I.S. Safety Committee were held and a safety code for sawmill workers is now practically ready for printing.



Karri laminated arches in use in the storage and transit shed of Bunning Bros., Manjimup. The shed is 77 feet long with a span of 50 feet 6 inches and each arch is 21 inches deep at the centre and 15 inches at the end made up of individual laminations of 1 inch x 4¼ inches.

## 6. FOREST MANAGEMENT

### Surveys and Map Production

Major surveys for mapping control amounted to 142 miles while Divisional staff completed 278 miles of lower order surveys.

The compilation of base sheets for use in charting surveys and for the control of air photo mapping was continued and a coverage of over 4,700 square miles was completed.

Revisions of four " 80 " scale plans—Dwellingup, Collie, Kirup and Perup—were issued and temporary plans prepared for Wanneroo, Busselton, Rocky Gully and F.D. 415/80.

A set of maps was prepared from Lands Department 3 miles to an inch series to show details of forestry importance. Transparencies of the Forests Department litho series have also been obtained to this scale.

### Air Photo Interpretation

The Department continued to obtain photos of forest areas at cost price from the State Survey and Mapping Committee and air photo interpretation at Head Office and the Harvey and Manjimup Working Plans Offices was as follows :—

| | acres |
|---|---|
| Head Office .... .... .... .... .... .... | 575,950 |
| Harvey .... .... .... .... .... .... .... | 600,000 |
| Manjimup .... .... .... .... .... .... | 600,000 |
| Total .... .... .... .... .... .... | 1,775,950 |

The mapping of existing and proposed plantation was increased by 109,700 acres. Such maps have considerably reduced the volume of ground survey work required for the definition of established plantations.

*Standard Mapping*

The net total area of standard 20 chain to 1 inch maps now amounts to 9,810,570 acres, an increase of 764,300 acres.

### Working Plans

The preliminary forest inventory or stocktaking of timber and forest produce available both for the present and in the future, completed last year, proved of considerable value in the compilation of Bulletin No. 69, entitled " Progress Report, 1955–1960." This was prepared for presentation to the 8th British Commonwealth Forestry Conference held in Kenya in June-July, 1962.

### Forest Engineering

Engineering projects during the year are set out in the following table :—

| Item | Completed in Current Year | Present Total |
|---|---|---|
| Construction of roads, firelines and tracks .... .... .... | 390 miles | .... |
| Maintenance of roads, firelines and tracks .... .... .... | 5,190 ,, | .... |
| Telephone lines .... .... .... .... .... .... .... | 38 ,, | 1,849 miles |
| Houses No. .... .... .... .... .... .... .... .... | 12 | 450 |

In view of the changeover from fire-break burning only, to mostly broadcast controlled burning, many tracks and firelines no longer warrant maintenance. For this reason, the total mileage of roads, firelines and tracks to be maintained in the older protected forest area is under review.

### Plant and Equipment

The gradual improvement of workshop equipment and facilities has enabled the appointment of a further three apprentices to the staff.

The performance and maintenance of the plant and equipment has remained at a high standard, particularly during the strenuous fire season when 463 fires were attended by Departmental gangs.

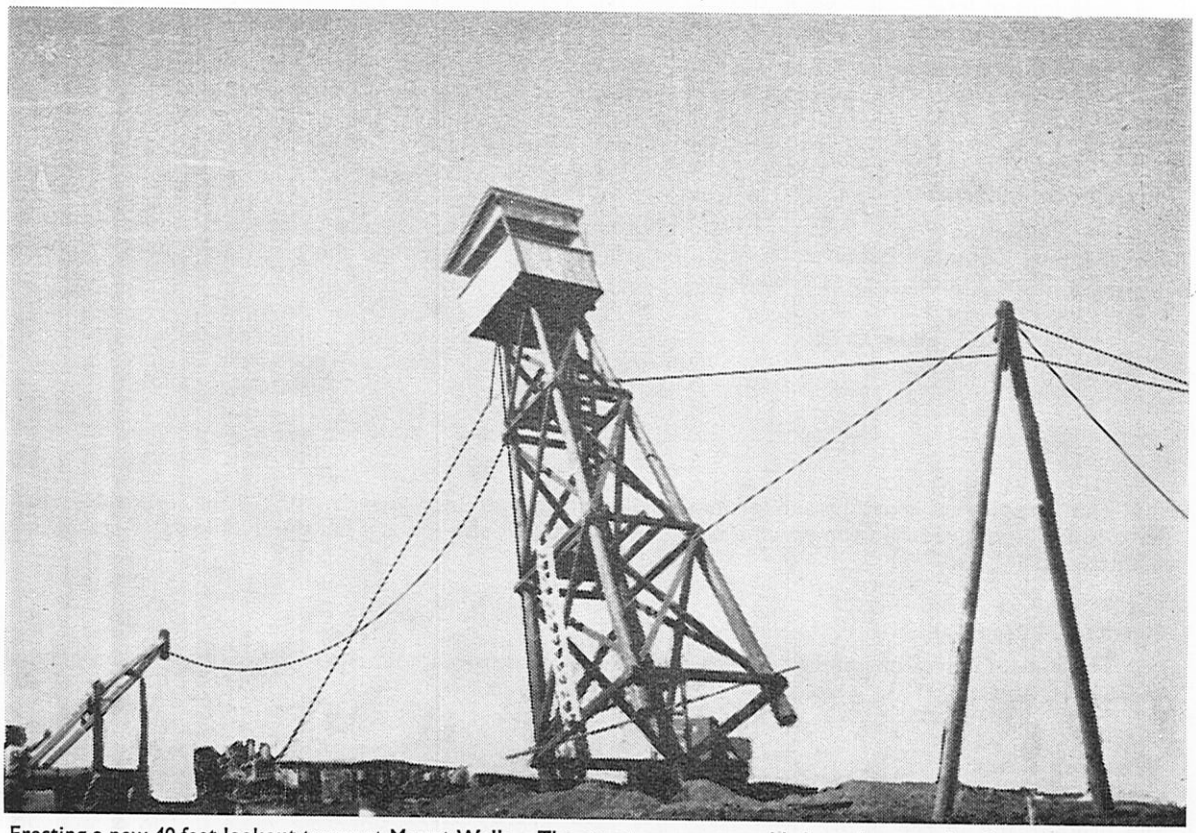
An experimental " fireline " plough has been constructed in the Department's workshops. Fitted on the front of a crawler tractor, it is intended for use in fireline construction in the thick undergrowth of the Southern Region.

### Departmental Buildings

The replacement of houses destroyed by fire at Dwellingup has been completed and at the close of the year the office and general storeroom were under construction.

Twelve houses were built, including those at Dwellingup, bringing the total number to 30th June to 450.

Three lookout towers at Mt. Wells, Grimwade and Nannup were constructed, making the total 38 and considerably increasing overall detection in the respective areas.



Erecting a new 40 feet lookout tower at Mount Wells. The structure was assembled on the ground and raised into position as a complete unit.

### Communications

*Radio.*—Twenty mobile VHF units were installed during the year. VHF fixed repeater stations were installed temporarily at Gnangara, Mt. Wells, Mt. Solus and Como. Somerville, Dwellingup and Wanneroo offices were equipped for mobile control purposes.

Initial tests carried out with the temporary VHF system were very satisfactory. It is anticipated that this system properly housed in permanent buildings will be in full operation before the commencement of the coming fire season.

*Telephones.*—The Pemberton settlement installation has been completed. Two of the bush lines are part P.M.G. and part Departmental. This follows the example tested at Manjimup with success last year, where the Alco and Diamond Tree bush lines were converted to P.M.G. rental line, to overcome high A.C. induction interference.

*Electrical.*—Fifteen vehicles were wired for radio and flood and trouble lights.

*General.*—Plans have been prepared for the proposed new building to be erected for the Communications Branch at Como.

## 7. REFORESTATION

The continued silvicultural control of felling by tree-marking ensures that trees are removed in such a way as to protect existing immature growth and encourage regeneration. After felling, top disposal operations assist to protect the young growing trees and allows for the provision of a good seed bed for future crops.

During the year, 59,400 acres of virgin State Forest were cutover and treated for regeneration. This consisted of 42,952 acres of Jarrah, 4,620 acres of Karri, 11,816 acres of Wandoo and 12 acres of other species.

The total Jarrah and Karri areas of State Forest treated for regeneration is now as follows :—

| | acres |
|---|---|
| Jarrah .... .... .... .... .... .... | 2,167,948 |
| Karri .... .... .... .... .... .... | 96,555 |

## 8. AFFORESTATION

During the year 2,430 acres of pine plantation were established, while a further 64 acres were planted in experimental areas. Clear felling of 115 acres brings the present net area of plantation to 34,349 acres including experimental areas of 916 acres.

The total area of pine plantations established by the Department to 30th June, 1962, is as follows :—

| Plantation | Pinus radiata | Pinus pinaster | Other Species | Total |
|---|---|---|---|---|
| | acres | acres | acres | acres |
| Wanneroo | 3 | 10,734 | 43 | 10,780 |
| Metropolitan | 10 | 2,647 | 12 | 2,669 |
| Mundaring | 2,023 | 1,060 | 161 | 3,244 |
| Gleneagle | 80 | 763 | 25 | 868 |
| Harvey | 1,144 | 2,820 | 55 | 4,019 |
| Collie | 1,302 | 240 | 4 | 1,546 |
| Ludlow | 267 | 2,028 | 23 | 2,318 |
| Willcock | 68 | 595 | 5 | 668 |
| Keenan | 803 | 402 | 17 | 1,222 |
| Grimwade | 2,974 | 178 | 17 | 3,169 |
| Nannup | 2,617 | .... | 3 | 2,620 |
| Pimelia | 267 | 2 | 41 | 310 |
| Total established Plantations | 11,557 | 21,470 | 406 | 33,433 |
| Experimental areas | 199 | 631 | 86 | 916 |
| Grand Total | 11,756 | 22,101 | 492 | 34,349 |

The 1961 pine planting was distributed over the following plantations :—

| | Acres | |
|---|---|---|
| | Pinus radiata | Pinus pinaster |
| Somerville | .... | 6 |
| Mundaring | 139 | .... |
| Mungallup | 83 | .... |
| Wellington A—F | 190 | .... |
| Grimwade | 372 | .... |
| Gleneagle | 1 | 78 |
| McLarty | .... | 46 |
| Myalup | .... | 160 |
| Tallanalla | 110 | .... |
| Gnangara | .... | 528 |
| Pinjar | .... | 197 |
| Yanchep | .... | 329 |
| Blackwood | 190 | .... |
| Totals Established Plantations | 1,085 | 1,344 |
| Experimental Areas | 33 | 31 |
| | 1,118 | 1,375 |

The preparation of ground for future planting is a continuing operation and the position is well in hand.

*Soil Surveys*

The need to establish, wherever possible, greater areas of the faster growing *Pinus radiata* on the better class soils it requires, leads to continuous soil investigations.

Details of work carried out during the year are :—

| | Acres |
|---|---|
| Detailed Surveys | 3,676 |
| Reconnaissance Surveys | 11,156 |
| Inspections | 33,390 |

Since 1954, when this standard of survey was initiated, the following areas have been covered :—

| | Areas |
|---|---|
| Detailed Surveys | 66,546 |
| Reconnaissance Surveys—Hills | 160,126 |
| Reconnaissance Surveys—Coastal Plain | 111,690 |

## Mallet Plantations

A further 63 acres were spot sown with Brown Mallet bringing the total area of mallet plantations to 19,111 acres.

No mining timber was supplied during the year, but the Department produced 127 tons of chipped bark.

## Production of Pine Timber

The total production of timber for the year from pine plantations, mainly in the form of thinnings, amounted to 1,435,085 cubic feet.

Production figures over the last few years are as follows :—

| | Cubic feet |
|---|---|
| 1950 .... .... .... .... .... .... | 397,347 |
| 1955 .... .... .... .... .... .... | 947,793 |
| 1960 .... .... .... .... .... .... | 1,336,825 |
| 1961 .... .... .... .... .... .... | 1,395,701 |
| 1962 .... .... .... .... .... .... | 1,435,085 |

The above figures emphasize the growing importance of pine in the industrial life of this State.

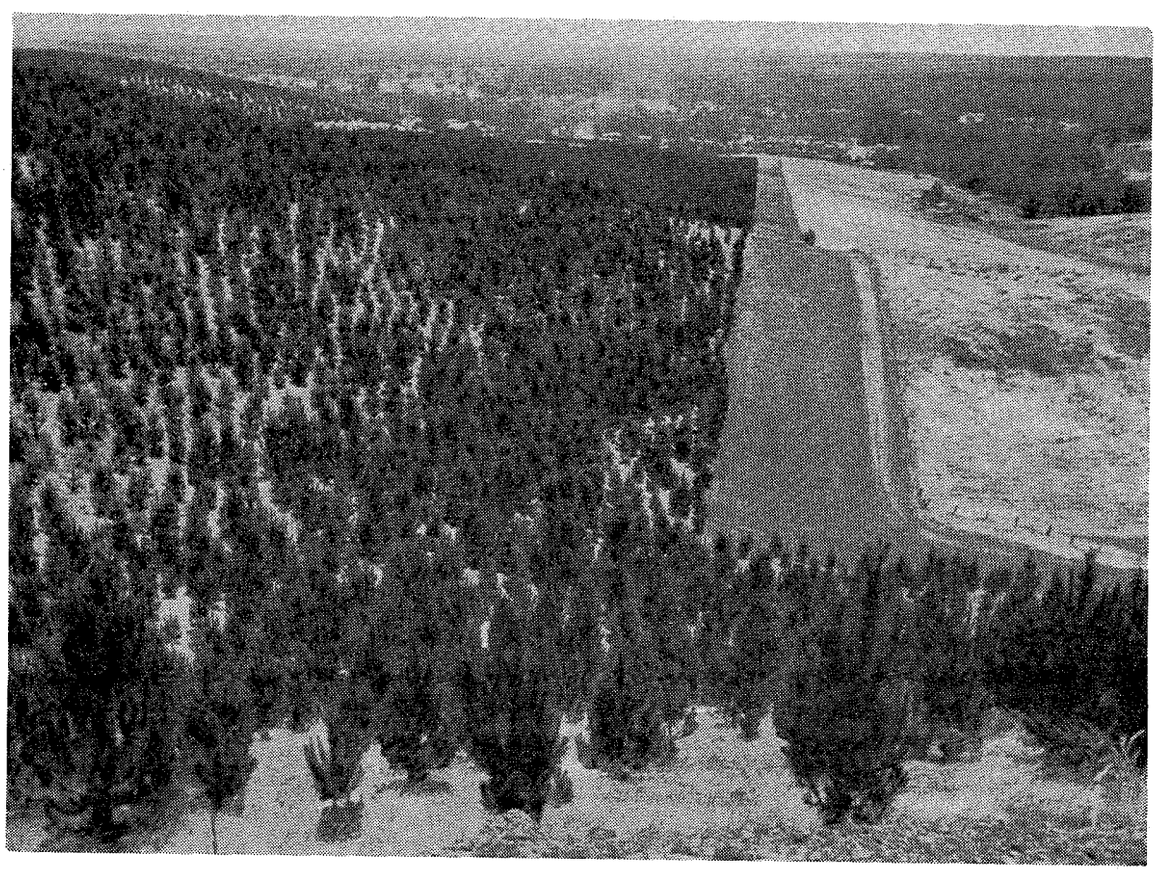
The preservative treatment of pine opens up a very wide field in the utilisation of this timber for domestic and industrial use and should result in a considerable increase in the demand for pine in the next few years.

The amount of pine used for peeling and slicing decreased from 89,048 cubic feet in 1961 to 76,906 cubic feet this year.

The woodwool industry obtained 2,850 cubic feet of the smaller sized logs.

Pine poles supplied to the pearl culture industry in the North-West for the construction of rafts for culture pots totalled 1,400 in number.

Manual training centres of the Education Department again used a considerable amount of pine timber in their classes.



Two years old *Pinus radiata* growing on the upper slopes of the Blackwood Valley near Nannup.

Logs produced by the various plantations were as follows :—

| | Cubic feet |
|---|---|
| Metropolitan— | |
| Gnangara | 215,250 |
| Somerville | 129,376 |
| Collier | 43,250 |
| Mundaring | 582,698 |
| Gleneagle | 200 |
| Harvey— | |
| Hamel | 9,450 |
| Harvey Weir | 98,035 |
| Myalup | 29,100 |
| Grimwade | 172,425 |
| Busselton— | |
| Keenan | 25,906 |
| Ludlow-Willcock | 51,331 |
| Boranup | 2,337 |
| Pardelup | 64,348 |
| Pimelia | 2,550 |
| Misc. F.P. Licenses, etc. | 8,829 |
| Total | 1,435,085 |

**Seed Distribution**

Sales of seed to Australian and overseas buyers amounted to £2,134 compared with £3,529 for last year when sales were boosted by an unusually large order of seed for Morocco.

There are 169 different species of seed of an estimated value of £21,057 now carried by the Departmental Seed Store.

A further 250 lb. of conifer seed were taken into stock during the year.

**Tree Nurseries**

The value of trees on farms and in country towns is again evidenced by the number of trees supplied by the two Departmental nurseries at Hamel and Dryandra to the public.

Open rooted pines both for Departmental use and private plantations and windbreaks were again in greatest demand. Sugar gum (Euc. cladocalyx) was, apart from pines, the most popular species distributed.

The year's work of the two nurseries is summarised on the following table :—

| Nursery | Number of Plants Sold | | | Departmental Use | Number of Species | Revenue | Expenditure |
|---|---|---|---|---|---|---|---|
| | Potted Stock | Tray Stock | Open Rooted Plants | | | | |
| | | | | | | £ | £ |
| Hamel | 23,886 | 1,464 | 16,689 | 188,561 | 99 | 4,366 | 5,110 |
| Dryandra | 31,138 | 174 | .... | 2,323 | 110 | 3,552 | 4,571 |

The above figures for Revenue and Expenditure are for the period 1st October, 1960, to 30th September, 1961, and they do not take into account the value of trees which were supplied for the Department's own requirements.

**Esperance Roadside Planting**

The Esperance Plains area which has been so prominent in the State's agricultural development during recent years is almost entirely treeless. Recognising the need for shelter on such an exposed area the Government, in 1960, provided a grant of £1,500 to inaugurate a project of extensive roadside tree planting—an undertaking unique in the history of the State.

A committee was formed with one representative from each of the Departments of Agriculture, Forests and Lands, and liaison was established through the medium of the Esperance Shire Council with members of the local farming community, who formed their own local committee.

The project involved a joint undertaking—the landholders to prepare, to adequate specifications, cultivated strips on the road verges adjoining their properties and the Government, operating through the Forests Department, to provide trees and fertilizer, with labour, transport and supervision for the planting.

The scheme was received with initial interest and apparent enthusiasm and preliminary inquiries from 42 landholders covered some 66 miles of planting. However, either through failure to sustain interest or applicants' inability, with available equipment to cultivate to the high standard required, the total length of strip actually prepared in time for planting in 1961–62 season was 23 miles adjoining 15 properties.

Of the land prepared the greater part lacked the thorough cultivation which has been found necessary, i.e., 9 in. deep ploughing, followed by 12 months fallow, and then a second cultivation prior to planting. Such treatment ensures the elimination of local scrub, a pre-requisite for satisfactory tree establishment.

In the case of only one property was soil preparation fully up to the standard recommended and results there have been outstanding. Elsewhere results have been broadly related to the degree of soil preparation given, although depredations of rabbits at several focal points of infection posed an unexpected, although at present limited, threat. A number of local establishment problems associated with the range of soil conditions and drainage, peculiar to the region presented themselves, and it is being found necessary to adapt planting methods to cope with them. It must be appreciated that the Esperance plains have been treeless in nature.

Survivals based on counts made in February, 1962, averaged 76 per cent., ranging from 95 per cent. in the most successful sections down to 29 per cent. in the poorer ones, with almost total failure in one section of severe rabbit infestation.

## Inland Arboreta

*Establishment*

The establishment during the 1961 winter of a further 10 plots in 8 different districts brings the total number of arboreta of this type to forty. It is pleasing to record the past and present co-operation of the Department of Agriculture in much of this work.

Due to the excessively long dry summer and attack by rabbits and galahs, mortality of the young trees was higher than usual. To offset the depredation of the above pests, it is now standard practice in all arboreta to enclose each plant in a cylindrical galvanised wire netting guard about 3 feet high and supported by a jarrah stake.

Planting was carried out only on properly cultivated land and no watering was done.

*Investigation*

(a) *Soil Moisture.*—A long term investigation was initiated in 1959 to obtain information about the soil moisture regime in "sand plain" soils. These soils, generally sandy, all rest on impenetrable hard pan at depths varying from one foot to 12 feet. Soils are being examined at Mendels-Wongoondy about 25 miles north of Mingenew, at Morawa and at Eneabba. The following is a summary of the results to date :—

(i) *Fallowing—The elimination of all grasses, weeds, and annual plants by cultivation.*—This treatment maintains a high level of soil moisture throughout the profile right through the summer. The watering of newly planted trees on ground so prepared is unnecessary.

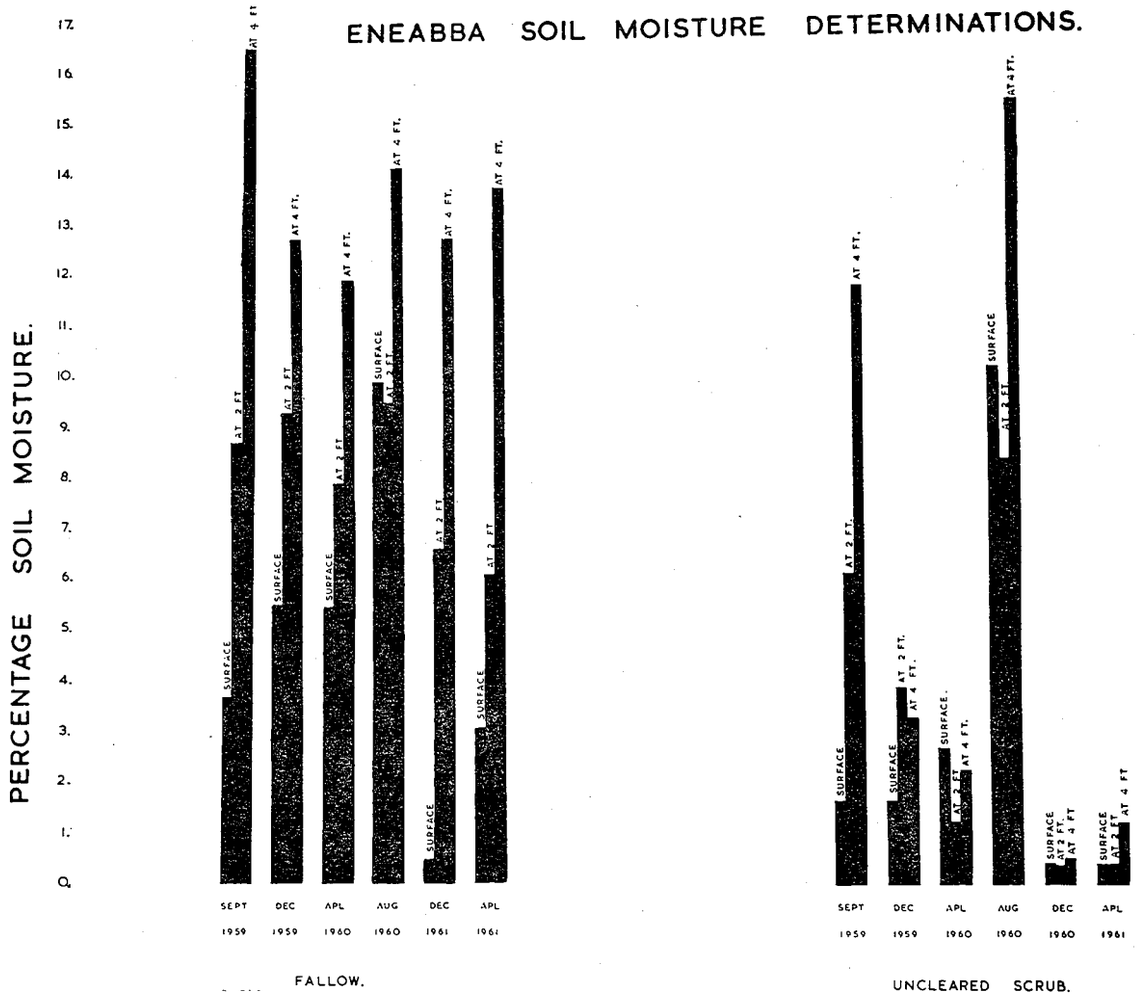
(ii) *Pasture—Annual grasses, clover, capeweed, etc.*—If these plants are allowed to develop fully and ripen their seed, then by November, they will lower the soil moisture to below wilting point for a depth of 18 in. to 24 in. Unrestricted competition from plants of this type results in a high percentage of deaths in newly planted trees.

(iii) *Trees.*—Trees planted at a spacing of 33 ft. x 33 ft. on properly cultivated soils of this type have the first slight effect on the soil moisture when they are four years old. The slight fall in moisture content is noticeable only in the centre of the plot, but the trees at this stage are still making healthy and rapid growth.

(iv) *Indigenous Vegetation—Mainly low and xerophytic scrub and in its natural condition.*—The annual winter rains have been sufficient so far to raise the whole of the soil profile to field capacity by the end of August. By late November or early December the complete profile is dried out to below wilting point and remains in that condition until the April rains commence.

The difference in the levels of moisture in the sandy soils of Eneabba under fallow and native scrub are illustrated in the accompanying histogram (fig. 1).

These tests will continue for several years until it has been possible to determine the effect growing trees at an espacement of 33 ft. x 33 ft., have on the soil moisture regime.




Histogram showing the dessicating effect of scrub on sandplain soil. Moisture readings were taken at the end of winter, in mid-summer and at the end of summer.

(b) *Root Coil.*—To offset the possibility of root coil and subsequent windthrow, the roots of each plant at the time of planting were severed with a sharp pen knife by longitudinally cutting to a depth of $\frac{1}{4}$ in.–$\frac{1}{2}$ in., the opposite sides of the ball of earth (or "gachi").

### Tree Planting by Shire Councils

The personal enthusiasm of the respective Shire Clerks has been the main reason for some outstanding examples of tree planting. In one Shire, orders for trees are placed on behalf of local citizens and the number of trees so ordered has increased annually culminating in a total of 4,290 in the winter of 1961.

The same Shire is promoting a self-help scheme of planting along road reserves adjoining private property—the Shire providing the trees and the settler preparing the ground and carrying out the planting, watering and general tending.

## 9. PROTECTION

### FIRE PROTECTION

### State Forest under Protection

| | |
|---|---|
| Indigenous Forest .... .... .... .... .... .... | 4,054,250 acres |
| Pine Plantation .... .... .... .... .... .... | 34,349 ,, |
| Mallet Plantations .... .... .... .... .... .... | 19,111 ,, |

### The Fire Season

Figures given are from the Forest Weather Stations at Dwellingup (Jarrah) and Pemberton (Karri).

| | Jarrah | Karri |
|---|---|---|
| Rainfall .... .... .... .... .... | Generally dry ; cumulative deficit, 1st September, 1961, to 1st May, 1962 = 472 pts. March and April driest. | Below average ; cumulative deficit, 1st September, 1961, to 1st May, 1962 = 7 inches. December and January lowest. |

| | | |
|---|---|---|
| Temperature— | Above average every month except March. Highest 101 degrees in January— | |
| Days over 100 degrees .... .... | 1 | *Nil* |
| Days over 90 degrees .... .... | 36 | 35 |
| Relative Humidity— | | |
| Number of days below 25 per cent. | 40 | 18 |
| Fire Hazard— | | |
| No. of days dangerous .... .... | 6 | *Nil* |
| No. of days severe summer .... | 31 | 3 |
| Mean Hazard .... .... .... .... | 5·9 | 3·8 |

The season in the Jarrah forest was very severe, the mean hazard being exceeded only by the 1957–58 season.

The season in the Karri was milder than normal but of fairly long duration.

**Controlled Burning**

A generally dry autumn coupled with an intensive control burning drive, additional expert staff and improved methods, resulted in the amount of control burning carried out during the season under review to more than twice that of the previous year, as the following figures show :—

| | 1961–62 acres | 1960–61 acres |
|---|---|---|
| *Prescribed Burning*— | | |
| General .... .... .... .... .... | 1,112,558 | 493,370 |
| Advance and top disposal .... .... | 87,012 | 70,953 |
| Fire breaks .... .... .... .... | 250 | 8,880 |
| Total .... .... .... .... | 1,199,820 | 573,203 |

**Detection**

Munro Tower was built during the year and manned from mid-November, while Mt. Wells destroyed by fire last year was replaced and manned from 2nd January, 1962. A new tower at Milward was completed towards the end of the fire season.

| | Jarrah | Karri |
|---|---|---|
| *Manning of Towers*— | | |
| First Watch .... .... .... .... | 22/9/61 | 10/11/61 |
| Last Watch .... .... .... .... | 11/5/62 | 4/5/62 |

**Fires and Fire Damage**

Total number of fires attended by Departmental gangs was 463, which is appreciably above the average of 360.

The following table sets out the principal causes :—

| | |
|---|---|
| Escapes from Settlers burning .... .... .... .... | 113 |
| Hunters and travellers .... .... .... .... .... | 64 |
| Lightning .... .... .... .... .... .... .... | 62 |
| Escapes from prescribed burns .... .... .... .... | 61 |
| Deliberately lit .... .... .... .... .... .... | 42 |
| Bush workers .... .... .... .... .... .... .... | 22 |
| Mill locos .... .... .... .... .... .... .... | 18 |
| W.A.G.R. .... .... .... .... .... .... .... | 4 |
| Children .... .... .... .... .... .... .... | 14 |
| Householders .... .... .... .... .... .... .... | 9 |
| Mill surroundings .... .... .... .... .... .... | 8 |
| Miscellaneous .... .... .... .... .... .... .... | 8 |
| Unknown .... .... .... .... .... .... .... | 38 |
| Total .... .... .... .... .... .... .... | 463 |

Once again escapes from settlers burning heads the list with 24·4 per cent. of the total as against 16 per cent. last year and a low 9·5 per cent. in 1958–59.

Lightning with 62 fires is again well above average, and is the second highest number recorded, the highest being 85 last year and the third highest of 42 in 1958–59. There were only three in 1959–60.

The area burnt over was higher than average due mainly to a few fires of large acreage in newly opened up and poorly roaded forest.

One serious fire in a pine plantation accounted for the loss of 120 acres of 30 year old pines. All of this pine was disposed of to the metropolitan markets.

| *Summary of Damage*— | acres |
|---|---|
| Slight | 19,719 |
| Medium | 19,423 |
| Severe | 27,547 |
| Total | 66,689 |

| *Points of Origin*— | |
|---|---|
| State Forest | 174 |
| Crown Lands | 59 |
| Private Property | 230 |
| Total | 463 |

**Public Relations**

Every effort is being made to assist in the formation of Advisory Committees in the Shires throughout the forest area. This closer liaison has in many cases led to the preparation by bush fire brigades of controlled burning plans, with subsequent successful completion of this prescribed burning by brigades working in co-operation with Departmental gangs.

There were several very heartening cases of bush fire brigades turning out to fires in State Forest without having been called upon by the Department. This gradual realisation that fires in State Forest are of concern to others besides Departmental gangs is a big step forward in fire control, as is also the increasing requests by bush fire brigades to take part in Departmental gang training exercises.

## PROTECTION FROM INSECTS

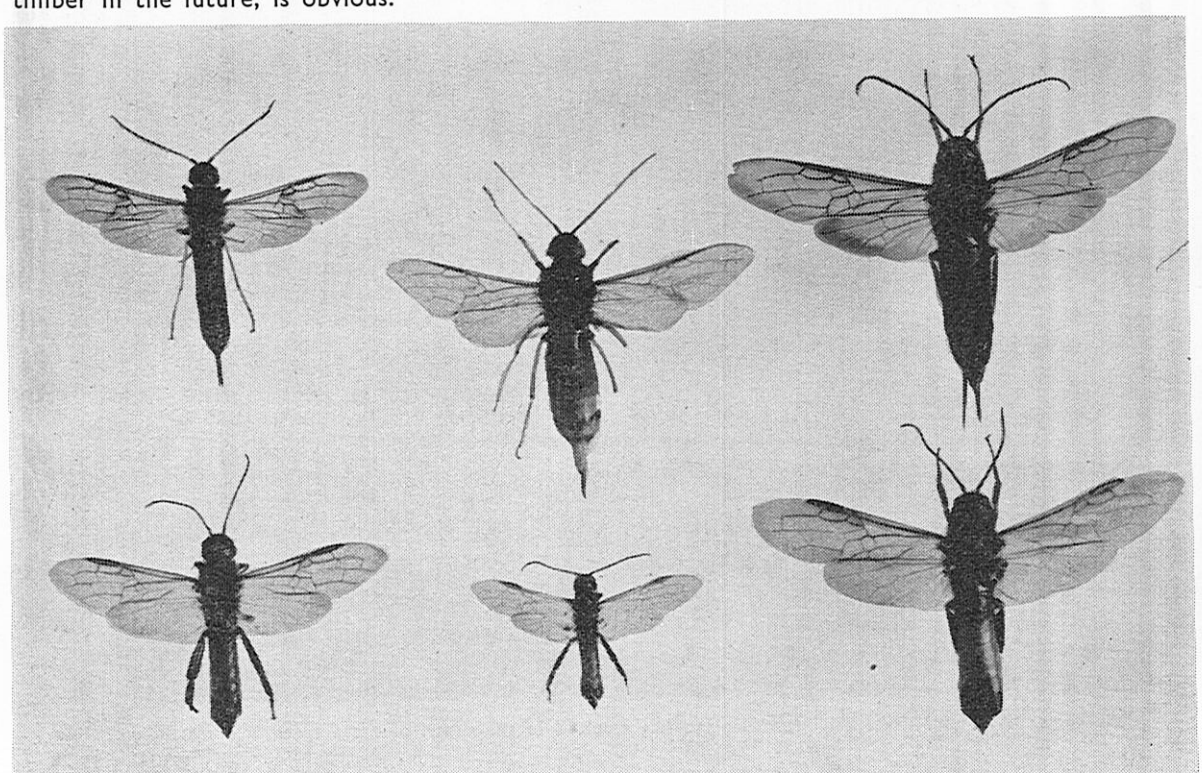
**Sirex Wasp**

The discovery near Melbourne, early this year, of several infestations of a Sirex wasp (*Sirex noctilio*) in trees of *Pinus radiata*, is viewed with extreme concern by Commonwealth, State and private owners of softwood plantations, as this is the first recorded occurrence of this pest on the mainland of Australia.

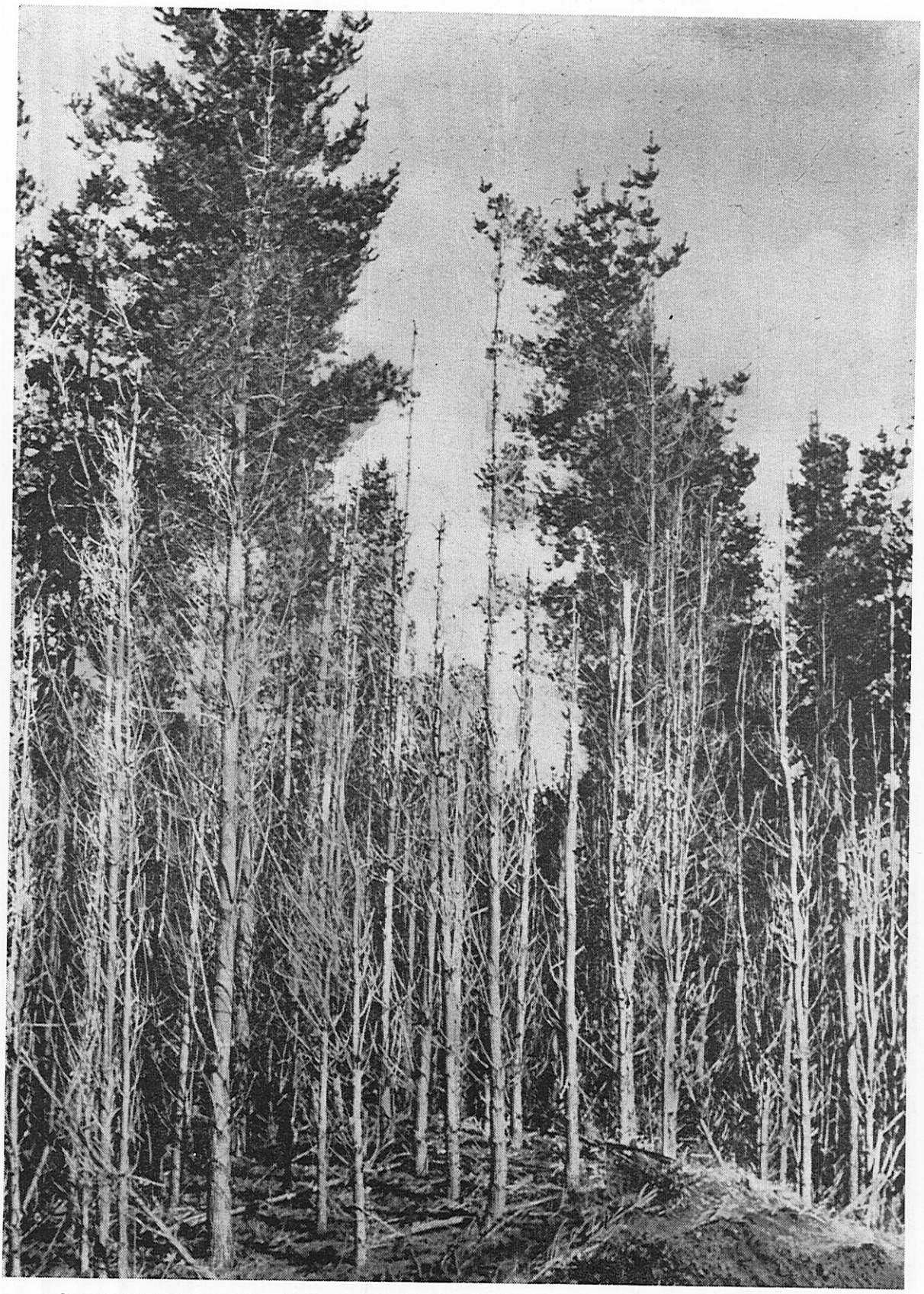
The Sirex wasp, which attacks and kills living softwood trees, is one of the most destructive insects in the world. Previously confined to the continents of America and Europe, it became established in New Zealand about 1900, where in the last 15–20 years it has reached plague proportions and killed thousands of standing trees in plantations of *Pinus radiata*. In 1952 its presence was reported in Tasmania and its attack has spread considerably since that time.

*The Threat to Australia*

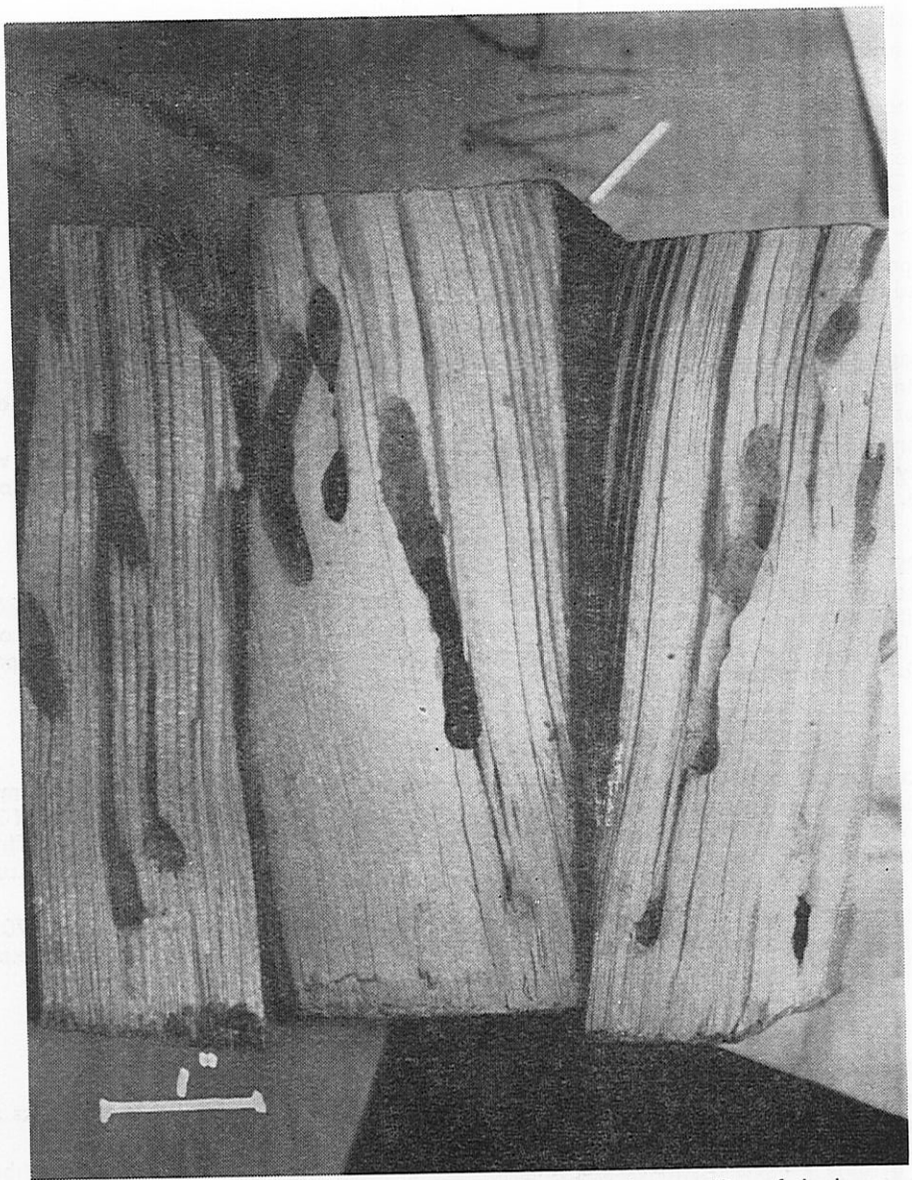
Approximately 500,000 acres of *Pinus* species, more than half of which is *P. radiata*, which has proven so susceptible to Sirex attack in New Zealand and Tasmania, have been planted throughout Australia. The threat to these plantations, which will be the source of many millions of cubic feet of softwood timber in the future, is obvious.



Adults of the Sirex Wasp responsible (Sirex noctilio). The female (upper) is about an inch long and steel blue in colour. The male (lower) is slightly smaller and distinguished by an orange coloured, black-striped abdomen.



Severe attack by Sirex Wasp in New Zealand has resulted in the death of these trees of *Pinus radiata*.



The photograph shows the damage done to the wood by the tunnelling of the larvae.

Although there is no record of any *Sirex* attack in Western Australia, action has already commenced here to combat its introduction and spread. An officer of the Forests Department, together with an officer of the Entomology Branch of the Department of Agriculture, have spent several weeks in the infested areas of Victoria to gain first hand knowledge of the problem. In co-operation with the Plant Quarantine office of the Department of Agriculture, our investigating officer is at present engaged on a wide examination of all pine trees, including those not controlled by the Department.

## 10. SILVICULTURE AND SOILS RESEARCH

### KARRI SILVICULTURE

**Flowering and Seeding**

Observations have continued on floral development in the karri forest, with particular emphasis on the karri floral cycle and seed supply.

Adequate seed fall is predicted for 1962–63 and 1963–64, and this seed fall will be closely related to the burning programme in order to satisfactorily regenerate some 15,000 acres of cut-over karri forest.

**Chemical Control of Growth on Tracks and Firelines**

A total of 95 spraying trials have now been carried out, and the main results to date are as follows :—

(1) Spraying within two years of burning causes the most permanent destruction of competing scrub. This prevents reseeding of the area by the undergrowth vegetation.

(2) The most satisfactory control of fireweeds so far discovered is by the application of the butyl ester of 245T (0·15 a.e. %), when applied as a 1·5% solution (w/v) at the rate of 75 gallons per acre.

(3) A better control of a wider range of species, however, was achieved using a 1 : 1 mixture of 24D and 245T (0·30 a.e. %) as 3% solution (w/v) at the rate of 75 gallons per acre.

Further experimental trials with higher concentration and less volume are being carried out.

### Karri Nutrient Trials

Three soil types have been tested in pot culture trials in an examination of the nutrient status of karri soils.

It has been shown that nitrogen and phosphorus have large effects on seedling growth, producing plants of 14 grams oven dry weight at 8 months, 20 times that of the control plants, but with growth disorders. Heat and ash treatments produced desirable plants of the same height growth (28 in.), but of 7 grams O.D.W. Heat and ash with nutrients yielded healthy plants, greater in weight (35 gr.) and height (33 in.). The shoot-root ratios of treated plants ranged from 2 to 4, while those of the control plants were less than 1·5.

These pot trials are being repeated as a field experiment this year, to determine the effects of fertilizer on seedling growth at different spacings.

### Fire Damage Studies

Following the 1961 fires in the karri forest, a number of 1 acre plots were established and individual tree descriptions prepared.

Fire scarred lesions preceding rot in butt logs were recorded in 40 per cent. of the trees which were defoliated by the fire, whereas in trees with unburnt crowns, only 10 per cent. of the butt logs showed fire damage.

### Cull Felling

This system, initiated in 1960 at Pemberton and Shannon River, has been extended to Quinninup and Northcliffe by two private companies. Broadly, the system aims at proving all trees of doubtful quality and felling useless trees with sufficient crown vigour to occupy effective growing space and so make way for the establishment of a new crop.

## JARRAH SILVICULTURE

Silvicultural work in this region has been confined to thinning operations and the treatment of the stumps of the removed trees to prevent coppice development. A two per cent. solution of 245T ester or amine in water was applied to the stump immediately following the felling operation. The addition of 2 per cent. ferrous sulphate to the solution has shown distinct promise as an indicator of stump treatment.

The results of the early work varied considerably in effectiveness ranging from 30 to 70 per cent. deaths. This is thought to be due to faulty application as complete success was achieved in experimental areas. Further trials are continuing to improve the technique of applying the hormone.

## PINE SILVICULTURE

### Tree Breeding—*Pinus Pinaster* and *Pinus Brutia*

During the year a total of 1,184 grafts were attempted and 50 per cent. of these grafts appear to have been successful.

The most suitable period for grafting appears to be from 20th August to 30th September.

Controlled pollinations were carried out on 132 of the older grafts of the scion orchard, and 93 of these appear to have been successful.

In April and May of 1962 a number of grafts produced female flowers and these were all pollinated. This propensity to produce female flowers in the dormant period has not previously been noticed on Pinus Pinaster.

### Germination Stimulation in *Pinus Pinaster*

A further series of experiments were carried out during the year. Seed was tested after being given the following treatments :—

Soaking in water for 8 days and 4 days.

Cold Chamber at 36° F for 3, 6, 9 weeks.

Calico versus Polythene containers.

Polythene as a container again proved much superior to calico and the optimum result was obtained by soaking for 8 days, with stratification in polythene bags for either 3 weeks, 6 weeks or 9 weeks.

On the strength of last year's experiments which, incidentally, the above results support, the bulk requirements for nursery sowing (350 lb.) in 1961 were soaked for 8 days, packed in polythene bags and stratified for 3 weeks. The results were most unsatisfactory and there was no effect of treatment over unstratified seed. It is not understood at this stage why seed stratified in small lots of a few ounces gives a different result from that stratified in lots of 4 to 5 lb. Further tests are under way to elucidate this problem.

### Pollen Storage

Tests have been carried out to determine the most suitable method to store *Pinus pinaster* pollen, and it was found that pollen stored in a dessicator over silica gel at 10°F. has given excellent germination after 12 months.

### Timber Tests

The C.S.I.R.O. is currently carrying out tests on the timber of the four races of *Pinus pinaster* Esterel, Leiria, Landes and Corsican. Samples from ten selected trees of each race have been sent over for examination. The object is to first determine standards for each race and this will be followed by tests of the timber of all our better plus trees.

### Scion Orchard, Neaves Road

Grafts are developing satisfactorily and the bulk of our best genetical material is now represented in this orchard. The planting of the 1962 grafts will fill the major portion of the area available and an additional area is now being sought.

### Seed Orchard, Lake Joondalup

Reserve No. 21176 of 30 acres about 2 miles north of Wanneroo townsite and situated between the main road and Lake Joondalup has been vested in the Conservator of Forests. The bulldozing of the standing indigenous tree species has been completed and the area will be ready for the first planting in 1963.

### Seed Orchard, Rottnest Island

The first grafts of *Pinus brutia* were planted out in this orchard in 1962. Additional grafts will be made each year until the area available is completely planted.

### Plus Trees

The search for plus trees continues and three new trees have been located in Collier plantation during the year. However, all our plus trees of *Pinus pinaster*, with the possible exception of tree E2 have faults we are trying to eliminate. The location of really high quality trees without fault is extremely difficult.

## SOILS RESEARCH

The Departmental Chemical laboratory was transferred to Perth during the year, and this has resulted in a marked improvement in working conditions.

Work was continued along the following lines :—

### Forest Litter Studies

From a study of litter accumulation data equations have been derived to show the rate of accumulation of litter on various forest floors.

For the jarrah forest the equations are

$Y' = 2{\cdot}77\ X^{0{\cdot}44}$ (40 per cent. crown cover)

and $Y = 3{\cdot}16\ X^{0{\cdot}52}$ (70 per cent. crown cover)

Under Site Quality 1 *Pinus pinaster* plantations a different relationship holds and

$Y = 1{\cdot}48\ X - 6{\cdot}1$

($Y$ = O.D.W. of litter–lb./acre $\times\ 10^3$ and $X$ = Age of forest floor–years)

A new series of litter fall experiments were commenced to study the effect of fire on jarrah forest litter fall. The annual litter fall for four different areas is shown in the following table

| Area | Treatment | Litter Fall (lb./acre) | | | | |
|---|---|---|---|---|---|---|
| | | Leaves | Twigs | Bark | Fruit | Total |
| Amphion 6 | Unburnt | 1,900 | 1,000 | 470 | 120 | 3,490 |
| Amphion 7 | Light Burn | 1,520 | 430 | 330 | 80 | 2,360 |
| Holmes 1 | Moderate Burn | 1,460 | 590 | 290 | 30 | 2,370 |
| Holmes 10 | Severe Burn | 740 | 710 | 340 | 40 | 1,830 |

All burnt areas showed a marked decline in litter fall, and it was observed that in both Holmes (1) and (10) the bulk of the litter fall was fire killed material.

### Pine Plantations

*Forest Nursery Studies*

The results of an investigation on *P. radiata* nursery soils was published as Departmental Bulletin No. 70.

*Co-operative Pine Research with C.S.I.R.O.*

Following the visit of Dr. L. Leyton from the University of Oxford, there was a marked increase in the work carried out on this project. Dr. Leyton is a world authority on tree nutrition, and he was brought out to Australia by the C.S.I.R.O., Division of Soils to advise on the co-operative pine project.

The major investigations during the year were :—

(a) *Soil Phosphorus and Nitrogen Studies.*—Soil phosphorus analyses have been carried out on samples from the Keenan plantation, and preliminary investigations indicate that there is a linear relationship between the soil phosphorus level and predominant height of the pine crop in this plantation.

Another transect has been established to check the relationships between soil phosphorus level and tree growth in the Grimwade plantation.

(b) *Soil Moisture Studies.*—Neutron probe holes have now been established at all the experimental sites, and routine measurements are continuing in these areas.

(c) *Soil Fertility Experiments.*—The field trial near Carinyah was continued. The area was top-dressed with superphosphate (one bag per acre) and the third series of plots put down under lupins and clover. The trial is to be planted with *P. radiata* in 1963.

(d) *Foliar Analysis.*—A large scale series of foliar analyses has been commenced with both Pinus radiata and *Pinus pinaster.*

The samples were collected during the late summer, and an attempt is being made to relate the pine growth to the chemical composition of the needles. At this early stage no definite conclusions can be drawn.

An interesting aspect of this work has been the study of the chemical composition of live bark as a substitute for foliar analysis. The results at present are rather disappointing, as they appear to indicate only very broadly the nutrient status of the tree.

## 11. LIBRARY

A continued increase in all phases of the library's activities is demonstrated by the following figures :—

| | 1960/61 | 1961/62 |
|---|---|---|
| Items indexed .... .... .... .... .... .... .... .... | 915 | 1,463 |
| General loans and queries .... .... .... .... .... .... | 1,946 | 2,455 |
| Journal loans .... .... .... .... .... .... .... .... | 4,734 | 5,614 |

An uncommon feature of this library is that not more than six of the eighty regular borrowers are in the same office. This creates unique problems which are overcome by the co-operation of the field staff and Interstate borrowers.

## 12. FOREST ECONOMICS

### Future Requirements of Forest Products

In recent times technical progress in the use of substitutes for wood, such as steel, concrete, aluminium, glass and bricks, together with a steady fall in the per capita consumption of domestic fuelwood, has led to a fairly general belief that the " age of wood " is slowly passing. On the contrary, available figures and carefully considered forecasts suggest that, not only will the requirements of forest products be greatly expanded in the future, but the *per capita consumption* of such products is likely to increase.

Figures presented by the F.A.O. to the Fifth World Forestry Congress, 1960, show that in the decade ended 1960, the *per capita consumption* of industrial wood had risen in all the major regions of the World—except North America where no change was evident. Increases for the regions were as follows :—

| | Approx. per cent. |
|---|---|
| Africa .... .... .... .... .... .... .... | 25 |
| Oceania (includes Australia and New Zealand) .... | 26 |
| Europe .... .... .... .... .... .... .... | 28 |
| South America .... .... .... .... .... .... | 60 |
| Asia .... .... .... .... .... .... .... | 80 |

For the whole of the World the figure was approximately 26 per cent.

In his article, " Methods of Forecasting Demand of Forest Products," Leaflet No. 85, A. G. Hanson of the Forestry and Timber Bureau has suggested that Australia's per capita consumption of sawn and hewn timber (including sleepers) will be about 200 super feet in the year 2,000, as against 180 super feet in 1958–59.

At 30th June, 1961, the population of Western Australia was 736,624. Applying a rate of increase of population of 1·87 per cent. which seems reasonable in view of the expected industrial expansion of the State, there should be some 1,500,000 persons in Western Australia in the year 2,000. Using Hanson's suggested per capita consumption figures for each class of product, the demand for forest products in the year 2,000 in this State is expected to be double that of the present day allowable cut from the hardwood forests of the State. The importance of the establishment of sufficient softwood plantations to make up the deficit is again clearly demonstrated.

From the above, it is suggested that the " age of wood " is still very much with us.

## The Value of Exports of Jarrah and Karri

In the nine-year period 1953–1961 the total annual value of the State's timber exports has risen from an average of £2 million (1953–55) to £4 million (1959–61). Sleepers and other sawn undressed timber together have represented up to 98 per cent. and 85 per cent. respectively for the periods quoted. The lower percentage in recent years has been caused by an increase in the export of flooring and plywood. (See Table below).

VALUE OF TIMBER EXPORTS—1953–1961

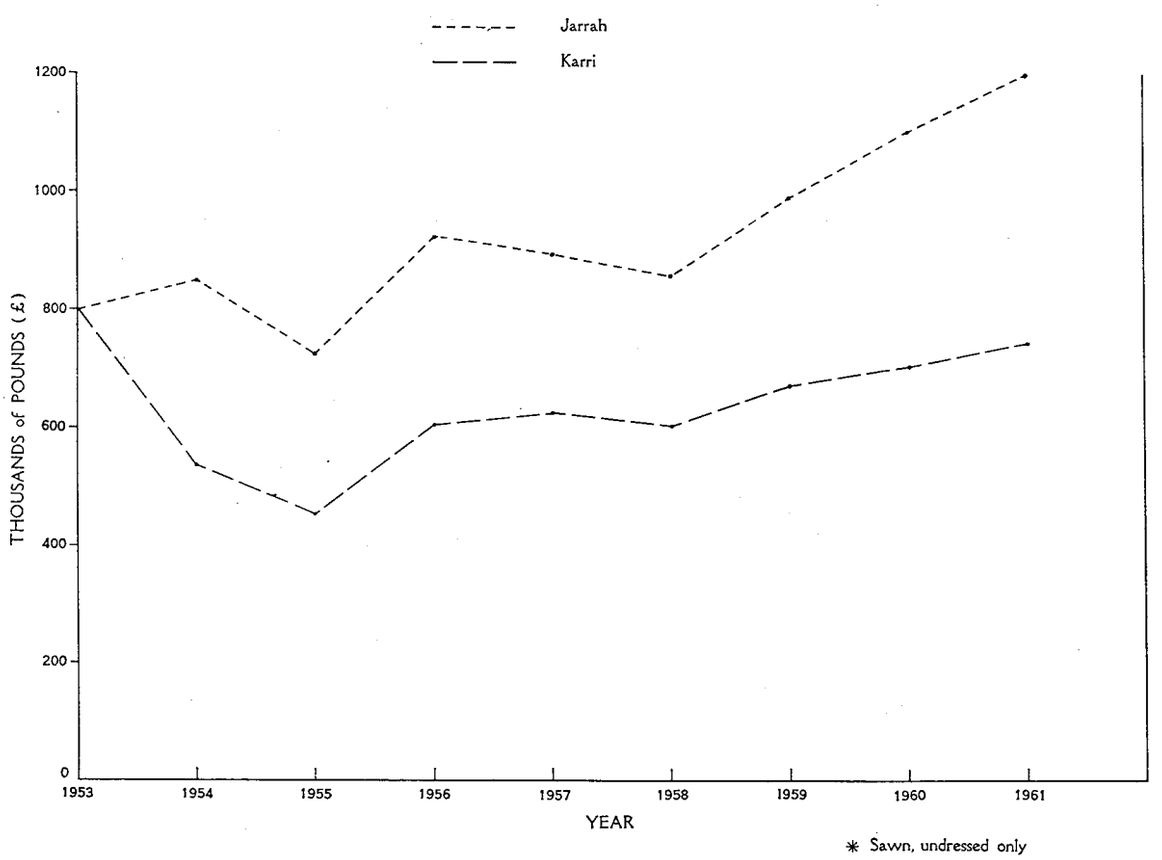
| Item | 1953 | 1954 | 1955 | 1956 | 1957 | 1958 | 1959 | 1960 | 1961 |
|---|---|---|---|---|---|---|---|---|---|
| | £'000 | £'000 | £'000 | £'000 | £'000 | £'000 | £'000 | £'000 | £'000 |
| Sleepers— | | | | | | | | | |
| Jarrah .... .... .... .... .... | 403 | 804 | 589 | 992 | 1,394 | 2,010 | 2,228 | 1,565 | 1,220 |
| Other .... .... .... .... | .... | .... | 107 | 157 | 21 | 15 | .... | 224 | 78 |
| Sawn, Undressed— | | | | | | | | | |
| Jarrah and Karri .... .... .... | 1,599 | 1,383 | 1,174 | 1,528 | 1,514 | 1,460 | 1,662 | 1,810 | 1,943 |
| Other .... .... .... .... | .... | .... | .... | 16 | 23 | 76 | 53 | 46 | 32 |
| Dressed and Moulded—Flooring, etc. | 25 | 34 | 22 | 60 | 120 | 159 | 216 | 218 | 297 |
| Plywood .... .... .... .... .... | 1 | 9 | 14 | 17 | 144 | 126 | 171 | 258 | 247 |
| Other .... .... .... .... .... | 46 | 18 | 29 | 49 | 41 | 30 | 43 | 39 | 21 |
| Total .... .... .... .... | 2,074 | 2,248 | 1,935 | 2,819 | 3,257 | 3,876 | 4,373 | 4,160 | 3,838 |

Sleeper exports have been shown to be rather variable in quantity, and only twice (1958 and 1959) has their value exceeded that of exports of other sawn undressed timber—almost entirely jarrah and karri. It is of interest, therefore, to examine the value and distribution of jarrah and karri (excluding sleepers) both interstate and overseas—figures for the two species were first segregated in 1953.

GRAPH 1

VALUE of EXPORTS of JARRAH and KARRI* (excluding sleepers)

1953 - 1961




* Sawn, undressed only

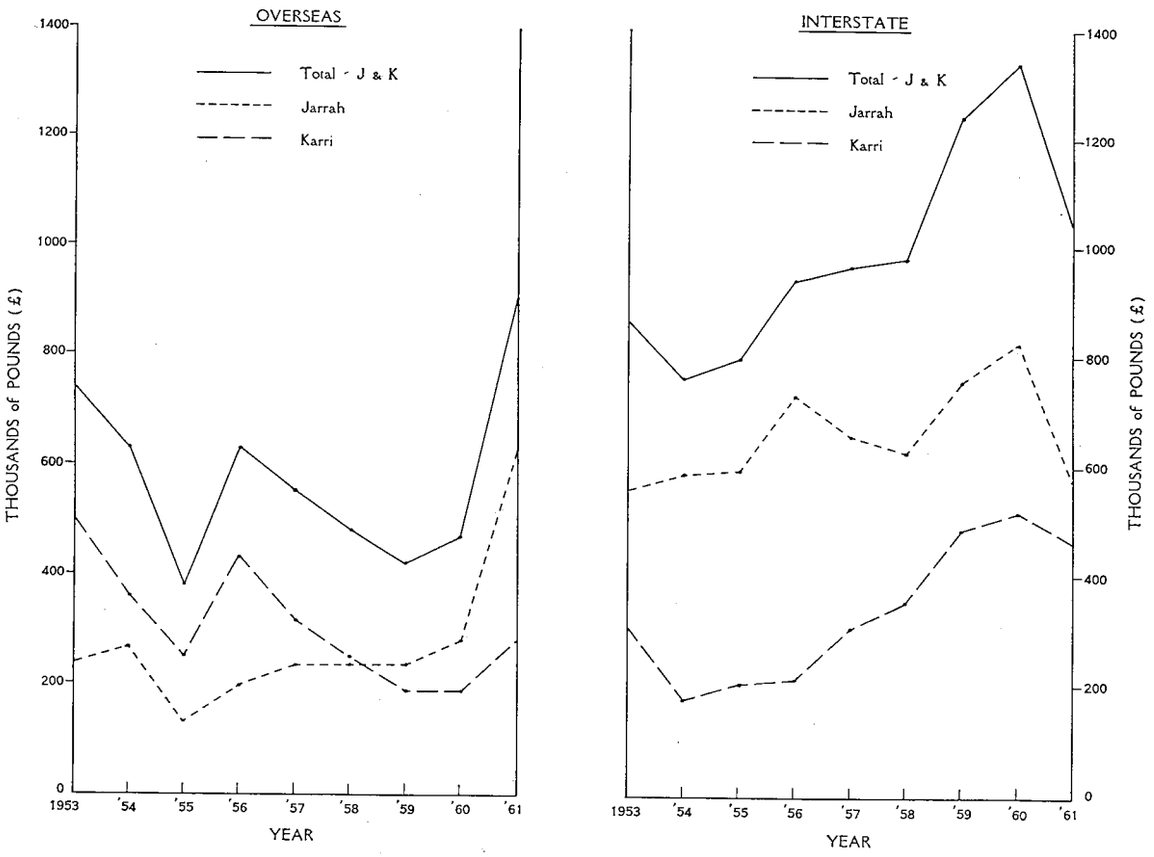
Graph 1 shows the total value of exports both overseas and interstate. Once again the effect of the local post-war housing demand is clearly demonstrated, particularly in 1955. Since 1958, the annual export value of both species has shown an increase, jarrah however, being much more marked than karri which still has not reached the 1953 level of £800,000.

The interstate export value of both species, together and individually, has exceeded the overseas value in all years except 1961 (Graph 2) when a particularly large order for jarrah for the United Kingdom was filled.

GRAPH 2

VALUE of EXPORTS of JARRAH and KARRI* (excluding sleepers)

1953 - 1961




* Sawn, undressed only

The effect of the sleeper trade on the value of jarrah exports is shown in Graph 3 (on p. 31). Since the lifting of restrictions on sleeper exports (1957), the annual value of the overseas sleeper trade has averaged £1,440,000 compared with £310,000 for the interstate trade. In the period 1953–57 the respective figures were £350,000 and £490,000.

## 13. EDUCATION AND PUBLICITY

### Education

A conference of professional staff dealing with the factors effecting fire prevention and suppression was held during the year at Perth.

A short duration school on Air Photo Interpretation was held at Harvey while Divisional schools were held at various centres.

Seven trainees continued a two-year course of instruction at Pemberton and are due to complete the course early in 1963.

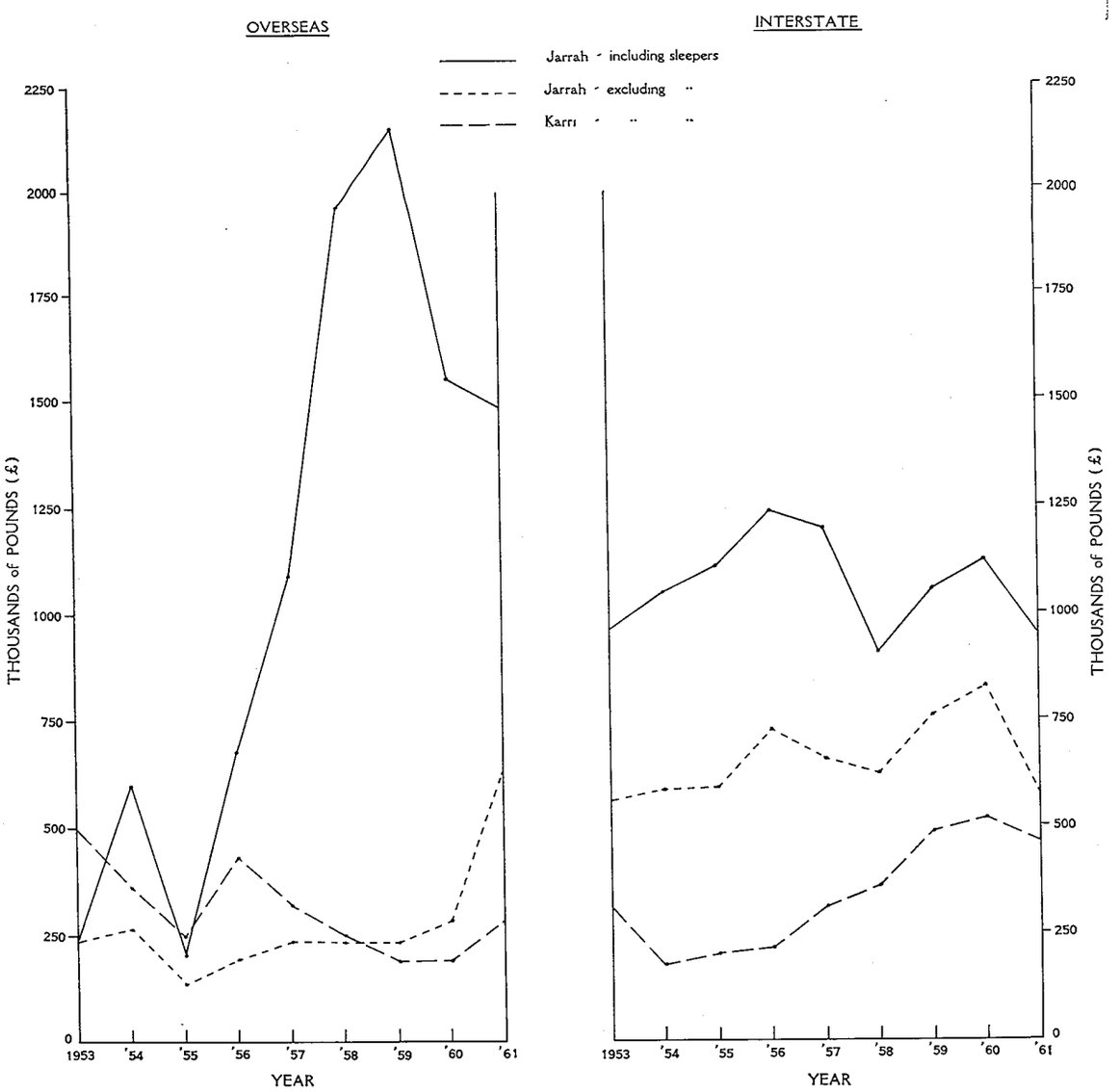
Due to the lack of suitable applicants, enrolments for the Forestry Course at the University of Western Australia and the Australian Forestry School, Canberra, have fallen. The present position is as follows :—

| | Commonwealth Scholarship | State Scholarship | Independent |
|---|---|---|---|
| 4th Year—Canberra—To graduate, 1962 | 2 | 3 | .... |
| 3rd Year—Canberra .... .... .... | 1 | .... | .... |
| 2nd Year—University of W.A. .... | .... | .... | .... |
| 1st Year—University of W.A. .... .... | 1 | .... | 1 |

GRAPH 3

VALUE of JARRAH and KARRI EXPORTS (sawn, undressed)

1953 - 1961




## Publicity

Only two Bulletins were published during the year, these were :—

"Progress Report 1955–60 of the Forests Department of W.A."—prepared for the British Commonwealth Forestry Conference, 1962.

"Nursery Soil Fertility Studies with Pinus radiata—D. Don at Hamel Nursery, W.A." by A. B. Hatch.

In addition, Bulletins 2 and 10 of the Forester's Manual were revised and re-written.

Lectures and talks were given to various Societies and Public Bodies by Senior Officers of the Department during the year.

This Department again displayed exhibits during the Timber Week activities and for the Australian Inland Mission at Kalgoorlie.

## 14. TIMBER INDUSTRY REGULATION ACT, 1926-1950

The number of mills registered under the provisions of the Act at the close of the year totalled 236 (122 Crown Land, 114 Private Property).

The average number of persons employed on timber holdings each month throughout the year was 4,906 compared with 4,790 last year.

The District and Workman's Inspectors made 1,577 inspections of timber holdings.

There were 1,216 notifiable accidents, none of which were fatal.

The number of accidents per 100 persons employed was 24·8 compared with 23·93 for last year.

The cost to the Forests Department of administering the Timber Industry Regulation Act for the year ending 30th June, 1962, was as follows :—

| | £ |
|---|---|
| Salaries .... .... .... .... .... .... .... | 3,333 |
| Mileage, travelling allowances and sundries .... .... | 2,000 |
| Total .... .... .... .... .... .... | £5,333 |

## 15. FOREST OFFENCES

Fifty-five forest offences were reported during the year. Legal proceedings were taken in four cases and all resulted in conviction. Fines and costs amounted to £62 and £9 2s. respectively.

Warnings were issued in 16 instances and the remainder were dealt with by charging royalty, forfeiture of deposits, collection of damages or confiscation and sale of timber illegally cut. The amount received by the Department in this way totalled £1,097 10s.

## 16. EMPLOYMENT IN FORESTRY AND TIMBER INDUSTRY

The number of wage earners directly employed in Forestry and the Timber Industry was estimated at 6,403, made up as follows :—

| | | |
|---|---|---|
| *Forestry*— | | |
| Professional Officers .... .... .... .... .... .... .... .... | 38 | |
| General Field Staff .... .... .... .... .... .... .... .... | 150 | |
| Clerical and Drafting .... .... .... .... .... .... .... .... | 72 | |
| Wages employees .... .... .... .... .... .... .... .... | 577 | |
| Contractors and employees (estimated) .... .... .... .... .... | 20 | |
| | | 857 |
| *Timber Industry*— | | |
| Sawmill employees including bush-workers at 31st December* .... .... | | 4,906 |
| Firewood cutters, pole getters, etc., on permits .... .... .... .... .... | | 331 |
| Goldfields firewood cutters, contractors and woodline employees and carters | | 72 |
| Sandalwood workers .... .... .... .... .... .... .... .... .... | | 61 |
| Apiarists, estimated (528 sites registered) .... .... .... .... .... .... | | 176 |
| Total .... .... .... .... .... .... .... .... .... .... | | 6,403 |

* Includes employees of registered sawmills.

## 17. STAFF MATTERS

### Public Service Act

The Eighth British Commonwealth Forestry Conference commenced on the 25th June, 1962, in Nairobi, Kenya, and was attended by the Conservator of Forests, A. C. Harris, and the Deputy Conservator, W. R. Wallace. The Conference is referred to elsewhere in this report.

New appointments during the year included a graduate from the Melbourne University and a graduate from the Australian Forestry School. Both were appointed as Assistant Divisional Forest Officers.

Promotions included Mr. B. J. Beggs to Senior Divisional Forest Officer, Mr. W. H. Eastman to Fire Operations Officer, Mr. P. J. McNamara to Divisional Forest Officer, Grade I.

Mr. J. C. Adams was promoted to Assistant Registrar in place of Mr. J. Vague who transferred to the Premier's Department.

In the Drafting Branch, one Draftsman resigned to take a position in New Guinea and two appointments (one Draftsman and one Drafting Assistant) were made to the permanent staff. Two Cadet Draftsmen also commenced duty.

A further twelve months' study leave was granted to Mr. E. R. Hopkins as from the 29th July, 1961, to enable him to continue post-graduate research for a Ph.D. at Melbourne University.

### Forests Act

New appointments during the year included a graduate of the Australian Forestry School appointed as a Forest Officer, two Senior Fire Control Foresters, one Assistant Maintenance Engineer, one Technical Assistant, Grade I, two Forest Assistants and one Engineering Draftsman.

Promotions included one District Forester (Fire Control), three Assistant Foresters, three Forest Rangers, Grade I, and three Forest Rangers, Grade II.

The title of Fire Control Forester was amended to Senior Fire Control Forester with an increased salary range. Reclassification included an officer to Assistant Forester and another to Forest Ranger, Grade I.

Two officers reached the retiring age, namely, Assistant Forester G. W. Ashcroft and Forest Ranger J. S. Valentine. They had given long and outstanding service to the Department.

It is with deep regret that I record the death of Assistant Forester T. D. Lovejoy, who passed away suddenly on the 9th August, 1961, while at work in the forest.

## 18. BRITISH COMMONWEALTH FORESTRY CONFERENCE

This, the Eighth British Commonwealth Forestry Conference, was held in East Africa (Kenya, Tanganyika, Uganda) during June–July, 1962 ; and was attended by 72 representatives of 21 Commonwealth countries. Extensive inspections of forestry in those regions were carried out as well as conference discussions on all aspects of forestry.

Conference appointed several working committees, one of which, on Forest Policy (Land Use) was presided over by Conservator of Forests A. C. Harris. Deputy Conservator W. R. Wallace was Secretary of the committee on Forest Protection. The Conference yielded valuable technical information, and made a special advisory report on forestry in East Africa, which in view of the forthcoming independence of those areas should be extremely valuable.

The Western Australian representatives also inspected representative forestry operations in the Union of South Africa.

## APPENDIX 1A

*Statement of Revenue and Expenditure of the Consolidated Revenue Fund for the Year ended 30th June, 1962*

| 1960–61 £ | Revenue | £ | 1961–62 £ | £ |
|---|---|---|---|---|
| 736,793 | *Royalties*— Logs | 847,691 | | |
| 35,452 | Sleepers | 44,515 | | |
| 2,009 | Sawn Timber | 1,753 | | |
| | | | 893,959 | |
| 23,431 | Piles and Poles | 32,809 | | |
| 15,489 | Mining Timber | 5,487 | | |
| 12,728 | Firewood | 12,754 | | |
| 3,114 | Posts | 3,654 | | |
| 8,500 | Sandalwood | 5,626 | | |
| 1,175 | Miscellaneous | 4,471 | | |
| | | | 64,801 | |
| | | | | 958,760 |
| | *Sales*— | | | |
| 105,795 | Pine Logs | 127,362 | | |
| 68,329 | Sawn Pine | 42,005 | | |
| | | | 169,367 | |
| 51,346 | Hardwood Logs | 65,951 | | |
| 27,973 | Sawn Hardwood | 13,718 | | |
| 5,934 | Piles and Poles | 7,182 | | |
| | | | 86,851 | |
| 113,792 | Other Forest Produce, Seeds and Trees ex Nurseries | 134,723 | | |
| | | | 134,723 | |
| | | | | 390,941 |
| | *Fees, etc.*— | | | |
| 22,850 | Inspection Fees | 27,035 | | |
| 13,680 | Rents, Leases | 15,756 | | |
| 1,925 | Miscellaneous | 8,222 | | |
| | | | | 51,013 |
| | *Recoupable Projects*— | | | |
| 22,683 | Specific Roads | 33,017 | | |
| 1,532 | Other | 5,553 | | |
| | | | | 38,570 |
| 1,274,530 | | | | 1,439,284 |

| 1960–61 £ | Expenditure | £ | 1961–62 £ | £ |
|---|---|---|---|---|
| 151,959 | Salaries | | | 164,000 |
| 29,507 | Incidentals | | | 40,020 |
| 17,218 | Refunds of Royalties to Settlers | | | 19,666 |
| 1,945 | Timber Industry Regulations | | | 2,000 |
| | Direct Conversion— | | | |
| 122,597 | Pine | 109,319 | | |
| 62,762 | Hardwood | 69,153 | | |
| | | | | 178,472 |
| 23,744 | Recoupable Projects | | | 41,702 |
| 409,732 | | | | 445,860 |
| 864,798 | Excess of Revenue over Expenditure | | | 993,424 |
| 1,274,530 | | | | 1,439,284 |

## APPENDIX 1B

*Forests Improvement and Reforestation Fund Account for the Year ended 30th June, 1962*

| 1960–61 £ | | 1961–62 £ | 1960–61 £ | | £ | £ |
|---|---|---|---|---|---|---|
| 165,210 | Balance at 1st July | 50,147 | 1,025,671 | Expenditure | 989,223 | |
| 780,263 | Nine-Tenths Revenue | 897,949 | 35,680 | *Less* Recoups | 59,020 | |
| 18,665 | Direct Credits | 18,690 | | | | 930,203 |
| 76,000 | Federal Aid Road Grant | 76,000 | 989,991 | | | |
| .... | Insurance paid as a result of 1961 Bushfire claims | 31,423 | 50,147 | Balance at 30th June— Fire Fighting Reserve | 50,000 | |
| | | | | Plant Depreciation and Pine Stabilisation Reserve | 94,006 | |
| | | | | | | 144,006 |
| 1,040,138 | | 1,074,209 | 1,040,138 | | | 1,074,209 |

### DETAILS OF EXPENDITURE

*Divisional*

| 1960–61 £ | | £ | 1961–62 £ |
|---|---|---|---|
| 16,553 | Division 1.—Busselton | 18,345 | |
| 42,224 | Division 2.—Mundaring | 44,287 | |
| 93,092 | Division 3.—Dwellingup | 74,470 | |
| 55,237 | Division 4.—Collie | 58,854 | |
| 49,622 | Division 5.—Kirup | 47,475 | |
| 82,371 | Division 6.—Manjimup | 79,468 | |
| 8,729 | Division 7.—Narrogin-Dryandra | 8,156 | |
| 34,691 | Division 8.—Gleneagle | 37,964 | |
| .... | Division 9.—Metropolitan | .... | |
| 39,485 | Division 10.—Harvey | 47,850 | |
| 76,784 | Division 11.—Pemberton | 66,238 | |
| 81,007 | Division 12.—Nannup | 75,572 | |
| 44,740 | Division 13.—Shannon River | 41,289 | |
| 2,909 | Division 14.—Kalgoorlie-Esperance | 1,241 | |
| 121 | Division 15.—Wanneroo-Gnangara | 255 | |
| 186 | Division 16.—Mt. Barker | 194 | |
| | | | 601,658 |

*Head Office*

| | | | | |
|---|---|---|---|---|
| 91,461 | Vehicles and Equipment .... .... .... | 97,872 | | |
| | *Less* Charged to Divisions .... .... .... | 42,091 | | |
| | | | 55,781 | |
| 15,415 | Mechanical Equipment .... .... .... .... | | 3,208 | |
| 12,116 | Fire Equipment .... .... .... .... .... | | 16,452 | |
| 2,026 | Training of Staff .... .... .... .... .... | | 1,873 | |
| 6,574 | Research .... .... .... .... .... .... | | 5,354 | |
| 2,865 | Drafting .... .... .... .... .... .... .... | | 4,158 | |
| 170,446 | Salaries and Allowances .... .... .... .... | | 190,972 | |
| 11,394 | Incidentals .... .... .... .... .... .... | | 12,990 | |
| 28,780 | Insurances .... .... .... .... .... .... | | 29,363 | |
| 2,960 | Special Surveys .... .... .... .... .... | | 3,960 | |
| 8,928 | Communications .... .... .... .... .... | | 17,324 | |
| 10,637 | Purchase of Land .... .... .... .... .... | | 13,264 | |
| 13,176 | Como Headquarters .... .... .... .... .... | | 14,794 | |
| 7,628 | Wundowie Firewood Project .... .... .... | | 865 | |
| 14,114 | Pay Roll Tax .... .... .... .... .... .... | | 17,207 | |
| | | | | 387,565 |
| | Total Reforestation Expenditure .... .... .... .... | | | 989,223 |
| | *Less* Miscellaneous Recoups of Overheads, Refunds, Sales of Equipment, etc. .... .... .... .... .... | | | 59,020 |
| | | | | £930,203 |

## APPENDIX 1C

*Statement of General Loan Fund Expenditure for the Year ended 30th June, 1962*

| 1960–61 £ | | 1961–62 £ | 1960–61 £ | | 1961–62 £ |
|---|---|---|---|---|---|
| 7,132 | Keenan .... .... .... .... .... | 5,908 | 100,000 | By General Loan Fund .... .... | 125,000 |
| 14,778 | Ludlow .... .... .... .... .... | 12,031 | | | |
| 7,882 | Applecross .... .... .... .... | 9,002 | | | |
| 2,129 | Collier .... .... .... .... .... | 2,272 | | | |
| 31,852 | Gnangara .... .... .... .... | 33,319 | | | |
| 24 | Scaddan .... .... .... .... .... | .... | | | |
| 4,968 | Harvey Weir .... .... .... .... | 3,066 | | | |
| 18,769 | Myalup .... .... .... .... .... | 20,432 | | | |
| 635 | Hamel .... .... .... .... .... | 846 | | | |
| 11,831 | Wanneroo .... .... .... .... | 22,032 | | | |
| .... | Grimwade .... .... .... .... | 16,092 | | | |
| £100,000 | | £125,000 | £100,000 | | £125,000 |

## APPENDIX 1D

*Statement of Pine Afforestation Expenditure for Year ended 30th June, 1962*

| *Expenditure* | | | | | *Source of Funds* | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 1960–61 £ | | 1961–62 £ | £ | | 1960–61 £ | | 1961–62 £ | £ | |
| 124,737 | Plantation Establishment .... | 101,117 | | | 100,000 | General Loan Fund .... .... .... | | | 125,000 |
| 63,164 | Plantation Maintenance .... .... | 93,015 | | | 86,622 | Reforestation Fund .... .... .... | | | 79,003 |
| | | | 194,132 | | | Sale of Pine— | | | |
| 14,095 | Buildings and Maintenance .... | 19,960 | | | 105,792 | Logs .... .... .... .... | 127,362 | | |
| 6,368 | Roads and Maintenance .... .... | 10,030 | | | 68,332 | Sawn Timber .... .... .... | 42,005 | | |
| 9,075 | Fire Prevention and Suppression | 13,254 | | | | | | 169,367 | |
| | | | 43,244 | | | | | | |
| 2,043 | Research .... .... .... .... | 4,396 | | | | | | | |
| 283 | Surveys and Plans .... .... | 171 | | | | | | | |
| 6,287 | Essential Services and Communications .... .... .... .... | 7,402 | | | | | | | |
| 12,098 | Administration .... .... .... | 14,706 | | | | | | | |
| | | | 26,675 | | | | | | |
| 122,597 | Direct Conversion of Pine .... .... | | 109,319 | | | | | | |
| £360,746 | | | £373,370 | | £360,746 | | | | £373,370 |

## APPENDIX 2A

*Exports from Western Australia of Timber, Tanning Substances and Essential Oils for Year ended 30th June, 1962*

| Item No. | Item and Destination | Quantity | Value |
|---|---|---|---|
| | | cub. ft. | £ |
| | TIMBER | | |
| 63490 | *Hardwood Logs*— | | |
| | Cocos Island .... .... .... .... .... | 1,216 | 216 |
| | *Sleepers*— | | |
| 63521 | *Jarrah Sleepers* : | | |
| | United Kingdom .... .... .... .... | 968,840 | 680,928 |
| | Ceylon .... .... .... .... .... | 2,057 | 1,729 |
| | Hong Kong .... .... .... .... .... | 5 | 5 |
| | Mauritius .... .... .... .... .... | 8,869 | 5,281 |
| | New Zealand .... .... .... .... .... | 556,200 | 333,364 |
| | Iraq .... .... .... .... .... | 335,470 | 248,503 |
| | Japan .... .... .... .... .... | 16,447 | 13,906 |
| | South Africa—Republic of .... .... .... | 137,433 | 74,625 |
| | | 2,025,321 | 1,358,341 |
| | Australian States : cub. ft. £ | | |
| | Victoria .... .... 784 372 | | |
| | South Australia .... 658,250 372,449 | | |
| | | 659,034 | 372,821 |
| | | 2,684,355 | 1,731,162 |
| 63529 | *Other Sleepers*— | | |
| | Ceylon .... .... .... .... .... .... | 18 | 13 |
| | Mauritius .... .... .... .... .... | 1,771 | 1,055 |
| | New Zealand .... .... .... .... .... | 35,140 | 21,101 |
| | South Africa, Republic of .... .... .... | 4,165 | 2,480 |
| | | 41,094 | 24,649 |
| | Australian States : cub. ft. £ | | |
| | South Australia .... 10,276 4,013 | | |
| | | 10,276 | 4,013 |
| | | 51,370 | 28,662 |
| 64100 | *Softwoods, Sawn Undressed*— | | |
| | Christmas Island (Indian Ocean) .... .... | 166 | 327 |
| | Cocos Island .... .... .... .... .... | 167 | 290 |
| | | 333 | 617 |
| | Australian States : cub. ft. £ | | |
| | Northern Territory .... 484 1,016 | | |
| | | 484 | 1,016 |
| | | 817 | 1,633 |
| 64260 | *Hardwoods, Sawn Undressed (other than sleepers)*— | | |
| | *Jarrah, Sawn Undressed* : | | |
| | United Kingdom .... .... .... .... | 197,653 | 162,254 |
| | Christmas Island (Indian Ocean) .... .... | 419 | 615 |
| | Cocos Island .... .... .... .... .... | 383 | 343 |
| | Naura .... .... .... .... .... .... | 83 | 112 |
| | Ceylon .... .... .... .... .... .... | 2,534 | 2,844 |
| | Mauritius .... .... .... .... .... | 35,951 | 27,689 |
| | New Zealand .... .... .... .... .... | 154,263 | 104,321 |
| | Pakistan .... .... .... .... .... | 117,915 | 95,285 |
| | Bahrain Island .... .... .... .... .... | 7,013 | 6,061 |
| | Arabian States (other) .... .... .... | 2,716 | 2,444 |
| | Belgium-Luxemburg .... .... .... .... | 6,669 | 5,847 |
| | France .... .... .... .... .... | 4,019 | 3,369 |
| | Germany—Federal Republic of .... .... | 1 | 2 |
| | Iran .... .... .... .... .... .... | 685 | 590 |
| | Italy .... .... .... .... .... .... | 1,918 | 1,305 |
| | Japan .... .... .... .... .... .... | 7,901 | 6,368 |
| | Netherlands .... .... .... .... .... | 9,681 | 6,781 |
| | South Africa, Republic of .... .... .... | 102,644 | 72,982 |
| | United States of America .... .... .... | 9,984 | 7,076 |
| | | 662,432 | 506,288 |
| | Australian States : cub. ft. £ | | |
| | New South Wales .... 1,580 1,470 | | |
| | Victoria .... .... 158,735 107,738 | | |
| | Queensland .... .... 30 27 | | |
| | South Australia .... 821,371 467,140 | | |
| | Northern Territory.... 5,669 6,104 | | |
| | | 987,385 | 582,479 |
| | | 1,649,817 | 1,088,767 |
| 64280 | *Karri, sawn undressed*— | | |
| | United Kingdom .... .... .... .... .... | 19,713 | 15,109 |
| | Christmas Island (Indian Ocean) .... .... | 86 | 71 |
| | Canada .... .... .... .... .... .... | 5 | 5 |
| | Mauritius .... .... .... .... .... | 2,634 | 2,338 |
| | New Zealand .... .... .... .... .... | 72,506 | 55,563 |
| | Belgium-Luxemburg .... .... .... .... | 4,985 | 3,859 |
| | Germany, Federal Republic of .... .... | 17,599 | 13,942 |
| | Netherlands .... .... .... .... .... | 55,046 | 43,989 |
| | Mozambique .... .... .... .... .... | 8,216 | 6,509 |
| | South Africa, Republic of .... .... .... | 56,837 | 43,868 |
| | United Arab Republic .... .... .... | .... | 1 |
| | Lebanon .... .... .... .... .... .... | 178 | 157 |
| | United States of America .... .... .... | 219 | 200 |
| | | 238,024 | 185,611 |
| | Australian States : cub. ft. £ | | |
| | New South Wales .... 14,799 8,462 | | |
| | Victoria .... .... .... 32,990 24,757 | | |
| | South Australia .... 636,384 345,210 | | |
| | Tasmania .... .... 1,544 1,389 | | |
| | Northern Territory .... 66,719 47,004 | | |
| | | 752,436 | 426,822 |
| | | 990,460 | 612,433 |

| Item No. | Item and Destination | Quantity | Value |
|---|---|---|---|
| | | cub. ft. | £ |
| 64290 | *Hardwoods, Sawn Undressed (other than Sleepers)—con.* | | |
| | *Other Hardwoods, sawn undressed* : | | |
| | Japan .... .... .... .... .... .... | 7 | 7 |
| | Australian States : cub. ft. £ | | |
| | *Blackbutt* : | | |
| | South Australia .... 481 294 | | |
| | Northern Territory 245 439 | | |
| | | 726 | 733 |
| | *Wandoo* : | | |
| | Victoria .... .... 2,008 1,729 | | |
| | South Australia .... 2,424 1,691 | | |
| | Northern Territory 538 749 | | |
| | | 4,970 | 4,169 |
| | *Other Hardwood* : | | |
| | Northern Territory 727 1,342 | | |
| | | 727 | 1,342 |
| | | 6,430 | 6,251 |
| 64410 | *Flooring*— | | |
| | United Kingdom .... .... .... .... .... | 9,060 | 12,487 |
| | Christmas Island (Indian Ocean) .... .... | 1,400 | 2,093 |
| | Cocos Island .... .... .... .... .... | 208 | 119 |
| | Mauritius .... .... .... .... .... .... | 42 | 96 |
| | New Zealand .... .... .... .... .... | 791 | 662 |
| | Japan .... .... .... .... .... .... | 4 | 7 |
| | United States of America .... .... .... | 18 | 35 |
| | Australian States : cub. ft. £ | | |
| | *Mosaic Flooring* : | | |
| | New South Wales .... 2,006 7,809 | | |
| | Victoria .... .... 2,451 7,378 | | |
| | South Australia .... 108 545 | | |
| | Northern Territory.... 212 418 | | |
| | Australian Capital Territory .... .... 2,965 8,996 | | |
| | | 7,742 | 25,146 |
| | *Other Flooring* : | | |
| | New South Wales .... 51,105 57,305 | | |
| | Victoria .... .... 35,434 35,038 | | |
| | South Australia .... 150,365 128,602 | | |
| | Northern Territory.... 3,921 5,130 | | |
| | Australian Capital Territory .... .... 1,941 3,235 | | |
| | | 242,766 | 229,310 |
| | | 262,031 | 269,955 |
| 64490 | *Other Timber, Dressed or Moulded*— | | |
| | United Kingdom .... .... .... .... .... | 208 | 550 |
| | Christmas Island (Indian Ocean) .... .... | 349 | 411 |
| | Hong Kong .... .... .... .... .... | 1 | 2 |
| | | 558 | 963 |
| | Australian States : cub. ft. £ | | |
| | New South Wales .... 582 694 | | |
| | Victoria .... .... .... 1,616 1,982 | | |
| | South Australia .... 5,047 4,505 | | |
| | Northern Territory .... 6,638 8,456 | | |
| | | 13,883 | 15,637 |
| | | 14,441 | 16,600 |
| 641600 | *Veneer* (see Item 64799)— | sq. ft. | |
| | Japan .... .... .... .... .... .... | 5,778 | 954 |
| 64790 | *Plywood* (see Item 64799)— | | |
| | United Kingdom .... .... .... .... .... | 120 | 15 |
| | Cocos Island .... .... .... .... .... | 1,098 | 87 |
| | Mauritius .... .... .... .... .... | 1,260 | 117 |
| | Sarawak .... .... .... .... .... | 480 | 78 |
| | Japan .... .... .... .... .... .... | 816 | 100 |
| | | 3,774 | 397 |
| 64799 | *Plywood and Veneer* (See Items 64600, 64790)— | | |
| | Australian States sq. ft. £ | | |
| | New South Wales .... 214,502 7,651 | | |
| | Victoria .... .... ....2,634,578 107,471 | | |
| | Queensland .... .... 108 15 | | |
| | South Australia ....2,301,879 110,916 | | |
| | Tasmania .... .... 63,040 2,484 | | |
| | Northern Territory .... 189,474 8,096 | | |
| | | 5,403,581 | 236,633 |
| | **Total, Timber Exports** .... .... | .... | 3,993,663 |
| | WOOD MANUFACTURES | | |
| 65050 | *Casks and Vats*— | | |
| | United Kingdom .... .... .... .... .... | 666 | 3,968 |
| 65290 | *Manufactures of Wood (except Furniture), N.E.I.*— | | |
| | United Kingdom .... .... .... .... .... | .... | 3 |
| | Christmas Island (Indian Ocean) .... .... | .... | 260 |
| | Malaya .... .... .... .... .... .... | .... | 820 |
| | Mauritius .... .... .... ..... .... .... | .... | 6 |
| | Singapore .... .... .... .... .... .... | .... | 7 |
| | Germany Federal Republic of .... .... .... | .... | 5 |
| | Italy .... .... .... .... .... .... | .... | 2 |
| | | .... | 1,103 |

## APPENDIX 2A—*continued*

*Exports from Western Australia of Timber, Tanning Substances and Essential Oils for Year ended 30th June, 1962*

| Item No. | Item and Destination | Quantity | Value |
|---|---|---|---|
| | Australian States : £ | | |
| | New South Wales .... .... .... 90 | | |
| | Victoria .... .... .... .... 87 | | |
| | South Australia .... .... .... 44 | | |
| | Tasmania .... .... .... .... 52 | | |
| | Northern Territory .... .... .... 3,627 | | |
| | .... | .... | 3,900 |
| | | .... | 5,003 |
| 90810 | *Furniture, of any Material*— | | |
| 90870 | United Kingdom .... .... .... .... .... | .... | 8 |
| | Christmas Island (Indian Ocean) .... .... | .... | 273 |
| | Cocos Island .... .... .... .... .... | .... | 170 |
| | Ceylon .... .... .... .... .... .... | .... | 7,650 |
| | Hong Kong .... .... .... .... .... | .... | 19 |
| | Malaya .... .... .... .... .... .... | .... | 788 |
| | Mauritius .... .... .... .... .... | .... | 325 |
| | New Zealand .... .... .... .... .... | .... | 800 |
| | Sarawak .... .... .... .... .... | .... | 100 |
| | Singapore .... .... .... .... .... | .... | 39 |
| | Kuwait .... .... .... .... .... | .... | 38 |
| | Other Arabian States .... .... .... | .... | 28 |
| | Indonesia .... .... .... .... .... | .... | 51 |
| | Japan .... .... .... .... .... | .... | 54 |
| | Thailand .... .... .... .... .... | .... | 19 |
| | United Arab Republic .... .... .... | .... | 30 |
| | | .... | 10,392 |
| | Australian States : £ | | |
| | New South Wales .... .... .... 34,248 | | |
| | Victoria .... .... .... .... 63,758 | | |
| | Queensland .... .... .... .... 26,162 | | |
| | South Australia .... .... .... 42,729 | | |
| | Tasmania .... .... .... .... 4,236 | | |
| | Northern Territory .... .... .... 1,672 | | |
| | Australian Commonwealth Territory 1,753 | | |
| | .... | .... | 175,017 |
| | | .... | 185,409 |
| | **Total, Wood Manufactures** .... | .... | 194,380 |
| | **Total, Wood and Wood Manufactures** .... .... .... .... | .... | 4,188,043 |
| | Basis of Value— | | |
| | F.O.B. Port of Shipment. | | |
| 16000 | *Tanning Substances of Natural Origin*— | cwt. | £ |
| | United Kingdom .... .... .... .... .... | 800 | 3,110 |
| | Canada .... .... .... .... .... .... | 20 | 58 |
| | India .... .... .... .... .... .... | 5 | 15 |
| | Malaya .... .... .... .... .... .... | 322 | 708 |
| | New Zealand .... .... .... .... .... | 2,599 | 8,926 |
| | Jamacia .... .... .... .... .... | 40 | 140 |
| | Trinidad and Tobago .... .... .... | 53 | 211 |
| | Kuwait .... .... .... .... .... | 200 | 929 |
| | Argentina .... .... .... .... .... | 5 | 12 |
| | Austria .... .... .... .... .... | 2,017 | 6,307 |
| | Burma .... .... .... .... .... | 636 | 1,631 |
| | Denmark .... .... .... .... .... | 1,806 | 5,566 |
| | Germany, Federal Republic of .... .... | 3,455 | 6,097 |
| | Indonesia .... .... .... .... .... | 4,228 | 11,838 |
| | Italy .... .... .... .... .... .... | 40 | 141 |
| | Netherlands .... .... .... .... .... | 2,281 | 4,268 |
| | Norway .... .... .... .... .... .... | 31 | 115 |
| | United States of America .... .... .... | 68,787 | 200,830 |
| | | 87,345 | 250,902 |

| Item No. | Item and Destination | Quantity | Value |
|---|---|---|---|
| | Australian States : cwt. £ | cwt. | £ |
| | New South Wales .... 3,505 11,918 | | |
| | Victoria .... .... .... 3,977 9,028 | | |
| | Queensland .... .... 500 1,890 | | |
| | South Australia .... 2,071 6,506 | | |
| | Tasmania .... .... 400 1,120 | | |
| | | 10,453 | 30,462 |
| | | 97,798 | 281,364 |
| 87010– | *Essential Oils, Natural Non-spirituous*— | | |
| 87290 | United Kingdom .... .... .... .... .... | 4,462 | 21,771 |
| | Nauru .... .... .... .... .... .... | 3 | 23 |
| | Canada .... .... .... .... .... .... | 112 | 630 |
| | Ceylon .... .... .... .... .... .... | 62 | 267 |
| | Hong Kong .... .... .... .... .... | 616 | 2,529 |
| | India .... .... .... .... .... .... | 1,326 | 541 |
| | New Zealand .... .... .... .... .... | 125 | 312 |
| | Singapore .... .... .... .... .... | 2,011 | 1,493 |
| | France .... .... .... .... .... .... | 1,960 | 11,025 |
| | Germany, Federal Republic of .... .... | 39,122 | 3,267 |
| | Netherlands .... .... .... .... .... | 1,184 | 92 |
| | South Africa, Republic of .... .... | 59 | 54 |
| | Spain .... .... .... .... .... .... | 400 | 331 |
| | Switzerland .... .... .... .... .... | 1,182 | 70 |
| | | 52,624 | 42,405 |
| | Australian States : lb. £ | | |
| | New South Wales .... 41,929 20,720 | | |
| | Victoria .... .... .... 28,001 15,746 | | |
| | Queensland .... .... 65 132 | | |
| | South Australia .... 752 2,503 | | |
| | | 70,747 | 39,101 |
| | | 123,371 | 81,506 |
| | **Total Value of all Exports on this Return** .... .... .... .... | .... | 4,550,913 |

## APPENDIX 2B

*Imports into Western Australia of Timber, Tanning Substances and Essential Oils for Year ended 30th June, 1962*

| Item No. | Item and Origin | Quantity | Value |
|---|---|---|---|
| | | cub. ft. | £ |
| 63010 | *Cane, Wicker and Bamboo and Manufacture thereof—* | | |
| 63090 | United Kingdom | .... | 9 |
| | Hong Kong | .... | 6,540 |
| | India | .... | 193 |
| | Malaya | .... | 9,870 |
| | Singapore | .... | 2,972 |
| | Burma | .... | 530 |
| | China, Republic of Mainland | .... | 114 |
| | Japan | .... | 5,441 |
| | United States of America | .... | 3 |
| | | .... | 25,672 |
| | Australian States : | | £ |
| | New South Wales | | 96 |
| | Victoria | | 467 |
| | South Australia | | 302 |
| | | .... | 865 |
| | | .... | 26,537 |
| 63400 | *Hardwood Logs—* | cub. ft. | |
| | Ceylon | 73 | 290 |
| | North Borneo | 53,185 | 18,672 |
| | Pakistan | .... | .... |
| | Sarawak | 535,480 | 172,941 |
| | Nigeria | 2,520 | 3,832 |
| | Dominican Republic | 75 | 267 |
| | Guiana (French) | 91 | 167 |
| | Gabon | 548 | 877 |
| | Indonesia | 2,054 | 716 |
| | Ivory Coast | 4,073 | 5,020 |
| | Thailand | 682 | 840 |
| | | 598,782 | 203,622 |
| 64120 | *Douglas Fir, sawn undressed—* | | |
| | Australian States covered by Item 64190. | | |
| | Canada | 1,598 | 1,106 |
| | United States of America | 46,129 | 29,449 |
| | | 47,727 | 30,555 |
| 64190 | *Other Softwoods, Sawn undressed—* | | |
| | Canada | 16 | 5 |
| | Sarawak | 2,938 | 1,521 |
| | Sweden | 1,855 | 1,645 |
| | United States of America | 6,697 | 8,286 |
| | | 11,506 | 11,457 |
| | Australian States : | cub. ft. | £ |
| | Victoria | 70 | 206 |
| | Queensland | 3,166 | 4,331 |
| | South Australia | 4,406 | 5,068 |
| | | 7,642 | 9,605 |
| | | 19,148 | 21,062 |
| 64230 | *Beech, sawn undressed—* | | |
| | Australian States covered by Item 64290. | | |
| | Yugoslavia | 188 | 286 |
| 64290 | *Other Hardwoods, sawn undressed—* | | |
| | Malaya | 118,806 | 74,162 |
| | North Borneo | 1,003 | 665 |
| | Sarawak | 211,116 | 113,986 |
| | Singapore | 438 | 170 |
| | Burma | 48 | 79 |
| | Japan | 413 | 714 |
| | Thailand | 398 | 1,215 |
| | United States of America | 652 | 466 |
| | | 332,874 | 191,457 |
| | Australian States : | cub. ft. | £ |
| | Victoria | 88 | 375 |
| | Queensland | 5,589 | 8,599 |
| | South Australia | 699 | 527 |
| | Tasmania | 13,478 | 10,841 |
| | | 19,854 | 20,342 |
| | | 352,728 | 211,799 |
| 64300 | *Shooks and Staves—* | | |
| | Australian States—South Australia | 4,045 | 8,375 |
| | Oversea : | | |
| | *Box Shooks* : | | |
| | Malaya | 4,669 | 1,852 |
| | | 8,714 | 10,227 |
| 64400 | *Sawn Timber, Dressed or Moulded—* | | |
| | Oversea: | | |
| | *Flooring* : | | |
| | Sweden | 9,603 | 7,976 |
| | *Other* : | | |
| | Netherlands | 162 | 230 |
| | Germany, Federal Republic of | 4 | 100 |
| | Norway | 1 | 1 |
| | | 9,7770 | 8,307 |
| | Australian States : | | £ |
| | New South Wales | | 3,934 |
| | Victoria | | 35,198 |
| | Queensland | | 6 |
| | Tasmania | | 69 |
| | | .... | 39,207 |
| | | .... | 47,514 |

| Item No. | Item and Origin | Quantity | Value |
|---|---|---|---|
| | | sq. ft. | £ |
| 64690 | *Veneers—* | | |
| | United Kingdom | 5,339 | 29 |
| | Ghana | 24,747 | 198 |
| | Malaya | 5,040 | 23 |
| | Sarawak | 94,150 | 188 |
| | France | 20,969 | 378 |
| | Germany, Federal Republic of | 57,768 | 476 |
| | Thailand | 19,745 | 559 |
| | | 227,758 | 1,851 |
| | Australian States : sq. ft. £ | | |
| | New South Wales 4,569 272 | | |
| | Victoria 66,068 3,873 | | |
| | Queensland 13,100 655 | | |
| | | 83,737 | 4,800 |
| | | 311,495 | 6,651 |
| 64790 | *Plywood—* | | |
| | New Guinea | 71,609 | 2,803 |
| | Gabon | 3,200 | 138 |
| | United States of America | 4,656 | 317 |
| | Yugoslavia | 1,200 | 78 |
| | | 80,665 | 3,336 |
| | Australian States : sq. ft. £ | | |
| | New South Wales 36,974 4,183 | | |
| | Victoria 26,964 1,710 | | |
| | Queensland 1,519,588 115,248 | | |
| | South Australia 15,350 306 | | |
| | Tasmania 2,436 187 | | |
| | | 1,601,312 | 121,634 |
| | | 1,681,977 | 124,970 |
| | **Total, Timber Imports** | .... | 683,223 |
| 65050 | *Casks and Vats, Empty—* | No. | |
| | Australia (re-imported) | 515 | 3,171 |
| 65080 | *Clothes Pegs of any Material—* | gross | |
| | Hong Kong | 500 | 62 |
| | Czechoslovakia | 5,010 | 557 |
| | Denmark | 250 | 78 |
| | Japan | 1 | .... |
| | Netherlands | 1,000 | 253 |
| | Poland | 1,000 | 132 |
| | Sweden | 19,830 | 2,749 |
| | | 27,591 | 3,831 |
| | Australian States : gross £ | | |
| | New South Wales 4,236 1,412 | | |
| | Victoria 5,437 2,188 | | |
| | Tasmania 17,794 6,263 | | |
| | | 27,467 | 9,863 |
| | | 55,058 | 13,694 |
| 65150 | *Last Blocks and Lasts :* | dozen | |
| | Australian States covered by Item 65290. | | |
| | United Kingdom | 8 | 185 |
| 65160 | *Match Splints—* | | |
| | Australian States covered by Item 65290. | | |
| | Finland | .... | 21,645 |
| 65170 | *Rules and Rulers, Wooden—* | | |
| | Australian States covered by Item 65290. | | |
| | United Kingdom | .... | 9,152 |
| | Japan | .... | 113 |
| | Netherlands | .... | 498 |
| | | .... | 9,763 |
| 65180 | *Tool Handles, unattached of any Material—* | dozen | |
| | United Kingdom | 1,129 | 2,380 |
| | Japan | 102 | 16 |
| | Germany, Federal Republic of | 10 | 12 |
| | United States of America | 727 | 1,714 |
| | | 1,968 | 4,122 |
| | Australian States : | | £ |
| | New South Wales | | 25,194 |
| | Victoria | | 6,233 |
| | Queensland | | 2,927 |
| | South Australia | | 616 |
| .... | Tasmania | | 847 |
| | | .... | 35,817 |
| | | .... | 39,939 |
| 65190 | *Table Mats, Wooden—* | | |
| | Australian States covered by Item 65290. | | |
| | United Kingdom | .... | 242 |
| | Germany, Federal Republic of | .... | 33 |
| | Japan | .... | 19 |
| | | .... | 294 |

## APPENDIX 2B—*continued*

*Imports into Western Australia of Timber, Tanning Substances and Essential Oils for Year ended 30th June, 1962*

| Item No. | Item and Origin | Quantity | Value |
|---|---|---|---|
| | | cub. ft. | £ |
| 65290 | *Other Manufactures of Wood whether partly or wholly finished—* | | |
| | United Kingdom | | 1,599 |
| | Canada | | 93 |
| | Hong Kong | | 221 |
| | Malaya | | 3 |
| | Rhodesia and Nyasaland | | 3 |
| | Sarawak | | 1 |
| | Singapore | | 145 |
| | Austria | | 24 |
| | Denmark | | 107 |
| | Germany, Federal Republic of | | 1,040 |
| | Italy | | 2,339 |
| | Japan | | 8,069 |
| | Netherlands | | 7 |
| | Norway | | 567 |
| | Sweden | | 1,148 |
| | United States of America | | 262 |
| | | | 15,628 |
| | Australian States : | £ | |
| | New South Wales | 23,317 | |
| | Victoria | 18,799 | |
| | Queensland | 3,065 | |
| | South Australia | 5,480 | |
| | Northern Territory | 74 | |
| | | | 50,735 |
| | | | 66,363 |
| 90811 | *Furniture of any Material—* | | |
| 90870 | United Kingdom | | 21,947 |
| | Ceylon | | 3 |
| | Hong Kong | | 27,774 |
| | India | | 36 |
| | Malaya | | 83 |
| | New Zealand | | 143 |
| | Singapore | | 159 |
| | China, Republic of Mainland | | 22 |
| | Denmark | | 936 |
| | Germany, Federal Republic of | | 2,666 |
| | Italy | | 1,201 |
| | Japan | | 3,166 |
| | Netherlands | | 63 |
| | Norway | | 1,605 |
| | Sweden | | 188 |
| | Switzerland | | 10 |
| | United States of America | | 3,020 |
| | | | 63,022 |
| 9081 | Australian States : | £ | |
| 9089 | New South Wales | 108,967 | |
| | Victoria | 70,132 | |
| | South Australia | 155,708 | |
| | | | 334,807 |
| | | | 397,829 |
| | **Total, Wood Manufactures** | | 552,883 |
| | **Total, Wood and Wicker—Raw and Manufactured** | | 1,236,106 |
| | *Basis of Value—* | | |
| | Oversea—F.O.B. Port of Shipment. | | |
| | Interstate—Landed Cost in Western Australia. | | |
| 16000 | *Tanning Bark—* | cwt. | £ |
| | Australian States : | | |
| | Victoria | 71 | 362 |
| | South Australia | 8 | 24 |
| | | 79 | 386 |
| 16100 | *Tanning Extracts of Natural Origin—* | | |
| | Oversea : | | |
| | *Wattle Bark Extract :* | | |
| | Rhodesia and Nyasaland | 200 | 575 |
| | South Africa, Republic of | 3,179 | 9,489 |
| | *Other :* | | |
| | India | 89 | 325 |
| | Argentina | 19 | 76 |
| | Norway | 190 | 180 |
| | Sweden | 374 | 538 |
| | | 4,051 | 11,183 |
| | Australian States : | | |
| | Victoria | 96 | 439 |
| | | 4,147 | 11,622 |

| Item No. | Item and Origen | Quantity | Value |
|---|---|---|---|
| | | cwt. | £ |
| 16200 | *Other Tanning Substances of Natural Origin—* | | |
| | United Kingdom | 100 | 966 |
| | India | 627 | 879 |
| | | 727 | 1,845 |
| 87010 | *Essential Oils, Natural, Non-spirituous—* | lb. | |
| 87290 | United Kingdom | 545 | 307 |
| | Ceylon | 746 | 288 |
| | Guiana (British) | 1,430 | 599 |
| | India | 397 | 727 |
| | Malaya | 100 | 233 |
| | Trinidad and Tobago | 224 | 699 |
| | China, Republic of Formosa | 3,198 | 1,614 |
| | China, Republic of, Mainland | 2,112 | 1,294 |
| | France | 2,518 | 1,366 |
| | Indonesia | 200 | 332 |
| | Italy | 560 | 595 |
| | Malagasy | 1,466 | 629 |
| | Netherlands | 123 | 185 |
| | South Africa, Republic of | 54,628 | 14,599 |
| | United States of America | 1,000 | 1,881 |
| | | 69,247 | 25,348 |
| 8710 | Australian States : | lb. | £ |
| 8729 | New South Wales | 340,550 | 96,803 |
| | Victoria | 5,609 | 4,901 |
| | South Australia | 10,439 | 3,824 |
| | | 356,598 | 105,528 |
| | | 425,845 | 130,876 |
| | **Total Value of all Imports shown on this Return** | | 1,380,835 |

## APPENDIX 3

*Summary of Exports of Forest Produce since 1836*

| Year | Timber | | Year | Timber | | Wood Manufactures | Tanning Materials | Essential Oils |
|---|---|---|---|---|---|---|---|---|
| | Cub. ft. | Value | | Cub. ft. | Value | Value | Value | Value |
| | | £ | | | £ | £ | £ | £ |
| 1836 (a) .... | 10,000 | 2,500 | 1899 .... | 6,913,550 | 553,198 | .... | .... | .... |
| 1837 .... | .... | .... | 1900 .... | 5,725,400 | 458,461 | .... | .... | .... |
| 1838 .... | .... | .... | | | | | | |
| 1839 .... | .... | .... | 1901 .... | 7,150,600 | 572,354 | | | |
| 1840 .... | .... | .... | 1902 .... | 6,256,750 | 500,533 | .... | .... | .... |
| | | | 1903 .... | 7,748,450 | 619,705 | .... | .... | .... |
| 1841 .... | .... | .... | 1904 .... | 8,072,300 | 654,949 | .... | 859 | .... |
| 1842 .... | .... | .... | 1905 .... | 8,709,500 | 689,943 | .... | 32,876 | .... |
| 1843 .... | .... | .... | 1906 .... | (c) 8,830,700 | 708,993 | .... | 154,087 | .... |
| 1844 .... | (b) | 163 | 1907 .... | (c) 6,409,550 | 511,923 | .... | 140,720 | .... |
| 1845 .... | .... | .... | 1908 .... | (c) 9,869,509 | 813,591 | .... | 98,773 | .... |
| 1846 .... | 2,550 | 255 | 1909 .... | (c) 10,830,450 | 867,419 | .... | 79,934 | .... |
| 1847 .... | 12,200 | 1,120 | 1910 .... | (c) 12,074,100 | 972,698 | .... | 59,633 | .... |
| 1848 .... | 3,350 | 333 | | | | | 93,733 | .... |
| 1849 .... | .... | .... | 1911 .... | (c) 12,449,500 | 986,341 | .... | 83,470 | .... |
| 1850 .... | 10,500 | 1,048 | 1912 .... | (c) 11,297,100 | 903,396 | .... | 49,004 | .... |
| | | | 1913 .... | (c) 13,619,850 | 1,089,481 | .... | 47,377 | .... |
| 1851 .... | 1,250 | 268 | 1914 (d) .... | (c) 6,279,750 | 502,153 | .... | 18,197 | 777 |
| 1852 .... | 7,050 | 806 | 1915 (e) .... | (c) 9,968,500 | 808,392 | .... | 6,127 | 381 |
| 1853 .... | 52,200 | 5,220 | 1916 (e) .... | 5,432,100 | 441,991 | .... | 10,208 | 1,102 |
| 1854 .... | 58,500 | 7,023 | 1917 (e) .... | 3,890,650 | 310,893 | .... | 18,959 | 2,060 |
| 1855 .... | 76,900 | 12,076 | 1918 (e) .... | 3,436,250 | 274,141 | .... | 16,886 | 3,995 |
| 1856 .... | 70,500 | 9,671 | 1919 (e) .... | 4,135,750 | 332,584 | 11,535 | 18,875 | 3,987 |
| 1857 .... | 69,200 | 9,449 | 1920 (e) .... | 5,065,300 | 465,731 | 21,935 | 22,121 | 3,704 |
| 1858 .... | 29,250 | 2,340 | | | | | | |
| 1859 .... | 67,250 | 6,051 | 1921 (e) .... | 9,816,250 | 1,137,819 | 24,916 | 23,073 | 10,107 |
| 1860 .... | 54,800 | 4,932 | 1922 (e) .... | 8,309,750 | 1,041,047 | 22,248 | 13,328 | 6,878 |
| | | | 1923 (e) .... | 7,911,310 | 997,454 | 12,377 | 21,161 | 20,075 |
| 1861 .... | 27,750 | 2,497 | 1924 (e) .... | 11,126,861 | 1,367,517 | 11,505 | 29,606 | 39,877 |
| 1862 .... | 68,800 | 7,151 | 1925 (e) .... | 11,844,303 | 1,477,997 | 13,298 | 40,136 | 42,057 |
| 1863 .... | 32,900 | 2,963 | 1926 (e) .... | 12,001,384 | 1,522,958 | 10,072 | 15,056 | 47,819 |
| 1864 .... | 58,300 | 5,508 | 1927 (e) .... | 12,580,262 | 1,651,149 | 8,727 | 15,818 | 26,544 |
| 1865 .... | 183,950 | 15,693 | 1928 (e) .... | 10,384,784 | 1,265,383 | 7,783 | 27,662 | 39,131 |
| 1866 .... | 85,650 | 6,849 | 1929 (e) .... | 7,635,237 | 960,435 | 6,603 | 35,850 | 63,307 |
| 1867 .... | 56,750 | 4,541 | 1930 (e) .... | 6,579,743 | 807,425 | 4,687 | 40,628 | 77,510 |
| 1868 .... | 8,000 | 638 | | | | | | |
| 1869 ... | 179,900 | 14,273 | 1931 (e) .... | 4,127,856 | 507,382 | 26,615 | 35,333 | 56,170 |
| 1870 .... | 157,200 | 17,551 | 1932 (e) .... | 3,062,673 | 361,700 | 85,488 | 42,016 | 59,301 |
| | | | 1933 (e) .... | 2,235,540 | 262,617 | 80,332 | 33,352 | 26,331 |
| 1871 .... | 218,500 | 15,304 | 1934 (e) .... | 4,060,830 | 487,248 | 76,107 | 20,904 | 26,720 |
| 1872 .... | 37,000 | 2,590 | 1935 (e) .... | 5,326,117 | 636,466 | 65,494 | 15,284 | 35,363 |
| 1873 .... | 68,150 | 4,771 | 1936 (e) .... | 5,598,180 | 697,522 | 50,665 | 12,237 | 27,526 |
| 1874 .... | 345,600 | 24,192 | 1937 (e) .... | 5,673,903 | 699,684 | 52,338 | 14,491 | 38,185 |
| 1875 .... | 342,350 | 23,965 | 1938 (e) .... | 7,545,744 | 932,420 | 47,934 | 13,865 | 35,128 |
| 1876 .... | 219,050 | 23,743 | 1939 (e) .... | 5,704,250 | 722,310 | 43,518 | 17,842 | 25,550 |
| 1877 .... | 336,150 | 26,979 | 1940 (e) .... | 5,049,585 | 634,859 | 62,796 | 19,485 | 47,736 |
| 1878 .... | 580,900 | 63,902 | | | | | | |
| 1879 .... | 627,250 | 69,742 | 1941 (e) .... | 6,091,187 | 790,876 | 74,935 | 13,686 | 59,867 |
| 1880 .... | 662,550 | 66,252 | 1942 (e) .... | 5,244,634 | 700,474 | 64,454 | 6,896 | 74,904 |
| | | | 1943 (e) .... | 3,516,566 | 605,327 | 32,426 | 1,598 | 70,523 |
| 1881 .... | 792,750 | 79,277 | 1944 (e) .... | 3,645,354 | 613,994 | 25,324 | 1,294 | 72,704 |
| 1882 .... | 936,500 | 93,650 | 1945 (e) .... | 2,851,475 | 570,028 | 27,307 | 2,795 | 103,055 |
| 1883 .... | 997,000 | 79,760 | 1946 (e) .... | 3,373,025 | 722,061 | (f) 2,618 | 4,872 | 128,050 |
| 1884 ... | 861,700 | 68,936 | 1947 (e) .... | 3,458,628 | 865,255 | (f) 13,118 | 12,056 | 151,768 |
| 1885 .... | 848,150 | 67,850 | 1948 (e) .... | 3,584,405 | 1,099,073 | (f) 6,572 | 9,556 | 116,465 |
| 1886 .... | 626,150 | 50,902 | 1949 (e) .... | 3,198,212 | 993,152 | (f) 6,639 | 5,112 | 75,395 |
| 1887 .... | 354,800 | 28,384 | 1950 (e) .... | 2,857,946 | 974,493 | (f) 13,525 | 8,243 | 78,550 |
| 1888 .... | 525,570 | 42,060 | | | | | | |
| 1889 .... | 788,500 | 63,080 | 1951 (e) .... | 2,342,492 | (g) 918,485 | (f) 25,101 | 16,581 | 125,833 |
| 1890 .... | 1,172,200 | 82,052 | 1952 (e) .... | 2,373,553 | (g) 1,032,909 | (f) 47,689 | 19,120 | 119,109 |
| | | | 1953 (e) .... | 3,965,188 | (g) 2,074,421 | (f) 120,095 | 34,136 | 70,852 |
| 1891 ... | 1,273,950 | 89,179 | 1954 (e) .... | 3,858,956 | (g) 2,248,320 | (f) 59,360 | 80,248 | 55,273 |
| 1892 ... | 1,082,650 | 78,419 | 1955 (e) .... | 3,477,249 | (g) 1,935,019 | (f) 79,893 | 37,338 | 80,822 |
| 1893 ... | 512,950 | 33,888 | 1956 (e) .... | 4,568,034 | (g) 2,818,716 | (f) 119,459 | 554,760 | 90,928 |
| 1894 .... | 1,063,700 | 74,804 | 1957 (e) .... | 4,684,017 | (g) 3,256,719 | (f) 78,934 | 588,544 | 58,993 |
| 1895 .... | 1,255,250 | 88,146 | 1958 (e) .... | 5,572,681 | (g) 3,875,705 | (f) 39,762 | 337,655 | 101,814 |
| 1896 .... | 1,545,600 | 116,420 | 1959 (e) .... | 6,461,535 | (g) 4,373,218 | (f) 41,612 | 259,046 | 52,843 |
| 1897 .... | 2,393,300 | 192,451 | 1960 (e) .... | 6,133,240 | (g) 4,160,354 | (f) 20,549 | 366,606 | 63,905 |
| 1898 .... | 4,086,150 | 326,195 | 1961 (e) .... | 5,533,847 | (g) 3,838,387 | (f) 25,305 | 201,957 | 95,475 |
| | | | 1962 (e) .... | 5,660,937 | (g) 3,993,663 | (f) 194,380 | 281,364 | 81,506 |
| | | | Total .... | 439,112,573 | 76,779,913 | 1,866,838 | 4,282,519 | 2,694,823 |

(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.
(f) Excludes Casks (principally empty returns) previously included in this Item.
(g) Includes items for which the quantity in cub. ft. is not available.

## APPENDIX 4

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

| Year | Timber, Woodware, etc. | Tanning Materials | Essential Oils | Year | Timber, Woodware, etc. | Tanning Materials | Essential Oils |
|---|---|---|---|---|---|---|---|
| | £ | £ | £ | | £ | £ | £ |
| 1848 .... .... | 464 | .... | .... | 1900 .... .... | 56,266 | 1,416 | 1,105 |
| 1849 .... .... | .... | .... | .... | 1901 .... .... | 80,134 | 1,740 | 1,546 |
| 1850 .... .... | 189 | .... | .... | 1902 .... .... | 97,810 | 3,418 | 1,751 |
| 1851 .... .... | 3,216 | .... | .... | 1903 .... .... | 102,383 | 3,556 | 1,348 |
| 1852 .... .... | 2,479 | .... | .... | 1904 .... .... | 157,856 | 1,322 | 2,122 |
| 1853 .... .... | 790 | .... | .... | 1905 .... .... | 98,494 | 582 | 1,592 |
| 1854 .... .... | 831 | .... | .... | 1906 .... .... | 95,229 | 1,412 | 1,915 |
| 1855 .... .... | 1,464 | .... | .... | 1907 .... .... | 122,016 | 2,767 | 1,549 |
| 1856 .... .... | 1,124 | .... | .... | 1908 .... .... | 93,205 | 2,392 | 4,584 |
| 1857 .... .... | 744 | .... | .... | 1909 .... .... | 90,502 | 4,129 | 4,033 |
| 1858 .... .... | 1,528 | .... | .... | 1910 .... .... | 171,280 | 3,531 | 3,686 |
| 1859 .... .... | 690 | .... | .... | 1911 .... .... | 152,133 | 2,912 | 4,938 |
| 1860 .... .... | 2,005 | .... | .... | 1912 .... .... | 167,244 | 3,089 | 4,598 |
| 1861 .... .... | 1,459 | .... | .... | 1913 .... .... | 202,640 | 2,651 | 5,392 |
| 1862 .... ... | 1,920 | .... | .... | 1914 .... .... | 78,736 | 629 | 2,823 |
| 1863 .... .... | 1,568 | .... | .... | 1914–15 .... .... | 107,763 | 2,082 | 4,988 |
| 1864 .... ... | 894 | .... | .... | 1915–16 .... .... | 76,849 | 3,313 | 4,788 |
| 1865 .... .... | 548 | .... | .... | 1916–17 .... .... | 75,681 | 2,848 | 3,848 |
| 1866 .... .... | 1,442 | .... | .... | 1917–18 .... .... | 58,305 | 2,020 | 4,358 |
| 1867 .... .... | 1,727 | .... | .... | 1918–19 .... .... | 62,824 | 1,181 | 4,168 |
| 1868 .... .... | 1,451 | .... | .... | 1919–20 .... .... | 100,083 | 3,748 | 10,043 |
| 1869 .... .... | 1,408 | .... | .... | 1920–21 .... .... | 171,654 | *4,899 | 6,106 |
| 1870 .... .... | 1,518 | .... | .... | 1921–22 .... .... | 92,448 | 5,865 | 6,577 |
| 1871 .... .... | 736 | .... | .... | 1922–23 .... .... | 109,428 | 6,991 | 4,033 |
| 1872 .... .... | 1,660 | .... | .... | 1923–24 .... .... | 133,983 | 2,790 | 3,301 |
| 1873 .... .... | 1,008 | .... | .... | 1924–25 .... .... | 161,893 | 2,670 | 4,429 |
| 1874 .... .... | 1,774 | .... | .... | 1925–26 .... .... | 144,989 | 5,826 | 4,449 |
| 1875 .... .... | 2,707 | .... | .... | 1926–27 .... .... | 162,193 | 8,971 | 4,254 |
| 1876 .... .... | 3,098 | .... | .... | 1927–28 .... .... | 183,196 | 9,648 | 6,955 |
| 1877 .... .... | 2,036 | .... | .... | 1928–29 .... .... | 241,601 | 6,894 | 4,413 |
| 1878 .... .... | 2,947 | .... | .... | 1929–30 .... .... | 197,532 | 10,825 | 3,980 |
| 1879 .... .... | 2,340 | .... | .... | 1930–31 .... .... | 76,533 | 4,145 | 3,160 |
| 1880 .... .... | 3,061 | .... | .... | 1931–32 .... .... | 164,496 | 4,705 | 3,505 |
| 1881 .... .... | 3,639 | .... | .... | 1932–33 .... .... | 197,916 | 4,903 | 3,421 |
| 1882 .... .... | 3,692 | .... | .... | 1933–34 .... .... | 183,944 | 4,310 | 3,888 |
| 1883 .... .... | 6,667 | .... | .... | 1934–35 .... .... | 211,056 | 4,076 | 5,040 |
| 1884 .... .... | 2,930 | .... | .... | 1935–36 .... .... | 228,451 | 5,401 | 3,921 |
| 1885 .... .... | 11,479 | .... | .... | 1936–37 .... .... | 257,164 | 5,267 | 4,810 |
| 1886 .... .... | 17,888 | .... | .... | 1937–38 .... .... | 270,126 | 4,777 | 6,560 |
| 1887 .... .... | 8,136 | .... | .... | 1938–39 .... .... | 254,315 | 3,974 | 7,014 |
| 1888 .... .... | 4,461 | .... | .... | 1939–40 .... .... | 259,399 | 6,802 | 23,027 |
| 1889 .... .... | 7,686 | .... | .... | 1940–41 .... .... | 249,111 | 3,798 | 32,399 |
| 1890 .... .... | 14,979 | .... | .... | 1941–42 .... .... | 283,611 | 15,846 | 33,828 |
| 1891 .... .... | 18,406 | .... | .... | 1942–43 .... .... | 163,480 | 6,250 | 47,718 |
| 1892 .... .... | 26,713 | .... | .... | 1943–44 .... .... | 149,928 | 7,883 | 68,871 |
| 1893 .... .... | 14,493 | .... | .... | 1944–45 .... .... | 148,838 | 9,264 | 75,449 |
| 1894 .... .... | 17,964 | .... | .... | 1945–46 .... .... | †219,466 | 19,573 | 56,295 |
| 1895 .... .... | 47,128 | .... | .... | 1946–47 .... .... | 386,465 | 12,395 | 78,091 |
| 1896 .... .... | 5,381 | .... | .... | 1947–48 .... .... | 345,508 | 8,019 | 96,769 |
| 1897 .... .... | 164,552 | .... | .... | 1948–49 .... .... | 470,755 | 8,662 | 42,926 |
| 1898 .... .... | 55,566 | .... | .... | 1949–50 .... .... | 521,815 | 24,923 | 51,197 |
| 1899 ... .... | 45,689 | .... | .... | 1950–51 .... .... | 640,059 | 21,147 | 161,358 |
| | | | | 1951–52 .... .... | 1,037,499 | 18,494 | 167,697 |
| | | | | 1952–53 .... .... | 509,667 | 21,493 | 69,804 |
| | | | | 1953–54 .... .... | 923,367 | 45,202 | 58,019 |
| | | | | 1954–55 .... .... | 816,052 | 27,395 | 76,464 |
| | | | | 1955–56 .... .... | 839,581 | 27,315 | 131,758 |
| | | | | 1956–57 .... .... | 830,700 | 35,403 | 99,863 |
| | | | | 1957–58 .... .... | 873,520 | 28,310 | 101,680 |
| | | | | 1958–59 .... .... | 815,300 | 9,365 | 62,983 |
| | | | | 1959–60 .... .... | 895,845 | 14,608 | 74,199 |
| | | | | 1960–61 .... .... | 1,203,641 | 12,621 | 60,942 |
| | | | | 1961–62 .... .... | 1,236,106 | 13,853 | 130,876 |
| | | | | Total .... | 20,138,374 | 556,296 | 1,966,810 |

* This and subsequent years include tanning extracts, not previously recorded.

† This and subsequent years include values for furniture, bamboo, cane, etc., not previously included.

## APPENDIX 5

SUMMARY OF LOG VOLUMES PRODUCED IN WESTERN AUSTRALIA SINCE 1829

| Year | *Crown Land | Private Property | Total | Year | *Crown Land | Private Property | Total |
|---|---|---|---|---|---|---|---|
| | Cubic feet | Cubic feet | Cubic feet | | Cubic feet | Cubic feet | Cubic feet |
| 1829–1916† .... | .... | .... | 663,267,850 | 1939 (c) .... | 29,247,650 | 11,086,000 | 40,333,650 |
| 1917 (a) .... | 19,333,100 | 2,144,500 | 21,477,600 | 1940 (c) .... | 27,660,100 | 9,139,550 | 36,799,650 |
| 1918 (b) .... | 7,665,550 | 504,950 | 8,170,500 | 1941 (c) .... | 28,089,200 | 10,289,000 | 38,378,200 |
| 1919 (c) .... | 19,987,050 | 3,390,450 | 23,377,500 | 1942 (c) .... | 26,636,650 | 5,633,400 | 32,270,050 |
| 1920 (c) .... | 28,292,200 | 5,762,900 | 34,055,100 | 1943 (c) .... | 23,604,900 | 4,322,950 | 27,927,850 |
| 1921 (c) .... | 29,308,950 | 7,018,450 | 36,327,400 | 1944 (c) .... | 22,252,500 | 4,456,200 | 26,708,700 |
| 1922 (c) .... | 36,122,400 | 15,640,150 | 51,762,550 | 1945 (c) .... | 21,970,000 | 4,309,550 | 26,279,550 |
| 1923 (c) .... | 26,807,300 | 9,867,050 | 36,674,350 | 1946 (c) .... | 21,126,500 | 5,482,350 | 26,608,850 |
| 1924 (c) .... | 42,004,450 | 9,342,800 | 51,347,250 | 1947 (c) .... | 21,948,550 | 7,831,950 | 29,780,500 |
| 1925 (c) .... | 43,832,900 | 18,142,250 | 61,975,150 | 1948 (c) .... | 22,251,350 | 8,871,900 | 31,123,250 |
| 1926 (c) .... | 48,823,750 | 25,037,600 | 73,861,350 | 1949 (c) .... | 20,261,800 | 9,814,300 | 30,076,100 |
| 1927 (c) .... | 46,887,600 | 31,356,100 | 78,243,700 | 1950 (c) .... | 21,081,150 | 9,932,650 | 31,013,800 |
| 1928 (c) .... | 42,781,250 | 23,334,450 | 66,115,700 | 1951 (c) .... | 25,391,450 | 10,713,050 | 36,104,500 |
| 1929 (c) .... | 32,289,750 | 11,098,950 | 43,388,700 | 1952 (c) .... | 28,942,550 | 11,938,300 | 40,880,850 |
| 1930 (c) .... | 31,654,150 | 11,653,600 | 43,307,750 | 1953 (c) .... | 34,223,400 | 13,021,400 | 47,244,800 |
| 1931 (c) .... | 18,822,600 | 12,148,500 | 30,971,100 | 1954 (c) .... | 37,485,950 | 13,562,000 | 51,047,950 |
| 1932 (c) .... | 11,742,850 | 4,115,950 | 15,858,800 | 1955 (c) .... | 37,467,650 | 15,195,450 | 52,663,100 |
| 1933 (c) .... | 13,165,650 | 2,456,650 | 15,622,300 | 1956 (c) .... | 39,811,350 | 13,773,350 | 53,584,700 |
| 1934 (c) .... | 21,263,100 | 6,330,400 | 27,593,500 | 1957 (c) .... | 39,426,100 | 11,585,350 | 51,011,450 |
| 1935 (c) .... | 27,458,250 | 11,451,750 | 38,910,000 | 1958 (c) .... | 39,069,500 | 12,397,450 | 51,466,950 |
| 1936 (c) .... | 31,400,600 | 13,436,150 | 44,836,750 | 1959 (c) .... | 40,533,471 | 13,756,198 | 54,289,669 |
| 1937 (c) .... | 31,703,850 | 15,902,200 | 47,606,050 | 1960 (c) .... | 38,882,048 | 12,017,553 | 50,899,601 |
| 1938 (c) .... | 31,737,450 | 15,928,950 | 47,666,400 | 1961 (c) .... | 37,752,774 | 10,818,790 | 48,571,564 |
| | | | | 1962 (c) .... | 39,243,552 | 9,789,268 | 49,032,820 |
| | | | | Total .... | .... | .... | 2,526,515,454 |

* Includes State Forest Timber Reserves, Crown Land and Private Property (Timber Reserved).

† Estimated.

(a) Year ended 31st December.

(b) Six months ended 30th June.

(c) Year ended 30th June.