CHAPTER 25

FORESTRY

For further details on subjects dealt with in this chapter *see* the annual bulletins *Non-Rural Primary Industries* and (for sawmills, etc. operations) *Manufacturing Industry*.

Source of statistics

Statistics relating to forestry are, in general, provided by the various authorities concerned with forestry administration. Particulars of forestry activities contained in this chapter have been collected by the Statisticians of the various States, mainly from information provided by the State forestry authorities. Other information on forested areas has been provided by the Commonwealth Forestry and Timber Bureau. Statistics of timber and by-products have been compiled from the annual factory collections undertaken by the Statisticians in the several States; manufacturing industry statistics for 1969–70 are not yet available; *see* page 715. Figures of production of gums, resins and tanning barks have been provided by the State forestry authorities. Data of imports and exports of forest products and timber and timber products have been compiled in the Commonwealth Bureau of Census and Statistics as part of the statistics of overseas trade. The figures shown relate, in general, to years ended 30 June.

Forestry in Australia

Objects of forestry

The main object of forestry authorities is to manage the forests of the country in a manner that will provide the maximum benefits, both direct and indirect. Direct benefits include the provision of essential commercial commodities such as structural timber, pulpwood, plywood, veneers, firewood, bark products, tars, oil, and resins. Indirect benefits include protection of soil and stock from wind and exposure, regulation of stream flow, provision of recreational facilities, and aesthetic effects. Forestry also aims at improving existing forests and woodlands by properly controlled harvesting, by protection from such destructive agencies as fire and insect attack, and by inducing regeneration. The provision of a partial tree cover on denuded lands where this cover is necessary for protective purposes, and a complete cover when the land is better under forest than under any other land use, are further aims of forestry.

General account of forests and timbers

The area of land in Australia suitable for the production of commercial timber as a primary crop is very small in comparison with the size of the continent. Broadleaved forests (hardwoods) cover 97 per cent of the total forested area, and approximately 94 per cent of the broadleaved forest area is occupied by eucalypts.

Eucalypts. The genus *Eucalyptus* is remarkable in that it includes some 500 known species, ranging in size from the mighty forest giants, mountain ash (*E. regnans*) of Victoria and Tasmania, and karri (*E. diversicolor*) of Western Australia, down to the small mallee species which inhabit vast areas of the inland. The habitats range from the inland plains to the high mountain areas in the Australian Alps, and from areas with the annual rainfall as low as 10 inches to those where it is 150 inches. Of the 500 species, only about 100 are used for sawmilling, and not more than 40 of these are exploited extensively.

The better class of eucalypt forest is concentrated mainly in the higher rainfall areas such as the east coast, the highlands of southern New South Wales, Victoria and Tasmania, and the south-western corner of Western Australia. The more important species include blackbutt (*E. pilularis*), tallowwood (*E. microcorys*), flooded gum (*E. grandis*), and red mahogany (*E. resinifera*) of New South Wales and Queensland; alpine ash (*E. delegatensis*) of New South Wales, Victoria and Tasmania; mountain ash (*E. regnans*), messmate (*E. obliqua*) and blue gum (*E. bicostata*) of Victoria and Tasmania; and karri (*E. diversicolor*) of Western Australia. For height and grandeur, mountain ash and karri are unequalled among the broadleaved trees of the world and are excelled only by a few North American coniferous (softwood) species.

In the coastal regions with lower rainfall the eucalypt forests contain many durable species such as the ironbarks, grey gums and bloodwoods of the east coast, and jarrah (*E. marginata*) and tuart (*E. gomphocephala*) of Western Australia. The spotted gum (*E. maculata*) occurring in New South Wales and Queensland is another example.

Along most of the inland streams and adjacent flood-plains there are riverain forests consisting mainly of river red gum (*E. camaldulensis*), a very durable tree which has supplied large quantities of sawn timber, railway sleepers and fence posts.

Eucalypts also occur in open forest and savannah woodland formations in areas receiving a reliable rainfall of about 10 to 20 inches per annum, as on the goldfields of Western Australia where salmon gum (*E. salmonophloia*), brown mallet (*E. astringens*) and wandoo (*E. wandoo*) occur. These trees are of considerable value for firewood, as mining timbers and for fencing. Minor forest products such as sandalwood, tan bark, essential oils, etc., also come from isolated areas in this type of country, and in the more arid areas.

Other broadleaved timbers (hardwoods). Broadleaved genera other than *Eucalyptus* cover a comparatively small portion of the forested land in Australia; however, the areas concerned provide a great variety of timbers suitable for a multitude of uses. There are two basic types of forest containing supplies of broadleaved timbers other than eucalypts, namely, the tropical and sub-tropical rainforests of coastal Queensland and New South Wales and the temperate rainforests of southern Victoria and Tasmania, both of which yield species known collectively as rainforest or brushwood species.

The tropical and sub-tropical rainforest along the eastern coast of Australia contains a large number of different species. Tropical rainforest occurs in northern Queensland in the vicinity of Cairns and on the Atherton Tableland, providing such well-known cabinet woods as Queensland maple (*Flindersia brayleana*), Queensland walnut (*Endiandra palmerstonii*) and the silky oaks. The sub-tropical rainforest found in southern Queensland and northern New South Wales yields the tulip oak, crab apple (*Shizomeria ovata*) and white beech (*Gmelina leichhardtii*). Coachwood (*Ceratopetalum apetalum*) and sassafras (*Doryphora sassafras*) occur in regions to the south near Dorrigo and have yielded valuable timber for many years.

Temperate rainforest which is to be seen in southern parts of Victoria and western Tasmania consists mainly of myrtle beech (*Nothofagus cunninghamii*), but produces also southern sassafras (*Atherosperma moschata*) and blackwood (*Acacia melanoxylon*).

Turpentine (*Syncarpia glomulifera*), an excellent harbour pile timber resistant to marine borer attack, and brush box (*Tristania conferta*), a superior structural and decking timber, are found in association with some eucalypts in the wetter rainfall areas on the north coast of New South Wales and in southern Queensland.

Conifers (softwoods). One of the most important species of native conifers is white cypress pine (*Callitris hugelii*). The main cypress pine forests of commercial value occur in New South Wales and southern Queensland west of the Great Dividing Range. The trees are comparatively small, but the timber has particular value owing to its durability including resistance to termites. It is suitable for use as scantlings, flooring, linings, weatherboards, poles, and posts. As much of the area originally covered by cypress pine has been cleared for wheat farming and grazing, the production from the remaining State forests is now strictly regulated to ensure a continuous supply.

Another important native conifer is hoop pine (*Araucaria cunninghamii*), which occurs naturally in the sub-tropical rainforest of southern Queensland and northern New South Wales associated with tulip oak, crab apple, white beech, coachwood, and sassafras. The greater part of the original hoop pine forests has been exploited, but considerable areas have been replanted to this species in Queensland and, to a lesser extent, in New South Wales.

Other native conifers which have played a useful but minor part in the Australian timber industry include bunya and kauri pines (*Auracaria bidwillii* and *Agathis palmerstonii*) of Queensland, and celery-top, Huon and King William pines (*Phyllocladus asplenifolius, Dacrydium franklinii* and *Athrotaxis selaginoides*) of Tasmania. Kauri pine is found in the tropical rainforest of northern Queensland in association with non-eucalypt broadleaved trees, while bunya pine occurs in the sub-tropical rainforests. In the temperate rainforests of Tasmania celery-top, Huon and King William pines are found in association with myrtle beech, southern sassafras and blackwood.

Extent of forested areas

Estimates prepared for the Food and Agriculture Organisation World Forest Inventory 1970, show the total area of forests plus other wooded areas as 340.4 million acres in 1970. This represents a smaller figure than the previously published result of a similar survey taken in 1965 for the Food and Agriculture Organisation which showed the total area of forests and woodlands as 599.7 million acres. The difference is largely explained by the fact that the definition of 'woodland' was changed considerably between the two reference dates.

CLASSIFICATION OF FOREST AREA(*a*): AUSTRALIA

(*Source:* Forestry and Timber Bureau)

('000 acres)

Types of forest	*Area*
FORESTS AND OTHER WOODED AREAS	
Forests under exploitation	65,269
Forests not under exploitation(*b*)—	
Excluded from exploitation by law	4,978
Other	23,498
Total forests	*93,745*
Other wooded areas(*c*)	246,625
Total forestry and other wooded areas	**340,370**
OWNERSHIP OF FORESTS	
Publicly-owned forests—	
State forests	41,355
Other forests	30,270
Total publicly-owned forests	*71,625*
Privately-owned forests	19,412
Ownership not yet determined	2,708
Total forests	**93,745**

(*a*) Date of inventory 31 March 1970. (*b*) Areas of lowgrowing mallee and similar associations of woody vegetation are not included. (*c*) Includes woodlands, scrublands, etc., not regarded as forests.

Forest reserves

The distribution of forest reserves is shown by States and Territories in the following table. Detailed comparisons between States are not possible because of the lack of uniform definitions.

FOREST RESERVES: STATES AND TERRITORIES
31 MARCH 1970

(*Source:* Forestry and Timber Bureau)

('000 acres)

	N.S.W.	*Vic.*	*Qld*	*S.A.*	*W.A.*	*Tas.*	*N.T.*	*A.C.T.*	*Aust*
Production reserves(*a*)—									
Productive	7,059	4,190	9,191	246	4,068	3,439	2	31	32,352
Unproductive		1,351	..	28	..	1,322	73	..	
Unstocked		*116*	..	..	*706*	529	*1*	..	
Total, production reserves	*7,059*	*5,657*	*9,191*	*274*	*4,774*	*5,290*	*76*	*31*	*32,352*
Protection reserves(*b*)—									
Productive	20	..	..	2	33	233	..	13	4,968
Unproductive		514	2,443	19	51	..	1,200	97	
Unstocked		..	..	..	28	1	314	..	
Total, protection reserves	*20*	*514*	*2,443*	*21*	*112*	*234*	*1,514*	*110*	*4,968*
All other reserves, productive, unproductive and unstocked(*c*)	1,031	151	..	..	..	..	(*d*)	..	1,182
Total area, all reserves	8,110	6,322	11,634	295	4,886	5,524	1,590	141	38,502

(*a*) Land permanently dedicated to timber production. In the case of the A.C.T. these are 'Managed Forests'. (*b*) Includes flora and fauna reserves, scenic reserves, state and national parks, and water catchment areas. (*c*) Includes other timber reserves, land reserved for fuel supply, and vacant forested crown land. (*d*) Excludes aboriginal reserves totalling 29,286,000 acres which are estimated to be 90 per cent forest.

Categories of forest reserves

(i) *Production reserves* consist of forest lands 'permanently' reserved—by law whether Federal, State or local—for the production of logs, pulpwood, pit props, poles, posts or fuelwood for commercial purposes.

(ii) *Protection reserves* consist of reserved lands, the management of which is principally aimed at the protection of natural resources, of fauna and flora, or at other purposes not directly related to the production of wood (e.g., parks, watersheds, soil conservation areas, etc.). Industrial cutting may or may not be allowed in these protection reserves. Industrial cutting includes the cutting of logs, pulpwood, pit props, poles, posts, fuelwood for commercial purposes. The production of logs for the production of sawnwood for local consumption is considered as industrial cutting; however, the cutting of poles and fuelwood for personal consumption on a casual or occasional basis is not considered as an industrial cutting.

(iii) *All other reserves* consist of reserved forest lands not included above.

A considerable proportion of the permanently reserved areas is in inaccessible mountainous country, and many of the forests contain a mixture of species, only some of which are at present of commercial value. Much of the area consists of inferior forest, and a large proportion of the whole has been seriously degraded by recurrent fires.

Plantations

The indigenous forest of Australia does not contain adequate supplies of coniferous timber, and Australia's requirements have had to be met largely by imports. As a result of the planned policy of the forest services and of several private commercial organisations, the area of coniferous plantations, mainly of exotic species, is steadily increasing. It was natural that this aspect of forestry should receive earliest attention in South Australia, as this is the State most poorly endowed with natural forest. South Australia now has a larger area of planted conifers than most other States in Australia, and for some years has been exploiting considerable quantities of timber from these plantations. Production is also increasing in the other States, and the thinnings from their plantations are already supplying a significant volume of timber.

The total production of roundwood from Australia's coniferous plantations is now more than 85 million cubic feet per annum and is expected to increase substantially during the next decade.

A special article prepared by the Forestry and Timber Bureau giving a detailed account of the history and development of coniferous plantations and of the characteristics of individual species is included in Year Book No. 44, page 975.

Broadleaved plantations (mainly *Eucalyptus* spp.) comprise a much smaller area, and the total acreage at 31 March 1969 was about 74,000 acres, about one-quarter of which was brown mallet (*E. astringens*). Plantations of this species have been established in Western Australia for tan bark production.

AREA OF CONIFEROUS PLANTATIONS, BY TYPE OF PLANTATION

(*Source:* Forestry and Timber Bureau)

(Acres net)

	Government			*Private*			
State or Territory	*Pinus radiata*	*Other species*	*Total*	*Pinus radiata*	*Other species*	*Total*	*Grand total*
31 March 1970—							
New South Wales	147,748	23,453	171,201	11,847	16,411	28,258	199,459
Victoria	90,091	9,396	99,487	119,210	(*a*)1,000	120,210	219,697
Queensland	4,085	153,681	157,766	852	38,231	39,083	196,849
South Australia	147,208	15,027	162,235	39,668	16	39,684	201,919
Western Australia(*a*)	26,123	39,171	65,294	3,325	296	3,621	68,915
Tasmania	39,828	425	40,253	16,084	10	16,094	56,347
Northern Territory	..	4,628	4,628	..	..	..	4,628
Australian Capital Territory	27,997	2,748	30,745	..	..	..	30,745
Australia, 31 March 1970	**483,080**	**248,529**	**731,609**	**190,986**	**55,964**	**246,950**	**978,559**
31 March—							
1969	438,097	228,291	666,388	187,035	52,865	239,900	906,288
1968	395,215	207,176	602,391	161,326	47,224	208,550	810,941
1967	368,597	196,564	565,161	147,053	40,415	187,468	752,629
1966	342,135	184,143	526,278	139,071	36,328	175,399	701,677

(*a*) Estimated

Forest administration and research

Commonwealth Forestry and Timber Bureau. The functions of the Commonwealth Forestry and Timber Bureau are laid down in the *Forestry and Timber Bureau Act* 1930–1953 and include forestry research and education, the study of timber supply, and advice to the Government on forestry matters. The administrating department is the Department of National Development.

In 1961 the Commonwealth Government expanded its activities in forestry research in Australia. The existing Forestry and Timber Bureau Divisions of Silvicultural Research and Forest Management Research were combined to form the Forest Research Institute as a separate branch of the Bureau. The purpose of the Institute is to provide complete coverage in forestry research, ensuring that all problems of primary importance to the practice and development of forestry in Australia are investigated. In developing a programme with this objective, the Institute takes account of the research activities and potential of the State forest services and other organisations. The research work carried out by the existing sections of the Forest Research Institute covers a wide range of studies, including the following: factors affecting tree growth, tree breeding, introduction of exotic species, forest nutrition, forest botany, forest entomology and pathology, fire protection, watershed management, forest mensuration, forest management and management economics, aerial inventory, biometrics, and tree seed. The Forest Research Institute maintains six regional establishments in the Commonwealth, two of which have an outstation in addition to the regional headquarters. These regional stations are run on a co-operative basis with State forest services and private forest companies or other government instrumentalities.

The Forestry and Timber Bureau also maintains a Timber Supply Economics Branch concerned with the compilation and analysis of statistics of production, consumption and trade in timber and other forest products. This Branch also carries out studies in forest economics and research into logging methods and machines. Advice on timber supply matters is currently made available to government departments and private enterprise. Research is also undertaken on matters associated with the marketing of timber products.

Commonwealth Scientific and Industrial Research Organization, Division of Forest Products. The Division of Forest Products was formed in 1928 to carry out investigations into Australian forest products, assist in the effective use of such products, reduce waste, reduce losses from decay and insect attack, and conduct research into the fundamental chemical, physical and mechanical properties of Australian timbers.

The research work of the Division is carried out by eight separate sections: wood and fibre structure, wood chemistry, timber physics, timber mechanics, timber preservation, timber seasoning, plywood and glueing, and timber utilisation. In addition, the Division provides assistance to individuals and local industry, administers courses of instruction on timber properties and usage, and maintains co-operative projects with several overseas authorities operating in the same field.

Forestry in the Territories. Forestry activities in the Territory of Papua and New Guinea are controlled by the Administration through its Department of Forests. The management of forests in the Australian Capital Territory is the responsibility of the Forestry Branch of the Department of the Interior.

The Forestry and Timber Bureau advises the Administrations of the Australian External Territories on the management of the forests in those Territories. Forests in the Northern Territory are under the control of the Forestry Branch of the Northern Territory Administration.

Forestry activities of the States. Forestry on State-owned lands in the various States is the responsibility of the respective State Governments, but they do not exercise any control over forestry activities on private property. The powers and functions of State forest authorities are laid down under forest Acts and Regulations. In each State there is a department or commission to control and manage State forests. Its functions include the introduction of proper measures for the control and management of forest land; the protection of forest land; the conversion, marketing and economic utilisation of forest products; the securing of an adequate and permanent reservation of State forests; and the establishment and maintenance of coniferous forests to remedy the existing deficiency of conifers in Australia. All State forest services are actively engaged on research programmes. Annual reports are issued by each State forest authority.

In addition to developing permanent forest reserves in each State, foresters are surveying all forested Crown lands with a view to obtaining dedications of new State forests to add to the permanent forest estate or to release for other uses areas unsuitable for forestry. State forest authorities control over 15 million acres of timber reserves, national parks, etc. They also usually control all timber on unoccupied Crown lands.

Private forestry. Privately owned lands contribute considerably to the total production from Australian forests. The most important areas of managed native forest in private ownership are the forests owned by pulp and paper companies. Schemes of financial assistance to individual land owners—designed primarily to encourage establishment and management of coniferous plantations—have been introduced by the Governments of New South Wales and Victoria.

The area of privately owned coniferous plantations is rapidly increasing, and here again the pulp and paper companies are very active. In step with the increase in afforestation programmes, the number of professional foresters employed in private forestry enterprise is increasing, while several are engaged on research.

The area of coniferous plantations established by private companies and individuals is included in the table on page 870.

Forestry education

The functions of the Australian Forestry School at Canberra, previously a division of the Forestry and Timber Bureau, were taken over by the Australian National University at the beginning of the 1965 academic year. The school was absorbed into the University's School of General Studies as the Department of Forestry. This department provides a full four-year training leading to the degree of B.Sc. in forestry. The University of Melbourne also maintains a School of Forestry which gives training leading to a B.Sc. degree in forestry. The Universities in all States provide facilities for post-graduate studies leading to higher degrees for forestry graduates.

The Victorian Forests Commission maintains a Forestry School at Creswick where recruits are trained, mainly for employment in the Commission.

The Australian Forestry Council

The Australian Forestry Council comprises the Ministers responsible for forestry in the six State Governments and the Commonwealth Ministers for National Development, Interior, and External Territories.

The Council is intended to provide the means for the mutual exchange between the State and Commonwealth Governments of information and views on forestry. It co-ordinates research into problems affecting the establishment, development, management, and fire protection of all forests, and the utilisation of forest products. It assists in co-ordinating the work of State and Commonwealth Governments and also private enterprise in the development of Australian forestry.

The Council is supported by a Standing Committee, consisting of the Director-General of the Forestry and Timber Bureau, the heads of each of the six State Forest Services, the Chief of the Division of Forest Products, C.S.I.R.O., the Secretary of the Department of the Interior and the Secretary of the Department of External Territories.

Fire protection

The provision of adequate fire protection is one of the main problems facing forest and rural authorities. The commercial forest area is estimated at 37 million acres with a further 39 million acres of forest not at present exploitable. The forest services maintain a high degree of protection over a relatively accessible area of about 23 million acres, about 17 million acres in the more inaccessible area receive a lesser degree of protection, and about 8 million acres are at present not protected. The remaining area of 28 million acres is mainly vacant Crown Land or is privately owned or leased, and under some degree of fire protection from the rural volunteer fire-fighting organisations or Government-financed fire protection associations.

During the 1969–70 fire season a total of 915 fires were recorded over the area of 40 million acres of forest land afforded either intensive or extensive protection. An area of 129,594 acres was burnt by these fires, which represents 0.3 per cent of the area protected.

The number of forest fires and the forest area burnt over the last ten years is shown in the following table.

NUMBER OF FIRES AND FOREST AREA BURNT 1960-61 TO 1969-70

(*Source:* Forestry and Timber Bureau)

	Protected forest areas(a)		
Year	*Number of fires*	*Forest area burnt*	*Percentage of forest area burnt*
		'000 acres	
1960–61	2,667	1,294	3.5
1961–62	1,761	297	0.8
1962–63	1,299	275	0.7
1963–64	1,494	549	1.5
1964–65	2,307	1,626	4.1
1965–66	1,865	465	1.2
1966–67	1,422	388	1.0
1967–68	1,754	754	1.9
1968–69	1,744	1,885	4.7
1969–70	915	130	0.3

(*a*) The area receiving protection has been taken as the 40 million acres for which State forest services provide protection.

Very intensive fire protection is afforded to the coniferous plantation area of Australia. This area is increasing rapidly and the annual planting programme is now between 60,000 and 70,000 acres. During the 1969–70 fire season a total of 149 acres were burnt, representing 0.02 per cent of the area of 874,000 acres for which fires statistics are available.

The area of coniferous plantations burnt during the past ten years is shown in the following table.

CONIFEROUS PLANTATIONS AREA BURNT AND TOTAL AREA, 1960-61 TO 1969-70

(*Source:* Forestry and Timber Bureau)

Year	*Area burnt*	*Area of coniferous plantations*	*Percentage of coniferous area burnt*
	acres	acres(*a*)	
1960–61	507	452,000	0.11
1961–62	598	472,000	0.13
1962–63	475	492,000	0.10
1963–64	418	515,000	0.06
1964–65	3,130	556,000	0.56
1965–66	1,520	610,000	0.25
1966–67	461	660,835	0.07
1967–68	288	729,928	0.04
1968–69	2,247	781,000	0.29
1969–70	149	874,000	0.02

(*a*) This area does not include certain privately owned coniferous forest (105,000 acres in 1969–70) for which fire statistics are not available.

Detailed information on fire protection is given in Year Book No. 55, 1969, pages 966–7.

Commonwealth loans to expand softwood plantations

In February 1965 the Australian Forestry Council recommended that the rate of expansion of softwood timber planting in Australia should be increased from their existing level of about 40,000 acres a year to 75,000 acres a year for the next thirty-five years. The recommendations envisaged a phased increase in the rate of Government plantings by the various State Governments up to a level of some 63,000 acres per annum together with plantings by the Commonwealth in the Territories of 2,000 acres per annum, and an average of at least 10,000 acres per annum by private forest owners. This programme would make a major contribution towards meeting Australia's future requirements for softwood products.

In February 1966 the Commonwealth Government endorsed this recommendation and agreed, as a first step towards achieving the proposed annual target of 75,000 acres, to provide financial assistance to each State, over a five-year period commencing 1 July 1966, to enable them to accelerate their rate of softwood plantings. The assistance, which is provided to the States under section 96 of the Constitution, takes the form of long-term loans repayable over twenty-five years with repayments of principal and the payment of interest commencing ten years after the date of each advance. The *Softwood Forestry Agreements Act* 1967 authorised the Commonwealth to enter into agreements with each of the States to provide financial assistance by way of loans during the financial years 1966–67 to 1970–71 inclusive. Payments under the Act by the Commonwealth to all States in 1966–67 amounted to $291,000, in 1967–68 to $3,456,000, in 1968–69 to $3,872,000, in 1969–70 to $4,814,000, and in 1970–71 to $4,748,000. It is estimated that $4,108,000 will be provided in 1971–72.

In February 1969 the Australian Forestry Council recommended a continuation of Commonwealth financial assistance to the states for softwood timber planting for a further five-year period. The Commonwealth Government has agreed in principle to the Australian Forestry Council's recommendation and consideration is at present being given to the basis and extent of Commonwealth assistance.

Employment in forestry

Persons engaged in forestry activities, 1966 census

The number of persons whose industry statements were classified to 'forestry' (excluding sawmilling) at the 1966 population census was 13,492 out of a total of 512,994 in all primary industries and 4,856,455 in the total work force. For further information *see* the chapter Employment and Unemployment, also 1966 Census Bulletin No. 9.6, *Population: by Industry and Occupational Status, Australia.*

Employment by Forestry Departments

In the table following details are shown of the number of persons employed by State forestry departments, the Northern Territory Administration, and by the Forestry and Timber Bureau in the Australian Capital Territory at 30 June 1970.

PERSONS EMPLOYED BY FORESTRY DEPARTMENTS
STATES AND TERRITORIES, 30 JUNE 1970

Occupational group	*N.S.W.*	*Vic.*	*Qld*	*S.A.*	*W.A.*	*Tas.*	*N.T.*	*A.C.T.*	*Aust*
Professional staff	316	246	175	77	74	46	8	9	951
Non-professional field staff	297	240	98	28	246	119	22	2	1,052
Clerical staff	291	261	236	112	46	99	15	8	1,068
Extraction of timber	(a)1,417	..	122	..	35	..	10	..	6,056
Milling of timber		..	..	558	37	..	12	..	
Labour (forest workers, etc.)		897	1,656	258	526	357	90	81	
Total	2,321	1,644	2,287	1,033	964	621	157	100	9,127

(a) Excludes milling of timber.

Employment in milling operations

Details of the average number of persons employed, including working proprietors, in sawmills during the year 1967–68 are shown in the next table. Further details regarding the operations of sawmills in 1967–68 are shown in the chapter Manufacturing Industry.

NUMBER OF SAWMILLS AND NUMBER OF PERSONS EMPLOYED
STATES AND TERRITORIES, 1967-68(a)

	N.S.W.	*Vic.*	*Qld*	*S.A.*	*W.A.*	*Tas.*	*N.T.*	*A.C.T.*	*Aust.*
Number of sawmills	685	442	478	86	199	274	..	8	2,172
Average number of persons employed during year—									
Males	7,713	5,645	5,055	(b)	3,201	2,745	..	(b)	26,498
Females	392	293	302	(b)	191	56	..	(b)	1,415
Persons	*8,105*	*5,938*	*5,357*	(b)	*3,392*	*2,801*	..	(b)	*27,913*

(a) Statistics for 1968–69 and 1969–70 are not yet available, *see* page 715. (b) Not available for publication; included in Australian total.

Forest production

Forest products

FOREST PRODUCTION(a): STATES AND TERRITORIES, 1969-70

Product		*N.S.W.*	*Vic.*	*Qld*	*S.A.*	*W.A.*	*Tas.*	*N.T.*	*A.C.T.*	*Aust.*
Logs for sawing, peeling, slicing, or pulping—										
Forest broadleaved	'000 cu ft	57,860	72,199	19,865	751	42,877	59,310	14	..	252,876
Brushwoods and scrubwoods	„	4,422	..	8,910	..	..	..	14	..	13,347
Coniferous—										
Indigenous forest 'pines'—										
Cypress	„	5,838	..	6,255	..	..	..	38	..	12,131
Other	„	460	..	2,267	..	..	524	..	..	3,251
Plantation grown 'pines'	„	11,365	19,553	5,575	28,841	2,924	2,521	..	1,760	72,538
Total logs	„	*79,945*	*91,752*	*42,872*	*29,592*	*45,801*	*62,354*	*67*	*1,760*	*354,143*
Value of logs	$'000	*24,395*	*24,406*	*14,994*	*7,442*	*9,044*	*15,299*	*21*	*447*	*96,048*
Hewn and other timber (not included above)—										
Firewood(b) (weight)	'000 tons	171	246	109	440	592	389	3	..	1,950
Other(c) (value)	$'000	11,794	2,192	2,173	439	(d)1,221	204	14	17	18,053
Value of hewn and other timber	„	12,947	3,768	2,806	3,027	(d)3,988	(e)3,039	32	17	29,623
Other forest products(f) (total value)	„	335	80	362	62	(g)5	(h)	..	..	843
Total value of forest products	„	37,677	28,254	18,162	10,530	(i)13,632	18,338	53	465	127,110

(a) Excludes some production from private land, thought to be relatively small, details of which are not available. (b) Excludes mill waste used as firewood. (c) Includes sleepers, transoms, girders, bridge timbers, mining timber, poles, piles, etc. (d) Excludes value of timber used for tannin extract, details of which are not available for publication. (e) Includes value of "Other forest products". (f) Includes charcoal (forest production only), tanning bark, essential oils, eucalyptus leaves, crude rutin, etc. (g) Excludes value of sandalwood and substitutes, details of which are not available for publication. (h) Not available for publication. (i) Includes value of timber used for tannin extract and sandalwood and substitutes.

FOREST PRODUCTION(*a*): AUSTRALIA, 1965–66 TO 1969–70

Product		*1965–66*	*1966–67*	*1967–68*	*1968–69*	*1969–70*
Logs for sawing, peeling, slicing, or pulping—						
Forest broadleaved	'000 cu ft	252,587	249,985	253,723	254,230	252,876
Brushwoods and scrubwoods	"	14,027	12,131	12,755	13,272	13,347
Coniferous—						
Indigenous forest 'pines'—						
Cypress	"	12,487	11,402	12,179	11,374	12,131
Other	"	3,706	3,568	3,475	3,696	3,251
Plantation grown 'pines'	"	59,894	61,992	59,798	66,026	72,538
Total logs	"	*342,701*	*339,078*	*341,930*	*348,597*	*354,143*
Value of logs	$'000	*87,532*	*88,169*	*89,552*	*90,210*	*96,048*
Hewn and other timber (not included above)—						
Firewood (*b*) (weight)	'000 tons	2,301	2,143	1,914	1,847	1,950
Other (*c*) (value)	$'000	17,291	15,477	16,926	17,331	18,053
Value of hewn and other timber(*d*)	"	31,166	28,112	27,702	(*e*)28,057	(*e*)29,623
Other forest products(*f*) (total value)	"	782	801	851	774	843
Total value of forest products(*g*)	"	**120,306**	**117,746**	**118,769**	**119,587**	**127,110**

(*a*) Excludes some production from private land, thought to be relatively small, details of which are not available. (*b*) *See* footnote (*b*) to previous table. (*c*) *See* footnotes (*c*) and (*d*) to previous table. (*d*) Incomplete; *see* footnote (*d*) to previous table. (*e*) Includes "other forest products" for Tasmania. (*f*) *See* footnotes (*f*) and (*g*) to previous table. (*g*) Includes value of timber used for tannin extract and sandalwood and substitutes in Western Australia.

Value of production

While statistics of both the gross value (at principal markets) and local value (at place of production) of the forestry industry are available, particulars of the value of materials used in the process of production are not available for all States. For this reason values cannot be stated on a net basis, as has been done with most other industries. A more detailed reference to the value of production of forestry and other industries in Australia, as well as a brief explanation of the terms used, will be found in the chapter Miscellaneous.

GROSS AND LOCAL VALUE OF FORESTRY PRODUCTION: STATES AND TERRITORIES
1965–66 TO 1969–70
($'000)

Year	*N.S.W.*	*Vic.*	*Qld*	*S.A.*	*W.A.*	*Tas.*	*N.T.*	*A.C.T.*	*Aust.*
GROSS VALUE(*a*)									
1965–66	33,663	29,691	18,043	9,729	12,731	15,990	75	384	120,306
1966–67	31,631	29,675	17,199	8,888	13,301	16,627	73	351	117,746
1967–68	35,140	27,845	17,683	8,128	14,077	15,488	42	365	118,769
1968–69	34,369	28,517	18,411	8,528	13,465	15,885	42	371	119,587
1969–70	37,677	28,254	18,162	10,530	13,632	18,338	53	465	127,110
LOCAL VALUE(*b*)									
1965–66	32,342	28,870	13,590	9,693	11,965	13,837	75	384	110,756
1966–67	30,967	29,036	12,631	8,853	12,473	14,332	73	351	108,716
1967–68	34,162	27,448	12,948	8,100	13,274	13,420	42	365	109,759
1968–69	33,649	28,174	13,472	8,499	12,591	13,418	42	371	110,216
1969–70	36,832	27,939	13,081	10,511	12,795	15,572	53	465	117,238

(*a*) Gross production valued at principal markets. (*b*) Gross production valued at place of production.

Timber and timber products

Mill production of timber

Particulars of logs treated and the production of sawn, peeled and sliced timber by sawmills and other woodworking establishments are shown in the following table. The figures prior to 1967–68 have been compiled from annual factory collections, which cover virtually all sawmills. The only omissions are some small portable mills operated by itinerants, e.g. sleeper cutters. Figures for 1968–69 have been compiled from the Manufacturing Census of the Integrated Economic Censuses and are not strictly comparable with previous years because of changes in the census units and scope.

OUTPUT OF AUSTRALIAN-GROWN TIMBER: ALL MILLS
STATES 1968-69(*a*)
('000 super ft)

	N.S.W.	*Vic.*	*Qld*	*S.A.*	*W.A.*	*Tas.*	*Total(b)*
Sawn, peeled or sliced timber produced from logs—							
Broadleaved	338,831	280,091	132,650	3,741	179,250	166,001	1,100,564
Coniferous	60,918	35,275	65,965	104,367	8,802	1,337	276,664
Total, timber produced	*399,749*	*315,366*	*198,615*	*108,108*	*188,052*	*167,338*	*1,377,228*

(*a*) Statistics for 1969–70 are not yet available, *see* page 715. (*b*) Excludes Australian Capital Territory and Northern Territory.

OUTPUT OF AUSTRALIAN-GROWN TIMBER, ALL MILLS: AUSTRALIA(*a*)
1964-65 TO 1968-69(*b*)
('000 super ft)

	1964–65	*1965–66*	*1966–67*	*1967–68*	*1968–69*
Logs treated—					
Broadleaved	2,767,843	(*c*)2,371,263	(*c*)2,313,256	(*c*)2,341,895	n.a.
Coniferous	728,691	(*c*)569,521	(*c*)554,838	(*c*)532,965	
Total, logs treated	*3,496,535*	(*c*)*2,940,784*	(*c*)*2,868,093*	(*c*)*2,874,860*	
Sawn, peeled or sliced timber produced from logs above—					
Broadleaved	1,203,705	1,185,831	1,151,369	1,173,931	1,100,564
Coniferous	329,508	331,709	317,591	307,684	276,664
Total, timber produced	*1,533,213*	*1,517,540*	*1,468,960*	*1,481,615*	*1,377,228*

(*a*) Excludes Australian Capital Territory and Northern Territory. (*b*) Statistics for 1969–70 are not yet available, *see* page 715. (*c*) Gross hoppus basis: not necessarily comparable with details for years prior to 1965–66, which are generally on a true volume basis. Gross hoppus measure is approximately 78.5 per cent of the true volume.

In addition to the mill production of timber shown in the preceding tables, a large quantity of hewn and round timber, e.g. sleepers, piles, poles, fencing timber, timber used in mining and fuel, is obtained directly from forest and other areas. Complete information in respect of the volume of this output is not available.

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. In recent years this has been considerably extended, since plywood manufacture has allowed the use of some species unsuitable for sawing. Special attention has been paid to ensure that logs suitable for peeling are diverted to ply factories.

PLYWOOD PRODUCED: STATES, 1964-65 TO 1968-69(*a*)
('000 square feet: $\frac{3}{16}$-in basis)

State	*1964–65*	*1965–66*	*1966–67*	*1967–68*	*1968–69*
New South Wales	59,045	54,201	58,791	63,909	71,087
Queensland	94,766	80,761	81,313	93,185	83,961
Other States	63,249	52,296	60,348	71,929	73,532
Australia	**217,059**	**187,258**	**200,451**	**229,023**	**228,580**

(*a*) Statistics for 1969-70 are not yet available, *see* page 715.

Of the total plywood produced in 1968–69, 123,823,000 square feet ($\frac{3}{16}$-in. basis) were classed as 'Commercial', 80,580,000 as 'Waterproof', 2,743,000 as 'Case', and 21,435,000 as 'Sliced fancy'.

During 1968–69, 709.6 million square feet ($\frac{1}{16}$-in. basis) of veneers were produced by the rotary process for the manufacture of plywood. In addition, 58.8 million square feet of sliced veneers were produced.

Manufactured boards

Particle board, resin or cement bonded of acoustic and other composition, amounted to 135,727,223 square feet surface measurement during 1968–69.

Wood pulp and paper

Wood pulp. During 1969–70 wood pulp production was 513,039 tons of chemical, mechanical and other pulp. During the previous year production was 410,933 tons.

Detailed information relating to the types and methods of production of wood pulp in the various States was published in Year Book No. 50, 1964, page 1110.

Paper and paper board. Paper and paper board are manufactured in all States but the greater part of the industry is in New South Wales, Victoria and Tasmania. During 1969–70 twenty-one paper mills were operating, nine in Victoria, three in New South Wales, four in Tasmania, two each in Queensland and South Australia, and one in Western Australia. A wide variety of paper and paper board is produced in Australian mills. The table below gives details of the production of some of the principal items.

PRODUCTION OF PAPER PRODUCTS: AUSTRALIA, 1967-68 TO 1969-70

Type of paper	*Quantity (tons)*			*Value ($'000)*		
	1967–68	*1968–69*	*1969–70*	*1967–68*	*1968–69*	*1969–70*
Newsprint	92,648	123,935	170,576	12,688	Not yet available *See* page 715	
Blotting	569	521	494	161		
Duplicating	10,212	10,898	9,564	3,876		
Printing and writing	112,780	121,013	124,271	35,952		
Wrapping—						
Kraft	183,591	230,444	252,303	43,344		
Other						
Paper felts	1,164	1,356	1,533	243		
Paper boards	334,660	342,405	388,396	57,093		

Overseas trade in forest products, timber and timber products

Imports

IMPORTS OF FOREST PRODUCTS, TIMBER AND TIMBER PRODUCTS AUSTRALIA, 1967-68 TO 1969-70

		Quantity			*Value ($'000 f.o.b.)*		
		1967–68	*1968–69*	*1969–70*	*1967–68*	*1968–69*	*1969–70*
Crude wood, timber and cork—							
Wood waste and charcoal	..	..	..	..	10	16	18
Wood in the rough or roughly squared	'000 sup ft	53,166	49,033	54,871	3,695	3,322	3,671
Wood shaped or simply worked—							
Timber, sawn lengthwise, sliced or peeled, but not further prepared, of a thickness exceeding 5 mm—							
Conifer—							
Douglas fir	„	171,316	195,132	165,323	16,104	21,785	21,479
Hemlock and balsam	„	11,200	12,562	19,733	865	1,175	1,791
Radiata pine	„	25,016	29,474	28,384	1,868	2,108	2,214
Redwood	„	28,905	30,065	2,225	3,851	4,455	487
Western red cedar	„			31,855			5,962
Other	„	18,564	17,693	15,570	2,443	2,600	2,609
Total conifer	„	*255,001*	*284,926*	*263,090*	*25,131*	*32,123*	*34,542*
Non-conifer	..	..	..	..	11,278	10,707	13,087
Timber (including blocks, strips, etc.), planed, tongued, grooved, rebated, etc., but not further manufactured—							
Conifer	'000 sup ft	4,553	5,028	4,470	677	802	844
Non-conifer	„	1,763	1,756	3,125	312	333	618
Cork, raw and waste	..	..	..	..	404	282	294
Selected items of forest origin, other than crude wood, timber and cork—							
Tanning extracts of vegetable origin	cwt	74,005	96,015	63,524	504	565	570
Wood and cork manufactures (except furniture)—							
Veneers, plywoods, 'improved' or reconstituted wood and other wood, worked, n.e.s.	..	..	..	..	7,777	8,580	9,922
Wood manufactures n.e.s. (household utensils, domestic utensils, building carpentry, etc.)	..	..	..	..	3,722	4,417	4,966
Cork manufactures	..	..	..	..	1,431	1,372	1,398

Imports of coniferous timbers, shaped or simply worked, came mainly from Canada, New Zealand and the United States of America in 1969–70. Malaysia was the source of by far the greater proportion of non-coniferous timber imports. Malaysia, Federal Republic of Germany and the United Kingdom supplied most of Australia's imports of veneers, while plywood imports came mainly from Papua and New Guinea and the Republic of China (Taiwan).

Exports

EXPORTS OF AUSTRALIAN FOREST PRODUCTS, TIMBER AND TIMBER PRODUCTS(*a*) AUSTRALIA, 1967-68 TO 1969-70

		Quantity			*Value ($'000 f.o.b.)*		
		1967–68	*1968–69*	*1969–70*	*1967–68*	*1968–69*	*1969–70*
Crude wood, timber and cork—							
Wood waste and charcoal (including shell and nut charcoal)	..	..	..	..	2	86	23
Wood in the rough or roughly squared	..	..	..	..	636	286	476
Wood, shaped or simply worked—							
Railway or tramway sleepers	'000 sup ft	5,621	3,312	8,214	863	522	1,279
Timber, sawn lengthwise, sliced or peeled, but not further prepared, of a thickness exceeding 5 mm—							
Conifer	„	574	143	169	99	37	46
Non-conifer—Jarrah	„	3,886	6,723	5,672	643	1,169	940
Other	„	5,978	6,281	12,218	991	1,123	2,187
Timber (including blocks, strips, and friezes for parquet or wood block flooring, not assembled), planed, tongued, etc.—							
Conifer	„	808	540	562	224	146	130
Non-conifer	„	588	624	453	146	114	121
Cork, raw and waste	cwt	..	101	40	..	5	1
Selected items of forest origin other than crude wood, timber and cork—							
Natural gums, resins, gum-resins, balsam and lacs	cwt	8,160	7,569	7,839	66	60	61
Eucalyptus oil	'000 lb	355	205	304	269	149	180
Wood and cork manufactures (except furniture)—							
Veneers plywood boards, etc.—							
Wood sawn lengthwise, sliced or peeled, not further prepared, veneer sheets and sheets for plywood, of a thickness not exceeding 5 mm	'000 sq ft	3,584	3,604	9,228	151	162	383
Plywood, blockboard, laminated wood products, inlaid wood and marquetry, cellular wood panels—							
Plywood	„	1,715	1,710	2,090	316	319	400
Other	„	..	1,928	633	100	162	57
Reconstituted wood, in panels, sheets or strips	„	1,106	1,262	1,844	147	191	311
Wooden beadings and mouldings	..	..	..	..	61	176	143
Improved wood, and wood simply shaped or worked, n.e.s.	..	..	..	..	11	25	12
Wood manufactures n.e.s., and plants and parts of plants used in dying and tanning	..	..	..	..	720	1,245	622
Cork manufactures n.e.s.	..	..	..	..	83	78	118

(*a*) Excludes re-exports.