Report

on the operations of the

FORESTS DEPARTMENT

WESTERN AUSTRALIA

for the

YEAR ENDED 30th JUNE, 1958

by

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

19242/10/58—510

Cover.—Gloucester Tree, Pemberton Western Australia. This giant Karri is manned during summer as a fire lookout. It was named after the Duke of Gloucester, then Governor General of Australia who visited the site during the initial construction in 1946. The cabin floor is 200 ft. above ground level.

Forests Department,
Perth, 2nd September, 1958

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, 1958.

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

Seventh British Commonwealth Forestry Conference, Australia and New Zealand, 1957. Pre-conference tour of Western Australia, visiting the Karri forests in the South-West.
Eighty year regrowth Lefroy Brook about 10 miles South-west of Manjimup.

CONTENTS

FORESTS DEPARTMENT

Annual Report on the Operations of the Department for the Year ended 30th June, 1958

I. STATISTICAL SUMMARY OF MAJOR OPERATIONS

Timber Production (in cubic feet).

Total production in square	17,488,315	Sawn	17,487,573
		Hewn	742
Exports—Interstate	2,449,177	(14%)	
Overseas	3,222,535	(18.4%)	
Local Consumption	11,816,603	(67.6%)	

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	8,883,838	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

Total Cut.

Log volumes (in cubic feet) 51,470,642

Jarrah	39,227,535
Karri	7,664,401
Wandoo	2,706,908
Pine	1,214,974
Other	656,824

Made up as follows :—

From State Forest and Crown Land	39,069,494	(76%)
From Private Property	12,401,148	(24%)

Value Produced.

	£
Total Value Sawn Timber	10,826,880
Total Value of Other Forest Products	2,200,000

Departmental Expenditure and Source of Funds.

	£	£	£
Source of Funds :—			
Royalties—Timber	832,848		
Sandalwood	65,513		
		898,361	
Departmental		290,684	
			1,189,045
General Loan Fund	100,000		
Federal Aid Road Grant		73,000	
			173,000
			£1,362,045
Gross Expenditure :—			
Consolidated Revenue Fund		391,263	
Reforestation Fund		758,022	
General Loan Fund		100,000	
			£1,249,285

(Details appear under " Revenue and Expenditure " within the Report).

Forest Area.

Additions to State Forest during the year	179,223	acres
Land Purchased for pine planting	4,104	,,
Total area of State Forest	4,169,090	,,
Area of National Parks	(approx.) 320,800	,,

Reforestation.

Cut over area treated for regeneration	46,666	,,

Afforestation.

Area planted with pines in 1957	2,516	,,
Area cleared for pines	3,723	,,
Area soil-surveyed for pines :—		
Reconnaissance surveys	19,300	,,
Detailed surveys	13,250	,,
Total area of pine plantation established	24,551	,,

Management.

Survey :—		
Theodolite surveys	243	miles
Re-opening old surveys	108	,,
Lower order surveys	156	,,
Map sheet compilation	2,457	sq. miles
Assessment :—		
Detailed assessment	3,065	acres
Reconnaissance cruises	766	miles
Type maps produced, covering	1,216,700	acres
Engineering, new works :—		
Roads and Tracks	686	miles
Telephones	10½	miles
Houses	14	
Offices and other buildings	4	
Vehicle fleet increased by	46	vehicles
New lighting plants	1	

Protection.

Fire outbreaks	530	
Area burnt by uncontrolled fires	33,617	acres
Controlled burning	394,744	,,

State Nurseries (Hamel and Dryandra).

Trees produced for :—		
Forests Department	146,785	
Private buyers	118,090	
Plantation nurseries, apart from the above produced	(approx.) 2,250,000	

Sandalwood.

Quantity exported	421	tons

2. REVENUE AND EXPENDITURE

Revenue.

Revenue for the year ended 30th June, 1958, reached the record figure of £1,189,045 as compared with £1,163,380 for the previous year.

The following tabulation shows a comparison of the two years :—

	Year ended 30th June, 1957	Year ended 30th June, 1958
	£	£
Timber Royalties, etc.	806,962	832,848
Sandalwood	68,399	65,513
Pine Conversion Sales	127,236	118,163
Hardwood Conversion Sales	114,044	104,666
Other Departmental	20,115	36,456
Recoupable Projects	26,624	31,399
	£1,163,380	£1,189,045

Details appear in Appendix 1A.

Expenditure.

The total expenditure charged against Consolidated Revenue Fund amounted to £391,263. This amount was expended as follows :—

	£
General Administration of the Forests Act and Regulations	146,635
Refund of Royalty to Settlers	12,106
Direct Conversion of Pine	78,514
Direct Conversion of Hardwood	82,053
Recoupable Projects	36,023
Forests Improvements—Collie area, special fund	35,932
	£391,263

Details appear in Appendix 1A.

APPORTIONMENT OF NET REVENUE OF DEPARTMENT

	£	£	£
Gross Revenue for year 1957–58			1,189,045
Less Revenue from Recoupable Projects			31,399
			1,157,646
Consolidated Revenue Fund Expenditure and Direct Charges by Treasury		395,252	
Less Expenditure on :—			
Recoupable Projects	36,023		
Timber Industry Regulation Salaries and Incidentals	3,450		
Forests Improvements, Collie area	35,932		
		75,405	
			319,847
Net Revenue			£837,799
Nine-tenths of Net Revenue credited to Reforestation Fund for the year 1957–58			£754,019

FORESTS IMPROVEMENT AND REFORESTATION FUND

	£	£
Balance, 1st July, 1957		124,294
Nine-tenths, Net Revenue		754,019
Federal Aid Road Grant		73,000
Direct Credits		16,448
		967,761
Less Expenditure :—		
General Account	685,022	
Federal Aid Roads	73,000	
		758,022
Balance as at 30th June, 1958		£209,739*

* This balance is made up as follows :—

	£
Outstanding orders for plant and equipment	61,000
Housing (including purchases not completed)	4,400
Forest and Plantation Stabilisation Reserve	144,339

LOAN FUND EXPENDITURE

Plantations	85,619
Administration	14,381
	£100,000

Details appear in Appendix 1C.

GROSS EXPENDITURE

The total expenditure of the Department charged against all funds was as follows :—

	£
Consolidated Revenue Fund	391,263
Reforestation Fund including Federal Aid Road Grants	758,022
General Loan Fund	100,000
	£1,249,285

3. FOREST AREA

State Forests.

The need to reserve sufficient land in high rainfall areas capable of producing timber in perpetuity has been stressed in previous reports and is dealt with in detail in Appendix 6 which contains an important statement of over-all land use in Western Australia.

Following submissions to the State Land Utilisation Committee, 179,223 acres of forested Crown Land have been added to the area dedicated as State Forest during the year.

In addition an area of approximately 153,000 acres of the sandy coastal plain in the Gnangara-Moore River area has been agreed to for dedication as State Forest for pine plantations, but has been held up pending finalisation of road location problems.

The final area of State Forest is unlikely to exceed 4,660,000 acres, which is a very small proportion of the area of the State.

Timber Reserves under the Forests Act.

The area held under Timber Reserves was increased to 1,835,856 by the addition of 14,467 acres in the South-West.

Jarrah	54,418
Pine planting	72,411
Sandalwood	27,105
Mallet	648
Goldfields Mining Timber, Firewood, etc.	1,681,274
	1,835,856

A further 64,900 acres in the Denmark area has been agreed to and is awaiting gazettal.

Land Acquisitions.

In furtherance of the policy of purchasing land suitable for the growing of *Pinus radiata* an additional 4,104 acres were purchased during the year at a cost of £20,402.

A total of 2,630 acres suitable for inclusion in State Forest were also purchased to eliminate fire hazards, consolidate irregular blocks, and to preserve valuable Karri regrowth of high productive capacity.

Land Released.

During the year 217 applications were received either direct or through the Lands Department, covering an area of 223,962 acres. Of this, the Department agreed to the release of 111,678 acres, which included 53,227 acres for pastoral leasing.

A total of 428 acres were excised from State Forest.

In the last 13 years, the Department has agreed to the release of 1,438,903 acres of Crown Land and State Forest for settlement and leasing.

4. SAWMILLING, HEWING AND TIMBER INSPECTION

The production of 17,488,315 cubic feet of sawn and hewn timber was a decrease of approximately 314,000 cubic feet or 1.8 per cent. on last year's figure. Of the total production, 4,215,871 cubic feet were obtained from private property, an increase of 176,328 cubic feet on last year.

Adverse trading conditions confronted the Australian sawmilling industry throughout the year, due to the reduction in housing construction, and also to the large volume of timber imports into the Eastern States at depressed prices. The Tariff Board Enquiry initiated in March, 1957, resulted in a report eventually made available in May, 1958, which was unhelpful to the native sawmilling industry. Within Western Australia, timber prices continued to be competitive enough to withstand competition from imported timber, but our traditional trade with the Eastern States suffered seriously. This was in part due to high interstate shipping freights. Fortunately the removal of export control had enabled Western Australian firms to secure large overseas orders for Jarrah railway sleepers which staved off to a considerable extent a seemingly inevitable slump in the timber industry. Scantling demand, however, remained depressed and stocks have been hard to quit.

Seven new mills were registered during the year making the total 268 as at the 31st December, 1957. Of these, 142 operated on Crown Land, and 126 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 (1829–1958) is given in Appendix 5.

Departmental plantations yielded 1,185,450 cubic feet of pine thinnings which was an increase of 3 per cent. on the previous year's total.

A total of 110,100 cubic feet of Karri and 89,550 cubic feet of pine were used in local plywood factories.

A slight increase was shown in the quantity of timber inspected.

Sawn sleepers produced during the year under review amounted to 4,064,274 cubic feet, of which 1,372,374 cubic feet were from private property. Of this quantity, 3,850,354 cubic feet were inspected. Hewn sleepers produced and inspected totalled 742 cubic feet, all of which came from private property.

Other sawn timber inspected totalled 566,120 cubic feet, of which 21,966 cubic feet were from private property. Of the 40,338 (1,044,556 lin. feet) piles and poles produced only 657 (16,903 lin. feet) were inspected.

5. TIMBER PRODUCTION AND DISTRIBUTION

The distribution of timber production was as follows :—

Distribution	(Sleepers including hewn)		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	32,550	511,600	607,200	1,193,200	2,344,550
Overseas	*Nil*	2,448,000	336,800	432,400	3,217,200
Local	*Nil*	1,105,400	1,629,350	9,191,800	11,926,550
Total	32,550	4,065,000	2,573,350	10,817,400	17,488,300

QUANTITY OF SAWN AND HEWN 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	Hewn Sleepers	Sawn Timber other than Sleepers	Sawn Sleepers	Hewn Sleepers		
	cub. ft.	cub. ft.	cub. ft.	cub. ft.	cub. ft.	cub. ft.	cub. ft.	£
1956–57	11,428,907	2,333,914	410	2,525,901	1,510,262	3,380	17,802,774	10,343,131
1957–58	10,582,413	2,691,900	....	2,840,886	1,372,374	742	17,488,315	10,826,880

TIMBER PRODUCTION

PRODUCTION OF TIMBER FOR YEAR ENDED 30th JUNE, 1958 (EXCLUSIVE OF MINING TIMBER, FIREWOOD, PILES AND POLES)

	Mill Logs					Hewn Timber		Grand Totals	
				Totals		Jarrah			
	Jarrah	Karri	Other	In Log	Recovery of Sawn Timber	In Log	In Square	In Log	In Square
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	cub. ft.	cub. ft.	cub. ft.	cub. ft.	cub. ft.	cub. ft.	cub. ft.	cub. ft.	cub. ft.
Crown Lands	29,380,051	6,801,622	*2,887,821	39,069,494	13,274,313	....	....	39,069,494	13,274,313
Private Property	9,843,774	862,779	†1,690,885	12,397,438	4,213,260	3,710	742	12,401,148	4,214,002
Grand Totals	39,223,825	7,664,401	4,578,706	51,466,932	17,487,573	3,710	742	51,470,642	17,488,315

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

* Comprises 1,193,169 cub. ft.Wandoo, 357,256 cub. ft. Yarri, 66,535 cub. ft. Sheoak, 1,185,441 cub. ft. Pine, 15,895 cub. ft. Marri, 67,062 cub. ft. Tuart, 76 cub. ft. Bullich, 1,294 cub. ft. Red Tingle Tingle, 428 cub. ft. Yellow Tingle Tingle, 645 cub. ft. Mallet, 20 cub. ft. Banksia.

† Comprises 1,513,739 cub. ft. Wandoo, 131,089 cub. ft. Yarri, 11,685 cub. ft. Sheoak, 29,533 cub. ft. Pine, 561 cub. ft. Marri, 4,278 cub. ft. Tuart.

In addition to the above a total of 68,411 tons of Wandoo logs were treated for Tannin extract.

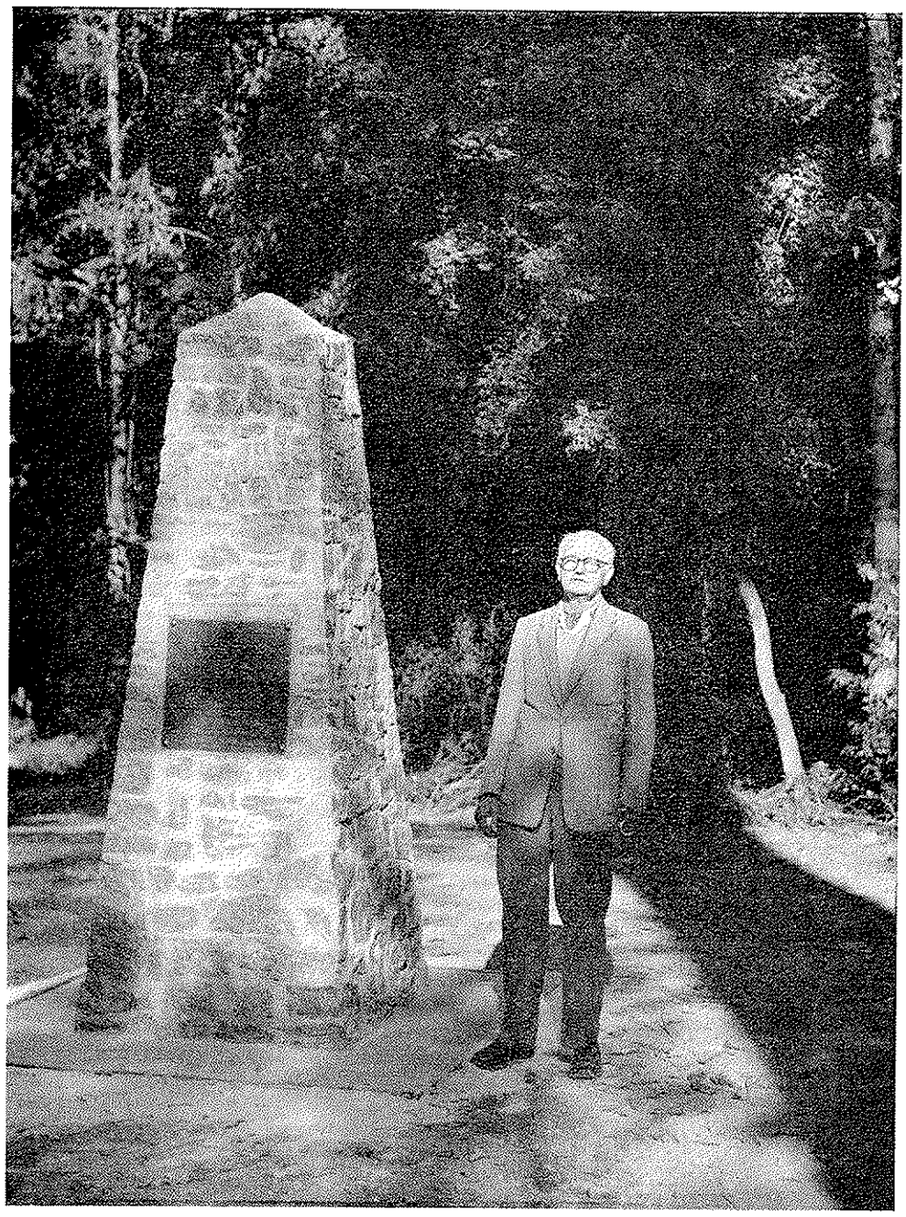
6. TIMBER UTILISATION

In accordance with the Department's policy of assisting the timber users of the State, close co-operation has been maintained with the Forest Products Division of the C.S.I.R.O. in a number of investigations.

A test has been set up at Dwellingup to investigate the seasonal changes in equilibrium moisture content of eight typical Australian species in addition to all the important Western Australian species. This study is in two parts, the first covering sheltered outdoor conditions and the second internal conditions as found in the internal walls of dwellings. A further test is being made to study equilibrium moisture content changes in floorings of Western Australian species at various centres in Perth and the South-West.

Material has been sent to C.S.I.R.O. for the determination of shrinkage figures for Western Australian Blackbutt and Marri. Material has also been sent for the determination of moisture meter correction figures for Blackbutt, Marri, Red and Yellow Tingle.

In February, 1957, as part of an Australia-wide test, 132 Jarrah poles were sent to Forest Products Division for bending tests. Preliminary results now available indicate that wood in the form of poles



Mr. C. E. Lane-Poole at the unveiling of the Jolly Memorial. Lane-Poole was from 1916 to 1921 Conservator of Forests in Western Australia and laid many of the foundations for successful forest management in this State.

has greater resistance to bending than would be inferred from the testing of sawn material. This will allow the safe use of smaller poles for good loading and is expected to result in considerable saving to pole using authorities.

In order to complete the range of Western Australian species being subjected to accelerated termite tests by C.S.I.R.O., samples of Wandoo, Tuart, Jam and Brown Mallet have been sent to Canberra.

Other investigations to assist the timber trade generally include work on equipment and mechanisms available for hydraulic drives for bench rolls and carriage feeds. The costs, advantages and mechanical details of the conveying of sawmill waste by high pressure air have been investigated. Similar attention has been given to the very important matter of finger jointing and samples of Western Australian species have been sent overseas for trial.

Information on types, characteristics, availability in Western Australia and prices of various synthetic glues has been obtained for work in the finger jointing, timber laminating and constructional fields.

Consideration has been given to the possibility of briquetting sawdust for domestic and industrial fuel, but it appears that economics are not likely to favour this method of utilisation in Western Australia for some years.

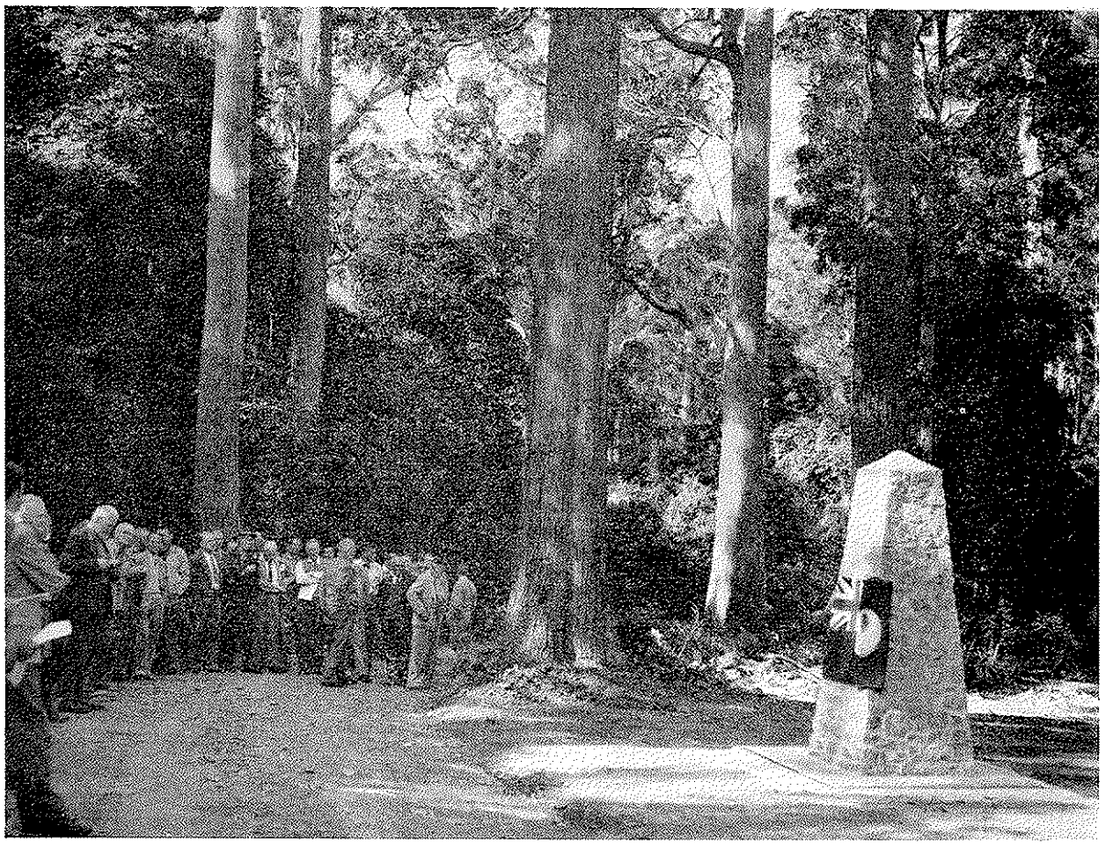
In an effort to assist the public in the better use of timber, a number of tests are being carried out by the Department. In co-operation with various paint firms an exposure test of many types of clear finish on the commonly used Western Australian weatherboard timbers has been set up at Como, and is already showing instructive results.

A test has been set up at Harvey to compare the efficiency of various concentrations of sodium pentachlorphenate, trichlorphenate and borax in combating blue stain in pine.

A layout for a proposed sleeper and pole preservation plant has been prepared and details are being discussed with Forest Products Division of C.S.I.R.O.

A large number of enquiries from the public, timber trade and timber using group on a great diversity of problems was attended to during the year.

Two meetings of the Western Australian Joint Timber Committee were held during the year. A final draft of a grading rule for round stringers is ready for despatch to Standards Association and work is continuing on other grading rules.



Norman Jolly Memorial—situated in a tallowwood grove within Moonpah State Forest (Coff's Harbour District) near Dorrigo, N.S.W. N. W. Jolly was one of the most distinguished of Australian forestry leaders and teachers.

7. FIREWOOD PRODUCTION AND CONSUMPTION

Firewood consumption for the State was estimated at 775,680 tons, over half of which was used for industrial and mining fuel. The quantity of sawdust consumed as fuel decreased from 127,400 to 90,549 tons.

In the following table approximately 56 per cent. of the firewood consumed is accounted for, the balance being obtained from private property for which specific records are not available.

Of the total quantity consumed 49 per cent. was obtained from Crown Lands.

Production.

	Crown Land.	Private Property.	Total.
Domestic Firewood—	Tons.	Tons.	Tons
Firewood Permits (South West)	50,653	418	51,071
Mill Waste sold as firewood (estimated 50 per cent. of total)	34,804	24,593	59,397
Domestic use on Goldfields	28,891	....	28,891
Total Domestic Firewood as shown by returns received	114,348	25,011	139,359
Industrial Firewood—			
Supplied under License Nos. 3 to 8 Pumps	26,859	....	26,859
Other Pumps	624	....	624
Factories, etc.	62,914	417	63,331
Mill Waste sold as firewood (estimated 50 per cent. of total)	34,803	24,593	59,396
Mill Waste used as firewood	94,911	3,889	98,800
	220,111	28,899	249,010
Mining Firewood	43,175	....	43,175
Total Firewood Produced (as shown by returns)	377,634	53,910	431,544

Consumption.

	Tons.	
Estimated Domestic	382,800	(at 2 tons per dwelling)
Industrial	322,222	(ex Govt. Statistician)
Pumping Stations	27,483	(as per F.D. Returns)
Mining	43,175	(as per F.D. Returns)
Total	775,680	

8. SANDALWOOD

Overseas market conditions for Sandalwood seriously deteriorated during the latter part of the year, mainly due to the economic and disturbed conditions general throughout the Far East. Supplies from Sandalwood pullers were readily available, but due to lack of overseas orders it was necessary to limit production to the available storage space at Fremantle. No variation was made in the price paid for Sandalwood f.o.r. country sidings.

The quantity of Sandalwood delivered during the year (including deliveries from orders placed during the previous year) was 799 tons compared with 788 tons to 30th June, 1957, and was made up as follows:—

Crown Lands—	Tons.
Logwood (including roots and butts)	714
Pieces	81
Private Property	4
	799

The total quantity of Sandalwood exported was 421 tons, as compared with 573 tons for the previous year and included trial shipments of Sandalwood powder prepared at Fremantle.

No orders for logwood were placed by the oil distillers, but 163 tons of roots and butts severed from the logwood at Fremantle were delivered to them for oil distillation purposes.

Ten thousand five hundred and ninety pounds of Sandalwood oil were produced by local distillers during the year and this was exported Interstate and Overseas.

9. FOREST PRODUCE

Piles and poles obtained from Crown Lands during the year amounted to 509,495 lineal feet which is a big increase on last year's figure of 351,884 lineal feet. Departmental cutting supplied 16,823 lineal feet of this quantity. The records received from private property operations show a further 518,238 lineal feet from this source, although the records are not complete.

Approximately 460,500 fence posts and strainers were recorded for the year, of which over 11,500 were produced by this Department. Figures are not available from private owners which would greatly increase these figures.

A total of 843 tons of Mallet Bark was produced, most of which came from private property.

Over 40,000 tons of mining timber was used apart from timber supplied by sawmills. Approximately 38,000 tons of this came from Crown Lands, 16,000 tons of which came from the inland forests.

The demand for pine Christmas Trees increased by approximately 50 per cent. from 3,483 to 5,970.

The following table shows numerous other items of interest produced from the forest areas in the State.

The estimated total value of this forest produce, excluding sawn timber, was approximately £2,200,000.

Honey Industry.

It has been reported by the W.A. Honey Pool that last year could be a State record as regards honey production.

Honey production has been reported as bringing £250,000 annually into the State. It is a valuable export and almost 80 per cent. of the State's production is exported to Britain.

It has been estimated that between 70 per cent. and 75 per cent. of the State's production comes from apiary sites situated on State Forests.

FOREST PRODUCE NOT ELSEWHERE INCLUDED IN PRODUCTION TABLES
OBTAINED DURING YEAR ENDED 30th JUNE, 1958

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	42	22,411	1,926	15,929	40,308 tons
Sleepers for Goldfields Wood Line .... Cub. ft.	....	....	....	13,371	13,371 cub. ft.
Charcoal (includes 16,450 tons ex Wundowie) Tons	....	16,474	....	39	16,513 tons
Piles and Poles .... Lin. ft.	16,823	509,495	518,238	....	1,044,556 lin. ft.
Fencing Posts and Rails .... No.	11,644	273,759	24,316	150,853	460,572 No.
Strainer Posts .... No.	524	1,860	160	....	2,544 No.
Mallet Bark .... Tons	178	45	620	....	843 tons
Wandoo Timber for Tanning Extract .... Tons	....	17,925	50,486	....	68,411 tons
Bean etc. Sticks .... No.	....	....	....	2,665	2,665 No.
Boronia Blossom .... Lbs.	....	960	119	....	1,079 lbs.
Stone .... Cub. yds.	....	22,728	....	....	22,728 cub. yds.
Sand .... Cub. yds.	....	934	....	....	934 cub. yds.
Gravel .... Cub. yds.	....	4,000	....	....	4,000 cub. yds.
Loam .... Cub. yds.	....	12	....	....	12 cub. yds.
Scout Staves .... No.	144	....	....	....	144 No.
Sawdust consumed as fuel, etc.† .... Tons	....	90,549	....	....	90,549 tons

* 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 unknown.

10. FOREST MANAGEMENT

Surveys and Map Production.

Map production of various types for forestry purposes necessitates a framework of high order survey for control. Two field crews were fully engaged in this work, and 243 miles of new survey together with the re-opening of 89 miles of existing survey were completed during the year. Cadastral connections to nine newly established triangulation stations along the South Coast were undertaken to assist the Lands Department.

Other surveys of lower order covered some 156 miles, largely in connection with the revision of the Department's 1 inch to the mile map series which depicts topographical features, water courses, roads and reference points in the areas concerned. It is expected that the amount of lower order ground

surveys will steadily diminish since techniques of charting this information from air photos at similar accuracy and only a fraction of the cost of ground survey, have been highly developed and will be increasingly used for future topographical mapping.

There was a considerable increase in mapping during the year. Compilations covering 1,365 square miles (35 standard sheets) were prepared as base sheets for further mapping by the Department. This work involved the charting of over 235 miles of theodolite traverses and computations covering almost the same amount of earlier surveys. Base plans for new areas being brought under management are now being produced on the same lines as those used for air photo mapping and this results in a considerable economy in initial drafting. This practice will be adopted for future mapping of all areas not covered by the 20 chain topographical map series.

Preparation of base plans for the control of air photo mapping continued as one of the major mapping tasks and 2,457 square miles (42 standard sheets) were completed. Other new work included the revision of one sheet in the one inch topographical series and commencement of work on a second.

Over 500 plans were also prepared to cover the varied requirements of management and administration.

Air Photo Mapping.

As in previous years, air photo mapping carried out exclusively by the Department provided the basis for current activities and 1,048,000 acres were covered by new maps, bringing the total area of standard mapping to 6,626,000 acres. Although this progress is satisfactory for the staff involved, it is barely sufficient to keep abreast of current requirements.

In addition to standard mapping at 20 chain scale, which gives an accurate picture of forest cover and land use, sketch mapping was extended by 168,700 acres to the present total of 901,400 acres. Sketch mapping, though of lesser accuracy than standard mapping, was produced for only a fraction of the cost and was used for extensive initial investigations of relatively inaccessible forest country north of Yanchep and along the South Coast. Air photos were also used for other reconnaissance projects involving uncontrolled photo mosaics covering 1,008,000 acres and low order sketch mapping of 627,000 acres.

During the year 2,754 photos were purchased from the State Mapping Committee, and although these were a welcome addition to photo coverage of the lower South-west, the lack of air photos is retarding the mapping of the valuable managed forests in the Northern Region.

Research into mapping techniques and air photo interpretation problems was continued along with current mapping projects so far as shortage of experienced staff would permit. Satisfactory progress was made with map preparation using the " stick-on " method for all map annotations and on the interpretation side a new method for classification of regrowth forest was developed and used with satisfactory results on a pilot scale. Stereograms prepared from vertical air photos and from horizontal photographs taken at ground level, together with a modified density scale prepared during the year, were used to assist in this work. Difficulties in interpretation, however, have been encountered because of the complexity of forest regrowth types and structure.

Seven year old windbreak of Pinus pinaster at the Esperance Research Station—19 inch rainfall.

Further infra-red photography and filter trials were carried out in conjunction with the Lands Department in an effort to solve the difficult problem of species differentiation in the Eastern Wandoo forests, and results of this work are still awaiting evaluation.

Working Plans.

The major task of the Manjimup Working Plans Office was detailed investigation of areas of vacant Crown Land in the main forest belt, to support the general policy for land utilisation set out in further detail in Appendix 6. This work was undertaken as part of a unified approach to land use problems in an effort to obtain a balance between rival interests in areas where forestry makes a major contribution to the local economy, or where, owing to remoteness from prime forest country, consideration had to be given to ensuring adequate local timber supplies for future needs.

Final proposals covering 812,000 acres were prepared and submitted for the consideration of the Land Utilisation Committee.

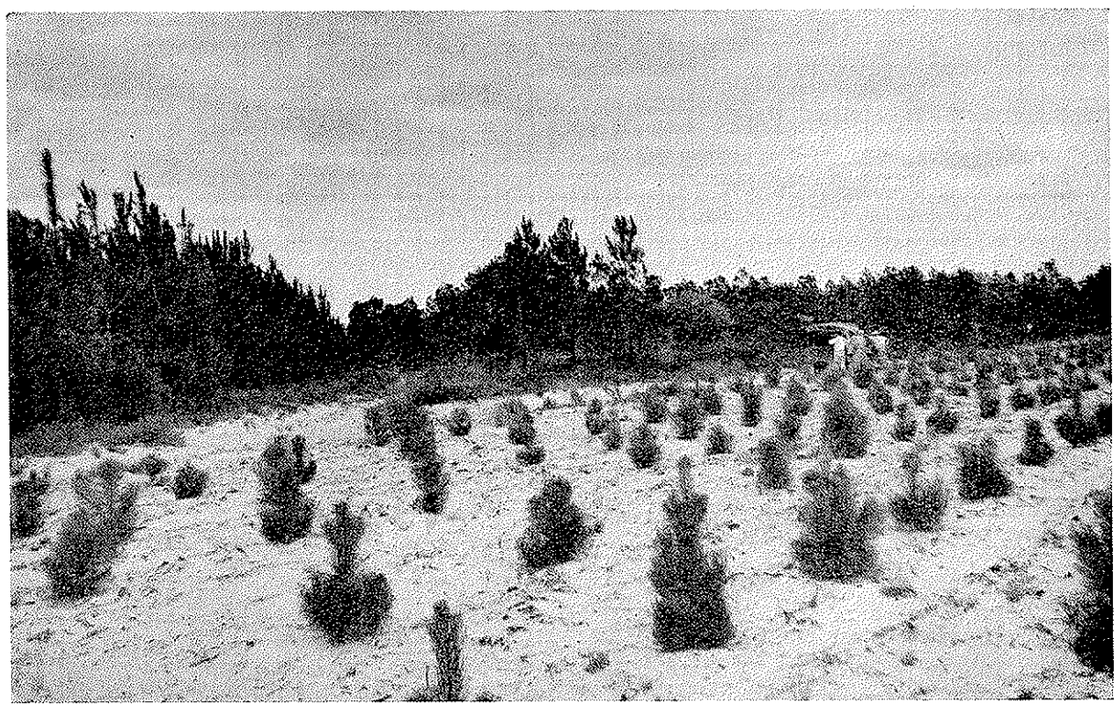
The Dwellingup Working Plans Office (later moved to Harvey) concentrated on site quality mapping of all pine plantations in accordance with a productivity index method developed and extensively tested in South Australia. By means of sample plots and strip surveys, 11,655 acres, which included all plantations exceeding index-age, were classified according to growth potential, and for the first time the Department obtained an accurate picture of pine yields together with a wealth of basic data concerning the growth of the major species of pine.

Apart from these technical projects, the two Working Plans Offices took over routine revisions of works progress records, and the Manjimup centre also carried out numerous general drafting projects to relieve the pressure of drafting priorities at Head Office.

Both centres undertook a limited amount of air photo interpretation; routine work was carried out satisfactorily at Manjimup and some valuable research into the problem of regrowth interpretation was completed at Harvey, but this work was seriously impeded by lack of trained and experienced interpreters.

As previously stated, general planning was primarily directed towards efficient utilisation of areas outside State Forest, but two detailed projects concerning the permanent life of the sawmilling industry on areas totalling 547,000 acres were completed, whilst initial work on a third project of the same type covering 200,000 acres was commenced.

On the resources side, the major activity during the year was the preparation of preliminary estimates of wood available for charcoal production on a total area of 1,832,000 acres. At the same time revised volume estimates were prepared for four areas totalling 98,500 acres in connection with the revision of the General Working Plan, and other projects totalling 86,000 acres were awaiting completion from field notes received during the year.



View of portion of Esperance Plantation (P. pinaster). Foreground, 1956 planting. Left Background—1951 planting showing result of advances in strain selection and establishment technique when compared with 1928 planting central background.

Forest Engineering.

The following table sets out the work on engineering projects completed during the year:—

Item.	Completed in Current Year.	Present Total.
Construction of roads, firelines and tracks	686 miles	16,656 miles
Maintenance of roads, firelines and tracks	3,535 miles	16,656 miles
Telephone lines	10½ miles	1,736 miles
Houses	14	445
Offices	3	48
Divisional Workshops	1	13
Fire Lookout Towers	1	36

Housing.

The big post-war lag in Departmental housing was made good by 1957, and current building is designed to cover normal requirements and expansion only.

A regular programme of maintenance is carried out, based on a detailed inspection of each house in January each year, to ensure that houses are kept in a good state of preservation and repair.

During the year four new houses were constructed and ten houses were purchased. A further eight houses were shifted to larger towns or settlements in accordance with the current policy of gradually eliminating the small isolated bush settlements and housing staff and employees in or near centres with better amenities.

The policy of installing septic systems at houses where adequate reticulated water is available was continued and 29 systems were installed, making a total of 134 now in use.

Private garages were erected for a further 34 houses bringing the total to 192.

A Working Plans Office was erected at Harvey and District Offices were erected at Wanneroo and Wheatley.

The construction of a workshop-garage was completed at Collie.

Plant and Equipment.

To carry out the Department's extensive and varied works programme it has been necessary to build up a substantial fleet of wheel vehicles, heavy equipment and stationary engines.

The fleet of wheeled and crawler units was increased by 46 during the year and now totals 423, after the disposal of 26 worn out units.

There are 172 stationary engines and 97 power saws in use.

The maintenance of this plant is carried out in 12 Departmental workshops, three of which were extended to take in additional work.

The staff of the Plant and Maintenance Branch was increased by four this year, bringing the total to 40, including 6 apprentices. One apprentice completed the five year contract and one new apprentice was started at Collie.

A new lighting plant was installed at Gleneagle to replace a worn out unit and provision has been made for replacements at Huntly and Tallanalla and extensions at Grimwade.

Last season's Mallet Bark production of 176 tons was chipped for the first time by a machine designed by the Department, considerably increasing the value of the product.

Communications.

Radio communication between gangs in the field and Divisional Headquarters was improved by the modernisation of the fixed stations at Como, Harvey, Dwellingup and Dryandra. In addition 15 new vehicles were wired for radio connection and three new mobile units were licensed with the P.M.G.

The standardisation of field sets to operate on 6 or 12 volt systems was completed with the modification of 11 mobile units.

Eight new Transmitter-Receivers are in the course of construction and six mobile sets have been overhauled.

Ten-and-one-half miles of new telephone line were erected, bringing the total mileage of line to 1,736 miles. Ten new telephone switchboards were made up and installed.

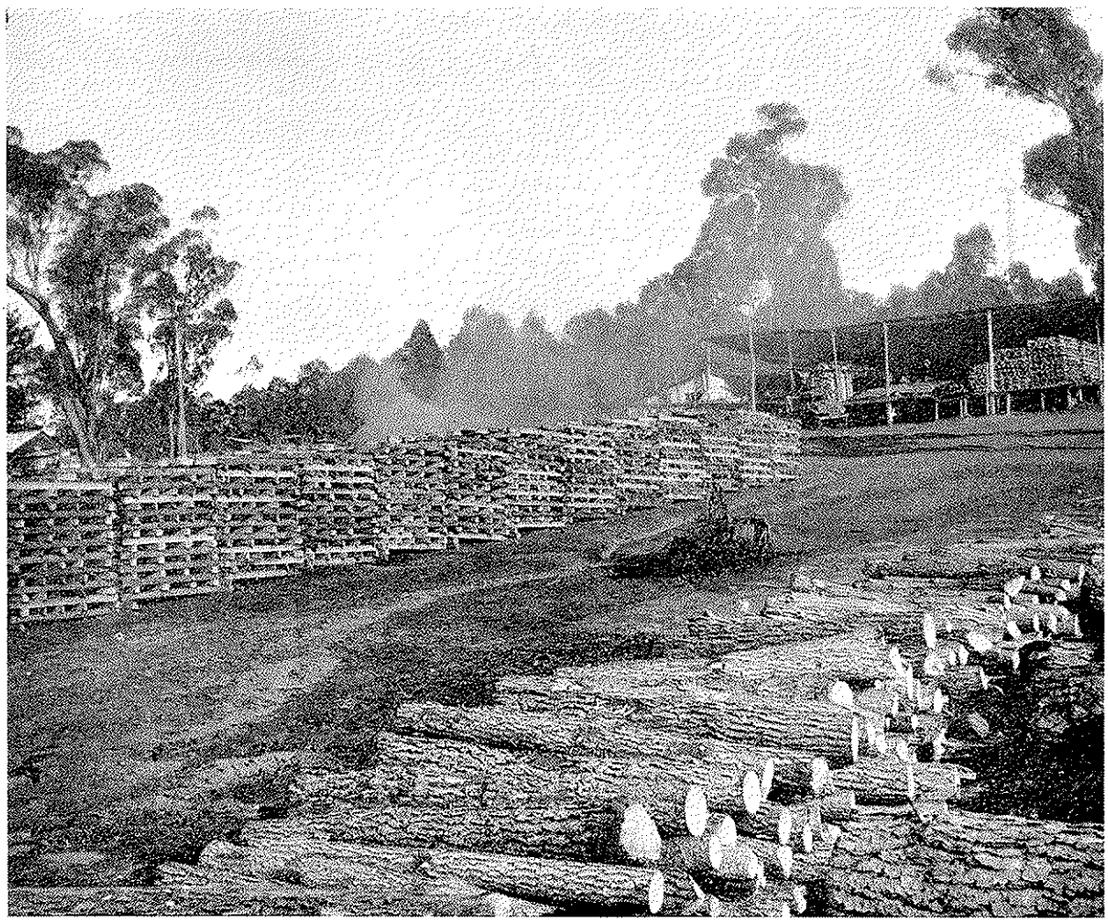
Routine maintenance to field radio and field telephone systems was kept up to date and the development of improved equipment to meet field conditions was continued.

Departmental two-way radio installed on a Land Rover played a big part in the successful search for a lost woodcutter in the Kalgoorlie area during the year. Without the initiative shown by a forest officer, together with the Department's up-to-date equipment, this man could have perished.

II. REFORESTATION

All trees felled on sawmilling permits in State Forest are selected and branded by authorised officers of the Department. This not only controls the quantity of wood removed from the forest, but ensures that trees are felled in such a way as to protect existing immature growth and encourage regeneration. The top disposal operation, i.e. the burning of the debris following the felling, also encourages regeneration by providing a good seed bed and fire protection for the young crop.

During the year 46,666 acres of virgin State Forest were cut over and treated for regeneration. This consisted of 3,497 acres of Karri, 39,583 acres of Jarrah, 3,383 acres of Wandoo, and 203 acres of other species.



A pine log sawmill at Mundaring Weir. Pine logs from these plantations have been supplying a case factory for about 28 years.

Shade group of Bald Island Marlock established on cleared heath land on one of the older Esperance farms.

12. AFFORESTATION

The need for plantations of pine as a source of timber and pulp for the future has already been stressed in previous reports. The 1956 Pine Working Plan sets a goal of 200,000 acres for the State. This figure and the annual target of 2,000 acres remain unaltered, but, in the light of the great increase in information achieved in the last few years, it is intended shortly to revise the more detailed prescriptions of the Plan.

Finance, particularly the allocation of Loan Funds, is still the chief limiting factor in the establishment of plantations. Other limits, such as the selection and acquisition of suitable areas and the development of satisfactory techniques have now been narrowed considerably.

Acquisition of land is dealt with in Section 3, while the selection of country suitable for the raising of the faster growing *P. radiata* is the aim of the soil surveys mentioned below. Large areas on the coastal sandplain North of Perth are available for the growing of *P. pinaster*, and these are being tested by trial plots, of which there are over 70 now established.

During the 1957 planting season a total of 2,516 acres were planted in established plantations, while an additional 43 acres were planted in experimental areas. One hundred and seventy-seven acres of pines were clear felled during the year which brought the total net area now under pines to 24,551 acres. The 1957 planting was distributed as follows:—

	Acres.
Ludlow	91
Keenan	137
Mundaring	275
Collie	185
Grimwade	240
Gleneagle	47
Somerville	5
Gnangara	541
Pinjar	184
McLarty	107
Myalup	214
Harvey Weir	37
Blackwood	453
Experimental	43
	2,559

Ground preparation in readiness for future planting was continued and the position after the above planting was as follows :—

Clearing prior to cultivation in progress	6,600 acres
Completely cleared awaiting cultivation	210 ,,
Cleared and cultivated ready for planting	95 ,,

Soil Surveys.

The selection of suitable planting land by intensive soil surveys has continued and work carried out during the year amounted to :—

Reconnaissance surveys	19,300 acres
Detailed surveys	13,250 ,,
Chemical analyses	280 samples

The total areas now covered since this standard of survey was initiated in September, 1954, are :—

Reconnaissance surveys	145,480 acres
Detailed surveys	28,670 ,,
Coastal Plain reconnaissance	111,390 ,,

Site Quality Mapping.

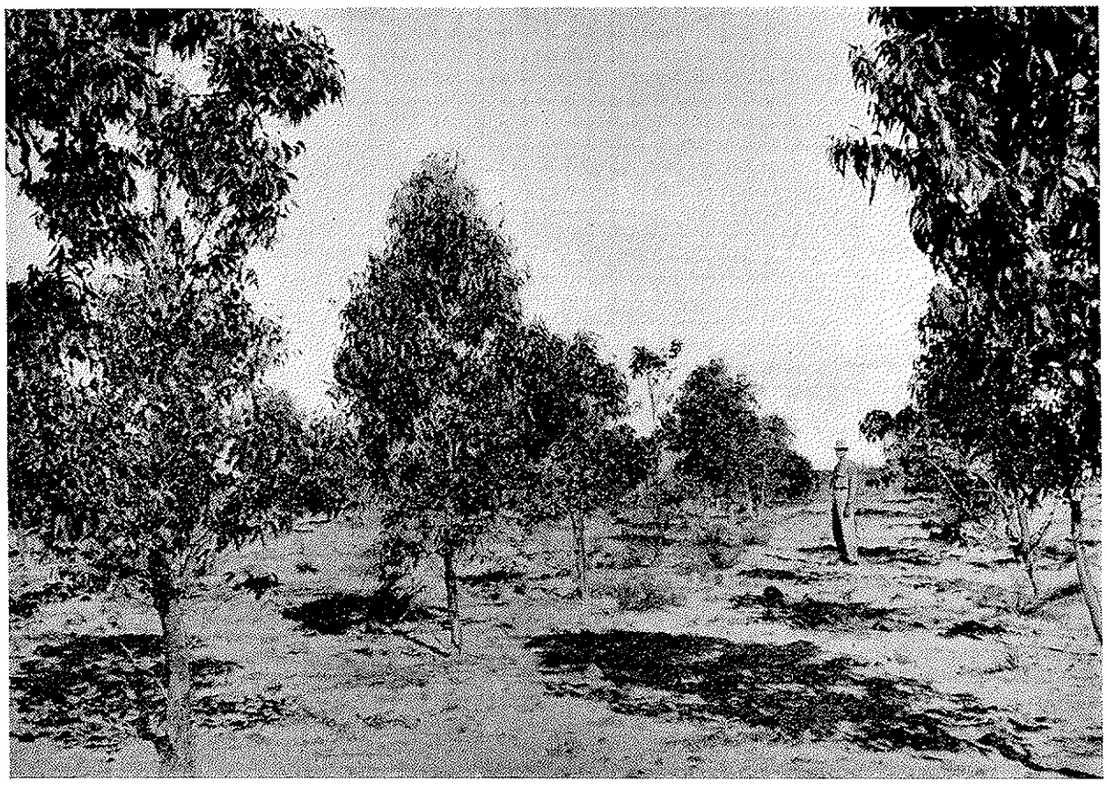
The production of timber from the older sections of the present plantations has now reached a volume where, for purposes of sound management and silviculture, a measure of the productivity of individual and total areas is essential. To this end all stands beyond the age of early development had been covered by Site Quality (Productivity Index) mapping. The total coverage is 11,655 acres consisting of 2,948 acres of *P. radiata*, 7,784 acres of *P. pinaster* and 923 acres of other species and areas classed as carrying no pine. Remaining areas of plantation will be mapped as they reach suitable age.

Production of Pine Timber.

Timber production from plantations, consisting largely of thinnings, amounted to 1,185•441 cubic feet. Eleven sawmills and case factories, in addition to Departmental mills, are now partly supported by this supply. Two plywood factories also draw supplies of local pine "peelers."

Logs produced by the various plantations were as follows :—

	Cubic feet
Busselton—	
Ludlow-Willcock	23,188
Keenan	4,691
Boranup	770
Mundaring	447,621
Carinyah	4,421
Collie	28,091
Kirup—	
Grimwade	101,056
Metropolitan—	
Collier	88,512
Scaddan	162,575
Somerville	104,700
Gnangara	160,901
Harvey—	
Myalup	32,700
Harvey Weir	23,857
Hamel	1,800
Pemberton—	
Pimelia	558
Total	1,185,441



A range of Eucalypt species under trial in arboretum at Esperance Research Station—1951 planting. With extensive agricultural development on the treeless Esperance plains, are associated problems involving the provision of shade and shelter from wind.

As an indication of the increasing importance of pine log output, it is interesting to note that plantations now support considerable employment and industry. For example, those in or close to the Metropolitan area (viz., Mundaring, Wanneroo, Collier, Somerville and Scaddan) totalling only 13,500 acres, give direct employment to approximately 315 men. A total of 105 Departmental employees are engaged on the extension and maintenance of these plantations, while the associated timber industry consisting of sawmills, case and box makers and plywood factories employ approximately 210.

It is estimated that this small but buoyant industry has an invested capital of £200,000, an annual production valued at £370,000 and makes annual wages payments of approximately £150,000.

Apart from the sale of pine logs, other minor uses are now consuming quantities of tops and smaller sized pines. Sales of such produce during the past year were as follows :—

5,970 Christmas trees.

800 pine poles for culture pearl rafts.

186 loads of small pines and tops for wood wool manufacture.

Mallet Plantations.

During the current year 176 acres were established bringing the total net area of the Mallet plantations to 18,801 acres.

Thinning operations in the plantations produced 178 tons of bark and 1,911 cubic feet of mining timber which was supplied to lead mines in the Northampton district.

Owing to the closure of these mines due to a substantial drop in lead prices at the end of 1957 this market disappeared.

The Department changed from previous methods of marketing bark, in that the whole production was chipped and bagged in its own plant at Dryandra and disposed of in that form.

The Hon. Minister for Forests, Mr. H. E. Graham, opens " Festival of Trees " week at the King's Park entrance on June 25th, 1958, from one of the three trucks which carried a Karri log donated by Bunning Bros Pty. Ltd. to Perth.

Grouped left to right are—

The Lord Mayor of Perth, Mr. H. R. Howard.

Chairman, King's Park Board, Sir Thomas Meagher.

Mr. G. M. Bunning, a Director of Bunning Bros. Pty. Ltd.

Mr. W. Britten, Manager of Donnelly River Mill.

Mr. J. Watson, Superintendent of King's Park.

Mr. N. Roennfeldt, President, Tree Society.

Notes from Kalgoorlie Division.

Reduced firewood consumption by the mining industry due to competition from oil fuel was recorded. Tests with dipped wood fuel by the Kalgoorlie and Boulder Power Corporation showed this material to be technically suitable, but the cost of production rendered its use uneconomical.

The installation of an oil burning plant at Hill 50 Gold Mine at Mt. Magnet and the consequent reduced use of Mulga is a desirable development in view of the value of the species to the pastoral industry.

The accelerated agricultural development in the Esperance area has meant a large demand for fence posts. Forest officers have rendered useful assistance in locating suitable areas from which to obtain them.

The effects of increased numbers of livestock in the vicinity of Kalgoorlie and Boulder have caused concern owing to the erosion risks and increased risk of dust storms and the District Forester has been particularly active and successful in focusing public attention on the need for positive action to combat this menace.

Arboreta and Tree Planting.

Considerable emphasis has been placed in recent years on the agricultural development of the naturally treeless light lands of the wheatbelt. With this development has come the demand for trees able to flourish on these areas, where nature produced only scrub or heath vegetation.

Information available from the arboreta, some of which have now been established for nine years, is already providing valuable leads and can be summed up as follows :—

(1) Provided care and correct technique are employed, no difficulty should be encountered in re-establishing appropriate tree growth on sites which have originally carried forests.

(2) Tree establishment on country which naturally carries heath or scrub presents more problems. While such country is best adapted to this latter vegetation, tree establishment has been shown to be possible, on some sites at least, provided strict attention

Arbor Day, 1958.—Three of W.A.'s leading citizens, the Hon. Premier, Mr. A. R. G. Hawke ; the President King's Park Board, Sir Thomas Meagher ; and the Hon. Minister for Forests, Mr. H. E. Graham, tree planting in King's Park.

(*Right*).—Two of the State's future citizens planting at Lathlain.

By courtesy "West Australian" Newspapers Ltd.

is paid to selection of species, elimination of scrub and weed competition, subsequent cultivation and adequate spacing. Field observations indicate that while soil quality is undoubtedly an important factor the one exerting the greatest influence is soil moisture available during the hot, rainfall-deficient months.

A detailed examination of arboreta has been commenced as a research project. This covers a number of factors affecting tree growth and includes the examination of soil profiles by borings, soil moisture determinations in late summer, salinity determinations of ground water in winter, measurement of slope and examination of drainage conditions. The ultimate aim is to correlate these factors with the survival and development of the various species under test.

(3) It has been found that some tree species which showed rapid and spectacular growth in the early stages have not maintained their early promise, while others which commenced more slowly, *e.g.*, the Casuarinas, Callitris and some of the smaller eucalypts, are likely to prevail in the long run on the poorer sites.

(4) The advisability of growing trees in single lines or very narrow strips rather than in blocks has been demonstrated.

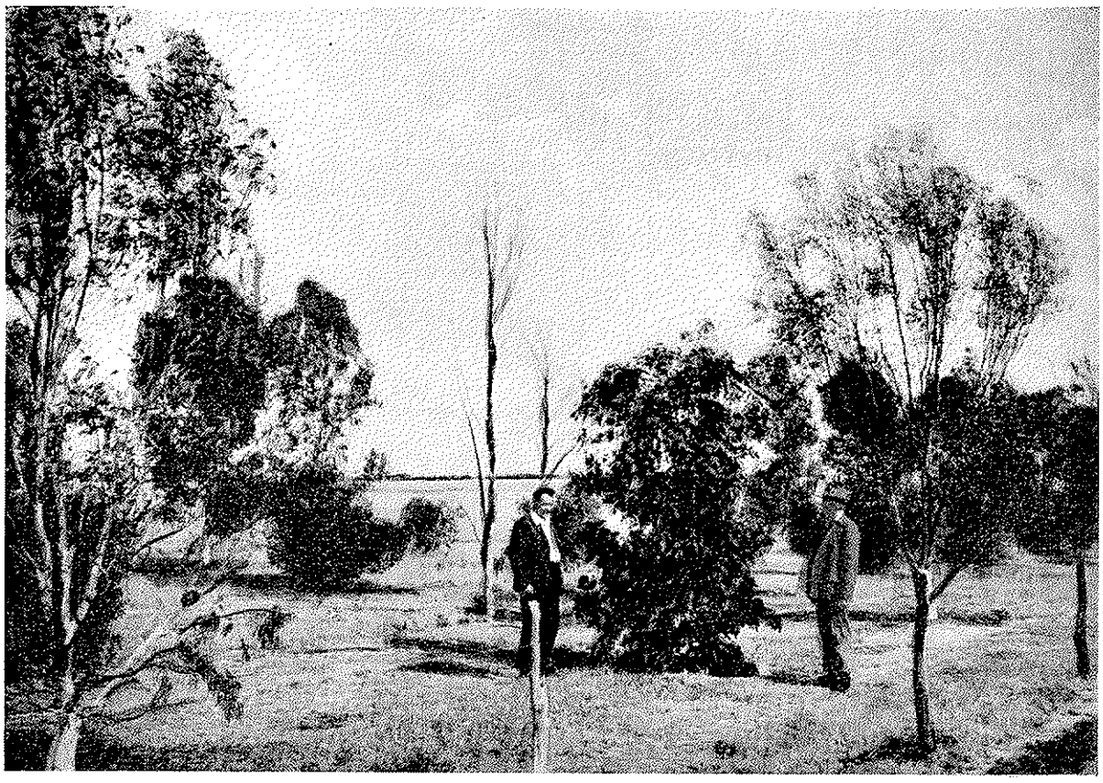
The extensive land development on the Esperance Plains has led to a considerable demand for trees for windbreak and shelter purposes in that region. Old plantings by individual settlers and Mr. A. Helms, together with more recent work by this Department on the Esperance Plantation and in association with the Department of Agriculture at the Research Station, provide reasonable data on which to base more extensive plantings in the region.

While the recommended list is at present restricted to five species (two pines, two eucalypts, and one Acacia) investigations are continuing with the object of providing a greater variety from which to select.

Assistance to Schools.

While the generally recognised purpose of tree establishment in school grounds is to provide shade and shelter for the pupils, it goes further than this, particularly in country areas. The creation in the pupils of an appreciation of trees should later lead to a much wider application as the pupils take their place in the agricultural or civic life of the community.

Forest officers visited a number of schools throughout the country in connection with this work. Several school authorities expressed an interest in the establishment of their own tree nurseries, and while there are certain technical difficulties associated with this, these are not insurmountable. A



Yellow-flowered Blackbutt (Euc. Stricklandi) flourishing where other species have failed in an arboretum in the Eastern wheatbelt. These arboreta scattered throughout the drier area provide a comparison of the drought resistance of various species, and give an indication of their general suitability for widespread planting.

liaison established with the student training college at Graylands in which the Forests Department is materially assisting in the establishment of a tree nursery should ensure that teachers with some training in the subject will be available throughout the country to guide such projects.

Arbor Day.

The activities of Arbor Day are encouraged and assisted by the Department. A number of officers gave talks to school children in their districts and organised tree planting excursions.

Assistance to the Public.

The two Departmental nurseries at Hamel and Dryandra were established to encourage tree planting in the country generally, and particularly in the drier areas. Seedlings are supplied to Local Authorities and private bodies at the lowest possible cost and to Departmental establishments at no charge.

The demand for trees this year was the highest on record.

The following table summarises the year's work for the two State nurseries :—

Nursery	No. of Plants				No. of Species	Revenue	Expenditure
	Sold			Department Use			
	Potted Stock	Tray Stock	Open Rooted Plants				
						£	£
Hamel	27,802	2,352	67,698	140,343	76	3,150	3,825
Dryandra	17,418	2,820	....	6,442	52	2,609	1,361

The above figures for Revenue and Expenditure are for the period 1st October, 1956, to 30th September, 1957, and they do not take into account the value of trees which were supplied for the Department's own requirements.

Seed Distribution.

The supply of Western Australian seed to Australian and Overseas buyers from the Departmental Seed Store continued. The Store has on hand supplies of seed of 196 different species valued at approximately £13,715. The seed is mostly collected by Departmental officers and staff as opportunity occurs.

Sales for the year amounted to £1,852.

The majority of the overseas enquiries for seed are from the Middle East and Mediterranean countries.

13. FIRE PROTECTION

The area of State Forest, given various intensities of protection, amounts to 3,359,000 acres to which must be added 24,551 acres of pine plantations, and 18,801 acres of mallet.

Surrounding and adjacent to this protected forest, there are some 1,500,000 acres of private property, and Crown Lands, on which any fires must be attended to promptly as they menace the protected forest.

The Fire Season.

The summer was one of the driest on record ; maximum temperatures were well above average throughout and reached a peak in January when the mean maximum was 6.2°F. above the average of 82·6°F.

There were 17 days with temperatures greater than 96°F. recorded, four of which were over 100°F., compared with only seven days with temperatures over 96°F. during the previous summer.

Fifty days were experienced with a minimum daily relative humidity of less than 25 per cent. and of these, 32 were less than 20 per cent. and eight were below 15 per cent.

The mean fire hazard for the Jarrah forest was 6.6, which is the highest ever recorded, the previous highest being 6.4 for the disastrous 1949–50 season.

On the basis of the Fire Hazard Scale, 22 days were " Dangerous " and 36 " Severe Summer," a far greater number than for many years.

For the first time on record there was a day of dangerous hazard in November, and several before the middle of December.

In the Karri forest region the season was again exceptionally dry with the rainfall below average for each month since June, 1957, the total deficit approaching 14 inches.

During the five months November-March, 248 points were registered at Pemberton as compared with an average of 731 points.

The Southern region also experienced higher temperatures than normal, there being nine days with temperatures of over 96°F.

The Karri forest experienced two days of " Dangerous " and six days of " Severe Summer " hazard, and the mean hazard was 4.9 as compared with an average of 4.4 for the past eight years (1949–50 was 5.2).

Controlled Burning.

In the Jarrah forest region spring burning was very drastically curtailed, due to the dryness of the season, and the early onset of unsafe burning weather in November.

In the Karri forest a record dry spell from October to mid-April enabled an extensive programme of protective burning to be carried out, most of it effected under ideal mild conditions. However, the unexpected continuance of dry conditions associated with rising temperatures led to several escapes from controlled burns in the extreme South where there are as yet few roads of access.

On the whole, despite the unfavourable burning conditions the extent of controlled burning carried out, amounting to approximately 316,800 acres, must be considered as satisfactory.

In addition, 400 miles of firebreaks were burned and 74,869 acres of advanced burn and top disposal were carried out.

Detection.

A new lookout on Granite Peak in the extreme South was brought into operation at the end of December, and a short tower for intermittent use was constructed at the Collier pine plantation towards the end of the season.

In the Jarrah forest the first tower was manned on 1st October, and the last lookout was on 10th May, 1958.

In the Karri forest the first tower was manned on the 7th November, 1957, and the last watch ceased on the 25th April, 1958.

In the Metropolitan area lookout was maintained from the 1st October to the 8th May.

Publicity and Public Relations.

Every effort is made to keep the idea of fire prevention before the eye of the general public by means of posters and road signs, and it is felt that this campaign is gradually producing the desired effect.

The fire hazard indicator boards erected at various Departmental headquarters are becoming recognised as valuable guides to the fire hazard, and the degree of care needed in handling fire. Several requests have been made by Local Authorities to have these boards erected in their areas.

Every opportunity is taken to attend bush fire brigade meetings to ensure closer liaision with Bush Fire Brigades, and it is becoming abundantly evident that this co-operation is increasing every year.

In the year under review there were numerous instances where Bush Fire Brigades took their place side by side with Departmental Gangs, not as separate entities, but as part of one big organisation for the suppression of fires.

In many instances local settlers and Bush Fire Brigades have requested our co-operation in protective burning and in the control of clearing burns.

Generally, it may be said that the picture of co-operation with local fire brigades is definitely becoming brighter, and the general fire consciousness gives grounds for considerable optimism for the future.

Fires during the Season.

A record number of fires (530) were attended by Departmental gangs during the season. However, it is felt that considering the season this number could have been considerably higher but for the increased fire consciousness of the farming community and the emergency bans imposed by the Bush Fires Board. Apart from preventing fires being lit, these bans brought home forcibly to the general public the very serious conditions that existed and the great need for extreme care in the use of fire.

Of these 530 fires, 51 started in pine plantations with a loss of only 30 acres of pines, 197 started in protected forest, and the remaining 283 started in private property or vacant Crown Lands or Reserves, and menaced protected forest.

Of all the fires, 353 were confined to five acres or less, and only 73 exceeded 100 acres of which 24 were in areas afforded only partial protection.

The total area of forest burnt over amounted to 33,617 acres, of which 13,530 acres were badly scorched ; on the remaining 20,087 acres the damage was negligible.

Once again escapes from farmers' burning operations head the list with 136 fires, or just over 25.6 per cent., and these fires cause the most trouble because they start as legitimate fires which cannot be attacked at inception but only after they have escaped and have become large bush fires.

There was an alarming increase of fires lit by mill locomotives, despite the fact that there has been a great decrease in the use of timber tramlines.

The reason for this increase from 22 fires or 6 per cent. last year to 78 fires and nearly 15 per cent. of all fires this year was due mainly to the prolonged period of extreme dryness of the forest fuel, and the fact that it was not possible to obtain the correct wire mesh for the arresters.

The Brew arresters appear to function satisfactorily on the very fine 64 hole to the inch mesh, as against the 36 hole mesh. It is expected, therefore, that in future years the fires lit by mill locomotives will be almost eliminated.

There were 42 fires of unknown origin, but a number of these are suspected of having been lit by children playing in the Metropolitan pine plantations.

Two small sawmills were destroyed by fire during the year, and the storeroom of a large mill was gutted. At this latter fire Departmental gangs co-operated in the successful effort to prevent the spread of the fire.

The following table sets out the causes of all fires attended by Departmental gangs :—

W.A. Government locomotives	54
Mill locomotives	78
Escapes from controlled burning	63
Bush workers	7
Bush navvies	1
Hunters and fishermen	20
Householders	14
Farmers burning	136
Firewood cutters	3
Travellers	25
Lightning	14
Deliberately lit	10
Children	20
Mill surroundings	10
Mine surroundings	5
Other Government employees	21
Stockmen	5
Tractors	1
Natives	1
Unknown	42
Total	530

During the year under review Departmental gangs were responsible for saving several farm houses and much valuable farming property, and several expressions of appreciation are on file.

Co-operation by the Timber Industry was again whole-hearted, although fortunately, no very great call on their resources was necessary.

It is with deep regret that we record the tragic death by fire of four Departmental employees (Robert Henry Johnston, John Francis Wiltshire-Butler, Jan Hilliger and George McCorkill), while fighting a bush fire in the Nannup district. This is the first time a tragedy of this magnitude has occurred since the inception of the Department, and the sympathy of all goes out to the relatives of the deceased. In this connection it is pleasing to report the great success of a public subscription which will provide substantially for the dependants.

14. SILVICULTURAL AND SOILS RESEARCH

At the present time four full time and two part time officers are employed on research activities.

Research activities have been expanded by the appointment of officers to study Jarrah silviculture, and the dry area arboreta which are now at a sufficiently advanced stage to warrant detailed investigation. New work is largely directed towards a tree breeding project for *Pinus pinaster*, detailed studies of Jarrah advance growth behaviour, problems of *P. radiata* establishment on laterites, and quantitative investigations of nursery fertility depletion.

A. KARRI SILVICULTURE.

Bud Development, Flowering and Seed Bed.

Two years' observations on Karri crown development phenomena indicate the following trends :—

(a) The period between bud inception and flowering is about two years, beginning at one and a half years, but usually extending over two and a half years.

(b) The period between flowering and the commencement of seed shed is up to two years and normally between one and one and a half years.

(c) The normal cycle from bud inception following the first seeding, to the next seeding is four years.

(d) For well stocked stands the first light seeding commences at age 25 years. At 80 years, well stocked regrowth stands may shed no more than one-quarter the amount of seed shed by virgin stands.

(e) Ripe seed is available for regeneration over a period of 18 months ; from spring of the seeding period to the second autumn. Seventy-five per cent. of this seed supply is available over the first twelve months.

(f) Most of the seed available at any time may be brought down within the first two months after burning.

Litter Fall.

Well stocked stands (virgin forest 0.65 canopy and regrowth 0.87 canopy) shed litter at the rate of 45 cwt. and 48 cwt. per acre respectively during the twelve months' seeding period ended June, 1957. Leaf material totalled 21.9 cwt. and 21.6 cwt. in the same stands. Maximum fall occurs during the summer months ; more than 25 per cent. of the total litter and seed fall was deposited in one month (February), and 50 to 80 per cent. was deposited in three months, January to March.

Germination and Establishment.

The average percentage germination recorded in Autumn, 1957, was 10 per cent. over all seed beds investigated. Thirty per cent. of total seed germinated on new ash bed, 7 to 15 per cent. on receptive top soil, and three per cent on unreceptive seed beds.

Seedling mortality in the ensuing twelve months reached 72 per cent., 17 per cent. failing within two months. Total percentage losses during twelve months have been similar on different seed beds. An average of 34,000 seedlings per acre survived twelve months.

Ashbed effect is quite remarkable. Weed competition is substantially reduced and dominant Karri seedlings gain five feet in height per annum.

The Effect of Burning on Regeneration.

The nature and timing of advance and regeneration burning has been examined in relation to establishment on widely different seed beds. Regeneration is more certain and more effective where a running fire can cover the whole of a logged area.

Advance burning, regarded as a necessary tool to facilitate effective treemarking and to minimise fire risk of subsequent logging operations, should be effected only under mild conditions and during seed years. A proportion of regeneration established on the advance burn will survive logging ; regeneration of the area will be complete following the burning of logging debris.

Other Karri Research.

Work has been initiated to develop a satisfactory technique for re-establishing Karri on old pasture re-purchased by the Department. Spot and broadcast sowings under various conditions have, to date, proved disappointing.

During the year a Karri trial felling plot was established to examine production rates following logging of varying intensity.

B. JARRAH SILVICULTURE.

Work has commenced on a project to examine the behaviour of Jarrah seedling and advance growth development. Treatments are being established to investigate the effects of cultivation, nutrition, fire, mycorrhiza, water, root competition, light intensity and insect damage on seedling development, with the aim of minimising the resting stage for Jarrah.

Continued studies of Jarrah crowns have shown a very heavy development and persistence of buds in the January-February period indicating a heavy flowering of Jarrah this season.

C. PINE SILVICULTURE.

Tree Breeding.

A tree breeding programme for *Pinus pinaster* was commenced during the year. This programme aims to improve of the quality of seed by producing local requirements in seed orchards of select grafted parent trees. At present all *Pinus pinaster* seed is imported from Portugal but there is wide variation in form and vigour of resultant stands.

Elite Tree Selection.

A preliminary survey in the most favourable *Pinus pinaster* plantations of Landes and Leiria strains resulted in the selection of 72 possible elite trees. Final measurement and classification work on these trees has yet to be completed, but is sufficiently advanced to indicate that a sound nucleus of favourable trees will be available to commence seed orchard establishment in 1960.

Stand Classification.

As a basis for future selection and classification of elite trees, existing stands of *Pinus pinaster* are being systematically classified to provide :—

(a) The number of crop stems available per acre from initial spacing.
(b) The number of crop stems per acre following first and second thinnings.
(c) The physical characteristics of an average crop stem.
(d) The characteristics and distribution of exceptional or " plus " stems.

Forty-one plots have been assessed to date on a system adapted from Queensland practice. Plots assessed include Landes and Leiria strains, ranging in age from 7 years to 28 years, and in spacing from 100 stems to 1,300 stems per acre.

Early Thinning and Pruning Studies.

Thinning and pruning trials were carried out in seven-year-old *Pinus pinaster* (Leiria strain) at Gnangara plantation, but real effects of treatment will not be available until the area has been given its first merchantable thinning.

D. SOILS RESEARCH.

Due to increase in the staff position at the Dwellingup Research Laboratory during the year, an extension of work was undertaken.

Forest Litter Studies.

Measurement of litter fall in the Jarrah, Wandoo and Mallet forest continued during the year. Complete summaries of litter fall are now available for :—

Jarrah forest for the period 1951–57.
Wandoo and Mallet forests, 1954–57.

Effect of Fire on Forest Soils.

A paper entitled "The Effect of Frequency of Burning on the Jarrah Forest Soils of Western Australia" has been prepared for the 1958 ANZAAS Conference in Adelaide.

Forest Nursery Studies.

An investigation was commenced of the Hamel Nursery Soils. In the preliminary experiments an estimate was made of the nutrients removed from the soil by a one-year-old crop of *Pinus radiata*.

The major inorganic nutrients removed by the crop were :—

Nitrogen	114	lbs./acre
Phosphorus	10	,,
Potassium	99	,,
Calcium	20	,,
Magnesium	19	,,

In the second series of experiments a number of surface soil samples were taken from the old nursery beds and compared with adjacent virgin soil.

The following results were obtained :—

Analysis	Old Nursery Beds				Virgin Soil	
	Conifer		Deciduous			
pH	5.3		5.7		5.6	
Total Soluble Salts, per cent.	0.037		0.068		0.058	
Organic Carbon, per cent.	3.01		2.67		5.93	
Nitrogen, per cent.	0.166		0.197		0.317	
C/N Ratio	18		14		19	
Exchangeable Cations—						
Calcium m.e., per cent. and per cent.	3.8	68	8.0	75	4.5	50
Magnesium m.e., per cent. and per cent.	1.2	21	1.5	16	3.6	39
Potassium m.e., per cent. and per cent.	0.36	7	0.54	6	0.54	9
Sodium m.e., per cent. and per cent.	0.20	4	0.26	3	0.22	2
Hydrogen, m.e., per cent. and per cent. (to pH 8.4)	28.7		26.8		35.7	
Total Exchange Capacity m.e., per cent.	34.3		37.6		44.8	
Saturation, per cent.	16		27		21	

The chief point of interest of these data is the decline in organic matter, as measured by organic carbon and nitrogen, which has been caused by the regular cropping. Further work is to be carried out to examine the effect of different crop rotations on these soils.

Pot Culture Trials with *Pinus radiata*.

A series of pot culture trials with *P. radiata* growing on lateritic gravelly soils were commenced during 1957. The plants were watered with various nutrient solutions in order to determine the capacity of the soil to supply various elements.

At the end of twelve months there was evidence that in the gravelly laterite soils, *P. radiata* is likely to experience a gross deficiency of nitrogen and phosphorus, and a moderate deficiency of molybdenum. In addition there were indications of possible deficiencies of potassium, calcium, sulphur and copper.

Pine Plantation Soils.

Routine phosphorus analyses of prospective pine plantations soils have again been an important feature of the analytical work of the laboratory with 360 analyses being carried out on samples collected by the soil surveyors.

15. LIBRARY

Demands on the library services continue to increase and queries answered by the staff reached a total of 1,000 during the year. While this represents an increase of 50 per cent. over the previous period, it is of interest that enquiries from outside the Department have almost doubled.

Accessions have also shown an upward trend and loans of publications to officers and others reached a total of 5,000.

With the steady expansion of this service during the past few years, the need for increased space is presenting a serious problem.

16. EDUCATION AND PUBLICITY

Education.

Training of staff has been given continued attention during the year. Two staff meetings held in the field were attended by Divisional staff to discuss present and future policy and procedure within the Department.

Short duration schools were held as follows :—

Fire Control	2
Timber Inspection	2
Plantation Techniques	2
Forest Assistants (Clerical)	1

The Forest trainees entered the second year of their school where emphasis was placed on plantation methods, fire control and tree felling using axes, power circular saws and chain saws.

During the year it has been pleasing to note a considerable awakening of interest in forestry as a career. An increasing number of enquiries have been received for information relating to both the Forest Trainees' Scheme and the professional course available through the University of Western Australia and the Australian Forestry School, Canberra.

Students are at present enrolled for the profession as follows :—

	Commonwealth Scholarship	State Scholarship	Independent
4th Year—Canberra. To graduate 1958	1	1	....
3rd Year—Canberra	1	....	....
2nd Year—University of W.A.....	2	1	....
1st Year—University of W.A.	2	1	3

Publicity.

Publications.—Three pamphlets dealing with the need for care in the use of fire were published and widely distributed during the year.

" Forestry in Western Australia," a book of some 185 pages has been produced to fill the long-felt need for a comprehensive work on forestry in general, and in this State in particular. It was written with the minimum use of technical terms in an endeavour to provide something which could be readily understood by the High School student and the man in the street. The publication is available as a bound volume or in individual chapters dealing with specific aspects of the subject.

Exhibits.—Departmental exhibits were again staged at both the Wildflower and Wild Life Shows.

Films.—In conjunction with the Education Department a 16 mm. film entitled " Message of the Trees " was produced to convey to children (and also to adults) some thoughts on the utility and aesthetic value of trees throughout the year.

The Tree Society.

This Society was formed on a voluntary basis from a public meeting in September, 1956. Requests for Government aid resulted in the seconding of a Departmental field officer as Secretary-Organiser and the provision of a secretarial establishment by the Department.

The main aims of the Tree Society are education and publicity relating to trees, the preservation of trees and other flora, and replanting of tree-denuded areas.

Thirteen branches of the Society have been formed in country areas and six in the Metropolitan area. Requests have been received from Local Governing Bodies to form another 10 branches, and present membership of the Society is estimated at 700. It is the object of the Tree Society to form at least one branch for every Local Governing Body.

The experience of the Tree Society up to date indicates that country people, particularly in the drier areas, are becoming more and more conscious of the value and need for tree preservation and establishment.

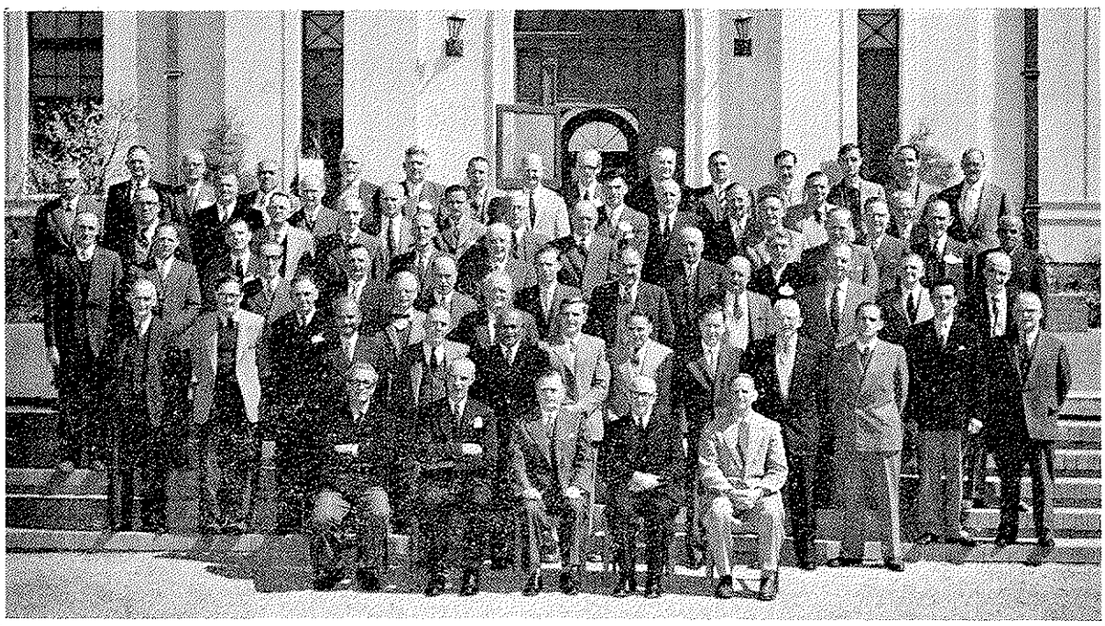
Authorised representatives of the Tree Society are welcome to visit schools to explain the work of the Society, particularly in regard to proposals for tree planting projects.

The instruction of Trainee Teachers at Graylands and Claremont Teachers' Training Colleges has been undertaken as a practical and very real contribution to future tree culture.

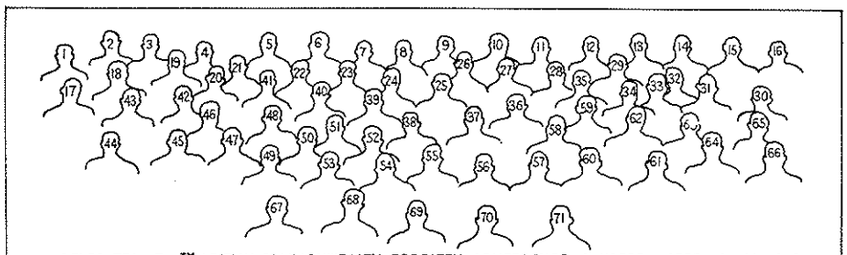
A state-wide " Festival of Trees " week, culminating on Arbor Day, was held for the first time this year.

Business houses and the Press and radio have shown an interest in the Society's activities and have co-operated in many ways to foster the idea of Tree Week.

A spectacular feature of Tree Week was the hauling to King's Park, Perth, of a 100 ton, 106 ft. long Karri log from a sawmill at Donnelly River Mill. With the assistance of several firms and the co-operation of the King's Park Board, the log is now installed on a site near the War Memorial.



Delegates to the Seventh British Commonwealth Forestry Conference, Australia and New Zealand, photographed at the Forestry School, Canberra.



DELEGATES AT 7TH BRITISH COMMONWEALTH FORESTRY CONFERENCE CANBERRA SEPT. 16 – 23 1957

No	NAME COUNTRY	No	NAME COUNTRY	No	NAME COUNTRY	No	NAME COUNTRY
1	M.BIN M. RASHAD–MALAYA	20	F.E. HUTCHINSON–N. Z.	38	C. D BEGLEY – U.K.	55	DR. J.S. BEARD–S.AFRICA
2	DR. M.R. JACOBS–AUST.	21	PROF. M.L. ANDERSON–U.K.	39	J. W YOUL–AUST. (VIC)	56	DR. H.E. DADSWELL–AUST.
3	C.S. CREE–BRIT. HONDUR.	22	A.O. LAWRENCE–AUST. (VIC)	40	E. J. HONORE–KENYA	57	PROF. R.W. WELLWOOD–CAN.
4	A.A. PORTER–AUST. (QLD)	23	D. MOORE TRINIDAD & TOB	41	R. G. MILLER–U. K	58	J.H. VAN WYK–S. AFRICA
5	G.B. RYLE–U.K.	24	A.J.S. ADAMS–AUST (S.A)	42	N. R. DUSTING–CANADA	59	K.V.M. FERGUSON–AUST. (VIC
6	R.H. NEEDHAM–AUST.	25	B.H. BEDNALL–AUST. (S.A)	43	R.G. SANGSTER–TANGAN.	60	COL. J.H. JENKINS–CANAD.
7	A.D. MC KINNON–N.Z.	26	C. D. SCHULTZ–CANADA	44	DR. F.Y. HENDERSON–U.K.	61	H.L. MALHERBE–S. AFRICA
8	A.C. HARRIS–AUST. (W.A)	27	L.S. HUDSON–AUST. (N.S.W)	45	J. L. HARRISON – SMITH N.Z.	62	R.R. WATERER–KENYA
9	P.C. LANCASTER–NIGERIA	28	W.D. MUIR–AUST. (N.S.W)			63	C.E. DUFF–RHOD & NYAS.
10	G.W.M. NUNN–AUST. (W.A)	29	E.W. MARCH–NIGERIA	46	J.R. ANGUS–FIJI	64	V.C. CANNING–AUST. (TAS)
11	DR. A.L. GRIFFITH–E. AFR.	30	G.G. TAKLE–INDIA	47	A.H. CRANE–AUST (TAS)	65	DR. C.D. ORCHARD–CANAD
12	D.F. DAVIDSON–CYPRUS	31	PROF. SIR HARRY – CHAMPION–U.K.	48	A.R. TRIST–AUST. (QLD)	66	W. MACF. – ROBERTSON–U.K.
13	B.E. SMYTHIES–SARAWAK			49	Y.S. AHMAD–PAKISTAN		
14	G.G.K. SETTEN–MALAYA	32	H.R. GRAY–AUST	50	H.W. BEALL–CANADA	67	C. SWABEY–U.K
15	J.B. MC ADAM–N.G. PAPUA	33	S.P. SHERRY–S. AFRICA	51	J. MACDONALD–U.K.	68	SIR ARTHUR – GOSLING U.K.
16	N.K. WALLIS–AUST.	34	R. HOBBINS–RHOD. & NYAS	52	V. GRENNING–AUST. (QLD)		
17	P.A. BRIEGLEB–U.S.A.	35	E.K. MARSH–S. AFRICA	53	E. J. KELLY – EDWARDS–RHOD & NYAS.	69	G.J. RODGER–AUST.
18	F.F. KRAEGEN–AUST. (N.S.W)	36	S.L. KESSELL–AUST			70	S.A. CLARKE– AUST.
19	R.G.M. WILLAN–RHOD&NYAS	37	F.J. PERHAM–N. Z.	54	C. PURKAYASTHA–F.A.O.	71	D.A.N. CROMER–AUST.

17. SEVENTH BRITISH COMMONWEALTH FORESTRY CONFERENCE

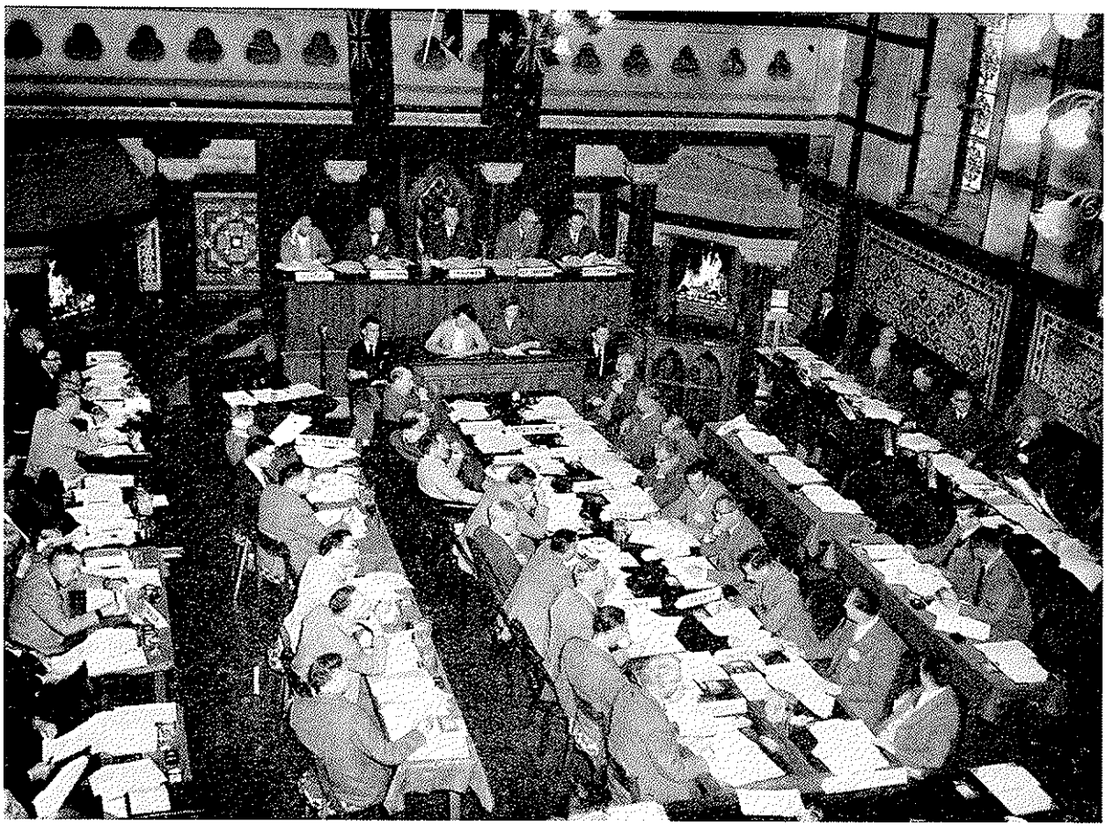
The Seventh British Commonwealth Forestry Conference was held in Australia and New Zealand during the period 26th August, to 10th October, 1957, and was attended by 78 delegates. Of these, 44 were from overseas Commonwealth countries. In addition to Foresters, there were many timber trade and forest products research representatives.

Not since 1928 has Australia and New Zealand been the venue of this Conference, which is held at intervals of five years in various countries of the British Commonwealth in turn.

Prior to the main Conference pre-sessional tours were organised, in various Australian States, and one of these parties spent two weeks inspecting Western Australian forestry. The Conference opened officially in Adelaide on the 26th August, 1957, and subsequently toured Victoria, New South Wales, Queensland and Australian Capital Territory forests, before the main business sessions opened in Canberra on the 16th September. Later the Conference moved on to New Zealand where the concluding business sessions were held, and an extensive inspection of New Zealand forestry was undertaken.

It became obvious that forestry had made great forward strides in the British Commonwealth as a whole, and Australia and New Zealand in particular, since the Conference last visited these shores. Resolutions of the Conference are given in Appendix 7 of this Report. These resolutions have been forwarded to all Governments which were represented at the Conference.

The Western Australian Forests Department was represented by the Conservator, and Mr. G. W. Nunn.



Seventh British Commonwealth Forestry Conference, Australia and New Zealand, 1957. Groups of delegates in conference at Christchurch.

18. TIMBER INDUSTRY REGULATION ACT, 1926-50

The number of mills registered under the provisions of the Act at the close of the year totalled 268 (142 Crown Land, 126 Private Property).

The average number of persons employed on timber holdings each month throughout the year was 5,227 compared with 5,574 last year.

The District and Workmen's Inspectors made 1,440 inspections of timber holdings.

There were 767 notifiable accidents, seven of which were fatal.

The number of accidents per 100 persons employed was 14.67 compared with 16.9 for last year.

The cost to the Forests Department of administering the Timber Industry Regulation Act for the year ended 30th June, 1958, was as follows :—

	£
Salaries	2,258
Mileage and Travelling Allowances and Sundries	1,192
Total	£3,450

19. FOREST OFFENCES

One hundred and fifteen forest offences were reported during the year. Legal proceedings were taken in 19 cases. Fines totalling £194 and costs of £105 13s. were imposed.

Warnings were issued in 40 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 totalled £2,025 4s. 4d.

20. EMPLOYMENT IN FORESTRY

The number of wage earners directly employed in Forestry has been estimated at approximately 6,614, made up as follows :—

Direct Employees of the Forests Department—		
Professional Officers	32	
General Field Staff	118	
Clerical and Drafting	59	
Wages Employees	553	
Contractors and Employees (estimated)	20	
		782
Sawmill employees including bush workers at 31st December, 1957*		5,227
Firewood cutters, pole getters, etc., on permits		400
Goldfields firewood cutters, contractors, and woodline employees and carters		55
Apiarists, estimated (266 sites are registered)		150
Total		6,614

* Includes employees of registered sawmills.

21. STAFF MATTERS

Mr. W. H. Eastman resumed duty with the Department after study leave.

Messrs. A. R. Hill and S. J. Quain, who previously resigned to seek employment overseas, returned to Western Australia and were re-appointed as Assistant Divisional Forest Officers. Other appointments to the professional staff were Messrs. A. J. Hart and I. S. Ferguson who were appointed Assistant Divisional Forest Officers under the Public Service Act, and Messrs. A. L. Clifton and J. B. Sclater who were appointed Forest Officers under the Forests Act.

Mr. D. E. Cox was promoted to Senior Forest Photogrammetist.

Other new appointments under the Forests Act were one typist, two clerical assistants and six forest guards. Promotions were—three officers to Forest Assistant, Class 1 (permanent) ; one to Assistant Forester, Class 2 ; one to Assistant Forester, Class 3 ; three to Forester, Class 4. One Forest Guard and two Assistant Foresters, Class 2, resigned.

District Forester J. A. Thomson was seconded to the Tree Society as Secretary-Organiser, and Assistant Forester R. B. Burke, Acting Forester W. T. Walton and Forester W. McMahon retired.

I desire to again place on record my appreciation of the active co-operation and loyal support of all members of both field and office staffs during the year.

APPENDICES

APPENDIX 1A

CONSOLIDATED REVENUE FUND

Statement of Revenue and Expenditure for 1957-58

Revenue

	£	£
Territorial—		
To Timber :		
Log Royalties	711,546	
Sleeper Royalties	51,701	
Sawn Timber Royalties	2,600	
Miscellaneous Royalties	56,719	
Goldfields Revenue	7,330	
Rents and Leases	2,952	
		832,848
,, Sandalwood		65,513
Departmental—		
To Inspection Fees	19,934	
,, Miscellaneous Sales	6,393	
,, Pine Conversion	118,163	
,, Hardwood Conversion	104,666	
,, Miscellaneous Receipts	10,129	
,, Recoupable Projects	31,399	
		290,684
		£1,189,045

Expenditure

	£
By Salaries	124,298
,, Incidentals	33,251
,, Timber Industry Regulations (Incidentals)	1,192
,, Direct Conversion of Pine	78,514
,, Direct Conversion of Hardwood	82,053
,, Recoupable Projects	36,023
,, Forests Improvements—Collie Area	35,932
,, Excess of Revenue over Expenditure	797,782
	£1,189,045

APPENDIX 1B

Statement of Reforestation Fund Expenditure for the Year ended 30th June, 1958

	£	£
To Division 1—		
Busselton	3,700	
Keenan	101	
		3,801
,, Division 2—		
Mundaring		41,386
,, Division 3—		
Dwellingup	43,472	
Research Station	1,663	
		45,135
,, Division 4—		
Collie		35,888
,, Division 5—		
Kirup		24,224
,, Division 6—		
Manjimup		77,844
,, Division 8—		
Gleneagle		30,539
,, Division 9—		
Collier	18	
Wanneroo	6,076	
Julimar	2,445	
		8,539
,, Division 10—		
Harvey		39,872
,, Division 11—		
Pemberton		48,124
,, Division 12—		
Nannup		38,120
,, Division 13—		
Shannon		46,424
,, Mt. Barker		3,193
,, Kalgoorlie		219
Total Divisional Expenditure		£443,308
Plantation Expenditure—		
To Division 2—		
Mundaring		11,824
,, Division 4—		
Collie		8,143
,, Division 5—		
Grimwade		15,524
,, Division 7—		
Narrogin		8,899
,, Division 8—		
Gleneagle		1,108
,, Division 12—		
Nannup		21,792
		£67,290
Head Office Expenditure—		
To Training of Staff		1,172
,, Head Office Research		611
,, Working Plans		2,219
,, Salaries and Allowances		122,835
,, Incidentals		13,745
,, Manjimup Drawing Incidentals		97
,, Workers' Compensation Premiums		7,691
,, Fire Insurance		1,307
,, Vehicle Insurance		5,860
,, Radio Branch		6,884
,, Equipment not charged to Divisions		89,440
,, Purchase of Land		25,034
,, Pay Roll Tax		10,680
,, Cash Order Account		4,452
		292,027
Total		£802,625

	£
By Forests Improvement and Reforestation Fund—	
General Account	685,022
,, Federal Aid Roads Grant	73,000
,, Miscellaneous Recoups of Overheads, Drum Refunds, Sale of Equipment, etc.	44,603
	£802,625

APPENDIX 1C

Statement of Loan Expenditure for the year ended 30th June, 1958

	£	£		£
To Division 1—			By General Loan Fund	100,000
Keenan	11,200			
Ludlow	18,671			
		29,871		
,, Division 9—				
Applecross	4,044			
Collier	3,725			
Gnangara	31,093			
Scaddan	249			
		39,111		
,, Division 10—				
Harvey Weir	3,058			
McLarty	4,248			
Myalup	9,331			
		16,637		
Total Plantation Expenditure		£85,619		
Head Office Expenditure—				
To Head Office Salaries		14,748		
,, Workers' Compensation Premiums		1,441		
,, Pay Roll Tax		2,118		
		103,926		
Less Recoups on Account Over-heads, etc.		3,926		
		£100,000		£100,000

APPENDIX 1D

Statement of Afforestation Expenditure for year ended 30th June, 1958

	£	£		£
To Division 1—			By General Loan Fund	100,000
Keenan	11,200		,, Reforestation Fund	104,883
Ludlow	18,671			
		29,871		
,, Division 2—				
Mundaring		11,824		
,, Division 4—				
Collie		8,143		
,, Division 5—				
Kirup		15,524		
,, Division 7—				
Narrogin		8,899		
,, Division 8—				
Gleneagle		1,108		
,, Division 9—				
Applecross	4,044			
Collier	3,725			
Gnangara	31,093			
Scaddan	249			
		39,111		
,, Division 10—				
Harvey Weir	3,058			
McLarty	4,248			
Myalup	9,331			
		16,637		
,, Division 12—				
Nannup		21,792		
Total Plantations		£152,909		
,, Head Office Charges—				
Salaries :				
Reforestation	12,396			
Loan	14,748			
		27,144		
Workers' Compensation Premiums				
Reforestation	1,129			
Loan	1,441			
		2,570		
Pay Roll Tax—				
Reforestation	1,122			
Loan	2,118			
		3,240		
Purchase of Land		19,020		
		£204,883		£204,883

APPENDIX 2A

Exports of Timber, Tanning Substances and Essential Oils from Western Australia during the year ended 30th June, 1958

Item No.	Item and Country of Destination			Quantity	£
6300	*Wicker, Bamboo and Cane, and all Manufactures of N.E.I., whether Partly or Wholly Finished :*			cub. ft.	
	Other Australian States :				
	New South Wales			....	745
	Victoria			....	5
	Northern Territory			....	652
	Total			....	1,402
	TIMBER				
6349	*Logs—Hardwood—*				
	Christmas Island (Indian Ocean)			....	206
6352	*Jarrah Sleepers—*				
	United Kingdom			367,645	278,691
	Ceylon			129,181	105,929
	India, Republic of			414,500	263,446
	Malaya, Federation of			500	430
	Mauritius and Dependencies			41,250	31,046
	New Zealand			911,049	681,692
	South Africa, Union of			268,937	167,628
	Iran			21,070	11,306
	Iraq			293,849	186,588
	Other Australian States :	cub. ft.	£		
	Victoria	3,486	1,743		
	South Australia	508,096	281,825		
				511,582	283,568
				2,959,563	2,010,324
6354	*Karri Sleepers—*				
	Other Australian States :				
	South Australia			32,555	15,432
	Sawn Timber, Undressed, N.E.I.—				
6410	*Softwoods :*				
	United Kingdom			6,673	4,200
	Christmas Island (Indian Ocean)			1,220	899
	Other Australian States :				
	Northern Territory			2,415	4,395
				10,308	9,494
	Hardwoods :				
6426	*Jarrah :*				
	United Kingdom			62,598	44,547
	Cocos Island			3,339	891
	Canada			1,425	1,225
	Ceylon			13,007	10,880
	Christmas Island (Indian Ocean)			728	819
	Mauritius and Dependencies			4,673	2,863
	New Zealand			122,074	84,350
	South Africa, Union of			81,553	60,457
	Bahrein Islands			101	900
	Belgium-Luxemburg			1,070	853
	Germany, Federal Republic of			1,551	1,444
	Iran			7,183	7,150
	Iraq			14,103	9,863
	Korea, Republic of			993	1,481
	Netherlands			8,901	6,001
	Other Australian States :	cub. ft.	£		
	New South Wales	9,545	6,540		
	Victoria	185,216	116,404		
	South Australia	827,653	490,605		
	Northern Territory	11,445	9,169		
				1,033,859	622,718
				1,357,158	856,442
6428	*Karri :*				
	United Kingdom			89,996	62,691
	Ceylon			619	527
	Christmas Island (Indian Ocean)			3,017	1,806
	Cyprus			4,000	2,929
	New Zealand			127,023	88,824
	Gilbert and Ellice Islands			556	536
	Rhodesia and Nyasaland			458	508
	South Africa, Union of			56,455	41,855
	Belgium-Luxemburg			9,811	8,139
	Germany, Federal Republic of			23,740	26,824
	Italy			1,503	886
	Netherlands			14,459	11,254
	Other Australian States :	cub. ft.	£		
	New South Wales	1,747	1,230		
	Victoria	11,728	7,401		
	South Australia	552,879	317,036		
	Northern Territory	40,832	30,977		
				607,186	356,644
				938,823	603,423
6429	*Other :*				
	United Kingdom			70,359	44,152
	Canada			250	220
	Christmas Island (Indian Ocean)			673	431
	Mauritius and Dependencies			1,663	1,102
	New Zealand			16,258	10,992
	Germany, Federal Republic of			11,441	9,309
	Other Australian States :	cub. ft.	£		
	New South Wales	1,276	2,037		
	Victoria	292	250		
	South Australia	9,567	6,692		
	Northern Territory	499	747		
				11,634	9,726
				112,278	75,932

Item No.	Item and Country of Destination			Quantit
6431	*Box Shooks—*			
	Other Australian States :			
	Northern Territory			1
6435	*Shooks and Staves, Cask and Vat—*			
	Other Australian States :			
	New South Wales			11,7
	Queensland			3,5
				15,3
	Sawn Timber, Dressed or Moulded, N.E.I.—			
6441	*Flooring :*			
	United Kingdom			
	Gilbert and Ellice Islands			5
	Singapore			1
	Netherlands			2
	Other Australian States :	cub. ft.	£	
	New South Wales	23,402	25,888	
	Victoria	26,437	31,125	
	South Australia	79,065	81,649	
	Northern Territory	1,280	1,251	
				130,1
				131,1
6449	*Other :*			2
	Christmas Island (Indian Ocean)			
	Other Australian States :	cub. ft.	£	
	New South Wales	93	93	
	Victoria	287	524	
	South Australia	9,645	8,869	
	Northern Territory	5,092	8,499	
				15,1
				15,3
6469	*Veneers :*			sq. ft.
	Other Australian States :			
	New South Wales			10,3
6479	*Plywood :*			
	Christmas Island (Indian Ocean)			1,0
	Other Australian States :	sq. ft.	£	
	New South Wales	176,736	5,845	
	Victoria	432,266	7,414	
	South Australia	2,951,136	108,966	
	Northern Territory	79,795	3,635	
				3,639,9
				3,641,0
	Total Timber Exports			
	WOOD MANUFACTURES			No.
6505	*Casks and Vats, Empty, New—*			
	United Kingdom			3
6529	*Manufactures of Wood (except Furniture)—*			
	United Kingdom			
	Ceylon			
	Cocos Island			
	Mauritius and Dependencies			
	Singapore			
	Other Australian States :		£	
	New South Wales		681	
	Victoria		4,605	
	Queensland		282	
	South Australia		5,608	
	Tasmania		10	
	Northern Territory		17,106	
6540	*Furniture of Wood or Partly of Wood—*			
	Cocos Island			
	Christmas Island (Indian Ocean)			
	Other Australian States :		£	
	New South Wales		1,360	
	Victoria		445	
	South Australia		400	
	Northern Territory		1,564	
	Total Wood Manufactures			
	Essential Oils, Natural, Non-Spirituous—			lb.
	United Kingdom			30,7
	Canada			8
	Hong Kong			1,3
	India, Republic of			
	Malaya			2
	Singapore			7
	South Africa, Union of			1
	Cuba			5
	France			4,6
	Germany, Federal Republic of			8
	Indonesia			2
	Philippines			1
	Thailand			2
	United States of America			1,9
	Other Australian States :	lb.	£	
	New South Wales	23,660	30,099	
	Victoria	26,041	21,386	
	Queensland	903	1,380	
	South Australia	1,121	2,107	
				51,7
				94,5

APPENDIX 2A—*continued*

Exports of Timber, Tanning Substances and Essential Oils from Western Australia during the year ended 30th June, 1958.

Item and Country of Destination	Quantity	£
ing Substances of Natural Origin—	cwt.	
ited Kingdom	2,955	8,967
nada	702	2,316
w Zealand	1,467	4,665
naica and Dependencies	120	393
nidad and Tobago	829	3,107
stria	1,406	3,975
nmark	2,137	5,951
rmany, Federal Republic of	8,281	20,444
onesia	4,113	16,156
q	200	813
y	100	407
an	205	609
therlands	4,069	8,196
Norway	104	320
Sweden	100	308
United States of America	72,197	210,469
Other Australian States :	cwt.	£
New South Wales	3,810	12,702
Victoria	10,503	23,801
Queensland	1,347	4,240
South Australia	2,174	8,524
Tasmania	311	1,292
	18,145	50,559
	117,130	337,655
Total Value of all Exports shown on Return	....	4,354,936

APPENDIX 2B

Imports of Timber, Tanning Substances and Essential Oils into Western Australia during the year ended 30th June, 1958

Item and Country of Origin	Quantity	£
er, Bamboo and Cane and Manufactures thereof—		
ited Kingdom	....	337
ng Kong	....	5,546
ia, Republic of	....	120
laya, Federation of	....	10,013
gapore	....	493
rma	....	902
na	....	132
nce	....	5
rmany, Federal Republic of	....	8
onesia	....	85
y	....	1
an	....	3,451
lippines	....	49
her Australian States : £		
New South Wales 1,080		
Victoria 4,024		
outh Australia 1,271		
	....	6,375
	....	27,517
TIMBER		
ot Sawn—		
dwoods (Pored Woods) :	cub. ft.	
orneo, British	451,467	109,793
Vindward Islands	25	135
lew Caledonia	3,573	1,383
	455,065	111,311
Timber, Undressed, N.E.I.—		
woods (Non-pored Woods) :		
edwood and Western Red Cedar—		
Canada	65	57
ouglas Fir :		
Canada	8,284	5,911
United States of America	43,421	31,054
	51,705	36,965
r Softwoods :		
orneo, British	1,681	738
nited States of America	4,618	5,705
	6,299	6,443
posite Item for Undressed Softwoods :		
ther Australian States :		
New South Wales	626	1,049
Victoria	322	439
Queensland	5,901	6,137
South Australia	648	775
Tasmania	2,577	2,519
	10,074	10,919
oods (Pored Woods)—		
ory :		
nited States of America	1,128	2,144
r Hardwoods :		
orneo, British	213,278	123,862
alaya, Federation of	62,967	42,547
ngapore	129	93
ther Australian States : cub. ft. £		
New South Wales 33 88		
Queensland 23,213 25,227		
Tasmania 33,299 25,105		
	56,545	50,420
	332,919	216,922

Item No.	Item and Country of Origin	Quantity	£
6431	*Box Shooks—*		
	Malaya Federation	13,068	6,411
6441	*Sawn Timber Dressed or Moulded, N.E.I.—*		
	Flooring :		
	Sweden	8,951	6,817
6442	*Lining :*		
	Norway	4,046	3,103
	Sweden	2,723	2,006
		6,769	5,109
6443	*Weatherboards :*		
	Norway	2	2
6449	*Other :*		
	United Kingdom	86	268
	Norway	979	713
		1,065	981
	Composite Item for Sawn Timber, Dressed, N.E.I.—		
	Other Australian States :		
	New South Wales	....	4,050
	Victoria	....	23,688
	Queensland	....	219
	Tasmania	....	683
		....	28,640
6461-6469	*Veneers—*	sq. ft.	
	United Kingdom	24,544	263
	France	21,450	415
	Other Australian States : sq. ft. £		
	New South Wales 401,810 10,986		
	Victoria 2,109 148		
	Queensland 152,994 2,245		
		556,913	13,379
		602,907	14,057
6479	*Plywood—*		
	New Guinea Trust Territory	37,740	2,781
	New Zealand	5,400	330
	Other Australian States : sq. ft. £		
	New South Wales 167,007 13,244		
	Victoria 97,752 3,087		
	Queensland 1,596,252 93,451		
	South Australia 2,670 142		
		1,863,681	109,924
		1,906,821	113,035
	Total Timber Imports	....	559,813
	WOOD MANUFACTURES		
6505	*Casks and Vats, Empty—*	No.	
	*Australia	522	3,797
	Germany, Federal Republic of	1	3
	Other Australian States :		
	Victoria	25	95
		548	3,895
6508	*Clothes Pegs of any Material—*	gross	
	Hong Kong	300	40
	Czechoslovakia	10,190	1,134
	Denmark	1,160	131
	Netherlands	3,100	402
	Sweden	13,100	1,953
	Other Australian States : gross £		
	New South Wales 8,614 3,204		
	Victoria 6,028 2,282		
	South Australia 616 221		
	Tasmania 29,712 10,416		
		44,970	16,123
		72,820	19,783

* Produce of Australia previously exported, now returned to this State.

APPENDIX 2B

Imports of Timber, Tanning Substances and Essential Oils into Western Australia during the year ended 30th June, 1958

Item No.	Item and Country of Origin	Quantity	£
6511	*Corestock (also known as Blockboard)*—	sq. ft.	
	Austria	96	4
	Other Australian States :	sq. ft.	£
	New South Wales	16,655	3,584
	Queensland	5,850	1,254
		22,505	4,838
		22,601	4,842
6515	*Last Blocks and Lasts*—*	doz.	
	United Kingdom	20	354
6516	*Match Splints*—*		
	Finland	....	28,953
6517	*Rules and Rulers, Wooden*—*		
	United Kingdom	....	6,133
	Germany, Federal Republic of	....	33
	Netherlands	....	472
		....	6,638
6518	*Tool Handles, Unattached, of any Material*—	doz.	
	United Kingdom	833	1,772
	Canada	30	277
	Germany, Federal Republic of	22	90
	Sweden	144	181
	Other Australian States :	£	
	New South Wales	26,429	
	Victoria	13,527	
	Queensland	1,641	
	South Australia	1,137	
	Tasmania	2,813	
		‡	45,547
		....	47,867
6528	*Oars and Sculls*—†	No.	
	Other Australian States :		
	New South Wales	1,670	2,774
	Victoria	96	163
	South Australia	64	145
		1,830	3,082
6529	*Manufactures of Wood (except Furniture), N.E.I., whether partly or wholly finished*—		
	United Kingdom	....	1,788
	Hong Kong	....	172
	India, Republic of	....	81
	Singapore	....	55
	South Africa, Union of	....	23
	Belgium-Luxemburg	....	41
	China	....	102
	Czechoslovakia	....	37
	Denmark	....	53
	France	....	28
	Germany, Federal Republic of	....	759
	Italy	....	279
	Japan	....	3,186
	Netherlands	....	44
	Sweden	....	53
	United States of America	....	517
	Other Australian States :	£	
	New South Wales	28,924	
	Victoria	60,634	
	Queensland	3,040	
	South Australia	5,716	
	Tasmania	48	
		....	98,362
		....	105,580

Item No.	Item and Country of Origin	Quantity
6540	*Furniture, N.E.I., of Wood or partly of Wood*—	
	United Kingdom	....
	Hong Kong	....
	India, Republic of	....
	Singapore	....
	§Commonwealth of Australia	....
	Germany, Federal Republic of	....
	Italy	....
	Japan	....
	Netherlands	....
	Norway	....
	Sweden	....
	United States of America	....
	Other Australian States :	£
	New South Wales	10,260
	Victoria	29,074
	Queensland	342
	South Australia	15,890
	Tasmania	55
		....
		....
	Total Wood Manufactures	....
	Total Wood and Wicker, Raw and Manufactured	....
8701-8729	*Essential Oils, Natural, Non-Spirituous*—	lb.
	United Kingdom	116
	Ceylon	2,356
	Malaya, Federation of	140
	Seychelles and Dependencies	16,787
	Singapore	324
	Jamaica and Dependencies	336
	China	3,008
	France	460
	Madagascar	1,323
	Indonesia	2,242
	Italy	14
	Spain	176
	United States of America	5,650
	Other Australian States :	lb. £
	New South Wales	250,195 68,444
	Victoria	16,433 4,772
	Queensland	39 37
	South Australia	8,439 3,189
		275,106
		308,038
	TANNING SUBSTANCES—NATURAL ORIGIN	
1606	*Tanning Bark*—	cwt.
	Other Australian States :	
	South Australia	17
1611-1619	*Tanning Extracts*—	
	South Africa, Union of	7,364
	India, Republic of	200
	Germany, Federal Republic of	188
	Norway	784
	Sweden	698
		9,234
1620	*Other Tanning Substances of Natural Origin*—	
	India, Republic of	757
	Other Australian States :	cwt. £
	New South Wales	3 20
	Victoria	33 197
		36
		793
	Total Tanning Substances of Natural Origin	....
	Total Value of all Imports shown in this Return	....

* Interstate imports not recorded separately.

† Overseas imports not recorded separately.

‡ Quantity not recorded.

§ Produce of Australia, previously exported, now returned to this State.

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
		£			£	£	£	£
(a)	10,000	2,500	1890	6,913,550	553,198			
....	....	....	1900	5,725,400	458,461			
....	....	....						
....	....	....	1901	7,150,600	572,354	....	....	....
....	....	....	1902	6,256,750	500,533	....	....	....
			1903	7,748,450	619,705	....	859	....
....	....	....	1904	8,072,300	654,949	....	32,876	....
....	....	....	1905	8,709,500	689,943	....	154,087	....
....	....	....	1906	(c) 8,830,700	708,993	....	140,720	....
....	(b)	163	1907	(c) 6,409,550	511,923	....	98,773	....
....	....	....	1908	(c) 9,869,509	813,591	....	79,934	....
....	2,550	255	1909	(c) 10,830,450	867,419	....	59,633	....
....	12,200	1,120	1910	(c) 12,074,100	972,698	....	93,733	....
....	3,350	333						
....	....	....	1911	(c) 12,449,500	986,341	....	83,470	....
....	10,500	1,048	1912	(c) 11,297,100	903,396	....	49,004	....
			1913	(c) 13,619,850	1,089,481	....	47,377	....
....	1,250	268	1914 (d)	(c) 6,279,750	502,153	....	18,197	777
....	7,050	806	1915 (e)	(c) 9,968,500	808,392	....	6,127	381
....	52,200	5,220	1916 (e)	5,432,100	441,991	....	10,208	1,102
....	58,500	7,023	1917 (e)	3,890,650	310,893	....	18,959	2,060
....	76,900	12,076	1918 (e)	3,436,250	274,141	....	16,886	3,995
....	70,500	9,671	1919 (e)	4,135,750	332,584	11,535	18,875	3,987
....	69,200	9,449	1920 (e)	5,065,300	465,731	21,935	22,121	3,704
....	29,250	2,340						
....	67,250	6,051	1921 (e)	9,816,250	1,137,819	24,916	23,073	10,107
....	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
....	27,750	2,497	1924 (e)	11,126,861	1,367,517	11,505	29,606	39,877
....	68,800	7,151	1925 (e)	11,844,303	1,477,997	13,298	40,136	42,057
....	32,900	2,963	1926 (e)	12,001,384	1,522,958	10,072	15,056	47,819
....	58,300	5,508	1927 (e)	12,580,262	1,651,149	8,727	15,818	26,544
....	183,950	15,693	1928 (e)	10,384,784	1,265,383	7,783	27,662	39,131
....	85,650	6,849	1929 (e)	7,635,237	960,435	6,603	35,850	63,307
....	56,750	4,541	1930 (e)	6,579,743	807,425	4,687	40,628	77,510
....	8,000	638						
....	179,900	14,273	1931 (e)	4,127,856	507,382	26,615	35,333	56,170
....	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
....	218,500	15,304	1935 (e)	4,060,830	487,248	76,107	20,904	26,720
....	37,000	2,590	1935 (e)	5,326,117	636,466	65,494	15,284	35,363
....	68,150	4,771	1936 (e)	5,598,180	679,522	50,665	12,237	27,526
....	345,600	24,192	1937 (e)	5,673,903	699,684	52,338	14,491	38,185
....	342,350	23,965	1938 (e)	7,545,744	932,420	47,934	13,865	35,128
....	219,050	23,743	1939 (e)	5,704,250	722,310	43,518	17,842	25,550
....	336,150	26,979	1940 (e)	5,049,585	634,859	62,796	19,485	47,736
....	580,900	63,902						
....	627,250	69,742	1941 (e)	6,091,187	790,876	74,935	13,686	59,867
....	662,550	66,252	1942 (e)	5,224,634	700,474	64,454	6,896	74,904
			1943 (e)	3,516,566	605,327	32,426	1,598	70,523
....	792,750	79,277	1944 (e)	3,645,354	613,994	25,324	1,294	72,704
....	936,500	93,650	1945 (e)	2,851,475	570,028	27,307	2,795	103,055
....	997,000	79,760	1946 (e)	3,373,025	722,061	(f) 2,618	4,872	128,050
....	861,700	68,936	1947 (e)	3,458,628	865,255	(f) 13,118	12,056	151,768
....	848,150	67,850	1948 (e)	3,584,405	1,099,073	(f) 6,572	9,556	116,465
....	626,150	50,092	1949 (e)	3,198,212	993,152	(f) 6,639	5,112	75,395
....	354,800	28,384	1950 (e)	2,857,946	974,493	(f) 13,525	8,243	78,550
....	525,750	42,060						
....	788,500	63,080	1951 (e)	2,342,492	(g) 918,485	(f) 25,101	16,581	125,833
....	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
....	1,273,950	89,179	1954 (e)	3,858,956	(g) 2,248,320	(f) 59,360	80,248	55,273
....	1,082,650	78,419	1955 (e)	3,477,249	(g) 1,935,019	(f) 79,893	37,338	80,822
....	512,950	33,888	1956 (e)	4,568,034	(g) 2,818,716	(f) 119,459	554,760	90,928
....	1,063,700	74,804	1957 (e)	4,684,017	(g) 3,256,719	(f) 78,934	588,544	58,993
....	1,255,250	88,146	1958 (e)	5,572,681	(g) 3,875,705	(f) 39,762	337,655	101,814
....	1,545,600	116,420						
....	2,393,300	192,451	Total	415,323,014	60,414,291	1,584,992	3,173,546	2,401,094
....	4,086,150	326,195						

(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
	£	£	£
1848	464	....	....
1849	....	....	....
1850	189	....	....
1851	3,216	....	....
1852	2,479	....	....
1853	790	....	....
1854	831	....	....
1855	1,464	....	....
1856	1,124	....	....
1857	744	....	....
1858	1,528	....	....
1859	690	....	....
1860	2,005	....	....
1861	1,459	....	....
1862	1,920	....	....
1863	1,568	....	....
1864	894	....	....
1865	548	....	....
1866	1,442	....	....
1867	1,727	....	....
1868	1,451	....	....
1869	1,408	....	....
1870	1,518	....	....
1871	736	....	....
1872	1,660	....	....
1873	1,008	....	....
1874	1,774	....	....
1875	2,707	....	....
1876	3,098	....	....
1887	2,036	....	....
1878	2,947	....	....
1879	2,340	....	....
1880	3,061	....	....
1881	3,639	....	....
1882	3,692	....	....
1883	6,667	....	....
1884	2,930	....	....
1885	11,479	....	....
1886	17,888	....	....
1887	8,136	....	....
1888	4,461	....	....
1889	7,686	....	....
1890	14,979	....	....
1891	18,406	....	....
1892	26,713	....	....
1893	14,493	....	....
1894	17,964	....	....
1895	47,128	....	....
1896	5,381	....	....
1897	164,552	....	....
1898	55,566	....	....
1899	45,689	....	....
1900	56,266	1,416	1,105
1901	80,134	1,740	1,546
1902	97,810	3,418	1,751
1903	102,383	3,556	1,348
1904	157,856	1,322	2,122
1905	98,494	582	1,592
1906	95,229	1,412	1,915
1907	122,016	2,767	1,549
1908	93,205	2,392	4,584
1909	90,502	4,129	4,033
1910	171,280	3,531	3,686
1911	152,133	2,912	4,938
1912	167,244	3,089	4,598
1913	202,640	2,651	5,392
1914	78,736	629	2,823
1914–15	107,763	2,082	4,988
1915–16	76,849	3,313	4,788
1916–17	75,681	2,848	3,848
1917–18	58,305	2,020	4,358
1918–19	62,824	1,181	4,168
1919–20	100,083	3,748	10,043
1920–21	171,654	*4,899	6,106
1921–22	92,448	5,865	6,577
1922–23	109,428	6,991	4,033
1923–24	133,983	2,790	3,301
1924–25	161,893	2,670	4,429
1925–26	144,989	5,826	4,449
1926–27	162,193	8,971	4,254
1927–28	183,196	9,648	6,955
1928–29	241,601	6,894	4,413
1929–30	197,532	10,825	3,980
1930–31	76,533	4,145	3,160
1931–32	164,496	4,705	3,505
1932–33	197,916	4,903	3,421
1933–34	183,944	4,310	3,888
1934–35	211,056	4,076	5,040
1935–36	228,451	5,401	3,921
1936–37	257,164	5,267	4,810
1937–38	270,126	4,777	6,560
1938–39	254,315	3,974	7,014
1939–40	259,399	6,802	23,027
1940–41	249,111	3,798	32,399
1941–42	283,611	15,846	33,828
1942–43	163,480	6,250	47,718
1943–44	149,928	7,883	68,871
1944–45	148,838	9,264	75,449
1945–46	†219,466	19,573	56,295
1946–47	386,465	12,395	78,091
1947–48	345,508	8,019	96,769
1948–49	570,755	8,662	42,926
1949–50	521,815	24,923	51,197
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
Total	15,987,482	505,849	1,637,810

* 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 W.A. SINCE 1829

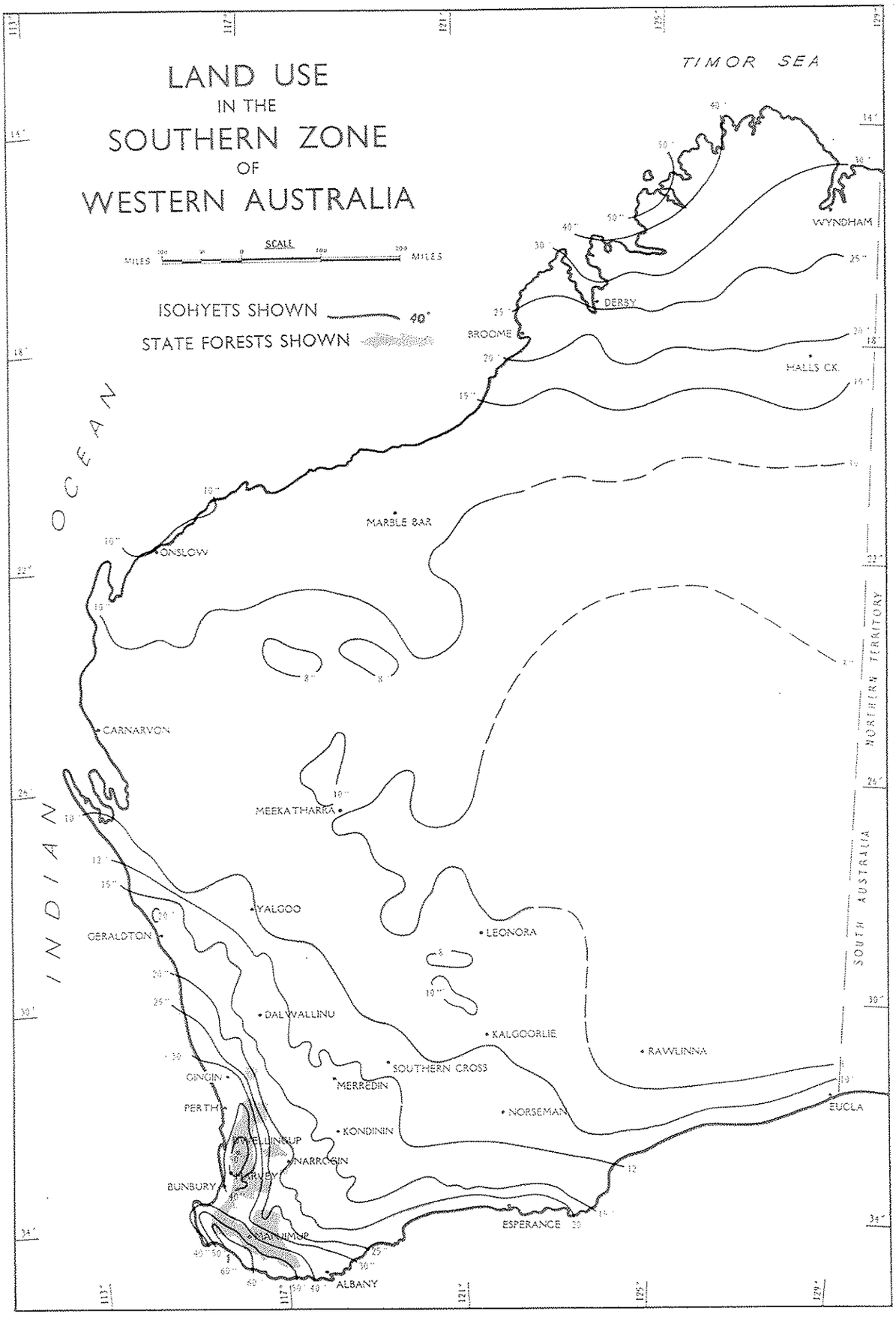
Year	*Crown Land	Private Property	Total	Year	*Crown Land	Private Property	Total
	Loads	Loads.	Loads		Loads	Loads	Loads
1916—				1937 (c)	634,077	318,044	952,121
imated	....	....	13,265,357	1938 (c)	634,749	318,579	953,328
(a)	386,662	42,890	429,552	1939 (c)	584,953	221,720	806,673
(b)	153,311	10,099	163,410	1940 (c)	553,202	182,791	735,993
(c)	399,741	67,809	467,550	1941 (c)	561,784	205,780	767,564
(c)	565,844	115,258	681,102	1942 (c)	532,733	112,668	645,401
(c)	586,179	140,369	726,548	1943 (c)	472,098	86,459	558,557
(c)	722,448	312,803	1,035,251	1944 (c)	445,050	89,124	534,174
(c)	536,146	197,341	734,087	1945 (c)	439,400	86,191	525,591
(c)	840,089	186,856	1,026,945	1946 (c)	422,530	109,647	532,177
(c)	876,658	362,845	1,239,503	1947 (c)	438,971	156,639	595,610
(c)	976,475	500,752	1,477,227	1948 (c)	445,027	177,438	622,465
(c)	937,752	627,122	1,564,874	1949 (c)	405,236	196,286	601,522
(c)	855,625	466,689	1,322,314	1950 (c)	421,623	198,653	620,276
(c)	645,795	221,979	867,774	1951 (c)	507,829	214,261	722,090
(c)	633,083	233,072	866,155	1952 (c)	578,851	238,766	817,617
(c)	376,452	242,970	619,422	1953 (c)	684,468	260,428	944,896
(c)	234,857	82,319	317,176	1954 (c)	749,719	271,240	1,020,959
(c)	263,313	49,133	312,446	1955 (c)	749,353	303,909	1,053,262
(c)	425,262	126,608	551,870	1956 (c)	796,227	275,467	1,071,694
(c)	549,165	229,035	778,200	1957 (c)	788,522	231,707	1,020,229
(c)	628,012	268,723	896,735	1958 (c)	781,390	247,949	1,029,339
				Total	....	....	46,475,036

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

(a) Year ended 31st December.

(b) Six months ended 30th June.

(c) Year ended 30th June.


LAND USE
IN THE
SOUTHERN ZONE
OF
WESTERN AUSTRALIA
SCALE
MILES
MILES
ISOHYETS SHOWN
STATE FORESTS SHOWN
TIMOR SEA
INDIAN OCEAN
NORTHERN TERRITORY
SOUTH AUSTRALIA
WYNDHAM
DERBY
BROOME
HALLS CK.
MARBLE BAR
ONSLOW
CARNARVON
MEEKATHARRA
YALGOO
GERALDTON
LEONORA
DALWALLINU
KALGOORLIE
RAWLINNA
SOUTHERN CROSS
GINGIN
MERREDIN
PERTH
NORSEMAN
EUCLA
KONDININ
NARROGIN
BUNBURY
ESPERANCE
ALBANY

APPENDIX 6

LAND USE IN THE SOUTHERN ZONE OF WESTERN AUSTRALIA

Western Australia covers 624 million acres of the earth's surface. Fifty-eight per cent. of it has less than 10 in. rain-, but with artificial water, could, and will, produce increasing food supplies.

The remaining 263 million acres is approximately equally divided between the two zones of the Northern Rivers l the Southern Rivers.

The Northern Zone has a vast potential for food production in the future, but is as yet relatively unknown, and ikely to be fully utilised under the present position of population and economics of Australia.

The Southern Zone covers all that land between the 10 in. isohyet and the South Coast, approximately 104 million es. Of this, 104 million acres, looking forward to the provision of artificial water supplies and new sources of power, could be envisaged that about 63 per cent. (65 million acres), lying between the 10 in. and the 15 in. isohyet, which is ay only partly used for wheat and sheep, would become capable of the production of cereals and other farm crops. The er 37 per cent. (39 million acres) of this zone, from approximately the 15 in. isohyet to the South and West coasts where nfalls run as high as 60 in., is today recognised as the main agricultural and forest area of Western Australia. This area 39 million acres is further divisible into rainfall zones as follows :—

15 in. to 20 in.	16·9	million acres
20 in. to 30 in.	12·2	,, ,,
30 in. to 40 in.	5·6	,, ,,
40 in. to 50 in.	3·1	,, ,,
50 in. plus	1·7	,, ,,
	39·5	million acres

Economic forestry for timber production in Western Australia can be carried on only in areas of above 25 in. rain- estimated at 16 million acres, of which approximately 4 million acres are at present State Forest.

Thus, from the main agricultural area of 39 million acres with more than 15 in. rainfall, only 4 million acres are State est and probably not more than a 5 million total could be considered suitable.

Looked at from the wider angle of all land in the South of over 10 in. rainfall coming into use for food production comparison is that out of 104 million acres of potential agricultural country, only a total of 5 million acres, or less than er cent., can ever be devoted to economic wood production. This figure by all world standards is very low, and it is te evident from figures produced in other publications that with the increasing development of food production throughout South-West of Western Australia, an area of 5 million acres of State Forest should be carefully guarded, with a view the reduction of the inevitable imports of timber to Western Australia.

Due to a number of factors, it is unlikely that forestry will be extensive in the small area of over 30 in. rainfall in Kimberleys, so that if and when the vast Northern areas of over 10 in. rainfall are populated, the comparison will be more striking, as the 5 million acres of forest cannot expand while the agricultural zone may grow to 41 per cent. of land area of Western Australia, or 258 million acres, all of which activities will require timber, wood derivatives, paper and o products.

When we consider developments within the various rainfall areas of the Southern portion of the State, we find the owing figures, as obtained from the Government Statistician. Developed land is taken as—Areas under crop, pasture, fallow and areas newly cleared or used for grazing.

Within the 30 in. rainfall area of 10·4 million acres at the South-West, 2·94 million acres are privately held, but only 1·28 million acres are developed.

Between the 15 in. and 30 in. lines, the figures are given as 15·13 million acres privately held and 9·13 million acres developed.

Between the 10 in. and the 12 in. line we have 9·87 million acres privately held, of which 2·04 million acres are developed.

Between the 12 in. and the 15 in. line we have 15·83 million acres privately held of which 7·29 million acres are developed.

Thus, out of a total of 104 million acres, only 19·74 million are developed, although 43·77 million are privately held.

Below the 10 in. line there is, of course, virtually no development at present beyond extensive grazing on natural top feed.

Figures given must be taken as " of the order of," since it was necessary to compile them from Road Board Districts, ch do not exactly conform with isohyets.

The Forests Department has carried out a special study from air photos of two important sections of the South-West—

(a) The area of high rainfall between Busselton-Margaret River-Augusta, in which it is found that out of 282,000 acres privately held, only 82,000 acres could be regarded as developed, *i.e.*, either cleared or having been ringbarked and carrying pasture. Portions of the under developed 200,000 acres had been at one time ringbarked but had reverted to Jarrah regrowth and/or dense scrub.

(b) A study of the Denmark area showed that out of a total area surrounding Denmark of 63,200 acres, only 13,100 acres had been cleared or could be regarded as developed by ringbarking and pasture. The remaining 50,000 acres fall into the same category as the under developed land in the Busselton-Margaret River-Augusta area.

APPENDIX 7

SEVENTH BRITISH COMMONWEALTH FORESTRY CONFERENCE

Resolutions

The Seventh British Commonwealth Forestry Conference adopted the following resolutions :—

Resolution No. 1—FOREST POLICY.

The Conference adopts the report of its Committee on Forest Policy and recommends that :—

1. The attention of Governments be drawn to the primary need for a complete inventory of forest resources and the classification of all forest land. It is urged that every effort be made to complete the inventory by the year 1967.
2. Although Governments have generally adopted sound forest policies, the cardinal principles of forest policy, admirably expressed by the 1952 British Commonwealth Forestry Conference in Resolution No. 1 be reiterated ; they are equally valid today.
3. Because the soil resources of every country are being subjected to increasing population pressure, there is greater need to recognise the benefits, both tangible and intangible, that forests confer. This in turn requires the permanent reservation of an adequate forest estate.
4. Governments place the administration of forest resources on all publicly owned land not yet dedicated to forestry under the forests authority for purposes of orderly forest management.
5. Vigorous afforestation and reforestation measures be undertaken to restore productivity to derelict and unproductive forest land.
6. Governments ensure that there is adequate representation of foresters on any Committee dealing with the allocation of land for specific purposes. In particular, the closest integration is desirable between the two major forms of land-use, agriculture and forestry.
7. Protection forests be so managed that they yield the maximum quantity of forest produce consistent with the maintenance of their protective function.
8. Governments make financial provision on a scale sufficient to ensure continuity in the execution of their accepted forest policies especially in view of the fact that the wholesale liquidation of forest capital has left many countries in the position where current forest revenues are quite inadequate to meet the cost of essential restorative measures.

Resolution No. 2—SILVICULTURE, FOREST MANAGEMENT, FOREST PROTECTION AND FORESTRY RESEARCH.

The Conference adopts the report of its Committee on Silviculture, Forest Management, Forest Protection and Forestry Research and recommends that :—

1. Sustained yield management be more closely linked with the needs of the wood-using industries as an essential to their long-term stability ; sustained yield management is here understood to imply development of the full productive capacity of the site.
2. Road systems be developed wherever necessary to permit maximum efficiency and economy in the management and protection of the forests and in the utilisation of their produce.
3. Thinning when essential to maintain the stand and soil in a healthy condition, be carried out whether the cost can be recovered by the sale of produce or not.
4. The significant results already achieved from forest tree-breeding and seed provenance studies be applied in silvicultural practice to the fullest extent possible. Research on tree-selection and tree-breeding should also be further expanded with particular reference to the heritability of characteristics of individual trees, the exchange of improved seed and the correlation and extension of provenance trials.
5. Among the most urgent needs in the field of fire protection, are a review of relevant legislation, the improvement of public relations, the better training of personnel, and the standardisation of fire-suppression equipment. Improvements are also needed in fire weather forecasting, both long and short term, and more attention should be devoted to techniques of fire suppression not dependent for their success upon abundant supplies of water.
6. In view of the grave danger of serious outbreaks of destructive insects and pathogens, governments continue to intensify their support of studies and efforts, including quarantine measures, to prevent and control insect and fungal attacks. This applies not only as regards forest stands but also to timber in transit, whether logs, sawn timber, or manufactured articles.
7. More study be given to nutritional microbiological, and soil conditions which may be related to tree disorders.

Resolution No. 3—TIMBER UTILISATION.

The Conference adopts the report of its Committee on Timber Utilisation and, in order to promote the more thorough and economic use of the products of Commonwealth forests, recommends that :—

1. Fully representative timber utilisation advisory Committees be established in each country.
2. Every effort be made to reduce the cost of timber production. Forest authorities should recognise the influence silvicultural practices can have upon logging costs and should combine with industry to intensify research into logging economics.
3. Where adequate supplies of forest products can be assured on a sustained basis, every effort be made to encourage the modernization and integration of existing wood-using industries and the establishment of new industries.
4. Silvicultural practices be reviewed in the light of the results of forest products research, and directed to the growth of forest products having qualities most desired by wood-using industries.
5. Governments be urged to introduce a system of measurement for logs using full volume under bark expressed in cubic feet or cubic metres.

Resolution No. 4—EXOTIC SPECIES.

The Conference invites the Imperial Forestry Institute to undertake the compilation and publication of a comprehensive summary by species based on the valuable reports on exotic species submitted to this meeting by the member countries.

Governments are recommended to assist, if necessary, in meeting the cost of publication.

olution No. 5—AUSTRALIAN FORESTRY.

The Conference adopts the report of its Committee on Australian Forestry and recommends that :—

1. A detailed inventory of the indigenous forests, both those belonging to the Crown and those in private ownership, be undertaken urgently and completed by the time of the Conference in 1967.
2. All indigenous forests of actual or potential value on Crown Lands be dedicated as part of the permanent Forest Estate as early as possible, recognising that well-managed forests not only produce timber of value but can at the same time serve other valuable purposes, particularly protection of water catchment areas.
3. The programme of obtaining more complete utilisation of, and affording silvicultural treatment to, indigenous forests, and of rehabilitating those degraded by fire and post-selective logging, be accelerated.
4. The urgent need for more forestry research be met by the establishment of a Central Research Institute, wit'i regional stations, under the Forestry and Timber Bureau, Canberra. An adequately paid research staff of high calibre is essential. It is the duty of the Bureau to deal with more basic problems and to assist in the co-ordination of the research activities of the States. The Bureau should be assisted in this task by an advisory Committee composed of representatives of the Commonwealth and the various State Forest Services and the C.S.I.R.O., together with a limited number of eminent scientists in other fields.

olution No. 6—FORESTRY IN NEW ZEALAND.

The Conference adopts the report of its Committee on Forestry in New Zealand and recommends that :—

1. The minimum area of indigenous forest necessary in National interest be determined and steps taken to see that this area is brought into sustained production. The work of restocking partly stocked land in State Forests should be intensified. Research into the problems of the indigenous forests should be increased.
2. In view of the high importance of controlled management of mountain catchments to New Zealand, where the whole standard of living is largely dependent upon a high level of agricultural and pastoral production for its lowlands, protection forest problems should, on completion of the protection forest survey already begun, receive the most careful attention from all appropriate authorities.
3. Exotic plantations be diversified by the use of a wider range of species.
4. Early thinning and pruning be carried out in all second-rotation crops of exotics, and, wherever practicable, in the younger first rotation crops, even if such early treatment is immediately unremunerative.
5. There is need for new outlets and markets for forest produce in order that the exotic forests may be managed on a sound basis. Development of large integrated plants in the major forest areas is required, as is also the establishment of small scale manufacturing units in other districts.
6. In view of the very real danger of disease and of insect attack, notably in exotic forests, there should be an intensification of precautionary and preventive measures.
7. Although there has been a notable expansion in forest research in New Zealand in recent years, there is urgent need for further increase in view of the numerous problems still awaiting solution.

olution No. 7—COMMONWEALTH FORESTRY BUREAU.

1. The Conference commends the work of the Commonwealth Forestry Bureau, Oxford, and recognizes that its commitments are still growing.
2. The Conference notes the great growth of the Centralized Title Service and commends this invaluable auxiliary of the *Abstracts* to the notice of all Commonwealth documentation centres.
3. The Conference reiterates Resolution 6 (c) of the 1952 Conference that Commonwealth governments continue their efforts to make the *Abstracts* more generally available and in particular urges Forestry Departments to provide additional copies for their field staff.

olution No. 8—STANDING COMMITTEE ON COMMONWEALTH FORESTRY.

The Conference desires to express its appreciation of the work of the Standing Committee on Commonwealth forestry l of the action of the Forestry Commission of Great Britain in providing secretarial facilities for the Committee. It quests the Standing Committee to :—

1. Arrange for the examination of any suggested additions or amendments to the British Commonwealth Forest Terminology and for the Forest Authority of each Commonwealth country to be consulted thereon.
2. Arrange for the greatest possible degree of uniformity in the details required by international agencies and organisations in connection with the collection of forestry and forest products statistics.
3. Review annually the progress being made by member countries towards completing their forest inventories in sufficient time to allow of the compilation of a reliable overall assessment of Commonwealth forest resources for consideration by the 1967 Conference.

olution No. 9—NEXT CONFERENCE.

The Conference records its appreciation of the joint invitation received from the Governments of Kenya, Tanganyika l Uganda, to hold its next meeting in East Africa in 1962, which it unanimously accepts with pleasure.

olution No. 10—VOTE OF THANKS.

The Conference desires to express its great appreciation of the arrangements made by the Australian Commonwealth vernment and the New Zealand Government for the conduct of its work. It also wishes to thank the Governments South Australia, Victoria, New South Wales and Queensland for the opportunities they provided for visits to a wide iety of forests and for discussions with the forest staffs.

It also thanks the Governments of Queensland, Western Australia and Tasmania, and the Administration of Papua l New Guinea for the comprehensive arrangements made for delegates to attend pre-Conference tours.

The delegates desire their Chairman to convey their greatful thanks for the many courtesies and generous spitalities extended to them by Governments, local government bodies, industry and private persons.

42/10/58—510

By Authority: ALEX. B. DAVIES, Government Printer, Perth.