

CLASSN. 5011. No 87
SERIES No. 1920
THE LIBRARY
University of British Columbia



FORESTRY CONFERENCE.

STATEMENT

ON

FORESTRY IN THE STATE OF
NEW SOUTH WALES.

COMMONWEALTH OF AUSTRALIA.

Prepared by the Forestry Commission, N.S.W.



SYDNEY: WILLIAM APPLIGATE GULLICK, GOVERNMENT PRINTER.

1920.

STORAGE ITEM
PROCESSING-ONE
I p1-E16G
U.B.C. LIBRARY

IMPERIAL FORESTRY CONFERENCE.

STATEMENT

ON

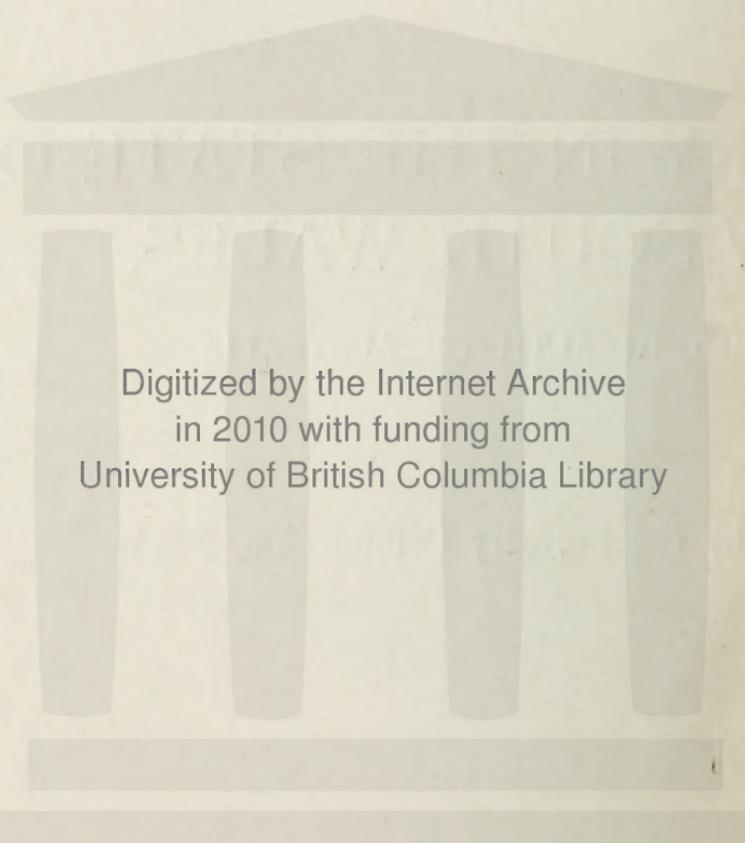
FORESTRY IN THE STATE OF
NEW SOUTH WALES.

COMMONWEALTH OF AUSTRALIA.

Prepared by the Forestry Commission, N.S.W.



SYDNEY : WILLIAM APPLIGATE GULLICK, GOVERNMENT PRINTER.



Digitized by the Internet Archive
in 2010 with funding from
University of British Columbia Library

Imperial Forestry Conference.

STATEMENT PREPARED AT THE REQUEST OF THE IMPERIAL GOVERNMENT, SETTING OUT THE PRESENT POSITION OF FORESTRY IN THE STATE OF NEW SOUTH WALES, COMMONWEALTH OF AUSTRALIA.

(1) General Description of Country.

The State of New South Wales has a frontage to the South Pacific Ocean, and comprises a territorial area of 198,051,200 acres (excluding the area set apart as Federal territory) within the parallels of latitude 28 degrees to 38 degrees south of the Equator, and longitude 154 degrees to 140 degrees Greenwich.

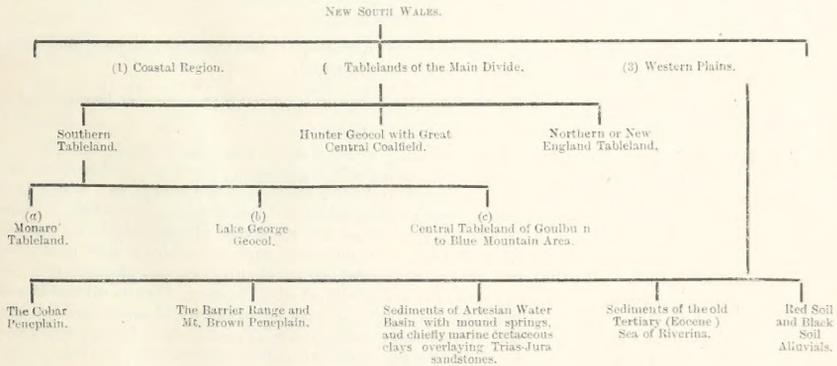
The population of the State by latest figures (1920) is 2,000,000 persons.

The general topography of the country is characterised by a main dividing range of mountains, running north and south, and roughly parallel to the coast line, which forms the dividing watershed between the eastern and western waters. This divide forms the centre of the Highland Zone (see Timber Zone map), and attains altitudes ranging from an average of about 2,000 feet above sea level in the north to an average of about 3,000 feet in the south, the highest point being Mount Kosciusko (7,305 feet) in the extreme south. The eastern slopes include minor ranges, intercepted by river valleys which extend sharply to the seaboard, and the western slopes decline gently to plain country, which is the main characteristic of the Interior and Western Zones.

The geological formation and soils vary greatly in this large extent of territory.

GEOLOGY.

Reference to a physiographical map shows that New South Wales may be divided up into the following units :—



Coastal Region.—The coastal region is narrow at its southern end, and first acquires a considerable width when the southern end of the great central coalfield is reached. Further north, west of Sydney, it sweeps inland for a distance of from 30 to 35 miles to the Eastern Escarpment of the Blue Mountains. The soft coal measure rocks of the Hunter Valley give the coastal plain its greatest extension inland of about 60 miles, and to the north it becomes contracted again in proportion as the harder rocks, older than the coal measures, approach the coast.

One of the principal features of the coastal region is that it contains two coal-bearing basins, the chief of which extends from the neighbourhood of Maitland, on the north, to the Shoalhaven River, on the south. This coal basin consists of the permo-carboniferous coal measures overlaid by the Hawkesbury (triassic) series. The second coalfield referred to is that known as the Clarence and Richmond field. It is composed of triassic rocks, and, so far as at present known, it contains no coal seams of commercial value. It may, however, be underlaid by the productive permo-carboniferous measures. The coastal region is also largely composed of post-tertiary fluvialite deposits, which form exceedingly rich agricultural areas. A considerable area between the Richmond and Tweed Rivers is occupied by basalt, the decomposition of which has produced a rich soil, eminently suitable for agriculture and dairy farming.

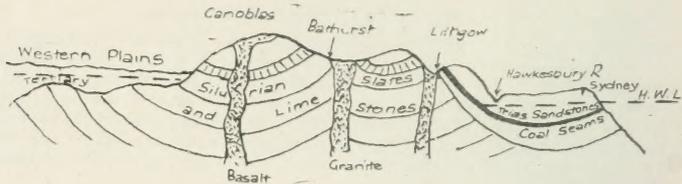
Tablelands of the Main Divide.—The main dividing range or tableland of New South Wales is composed for the most part of palaeozoic sediments, together with granitic and other igneous rocks. That portion of it, however, which is situated to the westward of Sydney is capped with mesozoic strata, namely, the Hawkesbury Series, forming the covering of the principal coal basin.

The highlands forming the hinterland of the Coastal Region can be divided into several well-marked elements, namely: (a) the New England Massif, (b) the Blue Mountain Massif, and (c) the Kosciusko Massif.

(a) *The New England Massif.*—This is composed chiefly of sediments of carboniferous age into which large masses of granite have been intruded. It extends from the Queensland border some 250 miles to the south, and is approximately 100 miles wide, with a broad offshoot—the trachyte bosses of the Nandewars extending towards the west. This massif forms the divide between the McIntyre, Gwydir, and Namoi Rivers on the west, and the Clarence, Macleay, and Manning, on the east. The head waters of the coast rivers arise in the most rugged country in the State. On the western slopes the country is much less rugged.

(b) *The Blue Mountain Massif.*—Standing on some slight eminence in the Blue Mountains, the landscape appears as a monotonous level plain, and one can hardly realise that he is almost on the brink of a vertical walled canon nearly 2,000 feet in depth. These great depths are the work of rivers flowing over the plateau since its elevation from base level.

The entire geological structure is an extremely weak one. Between the two great masses of sandstone there is a thin but extremely persistent band of chocolate shale, which weathers readily and so undercuts the upper sandstone. Below the lower sandstone we have the soft shales and coals of the coal measures, which are even less stable than the chocolate shales.



Section across the Blue Mountain Massif.

The Kosciusko Massif.—The Kosciusko massif extends south from Goulburn to beyond the Victorian border. It almost reaches the coast, and is about 100 miles wide.

The massif terminates in the granite boss of Mount Kosciusko (7,305 feet), the highest mountain in Australia. Except on the south-west, Kosciusko is not at all rugged.

Two important rivers flow down the western slopes of the Kosciusko massif—the Murray and the Murrumbidgee.

The Western Plains.—The Great Western Plains, which extend from the western foothills of the great tableland, are underlain by granitic rocks and sediments of palaeozoic, mesozoic, and early tertiary age. The most northerly portion is mesozoic (triassic), and forms the Artesian Water basin. South of this is a palaeozoic belt, stretching westerly from the great tableland to the South Australian border. During the mesozoic era this belt formed a mountain range, whose direction was at right angles to the main divide; but this range was subsequently planed down by denudation, and its surface is now nearly level with the surrounding country. To the south of this, along the Lower Darling and the Murray, is a large area of early tertiary marine beds (Eocene), while the remainder of the Riverina district up the Murray, Murrumbidgee, and Lachlan Rivers is underlain for the most part by granitic, Silurian, and Devonian rocks. The surface of the Western Plains is covered by post-tertiary deposits, flood loams, &c., except in isolated cases, where the remains of the older formations still rise above their surface.

Classification of Rocks.—A very systematic classification of the sedimentary rocks of New South Wales has been made, covering a wide range in the geological systems.

The oldest sedimentary rocks are probably those forming the Barrier Ranges in the far west, and are considered to be of Cambrian age. They consist of a laminated series of crystalline gneisses, quartzites, macaceous and hornblende schists and garnet sandstones. The great Broken Hill lode occupies the saddle-shaped cavity caused by the folding of the strata. It is now of larger dimensions than the original cavity, owing to the gradual replacement of the rock forming the walls by ores of lead, silver, and zinc. To the north these metamorphic rocks give place to less altered slates and schists traversed by tin-bearing dykes of coarse pegmatite. Silurian rocks cover a large area of New South Wales, consisting of a considerable thickness of slates, sandstones, and limestones, with intrusions of granites, felspar porphyries, &c. Rocks of the devonian system are scattered as a series of blue limestones, quartzites and slates, covering very large areas of the southern part of the State.

A considerable area of the coastal plain and tableland north of Newcastle is occupied by bluish claystones and tuffs, with occasional belts of limestones corresponding in age with the lower carboniferous rocks of Europe.

The productive coal measures of New South Wales contain fossil remains showing affinities to both the permian and carboniferous systems of Europe, hence the composite name permo-carboniferous which has been given to them. The permo-carboniferous coal basin occupies an area of about 25,000 square miles, extending to the north, west and south of Sydney, and is the storehouse of one of the State's most valuable assets. These measures lie unconformably upon altered claystones of lower carboniferous age, and have been intruded by granite which has tilted the coal seam from the horizontal about 40 degrees.

The permo-carboniferous coal basin is overlain in most places by a thickness of over 1,000 feet of shales and thick bedded sandstones. These shales and sandstones, which contain fossil fish and labyrinthodonts, together with plants at various horizons, have been named the Hawkesbury Series, and have been subdivided as follows in descending order:—

- (a) Wianamatta Shales.—Blue, red and gray shales, with occasional beds of sandstone.
- (b) Hawkesbury Sandstones.—Thick bedded, grayish-white freestones, used commonly about Sydney for building purposes.
- (c) Narrabeen Shales.—Beds of chocolate-coloured shales and greenish tufts up to 1,800 feet in thickness.

The Clarence River coal basin is composed of rocks closely resembling the Hawkesbury Series. These coal measures dip under the north-western plains, forming the great artesian basin.

Rocks of the Jurassic, Cretaceous and Tertiary systems have been found in various parts of the State, much of the alluvial gold, tin ore and gems being found in tertiary and post tertiary soils and gravels.

CLIMATE.

The climate ranges from subtropical to temperate in the coastal zone, from temperate to subalpine in the highland zone, and from temperate to arid in the interior, and to extreme aridity in the western zone. Rainfall averages from 80 inches annually in the sub-tropical portion of the State to as low as 9 inches in the extreme west.

(2) Description of Main Forest Types.

The main forest types are the Hardwood forests, of which species of *Eucalyptus* and the allied genera, *Tristania* and *Syncarpia*, are the principal components; the Cypress (*Callitris*) forests; and the Brush or jungle forests.

Hardwood Forests.—The hardwood forests may be divided roughly into two sub-types, namely, (1) the comparatively luxuriant growth in the moist parts of the coastal zone and a few favoured places in the highland zone; and (2) the drier forests of the interior zone, most of the highland zone, and the drier parts of the coastal zone. Speaking generally, provided that the physical conditions of the soil are satisfactory, the development of the hardwood forests is dependent directly upon the quantity of atmospheric and soil moisture available, local variations being due to conditions of soil, aspect, &c.

With the exception of small belts in which pure forests of *Eucalyptus pilularis* and of *Eucalyptus maculata* are found, the coastal hardwood forests are mixed, consisting of an overwood of numerous species of eucalypts and an underwood of miscellaneous shrubs and small trees, of which species of *Casuarina* and *Acacia* are the most abundant. Generally the development of the underwood varies with the moisture supply and the fertility of the soil.

The principal hardwood species contained in the coastal forests are *Eucalyptus pilularis*, *microcorys*, *resinifera*, *paniculata*, *propinqua*, *saligna*, *tereticornis*, *corymbosa*, *Tristania conferta*, *Syncarpia laurifolia* and *Eucalyptus eugenioides*, *hemiphloia*, *acenioides*, *siderophloia* and *maculata*, the last five being able to thrive under harder conditions than the others. In the southern half of the coastal zone species requiring a more temperate climate, such as *E. longifolia*, *botryoides*, *siberiana*, *capitellata*, *muelleriana*, and *goniocalyx* form a considerable percentage of the forest. Although the coastal belt of hardwood was formerly almost continuous from north to south, the quality of the forest varied greatly, markedly inferior forest being characteristic of badly-drained lands, of the shallow soils of the Hawkesbury sandstone formation, and of the dry Hunter River basin.

The development of eucalypts on the highland and interior zones is generally inferior, in the western half of the interior zone particularly so. In the interior zone species such as *E. crebra*, *siderophloia*, and *hemiphloia* are frequently interspersed with *Callitris*, and they, with the *E. rostrata* of the river flats, form in patches forests of value. In those few parts of the southern highlands receiving over 50 inches of rain annually, and not much snow, small but valuable forests of *E. gigantea*, with *E. viminalis*, *rubida*, *globulus* and *radiata*, are found, but where the rainfall is low the growth is inferior, and where snowfall is heavy either grass land or stunted forests of *E. coriacea* are found. Similarly, in specially favourable areas in the northern highlands, good forests of such species as *E. Andrewsii* and *E. obliqua* have been recorded, but generally the highland forests are inferior to the best forests of *E. crebra* in the interior zone, and though of importance for agricultural, pastoral and mining needs, are not of great value under existing conditions.

A specially valuable type of forest is the *E. rostrata* type, on the flats along the Murray River, which are flooded periodically. These forests are the source of supply to the poorly-timbered areas adjoining in Victoria and New South Wales.

Sylviculturally an important feature of the highland and interior hardwood forests is the absence of undergrowth, due to the drying action of eucalypts on the soil. The highland zone is, in fact, much more suited to the growth of the less exacting conifers than to Eucalypts.

The yield per acre from hardwood forests is generally low, even in the best localities, this being due to the tendency of over-mature trees of local species to faults, to the ravages of fire and white ants, and to the exacting demands of the trade. Two thousand cubic feet of marketable timber per acre from virgin forest would be regarded as an exceptionally high yield, while it is rarely that 1,000 cubic feet can be averaged over even as small an area as 1,000 acres.

Cypress Forest.—The Callitris forests are composed chiefly of *C. robusta* and *C. calcarata*, the former being by far the more valuable and abundant, and the latter, occurring as it does on the rougher and more stony slopes, attaining generally but poor development.

C. robusta occupied formerly a considerable area of the plains in the interior zone, but in consequence of the ravages of fire and destruction by settlement is now restricted to isolated patches. It flourishes best on well-drained, deep, loamy sand, and is found either in pure forest or mixed with species of Eucalyptus. Although a comparatively drought-resistant species, it has been seriously affected by drought, more so even than the accompanying Eucalypts, which are able to derive moisture from greater depths. The average rainfall throughout the zone affected by Callitris may vary from 15 to 30 inches, but the rainfall is very uncertain and irregularly distributed. It is incapable of preserving the forest canopy and is particularly sensitive to fire. Regeneration of cut over forests has been prevented by the rabbit pest and by grazing of sheep and the remaining forests are now composed chiefly of trees between the 4-inch and 9-inch diameter classes, giving no prospect of other than an insignificant yield of 10-inch trees for many years.

Brush Forests.—The brush forests—jungle or rain forests—are, or were, restricted practically to the warm climates of the north and south coasts, the main conditions governing their existence being warmth and abundant moisture, while the fertility of the soil is also a factor.

Although the timber zone map shows a zone of brush forests, it is to be understood that this means only that the brush forests are more abundant there than elsewhere, not that they are continuous. Outside of this zone they are confined to narrow moist gullies, or specially fertile areas in the coastal hardwood forests.

Brush forests are composed generally of a miscellaneous collection of species, and from a forestry standpoint were valued formerly solely on account of a few specially valuable species, such as *Cedrela australis*, *Gmelina Leichhardtii*, *Araucaria Cunninghamii*, *Flindersia australis*, *F. Ozleyana* and *Grevillea robusta*. The most abundant of these species was, and still is, the conifer *Araucaria*, but none of them remain in sufficient abundance to have an appreciable and lasting influence on the timber supply of the State. Other species which, owing to the shortage of imported softwoods, are now finding a market are *Ceratopetalum apetalum*, *Sloanea Woollii*, *Cryptocarya* species, *Litsea* species, *Elaeocarpus* species, *Tarrietia argyrodendron*, *Fagus Moorei*, *Doryphora sassafras*, *Dysoxylon* species, *Geissois Benthamii*, and *Schizomeria ovata*.

Sylviculturally the brush forests are distinct from the two preceding types in that they provide a good forest canopy and enrich the soil by the formation of humus, to which they give rise. On this account brush areas have largely been devoted to close settlement directed to the advancement of the dairying industry.

In order to afford some indication of the distribution of the forest resources a Timber Zone Map is furnished, and the following brief descriptions of the timber zones will be informative:—

Zone of Coastal Forests.

Territorial area about 13,797,000 acres. Approximate forest area 4,900,000 acres. Region of good to high rainfall, under development for dairying, cattle-raising, mining, and farming. Timber supply comparatively abundant, mainly hardwood of good quality, and ample for the needs of settlement, but largely in demand and extensively used for building, construction, manufacturing, and developmental works throughout the State. There is also a margin for export.

Zone of Brush Forests.

Territorial area about 6,339,000 acres. Approximate forest area 1,500,000 acres. Region of high rainfall under development for dairying and small farming. Timber supply abundant, mainly softwood of good quality and ample for the needs of settlement, but more largely in demand and utilized for building and manufactures in the more populated parts of the State.

Highland Zone.

Territorial area about 30,039,000 acres. Approximate forest area about 1,700,000 acres. Region of fair rainfall mainly occupied for pastoral purposes, but in parts considerably developed for mining and agriculture. Timber supply generally scattered and sparse, mainly hardwood of fair to good quality, and suitable for the needs of a pastoral, agricultural, and mining population.

Interior Zone.

Territorial area about 81,008,000 acres. Approximate forest area 2,900,000 acres. Region of medium but uncertain rainfall, mainly occupied for pastoral purposes, but including the great wheat belts, which are under development for agriculture. Timber supply generally scattered and sparse, including both hardwood and softwood of fair quality, suitable for the needs of pastoral and agricultural population, and in parts for constructional and developmental works.

Western Zone.

Territorial area about 66,868,000 acres. Forest area not appreciable as acreage. Region of low rainfall, lightly occupied for pastoral and mining purposes. Timber supply very sparse, scattered, and of inferior quality, and only partially suitable for the needs of occupation.

(3) Area Covered by Existing Forests.

The forest area of the State embracing timber supply of appreciable merchantable value, is estimated to include about 11,000,000 acres, made up approximately of about 8,000,000 acres, which is still the property of the State, and about 3,000,000 acres which has been either alienated or is in process of alienation. The area of scrub or other forest growth at present unprofitable or inaccessible, and the area of agricultural land in the State cannot be furnished with any degree of reliability.

TABLE I.

Statement showing the total area of Forest, including Crown and private resources, and the percentage of the land area covered by Forest.

	Agricultural land.	Forest.			Other land.	Total.
		Merchantable.	Unprofitable or inaccessible.	Total.		
Square miles	17,187.5	.....	.....	292,267.5	309,455
Percentage of total area	5.55	.....	.....	94.45	100

(4) Brief Notes of the Most Important Timbers, &c.

These are furnished in the following Schedule, which also includes information as to localities, supply, and principal uses:—

Common Name.	Botanical Designation.	Principal Locality and Supply.	Principal Uses.
HARDWOODS.			
White or Grey Ironbark	<i>E. paniculata</i>	Coastal zone; not plentiful.....	Girders, sleepers, piles, naves, felloes, sawn and hewn bridge timber, &c.; any situation where special strength is required.
Red Ironbark	<i>E. siderophloia</i>	Coastal zone; not plentiful.....	
	<i>E. crebra</i>	Coast and interior zones; fairly plentiful.	
	<i>E. sideroxylin</i>		
White Stringybark	<i>E. eugenioides</i>	Coast and highland zones; not plentiful.	Buildings, sleepers, fencing posts and poles.
Red Stringybark	<i>E. capitellata</i>	Highland zone; fairly plentiful.	
	<i>E. macrorrhyncha</i>	Highland zone; fairly dense over 50,000 acres.	Buildings, vehicle framing, oars, implement handles, tool handles.
Fountain Ash	<i>E. gigantea</i>		
Coast Ash	<i>E. sieberiana</i>	Coast zone; south fairly plentiful.	House and shipbuilding, wood-paving, waggou scantling, sleepers, posts, poles.
Blackbutt	<i>E. pilularis</i>	Coast zone; plentiful.....	
Yellow-wood	<i>E. microcorys</i>	Coast zone; fairly plentiful.....	Flooring, decking, building, framing, girders, sleepers.
White Mahogany	<i>E. acmenioides</i>	Coast zone; fairly plentiful.....	Buildings, posts, piles, sleepers, girders. House building, coach building, wheelwrighting, framing, ship planking, implement handles.
Spotted Gum	<i>E. maculata</i>	Coast zone; fairly plentiful.....	
Grey Box	<i>E. hemiphloia</i>	Coast and highland zone; not plentiful.	Sawn bridge timber, framing, sleepers, girders, posts, naves, cogs, mauls.
Red Mahogany	<i>E. resinifera</i>	Coast zone; not plentiful.....	Weather-boarding, wood-paving, turnery, heavy furniture.
Grey Gum	<i>E. punctata</i>	Coast zone; plentiful.....	Short girders, sleepers, posts, poles, and groundwork generally.
	<i>E. peopiqua</i>		
Murray Red Gum	<i>E. rostrata</i>	Interior zone; fairly plentiful.....	Building and bridge timber, girders, sleepers, paving blocks, posts, piles.
Forest Red Gum	<i>E. tereticornis</i>	Coast and highland zones; not plentiful.	Building timber, naves, felloes, posts, poles.
Sydney Blue Gum or Brush Gum	<i>E. saligna</i>	Coast zone; plentiful.....	General building, shipwrights and wheelwrights' work, wood-paving, wheel felloes. Building purposes, posts, poles, sleepers.
Woolly Butt	<i>E. longifolia</i>	Coast zone; not plentiful.....	
Blood-wood	<i>E. corymbosa</i>	Coast zone; plentiful.....	Posts, poles, and ground work generally.
Red Box	<i>E. polyanthemus</i>	Coast and highland zones; not plentiful.	Rough building, posts, poles, slabs, and ground work generally.
Turpentine	<i>Syncarpia laurifolia</i>	Coast zone; plentiful.....	Piles, posts, sleepers, fencing.
Brush Box	<i>Tristania conferta</i>	Coast zone; plentiful.....	Bridge decking, paving, mallets, chisel handles.
BRUSHWOODS.			
Red Cedar	<i>Cedrela Australis</i>	Coast and brush zone; very scarce.	Furniture, house joinery, cabinet ware.
Rosewood	<i>Dysoxylon Frasierianum</i>	Coast and brush zone; not plentiful.	Furniture, cabinet-ware, panelling, turnery, wood carving, engraving.
Red Bean	<i>Dysoxylon Muelleri</i>	Brush zone; not plentiful.....	Building, furniture, cabinet and fancy work. Flooring, ship decking, house fitting, picture framing, wood carving.
White Beech	<i>Gmelina Leichhardtii</i>	Coast and brush zones; not plentiful.	
Brown Beech or Bolly Gum	<i>Litsea reticulata</i>	Coast and brush zones; scattered.	Lining boxes, casks, wood carving.
Silky Oak	<i>Grevillea robusta</i>	Coast and brush zones; not plentiful.	Casks, staves, kegs, furniture, panelling, picture framing.
	<i>Orites excelsa</i>	Coast and brush zones; not plentiful.	
Red Silky Oak	<i>Stenocarpus salignus</i>	Coast and brush zones; not plentiful.	Furniture, veneers, staves, gun stocks, walking sticks, picture frames.
Black Bean	<i>Castanospermum australe</i>	Coast and brush zones; not plentiful.	Cabinet work, staves, furniture.
Coachwood	<i>Ceratopetalum apetalum</i>	Coast and brush zones; plentiful	Coachbuilding, boatbuilding, carpentry, joinery, cabinets, box-wood.
Dudjerie	<i>Flindersia Schottiana</i>	Brush zone; scarce.....	Furniture, flooring, general building, handles.
Native Teak	<i>Flindersia australis</i>	Brush zone; not plentiful.....	House building, flooring, slabbing, gearing wheels.

Common Name.	Botanical Designation.	Principal Locality and Supply.	Principal Uses.
CONIFEROUS WOODS.			
Hoop (Colonial) Pine ...	<i>Aracaria Cunninghamii</i>	Coast and brush zones: fairly plentiful as a brush species.	Floorings, linings, ceilings, shelving, boxes, packing cases.
Cypress Pine	<i>Callitris</i> species	Interior zone: fairly plentiful as small trees, mature trees scarce.	Building, ceilings, linings, flooring, blocks, ground posts, poles.

(5) Ownership of Forests.

In the sense of timber preservation and growth, the State is the principal owner of forests. Owing to past administration, much forest land of value has been alienated, or is in process of alienation, under land tenures, and large areas that were of prospective value for forestry were devoted to pastoral and agricultural pursuits, under which their timber wealth was destroyed. There is no municipal ownership of forests as in European countries, and apart from a limited area of forested land in the possession of coal and other mining companies, there is no corporate ownership. As shown under heading (3), the forest area embracing timber supply of appreciable merchantable value is estimated at 11,000,000 acres, of which about 8,000,000 acres is still in the possession of the Crown. The existing appropriation of State lands for forestry comprises 5,044,000 acres, set apart as State forests, and 1,847,000 acres reserved temporarily as timber reserves, a total of 6,891,000 acres; but the ultimate intention under the approved forest policy is to appropriate a total of not less than 5,500,000 acres as permanent State forests, and there is a probability that under a scheme for preservation of the remaining forest resources of the Commonwealth, which is now under national consideration, a further 2,500,000 acres of forest value will be held up from alienation in the combined interests of climate, and timber and water supply.

TABLE II.
Classification of the Forest Area by Ownership.

	Area belonging to—					
	The State.			Corporate Bodies.	Private Individuals.	Total.
	Dedicated to Timber Production.	Other Forest.	Total.			
Square miles	7,881	4,619	12,500	.....	4,687	17,187
Percentage	45.8	26.8	72.6	.....	27.2	.....

(6) The Relationship of the State to the Forests.

Until recent years, the relationship of the State to the forests may be described as a parental ship, characterised by gross neglect. Their part as an asset in the country's resources was not regarded with any political weight, until the thinking public, alarmed at the vast destruction and waste of forests that was going on all over the land, clamoured for forest preservation, and a better understanding of their potential importance. Then the Government of the day appointed a Royal Commission of Inquiry, as a result of which the first forest law was passed in 1909, and later in 1916 this law was repealed and superseded by a more comprehensive measure, which is the one now in force.

A.

The following is a brief summary of existing legislation, viz. :—The Forestry Act No. 55 of 1916 provides for the consolidation and amendment of the law relating to forestry; for the dedication, reservation, control, and use of State forests, timber reserves, and Crown lands for forestry and other purposes; for the appointment of a commission to administer the Act, with power to sell and convert timber and products, and to purchase and sell horses, cattle, and sheep to be depastured on State forests and timber reserves; for the management of the forests; and for purposes consequent thereon or incidental thereto.

B.

Forest management is at present in the transition stage from operations under license more or less controlled to the departmental felling of timber, and its disposal at the stump or in depôts. Under the former, regenerative treatment was delayed indefinitely until the licensees considered that they had obtained all the marketable timber possible, when the Department took such measures as were necessary to re-stock unproductive areas, at the same time converting any saleable trees which were left standing. Under the latter, the forest is worked through under a rotation, each annual cutting block being utilised to the full and prepared for regeneration by the departmental employees.

Systematic forest management can only be said to be in its infancy as yet, but the general lines on which development is proceeding are as follows :—Topo and assessment surveys are made and reports compiled, showing proposed subdivision into working compartment, the nature of the timber stand on each compartment, and the silvicultural treatment required, the permanent improvements, such as road construction, water supply, fencing, residence, &c., necessary, and the proposed fire protection scheme. These reports form the basis for the framing of elementary working plans approved by the Commission, and unalterable except on the authority of the Commission.

Fire protection is being developed steadily as surveys and organisation proceed, the basis being the construction of a framework of fire lines and breaks along the compartment boundaries. Where complete fire protection is impossible under existing conditions—as in rough eucalyptus forest—light firing in the safe season is practised as a precautionary measure against fiercer conflagrations.

Although the bulk of the work already undertaken has been directed to the control and management of the natural forests, afforestation of waste or unproductive areas is now receiving attention. The afforestation proposals of the Commission contemplate the introduction of exotic conifers to areas which are not capable of producing valuable forests of local species, these areas being chiefly in the highland zone. Up to the present 12 areas, containing about 60,000 acres, have been selected, and nurseries established thereon for the production of planting stock. The area planted during the current year will approach 1,000 acres, and a progressive increase is expected thereafter as new sites are selected.

C.

No statutory assistance is given to private forest development by the provision of nursery stock; grants, remission of taxation, &c. There is in reality no scope for it, because forestry is not privately practised. The State, however, provides nursery stock and advice gratis to municipalities, shire councils, and similar public bodies, for the planting of streets, roads, parks, and other public lands, but such plantings are more of ornamental than economic value. They certainly do not come within the scope of forest planting.

(7) The Forest Authority.

The Forest Authority is a Commission of three members, constituted under the Forest Law, with departmental quarters in the capital—Sydney.

The State has been organised to include twelve forest districts, which include the principal forest possessions of the Crown. Each district is in charge of a Resident District Forest Officer, who is held responsible for the working and administration of the district in his charge, and who is assisted by a staff, comprising one, and in some cases, two assistant foresters, a number of forest guards supervising sub-districts within the main divisions, forest overseers resident upon, and supervising approved forest operations, and directing the work of forest employees.

The whole of the districts also come under the purview of district inspectors, who periodically travel over and closely inquire into their working and management.

In addition to the regular staff of forest officers attached to districts, a staff of forest surveyors and assessors is employed on the survey and assessment of State forests, prior to their organisation and the laying down of working plans. A technical staff of nurserymen and planters is also employed in districts where the planting of coniferous softwood is in progress. The existing staff for carrying out the control and management of the forests, and the various branches of forest activity, is as follows:

**CONSTITUTION AND STRENGTH OF THE NEW SOUTH WALES FOREST SERVICE
ON THE 30TH JUNE, 1919.**

ADMINISTRATIVE.			
<i>Head Office.</i>		<i>Field.</i>	
Position.	No.	Position.	No.
Secretary	1	Inspector and District Forester	1
Chief Inspector	1	District Foresters	11
Chief Clerk	1	Assistant Foresters	13
Accountant and Examiner	1	Timber Inspectors	4
Timber Expert	1	Forest Guards	70
Officer in Charge of Leasing and Drafting	1	Surveyors and Forest Assessors	7
Forest Engineer	1	Clerks	15
Draftsmen	2	Cadet	1
Timber Inspectors	2	Forest Overseers	18
Clerks	16	Acting Foresters	66
Typists	3		
Messengers	2		
TECHNICAL.			
Position.	No.		
Superintendent of Planting	1		
Planting Overseers	2		
Nursery Hands	11		
Carpenters	2		

The powers and duties of the Commission, as defined by law, are as set out in the following sections of the Act, and for convenience its business transactions are sectionised under the heads of "Administration and Finance," "Forest Management," and "Commercial Development."

PART I. ACT NO. 1916.
THE COMMISSION AND ITS POWERS AND DUTIES.
Constitution of the Commission.

5. (1) There shall be a Forestry Commission constituted as follows:

The Governor shall, as soon as he thinks advisable after the passing of this Act, appoint a Chief Commissioner and two other Commissioners, who shall constitute the Forestry Commission.

If the Chief Commissioner disapproves of the decision of the other commissioners with respect to any matter before the commission for its decision and determination, such matter shall be deferred for not less than twenty-four hours after the decision, or if the Chief Commissioner was not present when the decision was given, for not less than twenty-four hours after it has been brought to his knowledge, when it shall again be brought before the commission; and if the Chief Commissioner again disapproves of the decision of the other commissioners, the matter shall be determined according to the deliberate judgment of the Chief Commissioner, irrespective of the decision of the other commissioners.

(2) Each commissioner shall, subject to this Act, hold his office for a term of seven years from the date of his appointment, but may be reappointed.

(3) No uncertificated bankrupt or insolvent shall be capable of being appointed a commissioner and any commissioner who is declared a bankrupt, or who applies to take the benefit of any Act for the relief of insolvent debtors, or who compounds by deed or instrument in writing with his creditors, shall be incapable of continuing a commissioner, and his office shall thereupon be vacant.

(4) A commissioner may be removed from his office by the Governor only for misbehaviour or incapacity, or upon resolution, passed by both Houses of Parliament.

(5) Any vacancy that may occur in the office of a commissioner during the term of such office shall be filled by the appointment by the Governor of a commissioner who shall hold office for the unexpired portion of such term.

6. The commissioners shall be paid salaries at the following rates per annum:

The Chief Commissioner, one thousand two hundred and fifty pounds.
Any other commissioner, one thousand pounds.

Such salaries are hereby charged upon the Consolidated Revenue Fund, and such fund, to the extent required for the payment of such salaries, is hereby permanently appropriated.

7. The commission shall be a body corporate under the name of "The Forestry Commission of New South Wales," and by that name shall have perpetual succession and a common seal.

8. All courts, judges, and persons acting judicially shall take judicial notice of the common seal of the commission affixed to any deed, instrument, or writing, and shall presume that such seal was properly affixed thereto.

Powers of the Commission.

9. The commission shall have the administration of this Act, and shall exercise the powers and discharge the duties conferred and imposed on it by this Act, and shall, subject to the provisions of the Public Service Act, 1902, or any Act amending it, have the control of officers and other persons appointed or employed under this Act, and shall, except where in this Act otherwise expressly provided, have the control and management of State forests and timber reserves:

Provided that in such administration and in the exercise and discharge of such powers and duties the commission shall be subject to and shall act in accordance with the regulations.

10. (1) The Governor may, subject to the provisions of the Public Service Act, 1902, or any Act amending it, appoint such officers and other persons as may be necessary for the purposes of this Act: Provided that no such officer or person shall be appointed without reference to the commission, and that all casual and general employees on forest work shall be engaged by the commission.

(2) The commission may provide for the training of forest officers, the conduct of research work, and the collection of statistics in connection with forestry.

11. (1) The commission may dispose of timber and products on any State forest or timber reserve, and:

(a) take and sell such timber and products;

(b) convert any such timber into logs, sawn timber, or any other merchantable article, and sell the same;

(c) convert any such products into merchantable articles, and sell the same;

(d) construct roads, railways, and tram lines, and other works for the transport of timber, and purchase, rent, or charter and use coaches and vessels with the necessary motive power;

(e) construct, purchase, or rent sawmills and other mills, with the necessary machinery and plant for converting timber, and manufacturing articles from timber, and use such mills for those purposes;

(2) The commission may purchase horses, cattle, and sheep and depasture them on State forests, and may sell such horses, cattle, and sheep.

Receipt of Money.

12. All moneys payable to the commission under this or any other Act, shall be collected and received by it on account of, and shall be paid into the Consolidated Revenue Fund.

Expenses of Money.

(3. (1) All moneys appropriated by Parliament for the purposes of this Act, and for all purposes in connection therewith, shall be expended under the control and management of the commission.

(2) One-half of the gross amount received by the commission from royalties, licenses, and permits under this Act, and from the sale of timber, otherwise than under paragraph (c) subsection one of section eleven, shall be carried to a special account in the Treasury, and shall be set apart for afforestation, reforestation, reserves, and improvement of State forests and timber reserves, for roads, for the resumption

of land under this Act, and for purposes incidental thereto. The amount set apart in any year may during that and the next succeeding year, but at no other time, be withdrawn from the Consolidated Revenue Fund and be expended under the control of the Commission for the above purposes without any authority other than this Act. A return of any money so expended in any year shall, as soon as possible after the commencement of the next succeeding year, be laid before both Houses of Parliament.

(3) Provided that the expenditure by the Commission of any amount exceeding five thousand pounds on any work shall be subject to the approval of the Minister.

11. (1) The provisions of the Audit Act, 1902, and of any other Act relating to the collection and payment of public moneys and the audit of the public account shall, save as in this Act otherwise expressly provided, apply to the Commission and to the Commissioners and to all officers and persons under the control of the Commission.

(2) The Commission shall cause books to be provided and kept, and a true and regular account to be entered therein of all sums of money received by it, and of the cost of all property vested in it, and of all payments made by it under the provisions of this Act, and of the salaries and maintenance of officers and persons under the control of the Commission.

All such books shall be open to the inspection of the Auditor-General and of any person authorised by the Minister or the Auditor-General to inspect the same; and all such persons may take copies or extracts therefrom.

Any clerk or other person having the custody of any such books who does not on demand permit any person authorised as aforesaid to examine the said books and take copies or extracts therefrom shall be liable to a penalty not exceeding five pounds.

The income and expenditure of the Commission for the first two years of its existence are shown hereunder:

<i>Income.</i>						
Year.	Timber Royalty.	Leases.	Sales.	Bents and Permits.	Other Fees.	Total.
1917-18	£58,031	£6,324	£2,010	£1,455	£3,149	£70,969.
1918-19	£70,888	£5,611	£3,426	£15,178	£2,490	£97,593

<i>Expenditure.</i>				
Year.	On Administration.	On Forest Works.	On Misc. Heads.	Total.
1917-18	£48,396	£27,527	£1,765	£77,688
1918-19	£52,830	£65,318	£3,014	£121,162

Recruiting and Training of Superior and Subordinate Staffs.

No training course in the practice of forestry having been established in the State, officers of the service, both superior and subordinate, have been chosen from general applicants, due regard being paid to natural fitness. Latterly preliminary training in forest survey and plantation camps has been given, while the general education of officers is assisted by the publication of a forester's manual, bulletins on general forestry subjects and chapters on silviculture, and by field instruction at every opportunity.

A forestry school, which will be the training ground for the superior staff of the future, and at which short courses will be given to the subordinate staff, was opened in March, 1920.

The new forestry school is located in a State forest near Gosford, about 50 miles north of Sydney. The course provides for lectures and practical work in the forest over a period of two years, followed by field work for a further period of twelve months, at the end of which time successful candidates will be eligible for appointment to the service.

The academic course comprises:

<i>First Year.</i>	<i>Second Year.</i>
Silviculture.	Forest Management.
Forest Mensuration and Office Procedure.	Forest Policy and Protection.
Forest Botany.	Forest Botany.
Physiography.	Geology.
Surveying.	Elementary Forest Engineering.
	Entomology.

The Commission issues an annual report on its proceedings, and various leaflets and bulletins on different branches of forest work, and supervises and edits the publication of an Australian Journal of Forestry Literature.

(8) Forestry Activities of Municipal and Corporate Bodies, &c.

There are practically no forestry activities in the State undertaken by the bodies above mentioned or by private companies or individuals.

(9) Professional and other Societies interested in Forestry, &c.

With the exception of a branch of the Australian Forestry League, which take mainly an academic interest in the Forestry question, there are no other societies of the character indicated. The headquarters of the League is in Melbourne, Victoria, and they issue a quarterly publication, designated "The Gum Tree."

(10) Educational Research and Experimental Work.

Since its establishment the Forestry Commission has entered upon a regular campaign of publicity, carried on by means of the issue of bulletins, leaflets, press papers, and the publication of a journal, with the object of enlightening and educating the people on, and extending their interest in, the forests and their requirements. A great deal of attention has been given in this campaign to questions such as the careless use of fire, organisation for fire prevention, and other aspects of forest preservation.

The first step in the forestry of the State system is, naturally, upon the commercial possibilities of forest products to be considered upon. It comprises the following field—The pulping qualities of woods; the chemical properties of woods; the fibre value of plants; the physical properties of timbers; the tannin value of trees and shrubs; the essential oil values of foliage; the products of the dry distillation of woods; the value of woodlands; the value of woodlands; and the special and undetermined uses to which timber, wood and material may be put.

In the forest itself, experimental and systematic work is being carried out to determine the rates of growth and the requirements of various kinds of trees, as well as experiment in afforestation, by planting and sowing, improvement in felling and compaction, and in the dry seasoning of woods.

(11) Annual Increment and Utilisation of Home-grown Timber.

(A.)

The annual increment and amount of the forests trees of forest have not yet been determined, and it will require more extensive research and application before an available figure can be adopted.

In these circumstances, it is obviously impossible to furnish any figures of gross or net increment that might be of value.

TABLE III (not tabular)

(B.)

The figures of utilisation furnished are exclusive of raw timber (softwood) imported, and are based partly on forestry and statistical returns under the Act, and partly on estimates. They may be accepted as approximately correct. The proportion produced from forests not under control of the State is usually taken at one-sixth, which is probably a fair estimate also. The gross consumption of native raw timber for year 1918-19, including 703,000 cubic feet exported, was estimated at 24,268,700 cubic feet.

TABLE IV.
ANNUAL Utilisation, including Exports.

1	Type of product.	Quantity.	Approximate value
			at the place of preparation.
		3	4
		cub. ft.	£
Under State Control— 12,500 square miles	Native Raw Timber	20,223,920	2,000,000
Other— 4,687 square miles		4,044,780	400,000
Total		24,268,700	2,400,000

(12) Forest Industries.

There are only two such industries in the State, viz. Lumbering and Sawmilling, and they are closely related. The Lumbering industry includes the felling and transport of log timber for sawmilling; the hewing of timber into squared lumber such as beams, girders, sleepers, posts, slabs, &c.; the preparation and transport of round timber in the form of piles, poles, posts, mining props, fuel, &c.

The volume figures quoted under Lumbering are the same as those given under Table IV—Utilisation—are based partly on statistical returns and partly on estimates, and they include the raw timber consumed in Sawmilling. The lowest available figures of Sawmilling output—499 establishments—are also furnished separately.

TABLE V. FOREST INDUSTRIES.

Industry.	Volume of timber consumed	Value of product at place of preparation.	No. of persons employed.
	cub. ft.	£	
Lumbering	24,268,700	2,400,000	7,119
Sawmilling output	10,562,000	1,072,878	4,258

(13) Statistics as to Exports and Imports of Timber.

These are furnished for a period of nine years, include raw timber, exclusive of manufactures only, comprise hardwoods principally, and cannot be supplied separately under species. A further Table dividing the figures according to their sources cannot be furnished, but one showing the principal destination countries, and the average quantities and values for the same period, is supplied.

TABLE VI.

Exports and Imports of Timber and Exports for Fuel of nine years, 1910-11 to 1918-19 inclusive.

Year of Period	Exports		Imports		Balance, plus or minus (+ or -).	
	Quantity	Value, £	Quantity	Value, £	Quantity, Col. 2 - Col. 4	Value, Col. 3 - Col. 5
	cub. ft.	£	cub. ft.	£	cub. ft.	£
1910-11	1,221,500	291,400	2,241,500	1,016,400	-10,607,800	-845,300

TABLE VIA.

PERCENT COMPOSITIONS OF EXPORTS—Average quantities and values for years 1910-11 to 1918-19 (table 10).

Exports		Imports		Average quantities		Percent composition	
Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value
884,300	11,700	1,412,760	11,800	1,337,460	2,400	84.170	6.470

(14) Summary and Outlook.

A.

The total home consumption of home-grown and imported timber cannot be compared with the total in export, which cannot be estimated, but the other figures required, exclusive of increment figures, are as under:—

TABLE VII.

Type of Product	Exports (Table IV, Col. 1)	Imports (Table VI, Col. 2)	Home Con- sumption of Home-grown Timber (Col. 2 minus Col. 3)	Imports (Table V, Col. 3)	Total Home Consumption Home and Imported Timber (Col. 4 plus Col. 5)	Per head (Col. 6 div. 8)	Balance, plus or minus (+ or -) (Col. 7 minus Col. 6)
1	2	3	4	5	6	7	8
Timber	24,268,700	1,633,700	22,635,000	12,241,500	34,876,500		
Total per head of popu- lation.	12.134	0.816	11.317	6.120	17.438		

B.

At the present rate of cutting, it is considered that the Hoop Pine resources of the State will be practically exhausted in twelve years. The present rate of cutting of cypress timbers can be maintained for the whole State by the opening up by railway communication of forests yet untouched. These resources are in the northern part of the Cypress belt, but the southern and central areas are within reach of exhaustion now as far as over-girth timber is concerned. After fifteen years, however, the growth of undersized timber will permit of an annual cut greater than at present.

The present rate of cutting in hardwood forests can be maintained indefinitely under forest management.

C.

The steps necessary to protect and develop the forest resources of the country are mainly—

1. The upholding of independent control by the Forest Commission of the forest estate, without political interference.
2. Firm and energetic action on the part of the Forestry Commission in exercising its powers, the great weakness in the past having been that the management of the forests was made subservient to the demands of exploitation.
3. A vigorous policy of afforestation with exotic conifers.

Fire protection and fire control: the control of grazing, and the extermination of rabbits are essential to the protection of young crops. Thorough utilisation of all timber which can possibly be marketed is at the foundation of the provision of a continuous supply of the hardwood requirements of the State, and this is now being enforced more and more. Systematic operations under fixed rotations are being carried out by the employees of the Commission, and this method is gradually displacing the old lease system.

As far as the Hoop Pine resources are concerned, forest alienation and destruction have proceeded too far to admit of even a small annual yield being maintained without closing down two-thirds of the established mills. It is not considered that the quantities of timber involved are of sufficient magnitude in comparison with the needs of the State to warrant this drastic action.

APPENDICES.

- A.—Royal Commission on Forestry, 1907-8.
 B. Forestry Act 55 of 1916, Act 83 of 1916, Act 16 of 1917.
 C.—Annual Reports of Forestry Commission.
 Forest Flora of New South Wales.
 Strength, Elasticity, and other properties of New South Wales Hardwood Timbers.
 Principal Timbers of New South Wales.
 Chapters on Sylviculture—Forestry Handbook, Parts I and II.
 Australian Forestry Journal.
 D.—Bulletins, &c.

A number of photographic illustrations of Forest trees and Forest scenes in the State are supplied for the information of the Conference.

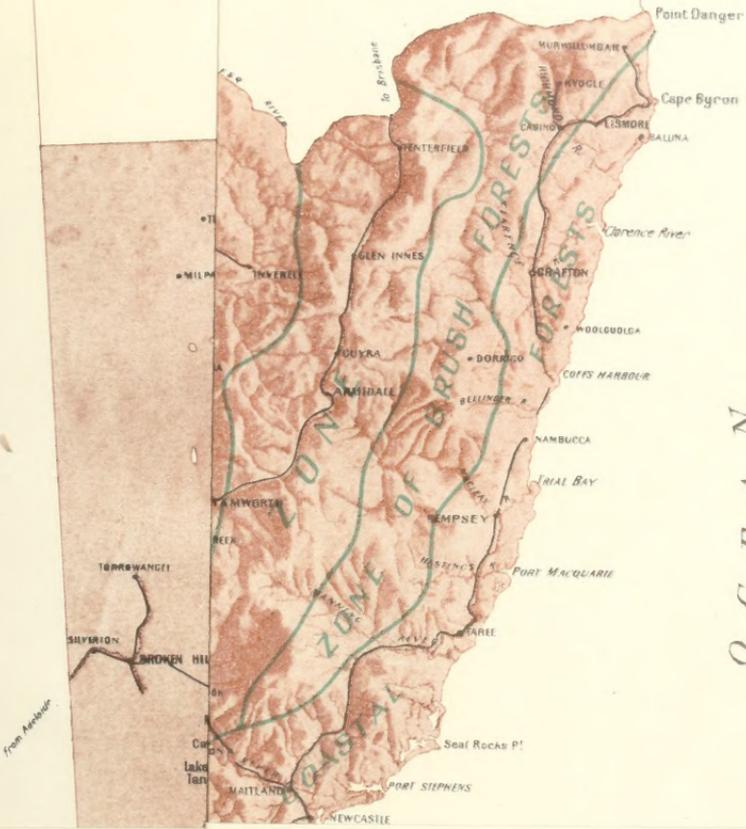
R. DALRYMPLE HAY,
 Chief Commissioner.

Sydney, New South Wales.
 18th May, 1920.

[14 plates : 1 map.]

ALIA

A U S T R A L I A



O C E A N

NEW SOUTH WALES ~ AUSTRALIA

SCALE

QUEENSLAND

SOUTH AUSTRALIA

PACIFIC OCEAN

PACIFIC OCEAN

SOUTH AUSTRALIA



NOTES -
 Forest Zone boundaries (approximate) shown thus 
 Existing Railways shown thus 

This book is for use in
Library Building ONLY
and as a
"Reserved" Loan

