

CHAPTER XIX.

FORESTRY.*

§ 1. Forestry.

1. **General.**—Economic forestry aims at the preservation and development of existing forest areas by safeguarding against fire and other destructive agencies, by expert supervision of the removal of timber, by judicious thinning, and by reforestation of denuded areas with suitable new growths of local or exotic origin. It provides also for the continuance of an indispensable form of national wealth by the afforestation of available bare lands adapted to the growth of various timbers. Though large areas of virgin forests still remain in Australia, the inroads made by timber-getters, by agriculturists, and by pastoralists—who have destroyed large areas by “ring-barking”—are considerable, and it is not unlikely that climatological changes are caused thereby. It is stated that beneficial consequences follow on the planting of trees on denuded lands, or along eroding coasts, and that a forest covering beneficially regulates the effects of rainfall.

Successful planting of exotics in various parts of Australia has demonstrated that the climate is suitable for the cultivation of a large number of the most valuable and beautiful of the world's timber trees.

2. **Extent of Forests.**—(i) *Australia.* The wooded area of Australia contains a large number of xerophilous trees and woody shrubs which thrive in regions receiving less than 10 inches of rain per annum. Country devoid of tree growth is rare, the conditions being due to lack of suitable soil rather than lack of rainfall. Sand dunes, rock exposures, and clay pans are the most common treeless areas. A treeless region such as the 300 miles long Nullarbor plain is quite exceptional. There the lack of tree growth is due to the failure of the limestone formation to retain moisture. While, however, the major portion of Australia carries trees, and may be said to be well wooded (the term “desert” applying to relatively small areas only) dense forest is confined to a very narrow fringe. The savannah forests of the interior yield minor products such as sandalwood and tan barks, but do not produce timber. These open, park-like formations carry only scattered trees of low habit. The bulk of the commercial forest products comes from the thickly-timbered areas comprised in the 30-inch and over rainfall belt south of the Tropics, and the 70-inch and over rainfall belt in the Tropics. The total area is comparatively small, and is confined to the following districts:—(a) The coastal belt in the extreme south-west of Western Australia, from a little north of Perth to Albany; (b) the Otway country, in the south of Victoria, and the whole of the south-eastern portion of that State; (c) the mountain forests of Victoria and New South Wales. A forest fringe extends along the coast of New South Wales and Queensland, the rainfall rising from 30 inches in the south and temperate portion to 140 inches in the Tropics. The greater portion of Tasmania receives sufficient rainfall to carry high forest, but a very small area only in South Australia, and practically none in the Northern Territory are endowed with the necessary rainfall. Edaphic forests occur here and there, and the most important belt is probably that which is to be found on each side of the Murray River in New South Wales and Victoria. Red Gum (*E. rostrata*) is the riverine species. Practically the whole of Papua and New Guinea carry or have carried dense forests, the exceptions being certain small dry belts where the rainfall is less than 70 inches. Norfolk Island was, at one time, covered with a thick jungle.

Special articles relating to Australian Eucalyptus timbers and the chemical products of Eucalypts will be found in Official Year Book No. 10, pp. 85–98.

* A specially contributed article dealing with Forestry in Australia appeared as part of this chapter in Official Year Book No. 19 (*vide* pp. 701 to 712 therein).

Scientific surveys of the forests of the various States have not yet been completed, and there are, in consequence, conflicting reports regarding the total forest area of Australia. Expert foresters, however, estimate the forest area possible for permanent reservation at approximately 24,500,000 acres, distributed throughout the States as follows :—

ESTIMATED FOREST AREA.—AUSTRALIA.

State.	Total Forest Area.	Percentage on Total Area.
	Acres.	%
New South Wales	8,000,000	4.04
Victoria	5,500,000	9.78
Queensland	6,000,000	1.40
South Australia	500,000	0.21
Western Australia	3,000,000	0.48
Tasmania	1,500,000	8.94
Total	24,500,000	1.29

(ii) *Comparison with other Countries.* The absolute and relative forest areas of Australia and other countries are shown below :—

FOREST LANDS.—RELATIVE AREAS, VARIOUS COUNTRIES.

Country.	Total Wooded Area.	Percentage on Total Area.	Country.	Total Wooded Area.	Percentage on Total Area.
	Sq. Miles.	%		Sq. Miles.	%
Soviet Republics	2,662,000	37.81	Norway	27,434	21.95
Canada	965,234	26.78	Rumania	26,436	21.62
United States	724,150	24.35	Italy	21,309	17.81
India (British)	228,850	20.91	Spain	18,965	9.74
Sweden	90,889	57.35	Czecho-Slovakia	17,996	33.17
Japan	74,019	50.13	New Zealand	17,969	17.30
Finland	71,770	55.80	Austria	12,220	37.75
Germany	50,608	26.29	Latvia	7,027	27.70
France	39,873	18.74	Greece	5,844	11.71
Australia	38,281	1.29	United Kingdom	5,180	3.90
Poland	32,781	21.99			

3. *Requisite Proportion of Forest Area.*—It is generally held that when the proportion of forest in any country falls below 0.86 acres per head of the population, that country will be obliged to import timber. Australia possesses 4.01 acres of forest per head of population, and the excess of imports of timber over exports amounts to 28,000,000 cubic feet. There are two reasons for this excess. In the first place the area of 24,500,000 acres given as the wooded area comprises all forest lands, reproductive or otherwise. The bulk of this area consists of cut-over forests swept by fire at frequent intervals, and the area of really productive forests is not available. Secondly, Australia does not possess a surplus of softwoods, and must, therefore—with the exception of a small quantity produced in Queensland and northern New South Wales—import the bulk of its requirements from overseas. The figure 24,500,000 acres represents the total area that in the estimation of foresters should be reserved for forestry, and taking the factor of 0.86, then, when all the forest area of Australia has been brought under silvicultural treatment, and is yielding its maximum of hard and soft woods, and none is being imported, the timber supply of Australia would support a population of 28½ millions.

§ 2. Activities of the Commonwealth Government.

Forestry was not included amongst the matters transferred by the States to the control of the Commonwealth, and federal supervision, therefore, is restricted to the forests in the Commonwealth Territories. These territories cover a large area, and, with the exception of the Northern Territory, are capable of sound forestry development. It is only during the last few years, however, that any attempt has been made to take stock of the forestry position. Reports have been issued in regard to Papua, New Guinea, the Federal Capital Territory, and Jervis Bay, and a general policy has been drawn up for the management of the forests of these Territories. So far as co-operation with the States is concerned, there has been progress in a small way in connexion with the investigation of minor forest products. The Council for Scientific and Industrial Research, for example, has carried out valuable research work into the pulping qualities of Australian hardwoods and into the tanning qualities of barks and other material. It is proposed to enlarge the work of investigation into minor products, and, through the Forestry Bureau of the Commonwealth Government, to co-operate with the States in major forest work. An Australian Forestry School has been founded, and the Federal Capital Commission has appointed a qualified forester to manage the forests at Canberra and Jervis Bay, while it is anticipated that in both New Guinea and Papua the forests will shortly be placed under scientific management.

§ 3. State Forestry Departments.

1. **Functions.**—Each State has organized a separate Department or Commission specially charged with the control and management of the State forests and timber reserves. Extensive survey work is carried on with a view to the classification of forest lands and the proclamation of State forests. The forests are improved by systematic cutting and scientific treatment, by judicious thinning and ring-barking, by the making of roads and the establishment of fire-breaks, and by the removal and destruction of debris, and stunted, diseased or suppressed growth. Provision is made for effective patrols in forest districts to check the ravages caused by fire, often due, it is believed, to carelessness. The training of forest officers, the conduct of research work, and the collection of forestry statistics are also undertaken.

2. **Forest Reservations.**—At the Interstate Conference on Forestry, held at Hobart in 1920, the forestry authorities of the various States agreed upon the necessity of reserving an area of 24,500,000 acres of indigenous forest lands to meet the future requirements of Australia. This area was distributed among the States as set out in § 1, 2 *ante*.

Having been endorsed by the Premiers' Conference held later in the same year, this area was adopted as the Australian forest ration towards which the authorities are now aiming for permanent reservation. The progress made in the various States to the end of June, 1928, is set out in the following table:—

AREA OF FOREST RESERVATIONS, 30th JUNE, 1928.

Particulars.	N.S.W.	Vic.	Q'land.	S. Aust.	W. Aust.	Tas.	Total.
	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.
Dedicated State forests ..	5,315,426	4,330,452	1,800,107	2,200,005	1,856,524	1,252,843	14,755,357
Timber and fuel reserves ..	1,541,346	748,794	3,393,941	..	1,350,662	946,338	7,981,081
Total ..	6,856,772	5,079,246	5,194,048	2,200,005	3,207,186	2,199,181	22,736,438

(a) Includes Timber and Fuel Reserves.

In addition to the work of permanently reserving their respective quotas, the State foresters are concerned with the surveying of all forest lands and the excising of those unsuitable for forestry. During the year considerable areas were revoked in certain States, but dedications of new areas resulted in a gain of 2,617,698 acres to the permanent estate, the greatest increase occurring in Tasmania.

The area of State forests reserved in perpetuity amounted in June, 1928, to 14,755,357 acres, or 60.2 per cent. only of the quota adopted for Australia. Of this area a considerable proportion consists of inaccessible mountainous country and cut-over lands, while the Australian quota recommended refers to merchantable forest only. The foresters of Australia are, therefore, faced with a difficult task in improving and preserving the existing forests, and in securing the reservation of further suitable forest country to ensure a permanent supply of accessible timber.

The Forestry Departments also control 7,981,081 acres of temporary timber and fuel reserves, but although these areas contain some land of high value for forestry purposes, the greater proportion thereof is not of importance for permanent reservation.

3. Sylvicultural Nurseries and Plantations.—Recognition of the necessity for systematic sylviculture has led to the creation in all of the States of a number of sylvicultural nurseries and plantations. The locality of these establishments, together with a brief statement of the nature of their activities, is given in previous issues of the Year Book. (Reference may be made to Official Year Book No. 6, pp. 451-3.) Details regarding forest plantations and employment are given hereunder :—

SYLVICULTURAL PLANTATIONS AND FORESTRY EMPLOYMENT, 1927-28.

Particulars.	New South Wales.	Victoria.	Q'land.	South Australia.	Western Australia.	Tasmania.	Total.
Total area of Effective Plantations—							
Softwoods .. Acres	16,698	12,341	3,100	22,690	3,330	620	58,779
Hardwoods .. Acres	..	2,308	400	9,110	..	..	11,818
Number of persons employed in Forestry Departments—							
Office Staff .. No.	45	36	73	12	40	3	209
Field Staff .. No.	89	131	165	9	(a)320	9	723

(a) Including 248 casual hands.

4. Revenue and Expenditure.—The revenue and expenditure of the State Forestry Departments from 1923-24 to 1927-28 are given below :—

FORESTRY DEPARTMENTS.—REVENUE AND EXPENDITURE, 1923-24 TO 1927-28.

State.	1923-24.	1924-25.	1925-26.	1926-27.	1927-28.
REVENUE.					
	£	£	£	£	£
New South Wales	186,393	209,732	224,207	224,943	226,667
Victoria	166,556	162,792	161,608	156,700	140,715
Queensland	227,830	246,641	224,728	250,881	462,383
South Australia	11,110	22,905	19,418	24,376	37,586
Western Australia	127,253	182,764	227,061	222,507	228,614
Tasmania	21,150	20,757	20,715	18,600	17,790
Total	740,292	845,591	877,737	898,007	1,113,755
EXPENDITURE.					
	£	£	£	£	£
New South Wales	137,705	153,722	178,490	207,099	212,858
Victoria	160,373	199,575	274,732	320,217	285,271
Queensland	66,670	60,542	72,236	69,262	277,534
South Australia	40,487	43,459	53,977	120,036	105,279
Western Australia	48,333	86,739	101,321	103,319	125,745
Tasmania	8,277	11,435	13,007	12,098	11,017
Total	461,845	555,472	693,763	832,031	1,017,704

5. **Instruction in Scientific Forestry.**—Forestry schools have been established in New South Wales, Victoria, and Western Australia, in which general scientific instruction is imparted, special attention being paid to forestry. In the classes, theoretical forestry, botany, geology, physics, land surveying, etc., are taught; while in outside work trainees receive practical instruction in the preparation of seed-beds, seed-sowing, propagation, planting out, pruning, the general care and improvement of plantations and natural forests, and the employment of timber to the best advantage. Courses of lectures are also given at various centres, and at some of the higher technical schools members of the forest staffs are afforded opportunities of qualifying in special subjects. It was early realized, however, that a higher national school was necessary for the training of fully qualified foresters and this matter has engaged the attention of the forestry authorities in the various States since 1916. A site for the school was chosen, the curriculum was drawn up, and complete unanimity was arrived at regarding the higher training to be given at the institution, but matters were allowed to remain in abeyance. Early in 1925, however, the Commonwealth Government assumed the responsibility of establishing the institution, and the States agreed to nominate a certain number of students annually. The school, which opened with eighteen students in March, 1926, was housed for the first year at Adelaide University, but early in 1927 it was transferred to Canberra, the Federal Capital City. Applicants for entrance must be graduates of an Australian University or matriculated students who have completed a minimum University course of two years in science. The school provides a two years' course in pure forestry, and successful students are awarded the Commonwealth Forestry Diploma. It is anticipated that the Central College will supply the States with foresters qualified to undertake all necessary forestry work, and that it will constitute a nucleus of forest knowledge designed to develop on sound lines the silviculture of Australia.

6. **Forest Congresses.**—Interstate Conferences on Forestry were held in 1911 and 1912, chiefly with a view of securing uniformity of management. An International Forest Congress was held at Paris in June, 1913, when a professor of South Kensington Imperial College represented the Commonwealth Government. The papers and reports dealt chiefly with the threatened shortage of timber, and the measures necessary to avert the danger. An Imperial Forestry Conference was held in London in the summer of 1920, at which also Australia was represented. Important Interstate Forestry Conferences were held in Adelaide in May, 1916; at Perth in November, 1917; at Hobart in April, 1920; at Brisbane in April, 1922, and at Sydney in September, 1924. Australia was also represented at a World's Forestry Congress held at Rome during May, 1926. In 1928 an Empire Forestry Conference was held in Australia, which reaffirmed the resolution of the 1920 conference urging all Governments of the Empire to lay down a definite forestry policy. The summary report pointed out that although there was cause for satisfaction at the progress made during the past five years, it was imperative that continued effort should not be relaxed as it was feared that certain parts of the Empire were still oblivious to their obligations.

§ 4. Production.

1. **Timber.**—Estimates of the quantity and value of local timber sawn and hewn in the sawmills of the various States are given hereunder:—

SAWMILL OUTPUT OF NATIVE TIMBER, 1923-24 TO 1927-28.

State.	1923-24.	1924-25.	1925-26.	1926-27.	1927-28.
	1,000 sup. feet.	1,000 sup. feet.	1,000 sup. feet.	1,000 sup. feet.	1,000 sup. feet.
New South Wales	167,493	162,423	169,991	162,891	146,575
Victoria	134,639	114,705	109,534	115,813	100,567
Queensland	(a)141,672	143,623	131,662	122,311	102,192
South Australia	1,350	3,981	3,362	3,971	4,833
Western Australia	(a)161,749	(a)189,019	(b)271,662	156,087	163,180
Tasmania	(a)63,120	50,799	53,588	52,058	53,174
Total	670,023	664,550	739,799	613,131	570,521

(a) Year ended 31st December. (b) Figures for eighteen months ended 30th June, 1926.

In addition to the timber shown above for Western Australia, the following quantities were hewn by contractors for the Railway Department, Mines, etc., or were sawn in establishments other than forest sawmills during the past five years:—1923-24, 30,797,419 sup. feet; 1924-25, 18,118,199 sup. feet; 1925-26, 57,272,898 sup. feet; 1926-27, 73,107,815 sup. feet; and 1927-28, 64,451,395 sup. feet.

2. **Other Forest Products.**—(i) *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 large quantities are manufactured, particularly in Victoria. Oversea exports amounted in 1923-24 to £66,339, in 1924-25 to £75,763, in 1925-26 to £73,023, in 1926-27 to £63,284, and in 1927-28 to £90,729, the bulk of the product being shipped from Victoria to the United Kingdom, the United States, and Germany. Large quantities of the crude oil are used locally in flotation processes at the mines.

(ii) *Tan Barks.* The forests of Australia contain a wealth of tanning materials, all the eucalypts being capable of furnishing a percentage of tannin. The principal source of supply in Australia is obtained from the golden and the black or green wattle, and in pre-war days the production was more than sufficient for local requirements and an export trade was built up. The supply is, however, diminishing, and since 1922-23 Australia has imported on the average about 2,900 tons each year from Natal, where the plantations were originally started from Australian seed. During the year 1927-28, however, the excess of exports over imports amounted to 2,072 tons, valued at £30,878, the chief exporting State being South Australia, where the quantity exported amounted to more than 1,000 tons, as compared with 77 tons for the previous year. In addition to the wattle bark, a valuable tan bark is obtained from the mallet (*E. occidentalis*) of Western Australia. This bark is not extensively used in Australian tanneries, but is exported to Europe and other countries, where it is used for producing a tannin extract. A survey of the tanning materials of Australia was recently completed by the Council for Scientific and Industrial Research, and the results have shown that with one possible exception no new high-grade tanning materials were discovered that could be exploited commercially for tanning purposes in the natural form, i.e., as tanning bark. Several new materials, however, were found to have a high tannin content, but in the majority of cases abundant supplies would not be economically available for transport to consuming centres unless the varieties of trees concerned were systematically cultivated. Prospects for utilizing a large variety of materials are more favourable in connexion with the manufacture of blended tannin extracts at or near the centre of harvesting. A tannin content of about 30 per cent. was recorded for the first time for the bark of a gum-tree (*Eucalyptus alba*) from the Kimberleys in the north-west of Western Australia. The tannin of this bark possesses excellent tanning qualities, and ample supplies are believed to be available, but the cost of collection would be high. Other Western Australian materials which possess a high tannin content, and of which abundant supplies are available in the southern portion of the State, are the bark of karri (*E. diversicolor*), the wood of tuart (*E. gomphocephala*), and red-gum or marri kino (*E. calophylla*). All these materials could be utilized if blended either with other known tanning materials occurring in the same area, or with soluble (sulphited) marri kino. Abundant supplies of mangrove barks are available both in tropical Australia and Papua. Their tannins might be worked up to form extract, either alone or blended with other lighter-coloured extractives. Blends of ridge-gum and mangrove bark are considered suitable for the manufacture of a high-grade extract. In the eastern States cypress pine bark is considered a promising raw material for the preparation of tannin extract. Blends with wattle have been tried. Silver wattle (*Acacia decurrens*, var. *dealbata*) might also be profitably worked up for tannin extract (alone or blended). None of the leaves and twigs examined was considered a promising material either for utilization in the original form or for the preparation of tannin extract, as in most cases the tannic content was low and the proportion of non-tannin too high. The production of tan bark in Australia is estimated at about 27,000 tons per annum.

3. **Value of Production.**—Though the valuation of the quantity of firewood consumed in Australia presents serious difficulty, an estimate of the total value of forest production is compiled annually, with the following results for the past five years:—

VALUE OF FOREST PRODUCTION.—AUSTRALIA, 1923-24 TO 1927-28.

Production.	1923-24.	1924-25.	1925-26.	1926-27.	1927-28.
	£	£	£	£	£
Total ..	10,292,000	10,577,000	10,964,000	11,046,000	10,339,000

§ 5. Commercial Uses of Principal Australian Timbers.

1. *General.*—The uses of the more important Australian timbers are many and various, and are indicated in previous issues of this work. (See Official Year Book No. 6, pp. 454-6; and Official Year Book No. 10, Section III., § 7 and 8.)

A list of Australian timbers best known on the local markets appeared in Official Year Book No. 20, p. 713.

2. *Lack of Uniformity in Nomenclature.*—Unfortunately the vernacular names applied to the gums, ironbarks, etc., in the various States, and even in different parts of the same State, do not always refer to identical timbers. The resulting confusion has not only been productive of loss, but it has, to some extent, prejudicially affected the timber trade. This subject is referred to at some length in the special article "Australian Eucalyptus Timbers," in Section III., § 7 and 8, in Official Year Book No. 10. At the Forestry Conferences alluded to above, the matter came up for special consideration, and steps were taken to establish a uniform nomenclature.

§ 6. Oversea Trade.

1. *Imports.*—(i) *Dressed Timber.* The quantity and value of timber imports into Australia during the four years 1924-25 to 1927-28 inclusive are shown according to countries of origin in the following tables:—

DRESSED TIMBER.—IMPORTS, AUSTRALIA, 1924-25 TO 1927-28.

Country of Origin.	Quantity.				Value.			
	1924-25.	1925-26.	1926-27.	1927-28.	1924-25.	1925-26.	1926-27.	1927-28.
	sup. ft.	sup. feet.	sup. ft.	sup. ft.	£	£	£	£
United Kingdom ..	1,083	5,343	157,061	39,790	112	342	1,928	1,734
Canada ..	3,122,711	6,367,054	6,399,263	8,271,122	33,733	60,942	67,524	95,831
Other British Countries ..	109,050	46,477	57,513	21,823	1,363	1,079	700	490
Norway ..	41,824,922	41,419,031	44,103,595	21,397,756	605,784	506,705	487,284	258,707
Sweden ..	25,814,691	43,282,827	38,304,718	45,084,605	306,715	485,867	425,896	497,606
United States ..	15,789,591	15,303,997	7,561,278	6,878,065	173,095	161,674	78,504	65,002
Other Foreign Countries	39,147	1,460,169	1,405,503	1,636,579	2,004	22,419	24,143	25,209
Total ..	86,701,195	107,884,898	97,988,931	83,329,740	1,122,806	1,239,028	1,085,979	944,579

The figures in the table above are exclusive of items such as architraves, veneers, 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 £311,629 in 1927-28, including plywood, veneered or otherwise, £147,953.

The bulk of the imports of dressed timber comes from Norway, Sweden, and the United States. Practically the whole of this timber consists of softwoods—deal and pine—used for lining, weatherboards, flooring, shelving, doors, box-making, etc.

(ii) *Undressed Timber.* Australian imports of undressed timber for the latest available four years are given hereunder:—

**UNDRESSED TIMBER, INCLUDING LOGS (a).—IMPORTS, AUSTRALIA,
1924-25 TO 1927-28.**

Country of Origin.	Quantity.				Value.			
	1924-25.	1925-26.	1926-27.	1927-28.	1924-25.	1925-26.	1926-27.	1927-28.
	sup. ft.	sup. ft.	sup. ft.	sup. ft.	£	£	£	£
United Kingdom	49,168	132,230	53,568	1,540,278	1,183	3,362	3,557	15,255
Canada	22,454,122	21,433,364	16,488,751	29,613,287	166,934	168,515	137,380	242,538
India	322,963	306,877	317,602	509,256	6,559	12,860	14,256	17,252
Malaya (British)	176,539	220,411	172,121	163,788	1,509	2,168	1,540	1,372
New Zealand	44,170,689	49,626,921	37,370,304	35,037,695	594,478	671,165	551,461	436,747
Other British Countries	890,033	1,567,528	2,563,920	1,888,052	9,112	15,354	20,460	16,778
Japan	8,103,367	6,895,043	8,365,463	7,502,972	200,187	136,835	176,516	165,140
Netherlands East Indies	928,474	1,252,129	377,217	882,892	10,230	9,649	3,124	5,273
Norway	3,528,405	787,576	365,855	307,450	37,086	7,916	4,021	3,138
New Caledonia	1,385,727	2,313,790	2,058,738	898,208	9,130	15,393	16,998	11,507
Philippine Islands	6,113,197	8,822,160	4,382,704	4,041,218	100,899	147,881	75,333	59,614
Sweden	5,864,057	6,465,812	3,716,748	4,690,710	61,583	60,643	36,428	45,711
United States	219,487,525	288,943,456	289,897,409	341,662,834	1,921,325	2,517,746	2,388,678	2,719,644
Other Foreign Countries	2,464,518	3,162,154	1,689,851	4,166,140	21,200	25,624	25,662	43,452
Total	315,938,784	392,019,451	367,820,251	433,506,780	3,141,415	3,795,111	3,455,414	3,783,430

(a) Exclusive of timber not measured in super. feet.

By far the larger proportion of the undressed timber imports consists of softwoods such as yellow pine, redwood, and oregon from the United States of America and Canada; kauri, rimu, and white pine from New Zealand; pine from Japan, and red deals from Norway and Sweden. Amongst the hardwoods imported, the principal are oak from the United States of America and Japan, and teak from India.

2. Exports.—The quantity and value of undressed timber exported from 1923-24 to 1927-28 are given below, the countries of destination being also shown:—

**UNDRESSED TIMBER, INCLUDING LOGS (a).—EXPORTS, AUSTRALIA,
1923-24 TO 1927-28.**

Country to which Exported.	Quantity.					Value.				
	1923-24.	1924-25.	1925-26.	1926-27.	1927-28.	1923-24.	1924-25.	1925-26.	1926-27.	1927-28.
	1,000 sup. ft.	1,000 sup. ft.	1,000 sup. ft.	1,000 sup. ft.	1,000 sup. ft.	£	£	£	£	£
United Kingdom	14,154	17,589	10,718	8,332	7,751	143,443	192,744	107,951	87,409	85,024
Canada	198	201	302	183	213	2,915	4,272	6,537	4,147	4,338
Ceylon	3,222	4,822	8,385	8,745	6,679	30,773	44,798	100,536	98,950	67,656
Hong Kong			131	927	184			1,618	2,818	2,818
India	12,588	1,230	7,920	12,971	10,946	125,865	11,274	79,890	130,772	119,192
Malaya (British)			4	6,575	4,846			25	67,347	49,879
Mauritius	2,835	2,448	67	293	1,380	29,849	24,152	1,040	2,927	13,790
New Zealand	36,349	46,318	31,750	28,793	18,350	510,035	680,802	424,214	369,920	262,422
Pacific Islands—										
Fiji	1,130	781	1,077	1,096	1,480	17,407	13,286	17,230	17,668	23,484
Territory of New Guinea	213	239	509	293	489	4,572	4,483	8,038	5,434	8,835
Other Islands	535	715	937	997	1,027	10,558	16,520	17,471	18,293	18,260
Papua	316	405	357	419	247	5,347	7,197	7,244	9,736	4,818
South African Union	24,681	51,902	47,130	50,278	41,519	273,713	558,511	527,138	554,298	467,922
Belgium	716	2,182	157	207	82	7,157	21,819	1,473	2,259	852
China	3,695	4	1,703	2,175	5	36,951	197	17,682	21,787	77
Egypt	5,341	66	518	19	355	55,666	664	5,156	192	3,793
Japan	116		50	35	7	2,100		742	618	155
Pacific Islands—										
New Caledonia	57	76	40	15	12	1,034	1,450	990	281	233
Other Islands	87	124	83	140	176	1,658	2,079	1,717	2,433	2,979
U.S. of America	399	469	846	800	1,480	9,318	12,169	20,131	18,160	26,313
Other Foreign Countries	276	433	501	1,361	1,786	3,587	5,855	6,377	15,182	19,757
Total	106,908	130,004	113,185	124,654	99,008	1,271,948	1,602,272	1,352,550	1,447,903	1,182,603

(a) Exclusive of timber not measured in super. feet.

As the table shows, the bulk of the exports of undressed timber was consigned to South Africa, New Zealand, India, 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 railway sleepers, harbour works, wood paving, etc.

3. Classification of Imports and Exports.—(i) *General.* The quantities of timber classified according to varieties imported and exported during the year 1927-28 are given in the next table :—

TIMBER, VARIETIES IMPORTED AND EXPORTED.—QUANTITIES, AUSTRALIA, 1927-28.

Description.	Unit of Quantity.	Imports.	Exports.	Excess of Imports over Exports.
Dressed	Sup. ft.	83,329,740	1,217,184	82,112,556
Undressed, including logs	"	433,506,780	99,007,946	334,498,834
Architraves, mouldings, etc.	lin. ft.	694,233	115,768	578,465
Plywood, veneered or otherwise	sup. ft.	9,914,473	(b)	9,914,473
Palings	No.	670,290	489,754	180,536
Pickets	"	12,917	..	12,917
Shingles	"	2,623,987	..	2,623,987
Staves—				
Dressed, etc.	"	2,272,964	100	2,272,864
Undressed	"	1,654,224	..	1,654,224
Laths—				
For blinds	"	(a)	(a)	(a)
Other	"	17,125,650	..	17,125,650
Doors	"	41,273	(a)	41,273
Wood pulp	ton	24,316	(b)	24,316
Veneers	—	(a)	(b)	(b)
Spokes, rims, felloes, etc.	—	(a)	(a)	(a)
Other	—	(a)	(a)	(a)

(a) Quantity not available. (b) Exports not recorded separately.
NOTE.—The minus sign — denotes an excess of exports.

Similar particulars relative to the values of imports and exports during the year 1927-28 are shown hereunder :—

TIMBER, VARIETIES IMPORTED AND EXPORTED.—VALUES, AUSTRALIA, 1927-28.

Description.	Imports.	Exports.	Excess of Imports over Exports.
	£	£	£
Dressed	944,579	29,211	915,368
Undressed, including logs	3,783,430	1,182,603	2,600,827
Architraves, mouldings, etc.	6,426	862	5,564
Plywood, veneered or otherwise	147,953	(a)	147,953
Palings	906	4,905	—3,999
Pickets	310	..	310
Shingles	4,798	..	4,798
Staves—			
Dressed, etc.	134,962	3	134,959
Undressed	29,142	..	29,142
Laths—			
For blinds .. .. .	..	..	..
Other	22,954	..	22,954
Doors	26,695	..	26,695
Wood pulp	307,803	..	307,803
Veneers	15,017	..	15,017
Spokes, rims, felloes, etc.	1,419	..	1,419
Other	6,582	..	6,582
Total	5,432,976	1,217,584	4,215,392

NOTE.—The minus sign — denotes an excess of exports. (a) Exports not recorded separately.

(ii) *Sandalwood.* A considerable amount of sandalwood is annually exported principally from Western Australia to Hong Kong and China, where it is highly prized, and largely used for artistic and ceremonial purposes. Particulars for the past five years are as follows :—

SANDALWOOD.—EXPORTS, AUSTRALIA, 1923-24 TO 1927-28.

Country to which Exported.	Quantity.					Value.				
	1923-24.	1924-25.	1925-26.	1926-27.	1927-28.	1923-24.	1924-25.	1925-26.	1926-27.	1927-28.
	ton.	ton.	ton.	ton.	ton.	£	£	£	£	£
United Kingdom ..	..	..	1	25	..	..	..	7	858	..
Hong Kong ..	8,894	3,811	5,063	3,984	4,856	222,300	113,551	155,139	116,408	142,890
India ..	239	406	341	246	314	6,192	11,574	12,384	8,871	11,434
Malaya (British) ..	1,404	725	567	346	397	45,118	27,321	18,340	10,784	13,610
Other British Countries ..	..	..	1	12	13	..	..	53	533	470
China ..	3,754	1,722	2,255	3,991	822	83,415	53,031	66,639	114,626	25,170
Other Foreign Countries ..	..	..	7	11	46	..	..	245	411	1,052
Total ..	14,291	6,664	8,235	8,615	6,448	357,025	205,477	252,807	252,491	194,626

(iii) *Tan Bark.* Tan bark figures both as an export and import in the Australian trade returns, as the following tables show. The first table refers to exports :—

TAN BARK.—EXPORTS, AUSTRALIA, 1923-24 TO 1927-28.

Country to which Exported.	Quantity.					Value.				
	1923-24.	1924-25.	1925-26.	1926-27.	1927-28.	1923-24.	1924-25.	1925-26.	1926-27.	1927-28.
	cwt.	cwt.	cwt.	cwt.	cwt.	£	£	£	£	£
United Kingdom ..	..	48	104	..	1,505	..	48	58	..	922
New Zealand ..	5,278	4,061	1,008	1,633	27,070	3,263	2,372	701	1,355	21,431
Other British Possessions ..	..	332	..	102	22	..	170	..	51	11
Germany ..	9,005	36,081	303	2,050	15,414	4,983	19,587	159	1,272	10,086
Other Foreign Countries ..	3,318	2,272	5,033	2,150	2,538	2,172	1,155	2,900	1,332	1,061
Total ..	17,601	42,794	6,448	5,935	46,549	10,418	23,332	3,818	4,010	33,511

The exports of tan bark from Australia during the past five years consisted largely of mallet bark from Western Australia. The shipments of this bark, exported mainly to Germany, are not so large as in pre-war days, owing to the cutting out of supplies. A considerable improvement, however, was shown during the year 1927-28. New Zealand took 58 per cent. of the total exports, which were sent chiefly from South Australia.

A comparison of the imports and exports of tan bark during the last five years is given in the next table :—

TAN BARK.—IMPORTS AND EXPORTS, AUSTRALIA, 1923-24 TO 1927-28.

Particulars.	1923-24.	1924-25.	1925-26.	1926-27.	1927-28.
	cwt.	cwt.	cwt.	cwt.	cwt.
QUANTITIES—					
Imports	73,941	28,628	44,372	57,302	5,114
Exports	17,601	42,794	6,448	5,935	46,549
Excess of exports over imports	-56,340	14,166	-37,924	-51,367	41,435
VALUES—					
Imports	£ 28,672	£ 11,821	£ 21,498	£ 27,680	£ 2,633
Exports	10,418	23,332	3,818	4,010	33,511
Excess of exports over imports	-18,254	11,511	-17,680	-23,670	30,878

NOTE.—The minus sign - denotes excess of imports.

The imports consist almost exclusively of wattle bark from the plantations in South Africa. One variety of Australian wattle is found to flourish in the sandy belts near the coast, but it is the *Acacia decurrens*, var. *mollis*, which is chiefly relied upon for the production of wattle bark in the South African plantations. Seed has been tried from New South Wales, Tasmania, and Victoria, but it is stated that most of the seed is 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 South Africa. (a) It is found that the treeless, grassy highlands of Natal are specially suitable for wattle culture, and the trees can therefore be grown in rows and economically attended to, while the necessary bark sheds and other appurtenances can be placed in the most advantageous positions. (b) There is an abundance of cheap and efficient native labour available for employment on the plantations.

Considerable quantities of tanning substances other than bark are annually imported into the Commonwealth. The total value of the importations in 1927-28 was £81,897, and was composed as follows:—Wattle bark extract, £1,009; quebracho extract, £15,244; other extract, £20,915; and valonia, myrobalans, cutch, etc., £44,729.