

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 objects of forestry are to protect and treat forests as restorable resources to provide their maximum direct and indirect benefits to a country. The direct benefits lie in the providing of essential commodities such as structural timber, pulpwood, firewood, tans, oils, resins, etc., and the indirect benefits includes the regulation of stream flow from catchment areas, by providing conditions ideal for the maximum penetration into the soil of rainfall and other precipitation.

Australia has a particular interest in water and soil conservation because the area suitable for agricultural and pastoral development is not so large that material reduction or deterioration of productive capacity cannot but retard development; moreover, the water conservation and irrigation schemes, constructed to ensure the successful cropping of very large areas, are ultimately dependent on regular stream flow and minimum siltation.

Forestry aims to protect existing forests from destructive agencies generally; to improve the quality and condition of forests by carrying out judicious fellings; to control exploitation; to regenerate cut over area; to afforest with native or exotic species denuded lands, or those which for protection or other reasons are from a national point of view better under forest than under any other crop.

2. **General Account of Forests and Timbers.**—Compared with Australia's land area of approximately three million square miles, the area of forest land capable of producing commercial timber has always been very small, occupying in the main the wetter belts of the coastal areas and the near coastal highlands. In the early days timbers were exploited chiefly on account of their accessibility, ease of working and general utility regardless of their intrinsic merits, and so it was that what are now regarded as superlative furniture and cabinet timbers were often put to quite inferior uses. Clearing of forest land to make room for crops and pastures has bitten deeply into the original forest estate which has been further degraded by recurrent forest fires.

The forests of Australia consist predominantly of relatively coarse bluish green foliated evergreen hardwoods. The characteristic genus is *Eucalyptus*, embracing five to six hundred species, which with few exceptions are endemic to Australia. The genus includes such species as the mountain ash (*Eucalyptus regnans*) of Victoria and Tasmania and karri (*E. diversicolor*) of Western Australia, both of which for height and grandeur have few equals in the world. At the other ends of the scale of size of species of this genus are dwarf types, including the small multiple stemmed species collectively known as the "mallees", which thrive in some of the drier belts. Probably not more than 80 to 90 of the species of eucalypts are used for sawmilling in Australia, and, for one reason or another, not more than 30 to 40 are extensively exploited. Some of the outstanding eucalypts are listed in Official Year Book No. 39 and earlier issues.

* A specially contributed article dealing with Forestry in Australia appeared as part of this chapter 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.

The range and properties of eucalypt timbers fulfil all Australia's requirements where strength and durability are required, and in large measure they also meet general building requirements and, to a lesser extent perhaps, the needs of export packaging. In recent years certain of the eucalypts have been extensively pulped for paper-making and, less widely, for the manufacture of hardboard. The species most commonly used for the production of paper pulp is *E. regnans*, but *E. obliqua*, *gigantea*, *sieberiana*, *scabra*, *goniocalyx baxteri*, *condeniana* and *muellariana* are used to a lesser extent, and still different species are at present used in pulping for fibreboard manufacture.

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 melanoxylon*), rose mahogany (*Dysoxylum fraserianum*), etc. Turpentine (*Syncarpia laurifolia*) ranks with the world's best as a harbour piling timber and swamp box (*Tristania suaveolens*) is almost as good. Coachwood (*Ceratopetalum apetalum*) came into prominence for rifle furniture and for aircraft ply during the last war. The foregoing are but a few examples indicating the range of use of the timbers of the Australian hardwood forests.

Indigenous softwood resources have never been large and are now seriously depleted. A remnant only remains of the forests of hoop pine (*Aracaria cunninghamii*), bunya pine (*Aracaria bidwillii*) of New South Wales and Queensland, kauri (*Agathis spp.*) of Queensland, and huon pine (*Dacrydium franklinii*), celerytop pine (*Phyllocladus rhomboidalis*) and King William pine (*Athrotaxis selaginoides*) of Tasmania.

There are still considerable areas of the slow-growing but useful white ant resisting cypress (*Callitris spp.*) in the forest of the inland areas of Queensland, New South Wales and Victoria, but many of them are being overcut and in some localities regeneration of the forests presents difficulties.

The savannah forests of the interior yield minor products such as sandalwood and tan barks, and the leaves of some of the mallees are used for oil distillation.

3. Extent of Forests.—According to data submitted mainly by State forestry authorities 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 total area of 159,751 square miles is considerably greater than the area previously given for Australia, owing to the inclusion of considerable areas of low grade forest, in many cases 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 South Australian authorities especially emphasize that, after excluding the mallee firewood areas, the proportion of the remaining forest comparable with even mediocre forest land in other States is so small as to be almost negligible. Apart from this specific case it seems clear that there is considerable variation in the standards adopted for the definition of forest land. Also it should be emphasized that the figures given are stated to be rough estimates only. Furthermore, it is generally agreed that the figures for forest areas given are often far in excess of those which are both suitable for reservation and likely to be maintained for timber production. Considering these facts the proportion of Australia carrying commercial forests is 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.
(Square miles.)

Class of Forest.	State Forest.	Communal Forest.	Private Forest.	Total.	
				Area.	Proportion of Total Forest Area.
Exploitable—					Per cent.
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
Proportion of Total Forest Area Per cent.	80.4	0.3	19.3	..	100.0

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 per acre volume of which is comparatively low.

4. Forest Reservations.—Over the years recognition became more general that forest reservations were inadequate, but it was not until an Interstate Forestry Conference was held at Hobart in 1920 that a specific target to be aimed at was mentioned. The figure then agreed upon was an area of 24½ million acres of indigenous forest, which it was considered should be permanently reserved to meet the future requirements of Australia.

The forest reservations in Australia at 30th June, 1952, totalled 28,769,231 acres of which 21,314,780 acres are described as Dedicated State Forests, and 7,454,451 acres as Timber and Fuel Reserves. The distribution of these areas is shown by States in § 4. 2 hereafter.

In general, the timber and fuel 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: a good proportion 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, of which our needs have to be largely met by softwood timber imported 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 would appear, 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, if provisional, 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 is steadily increasing. It now totals approximately 500 square miles and the species used are mainly exotic to Australia. 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 in Australia as at the 30th June, 1952 was 318,338 acres. Details by States are given under § 4. 3.

§ 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 a substantial forest resource. 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. Pending completion of the Australian Forestry School in Canberra, which took place in 1927, it commenced its career in Adelaide in 1926, where all States sent students, while a nucleus of qualified officers were sent abroad to undergo special courses of instruction. By an Act of 1930, the Bureau received statutory powers, and its functions included the advising of the various Territory Administrations on forestry matters, the management of forests placed under its control, the establishment of experimental stations, the training of students, 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 activities of the Bureau under its statutory functions are summarized below under four main headings

(a) *Forestry Education—Australian Forestry School.*—For information on the conditions required for enrolment as a student, the methods of entry and the scholarships available, see issues of this Year Book prior to No. 39. The Calendar of the School is also available on application to the Director General.

A Board of Higher Forestry Education advises in regard to the maintenance of the standard of the school diploma course and regarding pre-requisite university courses leading to the diploma course. Students who have passed the approved two-year university preliminary science course and two years of diploma course at the school may be granted the degree of B.Sc.F. by their universities.

The number of students enrolled decreased from 80 during 1950 to 60 during 1951, to 37 during 1952 and to 32 during 1953. The high level of enrolment in 1950 and 1951 resulted from the intake of Commonwealth Reconstruction Training Scheme students from the Universities.

(b) *Silvicultural Research.* The Bureau was charged with the responsibility of initiating research into problems connected with silviculture, forest management and forest protection, and some progress has been made by the establishment of a small Central Research Station at Canberra. Experimental forest research stations were also established at Mt. Burr in the south-east of South Australia and in Tasmania on a co-operative basis with the Forest Services of those States.

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 envisaged over the next few years as suitable trained staff becomes available.

The activities of the Central Research Station are in course of expansion and an Experimental Forest Research Station has been opened at Dwellingup, Western Australia, in co-operation with the Forests Department of that State. It is proposed to extend further the field of this class of work by the establishment of Research Stations in other States and Papua-New Guinea in co-operation with the respective Forest Services.

(c) *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.

(d) *Research and Investigation regarding Forest Resources.* Production of timber from native grown species has considerably increased since 1939 in order to assist in meeting the heavy demands, firstly for war purposes, and more latterly for building and other constructional projects of the post-war era.

In the national interests it is essential that overcutting of our 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.

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 VII.—The Territories of Australia.
- (b) *Northern Territory.* The forests of the Northern Territory are administered by the Administrator of that Territory under ordinance. The native forests of the Territory are very limited, consisting only of a limited area of rain forest in the North, patches of cypress pine, river fringing forests of paper bark, titree and savannah woodland. A Forestry Officer has recently been appointed to the Territory and efforts are to be made to protect and extend the forests.
- (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 are under the control of a Forestry Department and administered under ordinance of the Territorial Administration. Forestry in the Territory of Papua and New Guinea commenced with the appointment of two Forestry Officers to the Administration of New Guinea in 1938. Plans for the expansion of forestry activities are being prepared by the Director of the Forestry Department. This planning has been somewhat hampered by the loss of all records through enemy activities in 1942. Further information is contained in Chapter VII.—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.

Forestry matters were considered at the first session of the Food and Agriculture Organization of the United Nations held at Quebec in 1945, and at the second session at Copenhagen in 1946, which the Director-General of the Forestry and Timber Bureau attended as alternate delegate and adviser in forestry matters for the Commonwealth.

The Third World Forestry Congress was held in Helsinki in 1949 and was attended by the Officer-in-Charge of the Division of Forest Resources of the Forestry and Timber Bureau, who also attended the United Nations Scientific Conference on Conservation and Utilization of Resources, held at Lake Success, United States of America, in the same year.

§ 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 forestry work. 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. For many years Victoria has possessed a forestry school at which recruits are trained for the forestry service of the State.

2. **Forest Reservations.**—As mentioned in § 1, para. 4 *ante*, 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, 1952, the area of State forests reserved in perpetuity totalled 21,314,780 acres or 87 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 control more than 7,000,000 acres, recorded as temporary timber and fuel reserves, 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, 1952.

AREA OF FOREST RESERVATIONS, 30th JUNE, 1952.
(Acres.)

Particulars.	N.S.W.	Victoria.	Q'land.	S. Aust.	W. Aust.	Tasmania.	Total.
Dedicated State Forests ..	6,136,462	5,171,186	4,500,709	(a) 258,593	3,441,950	1,805,880	21,314,780
Timber and Fuel Reserves ..	1,386,189	(b)	c 3,099,434	..	2,831,800	(c) 137,028	d 7,454,451
Total ..	7,522,651	d 5,171,186	e 7,600,143	258,593	6,273,750	e 1,942,908	d 28,769,231

(a) Includes Timber and Fuel Reserves. (b) Not available. (c) Excludes Fuel Reserves. (d) Incomplete.

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 1951–52.

FORESTRY AREAS, AND NUMBERS EMPLOYED BY FORESTRY DEPARTMENTS, 1951-52.

Particulars.	N.S.W.	Vic.	Q'land.	S. Aust.	W. Aust.	Tas.	Total.
Total area of indigenous forest improved or regenerated .. acres	1,566,793	1,115,433	503,982	9,928	1,897,300	420,000	5,513,436
Total area of effective plantations—							
Hardwoods acres	909	3,067	2,770	4,159	18,189	153	29,337
Softwoods "	45,222	55,287	50,387	115,755	15,148	(a) 7,202	289,001
Number of persons employed in Forestry Departments—							
Office staff "	(b) 457	232	196	109	62	69	1,125
Field staff "	243	375	2,111	631	(c) 141	(d) 82	3,583

(a) Includes 30 acres of nurseries. (b) Includes Wood Technology staff totalling 65. (c) Excludes 451 other employees. (d) Excludes 245 bush employees.

4. Revenue and Expenditure.—The revenue of State Forestry Departments for 1951-52 was £7,639,388, as compared with £5,064,685 in 1950-51 and £1,466,781 in 1938-39; State details for 1951-52 were as follows:—New South Wales, £2,043,954; Victoria, £1,889,947; Queensland, £2,182,406; South Australia, £889,793; Western Australia, £481,497; and Tasmania, £151,791.

The expenditure of the Departments for 1951-52 was £10,475,950, as compared with £8,599,036 in 1950-51 and £1,840,088 in 1938-39; State details for 1951-52 were as follows:—New South Wales, £2,404,004; Victoria, £2,798,629; Queensland, £3,010,983; South Australia, £984,402; Western Australia, £838,846; and Tasmania, £439,086.

§ 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 1951-52.

OUTPUT OF NATIVE TIMBER : ALL MILLS, 1951-52.

('000 super. feet.)

Particulars.	N.S.W.	Victoria.	Q'land.	S. Aust.	W. Aust.	Tas.	Total.
LOGS TREATED, INCLUDING THOSE SAWN ON COMMISSION.(a)							
Hardwood ..	508,095	526,216	340,998	8,076	391,234	230,425	2,005,044
Softwood ..	87,232	33,231	128,660	100,310	5,778	8,288	363,499
Total ..	595,327	559,447	469,658	108,386	397,012	238,713	2,368,543
SAWN TIMBER PRODUCED FROM LOGS ABOVE.(b)							
Hardwood ..	328,663	331,398	209,003	4,495	174,326	122,048	1,169,933
Softwood ..	51,970	21,705	82,678	62,626	3,003	4,515	226,497
Total ..	380,633	353,103	291,681	67,121	177,329	126,563	1,396,430

(a) Includes logs used for plywood and veneer production.

(b) 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 1947-48 to 1951-52.

OUTPUT OF NATIVE TIMBER : ALL MILLS, AUSTRALIA.

Particulars.	Unit.	1938-39.	1947-48.	1948-49.	1949-50.	1950-51.	1951-52.			
Logs used—										
Hardwood ..	'000 super. feet (hoppus measure)	1,015,136	1,436,654	1,544,601	1,637,236	1,797,226	2,005,044			
Softwood ..	" "	293,680	425,812	432,567	415,712	300,052	363,499			
Total ..	" "	1,308,816	1,862,466	1,977,168	2,052,948	2,097,278	2,368,543			
Sawn Timber Produced—										
Sawn equivalent of Timber Peeled or Sliced for Plywood and Veneers—										
Hardwood ..	'000 super. feet	(a)	2,981	2,190	3,602	} 27,322	} 28,387			
Softwood ..	" "	21,639	27,629	22,644	22,444					
Total ..	" "	21,639	30,610	24,834	26,046					
Used for other purposes—										
Hardwood ..	" "	} 695,376	{ 841,512	905,514	961,540	} 1234018	} 1,368,043			
Softwood ..	" "							245,191	253,740	235,474
Total ..	" "							695,376	1,086,703	1,159,254	1,197,014	1,234,018	1,368,043
Total Sawn Timber—										
Hardwood ..	" "	526,229	844,493	907,704	965,142	1,068,096	1,169,933			
Softwood ..	" "	190,786	272,820	276,384	257,918	193,244	226,497			
Total ..	" "	717,015	1,117,313	1,184,088	1,223,060	1,261,340	1,396,430			

(a) 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 1947-48 to 1951-52.

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

('000 super. feet.)

State.	1938-39.	1947-48.	1948-49.	1949-50.	1950-51.	1951-52.
New South Wales ..	179,350	332,591	353,685	341,143	338,347	380,633
Victoria ..	120,197	260,502	281,852	308,792	329,640	353,103
Queensland..	193,250	235,214	250,355	251,127	252,378	291,681
South Australia ..	14,537	47,700	51,633	56,775	59,393	67,121
Western Australia ..	125,453	131,597	126,859	138,077	156,809	177,329
Tasmania ..	84,228	109,709	119,704	127,146	124,773	126,563
Total ..	717,015	1,117,313	1,184,088	1,223,060	1,261,340	1,396,430

(a) Includes the sawn equivalent of timber peeled or sliced for plywood and veneers.

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 sup. feet; 1947-48, 17,210,844 sup. feet; 1948-49, 16,331,835 sup. feet; 1949-50, 16,823,566 sup. feet; 1950-51, 19,396,134 sup. feet: and 1951-52, 21,156,790 sup. 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.**—(i) *Tasmania.* The manufacture of paper from Australian-grown timber has been established in three States. In Tasmania two large mills are making paper from indigenous hardwoods. The paper produced at Burnie covers a wide range of high class printing, writing, drawing, duplicating and blotting 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. When running at full capacity total production is 1,560 tons per week. An associate of the Burnie company was formed in 1948 to make vegetable parchment, grease-proof, glassine and specialty papers. Production of vegetable parchment commenced in June, 1952, using a machine of 126 in. width, and a second machine of 94 in. width was first used in May, 1953 to produce sulphite bonds and banks. A greaseproof machine is expected to be in operation towards the end of 1953 and two additional machines are to be installed for production of high-class writing and printing papers. Raw materials requirements will be met by extension to the major pulp mill. Hardwood not suitable for pulping and Tasmanian coal are used as fuels. During 1951-52, 169,212 tons of pulpwood and 48,334 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 1951-52 the wood taken from Crown Lands for the production of pulpwood and cellulose amounted to 1,888,352 cubic feet of which 1,869,896 cubic feet were hardwood and 18,456 cubic feet were radiata pine.

(iii) *South Australia.* In South Australia a pulp and paper board mill commenced operations during 1941-42 near Millicent. The mill uses considerable quantities of softwoods from the Mount Burr and Penola pine plantations. During 1951-52, 31,177,455 super. feet of pulp wood were produced, 4,581,004 super. feet for local use and 26,596,451 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 in all States, and much greater use has been made of local-grown timbers, both hard 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 1947-48 to 1951-52 :—

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

State.	1938-39.	1947-48.	1948-49.	1949-50.	1950-51.	1951-52.
New South Wales ..	24,194	23,726	25,572	28,008	32,287	31,784
Queensland ..	66,100	99,823	104,262	111,048	104,849	110,028
Other States ..	14,511	15,528	16,451	17,977	16,361	17,341
Total ..	104,805	139,077	146,285	157,033	153,497	159,153

During 1951-52, 444.2 million square feet ($\frac{1}{8}$ -in. basis) of veneers were produced by the rotary process for the manufacture of plywood, and 87.3 million square feet ($\frac{1}{8}$ -in. basis) were sold or added to stock, the bulk of which would eventually be used in the production of plywood. In addition, 20.2 million square feet were produced by slicing.

(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 overseas exports of eucalyptus oil distilled in Australia amounted in 1938-39 to £86,714; in 1949-50 to £147,355; in 1950-51 to £468,680; and in 1951-52 to £445,206. The quantities exported in the years 1949-50 to 1951-52 were 680,802 lb., 1,219,762 lb., and 1,254,618 lb., respectively.

(iii) *Sandalwood and Sandalwood Oil.* Most of the sandalwood is produced in Western Australia for export to Asiatic countries. Small quantities are also produced in South Australia, Queensland and New South Wales. Details of exports of sandalwood are shown in paragraph 3 (ii), § 6. Oil distilled from Western Australian sandalwood has a medicinal value and is used extensively in the manufacture of perfumes. Quantities of this oil are exported annually to the eastern States of Australia and overseas countries, principally to the United Kingdom. Oversea exports of Australian sandalwood oil amounted in 1938-39 to £13,964; in 1949-50 to £22,889; in 1950-51 to £9,629; and in 1951-52 to £19,397.

(iv) *Grass Tree or Yacca Gum.* South Australia is the chief State producing this gum, which is used in the preparation of varnishes and lacquers. Quantities are also obtained in New South Wales and Western Australia but these are small. The production in South Australia during 1951-52 amounted to 1,002 tons, whilst the exports from Australia amounted to 1,013 tons valued at £38,529.

(v) *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 the richest tan-bearing species only 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 kino impregnated karri (*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 1951-52 stood at approximately 11,000 tons. However, this diminution is offset by the increased use of vegetable tanning extract, which rose from 3,686 tons in 1938-39 to 6,880 tons in 1951-52.

4. Value of Production.—(i) *Gross, Local and Net Values, 1951-52.* The values of forestry production on a gross, local and net basis are shown in the following table for the year 1951-52.

GROSS, LOCAL AND NET VALUE OF FORESTRY PRODUCTION, 1951-52.
(£'000.)

State.	Gross Production Valued at Principal Markets.	Marketing Costs.	Gross Production Valued at Place of Production.	Net Value of Production. (a)
New South Wales	12,848	387	12,461	12,461
Victoria	9,275	796	8,479	8,479
Queensland	8,230	1,190	7,040	7,040
South Australia	3,323	144	3,179	3,179
Western Australia	4,258	569	3,689	3,689
Tasmania	3,422	305	3,057	3,057
Total	41,356	3,451	37,905	37,905

(a) No deduction has been made for depreciation and maintenance nor for the value of materials used in the process of production.

(ii) *Net Values, 1934-35 to 1951-52.* In the following table the net value of forestry production and the net value per head of population are shown by States for the years 1947-48 to 1951-52 in comparison with the average for the five years ended 1938-39.

NET VALUE OF FORESTRY PRODUCTION.

Year.	N.S.W.	Victoria.	Q'land.	S. Aust.	W. Aust.	Tas.	Total.
NET VALUE.(a) (£'000.)							
Average, 1934-35 to 1938-39	2,094	837	2,226	547	1,176	394	7,274
1947-48	5,741	3,494	3,394	1,700	1,605	1,834	17,768
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	23,195
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

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

Year.	N.S.W.	Victoria.	Q'land.	S. Aust.	W. Aust.	Tas.	Total.
NET VALUE PER HEAD OF POPULATION. (£ s. d.)							
Average, 1934-35 to 1938-39	0 15 7	0 9 1	2 5 2	0 18 7	2 11 8	1 13 9	1 1 4
1947-48	1 18 2	1 13 9	3 1 0	2 12 1	3 3 1	7 0 1	2 6 8
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

(a) No deduction has been made for depreciation and maintenance nor, since the year 1948-49, for the value of materials used in the process of production; in earlier years deductions were made on this account for one or two States only.

5. **Employment.**—(i) *Forestry Operations.* The estimated number of persons employed in forestry operations as at June, 1952 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, 1952.

(Excluding Sawmilling Industry.)

Sex.	N.S.W. (a)	Victoria.	Q'land.	S. Aust. (b)	W. Aust.	Tasmania.	Total.
Males	8,624	6,540	6,265	1,579	1,900	2,017	26,925
Females	35	50	6	21	19	9	140
Total	8,659	6,590	6,271	1,600	1,919	2,026	27,065

(a) Includes Australian Capital Territory.

(b) Includes Northern Territory.

(ii) *Milling Operations.* Details of the number of persons employed, including working proprietors, in the milling operations of sawmills during the year 1951-52 are shown in the next table. Further details regarding the operations of these mills are shown in Chapter XXIV.—Manufacturing Industry.

SAWMILLS : PERSONS EMPLOYED, 1951-52.

Sex.	N.S.W.	Victoria.	Q'land.	S. Aust.	W. Aust.	Tasmania.	Total. (a)
Males	10,265	7,170	7,027	1,789	3,732	2,170	32,153
Females	370	163	249	126	29	22	959
Total	10,635	7,333	7,276	1,915	3,761	2,192	33,112

(a) Excludes Northern Territory and Australian Capital Territory.

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

i. **Imports of Dressed and Undressed Timber.** The quantities of timber imported into Australia during the years 1938-39 and 1949-50 to 1951-52 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)			
	1938-39.	1949-50.	1950-51.	1951-52.	1938-39.	1949-50.	1950-51.	1951-52.
Borneo (British) .. ..	..	..	..	..	5,997	30,804	24,463	15,929
Canada	8,927	398	696	9,193	296,948	80,201	85,083	77,168
Malaya, Federation of .. ..	..	..	2	..	165	2,167	7,727	11,113
New Zealand .. ..	..	773	531	3,230	11,193	15,085	10,709	26,352
Other British Countries	3	6	54	19	4,598	3,830	3,780	8,041
Brazil .. ..	..	..	..	76	..	8,617	32,525	29,037
Finland	340	370	3,327	8,826	1,696	1,938	6,757	2,989
Norway	4,209	9,242	15,114	12,525	21	10	307	395
Portugal .. ..	..	..	101	3,728	..	..	251	196
Rumania .. ..	..	..	..	..	269	10	8,634	6,198
Sweden	1,978	33,189	64,700	59,337	4,654	23,115	53,018	26,768
United States of America	2,242	5	..	7,554	12,245	46,368	58,845	115,576
Other Foreign Countries	79	171	593	3,155	10,312	1,713	12,858	11,531
Total	17,778	44,154	85,118	107,649	348,098	213,858	304,957	331,293

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

The figures in the table above exclude items such as architraves, veneers, plywood, staves, etc., quantities for which are either not shown, or are expressed in dissimilar units in the Customs entries. The total value of the items so excluded amounted to £2,773,047 in 1951-52.

The bulk of the imports of dressed timber now comes from Norway and Sweden and consists of softwoods cut for making boxes, and tongued and grooved timber, weather-boards, etc. The total value of dressed timber, shown in the table above amounted to £7,097,000 during 1951-52, the major items being tongued and grooved weather-boarding. Undressed timber imported totalled £15,992,000, principally softwood beams, baulks, etc., valued at £9,861,000, and softwood boards and planks valued at £4,475,000. The principal component of beams, baulks, etc., was oregon pine from Canada and the United States of America, while the balance was mainly hemlock from North America, pine from New Zealand, Sweden and Finland, and spruce from Sweden. Included in the softwood boards and planks are oregon and hemlock from North America, pines principally from New Zealand and Brazil, spruce, principally from Sweden and Rumania (although there are considerable quantities from other European countries), red and white pine from New Zealand, and other softwood from Brazil.

2. Exports of Undressed Timber and Railway Sleepers.—The quantities of undressed timber and railway sleepers exported during the years 1938-39 and 1949-50 to 1951-52 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.			
	1938-39.	1949-50.	1950-51.	1951-52.	1938-39.	1949-50.	1950-51.	1951-52.
United Kingdom ..	11,750	15,319	7,266	4,849	1,438	..	325	217
Ceylon ..	535	326	..	..	5,324	423	346	..
Mauritius ..	334	397	539	187	503	350	..	..
New Zealand ..	17,145	11,634	7,526	14,507	16,896	11,358	5,059	4,148
Pacific Islands (British)	1,287	527	559	1,173	126	347	85	162
Union of South Africa ..	7,164	2,655	2,834	1,258	4,941	1,923	1,401	97
Other British Countries	779	2,120	2,098	1,793	75	92	35	124
Egypt ..	718	..	..	..	4,198	..	..	..
Iran ..	..	..	74	..	271	1,005	196	..
Other Foreign Countries	4,065	789	621	105	194	42	72	..
Australian Produce ..	43,797	33,767	21,537	23,872	34,036	15,540	7,519	4,748
Other Produce ..	541	470	299	124	..	..	..	..
Total ..	44,338	34,237	21,836	23,996	34,036	15,540	7,519	4,748

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

The bulk of the exports of undressed timber were 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 1951-52 was £1,561,987 of which £1,445,118 was hardwood and £116,869 was softwood. Railway sleepers exported were valued at £162,837.

3. Classification of Imports and Exports.—(i) *General.* The quantities and values of timber, according to items, imported and exported during the year 1951-52 are shown in the following table:—

TIMBER : IMPORTS AND EXPORTS, AUSTRALIA, 1951-52.

Description.	Quantity.				Value (£).		
	Unit of Quantity.	Imports.	Exports.	Excess of Imports over Exports.	Imports.	Exports.	Excess of Imports over Exports.
Logs, not sawn ..	'000 sup. ft.	20,870	7,775	13,095	478,481	433,325	45,156
Timber, undressed—							
Beams, Baulks, etc. ..	"	218,093	15,041	203,052	10,211,379	960,964	9,250,415
Boards, Planks, etc. ..	"	91,378	1,180	90,198	5,270,356	68,474	5,201,882
Boxmaking timber ..	"	562	(a)	..	31,403	(a)	..
Railway sleepers ..	"	..	4,748	-4,748	..	162,837	..
Other undressed ..	"	(b)	(b)	(b)	261,961	99,224	31,303
Timber, dressed—							
Bent or cut into shape ..	"	(b)	(b)	(b)	107,080	..	..
Boxmaking timber ..	'000 sup. ft.	11,505	(b)	(b)	699,495	..	..
Tongued, and grooved, weatherboards ..	"	77,193	(b)	(b)	5,071,768	8,578	7,195,776
Other, dressed or moulded ..	"	18,946	(b)	(b)	1,326,011	..	..
Plywood ..	'000 sq. ft.	77,107	188	76,919	2,126,118	10,992	2,115,126
Veneers ..	"	19,661	5,396	14,265	277,888	92,246	185,642
Total ..	..	(b)	(b)	(b)	25,861,940	1,836,640	24,025,300

(a) Not separately recorded. (b) Not available.

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

(ii) *Sandalwood.* Sandalwood is exported, principally from Western Australia, to Singapore, Malaya and Hong Kong, where it is highly prized and largely used for artistic and ceremonial purposes. During 1951-52 total exports were 361 tons valued at £83,010, as compared with 344 tons, £80,987 in 1950-51, 195 tons, £45,546 in 1949-50, and 1,648 tons, £42,328 in 1938-39.

(iii) *Tanning Bark.* With the exception of 1950-51 when 10,019 cwt. of tanning bark valued at £11,020 were exported from Tasmania to India, imports have been considerably in excess of exports for every year since 1938-39. Imports have, however, declined from 86,367 cwt. (£56,986) during 1945-46 to 10,783 cwt. (£24,359) during 1951-52, compared with 6,199 cwt. (£2,318) during 1938-39. In 1938-39 exports totalled 18,220 cwt. valued at £8,630. There were no exports of tanning bark during 1951-52.

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.

(iv) *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 1951-52 was £637,900, and was composed as follows:—Tanners' Bates, £3,880; wattle bark extract, £569,353; other extract, £19,327; and valonia, myrobalans, cutch, etc., £45,340.

Exports of tanning extracts and other tanning substances from Australia amounted to £326,371 in 1951-52.