

CHAPTER XXI.

FORESTRY.*

§ 1. General.

1. **Objects of Forestry.**—Scientific forestry aims at the preservation and development of existing forest areas by safeguarding them against fire, pests and destructive agencies generally, by expert supervision of the removal of timber, by judicious thinning and by reforestation of denuded areas with suitable forest growths of local or exotic origin. It provides also for the continuance of this indispensable form of national wealth by the afforestation of available bare lands proved capable of producing various timbers. Only small areas of virgin forests still remain in Australia, as extensive inroads have been made by timber-getters, by agriculturalists and by pastoralists—who have destroyed large areas by “ring-barking”—and it is not unlikely that climatological changes have resulted therefrom. It is recognized that beneficial consequences follow on the planting of trees on denuded lands, or along eroding coasts, and that a forest covering tends to regulate to the best advantage the effects of rainfall. The existing virgin forests consist of hardwood jungle, or brush, with very little softwood, and the need for extensive softwood planting is urgent.

Efficient forestry is of particular interest in connexion with the Murray River Basin, where a large expenditure from the public funds has been incurred in the provision of locks and weirs and in the formation of irrigation settlements in the lower course of the river. The stability of flow of this river in so far as it can be assured by forest plantation may be regarded as of national importance.

Successful planting of exotics in various parts of Australia has demonstrated that both climate and soil are suitable for the cultivation of a number of highly serviceable softwoods.

2. **Extent of Forests.**—(i) *Australia.* The bulk of the present local timber supply comes from the thickly forested areas in the 30-inch and over rainfall belt south of the tropics, and the 70-inch and over rainfall belt within the tropics. The total forest area included in the divisions specified is comparatively small, and is confined to the following regions:—(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; (d) the coastal districts of New South Wales and Queensland; (e) the greater portion of Tasmania; (f) the forests on the Murray River near Echuca; and (g) the cypress pine belt from the Murray northward to Queensland and westward of the coastal belt.

Over 90 per cent. of the timber trees of Australia consists of hardwoods belonging to the genus *Eucalyptus* (Gum Trees). Including the mallees over 400 species are now recognized, but the chief commercial varieties are confined to about 50 species.

In addition to the hardwood forests and the cypress pine belt the coastal strip in Queensland and northern New South Wales provides “rain” or “brush” forests. These tropical forests furnish the serviceable hoop pine and furniture timbers such as black bean, Queensland walnut and maple, silkwood, etc.

* 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).

The drier wooded area of the continent 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. Unsuitable soil conditions such as basalt formations, clay pans, rock exposures or sand dunes are as a rule more responsible for treeless areas than lack of rainfall. The 300-mile stretch of the Nullarbor Plain is a treeless area where the non-retentive limestone foundation accentuates the effects of a low rainfall. While, however, the major portion of Australia carries trees, and may be said to be 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 scattered trees of low habit only. Practically the whole of Papua and New Guinea carry or has carried dense forests, the exceptions being certain small dry belts where the rainfall is less than 70 inches. Norfolk Island was originally 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.

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. At the Interstate Conference on Forestry, held at Hobart in April, 1920, it was resolved that a forest area of 24,500,000 acres was necessary to provide for the future requirements of Australia. This area was subsequently adopted at the Premiers' Conference held in May of the same year. Expert foresters, however, consider that approximately 19,500,000 acres represent the possible limit for permanent reservation in Australia. The distribution of the latter area throughout the States was estimated as follows :—

ESTIMATED FOREST AREA.

State.	Total Forest Area. Acres.	Percentage on Total Area.
New South Wales	4,000,000	2.02
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	500,000	2.98
Australia	19,500,000	1.02

(ii) *Comparison with Other Countries.* The table hereunder shows the absolute and relative forest areas of Australia and other countries, and the relative areas owned by the State, by Public Institutions and by private individuals, in so far as the details are available. The term "Public Institutions" appears to include local governmental and ecclesiastical authorities, while those held by public companies, co-operative societies, etc., are included with private individuals.

The figures are based on information supplied to the International Institute of Agriculture and are the latest available. Comparisons of the returns for different countries are, however, subject to the qualification that the significance of the term "forest" is not identical in all cases. In older countries, and chiefly in Europe, scientific forestry has been practised for centuries, whereas in newer lands, such as Australia, Canada, etc., it is of comparatively recent application. Moreover, considerable areas included as forests in the newer countries contain indigenous growth of little or no commercial value, and effective comparisons cannot, therefore, be made with countries where efficient forestry has been practised for many years.

FORESTS : AREA AND OWNERSHIP, VARIOUS COUNTRIES.

Country.	Forest Area.	Per cent. of Total Area.	Percentage Owned by—		
			State.	Public Institutions other than State.	Privately.
	sq. miles.	Per cent.	Per cent.	Per cent.	Per cent.
Soviet Union	3,667,530	44.7	100.0	..	..
Canada	1,151,402	32.8	(a)	(a)	(a)
United States of America	733,539	24.7	(a)	(a)	(a)
India	307,928	27.5	(a)	(a)	(a)
Nigeria	234,990	63.8	(a)	(a)	(a)
Finland	97,540	73.5	39.8	1.7	58.5
Sweden	89,500	56.5	20.1	3.8	76.1
Japan	87,678	59.5	(a)	(a)	(a)
Germany	49,991	27.5	32.6	17.2	50.2
France	40,768	19.2	13.9	23.6	62.5
Poland	32,246	21.5	36.1	..	63.9
Australia (b)	30,469	1.0	(a)	(a)	(a)
Yugoslavia	29,504	30.6	37.5	28.9	33.6
Norway	29,454	24.7	13.0	6.4	80.6
Turkey	28,703	9.7	94.4	..	5.6
Rumania	27,544	24.2	30.5	18.3	51.2
Italy	22,425	18.7	3.0	34.0	63.0
New Zealand	20,778	20.2	(a)	(a)	(a)
Spain	19,305	10.0	(a)	(a)	(a)
Czechoslovakia	17,925	33.0	20.4	15.6	64.0
Union of South Africa	15,958	3.4	(a)	(a)	(a)
Algeria	12,257	10.7	(a)	(a)	(a)
Austria	12,116	37.4	15.7	12.6	71.7
Dutch East Indies	11,737	23.1	(a)	(a)	(a)
Bulgaria	11,469	28.8	23.0	58.8	18.2
Greece	9,291	18.5	69.3	10.3	20.4
Latvia	6,406	25.2	83.6	1.8	14.6
Great Britain	4,745	5.4	10.4	1.3	88.3

(a) Not available.

(b) Estimate of forest area possible for permanent reservation.

3. **Requisite Proportion of Forest Area.**—It is generally held that when the forest area in any country falls below 0.86 acres per head of population, that country will be obliged to import timber. Australia possesses 3.19 acres of forest per head of population and normally the excess of imports of timber over exports amounts to approximately 28,000,000 cubic feet. There are two reasons for the excess. In the first place, the area of 19,500,000 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 has not been ascertained. Secondly, Australia does not possess a sufficient supply of softwoods, and must, therefore—with the exception of a small quantity produced in Queensland and New South Wales—import the bulk of its requirements from overseas. Provided that the area of 19,500,000 acres considered possible of permanent reservation by foresters was yielding under silvicultural treatment its maximum of hard and soft woods the timber supply of Australia would be sufficient for a population of 22½ millions.

§ 2. Forestry Activities of the Commonwealth Government.

Forestry was not included amongst the matters transferred from the States to the control of the Commonwealth, and federal supervision, therefore, is restricted to the forests in the Commonwealth Territories. These territories (including Papua, New Guinea and Norfolk Island) cover a large area, and, with the exception of the Northern

Territory, are capable of sound forestry development. It is only within comparatively recent years, however, that any attempt has been made to take stock of the forestry position. The Commonwealth Forestry Bureau was instituted in 1925 to initiate sylvicultural and other forest research work and to take charge of the education and training of the professional staffs required by the Commonwealth and the State services. The Bureau received statutory powers under an Act passed in 1930. In the meantime, the Australian Forestry School was established in 1926, and not only was the training of the State forest officers begun, but a nucleus of qualified officers was sent abroad to undergo special courses of instruction with the object of staffing the research side of the Bureau. The financial situation since 1930 has delayed progress on the research side, and the educational work of the Australian Forestry School is at present the Bureau's main activity.

The forest resources of the Territories of Papua, New Guinea, Norfolk Island and the Australian Capital have been investigated, and reports in connexion therewith have been published. In the case of the Australian Capital area an active forest policy has been inaugurated.

The investigation of the dead product of the forests is entrusted to the Council for Scientific and Industrial Research, which has established a Forest Products Division. Research work is being carried out by this institution in regard to various matters, e.g., paper pulp, seasoning, preservation, tan barks, the chemistry of woods, and the utilization of forest products generally, including the substitution of local for imported woods for such purposes as butter boxes and fruit cases.

§ 3. State Forestry Departments.

1. **Functions.**—With the exception of 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 specially charged with 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 Victoria a forestry school has been established at which recruits are trained for the forestry service of the State.

2. **Forest Reservations.**—At the Interstate Forestry Conference held in Hobart in 1920, the State forestry authorities agreed in regard to the necessity of reserving an area of 24,500,000 acres of indigenous forest lands in order to meet the future requirements of Australia but, as previously mentioned, it is the considered opinion of expert foresters that 19.5 million acres only are possible of permanent reservation. 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 requirement towards the permanent reservation of which the authorities are now aiming. The progress made in the various States to the end of June, 1938, is set out in the following table :—

AREA OF FOREST RESERVATIONS, 30th JUNE, 1938.

Particulars.	New South Wales.	Victoria.	Queens- land.	South Australia.	Western Australia.	Tasmania.	Australia.
	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.
Dedicated State forests ..	5,180,002	4,818,180	2,859,394	(c) 268,439	3,196,999	1,468,535	17,791,549
Timber and fuel reserves ..	1,371,783	(a)	3,309,015	..	2,171,961	950,000	7,802,759
Total ..	6,551,785	4,818,180	6,168,409	268,439	5,368,960	2,418,535	25,594,308

(a) Not available.

(b) Incomplete.

(c) Includes Timber and Fuel Reserves.

In addition to the work of permanently reserving their respective areas the State foresters are endeavouring to survey all timbered lands with a view to the cutting out of all 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 area of State forests reserved in perpetuity amounted in June, 1938, to 17,791,549 acres, or 91 per cent. of the area considered possible of permanent reservation in Australia. Of this area a considerable proportion consists of inaccessible mountainous country and cut-over lands, while the Australian area 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.

The Forestry Departments also control 7,802,759 acres of 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.

3. **Sylvicultural Nurseries and Plantations.**—Recognition of the necessity for providing by systematic sylviculture for the future softwood timber needs has led to the creation in all of the States of a number of nurseries and plantations. A brief statement showing the locality of these establishments and the nature of their activities will be found in previous issues of the Official Year Book. (See Official Year Book No. 6, pp. 451-3.) Details regarding forest plantations and the number of persons employed are given hereunder:—

FORESTRY : AREAS AND EMPLOYMENT, 1937-38.

Particulars.	New South Wales.	Victoria.	Queensland.	South Australia.	Western Australia.	Tasmania.	Total.
Total area of indigenous forest improved or regenerated acres	1,229,315	959,840	294,212	9,906	454,235	..	2,947,508
Total area of Effective Plantations—							
Softwoods .. acres	43,506	51,263	16,977	91,344	11,245	1,150	215,485
Hardwoods .. acres	..	2,500	2,263	5,223	411,168	..	21,154
Number of persons employed in Forestry Departments—							
Office Staff .. No.	100	54	105	32	40	22	353
Field Staff .. No.	104	140	849	270	(b) 567	60	1,990

(a) Mallet—mainly for bark for tanning.

(b) Including casual hands.

4. **Revenue and Expenditure.**—The revenue and expenditure of State Forestry Departments from 1933-34 to 1937-38 are given below:—

STATE FORESTRY DEPARTMENTS : REVENUE AND EXPENDITURE.

State.	1933-34.	1934-35.	1935-36.	1936-37.	1937-38.
REVENUE.					
	£	£	£	£	£
New South Wales ..	166,014	188,471	87,674	206,770	201,416
Victoria ..	179,150	158,608	176,626	199,360	213,694
Queensland ..	293,991	608,935	660,455	669,457	835,311
South Australia ..	82,888	95,730	115,513	114,638	117,305
Western Australia ..	89,895	119,232	143,158	164,888	176,201
Tasmania ..	17,445	23,066	26,904	30,693	30,722
Total ..	829,383	1,194,042	1,210,330	1,385,806	1,574,649

STATE FORESTRY DEPARTMENTS : REVENUE AND EXPENDITURE—*contd.*

State.	1933-34.	1934-35.	1935-36.	1936-37.	1937-38.
EXPENDITURE.					
	£	£	£	£	£
New South Wales ..	(a) 213,067	(a) 349,119	(a) 179,234	84,857	190,215
Victoria ..	(a) 256,195	165,431	196,279	(a) 610,604	(a) 491,964
Queensland ..	(a) 232,930	420,178	496,928	495,740	624,087
South Australia ..	158,788	170,426	175,913	174,973	182,534
Western Australia ..	(a) 171,798	(a) 190,348	(a) 235,186	(b) 196,698	(b) 182,283
Tasmania ..	8,978	11,118	15,674	20,234	58,869
Total ..	1,041,756	1,306,620	1,299,214	1,583,106	1,729,952

(a) Including expenditure from Unemployment Relief Funds as follows:—1933-34—New South Wales, £106,370; Victoria, £93,050; Queensland, £27; Western Australia, £141,520. 1934-35—New South Wales, £236,735; Western Australia, £157,627; 1935-36—New South Wales, £117,703; Western Australia, £183,549; 1936-37—Victoria, £350,564; and 1937-38—Victoria, £238,341. (b) Including expenditure from General Loan and Trust Funds, 1936-37, £122,011; 1937-38, £155,178.

§ 4. The Australian Forestry School.

The Australian Forestry School situated at Canberra in the Australian Capital Territory was established in 1926 by the Commonwealth Government to meet the demand of the States for an institution which would give a professional training at least equal to that afforded by the recognized forestry schools abroad.

Under existing arrangements the head of the State forestry service may nominate candidates for enrolment at the school. According to the system in vogue in each State, the nomination may be made either at school leaving age or after the candidate has successfully completed the specified university course. In the first case, the youth is helped throughout his university career and is given employment in practical work during the long vacations to test his suitability as a forestry officer; in the second case he is chosen later, and the practical tests are not made until the long vacation immediately preceding his entry to the school. The possession of a nomination by a State government service is not, however, essential for enrolment, since any candidate possessing the necessary qualifications will be accepted for the diploma course, and in special cases applicants desirous of studying a particular branch of forestry will be required to follow certain lectures only. Refresher or post graduate courses are arranged to meet the needs of senior foresters.

A candidate for enrolment in the diploma course must possess—(a) a degree of a university, or (b) a certificate that he has completed the special two years' preliminary course at a university.

The qualifications for enrolment may be waived to assist an applicant of exceptional ability with a record of long service in a State Forestry Department, who has been specially recommended by the head of that service. Such applicants must show proof of education equal to that required for a school leaving certificate.

The course of instruction extends over three years, the first two of which are spent at the school, and the third in one of the forestry services of Australia.

The Commonwealth diploma of forestry is awarded to students on the following conditions:—(a) Successful completion of theoretical course; (b) Satisfactory field work during the course; and (c) One year's satisfactory practical forestry work following the school course.

Students who have passed the approved two-year preliminary science course at the Universities of Adelaide, Melbourne, Western Australia or Queensland, and two years of Diploma course at the School, may be granted the degree B.Sc.F. by their Universities, subject to certain conditions laid down, particulars of which may be obtained from the Registrar of the University concerned.

§ 5. Forest Congresses.

References to the various Forestry Conferences held in Australia and elsewhere will be found in Official Year Book No. 22, p. 743, but owing to limitations of space, the information cannot be repeated herein. The Third British Empire Forestry Conference was held in Australia and New Zealand in 1928, and the Fourth in South Africa in 1935. Publications issued in connexion with these Conferences are available on application to the various State and Commonwealth forestry authorities.

§ 6. Forestry Production.

1. Timber.—Particulars regarding logs treated and the production of rough sawn timber in forest sawmills in each State for the year 1937-38 are shown in the following table :—

OUTPUT OF NATIVE TIMBER : FOREST SAWMILLS, 1937-38.

Particulars.	N.S.W.	Vic.	Qld.	S.A.	W.A.	Tas.	Total.
LOGS TREATED INCLUDING THOSE SAWN ON COMMISSION.							
Hardwood— Quantity 1,000 sup. ft.	121,979	230,567	109,082	5,944	334,201	159,261	961,034
Softwood— Quantity 1,000 sup. ft.	46,982	2,386	171,387	13,255	386	2,333	236,732
Total— Quantity 1,000 sup. ft.	168,961	232,956	280,469	19,199	334,587	161,594	1,197,766
ROUGH SAWN TIMBER PRODUCED FROM ABOVE LOGS.							
Hardwood— Quantity 1,000 sup. ft.	82,978	130,049	77,207	2,926	129,749	81,547	504,456
Softwood— Quantity 1,000 sup. ft.	30,303	1,330	110,771	8,529	138	1,332	152,403
Total— Quantity 1,000 sup. ft.	113,281	131,379	187,978	11,455	129,887	82,879	656,859

The next table gives the sawn output of native timber in both forest and town sawmills and in joinery works, box and case factories and other woodworking establishments in each State for 1923-24, 1928-29 and for the last three years.

SAWN OUTPUT OF NATIVE TIMBER : ALL MILLS.

State.	1923-24.	1928-29.	1935-36.	1936-37.	1937-38.
	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	136,051	133,342	145,929	168,042
Victoria ..	134,639	79,018	105,935	122,908	141,439
Queensland ..	141,672	106,862	125,269	160,745	208,098
South Australia ..	1,350	3,219	12,858	13,039	16,167
Western Australia ..	161,749	145,043	109,374	130,987	129,986
Tasmania ..	63,120	46,195	76,422	81,328	83,009
Total ..	670,023	516,388	563,200	654,936	746,741

In addition to the sawn timber shown in the 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 outside forest sawmills, but the figures have not been included in the preceding two tables. The quantities so produced in the last five years were as follows:—1933-34, 31,335,186 sup. feet; 1934-35, 43,259,941 sup. feet; 1935-36, 45,614,500 sup. feet; 1936-37, 44,771,668 sup. feet; and 1937-38, 46,775,418 sup. feet. The annual reports of the Forest Departments in the States contain particulars concerning the output of timber from areas under departmental control, but owing to lack of uniformity in measurements accurate determination of total production cannot be made. Moreover, there is a fair quantity of hewn timber produced from privately owned land, but information regarding output is not available.

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 considerable quantities are manufactured particularly in Victoria. Oversea exports amounted in 1933-34 to £41,010; in 1934-35 to £50,699; in 1935-36 to £53,797; in 1936-37 to £82,457; and in 1937-38 to £94,538; 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 in connexion with the recovery of gold and other minerals.

(ii) *Sandalwood and Sandalwood Oil.* The distillation of oil from Western Australian sandalwood has been characterized by improvement both in quality and in quantity within recent years. It is claimed that the Western Australian oil is at least as valuable medicinally as the well-known Mysore oil, besides having an extensive use in the manufacture of perfumes. Exports of essential oils from Western Australia amounted in 1933-34 to £26,720; in 1934-35 to £35,363; in 1935-36 to £27,526; in 1936-37 to £38,185; and in 1937-38 to £35,128. The bulk of the product consisted of sandalwood oil which was shipped principally to the United Kingdom, Eastern States of Australia and Germany. In addition to its distillation, quantities of sandalwood are gathered for export each year. Western Australia is the chief source of supply, followed by South Australia, while Queensland and New South Wales also produce small quantities. In 1937-38, 1,241 tons valued at £36,831 were exported, the whole of which was shipped to the East; Hong Kong 729 tons and China 312 tons were the principal countries of destination. A table giving these details is included in § 8 hereinafter.

(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. Quantities are also obtained in New South Wales and Western Australia but these are small. The production in South Australia during 1937-38 amounted to 3,278 tons; whilst the exports from Australia amounted to 2,688 tons valued at £18,812 during the same period.

(iv) *Tan 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. Although many of these species contain higher percentages of tannin than are found in the barks of oak, chestnut and hemlock, formerly the chief source of tannin material in the northern hemisphere, scattered distribution 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*).

Up to 1913 the production of wattle bark was more than sufficient for local requirements, and an export trade was built up. The supply diminished during the six years ending 1926-27, and Australia imported on the average about 2,900 tons each year from Natal, where the plantations were originally started from Australian seed. Since 1927-28, however, exports exceeded imports in every year except 1936-37, the annual excess value averaging £11,159 during the past five years. The chief exporting States are South Australia, Tasmania and Western Australia. This matter is referred to in tables appearing in § 8 hereinafter. The other valuable tan bark, mallet (*Eucalyptus astringens*) of Western Australia, is not extensively used in Australian tanneries, but it is exported to Europe and other countries, where it is used for producing a tannin

extract. A brief account of the work done by the Council for Scientific and Industrial Research in connexion with tanning materials will be found in Official Year Book No. 22, page 743. The production of extract from the bark of karri (*Eucalyptus 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 marri (*Eucalyptus calophylla*) bark is not yet complete. The production of tan bark in Australia is estimated to exceed 25,000 tons per annum.

3. Value of Production.—As the outcome of a series of conferences of Australian Statisticians it is now possible to present the value of forestry production on a more satisfactory basis than was possible hitherto, but the relative proportions of marketing costs to gross production suggest that complete uniformity in method has not yet been obtained. Provision is made for the inclusion of all phases of forestry output, including forest sawmills, the production of logs, poles, piles, sleepers and other hewn timber, firewood, sandalwood and gums and resins. All of these items are not yet collected in all the States, but the omissions are not serious.

GROSS, LOCAL AND NET VALUE OF FORESTRY PRODUCTION, 1937-38.

State.	Gross Production Valued at Principal Markets.	Marketing Costs.	Gross Production Valued at Place of Production.	Value of Other Materials Used in Process of Production.	Net Value of Production.(a)	
	£	£	£	£	£	
New South Wales ..	2,310,000	131,000	2,179,000	..	2,179,000	
Victoria	1,231,322	202,148	1,029,174	..	1,029,174	
Queensland .. .	2,782,000	268,000	2,514,000	..	2,514,000	
South Australia ..	622,655	52,456	570,199	..	570,199	
Western Australia ..	1,478,636	185,080	1,293,556	20,849	1,272,707	
Tasmania	485,800	54,600	431,200	..	431,200	
Total	1937-38	8,910,413	893,284	8,017,129	20,849	7,996,280
	1936-37	8,380,565	876,878	7,503,687	197,766	7,305,921
	1935-36	7,641,162	806,524	6,834,638	27,042	6,807,596
	1934-35	7,331,603	867,464	6,464,139	26,791	6,437,348
	1933-34	5,853,862	716,712	5,137,150	..	5,137,150

(a) No account has been taken of maintenance costs and depreciation.

4. Employment.—The number of persons employed in forestry operations as revealed by the Census of the Commonwealth of Australia at the 30th June, 1933, is shown in the following table. With the exception of those employed in forest sawmills referred to in Chapter XXIII. no later details are available.

EMPLOYMENT IN FORESTRY, 30th JUNE, 1933.

Sex.	New South Wales.	Victoria.	Queensland.	South Australia.	Western Australia.	Tasmania.	Total. (a)
	No.	No.	No.	No.	No.	No.	No.
Males ..	6,446	7,225	4,054	1,549	4,189	2,376	25,839
Females ..	38	29	27	8	7	5	114
Total ..	6,484	7,254	4,081	1,557	4,196	2,381	25,953

(a) Not including Northern Territory, 11, and Australian Capital Territory, 152.

§ 7. Commercial Uses of Principal Australian Timbers.

i. 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. [Further references are made in "Timber and Forest Products of Queensland" (E. H. F. Swain), published in 1928.]

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, of Official Year Book No. 10. At the Forestry Conferences previously mentioned, the matter came up for special consideration, and steps were taken to establish a uniform nomenclature.

§ 8. Oversea Trade.

1. Imports.—(i) *Dressed Timber*. The quantities and values of timber imported into Australia during the four years 1934-35 to 1937-38 inclusive are shown according to countries of origin in the following tables:—

DRESSED TIMBER: IMPORTS INTO AUSTRALIA.

Country of Origin.	Quantity.				Australian Currency Values.			
	1934-35.	1935-36.	1936-37.	1937-38.	1934-35.	1935-36.	1936-37.	1937-38.
	sup. ft.	sup. ft.	sup. ft.	sup. ft.	£	£	£	£
United Kingdom ..	21,839	369	2,609	235	2,075	34	238	76
Canada ..	2,739,082	4,301,411	6,772,408	12,286,173	26,896	44,625	66,826	165,374
Other British Countries ..	38,356	208,443	98,196	91,387	1,225	2,910	883	2,095
Norway ..	4,688,155	5,972,177	5,283,893	5,492,273	46,646	53,670	51,902	73,579
Sweden ..	3,911,008	2,041,848	2,504,871	5,362,982	38,794	18,299	28,514	81,694
U.S. of America ..	2,698,135	1,637,157	2,326,883	1,921,917	23,116	13,891	18,523	25,037
Other Foreign Countries ..	742,195	1,967,025	249,150	776,919	11,835	18,379	4,699	14,496
Total ..	14,838,770	16,128,430	17,238,010	25,931,886	150,587	151,808	171,585	362,351

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 £68,381 in 1937-38 including plywood, veneered or otherwise, £28,797.

The bulk of the imports of dressed timber comes from Canada, Norway, Sweden and the United States of America. 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 years 1934-35 to 1937-38 are given hereunder:—

UNDRESSED TIMBER, INCLUDING LOGS.(a): IMPORTS INTO AUSTRALIA.

Country of Origin.	Quantity.				Australian Currency Values.			
	1934-35.	1935-36.	1936-37.	1937-38.	1934-35.	1935-36.	1936-37.	1937-38.
	1,000. sup. ft.	1,000. sup. ft.	1,000. sup. ft.	1,000. sup. ft.	£	£	£	£
United Kingdom ..	523	202	75	170	20,542	15,696	8,513	13,577
Canada ..	212,927	265,016	261,223	334,177	762,747	825,777	959,891	1,692,500
India ..	93	101	127	190	3,856	4,299	5,859	2,596
Malaya (British) ..	105	104	127	368	735	730	894	2,930
New Zealand ..	38,702	36,697	17,095	14,574	508,658	452,167	247,935	221,333
Other British Countries ..	4,398	3,690	4,274	9,689	28,055	34,212	28,064	73,790
Japan ..	916	1,186	786	666	12,584	14,166	10,411	13,558
Netherlands East Indies ..	2	41	..	..	104	185	..	..
Norway ..	798	33	..	124	7,172	237	90	1,668
New Caledonia ..	..	..	..	..	..	..	..	..
Philippine Islands ..	4,589	3,949	3,390	4,359	41,394	37,138	31,566	42,375
Sweden ..	3,486	2,251	2,549	2,409	28,732	16,778	20,116	28,066
United States of America ..	38,717	39,863	23,485	31,695	264,023	341,432	218,937	342,674
Other Foreign Countries ..	2,745	5,015	5,042	8,362	20,442	31,307	33,990	79,393
Total ..	308,001	358,148	318,173	406,783	1,699,044	1,774,124	1,566,266	2,514,460

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

By far the larger proportion of the undressed timber imports consists of softwoods such as oregon, redwood, hemlock, western red cedar and yellow pine from Canada and the United States; and kauri, rimu and white pine from New Zealand. Amongst the hardwoods imported the principal are oak from the United States of America and Japan, and furniture woods from the Pacific Islands.

2. Exports.—(i) *Undressed Timber*. The quantity and value of undressed timber exported from 1934-35 to 1937-38 are given below, the countries of destination being also shown:—

UNDRESSED TIMBER, INCLUDING LOGS. (a) : EXPORTS FROM AUSTRALIA.

Country to which Exported.	Quantity.				Value.(b)			
	1934-35.	1935-36.	1936-37.	1937-38.	1934-35.	1935-36.	1936-37.	1937-38.
	1,000 sup. ft.	1,000 sup. ft.	1,000 sup. ft.	1,000 sup. ft.	£	£	£	£
United Kingdom	12,196	12,875	15,740	17,500	142,066	147,530	182,981	216,323
Canada	103	140	127	341	1,920	2,565	2,474	7,715
Ceylon	764	635	760	567	7,643	6,353	7,941	5,893
Hong Kong	33	..	69	443	200	..	621	3,740
India	7	438	..	..	114	4,514	..	..
Malaya (British)	83	..	..	..	877	..	..	..
Mauritius	276	432	403	311	2,777	4,738	5,014	5,846
New Zealand	9,991	12,842	15,055	15,835	126,089	160,382	209,419	237,098
Pacific Islands—								
Fiji	555	727	736	896	8,658	10,832	11,661	14,788
Gilbert and Ellice Islands								
Colony	17	38	67	212	286	716	955	2,272
Papua	93	139	118	424	1,416	2,344	2,056	6,980
Solomon Islands	72	94	184	236	1,207	1,532	3,391	4,800
Territory of New Guinea	145	187	136	289	2,011	2,355	2,472	4,741
Other Islands	47	53	156	407	817	867	2,617	6,590
Union of South Africa	5,438	5,399	5,097	7,358	62,047	64,957	57,768	83,055
Other British Countries	18	18	112	92	173	211	2,071	1,579
Africa, Portuguese East	1,852	574	382	346	21,104	7,271	4,370	4,983
Belgium	528	1,078	518	1,612	5,686	11,181	7,117	24,241
China	1,621	1,153	746	128	16,227	11,504	7,143	1,010
Egypt	187	392	132	228	1,871	3,919	1,317	2,280
Germany	448	236	298	81	5,048	2,625	4,661	1,066
Japan .. .. .	..	..	..	..	..	..	..	..
Netherlands	307	73	189	685	3,466	974	2,081	8,541
Pacific Islands—								
New Caledonia	85	210	60	94	1,435	3,412	1,075	1,880
New Hebrides	19	39	57	128	355	477	854	2,306
Other Islands	80	15	36	44	1,932	343	862	995
United States of America	1,656	2,445	2,800	1,150	37,335	63,081	84,896	32,850
Other Foreign Countries	290	(c) 75	78	35	2,901	(c) 1,339	885	438
Australian Produce	36,911	40,307	44,056	40,999	455,661	516,022	606,702	674,187
Other Produce	580	812	1,134	8,443	4,658	6,169	16,001	7,823
Total	37,491	41,119	45,190	49,442	460,319	522,191	622,703	682,010

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

(b) Australian currency values.

(c) Includes Iraq, 19,127 super. feet, £207, in 1935-36.

The bulk of the exports of undressed timber was consigned to New Zealand, the United Kingdom, South Africa and the United States of America, 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. Considerable quantities of pole, pile and girder timber are also exported from New South Wales to New Zealand.

(ii) *Sleepers.* Prior to the year 1933-34 particulars of the quantities and values of sleepers exported were included in the table relating to Undressed Timber, including Logs. These details have been separated in the export returns and are now shown in the following table:—

RAILWAY SLEEPERS : EXPORTS FROM AUSTRALIA.

Country to which Exported.	Quantity.		Value.(a)	
	1936-37.	1937-38.	1936-37.	1937-38.
	sup. ft.	sup. ft.	£	£
United Kingdom	532,200	1,184,784	5,322	16,722
Ceylon	2,439,599	3,750,156	27,335	37,499
Hong Kong .. ..	..	1,396,604	..	14,888
Mauritius	272,512	964,987	2,521	10,217
New Zealand	7,851,226	7,628,809	57,241	78,636
Pacific Islands	302,251	216,038	3,177	2,180
Union of South Africa ..	4,843,067	6,299,076	48,506	62,990
Other British Countries ..	531,756	30,024	5,317	300
Africa, Portuguese East ..	29,892	..	299	..
China	10,332,098	7,852,981	105,242	80,312
Egypt	2,435,520	8,148,120	24,355	81,481
Iran (Persia) .. ..	..	155,604	..	1,556
Iraq	2,753,058	14,479,697	27,530	141,934
Other Foreign Countries ..	..	44,556	..	445
Total	(b)32,323,179	(c)52,151,436	306,845	528,260

(a) Australian currency values.
1,803,793.

(b) Number of sleepers, 1,190,380.

(c) Number of sleepers,

3. **Classification of Imports and Exports.**—(i) *General.* The quantities of timber classified according to varieties imported and exported during the year 1937-38 are given in the next table:—

TIMBER : VARIETIES IMPORTED AND EXPORTED FROM AUSTRALIA,
QUANTITIES, 1937-38.

Description.	Unit of Quantity.	Imports.	Exports.	Excess of Imports over Exports.
Dressed	sup. ft.	25,931,886	1,107,967	24,823,919
Undressed, including logs ..	..	406,782,623	49,441,890	357,340,733
Sleepers .. ..	..	(c)	52,151,436	-52,151,436
Architraves, mouldings, etc. .	lin. ft.	46,334	140,858	-94,524
Plywood, veneered or otherwise ..	sq. ft.	3,311,581	2,966,380	345,201
Palings	No.	..	121,360	-121,360
Shingles .. ..	..	835,258	..	835,258
Staves—				
Dressed, etc. .. ..	..	..	2,388	-2,388
Undressed .. ..	..	1,336,016	7,371	1,328,645
Laths—				
For blinds .. ..	..	(a)	(a)	(a)
Other .. ..	..	..	18,352	-18,352
Doors .. ..	..	746	(a)	(a)
Wood pulp	ton	63,605	(b)	63,605
Veneers	sq. ft.	4,457,962	4,768,597	-310,635
Spokes, rims, felloes, etc. ..	..	(a)	(a)	(a)
Other .. ..	..	(a)	(a)	(a)

(a) Quantity not available.
separately.

(b) Exports not recorded separately.

(c) Imports not recorded

NOTE.—The minus sign (—) denotes an excess of exports.

Similar particulars relative to the values of imports and exports during the year 1937-38 are shown hereunder:—

**TIMBER : VARIETIES IMPORTED AND EXPORTED FROM AUSTRALIA,
VALUES(a), 1937-38.**

Description.	Imports.	Exports.	Excess of Imports over Exports.
	£	£	£
Dressed	362,351	27,197	335,154
Undressed, including logs	2,514,460	682,010	1,832,450
Sleepers	(b)	528,260	-528,260
Architraves, mouldings, etc.	561	1,247	-686
Plywood, veneered or otherwise	28,797	39,258	-10,461
Palings .. .. .	..	1,284	-1,284
Shingles	1,523	..	1,523
Staves—			
Dressed, etc. .. .. .	..	449	-449
Undressed	25,726	246	25,480
Laths—			
For blinds	1	93	-92
Other .. .. .	..	24	-24
Doors	30	2,715	-2,685
Wood pulp	705,545	(a)	705,545
Vencers	31,705	29,229	2,476
Spokes, rims, felloes, etc.	4	1,057	-1,053
Other	5,790	12	5,778
Total	3,676,493	1,313,081	2,363,412

(a) Australian currency values.

(b) Imports not recorded separately.

NOTE.—The minus sign (–) denotes an excess of exports.

(ii) *Sandalwood.* A considerable quantity of sandalwood is 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 last four years are as follows:—

SANDALWOOD : EXPORTS FROM AUSTRALIA.

Country to which Exported.	Quantity.				Value.(a)			
	1934-35.	1935-36.	1936-37.	1937-38.	1934-35.	1935-36.	1936-37.	1937-38.
	ton.	ton.	ton.	ton.	£	£	£	£
Hong Kong	2,390	1,208	2,120	728	70,007	32,842	63,344	21,242
India	112	75	105	40	3,475	2,339	3,279	1,280
Malaya (British)	112	99	140	116	3,409	2,997	4,283	3,578
Other British Countries	17	12	20	13	543	351	620	415
China	1,025	932	1,154	312	30,773	27,513	34,426	9,357
Other Foreign Countries	14	26	16	32	434	803	496	959
Total	3,670	2,352	3,555	1,241	108,641	66,845	106,448	36,831

(a) Australian currency values.

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

TAN BARK : EXPORTS FROM AUSTRALIA.

Country to which Exported.	Quantity.				Value.(a)			
	1934-35.	1935-36.	1936-37.	1937-38.	1934-35.	1935-36.	1936-37.	1937-38.
	cwt.	cwt.	cwt.	cwt.	£	£	£	£
United Kingdom		305		100		162		20
New Zealand	33,810	20,001	10,808	5,779	16,536	9,482	6,024	3,118
Other British Possessions ..	40			30	26			21
Germany	6,007	1,517	515	3,193	2,356	1,101	228	1,313
Other Foreign Countries ..	40	1,941	1,514	6,253	18	914	2,155	3,100
Total	39,897	23,764	12,837	15,355	18,936	11,659	8,407	7,572

(a) Australian currency values.

For a number of years prior to 1927-28 Australia had to import large quantities of tanning bark, but thereafter imports dropped to negligible quantities and exports rose annually to 89,061 cwt. in 1931-32. After 1931-32 exports declined each year to 12,837 cwt. in 1936-37 and imports rose in the latter year to 18,216 cwt., of which 15,487 cwt. consisted of wattle bark imported from South Africa.

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.

Particulars.	1933-34.	1934-35.	1935-36.	1936-37.	1937-38.
	cwt.	cwt.	cwt.	cwt.	cwt.
QUANTITIES—					
Imports	1	2,556	4,362	18,216	7,361
Exports	41,350	39,897	23,764	12,837	15,355
Excess of exports over imports	41,349	37,341	19,402	-5,379	7,994
VALUES (a)—	£	£	£	£	£
Imports	1	827	1,395	6,660	3,145
Exports	21,249	18,936	11,659	8,407	7,572
Excess of exports over imports	21,248	18,109	10,264	1,747	4,427

(a) Australian currency values.

NOTE.—The minus sign (—) denotes an 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 the Union of 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; and (b) there is an abundance of cheap and efficient native labour.

(iv) *Other Tanning Substances.* Considerable quantities of tanning substances other than bark are annually imported into Australia. The total value of the importations in 1937-38 was £64,421, and was composed as follows :—Wattle bark extract, £5,699; quebracho extract, £16,810; other extract, £24,157; and valonia, myrobalans, cutch, etc., £17,755.