

CHAPTER XXII.

FORESTRY.*

§ 1. General.

NOTE.—Values of Australian oversea trade shown throughout this Chapter are expressed in £A f.o.b., Port of Shipment, except where otherwise indicated.

1. **Objects of Forestry.**—The main object of forestry is to manage the forests of a country in the way that will provide the maximum direct and indirect benefits. Direct benefits include the provision of essential commercial commodities such as structural timber, pulpwood, plywood, veneers, firewood, bark products, tars, oils and resins. Indirect benefits include protection of soil and stock from wind and exposure, regulation of stream flow, and aesthetic effects.

Forestry aims to improve existing forests and woodlands by properly controlled exploitation, by protection from destructive agencies such as fire, and by inducing natural regeneration where it is desirable. Forestry also aims to provide a partial tree cover on denuded lands when such cover is necessary for protective purposes, and a complete cover when the land is better under forest than under any other crop.

2. **General Account of Forests and Timbers.**—The area of land in Australia suitable for the production of commercial timber as the primary crop is very small in comparison with the size of the continent. It is concentrated mainly around the wetter coastal belts and the eastern highlands and it includes the bulk of the land suitable for intensive development by agricultural or pastoral undertakings.

The allocation of land for agricultural and pastoral purposes led to the clearing of much of the original forest of Australia, particularly of the more readily accessible parts. In the early period of agricultural and pastoral expansion, only the timbers found their way into commerce, and species now prized as providing high quality woods were often put to inferior uses. During this period the forest resources of the country were considered by the majority of the people to be inexhaustible, and relatively little care was taken to prevent the degradation of the remaining forests by fire and uncontrolled grazing. This state of affairs is rapidly changing; it is now recognized that the remaining forest land must be protected and properly managed in the interests of the community.

The trees which make up the forests of Australia are mainly evergreen hardwoods. The characteristic genus is *Eucalyptus*. There are over six hundred different kinds of eucalypts and with few exceptions the natural occurrence of all of them is restricted to Australia. The genus includes such species as the mountain ash (*Eucalyptus regnans*) of Victoria and Tasmania, and karri (*E. diversicolor*) of Western Australia, which are the tallest-growing hardwoods in the world. At the other end of the scale there are many eucalypts which do not grow to tall trees, including the species collectively known as the "mallees". The mallees develop a number of small stems from an underground

* A specially contributed article dealing with Forestry in Australia appeared as part of Chapter XIX in Official Year Book No. 19 (see pp. 701-12 therein). See also "The Commercial Timbers of Australia, Their Properties and Uses" by I. H. Boas, published by the Council for Scientific and Industrial Research in 1947, "Timbers and Forest Products of Queensland" by E. H. S. Swain, published in 1928 and "Australian Standard Nomenclature of Australian Timbers" published by the Standards Association of Australia.

structure called the "mallee root". Less than 100 eucalypts are used for sawmilling and not more than 30 to 40 are exploited extensively. The main commercial eucalypts are listed in Official Year Book No. 39 and earlier issues.

The eucalypts satisfy the Australian requirement for timbers having great strength and durability. They also provide a large proportion of the building timber and some of the wood required for packaging. In recent years some eucalypts have been used extensively for papermaking and for the manufacture of hardboard and fibreboard. The species most commonly used for pulping are mountain ash (*E. regnans*), alpine ash (*E. gigantea*), and messmate, stringybark or Tasmanian oak (*E. obliqua*).

A large number of other genera represented in the Australian forest flora also produce commercial hardwoods. Among the outstanding furniture cabinet and veneer timbers are red cedar (*Cedrela toona* var. *australis*), Queensland maple (*Flindersia brayleyana*), Southern and Northern silky oak (*Grevillea robusta* and *Cardwellia sublimis*, respectively), Queensland walnut (*Endiandra palmerstoni*), blackwood (*Acacia melanoxydon*), rose mahogany (*Dysoxylum fraserianum*), etc. Turpentine (*Syncarpia laurifolia*) ranks with the world's best as a harbour piling timber. Coachwood (*Ceratopetalum apetalum*) came into prominence for rifle furniture and for aircraft plywood, during the 1939-45 War.

The foregoing are but a few examples indicating the range of use of the timbers of the Australian hardwood forests.

The most important indigenous softwood resources of Australia were in the forests of hoop pine (*Araucaria cunninghamii*) of Queensland and New South Wales. These forests occurred on rich land suitable for intensive agriculture. The greater part of the original hoop pine forest has gone but the wood removed made an important contribution to the Australian timber industry. Some areas of the hoop pine forest have been replanted with this species in Queensland and, to a lesser extent, in New South Wales.

There are still considerable areas of the useful white-ant resisting cypress pine (*Callitris* spp.) in the inland areas of Queensland and New South Wales. They have been seriously overcut but are gradually being brought under management.

Other native softwoods which have played a useful but minor part in the Australian timber industry include bunya pine (*Araucaria bidwillii*) and kauri (*Agathis* spp.) of Queensland, and huon pine (*Dacrydium franklinii*), celerytop pine (*Phyllocladus rhomboidalis*) and King William pine (*Athrotaxis selaginoides*) of Tasmania.

The savannah woodlands of the interior of Australia yield commercial commodities such as sandalwood, tanbarks and essential oils. They also have an important function in providing fuel and rough timbers for the development of agricultural and pastoral holdings.

3. Extent of Forests.—According to data assembled for the Sixth British Commonwealth Forestry Conference held in Canada in 1952, the total area of forest in Australia is 159,751 square miles, or about 5.4 per cent. of the total land area of the continent. The forest area is distributed amongst the States as follows—New South Wales and the Australian Capital Territory, 47,356 square miles; Victoria, 26,236; Queensland, 22,300; South Australia, 10,311 (including 4,600 square miles of mallee suitable for firewood only); Western Australia, 41,256; and Tasmania, 12,292. The areas given are rough estimates only and are considerably in excess of those which are both suitable for reservation and likely to be maintained for timber production. Considerable areas of low grade forest are included which, in many cases, are suitable for little more than the production of firewood. It is doubtful if the remaining prime native forest area of Australia exceeds 20,000 square miles. The proportion of Australia carrying commercial forests is therefore very low. On the other hand it should be noted that approximately 68 per cent. of the area of the continent is practically uninhabited and carries less than one person in every eight square miles.

The table below shows a classification of the estimated total forest area referred to above:—

CLASSIFICATION OF FOREST AREA : AUSTRALIA, 1952.

Class of Forest.	Area (Square Miles).				Proportion of Total Forest Area
	State Forest.	Communal Forest.	Private Forest.	Total.	
Exploitable—					%
Softwood	4,157	5	1,072	5,234	3.3
Mixed wood	729	..	..	729	0.5
Hardwood	41,020	74	11,050	52,144	32.6
Total	45,906	79	12,122	58,107	36.4
Potentially Exploitable—					
Softwood	156	..	78	234	0.1
Mixed wood .. ..	..	..	..	..	..
Hardwood	15,063	..	12,877	27,940	17.5
Total	15,219	..	12,955	28,174	17.6
Other Land Classed as Forest	67,294	450	5,726	73,470	46.0
Grand Total	128,419	529	30,803	159,751	100.0

State forest accounted for 80.4 per cent. of the total forest area, private forest for 19.3 per cent. and communal forest for 0.3 per cent.

The bulk of the softwood areas of approximately 5,468 square miles is in Queensland and New South Wales and consists principally of natural forest, a large proportion of which is slow-growing cypress pine (*Callitris spp.*) in low rainfall areas. The volume of this species per acre is comparatively low.

4. Forest Reservations.—The first attempt to arrive at a forest area which should be reserved solely for purposes of timber production was made at an Interstate Forestry Conference held at Hobart in 1920. This Conference decided that an area of 24½ million acres of indigenous forest should be permanently reserved. According to statements furnished by State authorities, reservations of forest areas in Australia at 30th June, 1953, excluding those in the Northern Territory and the Australian Capital Territory, totalled 29,150,627 acres, of which 21,561,426 acres were Dedicated State Forests, or under some other title, for forestry purposes, and 7,589,201 acres were Timber and Fuel Reserves. The distribution of these areas is shown by States in § 4.2 of this chapter.

In general, the Timber Reserves are temporary only and are liable to be alienated after the timber on them has been exploited. Some of these areas contain land of high value for forestry purposes, but the greater part does not justify permanent reservation.

If the permanently reserved areas were all of good quality, accessible, and fully productive forests supplying the class of timber required, they could be regarded as adequate for a much larger population than exists in Australia at the present time. Actually, however, a considerable proportion is in inaccessible mountainous country and many of the forests contain a mixture of species, some only of which are at present of commercial value: much of it consists of inferior forest and a large proportion of the whole has been seriously degraded by recurrent fires. Also the indigenous forest does not contain adequate supplies of softwoods producing commercial timbers and Australia's requirements of these have to be met largely by imports from other countries.

It is freely acknowledged by Australian forestry authorities that information on forest resources is very imperfect. It is not possible at present to give a reliable estimate of the forest areas needed to meet all future demands because of the number of unknown variables involved; in particular the yield capacity per acre, future consumption of different classes of timber per head, and the future population. It appears however, that all available potentially good forest country, including adequate areas for plantations of conifers, will need to be reserved, protected and systematically managed, if Australia is to approach the goal of self sufficiency in timber supplies in the future. One of the most urgent requirements in this connexion is a comprehensive estimate of forest resources.

5. **Plantations.**—Reference has been made to the inadequacy of indigenous softwood supplies, but, as a result of the planned policy of the forest services of the States and the Commonwealth and, to a less extent, of several private commercial organizations, the area of softwood plantations, mainly of exotic species is steadily increasing. It was natural that this aspect of forestry received earliest attention in South Australia as it is the State most poorly endowed with natural forest. This State now has a larger area of planted softwoods than any other State in Australia, and for some years has been exploiting considerable quantities of timber from these plantations. The total production is now in the vicinity of 100,000,000 superficial feet and this quantity is expected to be increased very substantially during the next decade. Production is also increasing in the other States and first thinnings from their plantations are already supplying a significant portion of the requirements of the case-making industry.

According to statements provided by State authorities, the total effective area of plantations at 30th June, 1953, excluding those in the Northern Territory and the Australian Capital Territory, was 332,264 acres. Details by States are given in § 4.3 of this chapter.

§ 2. Forestry Activities of the Commonwealth.

1. **Prior to 1925.**—When the Commonwealth of Australia was established on the 1st January, 1901, forestry was not included among the matters transferred from the States to the control of the Commonwealth, and Federal jurisdiction was therefore restricted to the then relatively unimportant forests of the Australian Territories. After the 1914–18 War these Territories (including Papua-New Guinea and Norfolk Island) covered a large area, and in the aggregate contained substantial forest resources. In the early twenties of this century a professional forester was appointed as forestry adviser to the Commonwealth Government, and he submitted preliminary reports on the forest resources of Papua-New Guinea, Norfolk Island and the Australian Capital Territory, with suggestions for future policy.

2. **Forestry and Timber Bureau.**—In 1925 the Commonwealth Forestry Bureau was instituted, and the previous Commonwealth Forestry Adviser became the Inspector-General of Forests. By an Act of 1930, the Bureau received statutory powers, and its functions included the advising of the various Territorial Administrations on forestry matters, the management of forests placed under its control, the establishment of experimental forest stations, the training of students in forestry, etc.

At the end of the 1939–45 War, the Commonwealth Government decided to continue certain advisory functions which during the War had been carried out by War-time Timber Control, and such functions were incorporated in the Forestry and Timber Bureau Act 1946, under which the title of the Bureau was altered to Forestry and Timber Bureau. The powers and functions of the Bureau were extended to embrace the collection of statistics and information, and advising the Governments of the Commonwealth and the States or other interested bodies on matters relating to the supply, production, oversea trade and distribution of timber in Australia. The Bureau was placed under the administration of a Director-General.

The activities of the Bureau under its statutory functions are summarized below :—

(a) *Forestry Education.* The Australian Forestry School was opened at Adelaide University in 1926 in continuation of the School of Forestry of that University established in 1911. In 1927 the School was transferred to Canberra. The purpose of the School is to train students as professional officers to manage the forests of Australia. It also accepts students from overseas.

Training at the School covers the third and fourth years of a four-year course. The first two years are spent at an Australian University in a study of prescribed science subjects. Courses at the School lead to Commonwealth Diplomas in Forestry and in Forest Technology, and in the case of the former, can lead further to a Degree in Forestry of an Australian University. Applicants possessing a University Degree granted for approved natural science subjects, or applicants with academic qualifications accepted by the Director-General as equivalent, may also be admitted to this School and proceed to the Diplomas. Graduates or Diploma holders approved by the Director-General may be admitted to the School to take selected subjects or to carry out research work.

The Board of Higher Forestry Education advises regarding pre-requisite University courses leading to the Diploma courses and in regard to the maintenance of the standard of the School Diploma course.

In addition to students nominated by State Governments and other Australian and overseas authorities and organizations, private students are accepted at the School, and the Commonwealth Government offers up to ten forestry scholarships each year. These scholarships provide a salary allowance for the four years of the full Diploma course.

During 1950 the number of students enrolled reached 80, owing to the intake of ex-servicemen taking University courses under the Commonwealth Reconstruction Training Scheme. The normal capacity of the School is 40.

(b) *Silvicultural Research.* Research head-quarters and a Central Experimental Station have been established at Canberra. Other Forest Experimental Stations have been established at Mount Burr in the south-east of South Australia, in Tasmania, and at Dwellingup in Western Australia, on a co-operative basis with the Forest Services of those States. It is proposed to establish similar co-operative Experimental Stations in other States and Territories.

With its present limited staff, the research work of the Bureau has been concentrated largely upon studies of forest and climatic conditions, the genetical relationships and silvicultural requirements of various species, forest nutrition and the improvement of forest yields. A considerable expansion in the research activities is planned for the next few years as suitable trained staff becomes available.

(c) *Forest Management Research.*—In the national interest it is essential that over-cutting of forests should be avoided and in consequence it is a matter of primary importance that reliable information be available as to the country's forest resources and potentialities. To this end a national forest stocktaking is being carried out by the Bureau in co-operation with the Forest Services of the States and, to assist in the work of forest assessment, special consideration is being given to the development of the use of aerial surveys.

Consideration is also being given, in co-operation with the State Forest Services, to the establishment of increased areas of plantations of exotic pines with a view to providing additional supplies of softwood timber to meet requirements.

The general economics of forest management are also being studied.

(d) *Timber Supply.* The value of reliable statistical data covering availability of timber and timber requirements was so forcibly demonstrated during the 1939-45 War that it was considered essential to maintain at least a skeleton organization against times of future national emergency. Apart from this, it became clear that for many years to come shortages of timber on the one hand and heavy post-war reconstruction demands

on the other, accentuated by a rapidly increasing population, would necessitate assessment of requirements and availability of supplies being kept constantly under review as a basis for short and long term policies of timber supply and distribution.

Advice is currently provided to Government Departments and the trade in matters pertaining to timber supply, including—(a) the availability of total quantities and quantities of particular grades and specifications required to meet Australia's needs; (b) the quantity of timber that should be imported; (c) the extent to which exports of timber and related products might be allowed without detriment to local needs; and (d) distribution of timber within Australia.

(e) *Management of Forests.* The Bureau manages the forests of the Australian Capital Territory and maintains a forestry officer in the Northern Territory. In addition, it is responsible for advising the administrations of the Northern Territory and the External Territories on the management of the forests under their charge.

3. **Commercial Forests.**—The forest areas under Commonwealth control include the following:—

- (a) *Australian Capital Territory.* The forests of the Australian Capital Territory are administered by a Division of the Forestry and Timber Bureau. Further information is contained in Chapter V.—The Territories of Australia.
- (b) *Northern Territory.* The forests of the Northern Territory are administered under ordinance by the Administrator of that Territory. The native forests of the Territory are very limited, consisting largely of open eucalypt forest in the North, with very restricted patches of rain forest along streams, river-fringing forests of paper bark tea-tree, patches of cypress pine, and elsewhere savannah woodland deteriorating to mallee and mulga in the interior. The Bureau maintains a forestry officer in the Territory for investigation and advisory purposes.
- (c) *Norfolk Island.* The forests of Norfolk Island are administered by the Administrator of that Territory. The area reserved for forest covers 1,037 acres, of which the main species is Norfolk Island pine.
- (d) *Papua and New Guinea.* The forests of the Territory of Papua and New Guinea are managed by a Forestry Department under the control of a Director, and are administered under an ordinance of the Territorial Administration. Forestry in the Territory commenced with the appointment of two officers in 1938. Further information is contained in Chapter V.—The Territories of Australia.

4. **Forest Products Research.**—Fundamental investigations connected with the properties and uses of timber and forest products generally are carried out by the Forest Products Division of the Commonwealth Scientific and Industrial Research Organization. These investigations cover a very wide field, e.g., pulp, paper, seasoning, structure and chemistry of wood, tans, etc.

Details can be obtained from the annual reports and publications of the Division.

§ 3. Forest Congresses.

The first British Empire Forestry Conference was held in London in 1920. Subsequent conferences were held in Ottawa in 1923, Australia and New Zealand, 1928, South Africa, 1935 and again in the United Kingdom in 1947. In 1952 (the name of these conferences having been changed in conformity with the development of the British Commonwealth of Nations) the Sixth British Commonwealth Forestry Conference was held in Canada. It is proposed to hold the next conference in Australia and New Zealand in 1957.

§ 4. State Forestry Departments.

1. **Functions.**—Except for Queensland, the powers and functions of State forest authorities are laid down under Forestry Acts and Regulations. In each State there is a department or commission to control and manage the forests of the State. The functions of these administrations are as follows:—(a) The securing of an adequate reservation of forest lands; (b) the introduction of proper measures for scientific control and management of forest lands; (c) the protection of forests; (d) the conversion, marketing and economic utilization of forest produce; and (e) the establishment and maintenance of coniferous forests to remedy existing deficiency in softwoods. Annual reports are issued by each State forest authority. In Queensland, forestry is a sub-department of the Department of Public Lands. Victoria maintains a forestry school at which recruits are trained for the forestry service of that State.

2. **Forest Reservations.**—As mentioned in § 1, para. 4 above, State forest authorities agreed that, in order to secure Australia's future requirements, an area of 24½ million acres should be permanently reserved. In June, 1953, the area of State forests reserved in perpetuity totalled 21,561,426 acres or 88 per cent. of the area recommended as the goal to be attained.

In addition to the work of permanently reserving areas in each State, foresters are endeavouring to survey all timbered lands with a view to the elimination of those unsuitable for forestry. Considerable areas have been revoked in certain States, while dedications of new areas have resulted in gains to the permanent forest estate. The Forestry Departments also usually control all timber on open Crown lands as well as over 10 million acres of Timber Reserves, National Parks, etc., but, while these areas contain some land of high value for forestry purposes, the greater part does not justify permanent reservation.

In the following table details of forest areas as recorded by State Forest Authorities, distinguishing between Dedicated State Forests and Timber and Fuel Reserves, are shown for each State as at 30th June, 1953.

AREA OF FOREST RESERVATIONS, 30th JUNE, 1953.

(Acres.)

Particulars.	N.S.W.	Victoria.	Q'land.	S. Aust.	W. Aust.	Tasmania.	Aust.(a)
Dedicated State Forests	6,176,163	5,171,176	4,597,199	259,726	3,460,092	1,897,065	21,561,426
Timber and Fuel Reserves	1,378,117	(b)	c 3,253,656	..	2,820,400	(c) 137,023	d 7,589,201
Total	7,554,285	d 5,171,176	e 7,850,855	259,726	6,280,492	e 2,034,093	d29,150,627

(a) Excludes Australian Capital Territory and Northern Territory details for which are not available.

(b) Not available.

(c) Excludes Fuel Reserves.

(d) Incomplete: see notes (b) and (c).

3. **Reforestation, Afforestation, etc.**—In the table below details are shown of the area of indigenous forest improved or regenerated, the area of forest plantations and the number of persons employed by Forestry Departments for the year 1952-53.

FORESTRY AREAS, AND NUMBERS EMPLOYED BY FORESTRY DEPARTMENTS, 1952-53.

Particulars.	N.S.W.	Vic.	Q'land.	S. Aust.	W. Aust.	Tas.	Aust.(a)
Total area of indigenous forest improved or regenerated . . . acres	1,587,265	1,173,894	515,125	9,928	1,022,700	426,000	5,634,917
Total area of effective plantations—							
Hardwoods acres	1,156	3,067	2,761	1,089	13,189	153	29,415
Softwoods "	48,387	55,601	54,726	118,461	17,689	(b) 7,985	302,846
Number of persons employed in Forestry Departments—							
Office staff	(c) 400	249	191	63	63	60	1,035
Field staff	246	302	1,731	736	564	(d) 306	3,885

(a) Excludes Australian Capital Territory and Northern Territory details for which are not available.

(b) Includes 30 acres of nurseries.

(c) Includes Wood Technology staff totalling 51.

(d) Includes

217 bush employees.

4. Revenue and Expenditure.—The revenue of State Forestry Departments for 1952-53 was £9,346,854, as compared with £7,639,388 in 1951-52 and £1,466,781 in 1938-39; State details for 1952-53 were as follows:—New South Wales, £2,405,789; Victoria, £2,354,331; Queensland, £2,541,904; South Australia, £1,120,120; Western Australia, £678,150; and Tasmania, £246,560.

The expenditure of the Departments for 1952-53 was £9,856,678, as compared with £10,475,950 in 1951-52 and £1,840,088 in 1938-39; State details for 1952-53 were as follows:—New South Wales, £2,131,156; Victoria, £2,648,468; Queensland, £2,824,152; South Australia, £1,119,142; Western Australia, £766,775; and Tasmania, £366,985.

§ 5. Forestry Production.

1. Timber.—Particulars of logs treated and the production of rough sawn timber by sawmills and other woodworking establishments are shown in the following table by States for the year 1952-53.

OUTPUT OF NATIVE TIMBER : ALL MILLS, 1952-53.
(^{'000} super. feet.)

Particulars.	N.S.W.	Victoria.	Q'land.	S. Aust.	W. Aust.	Tas.	Aust.(a)
LOGS TREATED, INCLUDING THOSE SAWN ON COMMISSION.(b)							
Hardwood ..	474,362	504,632	320,622	10,011	449,977	210,522	1,970,126
Softwood ..	85,604	31,588	129,117	106,537	9,925	4,110	369,881
Total ..	559,966	536,220	449,739	116,548	459,902	214,632	2,340,007

SAWN TIMBER PRODUCED FROM LOGS ABOVE.(c)

Hardwood ..	299,235	300,487	202,379	6,196	199,344	107,782	1,115,423
Softwood ..	51,557	21,722	82,095	62,304	3,970	2,126	224,374
Total ..	350,792	322,209	285,074	68,500	203,314	109,908	1,339,797

(a) Excludes Australian Capital Territory and Northern Territory details for which are not available.
(b) Includes logs used for plywood and veneer production. (c) Includes the sawn equivalent of timber peeled or sliced for plywood and veneers.

The following table shows logs used and the sawn timber produced in Australia for the years 1938-39 and 1948-49 to 1952-53.

OUTPUT OF NATIVE TIMBER : ALL MILLS, AUSTRALIA.(a)

Particulars.	Unit.	1938-39.	1948-49.	1949-50.	1950-51.	1951-52.	1952-53.
Logs used—							
Hardwood ..	'000 super. feet (hoppus measure)	1,015,136	1,544,601	1,637,236	1,797,226	2,000,032	1,970,126
Softwood ..	" "	293,680	432,567	415,712	300,052	363,829	369,881
Total ..	" "	1,308,816	1,977,168	2,052,918	2,097,278	2,363,861	2,340,007
Sawn Timber Produced—							
Sawn equivalent of Timber Peeled or Sliced for Plywood and Veneers—							
Hardwood ..	'000 super. feet	(b)	2,190	3,602	27,322	29,159	21,606
Softwood ..	" "	21,639	22,644	22,444			
Total ..	" "	21,639	24,834	26,046	27,322	29,159	21,606
Used for other purposes—							
Hardwood ..	" "	695,371	905,514	961,540	1234,018	1,363,607	1,318,191
Softwood ..	" "		253,740	235,474				193,244
Total ..	" "	695,371	1,159,254	1,197,014	1,234,018	1,363,607	1,318,191
Total Sawn Timber—							
Hardwood ..	" "	526,229	907,704	965,142	1,068,096	1,166,114	1,115,423
Softwood ..	" "	190,781	276,384	257,918	193,244	226,652	224,374
Total ..	" "	717,015	1,184,088	1,223,060	1,261,340	1,392,766	1,339,797

(a) Excludes Australian Capital Territory and Northern Territory, details for which are not available.
(b) Not available for publication; included with softwoods.

The next table shows the sawn output of native timber in sawmills and other wood-working establishments in each State for the years 1938-39 and 1948-49 to 1952-53.

SAWN OUTPUT (a) OF NATIVE TIMBER : ALL MILLS.

('000 super. feet.)

State.	1938-39.	1948-49.	1949-50.	1950-51.	1951-52.	1952-53.
New South Wales ..	179,350	353,685	341,144	338,347	380,633	350,792
Victoria ..	120,197	281,852	308,790	329,640	348,478	322,209
Queensland ..	193,250	250,355	251,127	252,378	291,681	285,074
South Australia ..	14,537	51,633	56,775	59,393	67,121	68,500
Western Australia ..	125,453	126,859	138,077	156,810	178,290	203,314
Tasmania ..	84,228	110,704	127,147	124,772	126,563	109,908
Australia (b) ..	717,015	1,184,088	1,223,060	1,261,340	1,392,766	1,339,797

(a) Includes the sawn equivalent of timber peeled or sliced for plywood and veneers. (b) Excludes Australian Capital Territory and Northern Territory, details for which are not available.

In addition to the sawn timber shown in the preceding table, a large amount of other timber, e.g., sleepers, piles, poles, fencing material, timber used in mining, and fuel, is obtained from forest and other lands. Complete information in regard to the volume of this output is, however, not available. In Western Australia particulars are obtained of the quantities of timber hewn by contractors for the Railway Department, mines, etc., as well as of the quantities produced by other agencies, but the figures have not been included in the preceding tables. The quantities so produced in Western Australia in the six years shown in the preceding table were as follows : 1938-39, 35,862,540 super. feet ; 1948-49, 16,331,835 super. feet ; 1949-50, 16,823,566 super. feet ; 1950-51, 19,396,134 super. feet ; 1951-52, 21,156,790 super. feet ; and 1952-53, 20,011,008 super. feet. The annual reports of the Forest Departments of the States contain particulars of the output of timber from areas under department control, but owing to lack of uniformity in classification and measurement, accurate determination of total production cannot be made. Moreover, there is a moderate quantity of hewn timber produced from privately owned land, but information regarding output is not available.

2. Paper and Wood Pulp.—The manufacture of paper from Australian-grown timber has been established in three states.

(i) *Tasmania.* In Tasmania two large mills are making paper from indigenous hardwoods and a third from imported pulp. The paper produced at Burnie covers a wide range of high-class printing, writing, drawing, duplicating, blotting and specialty wrapping papers. At Boyer on the River Derwent, 20 miles from Hobart, newsprint is manufactured from locally ground wood pulp to which is added a small proportion of kraft pulp imported from New Zealand. An associate of the Burnie company produces sulphite banks and bonds, vegetable parchment, grease-proof, glassine and specialty papers on three machines, the last of which went into production in February, 1954. Two additional machines are being installed for the production of high-class writing and printing papers and the first of these will be operating early in 1955. The additional eucalypt pulp requirement for these machines will be made by extensions to the main pulp mill including a continuous digester new to the Australian industry. Hardwood not suitable for pulping is used to manufacture hardboard, and for fuel. During 1952-53 169,234 tons of pulpwood and 71,710 tons of firewood were used by these mills.

(ii) *Victoria.* In Victoria wood pulp is produced for paper-making at Maryvale. Associated with the pulp mill is a paper-making plant capable of producing about 20,000 tons of kraft paper per annum. The timber used at this mill consists mainly of hardwoods at present unsuitable for other purposes and, in addition, a small quantity of pine, (mainly thinnings), mill waste, and special softwood for production of cellulose. During 1952-53 the wood taken from Crown Lands for the production of pulpwood and cellulose amounted to 3,191,585 cubic feet of which 2,961,607 cubic feet were hardwood and 229,978 cubic feet were radiata pine.

(iii) *South Australia.* In South Australia a pulp and paper board mill operates near Millicent, using considerable quantities of softwoods from the Mount Burr and Penola pine plantations. During 1952-53, 9,829,370 super. feet of pulp wood were produced from South Australian forests, 5,610,014 super. feet for local use and 4,219,356 super. feet for use in an interstate mill.

3. *Other Forest Products.*—(i) *Veneers, Plywood, etc.* Cutting of timber for the manufacture of veneers, plywood, etc., has been carried out in most States for a number of years. Recently, however, this has been considerably extended, and much greater use has been made of locally-grown timbers, both hardwoods and softwoods. In recent years special attention has been paid to the selection of logs suitable for peeling.

The following table shows the production of plywood for each of the years 1938-39 and 1948-49 to 1952-53 :—

PLYWOOD PRODUCED.
(‘000 square feet $\frac{3}{8}$ in. basis.)

State.	1938-39.	1948-49.	1949-50.	1950-51.	1951-52.	1952-53.
New South Wales ..	24,194	25,572	28,008	32,287	31,784	22,557
Queensland. . .	66,100	104,262	111,048	104,799	110,028	81,400
Other States ..	14,511	16,451	17,977	16,412	17,341	11,771
Australia ..	104,805	146,285	157,033	153,498	159,153	115,728

Of the total plywood produced in 1952-53 95,636,373 square feet $\frac{3}{8}$ in. basis was classed as "Commercial", 13,891,529 as "Waterproof" and 6,200,159 as "Case."

During 1952-53, 333.3 million square feet ($\frac{3}{8}$ in. basis) of veneers were produced by the rotary process for the manufacture of plywood, and 45.9 million square feet ($\frac{3}{8}$ in. basis) were sold or added to stock, the bulk of which would eventually be used in the production of plywood. In addition, 17.2 million square feet of sliced veneers were produced.

(ii) *Eucalyptus Oil.* Oil may be distilled from the foliage of all varieties of Eucalyptus, and several of them furnish a product widely known for its commercial and medicinal uses. Complete information regarding Australian production and consumption of eucalyptus oil is not available, but considerable quantities are manufactured, particularly in Victoria. The value of oversea exports of eucalyptus oil distilled in Australia amounted in 1938-39 to £86,714; in 1950-51 to £468,680; in 1951-52 to £445,206; and in 1952-53 to £215,283. The quantities exported in the years 1950-51 to 1952-53 were 1,219,762 lb., 1,254,618 lb., and 721,330 lb., respectively.

(iii) *Grass Tree or Yacca Gum.* South Australia is the chief State producing this gum, which is used in the preparation of varnishes and lacquers. Small quantities are also obtained in New South Wales and Western Australia. Production in 1952-53 amounted to 73 tons in South Australia and 56 tons in Western Australia, whilst the exports from Australia amounted to 158 tons valued at £3,976 in the same year.

(iv) *Tanning Barks.* The forests of Australia are capable of yielding a wealth of tanning materials; many species of eucalyptus and other genera contain varying proportions of tannin, chiefly in the bark, but also in the wood and twigs. Scattered distribution however, has resulted in only the richest tan-bearing species being used in Australia. These are :—Golden wattle (*Acacia pycnantha*), black or green wattle (*Acacia decurrens* or *mollissima*), and mallet (*Eucalyptus astringens*). Mallet (*E. astringens*), of Western Australia, is not extensively used in Australian tanneries, but is exported to Europe and other countries. Reference to oversea trade in tanning barks is made in § 6, para. 3.

A brief account of work done by the Council for Scientific and Industrial Research in connexion with tanning materials is given in Official Year Book No. 22, p. 743. The

production of extract from the bark of karri (*E. diversicolor*), of which very large quantities are available at karri sawmills, has passed the experimental stage, and private enterprise has started production on a commercial scale. The experimental work in kinko impregnated marri (*E. calophylla*) bark is not yet complete. The production of tanning bark in Australia approximated 25,000 tons per annum in the years prior to 1939, but since then production has declined and in 1952-53 was approximately 12,000 tons. However, this decrease is offset by the increased use of vegetable tanning extract.

4. Value of Production.—(i) *Gross and Local Values, 1952-53.* The values of forestry production on a gross and local basis are shown in the following table for the year 1952-53.

GROSS AND LOCAL VALUE OF FORESTRY PRODUCTION, 1952-53.
(£'000.)

State.	Gross Production Valued at Principal Markets.	Marketing Costs.	Gross Production Valued at Place of Production.
New South Wales	16,090	598	15,492
Victoria	9,620	716	8,904
Queensland	8,302	1,200	7,102
South Australia	3,939	149	3,790
Western Australia	3,578	250	3,328
Tasmania	3,777	529	3,248
Australia(a)	45,306	3,442	41,864

(a) Excludes Australian Capital Territory and Northern Territory, details for which are not available

No information is available on the value of materials used in the process of production or of depreciation and maintenance charges for 1952-53 and hence it is not possible to calculate net value of forestry production.

(ii) *Local Values, 1934-35 to 1952-53.* In the following table the local value of forestry production and the local value per head of population are shown by States for the years 1948-49 to 1952-53 in comparison with the average for the five years ended 1938-39. Local value is gross value less marketing costs and is the value at place of production.

LOCAL VALUE OF FORESTRY PRODUCTION.

Year.	N.S.W.	Victoria.	Q'land.	S. Aust.	W. Aust.	Tas.	Aust.(a)
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LOCAL VALUE. (£'000.)

Average, 1934-35 to 1938-39 (b) ..	2,094	837	2,226	547	1,176	394	7,274
1948-49	6,561	3,940	3,804	2,104	1,791	2,105	20,305
1949-50	7,185	5,570	4,020	2,300	2,021	2,099	23,193
1950-51	8,966	6,437	5,029	2,656	2,908	2,432	28,428
1951-52	12,461	8,479	7,040	3,179	3,689	3,057	37,905
1952-53	15,492	8,904	7,102	3,790	3,328	3,248	41,864

LOCAL VALUE PER HEAD OF POPULATION. (£ s. d.)

Average, 1934-35 to 1938-39 (b) ..	0 15 7	0 9 1	2 5 2	0 18 7	2 11 8	1 13 9	1 1 4
1948-49	2 2 10	1 17 3	3 7 0	3 3 3	3 8 7	7 16 11	2 12 3
1949-50	2 5 4	2 11 4	3 9 2	3 7 0	3 14 1	7 11 4	2 17 11
1950-51	2 14 9	2 17 7	4 4 4	3 14 9	5 1 10	8 9 2	3 8 9
1951-52	3 14 3	3 13 8	5 15 4	4 7 2	6 4 10	10 4 9	4 9 3
1952-53	4 10 7	3 15 5	5 13 9	5 1 2	5 8 8	10 10 3	4 16 3

(a) Excludes Australian Capital Territory and Northern Territory, details for which are not available.

(b) Net value of production (i.e. local value less value of materials used in the course of production) has been included for certain years for Victoria and Western Australia.

5. **Employment.**—(i) *Forestry Operations.* The estimated number of persons employed in forestry operations during June, 1953 is shown in the following table. These estimates, which have been based upon pay-roll tax and other data, include working proprietors, but exclude those employed in the sawmilling industry, for which particulars are shown in the next table.

ESTIMATED NUMBERS EMPLOYED IN FORESTRY, JUNE, 1953.
(Excluding Sawmilling Industry.)

Sex.	N.S.W.	Vic.	Q'land.	S. Aust.	W. Aust.	Tas.	N. Terr.	A.C.T.	Aust.
Males	7,758	6,537	5,819	1,547	1,824	2,031	7	159	25,632
Females	26	37	2	9	16	10	..	7	107
Total	7,784	6,574	5,821	1,556	1,840	2,041	7	166	25,739

(ii) *Milling Operations.* Details of the average number of persons employed, including working proprietors, in the milling operations of sawmills during the year 1952-53 are shown in the next table. Further details regarding the operations of these mills are shown in Chapter XXIV.—Manufacturing Industry.

SAWMILLS : AVERAGE NUMBER OF PERSONS EMPLOYED, 1952-53.

Sex.	N.S.W.	Victoria.	Q'land.	S. Aust.	W. Aust.	Tasmania.	Australia. (a)
Males	9,745	7,051	6,832	1,877	4,108	1,998	31,611
Females	345	154	267	130	33	22	951
Total	10,090	7,205	7,099	2,007	4,141	2,020	32,562

(a) Excludes Northern Territory and Australian Capital Territory, details for which are not available.

§ 6. Imports and Exports of Timber and Tanning Substances.

1. **Imports of Dressed and Undressed Timber.** The quantities of timber imported into Australia during the years 1949-50 to 1952-53 inclusive are shown in the following table according to countries of origin:—

IMPORTS OF DRESSED AND UNDRESSED TIMBER INTO AUSTRALIA :
COUNTRIES OF ORIGIN.

('000 Super. feet.)

Country of Origin.	Dressed Timber.				Undressed Timber.(a)			
	1949-50.	1950-51.	1951-52.	1952-53.	1949-50.	1950-51.	1951-52.	1952-53.
United Kingdom	6	43	7	2	131	143	101	57
Canada	398	696	9,193	250	80,201	85,083	77,168	41,928
New Zealand	773	404	3,235	1,981	15,085	10,709	26,351	8,565
Other British Countries .. ..	..	140	12	67	36,621	35,827	34,983	21,772
Sweden	33,189	64,700	59,337	7,025	23,115	53,018	26,768	1,127
United States of America .. ..	..	..	7,554	..	46,368	58,845	115,576	32,560
Other Foreign Countries	9,788	19,135	28,311	985	12,287	60,952	50,346	8,125
Total	44,154	85,118	107,649	10,310	213,858	304,577	331,293	114,134

(a) Includes logs not sawn and excludes timber not measured in super. feet.

The figures in the table above exclude dressed and undressed timber such as architraves, veneers, plywood, staves, etc., quantities for which either are not shown, or are expressed in dissimilar units in the Customs entries. The total value of the items so excluded amounted to £126,812 in 1952-53.

The bulk of the imports of dressed timber now comes from Sweden and New Zealand and consists of softwoods cut for making boxes, and tongued and grooved timber, weatherboards, etc. The total value of dressed timber shown in the table above amounted to £723,000 during 1952-53, the major items being timber for box making and tongued and grooved weatherboarding. Undressed timber imported totalled £4,739,000 of which more than 90 per cent. was softwood. The principal undressed timber imported was oregon pine from Canada and the United States of America. The balance was mainly hemlock from North America, pines from New Zealand and the United States of America, and hickory from the United States of America.

2. Exports of Undressed Timber and Railway Sleepers.—The quantities of undressed timber and railway sleepers exported during the years 1949-50 to 1952-53 are shown below, together with the countries of destination.

EXPORTS OF UNDRESSED TIMBER (a) AND RAILWAY SLEEPERS FROM AUSTRALIA : COUNTRIES OF DESTINATION.

('000 super. feet.)

Country of Destination.	Undressed Timber (excluding Railway Sleepers).				Railway Sleepers.			
	1949-50.	1950-51.	1951-52.	1952-53.	1949-50.	1950-51.	1951-52.	1952-53.
United Kingdom ..	15,319	7,266	4,840	8,289	..	325	217	..
Ceylon ..	326	..	..	5	423	346	..	..
Mauritius ..	397	539	187	409	350	..	..	..
New Zealand ..	11,034	7,526	14,507	26,059	11,355	5,059	4,148	8,136
Union of South Africa ..	2,055	2,854	1,258	2,880	1,923	1,401	97	..
Other British Countries	2,647	2,657	2,966	1,927	438	120	286	214
Foreign Countries ..	789	695	105	7,633	1,048	268	..	17
Australian Produce ..	33,767	21,537	23,872	47,207	15,540	7,519	4,748	8,367
Re-exports ..	470	299	124	231	..	..	..	..
Total ..	34,237	21,836	23,996	47,438	15,540	7,519	4,748	8,367

(a) Excludes timber not measured in super. feet.

The bulk of the exports of undressed timber was consigned to New Zealand and the United Kingdom, and consisted largely of the Western Australian hardwoods, jarrah and karri, which have earned an excellent reputation for such purposes as harbour works and wood paving, etc. The total value of exports of undressed timber, excluding railway sleepers, during 1952-53 was £3,251,955 (hardwood £3,223,496, softwood £28,459). Railway sleepers exported were valued at £355,047.

3. Classification of Imports and Exports.—(i) *General.* The quantities and values of timber, according to items, imported and exported during the year 1952-53 are shown in the following table :—

TIMBER : IMPORTS AND EXPORTS, AUSTRALIA, 1952-53.

Description.	Unit of Quantity.	Quantity.			Value (£).		
		Imports.	Exports.	Excess of Imports over Exports.	Imports.	Exports.	Excess of Imports over Exports.
Logs, not sawn	'000 sup. ft.	16,941	12,331	4,610	355,057	762,166	-407,109
Timber, undressed—							
Boxmaking timber	..	468	..	468	25,308	..	25,308
Railway sleepers	..	981	8,367	-7,386	34,894	355,047	-320,153
Other undressed	..	(a) 95,743	35,392	(a) 60,351	64,328,245	2,489,789	61,838,456
Timber, dressed—							
Bent or cut into shape	..	(c)	(c)	(c)	25,615	2,719	22,896
Boxmaking timber	'000 sup. ft.	4,809	..	4,809	324,846	..	324,846
Tongued, and grooved, weatherboards	..	4,514	762	3,752	316,501	43,626	272,875
Other, dressed or moulded	..	987	(c)	(c)	81,447	272	81,175
Plywood	'000 sq. ft.	914	1,161	-247	37,616	41,123	-3,477
Veneers	..	3,073	4,748	-1,675	54,347	71,991	-17,644
Total	..	(c)	(c)	(c)	5,583,906	3,766,733	1,817,173

(a) Excludes undressed timber valued at £4,182 for which quantity data are not available.
 (b) Includes the value of timber referred to in note (a).
 (c) Not available.

NOTE.—Minus sign (—) denotes an excess of exports.

(ii) *Tanning Bark.* Since 1938-39, imports of tanning bark have been considerably in excess of exports each year except for 1950-51 and 1952-53. Imports reached a maximum of 105,315 cwt. valued at £53,553 during 1943-44, but declined in subsequent years and in 1952-53 amounted to only 2,486 cwt. (£5,022). In recent years exports have declined considerably. In 1947-48, 1949-50 and 1951-52 there were no exports, while in 1950-51, exports amounted to 10,019 cwt. (£11,020) and in 1952-53 to 8,566 cwt. (£15,928).

The imports of tanning bark consist almost exclusively of wattle bark from the plantations in South Africa. One species of Australian wattle, *Acacia mollissima*, is chiefly relied upon for the production of wattle bark in the South African plantations, most of the seed being obtained from the best wattle bark areas in eastern Tasmania and western Victoria. Two reasons are given to account for the success of the industry in the Union of South Africa :—(a) The suitability of the treeless, grassy highlands of Natal; and (b) the availability of native labour.

(iii) *Other Tanning Substances.* Considerable quantities of tanning substances other than bark are imported annually into Australia. The total value in Australian currency of the importations in 1952-53 was £468,041, and was composed as follows :—tanners' bates, £9,719; wattle bark extract, £391,489; other extracts, £23,240; and valonia, myrobalans, cutch, etc., £46,400.

Exports of tanning extracts and other tanning substances from Australia amounted to £208,856 in 1952-53.