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FORESTRY IN QUEENSLAND

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FORESTRY IN QUEENSLAND.

STATEMENT

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FORESTRY IN QUEENSLAND.

Statement prepared by the Queensland Forest Service.

PART I.

GENERAL DESCRIPTION OF THE COUNTRY.

The State of Queensland comprises an area of 670,500 square miles. Of this the coastal watershed embraces approximately 350,000 square miles and the interior plain country, drained by tributaries of the Murray River and Lake Eyre, about 320,000 square miles.

For the most part the Dividing Range is a chain of low hills, except in the south, in the Darling Downs where the elevations range from 3,000 to 5,000 feet. Along practically the whole length of the east coast and leaving only a small belt of flat littoral however there is a well-defined range, broken to allow of the exit of the larger coastal rivers; this range is generally of higher elevation than the Dividing Range, and attains an elevation of 5,000 feet in the Bellenden Ker Range near Cairns on the north-eastern coast.

There being no mountains in Queensland extending beyond the permanent snow line, the rivers are dependent on the rainfall. Thus the coastal rivers fed by the Pacific Ocean precipitation of 30 to 140 inches per annum are good permanently flowing streams, while the watercourses of the interior with rainfall of 5 inches to 25 inches per annum are completely dry in drought seasons.

From a geological point of view Queensland may be divided into two great parts, occupying nearly equal areas, but possessing very different physical features. One of these extends along the eastern coast, from the New South Wales border northwards to the 12th parallel of latitude, has an average width of about 200 miles from east to west, and is well watered and timbered. To this division also belongs an area in the north-west portion of the State, viz., in the Burke district, extending from the extreme north-west southwards to Cloncurry and Boulia. The loftiest mountain ranges occur in this division, the remnants of what was once a high tableland, the highest peak, Bellender Ker, attaining an elevation of 5,120 feet.

This region consists of stratified rocks of different ages, from the oldest Palæozoic—the exact age of older rocks has not yet been determined—up to those of recent origin. There are also large areas of granites, porphyries partly of igneous and partly of metamorphic origin, as well as other intrusive and interbedded igneous rocks. It is in this division that most of the mineral wealth of the State exists.

The other large division, known as the Western Interior, consists almost entirely of the Lower Cretaceous Rocks overlaid unconformably in places by the Desert Sandstone, which is of Upper Cretaceous Age.

The division, locally known as the Rolling Downs Formation, presents a vast area, in parts of almost treeless plains, with here and there clumps of "Gidya" scrub.

The rainfall over this division, more especially in the south-west, is small. The river beds are generally dry.

On the coastal belts of Queensland on which the bulk of the softwood and cabinet-wood timbers, the soils have in the main been derived in places and indicate generally the nature of the surrounding rocks. The extensive deep and red soils of the high plateaux such as the Atherton Tableland arise chiefly from the decay of basalts, andesites and allied rock types; the black soils occupy the areas subject to flooding and the red and chocolate soils the drained hillsides. The sandy soils originate from the decomposition of the sandstones and allied types; e.g., the Gympie formation covering a large part of the south-eastern corner of the State. The clay soils are due to the decomposition of Palæozoic slates, and the light loams originate from the granites and from mingling of soils by stream action from dark and sandy rocks associated in the same district. The interior country is for the most part formed of sedimentary soils over sandstone. These are black on those areas subject to

periodical flooding and red and grey on the higher and drier areas. This belt extends practically from Cape York covering the western side of the peninsula to the New South Wales border and represents by far the greater part of Queensland, with exclusion of the belt near Cloncurry noted.

As before mentioned the rainfall varies considerably. The coast belt fares best, the fall varying from 30 to 140 inches annually, while in the west the annual averages are from 5 inches to 30 inches per annum, the latter being generally experienced under the shadow of the coastal ranges.

Generally speaking, the tropical north experiences much heavier rainfall than the south; this fact influences the growth of timber to a considerable extent. Here the forests suffer from periodical cyclonic visitations.

The climate is generally temperate, mean temperatures on the coast varying from 52° to 78° in the winter and from 73° to 86° in the summer.

PART II.

MAIN TYPES OF FOREST GROWTH.

Summer rains and winter droughts, accompanied by excessive evaporation, both differentiate the forestry problems of Queensland from those of the other States, and at the same time give new character to the wooded vegetation.

In addition to extensive areas of more or less open hardwood, Queensland possesses the most important softwood resources of the Commonwealth.

Between the two types of forest there exists a sharp line of demarcation.

The Softwood Forests.—This type, known in the vernacular as “scrub,” occupies the soils of high moisture content of the thirty to one hundred inch rainfall belt fringing the long stretch of coast. It hugs the alluvial bottoms and the rich volcanic highlands and is of patchy distribution. Actually a jungle type, the density is high and the mixture ordinarily consists of a hundred various species, the majority of which are small shade bearers of the lower storey, really medium hardwoods. The natural standards of the type furnish the principal timbers of Queensland.

There are several sub-types, the most considerable being the *Araucaria* mixture.

The Araucaria Sub-Type.—This sub-type is comparatively abundant in the south-west corner of the State but rarely extends northwards of Gladstone. The dominant species are “Hoop Pine” (*Araucaria Cunninghamii*) and Bunya “Pine” (*Araucaria Bidwillii*). The natural stand varies between 10 to 20 trees per acre in mixture with miscellaneous sorts. The biggest trees furnish up to 6,000 feet of sawn timber. The timber is sold as Queensland Pine without discrimination of species, and furnishes the chief building wood of the State. It is the accepted timber for butter boxes and is achieving favour as a plywood. Specimens of Hoop Pine with from 10% to 20% moisture gave weight 30–37.5; modulus of rupture 14,700–9,750; crushing 8,480–6,750.

Probably there are over 1,000,000 acres of this type in the State in patches and the stand of mature timber of the species will measure between one and two thousand million super feet, log measurement.

Associated trees are:—

Yellow wood (*Flindersia Oxleyana*),

Crow's Ash or Queensland Teak (*Flindersia Australis*),

White Ash (*Flindersia Schottiana*),

all valuable hardwoods of 40–60 lbs. weight per cubic foot.

Others are White Beech (*Gmelina Leichardtii*), perhaps the finest carving softwood in Australia, now very rare; Bally Gum (*Litsea reticulata*), second only to White Beech for each of working and carving; Pink Poplar (*Euroschinus falcatus*) a light softwood, fairly plentiful, but not much used owing to seasoning difficulties, and Crow's Foot Elm, also plentiful, a “scrub” hardwood with an “Oak-grain,” suitable for staves and axe handles.

The Jungle sub-type.—As the moisture content increases the Araucarias are displaced by the more robust moisture-loving species, among which the natural orders Meliaceæ and Laurineæ are strongly represented. The trees achieve large dimensions, and provide the more important of the cabinet woods. In the Killarney "scrubs" of the south-west corner the volcanic highlands support a limited extent of this sub-type, which here is composed of a mixture of such species as Southern Maple (*Cryptocarya glaucescens*), Silky Oak (*Grevillea robusta*, *Orites excelsa* and *Stenocarpus saligna*), Sassafras (*Doryphora sassafras* and *Daphnandra micrantha*), Rose Mahogany (*Synoum glandulosum* and *Dysoxylon Fraserianum* and *D. Muelleri*), Whitewood (*Schizomeria orata*), &c.

In the North Queensland scrubs, the same factors of heavy rainfall and rich volcanic soil produce a similar profusion of valuable softwoods, and the chief of which, Red Cedar, is now almost cut out. Its successor in popular favour is Maple (*Flindersia Chataiiana*), of which five or ten years' supply remains. This is a fine, well-grown tree, and the pink slightly aromatic softwood is shipped to the southern cabinet makers. It is one of the few Australian timbers suitable for rifle stocks and aeroplane propellers.

Other important Northern woods are :—

Silkwood (*Flindersia Mazlini*).
 Kauri (*Agathis Palmerstoni*).
 Satinwood (*Dysoxylon Pettigrewianum*).
 Silky Oak (*Cardwellia sublimas*).
 Black Walnut (*Cryptocarya Palmerstoni*).
 Yellow Walnut (*Cryptocarya Bancrofti*).
 Bally Gum (*Blepharocarya involuerigera*).
 Candelnut (*Aleurites moluccana*).
 Black Bean (*Castanospermum Australe*).
 Pencil Cedar (*Lucuma galactoxylon*).
 Cairns Hickory (*Flindersia Ifflaiana*).

The Hardwood Forests. The hardwood forests are widespread, alternating with the Araucaria forests of the moist south-eastern corner, and with the Cypress Pine scrubs of the dry west. As the available moisture decreases, the forests become more open, and more valuable species drop out and the yield per acre becomes low. The forests are preponderatingly Eucalyptian, with some admixture of other Myrtaceous and Leguminous species.

On the moist sands of Fraser Island and the alluvial bottoms of the south-east corner, the association is one of

Tallow-wood (*Enc. microcorys*).
 Blackbutt (*Enc. pilularis*).
 Scrub Box (*Tristania conferta*).
 Turpentine (*Syncarpia Hillii*).
 Flooded Gum (*Enc. saligna*).
 Red Stringybark (*Enc. tereticornis*).

All these are useful building woods, 50 to 60 lbs. in weight per cubic foot.

On the drier ridges of the coast and near west, Ironbark (*Enc. paniculata*, *E. crebra*, *E. siderophloia*, &c.), and Spotted Gum (*Enc. maculata*) preponderate. These are the valuable very heavy hardwoods (60-80 lbs.) used in railway construction and of these large quantities exist. Other plentiful species are Grey Gum (*E. punctata* and *E. propinqua*) and Bloodwood (*E. corymbosa*). In the north, *Eugenia* and *Xanthostemon*s appear. In the drier west the *Acacias* replace the Eucalypts.

The Cypress Pine Forests.—Cypress Pine (*Callitris glauca*) furnishes the domestic timber of Western New South Wales and Queensland. It occurs either pure or under open Ironbark, and is found chiefly in the sandy belts of the dry west in a 20-30-inch rainfall. Droughts and fires have thinned these forests, and prickly pear infests them to more or less degree. At the same time they afford a useful resource. The timber is a coniferous hardwood, aromatic, but somewhat knotty and brittle. It is one of the few species that can be grown under droughty conditions, and for that reason has an especial value to foresters.

PART III.

AREA COVERED BY EXISTING FORESTS.

TABLE 1.

Statement showing the Total Area of Forest and the percentage of the Land Area covered by Forest.

			Forest.				Other Land.	Total.
			Agricultural Land.	Merchantable.	Unprofitable or inaccessible.	Total.		
Square miles	...	...*	15,000	10,000	50,000	60,000	595,500	670,500
Percentage of total area			2½	1½	8½	12½	87½	100

* Approximate only—no satisfactory survey has been made ; only 1,250 square miles are under crop in Queensland, or 0·17 per cent. of the total area.

PART IV.

NOTES ON THE IMPORTANT TIMBERS.

Araucaria Cunninghamii—Hoop Pine.

This timber is the chief softwood of Queensland, and is universally used for all inside purposes. It is excellent for joinery and cabinet purposes and staves, and it is the accepted timber for butter boxes. In the railway workshops it is more used than any other timber for sheeting, flooring, panelling, framing, and finishing of carriages, and also for the decks of sheep trucks.

Specimens with from 10 to 20 per cent. moisture gave weight 30–37·5; modulus of rupture 14,700–9,750; crushing 8,450–6,750.

Araucaria Bidwilli—Bunya Pine.

Occurs with hoop pine over a very restricted area between Gympie and Bunya Mountains, but in much smaller quantities. It is cut and sold indiscriminately with hoop pine, but is preferred for staves and building motor boats.

Specimens with 11·6 per cent. moisture gave weight 31·5–33·7; modulus of rupture, 14,150–13,700; crushing 8,120–7,530.

Agathis Palmerstoni—Kauri Pine.

The timber is exported either in the log or in wide boards, and for local building purposes is to the north what hoop pine is to the south. Like the hoop and Bunya pines, it is very liable to attack by borers if left lying in the scrub. In the railway workshops it is well thought of for cabinet work, panelling, and framing, and, after red cedar, is the most suitable wood for pattern making. Favoured also for building light boats.

Callitris Spp.—Cypress Pines.

The botanical determinations of species of this genus still form a subject for debate. They occurred formerly in fairly large quantities in the dry south-western districts, where, however, the effects of cutting, fire, grazing, drought, and prickly-pear have rendered them comparatively scarce. They yielded the bulk of the timber used in the south-western districts, the wood being, perhaps, the most durable softwood in the world and white-ant resistant.

Western cypress with 33·2–36 per cent. moisture gave weight 50·5; modulus of rupture 5,120–4,920; crushing 6,130–4,450.

Eucalyptus paniculata—Grey Ironbark; and *Eucalyptus crebra*—Narrow-leaved Ironbark.

They are the most highly esteemed of all hardwoods for general building purposes and are specially sought after by the railway department for all purposes where great strength is required, such as girders, corbels, headstocks, &c., in bridge building

and sole bars and underframes for wagons and carriages. Preferred for spokes, naves, and shafts of heavy vehicles, and for piles and sleepers. Very durable.

Specimens with from 17.7 to 25.2 per cent. moisture gave weight 68.75; modulus of rupture 20,500–14,000; crushing 12,200 to 9,400.

Average life of 2,050,000 sleepers, replaced during 18½ years, was 22–33 years.

Eucalyptus maculata—Spotted Gum.

The pale brownish wood ranks second only to Grey Ironbark as regards strength, and is similarly used, except in contact with the ground. The timber being of a somewhat greasy nature is favoured for skidding.

Specimens with 18.4–30.3 per cent. moisture gave weight 65.7–76.1; modulus of rupture 20,500–13,600; crushing 11,250–9,000.

Average life of 77,000 sleepers, replaced during 18½ years, was 17.41 years.

Eucalyptus microcorys—Tallow-wood.

The yellowish somewhat greasy timber is of excellent quality, particularly for all purposes exposed to weather, and is specially in request for sleepers and veranda posts and flooring. In the railway workshops it is used for pillars of covered wagons and for wagon sheeting. Very durable.

Specimens with 14–54 per cent. moisture gave weight 58–75; modulus of rupture 18,200–9,900; crushing 10,500–6,800.

Average life of 11,000 sleepers, replaced during 18½ years, was 17.52 years.

Eucalyptus Pilularis—Blackbutt.

The light greyish wood is an extremely useful general building timber, and in the railway workshops is used for wagon sheeting; being very straight in the grain, it is much sought after for splitting into rails and palings; somewhat subject to gum veins.

Specimens with 20–55.7 per cent. moisture gave weight 56–71; modulus of rupture 16,200–12,000; crushing 10,450–6,300.

Average life of 11,000 sleepers, replaced during 18½ years, was 15.81 years.

Eucalyptus propinqua—Grey Gum.

The red wood is of very fine quality, and is much favoured when logs are reasonably sound. Useful for general building purposes and sleepers. Very durable.

Specimens with 21.8–35.7 per cent. moisture gave weight 70.1–74.4; modulus of rupture 19,700–14,600; crushing 11,000–6,800.

Average life of 19,500 sleepers, replaced during 18½ years, was 13 years.

Eucalyptus resinifera—Red Stringybark.

The straight-grained red wood is one of the most popular hardwoods for house building, particularly for weather boards; used also for wagon sheeting. Rather subject to pinhole borers.

Specimens with 27.8–46 per cent. moisture gave weight 63.4–72.2; modulus of rupture 20,300–13,800; crushing 10,600–8,200.

Average life of 193,000 sleepers, replaced during 18½ years, was 17.95.

Eucalyptus acmenioides—Yellow Stringybark.

Wood, yellowish, cut and sold with other hardwoods for general purposes but not specified for particular uses.

Specimens with 27.3–47.7 per cent. moisture gave weight 63.4–71.8; modulus of rupture 14,000–9,000; crushing 8,850–7,400.

Average life of 14,500 sleepers, replaced during 18½ years was, 13.83 years.

Eucalyptus corymbosa—Red Bloodwood.

Perhaps the most widely spread *Eucalyptus* in Queensland, reaching its best development on the south coast.

Wood, deep red, particularly subject to veins, on account of which it is rarely, if ever, sawn. Highly esteemed for fencing, house stumps, and sleepers, being the most durable hardwood in Queensland, but its life as a sleeper is diminished by its tendency to shell off along the veins.

Specimens with 20–53 per cent. moisture gave weight 55·3–73·3; modulus of rupture 23,200–9,700; crushing 12,300–7,100.

Average life of 128,500 sleepers, replaced during $18\frac{1}{2}$ years, was 17·06 years.

Syncarpia laurifolia—Turpentine.

The pinkish brown wood is, for a hardwood, comparatively light and easy to work, and of great durability. On account of its large shrinkage and tendency to warp in small sizes, it is not favoured by sawmillers, but is very suitable for decking of wharves and for large beams—it being very fire-resistant; used for sleepers and for fender piles of wharves, but deserving generally of far greater attention than it has yet received. In the railway workshops it is cut for wagon sheeting and pillars.

Specimens with 27–43·4 per cent. moisture gave weight 63·4–68; modulus of rupture 15,600–8,600; crushing 9,990–7,480.

Average life of 29,000 sleepers, replaced during $18\frac{1}{2}$ years, was 19·60 years.

Tristania conferta—Scrub Box.

Abundant on the south coast and on Fraser Island where it is probably more plentiful than any other species of this order.

Though very durable and used largely in New South Wales, it rarely is sawn in Queensland, probably owing to its tendency to warp in small sizes.

Cedrela australis—Red Cedar.

The wood, of a deep red colour, is light, soft, easily worked, and aromatic, and extremely durable when exposed to the weather. It is the most valuable cabinet and decorative wood in Australia. Largely used for the construction of racing boats, and when comparatively plentiful and cheap was preferred to all other woods for pattern-making.

Specimens with 12 per cent. moisture gave weight 33·5; modulus of rupture 11,500; crushing 6,600.

Flindersia australis—Crow's Ash.

A hard, oily, yellowish brown wood, of great durability, used chiefly for flooring ballrooms, skating rinks, and verandas, and for sheeting of railway wagons; suitable for staves, handles of tools, and bearings.

Green specimens with an unrecorded percentage of moisture gave weight 58·3–61·7; modulus of rupture 13,300–15,800; crushing 6,800–7,600.

Flindersia Chatawaiana—Red Beech or Maple.

The pink slightly aromatic timber is used in the north for general building purposes, such as weather boards, chamfer boards and studding plates, but is chiefly shipped south as a very valuable cabinet wood—now the most popular in South Queensland. Suitable for rifle stocks, airship propellers, and boat building, and used in railway carriage construction for pillars, framework, moulding, panels and general furnishings. The most suitable wood for wheels of railway tricycles. A very fair bending timber.

Dysoxylum Fraserianum—Rosewood.

A red, fragrant wood, extremely durable and of great beauty for cabinet purposes when cut tangentially.

Cardwellia sublimis—Bull Oak, Brown Oak, Silky Oak.

This wood is now the common "Silky Oak" of the trade, and is used largely for cabinet work. In the north it is used for staves and for general building purposes, especially in the Innisfail district, where it is cut into scantlings, weather boards, chamfer boards, studding, lining boards, &c. It is a good timber for bending into seats of vehicles, and is in general use in railway carriage construction for bent roof sticks, mouldings, framework, and panelling. Air dry weight about 38.

Litsea reticulata and *ferruginea*—Bally Gum (*Lauracea*).

Useful for all inside work, staves, and boat building. The wood is light and very soft, and is second only to White Beech for ease of working and carving: an excellent cabinet timber.

Specimens with 17.4 per cent. moisture gave weight 35.5; modulus of rupture 11,150–9,850; crushing 6,100–5,200.

Blopharocarya involuerigera—Northern Bally Gum (*Sapindacea*).

A light, soft, pink timber, rather woolly but quite suitable for inside work. Is used largely for staves, chiefly on account of its comparative cheapness. Air dry weight about 46.

Cryptocarya Palmerstoni—Black Walnut (*Lauracea*).

Wood, rich brown, moderately hard and heavy, of great beauty. Turns well and takes a fine polish, but is disliked by sawmillers owing to its injurious effect on the saws. Air dry weight about 49.

Tarrietia argyrodendron—Crow's Foot Elm (*Sterculiaceae*).

The brownish wood is straight-grained and beautifully marked when cut on the quarter, and should find a use for cabinet purposes and the panelling of houses and railway carriages. It was selected by an American tool manufacturing firm from a series of samples comprising Black Bean, Red Bean, and Red Cedar, as the most suitable for turning into handles for combination tools.

It is not durable when exposed to weather, and becomes fairly hard when dry. When green it is tough and very elastic, but is said to become brittle when dry, though axe handles turned from this wood and preserved in the Forests Office for over seven years show no signs of brittleness. The southern variety was once used for staves, when it was commonly known as stavewood.

Specimens of the variety *trifoliolata* with 18.2 per cent. moisture gave weight 61.2–62.4; modulus of rupture 14,000–16,800; crushing 18,900–10,500; but the air dry weight of an office specimen of *peralata* was only 51.

Castanospermum australe—Black Bean (*Leguminosae*).

Wood of a rich dark brown with light streaks, only moderately hard and heavy, and very durable. Formerly used in the north largely for house-building and fencing, but much too valuable for such purposes. An excellent cabinet wood of great beauty, used for framing, moulding, and panelling of railway carriages. Air dry weight about 46.

PART V.

OWNERSHIP OF FORESTS.

TABLE II.

Classification of the Forest Area by Ownership.

			Area belonging to.			Total
			Dedicated to Timber Production.	The State, Other Forests.	Corporate Bodies and Private Individuals	
Square miles	...	...	6,250	46,875	53,125	62,500
Percentage of total forest area	...	...	10	75	85	100

Note.—The areas owned by corporate bodies and private individuals are forests to be cleared for settlement purposes and not for forestry. They supply at present 74% of the total timber cut for the State.

PART VI.

THE RELATIONSHIP OF THE STATE TO THE FORESTS.

6A. The forestry legislation of Queensland has been enacted under two measures :

1. "The State Forests and National Parks Act of 1906."
2. "The Land Act of 1910."

and by means of regulations under both enactments.

The State Forests and National Parks Act provides mainly for the establishment of State Forests and National Parks, *i.e.*, permanent forestry reservations which may not be interfered with except by authority of an Act of Parliament. Special provision was made in the Act for the granting of Special Leases and Occupation Licenses under the Lands Act over State Forests and National Parks; and the mining laws are not affected by the Act. The Act also authorises the making of Regulations to administer the State Forests and National Parks.

Regulations under State Forests and National Parks Act.

The regulations made under this Act provided for :

1. The control of the State Forests and National Parks by the Director of Forests.
2. The making of working plans in respect thereof.
3. The methods by which timber and forest produce were to be sold therefrom.
4. The prevention of illegal acts in connection therewith, *i.e.*, trespass, cutting timber without authority, defacement of brands, marks, &c., careless use of fire, &c., &c.
5. The authorities of forest officers to prosecute in respect of forest offences on State Forests and National Parks.

and other minor provisions.

"Land Act of 1910."

"The Land Act of 1910," a statute governing the leasing, sale, and administration of Crown Lands generally, contains provisions relating to the removal of timber from Reserves (temporary reservations Crown Lands, *i.e.*, land not lawfully granted, or contracted to be granted in fee simple; or not reserved or dedicated for stated public purposes) and certain leases.

Selectors of certain selections are given timber rights commensurate with the security and purpose of their land tenure.

The Act provides for making of regulations to govern sale of timber on Timber Reserves and Crown Lands, and affords authority of entry on lands to officers.

"The Timber and Quarry Regulations."

The Timber and Quarry Regulations of 1912 set forth :—

1. The procedure by which timber is to be sold from Crown Lands, and Reserves.
 2. The minimum prices and sizes at which timber and forest produce is to be sold.
 3. The conditions pertaining to removal of quarry material.
 4. Requirements to be observed by purchasers and persons handling Crown timber, &c.
 5. Conditions under which animals used in forest work may be depastured.
- and other minor provisions *re* legal proceedings, &c.

An Act is to be brought before Parliament at an early date to afford a greater measure of control of the estate to the Forest Service.

6B. At the present time in Queensland the Forest Service is not fully developed. The limited staff cannot deal with the large area of country involved, and the operations are necessarily confined to the more closely settled areas, contiguous to the chief markets.

Forest Stations have been established on a number of the more accessible reserves. Houses have been provided for officers in charge of operations, and the housing of the staff is being proceeded with.

Forest Protection.

On those areas at present under treatment, the forest staff deals with fires as they arise. A system of road firebreaks is being established, and these, coupled with supervision, are found to be effective in checking forest fires generally. Fire protection clauses are inserted in timber sale agreements and licenses wherever necessary. The new Act will make provision for greater power of the Forest Service in dealing with the fire question in demanding aid of forest and neighbouring settlers and of timber-getters and timber workers on the forest.

Nurseries and Plantations.

Forest nurseries have been established in the several main districts and the propagation of indigenous and exotic plants is being carried forward as quickly as possible. Nurseries now in existence cover about 3 acres of ground.

Experimental planting is also being undertaken, chiefly of Hoop and Bunya Pine (*Araucaria* species). An area of about 320 acres is under plantation at the present time, and the work is being undertaken more extensively during the current year.

Treatment of the present stand for the improvement of natural regeneration is also being proceeded with experimentally.

Forest Organisation—Roads and Tramways.

Good progress is being made with survey of forest road systems and the construction of forest roads.

Tramway projects are also being initiated in several localities.

Water Supply.

Water is being provided on some of the drier reserves by means of sub-artesian bores, tanks, dams, &c. Where water is available pumping plants are being installed in several places for nursery and domestic use.

Timber Trading.

The Forest Service activity has extended to timber harvesting and marketing, and during the past year it has logged and sold departmentally some 8,000,000 square feet of timber. Sales on the stump bring the total annual cut on Crown forests to about 60,000,000 square feet, log measurement.

6c. Assistance to private forestry.

No private forestry exists, and so long as funds for State Forestry are limited, subsidies on this account are inadmissible.

PART VII.

THE FOREST AUTHORITY.

The Forest Service of Queensland, as at present constituted, is merely a branch of the Department of Public Lands. It has this measure of autonomy, however, that under the State Forests and National Parks Act, the Director of Forests is responsible to the Minister for the management and control of permanent reservations. In other cases the Lands Department has a certain control, *e.g.*, of the leasing of the timber reserves and of the reservation of Crown Lands for forestry, &c. Forestry advice, however, is invariably sought on these questions.

Owing to the limited forestry staff a large portion of the State is still supervised by Lands Department officers only partly responsible to the Director of Forests.

The Forest personnel consists of the Director of Forests to whom the District Foresters are responsible. Each District Forester, as the name signifies, has charge of a separate district, and may control Deputy Foresters under the respective

branches of Sylviculture, Sales and Engineering, Forest Factors, Forest Rangers and Forest Guards, Forest Overseers and Foremen in charge of Reserves and working gangs and their staffs, and of Cadet Foresters, placed within his District for training. Each District Officer has necessary clerical assistance to enable him to carry out the uniform system of accounting and cost keeping, and the vertical filing of records.

A Forest Engineer is to be appointed shortly to take charge of the Engineering Branch of the Forest Service.

A Forest School is being built at Imbil in Southern Queensland, and an Instructor and Assistant are to be appointed. Short courses will then be arranged for officers at present in the Service, and a system of training of new entrants put into operation.

Education methods now being adopted are :—

1. The distribution of publications from the forest library to all aspirants to forestry knowledge, and
2. A generous circularisation among the personnel of items of forestry information and interest and of salient points from recognised works on forestry.

The system in force of compiling information has been found of great use in this regard.

Each year the Director of Forests furnishes his Annual Report to Parliament. This report covers the main activities of the Service.

Publications have been issued as under :—

- “The Structure and Identification of Queensland Woods.”
- “Notes on the Principal Timbers of Queensland.”
- “Sylvicultural Notes on Forest Trees of Queensland.”
- “Australian Study of American Forestry.”
- “Financing of Forestry.”
- “Federal or State Forestry—Which ? ”
- “Forestry in Queensland.”
- “The Australian Forest Ration and its Apportionment.”

Following is a statement of revenue and expenditure during the past fifteen years :—

Year.					Expenditure.	Revenue.
					£	£
1904	...	...	...	...	837	11,441
1905	...	...	...	...	712	11,577
1906	...	...	...	...	1,331	14,560
1907	...	...	...	...	1,549	22,236
1908	...	...	...	...	2,132	27,979
1909	...	...	...	...	2,448	35,200
1910	...	...	...	...	2,548	39,645
1911	...	...	...	...	2,930	53,840
1912	...	...	...	...	5,397	63,447
1913	...	...	...	...	7,386	62,973
1914	...	...	...	...	7,653	74,729
1915	...	...	...	...	7,416	69,793
1916	...	...	...	...	9,473	60,401
1917	...	...	...	...	13,930	66,200
1918	...	...	...	...	21,877	71,481
					£87,619	£685,502

PART VIII.

FORESTRY ACTIVITIES OF MUNICIPAL AND CORPORATE BODIES.

Private or municipal forestry is not yet practised in Queensland.

PART IX.

PROFESSIONAL AND OTHER SOCIETIES INTERESTED IN FORESTRY.

There are no such Societies except those such as the Brisbane Timber Merchants' Association (Creek Street, Brisbane), interested in the marketing of timber.

PART X.

EDUCATION, RESEARCH AND EXPERIMENTAL WORK.

A Forest School of Forestry and Institute of Sylvicultural Research is projected, the site to be at Imbil, Mary Valley Line, Queensland.

Sylvicultural research and experiment are being carried out at the several Forest Stations.

The work at the Forest Service Office in Brisbane includes studies in wood technology and classification, and a small Timber Museum exists. Timber exhibits are prepared for display at local and foreign exhibitions.

PART XI.

ANNUAL INCREMENT AND UTILISATION OF HOME-GROWN TIMBER.

TABLE III.

Annual Increment.

	Area Square Miles.	Estimated increment per Square Mile.	Total gross increment	Loss by decay, &c.	Total	Net increment (col. 4, less col. 5).
		s. ft.	s. ft.	s. ft.	s. ft.	s. ft.
Under State control ...	10,000	32,000	320,000,000	80,000,000	160,000,000	80,000,000
Other ...	1,000	32,000	32,000,000	8,000,000	16,000,000	8,000,000
TOTAL ...	11,000	32,000	352,000,000	88,000,000	176,000,000	88,000,000

TABLE IV.

Annual Utilisation.

State Control.						Colonial.		
Type of Product.						Type of Product.	Value at place of preparation.	
						c. ft.	£	
Milling timbers	...	...	...	...	4,000,000	72,000	12,000,000	216,000
Railway timbers	...	...	...	...	750,000	6,750	800,000	7,000
Mining timbers	...	...	...	...	350,000	3,250	300,000	3,000
Telegraph poles, &c.	...	...	...	...	125,000	1,250	200,000	2,000
Post rails, &c.	...	...	...	...	25,000	300	150,000	1,000
						5,250,000	13,450,000	-
Fuel	...	...	...	...	45,000 tons	2,750	200,000 tons	13,000
Sandalwood	...	...	...	...	500 "	500	-	-
Tan and foam barks, &c.	...	...	...	...	100 "	200	-	-
						£87,000		£242,000

PART XII.

FOREST INDUSTRIES.

In 1918 the saw milling industry absorbed 15,000,000 cubic feet of timber; of this 9,000,000 cubic feet was Pine, 30,000 cubic feet Cedar, and the balance Hardwoods. The value of this cut was £1,340,000, and approximately 3,500 hands were engaged in its manufacture.

Considerable employment is also afforded in log getting, railway, mining and pole timber getting. It is estimated that about 1,500 to 2,000 persons are engaged in these activities.

No figures are available to show the quantity of timber cut on private lands. A close approximation is available in respect of milling timber, and indicates that the private cut is three times that of the Crown, due to the fact that in past times vast alienations of timber land have been made, and these are being cut into regardless of the future.

Fuel and fencing operations are extensive, and provide employment for a large number of persons, while about 100 are engaged in the getting of sandalwood, guano, and cupania and mangrove bark. No definite figures are available, however, of value of the products obtained.

A pulp mill was erected at Yarraman for the purpose of making paper pulp from the tops of Hoop and Bunya Pine (*Araucaria sp.*). Operations were ceased in the latter part of 1919, owing mainly to water difficulties.

For volume of timber consumed in various industries, *see* Table IV. No other information is available.

PART XIII.

STATISTICS AS TO EXPORTS AND IMPORTS OF TIMBER.

TABLE VI.

Average Annual Imports and Exports.

Type of Product.	Exports.		Imports.		Balance, plus or minus (+ or -).	
	Quantity.	Value, f.o.b.	Quantity.	Value, c.i.f.	Quantity (col. 2 - col. 4).	Value (col. 3 - col. 5.)
	c. ft.	£	c. ft.	£	c. ft.	£
Queensland softwoods ...	2,000,000	500,000	—	—	} 1,994,000	498,500
American hickory ...	—	—	6,000	1,500		

Note.—Most of the exports from Queensland are to the other States.

The imports shown are from overseas to Queensland. There is no interstate timber imported.

PART XIV.
SUMMARY AND OUTLOOK.
TABLE VII.

Type of Product.	Utilisation. Table IV. Col. 3.	Exports. Table VI. Col. 2.	Home consumption of Home- grown timber. Col. 2 Col. 3.	Imports. Table VI. Col. 4.	Total home consumption of Home and imported Timber. Col. 4 plus Col. 5.	Net increment. Table III. Col. 8.	Balance, plus or minus. Col. 7 - Col. 6.
	c. ft.	c. ft.	c. ft.	c. ft.	c. ft.	c. ft.	c. ft.
All classes	19,600 M	2,000 M	17,600 M	6 M	17,606 M	7,333 M	- 10,273 M
Total per head of population ...	28	2.86	25.14	.01	25.15	10.48	- 14.67

Note.—Population of Queensland, 700,000.

14c. *Short Summary of steps which should be taken, &c.*

The reason for the apparent serious overcutting taking place in Queensland is the operation by private landholders who are all realising timber values immediately with no thought for the future.

As these private resources become cut out, operators will be forced to go further afield on Crown Lands in search of timber.

With increased utilisation under forestry management the amounts lost by waste, decay, fire, &c., will be reduced considerably, and the net increment of the Queensland forests enhanced as much.

The position is, however, that the immediately prospective resource of timber is barely sufficient to meet requirements at the present rate, much less to meet the increased demand the future must hold.

The necessary steps to be taken are :—

1. Permanent dedication of not less than 6,000,000 acres Pine forest.
2. Construction of an independent Forest Service free from political control, in so far as technique and trade are concerned.
3. The provision of adequate funds for forest development purposes.

APPENDICES.

Appendix A.

No Commissions have reported on forestry and forest questions in Queensland.

Appendix B.

"State Forests and National Parks Act, 1906," and Regulations; "Lands Act, 1910," and "Timber and Quarry Regulations."

Appendix C.

Annual Report of Director of Forests.

"Australian Study of American Forestry."

"The Structure and Identification of Queensland Woods."

"Notes on the Principal Timbers of Queensland."

"Financing of Forestry."

"Federal or State Forestry—Which?"

"Forestry in Queensland."

"The Australian Forest Ration and its Apportionment."

Appendix D.

No forestry literature is issued in Queensland other than by the Forest Service.

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