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The Company possesses a large plant, and is prepared to execute extensive orders with the utmost promptitude, *e.g.*:—Railway Sleepers, Piles, Telegraph and other poles, Planks for Paving Blocks (so extensively used in London and elsewhere), and Timber for Bridges, Mining, and Building purposes, &c.

To the Hon. George Throssell M.L.A., Minister of Lands,

Woods and Forests Department, Perth, Western Australia,

30th June, 1899.

SIR,

I have the Honor to submit, herewith, my Second and Amended Report upon "The Forests of Western Australia and their Development."

I have the honour to be,

Sir,

Your obedient servant,

J. EDNIE-BROWN,

Conservator of Forests.

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PREFACE.

Owing to the fact that the first issue of my Report upon the Forests of Western Australia—issued in 1896—has now been thoroughly exhausted, and there being still a very considerable demand for the publication, it has been deemed advisable to bring out this "Second Edition." In doing this a large portion of the original matter has, with considerable corrections, been fairly well retained, but this has been considerably added to in places so as to make the report an up-to-date compendium upon The Forests of Western Australia, and of the various conditions which now surround their utilisation and administration.

Introductorily, it is my privilege to state the fact that within the last three years, the Colony, from an indefinite and comparatively little-known market, has bounded into a leader of export timber-trade with most parts of the world. We are now very large exporters of timber to America, India, the Continent of Europe, and of course to Old England; and there are signs that before long we shall have considerable dealings in this way with progressive China and Japan.

Perhaps it is not too much to say that this position has, to a very large extent, arisen from our having made known what we possess in quantity, quality, and variety of matured timbers. At all events, it is gratifying to me to be in position to report most favorably upon the progress which has been made during the last few years in our timber industry, and that this improvement is likely to continue for many years to come. There is no getting away from the fact that this progress has been immense and almost phenomenal. Over nearly all the world, and more particularly in England, there has arisen a wonderful demand for "Australian Hard-Woods," which, to a large extent, means those of Jarrah and Karri; and as the trees of these kinds are purely endemic to this Colony, it follows that most of the quotations bearing this name refer only to the timbers of Western Australia. This fact is most satisfactory and points emphatically to the value of our Forests and how necessary it is that they should be properly looked after by systematic conservation in order to ensure their permanency.

Our timbers, from some cause, seem to meet the requirements of outside constructive works all over the world, and hence the demand for them. Again, perhaps, the great "run" which is now being made upon the woods of the forests of Western Australia—apart altogether from the fact of their undoubted excellence—is that large quantities of the same kind of tree can be obtained from considerable areas without any material intermixture of other kinds. This fact is, of course, of very great advantage to timber-getters, in that it tends to very materially lessen the working expenses of moving machinery and all the other expenses incurred in connection with the securing of large quantities of one particular kind of timber. Our timber trees are chiefly gregarious. This is, fortunately, particularly the case with the two principal members—Jarrah and Karri—although, as a rule, the former is always found forming a sort of a fringe to the latter, but never the latter to the former. This peculiarity of specially marked habitates for specific trees is a distinctive feature of the forests of Western Australia, and, as I have already inferred, is one of the points of strength in the disposal of her timbers.

Something over one million acres of forest land have now been leased from the Government for the purpose of acquiring the timber upon them. This is chiefly Jarrah country, and embraces some of the finest forests of that particular kind of tree. This has been taken up in blocks ranging in size from one to over one hundred thousand acres, and although only a small portion of the whole is as yet being worked, the probabilities in this respect in the near future are immense and will soon reach fabulous figures. At present, there are only some forty sawmills at full work in our forests, but even in connection with these, the following interesting figures have been collected:—Strength-power of mills, two thousand five hundred and fifty-four horse power; number of all persons employed in connection with the working of the mills, two thousand five hundred and eighty; the number of horses and bullocks

employed upon the works, one thousand eight hundred and forty-seven; and the length of private tramways and railways on the various properties, two hundred and fifty miles. Altogether, it is calculated that, including their families, there is something like one-thirtieth of the population of the Colony dependent upon the timber industry for its support. This is gradually increasing; so that it will be seen that its forests play a very important part in the welfare of the Colony.

I am pleased to state that a Department of Woods and Forests has now been pretty well established, and its general usefulness as regards the control and management of this enormous natural wealth of the timber resources of the Colony, is beginning to be recognised and appreciated by the mass of the people and of the various individuals and companies directly and indirectly connected with the industry.

It is only fair for me to state here that the following firms have, to a certain extent, contributed towards the expense connected with the publication of the new issue, and hence the reason for their being allowed the unusual privilege of inserting their advertisements upon its fly-sheets:—The Millars' Karri & Jarrah Co., The M.C. Davis Co., The Jarrahdale Jarrah Forests Co., The Canning Forests Co., The Gill-McDowell Jarrah Forest Co., the West Australian Jarrah Forests Co., and the Jarrah Timber and Wood Paving Corporation.

In order to make the report more comprehensive in every respect, its title has been altered from a "Report on the Forests of Western Australia, their description, utilisation, and proposed future management," to "The Forests of Western Australia and their Development."

WOODS AND FORESTS DEPARTMENT,
PERTH, W.A., 30TH JUNE, 1899.

SECTION I.

THE FOREST TREES OF WESTERN AUSTRALIA.

The Flora of this division of the Australian Continent is a very large and unique one, and embraces many species which are, commercially, of little use, but it also comprises many kinds which are of great value in the commercial world. There is perhaps none of the colonies which has a greater number of Acacias than does this one, but our principal trees belong chiefly to the Eucalyptus family, many of which are second to none as regards worth and durability of their timbers.

In this Section I shall give a list of the principal members of our forest flora, as far as yet known, giving their natural orders, systematic and vernacular names, following on afterwards, under distinctive sub-headings, with a descriptive reference to each tree, showing its uses and possibilities.

A.—LIST OF THE PRINCIPAL FOREST TREES.

Natural Order.	Systematic Name.	Vernacular Name.
Leguminosæ	<i>Acacia saligna</i>	Wattle
"	" <i>acuminata</i>	Raspberry Jam
"	" <i>microbotrya</i>	Badjong Acacia, or "Wattle Gum"
Myrtaceæ	<i>Agonis flexuosa</i>	Peppermint Tree
Proteaceæ	<i>Banksia verticillata</i>	River Banksia
"	" <i>littoralis</i>	Seaside Banksia
"	" <i>attenuata</i>	Narrow-leaved Banksia
"	" <i>Menziesii</i>	Menzie's Banksia
"	" <i>ilicifolia</i>	Holly-leaved Banksia
"	" <i>grandis</i>	Great-flowering Banksia
"	" <i>dentata</i>	Toothed Banksia
Casuarinæ	<i>Casuarina Fraseriana</i>	} Sheaoaks
"	" <i>glauca</i>	
"	" <i>Decaisneana</i>	} Jarrah Karri Tuart Yate Gum Red Gum York Gum Blackbutt Mallee Flooded Gum of the Interior Flooded Gum of the South-West Wandoo Flooded Gum Red-flowering Gum Morrell Salmon Gum Gimlet-wood Blue Gum Red-flowering Mallee Cypress Pine Paperbark Sandalwood Christmas Bush
Myrtaceæ	<i>Eucalyptus marginata</i>	
"	" <i>diversicolor</i>	
"	" <i>gomphocephala</i>	
"	" <i>cornuta</i>	
"	" <i>calophylla</i>	
"	" <i>loxophleba</i>	
"	" <i>patens</i>	
"	" <i>oleosa</i>	
"	" <i>rostrata</i>	
"	" <i>rudis</i>	
"	" <i>redunca</i>	
"	" <i>decipiens</i>	
"	" <i>ficifolia</i>	
"	" <i>longicornis</i>	
"	" <i>salmonophloia</i>	
"	" <i>salubris</i>	
"	" <i>megacarpa</i>	
"	" <i>pyriformis</i>	
Coniferae	<i>Frenela verrucosa</i>	
Myrtaceæ	<i>Melaleuca Leucadendron</i>	
Santalaceæ	<i>Santalum cygnorum</i>	
Læcynthaceæ	<i>Nuytisia floribunda</i>	

B.—DESCRIPTIONS AND PROPERTIES OF THE PURELY COMMERCIAL TREES OF WESTERN AUSTRALIA.

The forests of Western Australia contain, as we have seen in the previous list, a very considerable number of genera and species of trees, but of these a few only are at present known to be of any real commercial value. It is, of course, to the latter that this report has special reference, and in order to at once clearly set these forth, I devote this division to a description and enumeration of their technicalities, properties and uses. This will enable readers of the report to see concisely the everyday phraseology, and all matters connected with these trees, and at the same time enable me to dispense with much repetition throughout the body of this document.

After this Section, the trees will, therefore, as much as possible be referred to by their vernacular names only.

Jarrah.

This is without doubt the principal timber tree in the Western Australian forests; no one knowing the subject would for a moment dream of classifying it as anything else. It is predominant above all others in its extent of forest, the various uses to which it is or can be applied, the part which it is now taking in the great timber export of the Colony, and the esteem in which it is held in the country. Jarrah and Western Australia are almost synonymous words, and, as this has been the case from the earliest days of the foundation of the colony, so it will now remain as long as a Jarrah forest exists. I do not mean by these remarks to disparage in the least degree any of the other commercial woods of the country, but simply to emphasise the fact that Jarrah is the principal indigenous timber of this part of the Australian Continent. There are other timbers in our forests which are equally, if not more, valuable, for their own special purposes, as I shall point out, but for general constructive works necessitating contact with soil and water, the timber of this tree stands foremost in these forests.

The specific name refers to the thickened margin of the leaves, and the vernacular is the name given to the species by the aborigines. In some districts, the tree is known to the settlers as the "mahogany gum."

Taken as a whole, there is nothing particularly picturesque about the appearance of a Jarrah tree or forest of these. Indeed, the general effect of the species, *en masse*, is dull, sombre, and uninteresting to the eye. Except in special spots and localities, the trees are rugged and decidedly inclined to be straggling and branchy. In this respect they differ very materially from the karri, which is almost invariably a fine straight tree and comparatively free from branches except at the top.

In general appearance the Jarrah resembles what is known in the other colonies as the stringy-bark. Its likeness to this division of the Eucalyptus family is very marked. The bark is therefore persistent, fibrous, and of a dark grey colour, although more deeply indented in its longitudinal furrows than the true stringy-bark.

It is not uncommon to find considerable areas of Jarrah forest where many of the matured trees attain heights of from 90ft. to 120ft., with good stems 3ft. to 5ft. in diameter, and 50ft. to 60ft. to the first branch. Such places would be described as first-class Jarrah forest. Taking an average, however, of these forests, I think a Jarrah tree of a good healthy stamp and one representing a fair specimen of its kind, would run about 90ft. to 100ft. in height, and from 2½ft. to 3½ft. in diameter at the base. Under such conditions and in fairly favourable situations, trees of this size might be expected to be sound and convertible into good marketable timber without much waste.

Of course, in places there are individual trees to be met, with the measurements of which run into figures far in excess of those just mentioned, and one or two of these may be cited as indicative of the possibilities of the tree as regards size and wealth of timber. One, about three miles west of the old "Wellington Mill" upon the "Ferguson River," measured 22ft. in circumference at 5ft. up from the ground and 80ft. to the first branch. It is a fine, straight, handsome tree, apparently perfectly sound, and would turn out at least 20 loads of good sawn timber. Another large specimen on the "Ferguson" area went 21ft. in circumference at 4ft. from the ground, and 75ft. to the first branch. And yet another, this time in the "Ironpot" area; this measured 22ft. in circumference at 4ft. up, and 60ft. to the first limb. These few instances of the actual measurements of large Jarrah trees will show to what an immense size the species will sometimes attain, under what must, of course, be favourable circumstances.

As regards the age of the tree when it has attained a diameter of about 2ft., or has reached that stage when it may be considered fit for the saw mill, I have gone carefully into this question by having trees cut down and their concentric rings counted, and have come to the conclusion that in good situations it will attain this size when about 40 or 50 years of age.

So far as my observations have extended, the Jarrah is confined in its distribution to what is known as the South-Western Division of the Colony, and this, I understand, is practically its

geographical limits. On reference to the plan attached, it will be seen that this district lies along the western coast of the Colony, between latitudes 31 degrees and 35 degrees south and longitude 115 degrees and 119 degrees east. This means a scope of country extending nearly 350 miles running north and south, and from 50 to 100 miles east and west, and embraces all that portion of the country upon which the heaviest rains of the season fall, which averages 40 inches in the south and 35 inches in the north. An average of 10 years shows the rainfall of this, the timbered district of the Colony, as 38 inches.

The Jarrah is purely a semi-coastal tree, by which I mean that it is not found anywhere strictly beyond the influence of the sea, and yet is not at all partial to the direct effects of the sea-breezes. Perhaps the best forests of the species are found from 20 to 30 miles off the coastal line. Whether this fact is only co-existent with the heavy rainfall district, and that, with an equal rainfall more inland, the result of growth would be equally as good as along the coast, I am not prepared to say.

The principal habitat of the tree is therefore along the table-lands and slopes of the Darling Range, which runs through nearly the whole of the South-Western District. Perhaps the best areas of Jarrah lie along that portion of this range from the Blackwood River north to the Helena River, with the choicest portions midway between these two points.

In all cases this tree delights in an ironstone formation, and it would almost appear as though the rougher and the more the site is composed of Ironstone rocks and barren of almost any other vegetation, the better the tree will grow. It is certainly beyond a doubt that, under such circumstances, the timber attains its greatest degree of soundness, strength, and general durability. There are, it is true, some fine belts and patches of Jarrah forest to be found upon many of the lower-lying portions of the district referred to, where the geological formation of these is composed of ironstone—as for instance in the country lying between Quindalup and Karridale—the timber is good in every respect.

It is indeed asserted by some and denied by others that the timber grown on the flats is superior in its lasting qualities to that grown on the hills, but this wants further verification before being accepted as a fact. I may, however, state that I have seen some specimens of the timber which had been cut from trees grown on the flats, which were in an apparently sound condition after having been in the ground and water for over 40 years.

It is very marked that so soon as a granite formation comes in, so sure will the Jarrah forest fall off to a mere scrub, if it does not disappear altogether. This is a well-known fact to those who have travelled through these forests.

We find Jarrah all over the South-Western Division and almost invariably intermixed with red gum, and in places with the blackbutt as well, the latter always in the hollows and richer portions of the district. In some parts of the karri country, to which I shall more particularly refer later on, the Jarrah appears to mix with the former, except in places where the karri takes possession of the ground to the exclusion of all others. It is, however, a fact that in almost all cases the Jarrah is to be found, if not exactly intermixed with the karri, at all events in close proximity to it. This is an important fact, which should be of advantage to intending exporters of our timbers.

The late Baron Sir F. von Mueller, the great and well known botanist of Victoria, said "the Jarrah is famed for its indestructible wood, which is neither attacked by the borings of the Chelura, Teredo, nor Termite."

Its resistance to white ants is remarkable and houses built of the wood when thoroughly seasoned are almost indestructible and have been known to exist in perfect preservation for nearly 100 years. It gets extremely hard with age and then becomes almost unworkable, even strong nails cannot be driven into it and when struck the wood rings like a bell. Altogether, it is a remarkable timber and is highly suited for outside works. Should any decay or destruction have occurred in the timber after having been years in use, it will always be found that this is confined to the sap-wood; which therefore ought always to be avoided in the construction of houses or in other works of a permanent character.

Unfortunately, sufficient attention is not always paid to the seasoning of the timber and hence disappointment sometimes ensues. When used as flooring boards, it should specially be thoroughly seasoned, otherwise there will be much warping, buckling, and an unsatisfactory floor altogether; if seasoned before being laid, however, a better floor could not exist.

Much has, of course, been said and written about this timber, but it is not my intention to wade through these details and give the results here; suffice it to say that it is one of the most valuable of Western Australian timbers, and the best known of all Australian timbers.

My own opinion of it is that it is one of great excellence, and may be looked upon as one of the principal timbers of Australia for general constructive purposes. I have been shown many specimens with surprising records of durability in the ground and in water, salt and fresh, and these of themselves testify to its wonderful excellence. I have, however, observed also that this timber is variable in its chief attractive properties, and that it is sometimes less durable than at others. This no doubt is accounted for by cutting at the wrong season of the year, by the character of the soil upon which it is grown, and other specific peculiarities.

The weight of the wood, when newly cut, is a little over 70lbs. per cubic foot, which is reduced to 60lbs. when thoroughly seasoned. It is red in colour, polishes well, and is comparatively easily worked.

Some of the principal uses to which it is as yet applied are as follows:—Wood-blocking, piles, jetties, bridges, boatbuilding, posts, furniture and railway sleepers. It makes the best charcoal of any timber in the Colony. Its adaptability for all kinds of out-door work is well known, and hence it is considered the staple timber of Western Australia.

The suitability of the timber for piles or any works requiring immersion in salt or fresh water has been practically noted and is worth recording. In this office there are specimens which have been obtained from piles and girders 60 years old. These were driven and used in local harbors and bridges. When obtained for the department, the timber appeared to be perfectly sound and free from any signs of decay whatever; if anything the wood seems to be harder, more solid and apparently more durable than freshly-cut timber. At all events, it seems capable of standing wear and tear for 100 years longer. From its immersion in water, it certainly appeared darker in colour compared with newly-cut timber, but no decay whatever is apparent. Pieces of this wood have been converted into cups, card cases and other articles, and the polish which they have taken on is equal to, if it does not surpass, the finest old mahogany.

The records of this timber having lasted in the ground as fence-posts are almost without number, and need not therefore be particularised here.

There are instances of railway sleepers which were laid down 18 years ago and still appear as sound as ever.

Karri.

This is the giant tree of Western Australia, if not of the whole Australian Continent. The latter remark is, however, disputed, but the assertion is made without much fear of contradiction. It comes, at all events, next to be considered as one of the principal timber trees of this Colony. It is not so well known as the jarrah, owing to the limited field of its growth and the, at present, comparative inaccessibility of its haunts. I now give some particulars of the species.

The late Baron von Mueller was the first to give this tree its specific appellation (*diversicolor*), and this we are told by him bears reference to the paleness of the leaves upon their lower side, compared with eucalypts generally. The common or vernacular name is the aboriginal designation of the tree.

It is of some botanical interest to note that this tree was known for some time as *E. collosea*, referring no doubt to its enormous height, but this has been abandoned in preference to the one which it now bears.

There is much to be said in favour of this member of our forest flora. In its young stage it can hardly be beaten as a highly ornamental tree, being regular in its growth, straight, and umbrageous, its leaves changing in a few years from being of an oval shape to those long broad ones which mark its more matured condition. I consider that in this respect, and its general appearance as well, it resembles greatly the sugar gum of South Australia (*E. corymocalyx*).

There is no doubt that this is the finest and most graceful tree in the Australian forests. When matured, and has attained large dimensions, its appearance is simply grand in the extreme, and in this respect at least puts the jarrah far into the shade. The trees are almost always of straight growth, and tower skywards for great heights without having even the semblance of a branch. So marked are they in these respects that they look like a mass of upright candles.

The bark is smooth, yellow-white in appearance, but not persistent like the jarrah. It, therefore, peels off in flakes each year, and thus the tree has always a clean bright appearance. In consequence of this it is frequently spoken of as a "white gum," although generally known as the Karri.

The height of these trees is almost phenomenal, and present astonishing productions of nature. As a rule, an average tree may be put down at 200 feet in height and 4 feet in diameter at 3 to 4 feet from the ground, and about 120 to 150 feet to the first branch. Trees of this size are generally sound in every respect, and may be expected to turn out timber free from the usual blemishes of dry rot, gum veins, &c., to which large trees are usually subject.

Trees of the size indicated are what one usually meets with in the Karri forests, but much larger specimens are, of course, run against now and again. For instance, on the Warren River, it is not unusual to meet with trees which go 300 feet in extreme height, over 180 feet in height to the first limb, and from 20 to 30 feet in circumference at the base. Of course, these are exceptional cases, but still they do exist.

The finest tree of this kind which I came across during my trip was at Karridale (M. C. Davies & Co.). This is called "King Karri," and the following are some measurements taken in connection with this great specimen:—

34 feet in circumference at 3 feet from the ground.
160 feet to the first branch.
14 feet in circumference at the first limb.
Over 200 feet in extreme height.

From these figures it will be seen that the bole of this tree from the bottom to the first limb contains nearly 6,000 cubic feet of timber. This means a weight of over 40 tons in all; that it would take one of our ordinary mills at least four days to convert it into sawn stuff; and that it would form about a quarter of the loading capacity of one of the ships which form the fleet of our present export timber trade. These figures speak for themselves, and need no comment. I question if there could be found appliances in the Colony at the present moment to deal with this forest monarch. Similar cases might be cited, but this one will give a fair idea of the enormous dimensions to which this tree sometimes attains.

The Karri is a very rapid grower, and soon attains a great height and considerable dimensions of timber. I had several cut down with the object of counting the concentric rings in the wood, and of making some measurements and observations in regard to the species generally. The following may be taken as an average of these:—

A tree on the track from Giblet's to the Vasse road was felled. It looked like a sapling in comparison with the surrounding members of the forest.

The measurements, however, were:—

Height of whole tree	...	...	...	...	...	153ft.
Height to top of available timber	...	...	...	...	...	100ft.
Thickness of bark	...	...	...	...	...	$\frac{1}{2}$ in.
Diameter at 2ft. 7in. from the ground	...	...	...	...	...	1ft. 11 $\frac{1}{2}$ in.
Age of tree, judging from the concentric rings,	35 years.					
Contents of tree, say	175 cubic feet of timber.					

We thus see that a forest of marketable Karri can be produced in the short term of from 30 to 40 years.

It is certainly a matter of local record that some years ago a resident on the "Warren" lived and partially raised a small family in the hollow of one of these fallen monarchs. It appears that the tree was hollow and fell, and was afterwards further worked out and lined by the enterprising settler as a dwelling for his family until such time as he was in a position to build the modern edifice which now stands not far from the site or remains of the primitive habitation. The old tree was destroyed and effaced from the place by a recent bush fire. This specimen was said to be over 300ft. in length and some 12ft. in diameter at the base.

The "Karri" is strictly confined in its range of locality to the south-western portions of the great South-Western Division of the Colony, or that part of the latter lying between Cape Hamelin on the west and the Torbay Estate, near Albany, on the east. Its geographical confines are embraced within longitudes 115 degrees and 118 degrees east, and latitudes 34 degrees and 35 degrees south.

This part of the country comprises the more humid portions of the temperate region of Western Australia, where I find the annual rainfall is from 35 to 40 inches, so that one may safely classify the species as a tree which delights in plenty of moisture. The region is purely coastal, and is very distinct in its general physical features from anything else in this way in the Colony. The tree seems to be a component part of its surroundings, or *vice versa* as the case may be individually viewed. Here we find immense forests of trees of straight and wonderful size, springing out of a rich soil, deep and spongy, yet the country sufficiently undulating to make it in some parts what may be termed hilly, but not difficult of working by road or tram.

In some instances we find the tree fairly close to the sea-coast, but in such cases it is scraggy, stag-horned and branchy, and therefore not a desirable specimen for the saw mill, or readily convertible into timber for marketable purposes. Still, it is, undoubtedly, essentially a coastal-tree, but yet shy of actual contact with saline particles or of strong direct sea breezes. In this respect, it perhaps also resembles the jarrah, if not the eucalyptus family generally.

In that portion of the Karri area south of the Blackwood River, the country consists of knolls and belts of red chocolate, or partial ironstone-humas soils. Around these eruptions or hills, there are low-lying parts, valleys, or swamps, which usually consist of deep vegetable debris soils, and covered with the usual tea-tree, banksias, and low eucalypti scrubs, backed up by a low inferior scrubby class of jarrah, which gradually intermixes and merges with the Karri.

As a rule, I found that in the Karri country the jarrah is subservient to the former, and therefore is inferior in every physical feature tending to natural competition as a timber tree.

Of course there are ranges and table-lands of this country which dissociate themselves from these remarks, but as a rule the latter are fairly correct.

Again, I found that the soil of the Karri belt at Karridale, or that lying between the Blackwood and the coast of Cape Hamelin, is of an entirely different nature to the other, being of a limestone formation, with the limestone on the surface, and the soil of a sandy calcareous kind. This, so diametrically opposite to the other, is a very remarkable phytological fact for future examination.

From aneroid readings, I found that the best Karri forests (that is as regards size, soundness and health of individual specimens) are to be found at elevations of from 300 to 600 feet above the level of the sea. This I found a fairly correct observation applicable to the whole area.

Of course, in a large area of forest country such as I am now referring to, there are certain parts better than others as regards all of their natural features and surroundings; and, therefore, in coming to a conclusion as regards the best Karri forests which I have seen, I cannot but say that this is upon the Warren River, within a radius of some five or six miles of Mr. Brockman's homestead.

This, undoubtedly, is the best home of the tree, and although there may be places where there are larger members of the species, to my mind the ranges and plateaus upon the Warren River contain the best forests of this remarkable tree.

At Denmark, the property of the Millar Company, the forest of the tree is certainly very fine, and is perhaps more continuous than anywhere else; but the trees are not so high, individually, as those on the Warren.

Karridale, the concession of the M. C. Davies Company, contains some excellent timber of the species, and has the honour of possessing the largest tree of the kind represented in this report. The trees here are certainly of a high-class order in every respect, and will hold their own as regards general possibilities.

The timber is red in colour, and has very much the appearance of jarrah; indeed, so like are the two, that it takes a good judge of both to distinguish each. It is hard, heavy, elastic, and tough, but does not dress, nor can it be wrought, so easily as its contemporary.

It is said that for underground or waterworks the timber is certainly inferior to some other kinds, especially to that of the jarrah, and there can be no doubt about this fact, which has been demonstrated time after time in this Colony. And still it is only fair to say that instances have been brought under my notice where posts and slabs of the timber have been known to have been in the ground for 30 and 40 years with only an ordinary amount of decay. This is certainly very puzzling, and makes one doubtful in regard to the conclusions generally which have been arrived at in regard to this timber.

However, as may be seen from the comparative tests which have been made in regard to its tensile, crushing and breaking strength, it stands as a timber of a very high order indeed. We must, therefore, pending other and more general experiments, look upon the Karri timber as one best suited for superstructural works.

For bridge planking, shafts, spokes, felloes, and large planking of any sort, flooring, general wagon work, beams, it is unequalled in this Colony.

In lateral strength it is very much stronger than jarrah, and for works requiring the bearing-up of considerable weights, such as bridges, floors, rafters, beams of various kinds, it is of great value. In our railway sheds, the wood is now much in use for the construction of wagons of all sorts. It shrinks laterally but not to any great degree in a longitudinal direction. Altogether the timber is a most valuable one.

For street blocking it is most valuable, and for this purpose seems to be equal to, if not better, than its colleague, the jarrah, in that its surface by the wear caused by the traffic does not render it so slippery for the horses' feet. As is well-known, this timber is now largely exported for the London street paving. It is also finding a ready sale in South Africa, for mining purposes chiefly.

Tuart.

This is another of the commercial trees of the Colony, and, although comparatively limited in extent, still its importance is great, and hence must have a place in this section of the report.

The technical designation (*gomphocephala*) has reference to the markedly peculiar swelling or hanging-over appearance of the lid of the calyx tube. This is a very marked feature of the species.

Sometimes the vernacular name is spelt "Tooart." It is our rendering of the aboriginal pronunciation of the word.

This is a handsome Eucalypt, and has a wonderfully bright and cheerful appearance in the forest. The bark is of a greyish-white colour, and is smoothly crinkled and persistent throughout. The trees are always clean and bright looking.

In the young stage the species forms a very ornamental tree, and is planted as such in some of the other Colonies. It is straight, well clothed, and has a beautiful bright-green leaf, and in this

respect is not unlike the Karri. When the tree has developed out of the seedling and sapling stages the leaves get more narrow and elongated than formerly.

In height this species attains sometimes to 150 feet, and in circumference to more than 22 feet at the base. In some cases the trees run up to 70 and 80 feet without a branch, but, as a rule, they have heavy tops with boles about 40 feet to the first branch. As a rule they do not form a dense forest, but appear to like plenty of individual room, although this observation may be only one of conjecture from the present appearance of what remains of the forests of the tree.

I am inclined to think that the species is a fairly quick grower, and, by cultivation, could be made to attain the size of a fair tree in from 30 to 40 years' time. A sapling which I had cut down gave the following measurements:—

Extreme height	88 feet.
Length of bole to first branch	43 feet.
Diameter at base	15 inches.

I could not count the concentric rings, but put the tree down as of about 35 years of age.

In general appearance, the trees resemble very much what are known in the Eastern Colonies as the "box."

The tree is confined in its natural habitat to the limestone belts lying along the coast between Perth and Busselton. It seems to grow nowhere except upon this calcareous formation, and is not, so far as my observations go, in any case, found even slightly outside of these.

This calcareous strip of country is intermittent in places, and is hardly, if ever, more than two to three miles in width; but, in all cases, it is quite close to the sea, and in some instances runs into the coastal sandhills.

I think that the tree is purely gregarious, and does not intermingle with any of our other timber trees, except perhaps in places sparsely with a stunted form of the jarrah. With the banksias and melaleucas it is of course intimately associated, but these only form the undergrowth of the forest which it creates.

The soil formation of the limestone belt referred to is a sandy loam of considerable fertility, with a subsoil of a rather retentive nature. Upon this the Tuart seems to feed and thrive well.

Of course, from these natural proclivities, we must classify the tree as a purely coastal one.

The real home of, or the place where the Tuart is found in its perfection as regards size, health, and soundness of timber, is in the neighbourhood of Wonnerup Station. Here the tree is to be seen at its best. No doubt there are other spots where fine trees are to be seen, but for quantity and general excellence the place indicated is undoubtedly pre-eminent. This lies about fifty feet above sea level.

The timber of this species of Eucalypt stands classified as the strongest, heaviest and toughest in Western Australia.

It is extraordinarily hard, and so interlaced in the grain that it is difficult to split. It is said to season without much shrinkage or splitting. There are some wonderful, apparently correct, records in connection with it. It has the quality of resisting the changes of weather, and altogether is a timber of a high standard.

Some of the uses to which it is now applied are railway wagons, buffers, engine bearers, keelsons, stern posts, bridge supports, dockgate frames, wheelwright's work generally, shafts, and most other works where great strength, solidity, and hardness are requisite.

The wood is of a yellow-whitish color, and so dense that it is difficult to work. It is doubtful as to its resistance to white ants or the teredo. I have seen a log of the timber badly destroyed by the former. Another case represented a slab which had been lying exposed to the weather and white ants for over 20 years without any injury.

Sandalwood.

This, although only a small tree or shrub, is an important factor in the timber industry of Western Australia, and therefore has a place in the description of those forest products which have assisted to build up the export trade of the Colony.

This species is somewhat peculiar in its appearance, and certainly has more of the character of a large bush than that of a tree proper. It has a low depressed habit, and consequently decidedly branchy and heavily topped. It is seldom found more than 15in. in diameter, and from 12ft. to 18ft. in height, with stems about 8ft. to 10ft. in length. In a good many cases, however, stems have been found measuring over 18 inches in diameter and 12ft. in length, these weighing from 3cwt. to 6cwt. Trees have been cut which produced timber weighing more than half a ton.

This tree is found fairly distributed over the inland parts of the Colony, except in the south-western portion of it, grows most freely on barren, sandy soils, and is frequently intermixed with the wandoo, york gum, and morrell. It is not gregarious.

From Mr. J. Moore, J.P., of Bunbury, I have received the following interesting details of the early days of the sandalwood trade. It appears that the first wood was delivered in Perth by the farmers of the eastern districts, about 50 years ago. This they exchanged with the merchants for goods.

This was then shipped to Singapore and China.

Although the principal shipments of the wood took place from Fremantle and Albany, large quantities were exported from Bunbury, from which port the first shipment took place in 1849, the timber being brought there by teams belonging to Messrs. Elliott & Clifton.

For the wood, the farmers received from £7 to £8 per ton, the merchants realising about 15s. per ton profit.

The trade then languished for nearly 20 years, when it made a fresh start by the farmers sending their teams out in the summer time to cart the timber into port, which had been procured by parties of cutters during the previous season. In this latter enterprise I understand that Mr. George Rich, of Bunbury, was prominently associated, and that it was he, with his men, who cut the sandalwood track through the virgin jarrah forest to the Williams.

Altogether, I understand that about 20,000 tons of the material have left the port of Bunbury to date.

About 1882 the trade practically ceased, owing to a decline in price caused by the Chinese market being overstocked; in consequence of which, the merchants were encumbered with large quantities in stock.

At the present time there is a revival in the trade, and all the old stocks along the Great Southern Railway are now fast disappearing through the port of Albany, which is destined, I think, to be the chief shipping place for the trade.

At present there is, however, a considerable quantity of the wood being exported from Fremantle. This is being cut between Northam and Southern Cross and upon the goldfields.

In order to allow the young trees in the cut-over portions of the Sandalwood country, to come up and grow to maturity, the Government lately set apart a considerable area of this, upon which Sandalwood cutting of any kind whatever is prohibited for the next two years. This will enable the crop of this tree to be maintained for future operations. The area thus closed from cutting is a very large one indeed, and includes all that portion of the colony from which Sandalwood timber has been obtained during the last forty years or more. The young trees upon it are showing here and there all over the ground, and thus the renovation of the forest by natural reproduction is now assured; consequently there is no fear of the tree becoming exterminated.

Should, at the end of the two years, it be found that the conserved trees are not then sufficiently grown for utilisation, the area will be reserved from cutting for a further period as may be found necessary, and so on until the crop is considered ripe for the market.

In carrying out the reservation scheme as above notified, care has of course been taken to leave a sufficient area of the available country open for the cutting of Sandalwood in order that there may be no complaints as to the curtailment of the operations of the getters of this wood, and consequently to the injury of the industry.

The principal areas now available for Sandalwood getters are those lying along the Railway lines North of Southern Cross, where there is a very considerable quantity of matured trees ready for the axe. This is generally within easy distance of Railway communication, and therefore thoroughly negotiable.

As will be seen on reference to the Section of this report which deals with the subject of Regulations, there is provision made for restricting the cutting of Sandalwood to a certain size, so that even the young and immatured trees growing on ordinary Crown Lands outside of the reserved area just referred to, are in a sense protected and beyond the reach of the wood-getters.

At the instance of the late Bureau of Agriculture, the Government is experimenting in the sowing and artificial cultivation of the Sandalwood tree upon a small block of land near Pingelly, and a small area of Sandalwood near Meckering has been enclosed, and is being systematically conserved.

From these facts it will be seen that the Government is alive to the importance of the industry connected with this small tree.

C.—BRIEF DESCRIPTION OF THE PRINCIPAL SECONDARY FOREST TREES OF THE COLONY.

In the previous subdivision of this section, I have reviewed what are at present known and recognised as the trees which supply the export timber trade of the Colony.

These, however, do not comprise the whole of the forest wealth of the territory, and a brief reference to the principal members of what may, for distinctive reference, be classified as being of a secondary type, is necessary in order to make this document more complete as a report upon the forest resources of the country; more especially as I consider that some of these trees possess timber of a high class, and will yet become, if they are not now, of considerable importance to the State.

My information in regard to several of the trees which will be referred to here, is necessarily limited as regards personal observation, but all the best sources have been taken advantage of in order to produce some tangible data upon the subject. In more than one case, several species will be dealt with collectively, more from want of specific information than from individual worthlessness.

Where common or vernacular names are unknown, the trees will be referred to by their technical designations.

Wattle.

The word "Wattle" is rather ambiguous, and in Australia generally, is applied to any species of the Acacia family. In this case, its application, however, has reference only to *A. saligna*, from which the bark containing the mimosa tannin in this Colony is obtained. In Mueller's "Select Extra-tropical Plants," it is designated *A. leiophylla*: this referring to the smooth character of the leaves.

The species is a small tree at best, rarely exceeding 30 feet in height and one foot in diameter. It is, however, of a very spreading habit, with timber of considerable size and good girth; consequently each tree bears a fair quantity of bark.

In appearance, it is a somewhat handsome member of our forest flora, and as it is umbrageous and lives a fairly good number of years, it may be considered a fitting subject for avenue and shade purposes.

I have seen it in various parts of the Colony south of the 30th degree of latitude, but as to whether it was in all cases the result of natural growth I am unable to say; possibly not, as, being a rather handsome tree, it may in some cases have been planted for ornamental purposes.

In any case, however, the South-Western District of the Colony is the natural habitat of the species. It appears to frequent deep rich places, where there is a fair amount of moisture, although not of a stagnant nature.

There is a good deal of the tree to be seen growing naturally near Busselton or the Vasse. That portion of the Colony seems to be peculiarly well adapted to the growth of the species.

A special feature of this tree, and one which commends it for cultural purposes, is that it sends out suckers from the old stump after the parent tree has been cut down. This is a valuable peculiarity of the species.

According to analysis, the bark contains some 30 per cent. of tannic acid; and as the tannin-bearing trees here are somewhat scarce, its cultivation should form a subject for industrial attention.

The tree is easily distinguished by its long, twisted leaves, which are a special feature of its foliage, and as such are very marked in their characteristics.

It seeds prolificly, and if sown for cultural purposes, this should be soaked in boiling water, and otherwise softened before being sown in the ground. It germinates freely, and is comparatively easy of cultivation.

Raspberry Jam.

This is another Acacia, and well-known in the Colony. It is a small tree of about 30 feet in height, with stems reaching to one foot in diameter, and boles 10 to 12 feet in height. It is of a handsome rounded shape when allowed to spread out its branches, and the appearance of the leaves is bright green and picturesque.

The vernacular name is derived from the peculiar scent of the wood, which is wonderfully similar to that of raspberries. This is truly remarkable, and has to be smelt to be appreciated. An oil of this flavour is obtained from the wood by distillation.

The wood is very dense, and is largely used for fencing, survey posts, etc. In the ground it seems to last for ever, and has the peculiar faculty of being impervious to white ants. It is a beautiful wood, dark in the middle, with a white margin on either side; very heavy, and would make an excellent timber for cabinet and ornamental work of all kinds. At present it is sometimes turned into pipes and walking sticks. A large quantity is now being yearly cut down and burned, in clearing the land, by settlers.

The Government is now endeavouring, through the Agent-General in London, to introduce it to the English market. Its utilisation there would, I think, be generally appreciated.

Badjong.

This is what is known to the colonists as the "Wattle Gum." It is found here and there along the flats and river banks in the South-Western humid districts, and is often found growing with the "Jam," in the eastern districts.

Its common name has reference to its distinctive peculiarity of yielding or exuding large quantities of gum each year. For the production of this useful and valuable material, it is a tree of some commercial interest. I have seen it over 40 feet in height in favorable places, with diameters reaching nearly 15 inches.

Although I have not actually seen it tried for the purpose, I am of the opinion that the timber of the species might, with advantage, be utilised as ordinary barrel staves and for soft-wooded turnery of various kinds.

Peppermint.

This is sometimes called the "Willow Myrtle" of the South-Western portion of the Colony, but it is more generally known as the "Peppermint Tree of the Colony."

It is a well-known tree here, and is found abundantly along the sand banks and river estuaries of the western coast. It is therefore, purely coastal, and is seldom seen further inland than 15 or 20 miles, and then only in the flats and sand-drifts or washes of the more sheltered portions of the rivers. In exceptional cases I have seen it 40 miles from the coast, but only a few individuals in specially favorable spots.

The species is very handsome, and, with its dense drooping foliage, makes a fine tree for shelter, shade and ornamental purposes. The flower is white and covers the tree like a spray of snow. As a tree for street planting it is well suited, and may be seen in the streets of Albany, Bunbury, and Busselton, where, at the latter township especially, there are some fine avenues of it. It may also be seen growing in Adelaide Terrace, Perth.

The timber is hard, durable, and makes an excellent firewood. The leaves, when crushed, emit a strong perfume resembling peppermint, hence the name. The oil distilled from the latter possesses strong antiseptic properties.

It often grows to over 50 feet in height, with diameters of stem two to three feet at the bottom.

Banksia.

These trees and shrubs form an interesting feature in the forest flora of this part of Australia. They are, however, with one or two exceptions, more ornamental than utilitarian, and I shall therefore only refer to them briefly in a body, and not individually.

What is known as the "River Banksia" attains the dimensions of a fair-sized tree, and is always found growing on the rich alluvial flats or banks of rivers. It is rather a handsome and well-grown tree, and, when in flower, with its yellow-red erect cones, combined with the light-green leaves, has a very striking appearance. The wood of this species is of a soft, light-coloured character, and is used in furniture making and for some purposes in house fittings. It would, I think, make good staves for casks.

I have seen some very good bush tables made of the timbers. It seems to become hard and durable through age.

The timber of all the Banksias is largely used for firewood, but the principal one for this purpose is *B. Dentata*, which grows so freely round Perth and the flats generally lying between the hills and the coast.

Sheoak.

Of these Casuarinas there are several species in the Colony which come under the category of trees. The ones enumerated in the list at the beginning of this section of the forest trees of the Colony are the most prominent members of the family here.

Casuarina Fraseriana is the species chiefly found in the South-Western portion of the Colony. This yields a good timber for furniture purposes; it is fairly light in weight, and beautifully grained in its growth, and is, (or was,) largely used for shingles, for which purpose it is well adapted, being easy to split and durable. It is also a very ornamental tree, and is therefore suitable for planting in parks and pleasure grounds. It is very gregarious, and is only found in clumps here and there through the jarrah and Karri forests. I have seen it on dry knolls, upon poor soils, and upon rich bottom river flats as well, but always of greater size and beauty upon the latter.

The other Casuarinas mentioned in my list, as well as other species not enumerated, are not of much commercial value, although each has its own local uses.

Red Gum.

Next to the jarrah, there is no tree which is so widely distributed over the timber regions of the country as the Red Gum. We find it intermixed with the jarrah, wandoo, York gum, and karri. In some places it takes precedence, as regards numbers, of any of the trees mentioned, but in only a very few cases can it be called gregarious, and even then only upon comparatively small patches. It certainly is the only tree of any consequence upon the flats between the Moore River and the Vasse. All over the South-Western Division of the Colony it is a common member of the forests, and this, so far as I am aware, embraces the extent of its local habitat.

Although sometimes found growing luxuriantly upon the high ironstone ranges, it seems to delight mostly in the deep rich soils of the flats and valleys, where in places it forms the principal, if not the only tree growth. This may be seen to advantage about Perth, Midland Junction, Guildford, and along the railway line to Bunbury, at Boyanup, and other places where the country is locally low-lying and the soil of a deep loamy character. It seems to grow equally well in deep, sandy, porous soils, as in those having a clayey retentive nature.

The specific name (*calophylla*) has reference to the beautiful appearance of the leaves, and is not inappropriate, as these are, relatively to other members of the genus, particularly handsome.

The vernacular name has, so far as I can see, no special application, except that it may be to the gum which exudes from the tree, and being of that colour, gives it and the surrounding vegetation a reddish appearance.

I have observed that when growing in the karri country, where the soil is of a rich, deep, loamy character, the tree is less subject to gum veins than elsewhere, and consequently the timber there is of a more marketable character.

The gum is a "kino" of some considerable value for its medicinal properties. It exudes from the tree in a thick treacley condition during the summer—generally from the trunk, but frequently from the main limbs as well, thus giving the leaves and herbage under the tree the appearance of being bestrewed with blood. It is worth about £25 to £30 per ton, and is easily collected, either in the liquid or dry state. It is used locally for tanning purposes.

The bark of this species is of a hard, rough, and irregularly-furrowed or broken appearance, therefore adding considerably to its rugged aspect.

Unfortunately, although such a widely distributed species, its timber can only, at present, be classed as of second rate quality.

This, of course, is owing to the gum veins which intersect it in every direction; otherwise the wood is of an excellent kind, and is used locally in short lengths for such purposes as axe and other handles, spokes, naves, rails, harrows, shafts, and other farming necessities.

Although sometimes subject to attacks of white ants it is not as a rule apt to be destroyed by these insects. In any cases, especially in the early days of our settlement, the timber was frequently used for outside constructive works by the settlers. In proof of this, and of the durability of the wood, there are some valuable specimens to be seen in the Museum in connection with the Department here. These consist of—

1. A piece found bedded in the mud wall of an old house erected at Ellenup, near Bunbury, by Mr. J. Scott, about the year 1837, having been used as a wood brick to fasten the lining to. This was taken from the wall by his son, Mr. Robert Scott.
2. Portion of post of fence erected in 1865 on Mr. Edward McCarthy's property, Pinjarrah, and forwarded by Mr. J. N. Cox in 1898. This is in a good state of preservation.
3. From Mr. Clifton, Austerlin, two pieces of Red Gum taken out of the cellar of his house, having been there for fifty years. Received in the year 1897. In an excellent state of preservation.

4. The wood splits most freely, as may be seen from specimens in the Museum of portion of a tree upon which a Jarrah tree fell in the forest. This was rendered into splinters over 12 feet in length without any artificial aid, consequently I think the timber could be utilised in the construction of casks, &c. In consequence of this special feature, it is now, especially in the Blackwood district, used in the construction of fruit cases, specimens of which may also be seen in the Museum of the Department.
5. Portion of a pointed end of a pile which had been used in a bridge across the Perth waters, where it stood for over 30 years without much deterioration. This was presented to the Department by the Public Works Department, through Mr. H. Passmore, one of its Inspectors.

The excellence of this tree, however, lies in its uniform umbrageous and spreading character, and this gives it the unqualified name of being the best shade gum in our forests. When standing alone, and allowed to spread and develop its branches, this tree forms a very handsome, picturesque, and shady object.

In those portions of the country which are devoted to stock raising, a few specimens of this kind are invaluable in the summer months.

The flowers of the tree are large, white, prolific, and full of honey. In consequence of this fact the apiculturalists of South Australia are planting it round their holdings.

It is fast-growing, highly suited for ornamental planting, and makes splendid firewood.

Wandoo.

This is sometimes referred to as the "white gum," but more generally, I think, as the "Wandoo." The specific name which it bears refers to the curvature of the lid of the seed vessel, but this is hardly sufficiently pronounced to justify the deduction. "Wandoo" is the aboriginal term applied to the species. It has a very large range of habitat, and may be said to be the principal forest tree on the eastern slopes of the Darling Range; also intermittently northwards to Geraldton, and eastwards to the Goldfields. In places here and there the species crosses the Darling Range to the western slopes and bottom lands, but then only in patches or strips, and not to any great extent. Instances of the latter may be seen in places all along the foot-hills and flats of the ranges between Gin Gin and the Collie River.

In appearance it has a yellow-whitish, blotchy look, not clean-white like the karri, but always more or less speckled, but still smooth. It is a well-balanced, sturdy-looking tree, and is at all times a clean bright object in the landscape.

As a rule this tree is not very large, but, on an average, specimens 60 to 80ft. in height, with diameters of from 1 to 2½ft. may be taken as fairly representative of the species.

It is true that I have seen individual trees a little over 100ft. high and 3ft. in diameter at the base, but these were exceptionally large for the class.

The country upon which the Wandoo is found growing abundantly and most luxuriantly, is of a cold, hard, unpromising nature (decomposed granite), being flat, stagnant, sour, and sandy on top, and invariably resting upon pipeclay. This is very boggy in winter and hard in summer. In such situations, however, the tree seems to thrive well. As a rule this class of country is fairly well grassed, but in many cases is infested with one or other of the poison weeds, principally that of the "York Road Poison," which of course interferes with its speedy and safe settlement for pastoral purposes.

In some cases the tree intermixes with the jarrah and "blackboys" to a slight degree, and then the soil improves, having more loamy and friable particles in its composition.

These Wandoo tracts form fine open forest country, but, for the most part, are destitute of natural waters, although I understand that good and plentiful water can be obtained by sinking at comparatively shallow depths. Of course, for ready settlement, damming the water courses should be an easy matter with the subsoil which this country possesses.

I am pleased to say that the timber of this tree is, although occasionally spoken of in an indifferent manner, of a rather superior character. It is hard, very dense, somewhat dull yellow or darkish yellow in colour, durable, and remarkable in its lateral and compressive strengths. At Pingelly, I was shown a fence post which was said to have been nearly 50 years in the ground; and Mr. Warburton, of Yeriminup, gave me a piece of white gum which he said had been in the ground as a fence post for over 40 years; this appeared to be in a perfectly sound condition.

For naves, cart and buggy shafts, spokes, felloes, and other rural purposes, it is frequently used, and I think for railway truck construction, receiving buffers, and other works requiring resisting strength, it is of great importance, and will eventually vie with, if not surpass, the tuart timber for these purposes. I look upon it as a timber highly suitable for mining works. It weighs over 70lbs. per cubic foot, even after it has been seasoned for a considerable time.

It forms one of the principal trees found upon the goldfields and there are several sawmills which cut up this timber for general mining purposes. Were it not for this local timber the mines would be badly supplied with handy supplies.

In the early days of the Colony, the timber of this tree was frequently used for general outside works, and specimens of this have in some cases been given to the Department. Amongst these are the following:—

1. Head and section of a pile which was drawn from the old Serpentine bridge upon the Bunbury road. This pile was driven in 1854 and when drawn two years ago, was in a remarkable state of preservation. This was presented to the Department by Mr. Louis Grant, the contractor for the new bridge.
2. Cogs from an old water wheel at Ellen's Brook Flour Mill. These had been in use since the year 1837 and now show very little wear and are in a thorough state of seasoning and preservation.

All these specimens were kindly supplied by Mr. Grant as aforesaid.

Altogether this is a remarkable timber and is one of considerable value.

York Gum.

The specific name given to this tree bears reference to the oblique veins of the leaves.

I understand that the vernacular designation was given to it owing to its being a common tree about the town of York in this Colony.

So far as I have seen, this tree seems to be scattered all over, in a more or less degree, the country occupied by the wandoo, that is the eastern slopes of the Darling Range. I have not, however, met with it where the wandoo crosses into the forest on the western slopes of that range. It seems, however, to occupy a distinct tract of country some miles in width, extending from north of Beejording, running southwards through Northam, York, Beverley, Pingelly, Bannister and Ettakup, and thence bearing south-east to the Pallinup River.

The bark of this species is rough, dark coloured, and persistent and easily distinguishable from the wandoo by its dark rugged appearance; otherwise the two trees have a resemblance in growth, habit, and general surroundings.

In height, the York gum rarely exceeds 100ft., and a diameter at base of 3ft.; more generally it is about 70ft. to 80ft. in height and 18in. in diameter.

It appears to grow in any kind of soil, but certainly has a preference for the richer and loamy deposits found along the depressions and water courses of the country.

The wood is exceedingly hard, heavy, and tough, and it is considered one of the best in the Colony for the construction of naves, felloes, and general wheelwright work. This being the case, it appears to me that its usefulness might be extended to works where toughness and general strength are required. It is reddish in colour.

As already said, the timber of this tree is used for wheelwright purposes, and for such articles as "hobs" and felloes it is in great request, and can hardly be surpassed as such. A large number of

these are daily manufactured at Newcastle, and from there are sent out to various parts of the Colony. There are now enquiries being made from wheelwrights in Melbourne, and a market for the timber is likely shortly to arise there.

The timber is said to be the very best in Australia for the purposes named.

There is in the office of the Department, a portion of a felloe which has been in use in an old wheel over 40 years, and now the wood appears to be as sound as ever.

Mallee.

There is not much to say about this member of our forests. It is found in different parts of the inland scrubs of Australia. I have seen it in South Australia, Victoria, and New South Wales, but always only about 20 to 30 feet in height, and with proportionate girth of stems.

The tree is referred to here only because, according to Baron F. Von Mueller, an oil of a valuable specific character is obtained from its leaves.

It may be seen in small clumps here and there through the wandoo and York gum country; but further east and north there are, I understand, considerable belts or masses of the tree, which will, no doubt, in time, be availed of for the purpose of producing the eucalyptus oil referred to.

Crimson Flowering Gum.

This is referred to here, not because of its value as a timber tree, but simply as a gorgeous and remarkable specimen of the forest flowering trees of Western Australia.

Having seen specimens in the Botanical Gardens of Adelaide and Melbourne, and having learned of its whereabouts, I was upon the look-out for it, so as to be able to see and describe the species as found in its native condition.

On our way down from "Forest Hill" to the sea coast, on the 2nd of June, 1895, we struck it for the first time. This was about six miles from "Irwin's Inlet," and possibly some ten miles from the coast. The site is of a rich sandy loam, with large bracken ferns growing all round: a gently sloping, southerly aspect terminating in a creek with grass trees.

The subject is a very handsome, branchy, umbrageous, small tree; its foliage is dark-shining green, with the leaves standing out more flat, and not edgeways, as is usual with the eucalyptus family generally. The specimens which I saw ranged from 20 to 40 feet in height, with stems averaging about a foot in diameter. The bark is rough and somewhat like the red gum; the wood is a dark, blood-like colour. These trees had their branches sweeping down to the ground amongst the ferns. Elevation of the site above the sea, about 100 feet.

I also saw it growing most luxuriantly upon the land side of the sand hills, within one mile of the sea, at "Point Irwin." The trees there were in full bloom at the time (June). In this case the trees were small, and certainly more of the character of a bush than a tree.

It is generally understood that the flowering period of this species is February and March, but in this instance I found it as late as that stated.

The capsules or seed vessels are large and urn-shaped, like the red gum, but the seed is of a pale colour, and winged; whilst those of the red gum are large and black, but without any membranous appendage.

The late Baron Von Mueller in referring to this handsomely-flowered species says: "There are other large-flowered Eucalypti peculiar to Western Australia, for instance, 'E. Preisiana,' 'E. tatrafstra,' 'E. ptychocarpa,' 'E. erythrocorys,' and 'E. Youngiana,' the seeds of all which could be made an article of commerce." I am, however, unacquainted with any of these and hence do not attempt a description of them as yet.

Flooded Gum of the Interior.

This, perhaps, is one of the most widely distributed eucalypts on the Australian Continent. Having now seen it here, I can affirm its being indigenous to all the colonies, but perhaps under different physical circumstances in each territorial division of the country.

In South Australia and Victoria no tree has, perhaps, supplied more material for railways, bridges, jetties, piles, and telegraph poles than this has done.

In those colonies it is the principal timber tree and, although it has not—through want only of convenience of land carriage—been much used in the public works of New South Wales, the forests of it along the "Murray," "Darling," "Murrumbidgee," and other rivers in that Colony are second to none on the Continent.

This, I consider, is the true red gum of "Australia," and no tree is better known to our explorers than it is. Nearly all of the land marks, and camp locations and "signs," left by these intrepid adventurers have been recorded upon trees of this species.

The tree appears to crop up here and there along the water courses of the interior of Australia, but of course there only as a fringe and in a stunted, branchy, and gnarled form. In those portions of this Colony through which I have travelled, the localities upon which the species was found invariably indicated the courses of the creeks and those low-lying parts of the country where claypans exist, and the storm waters had accumulated and lain for some time.

The bark of the tree is smooth, white, and deciduous each year. The wood is red in colour, weighs about 60lbs. per cubic foot, is admirably adapted for constructive works of all kinds, and resists the white ant and teredo as well as most timbers.

In this Colony, the tree is only found in such situations as those indicated, and, I understand, is not met with further south than the "Murchison" River. I therefore do not consider it as one of the timber trees of Western Australia, and dismiss it with this short notice.

Yate Gum.

This tree was first discovered at "Cape Leeuwin," and then named by "Labillardière." The specific description has reference to the long horn-like appearance of the operculum or lid of the calyx. The vernacular is that given to it by the aborigines, and in the Broome Hill District it is sometimes called "white iron bark."

This is not a very numerous member of our forests, but it still occupies a not inconsiderable place in the valuable character of our timbers.

I have found the species here and there all over the southern portion of the Colony, but always in small patches only. It seems to prefer and delight in the low-lying parts of the country, where the soil is deep and fairly moist, such as along lake banks, claypans, and river depressions. There are some good specimens of the tree about "Lake Muir," and in the country lying between that and "Forest Hill." In the hollows of the wandoo country it is frequently met with.

The bark is persistent, dark, rough, and rugged at bottom, but deciduous at top, leaving the branches white, like the karri.

The species is not, as a rule, a very large tree, but I have seen specimens 3 to 4ft. in diameter and 40ft. to the first branch, the extreme height being about 80ft. In South Australia I experimented considerably with the tree, and found it easily raised from seed, a fast grower, a hardy species to deal with generally, and readily adapting itself to situations with an annual rainfall ranging from 15 to 20 inches.

In this tree we possess a most excellent timber, and one highly suited and used for shafts, spokes, naves, felloes, boat ribs, and agricultural implements generally. It is well worthy of cultivation.

Morrell Gum.

A tree 50 to 60ft. in height and from 12 to 18in. in diameter. It seems to prefer a loamy soil, but to be partial to soils of any kind which are good, strong, and with some body.

The bark is rough and somewhat like that of the yate. Baron von Mueller says that it is probably closely allied to *E. oleosa*. Its range of habitat is from the Upper Swan country eastwards beyond Northam and up Newcastle way.

The timber is hard, heavy, very strong in every way, especially in its lateral tension, and is of a dark reddish colour. For such works as general wheel manufacture, shafts, blocks, tool handles, mallets, and others requiring timber of a tough, strong, durable character, the Morrell timber is highly recommended.

The word Morrell is the aboriginal designation of the tree; and the specific or technical appellation refers to the long horn-like lid of the calyx.

The leaves are especially rich in oil, and are therefore available as an industry for its extraction.

Red-Flowering Mallee.

In my "Forest Flora of South Australia," this small tree, or shrub, is fully dealt with, described, and illustrated.

The species is practically a Mallee only, and is here referred to purely on account of the beauty and striking character of its flowers. These are large, spreading and red in colour and wonderfully handsome. So far as I am aware, it is only found in a dwarfed form in the interior upon our South Australian border. The calyx, or seed vessel, is unusually large and angular, and these characteristics formed the basis for the specific name.

Blackbutt.

This tree is confined in its habitat to the South-Western portions of the Colony, and there only to the gullies and richer parts of it. It is met with on the Canning, Serpentine, Harvey, Collie, Brunswick, and Blackwood Rivers; in fact, it may safely be said that, on the western slopes of the Darling Range, where there is good deep moist soils, there will be found specimens of the Blackbutt. It is never met with in large masses, but always in patches and individuals according to the extent and lay of the rich soil. It is specially abundant at Balbarup, Dingup, and along the Blackwood River, especially from Bridgetown down to the Lower Blackwood. In the Blackwood gorge proper, the tree predominates above all others, and there grows to a large size. The tree is specially abundant and the timber of good sound quality in the Collie district, where large specimens of it may be seen.

I am of the opinion that the timber might with great consistency be used for street-blocking. It is often ruthlessly destroyed by the settler, and I really cannot see why it cannot be profitably used in this way. I am pretty sure that it would give considerable satisfaction.

The specific name refers to the spreading or diffuse character of either the veins of the leaves or the branches of the tree. There is, however, nothing in either of these to indicate the application of the word specifically compared with other members of the family.

As regards the timber, it is light in colour, hard, tough, and durable, and is used locally for such purposes as the construction of wheels, shafts and farming implements generally. It is certainly a good timber as a whole, and is gradually taking a place in our local timber market. It appears to last well underground. An instance of this was shown me at Dingup, where slabs of the timber were used 20 years ago in the construction of a cattle yard, and these were quite sound when I saw them, with the exception of a little decay between wind and water. Another instance of its durability came under my observations at Deeside, where Mr. Muir showed me fence posts of the wood which had been in the ground for 50 years.

Of course, as this tree is only found growing upon what may be described as the best land in the Colony, it is bound in time, as settlement develops, to become practically exterminated, or at least so far as to make it unavailable for marketable purposes to any appreciable extent.

It is very difficult to split or burn, and hence is not looked upon with much favour by the settler although always indicating rich soil. It is often to be met with 140 feet in height, and 4 to 7 feet in diameter. The bark is persistent, hard, deeply fissured, and dark grey in colour.

Blue Gum.

This is neither an important nor a numerous tree in the Colony, and is therefore only referred to briefly here. I have seen it occasionally in places but not very often. It occurs in small patches about

Karridale, the Vasse, Mount Barker, on the Tone and Gordon Rivers, in the creeks along the eastern slopes of the Darling Range, and on the Sandalwood track between Bunbury and the Williams.

The species is a fairly-sized tree of about 70 feet in height, and from 1 to 3 feet in diameter, with a smooth white deciduous bark. The settlers do not use the wood for any particular purpose.

The technical name refers to the large size of the seed vessels.

I think the vernacular was given to it, owing to its resemblance to the great Tasmanian blue gum (*E. globulus*).

Flooded Gums of the South-West.

These are *E. rudis* and *E. decipiens*, and are not of any marketable importance. They inhabit the low-lying flats and banks of the rivers between the Swan and the Blackwood, and are sometimes to be met with east of the Great Southern Railway.

The timber of both is inferior, and altogether the trees have little or no commercial value.

The Salmon Gum.

A tree ranging from 40 to 70ft. in height, and 12 to 30in. in diameter. Its name refers to the colour of the bark, which is of a reddish burnt appearance, fairly smooth and somewhat persistent.

It is decidedly patchy in its general habitat and often gregarious; and in the wandoo country is met with occasionally in clumps, and chiefly upon the ridges of local rises.

The principal home, however, of the tree is eastward of the Darling Range, from the upper reaches of the Swan to the dry inland districts of the Goldfields, and is found intermixed with the morrell and gimlet gums. It is a common tree east of Newcastle, Northam, York, and along the Yilgarn, Midland, and Great Southern Railways.

Along the Midland Railway the tree is found of a fair size, and in several cases there the timber has been used with great success in the construction of bridges and culverts.

The species prefers a good stiff loamy soil on top with a clay sub-soil.

The timber is hard, heavy, and durable, and is used upon the Goldfields for mining purposes, and at Northam and Newcastle in connection with wheelwright work. It has also been used as piles in connection with the construction of bridges on the Midland Railway in the Colony.

Gimlet Gum.

This is intimately associated with the salmon gum, and the two together often form considerable areas of forest country. The name is derived from the strongly fluted or longitudinally twisted character of the outer surface of the stem of the tree: this is very peculiar in appearance and is a unique and special feature of the species.

It seems to prefer good retentive soils, and its chief habitat is in the dry country east of the Darling Range. It is a common member of the forests east of the Meckering Agricultural Area, and in the country lying along the route of the Yilgarn Railway, and there spreading out north and south. There are patches of the tree at Carnaman, on the Midland Railway. With the salmon gum, it stretches beyond the Coolgardie Goldfields.

The timber is much of the same class as that of the salmon gum, and is in general use upon the Goldfields.

Mr. Worsley, of the P.W. Department, says that he finds it highly suited for cabinet work, and shows some fine specimens of furniture made by himself of it.

Native Pines.

These trees seem to crop up here and there in various parts of the Colony, but chiefly in the sandy and poorer portions of it. Of the various members of the family, the one in my list is the most important and the most widely distributed here, as well as all over the continent of Australia. The timber of this species is of splendid grain, not readily, if at all, attacked by white ants, is hard, light in colour, has an agreeable scent, and weighs about 40lbs. per cubic foot. For house-building, where

white ants are numerous, it is particularly well suited, as was found by the South Australian Government in the construction of the stations and other buildings along the route of the Port Darwin and Pine Creek Railway. It is also suitable for furniture making, yokes, boat knees, walking sticks, door panels, wainscotting, and picture frames.

I have not seen it in the humid districts of our South-West, but on the eastern sand plains and elsewhere in similarly dry and partially arid country it forms considerable belts.

Paper Barks.

A passing notice is all that I can devote to these trees. There are several kinds in the Colony, and these are always met with in swamps, on river banks, and in the moist alluvial flats bordering the rivers, and all chiefly upon the sea coast. The bark, with its numerous layers of a paper-like consistency, is a marked peculiarity of the tree, and for packing fruit for export should be well suited.

The timber is hard, durable, cross-grained, lasts well underground, and resists the white ants.

It is not much used here, but is available for ship-building, posts, short piles, and fencing.

The Christmas Bush.

A reference to this tree is made, not because of any value attached to its timber but simply on account of the picturesque appearance of its flowers.

This tree, as its vernacular name indicates, flowers at the end of the year, and then presents a striking appearance in the forest.

The flowers are in pendulant clusters, sometimes two or three feet in length, and are of a strikingly bright yellow colour.

The tree belongs to what is known as the Lorantheæ order of plants. None of these are cultivable, being all genuine parasites.

The wood is soft and spongy, white in colour, but of no commercial value.

The tree is always found amongst the banksias and jarrahs growing on the flats lying between the hills and sea coast.

NOTE.—Besides the foregoing, there are the Spearwood (*E. doratoxylon*), the Yatthæ (*E. focunda*), *E. Augustissinra*, and several other Eucalypti and Acacias which are endemic species to W.A., but not being of any particular economic importance, are not enumerated in this work.

SECTION II.

THE FOREST AREAS OF WESTERN AUSTRALIA.

In my description of the Forest Trees of the Colony (Section II.) I have gone so fully into their habitats, physical predilections, &c., that a description of the forest areas here would simply mean a great deal of tautology and unnecessary swelling of this report.

Besides, the forests here are so massed together and run into each other, that any attempt at separation would simply mean a description of the various districts from which the timbers are now being removed, and as the physical features of these districts are all pretty much alike, and are referred to more or less in other parts of this report, a further descriptive reference to them here is unnecessary.

Practically, the forests of the Colony are all situated in its South-Western Division. It is only there, at all events, where the great commercial timbers are found growing.

Of course, outside of this area, there are timber belts pretty well all over the territory, and although they represent considerable wealth for local demands, it is not considered necessary to refer to them specially here.

The Plan herewith has been specially compiled to accompany this report. It represents the district in question, and shows by colour, &c., the particular portions upon which the principal timbers are found growing. A reference to this will give a better idea of the forest areas of the Colony than any amount of writing would do.

I may state that the demarcations of the respective forest areas, and the computations connected with these, have been carefully calculated, and may be relied upon as representing a fairly correct record of the principal forest surfaces of this Colony.

According, therefore, to this Plan, the areas occupied by the respective principal trees of Western Australia are as follows:—

	Acres.
Jarrah, chiefly (with Blackbutt and Red Gum) ...	8,000,000
Karri	1,200,000
Tuart	200,000
Wandoo	7,000,000
York Gum, Yate, Sandalwood, and Jam ...	4,000,000
<hr/>	
Total area of the principal Forest surface of Western Australia	20,400,000

The above were my figures as published in 1896, and although a good many conditional purchase blocks have been alienated since that time, these only amount to a small area as a whole, and they do not affect the grand total very materially, and therefore need hardly be taken into consideration. I shall therefore make no alteration in them.

SECTION III.

ESTIMATED QUANTITIES AND VALUES OF THE MATURED MARKETABLE TIMBERS NOW STANDING IN THE FORESTS OF WESTERN AUSTRALIA.

It is perhaps quite unnecessary for me to say that I approach this subject with a considerable amount of diffidence; not diffidence in exactly the literal meaning of the word, but rather with a certain feeling of caution and hesitancy in approaching such a comprehensive and important matter.

However, whatever be the general verdict upon my figures and deductions, I am assured in my own mind that they are fairly correct and may be accepted as a reliable approximation of what they purport to be.

I desire it to be distinctly understood that the estimate of quantities has reference only to those large trees which are at the present time sufficiently matured to be available for sawmill purposes, and which are at that stage of growth when they should be removed in order to make room for the development of the young crop coming on.

In no sense, therefore, do these figures refer in any way to the permanent value of the forests, but only to the crop of trees which is now available for utilisation.

A reference to the value of the forests of the Colony as a whole, and to their possible permanency, are dealt with in another section of this report.

I have based my calculations in this section upon what I consider the trees contain of round timber suitable for the mill.

There is no doubt that our timbers must at present be cut to suit market requirements, without reference to a consideration of the proper and most profitable utilisation of the timber. This is one of the disadvantages attending the present market for our timber, but it is one which will, no doubt, gradually remedy itself.

To give an idea of the waste, unavoidably as well as carelessly, which goes on, I should think that something like two-thirds only of the timber in the trees are at present utilised. It therefore follows that the realised output from the saw-mills of marketable stuff is not so much as it would be were we in a position to command a market for general timber merchandise.

With these few preliminary remarks, I now submit the following as my estimate of the matured timber at present growing in the forests of the colony:—

	Loads.
Jarrah	40,000,000
Karri	15,000,000
Tuart	300,000
Wandoo, York Gum, Yate, Blackbutt ...	7,000,000
Estimated total loads of round matured timber now in the Forests of Western Australia...	62,300,000

This immense quantity is, I believe, considerably under what actually exists.

I think that we may safely look upon this timber as worth to the country, 60s. per load: this representing the average amount which is retained in the Colony for wages, haulage, trainage, loading on board ship, and profit now obtained by those employed in the trade.

Such being the case, we find that the marketable timber now growing in the forests of Western Australia is worth, deducting one-third for waste in sawing, no less a sum than, in round numbers, £124,000,000.

No estimate is here made of the Red Gum.

I think it is only fair for me to remark now, that the above figures, which were given in the 1896 report, were very much under what the calculations were arrived at by Mr. Newton Moore and myself at the time. As a matter of fact, the totals of the calculation were so enormous that I considered it advisable to only put down one-half of what they really came to, in order that they would not appear ridiculous and yet be wonderful. Even the £124,000,000 which I put down at the time have given rise, I am aware, to considerable unfavorable comment, in certain quarters, but I can assure the Government and the public generally, that they were very much under-estimated, and as I am confident on this point, I do not consider it necessary, even after the three years' cutting which has been going on upon the timbers, to alter the figures in any way.

Of course we are aware that considerable cutting and removal of the timbers has been done, but this has only been infinitesimal compared with the enormous quantities involved. It must not be forgotten that although very large areas of our forest lands have been taken up and leased, only a very small proportion of these are being as yet worked, and the timber removed from them.

I can assure the Government, and I think it is a matter for great congratulation, that when these leases are all being properly worked, it will tax all our present available wharfage accommodation to make room to enable us to readily and conveniently load up our timbers for export. I consider that, although there is now a very large quantity of timber annually leaving our shores, this is comparatively small to what our possibilities are in this respect. Such, at least, is my opinion, and I think any one who is mixed up with this enormous industry, will say the same.

SECTION IV.

THE PROSPECTIVE VALUE OF OUR FORESTS.

If dealt with now in an enlightened manner, the forests of this Colony have a bright future before them, and will become a lasting revenue-producing asset of the State.

Nothing worth speaking of has yet been done to avoid making their future management anything other than a success.

This fact must be gratifying to all concerned, and is certainly encouraging to those who have the privilege and honor of instituting such a complete modern system of forestry in the Colony as will entitle these forests to be recognised as one of the most important and reliable resources of the country.

It is easy, of course, to make a statement of this kind, but to carry it out successfully will be found to be a work fraught with difficulties, vexations and disappointments. Yet I maintain that all these can and ought to be overcome in the interests of the country generally. It only wants a wise administrative power and a strong Government to bring about what is here indicated.

Although, perhaps, there may be some personal opposition encountered with regard to any proposed measures, still I think they will, if carefully gone about, be carried. Generally speaking, I think it will be found that any sound scheme of forest administration which may be put forward will have the hearty support of the people, and therefore must eventually be adopted.

The value of these extensive Jarrah and Karri forests is now beginning to be recognised; they are not now looked upon as a nuisance and hindrance to settlement, as they were some years ago. The progress of events has entirely changed the aspect of the timber question, and where years ago forest areas could be obtained for almost nothing, these are now eagerly sought after at fair prices. The individual who possesses a bit of good forest land may consider himself fortunate in having this capital at his back.

A beginning only has yet been made in what may be described as the timber industry, but even the operations now going on in the forests give us an idea to what magnitude they will assume if fostered and encouraged.

At the present time there are not less than over 2,000 men employed in connection with the various sawmills; or, with their wives and families, and including all the other timber getters in the colony, something like from 8,000 to 10,000 souls are more or less dependent upon the present output of timber.

It is safe, I think, to assume that the capital represented by the various sawmills, railways, tramways, jetties, locomotive engines, trucks, wagons, live stock, and buildings, now engaged in and connected with the present utilisation of our timber, is not far short of £1,000,000.

We find that the total output of sawn stuff of all sorts from the sawmills last year was over 322,000 loads. This represents a gross value of nearly £2,000,000.

These, then, are only a few of the more striking figures in connection with the industry, which occur to me as sufficient to indicate the present position of our timber trade.

Even these figures are of considerable magnitude, and represent a business of no mean capacity, and certainly are of great importance to the country.

Then, if this be the case now, when a start only has really been made in the trade, the question naturally arises: What will the figures be in these respective lines in a few years' time? No doubt enormous. Even during the last two years the impetus and development of the trade has been most marked, and I do not hesitate to state, as my opinion, that, before the end of the present century, the capital invested, the number of men employed, and the output of the timber will be four or five times these figures.

But the question may be asked: What benefit is the State receiving from all this increased trade in her timber? Surely, after bearing and producing all this magnificent crop, the public finances of the country ought to be benefited by its removal. It is true, no doubt, that the country benefits indirectly through the Customs in increased consumption of dutiable goods. Still, admitting all this, I contend that the Forest Department should be able to show a fair revenue for the timber removed from its estate. At present it is only the individual timber getters who are reaping the benefit.

It is just and right that these parties, who have risked their money in developing and pushing on this trade, should receive a handsome return for the expenditure of their capital and energies; but it is equally right that the State should receive a fair equivalent for the product which is making this market.

As I have already remarked in this report, I do not think that the management of State Forests should consist in principally trying to make as much out of them as possible. This, in my opinion, should be a minor matter entirely, and always subservient to the more important one of efficient conservation and permanency.

It would certainly be most interesting and instructive to know the total forest areas and revenues of the respective countries in the world for comparative purposes, but to do this would entail too much labour. One or two instances which I am acquainted with may, however, partially fill the blank.

In 1886 the forests of the United States of America were estimated to embrace an area of about 350,000,000 acres, in which there were 25,700 sawmills erected, which employed 141,600 men, whose wages sheet amounted to £6,700,000 yearly, and the value of the output from which was £48,000,000 annually.

Great Britain, even with her, comparatively speaking, insignificant areas of forest country, can boast of a forest surface of over 3,000,000 acres, from which she annually receives at least £2,000,000.

India, that grand jewel of the British Empire, is in possession of the finest Forest Department in the world. Her forests cover an area of 144,000,000 acres, and the annual revenue from these is now considerably over one million pounds sterling (£1,000,000).

Coming nearer home we have South Australia, with an area of forest land not more than what is represented by one of our largest concessions, bringing in £12,000 a year in 1889, and New South Wales, in 1890, close upon £20,000 a year.

These facts make us think and wonder as to our possibilities in this particular line.

I find that during the year ending the 31st December, 1895, the total amount of all licenses, rents, &c., received in connection with the timber in this Colony amounted to the small sum of only £2,280. Since that time, however, there has been a wonderful increase in these fees, and, judging from the receipts to date, the revenue under this line will not be far short of £30,000 for the current year.

This is certainly encouraging, and points to the probability of a very large increase in the revenue derived from the forests in the near future.

With a rising market, a daily increasing appreciation of and demand for our timbers, a permanent reserved area of, say, 3,000,000 acres of the best matured forests in Australia, and controlled by a liberal, progressive, and able administration, is it too much to hope, with an almost certainty of realisation, that the revenue of the Forest Department of Western Australia will soon reach £50,000?

SECTION V.

SOME OBSERVATIONS AND COMPARATIVE TESTS ON WESTERN AUSTRALIAN TIMBERS.

Although I have already, in Section II. of this report, given some general information in regard to the qualities of our timbers under the headings of the respective trees, I devote this special section to a few notes and observations dealing with the subject as a whole and comparatively with the recognised tests which have been made from time to time by special authorities.

Numerous and systematic as these tests and experiments have been, still we find the results are so varied that it is fair to assume that they are not altogether conclusive, and should not therefore be accepted as final. I am very reluctant to come to this conclusion, but cannot avoid doing so after a careful study and examination of the various tables of experiments at my disposal.

The authorities consulted, and who have themselves actually made the tests, are the Admiralty, J. A. McDonald, Esq. (late Engineer in charge of the Fremantle Harbour Improvements), and Professor Warren (of the Sydney University).

Recently an able and interesting report was furnished to the Works Department of this Colony by Mr. H. P. Robertson, Assistant Engineer, generally upon the whole tests made by the authorities named, and although reluctantly unable to quote this document in full, I venture to give his summary of the average strengths of our principal timber trees as deduced from his investigations, which we will accept, for the present, as the most authentic record dealing with the subject:—

Table showing the Strengths of the Chief Timbers of Western Australia.

Local Name.	Botanical Name.	Weight per cub. ft. lbs.	Ultimate resistance in lbs., per sq. in.			Modulus of Rupture. lbs. per sq. in.	Modulus of Elasticity. lbs. per sq. in.	Factor of Safety.	
			Tension.	Compression.	Detrusion.			For live loads.	For dead loads.
Jarrah	<i>Eucalyptus Marginata</i> ...	65	5,000	6,900	680	8,900	2,080,000	8	
Karri	" <i>diversicolor</i> ...	63	7,000	6,800	580	8,000	2,890,000	8	
Tuart	" <i>gomphocephala</i> ...	67	5,000	9,300	670	9,300	2,300,000	8	
Wandoo	" <i>redunca</i> ...	72	6,500	8,600	580	11,100	2,600,000	8	

Referring to this table, Mr. Robertson says:

"In this table, for the weight per cubic foot of the different timbers, I have stated the average of the reliable results, and, for Jarrah and Karri, this is less than that given by Mr. McDonald."

"For the modulus of rupture for Jarrah and Karri, I have adopted Mr. McDonald's results, and for the other timbers I have taken 33 per cent. of the results calculated from the Admiralty experiments."

"For ultimate resistance in tension, compression, and detrusion, I have adopted the average of the Admiralty results. The results for tension are not very satisfactory, but are the best that I have."

"For the modulus of transverse elasticity I have taken a mean between the results of the Admiralty tests and those of Mr. McDonald."

That these tests are made by the different authorities in perfect good faith of course we know, but the results from each are, in some cases, so conspicuously different that the idea naturally arises that possibly the samples have been wrongly labelled, or tampered with, before they reached their destination. In no other way can I account for such differences of opinion. The timbers of Jarrah and Karri are so much alike in general appearance, that a piece of each placed together, without distinctive marks upon them, are most difficult to distinguish correctly.

As bearing out this hypothesis of possible change of names, an analysis of the figures arrived at by the authorities place our two principal timbers in quite reverse positions. For instance:—

1. Local tests give Jarrah greater transverse strength than Karri.
2. The Admiralty show that Karri has a greater transverse strength than Jarrah.
3. Local weights of both timbers are greater than those of the Admiralty.
4. Again, Professor Warren gives Jarrah three times and Karri twice the strength assigned to them by the Admiralty.

These discrepancies between the various parties show that grave errors must exist somewhere, and suggest the need for further tests upon a thorough and systematic plan being at once carried out by the Government, so that a reliable record may be made of the possibilities of our timbers.

It is true that these artificial tests have, at best, a relative value only, and do not afford an absolutely correct definition of the merits of the timbers.

It is well-known here that soil, locality, temperature, elevation, and rainfall, affect the strength and durable qualities of timbers. In no case is this more forcibly demonstrated than in the practical use of our best commercial timbers, the Karri and Jarrah.

For instance, it is well known that Jarrah, which is found in such a diversity of physical conditions, grown upon the ironstone formations or ridges, is far superior in every respect to that grown upon the low-lying granitic soils, although the trees themselves, and the appearance of the timber as well, may present the same characteristics to the eye.

So with Karri: I have seen specimens which have been in the ground over 30 years in good condition, whilst others grown in a different locality have only lasted a few years under similar conditions.

It is, therefore, perhaps only fair to assume that the specimens tested and reported upon by our different authorities were not obtained from the same locality.

There is a matter which I wish to draw attention to in connection with our timber export, and this being a fitting place, I do so now:—

For years back, in fact ever since the timbers of Western Australia began to take a place in the marketable world outside of her own domains, there has been a certain degree of rivalry of competition between Jarrah and Karri. This is a well-known fact, and has been emphasized in various ways, not only here, but also, and perhaps more emphatically, in the other colonies, and particularly in commercial circles abroad, especially in England.

The argument of contention has been that each timber is better than the other in quality, durability, strength, and so forth, for special general constructive purposes. This has, of course, been claimed, urged, and apparently proved by the advocates of the respective timbers.

Now, why is this the case? Of course we know that a little of supply and demand, and a large portion of self-interest, is at the bottom of the whole thing.

Without going into the matter here, beyond this mere mention, I can only say that the fact of this antagonism is a great mistake and detrimental to the respective timbers, and consequently to the country at large.

I maintain that both are most valuable timbers; that each is superior to the other in its own specific line; that practical men would not dream of using Jarrah for certain works when he knows that Karri is more suitable, and *vice versa*, and that there is room and a demand for both timbers without clashing with the markets of each other.

I much regret to say that since the first edition was published, there has been no further information obtained in regard to the tests of our timbers, so that given above must still hold good.

Although urgently required, no further tests have been made by the Government as recommended by me in my previous report.

A complete and trustworthy table of tests is very much required, and I again strongly urge upon the Government the necessity for having this done at an early date.

Our timbers are now being sought from all quarters of the world, and it does seem strange that we are not in a position to give applicants a reliable account of their qualities.

SECTION VI.

THE LEASED FOREST AREAS IN THE COLONY.

These I shall refer to under three distinct headings, beginning with:—

A.—THE SPECIAL TIMBER CONCESSIONS.

These represent an area of something like 447,000 acres of forest land. To the outside world the principles of these Concessions are not understood, therefore a little explanation is necessary to a full comprehension of their position.

It appears, then, that when our timbers began to get known, and assert themselves as of great excellence and durability for constructive works generally, an outside trade, chiefly with the other Colonies, of the materials, was the result. This, although necessarily small at first, soon began to develop, and with the view of encouraging it, the Government of the day said:—

“Whereas it has been deemed to be most advisable for the general benefit and advancement of the Colony and territory of Western Australia, and the development of its trade and internal resources, to establish a trade in timber, the growth of the said Colony, and for that purpose to make concessions to foreign capitalists who shall be desirous of carrying on *bonâ fide* operations for such purpose.”

Acting upon the policy thus enunciated, the Government leased certain timbered lands for certain numbers of years, with the sole right to remove, sell, or export the timber upon them at a mere nominal rent per annum. These rights and privileges still exist, and are now the cause of some trouble and complications owing to the advantages which they give the owners over those who are taking up timber areas at the present day.

In considering the aspect of these timber concessions, it is right, however, that the then condition of the Colony should be borne in mind.

I am now referring to over 20 years ago. At that time the Colony was struggling under the unavoidable Imperial policy. The resources of the territory were languishing for the necessary capital and energy to develop them, and, therefore, what more natural than that the Government should offer inducements (practically bonuses of the materials themselves), in order to bring trade to the country and induce development of her industries upon a sure and extensive scale.

Whatever arguments may be brought against the action taken at the time, I am convinced in my own mind that the policy was a sound and substantial one. It certainly led to what was intended: *development* in this particular branch of the country's resources.

Expensive machinery was imported and erected, tramways, jetties, and railways were constructed, and thousands of pounds were annually spent in labour; all adding to the general advancement and wealth of the Colony.

Such, however, were the difficulties which had to be encountered by those who took up the industry in those days, that, in several cases at least, money was lost over the venture, and for many years it was not a remunerative concern, and some of the Concessions had to change hands, whilst others remained in comparative abeyance, and one was recently re-purchased by the Government.

Now, however, with increased trade and brilliant prospects, these concessions have become valuable properties.

I shall now briefly describe those which are now in existence.

The Jarrahdale Jarrah Forests and Railways, Limited.

This concession was granted in June, 1874, and consists of 250,000 acres, situated in the Cockburn District, and was issued by the Hon. F. P. Barlee, the then Colonial Secretary, to “The Rockingham Jarrah Timber Company, Limited,” for a term of 13 years, to date from the 1st of January of that year and confirmed, with alterations, by Governor Broome, in 1889.

The company to have the sole right to cut and remove all the indigenous timbers as shall be growing or shall grow upon the land during the term of the lease.

The only reservations in regard to the timber are: The Government may cut and remove any timber which may be required for public works, and issue licenses to private persons to cut and remove timber required for mining or settlement, but not for sale.

At the expiry of the first 13 years, the right was reserved to the company to extend such term for a further period of 14 years at the same rental, but subject to a penalty of £500, and also to have the right to a still further extension of 14 years at the same rent, but then subject to further fine of £3,000.

Practically, therefore, the lease of this concession does not terminate until 1930.

The company may construct railways and tramways through the forest, and to the beach at Rockingham.

Jarrahdale Railway to be extended, maintained, and worked to the Albany Road before end of lease.

Reserving a right to the company to lease 2,500 acres of land in two blocks near the line during the currency of the lease at an annual rental of £2 10s., or to purchase the freehold of this at 10s. per acre.

A freehold block of 50 acres, with foreshore rights, is granted to the company for the construction of a jetty. The company may also obtain the fee simple of all approved mill sites, sidings, stations, and watering places.

Company to provide and maintain steam tug at Rockingham for general shipping, upon certain conditions, if required by the Government.

Right of the company to remove all buildings, machinery (not railways), &c., at any time during the lease, and for six months after termination.

There is no special restriction in regard to the size of the trees which may be cut, but the operations of the company are subject at all times to the general regulations at the time, and which may afterwards be in force, with reference to the timber upon the Crown lands of the Colony.

The company must carry passengers (under certain conditions) upon their railway.

No duty or export can be imposed by the Government upon any timber cut by the company during the whole possible term of the lease.

The mill or mills at Jarrahdale to be kept in perfect order and repair, and to be capable of cutting at least 300,000 feet of timber per week.

Survey of the block to be made by the Government at the expense of the company.

In case of the mills being closed down for a period of three successive years, then the rights of the company shall lapse.

The company was recently floated in London, and now carries on business under the name of "The Jarrahdale Jarrah Forests and Railways Company, Limited."

An inspection of this fine property, with its forests, mills, tramways, buildings, and jetties, together with the evident care and systematic management displayed in everything connected with it, is well worth making.

I had an opportunity of doing this during the latter period of my inspection, and was much impressed with the magnitude of the works generally.

The operations were begun here some 20 years ago, with one mill only. Other mills have been added from time to time, so that at present there are five upon the property in full working order in the forests, besides a very fine planing and grooving mill at Jarrahdale Junction.

The combined strength of all the mills is 600 horse-power (indicated).

There are generally about 120 hands employed in and about the mills, and some 200 otherwise engaged upon the estate in connection with its working.

To keep these works going, 140 horses and 100 bullocks are required.

The tramway system here is very extensive and amounts to over 60 miles in length. The railway from the mill yard to Rockingham is well laid and very serviceable, both for passenger and goods traffic.

I understand, from Mr. Munro, the energetic manager, that the out-put of timber from these mills is about 2,500 loads monthly; and that this large quantity has been about the monthly return during the last couple of years.

This timber is disposed of locally and by export in about equal parts. Considerable quantities are sent to the other colonies, and large shipments are made to England in connection with the street-paving trade.

Mr. Munro estimates that at least 260,000 loads of sawn stuff have been turned out here since the works began.

The forest consists of Jarrah principally with the usual intermixture of Red Gum and occasional clumps of Blackbutt. Upon the low-lying portions and foot hills of the range of the concession there is a fair sprinkling of Wandoo of a good character.

The Jarrah forest produces timber of a good quality. There are some very fine belts or masses of the tree, and it is not uncommon to come across specimens containing from 5 to 10 loads each.

It is estimated that some 70,000 acres of the property have been cut over to date, but upon this there is still a large quantity of good timber yet available. The area cut over is said to have produced so far, about 5 loads of sawn timber per acre.

During 1894-95 some 30,000 loads were exported to London and other markets, and over 10,000 loads supplied to the local market during the same period.

There is a fine and well-provided store in the hands of the company at Jarrahdale, from which all the necessary supplies of the employees are obtained.

At the head-quarters (Jarrahdale) the principal buildings are situated. Here are the directors' and manager's houses, and engineering, fitting, turnery, and casting shops, the latter being all supplied with modern appliances, and capable of turning out excellent work. At this place there are also post and telegraph offices, churches, hospital, hall, library, and other buildings. A medical man resides upon the property.

The company has secured the freehold of about 400 acres of good land, of which 10 acres are under cultivation as a garden and orchard.

Jarrahdale is situated about 800ft. above the sea level, and is 6 miles from the Junction of that name upon the South-Western railway, some 28 miles distant from Perth.

The recuperation of the forest where it has been cut out is going on satisfactorily by natural regeneration, and its permanency as a forest area may be safely predicted, if care be taken over the young crop.

A word of commendation is due for the excellence and general arrangements of the jetties at Rockingham. The structures have been well built and are serviceable in every way. I give an illustration of this showing two ships loading timber for export.

A large new jetty has recently been built which accommodates two very large ships and steamers at once, and the total berthing accommodation is now sufficient for five ships at once.

The Canning Jarrah Timber Company of W.A., Limited.

This concession consists of 100,000 acres, situated in the Darling Range, within 30 miles of Perth, was originally held by Messrs. Mason, Bird & Co., and conceded in 1882 by the then Governor, Sir William Robinson, to Mr. Joseph Shaw, Timber Merchant, of Perth, for a term of 42 years. The rights and privileges of this concession were afterwards transferred by Mr. Shaw to Mr. E. V. H. Keane, and is now worked under the name of "The Canning Jarrah Timber Company." The original conditions were altered somewhat in favour of Mr. Keane, in consideration of his constructing a railway line to the mills from Midland Junction.

The terms relating to rent are as follows:—For the first 14 years, £200 per annum; for the succeeding 14 years £400 per annum, and for the remainder of the term, a sum of £600 annually.

This concession therefore expires in 1924.

The principal features of the agreement are as follows:—Granting unto the said company "full, free, and exclusive right to fell, cut, stack, prepare for market, and remove all such indigenous timbers as may be standing, growing, or being" upon the land during the full term of the lease.

It is, however, also subject to any regulations which may be issued for the better working or conservation of the timber forests.

An export duty may be imposed upon the timber.

Right given to the company to construct tramways, buildings, saw-mills, &c., anywhere, as may be required, and to connect the whole by railway with the Government railways at Midland Junction.

The company shall carry timber for the public upon its railway to Midland Junction, provided it is not for export.

Company to erect a saw-mill capable of turning out 20 loads of timber per day; and forfeiture of lease and all machinery if this output is allowed to lapse for six consecutive months, except by reason of exhaustion of the timber. One year given, after expiry of lease, to remove all machinery; but the Government reserve the right, should it think desirable, to purchase such machinery, tramways, &c., at a price to be agreed upon, or by arbitration in the usual way.

Sub-letting, without permission, is not allowed.

Failure to carry out conditions by lessee will entitle the Government to enter upon and take possession.

No sale or other disposition of any lands within the area shall be made by the Government until all the marketable timber upon it has been removed by the lessees.

Should any lands within the area be reserved for public purposes, the company has still the right to remove the timber therefrom.

Such are the principal features of the agreement in connection with this Concession.

I have many times examined this property, and will now endeavour to indicate what I saw there, as well as give an idea in regard to the value and capabilities of the property generally:—

The timber here is Jarrah principally, with the usual sprinkling of Red gum, and occasional belts or clumps of Blackbutt.

The Jarrah is of good quality, and up to the usual standard of its kind. There are some very fine trees on the land, and many are to be met with which are over 5 and 6 feet in diameter at the base, and fully 60 feet to the first branch. Several came under my observation which will run from 8 to 10 loads of timber each. A large number of piles of all lengths are obtained from this forest.

I estimate that something like 70,000 acres of the property still contain from 3 to 4 saw mill trees per acre of available marketable timber. I think that one fourth part of the concession has been more or less cut over, but that even this contains a lot of trees which would produce serviceable and matured timber.

There are four saw mills in this forest; these are good of their kind and do excellent work, and have a combined strength of 140 h.p.

The daily output of these is, at present, 60 to 70 loads; but I am inclined to think that the forest is capable of a much larger output than this. There is a large quantity of matured timber upon the property, which wants utilising in order to allow of an increased natural regeneration taking place.

The company employs a regular staff of 250 hands, and 74 horses and a large number of bullocks form part of the plant.

In connection with the establishment there are large stores, blacksmith, engineering, and butchers' shops, church, reading-room, resident doctor's and manager's residences, numerous houses for the men, and an office connected by telephone with Perth.

About 1,000 acres of the estate have been acquired as freehold; this is highly suitable for orchards, &c., of which there are a considerable number already in the district.

The head office of the company is in Perth, where it has a large timber yard, covering three-and-a-half acres of freehold land and which is connected by a siding with the Eastern Railway, and upon this land there are erected large Planing and Moulding Mills, including a Joinery Factory, also extensive sheds for the storing of local and imported timbers.

Here the retail business is transacted, and when in full work, about 100 men are employed.

The Upper Darling Range Railway, which belongs to this Company, and connects the Canning Timber Station with the Government Railway at Midland Junction, is more generally known as the "Zig-Zag." This is a remarkable piece of engineering work, and a most valuable adjunct to this property.

There are numerous settlers along the Range, and several brick yards, also a large blue-stone quarry is situated on this line.

The gauge and weight of rails are the same as those on the Government line. It is efficiently worked by four locos. and the necessary rolling stock.

The total length of the Company's railway is 36 miles.

In addition to the above property, the company owns some 62 square miles in the Wellington District, of some very fine Jarrah country.

A survey has just been completed from the Dardinup station on the South-Western line, up the Ferguson river valley, to this forest, a distance of about 15 miles.

When the railway is completed, operations on a very large scale will be commenced here.

The port of shipment for the Company's timber from this forest will be Bunbury, where the Government has spent large sums of money in making it a safe and commodious harbour.

Last year, the old Company was sold to an English Syndicate which now trades under the old name, and still under the able management of Mr. Frank Wilson, M.L.A.

The Karridale Timber Concession.

Forty miles South of the Vasse, in the South-Western corner of the Colony, and near to Cape Leeuwin, lies the busy settlement of Karridale, the head Timber Station of the M. C. Davis Karri and Jarrah Timber Co. Ltd.

In 1882, Mr. Davis obtained this Timber concession from the Government. It consists of 46,000 acres of splendidly timbered land, which was leased for a term of 42 years from 1st October, 1882.

In 1897, the Concession was purchased by an English company, since when the business has been developed to a very large extent, and from time to time additional timber freehold blocks have been added.

The cutting plant in operation consists of three complete mills. They are well designed, and combine a maximum of efficiency with the minimum hauling of the timber. The latest labour saving appliances have been introduced, and both skill and long experience have been brought to bear in their arrangement and erection.

The railway and rolling stocks are very considerable. Some thirty miles of railways have been constructed of the Government gauge.

The rolling stock consists of four locomotives and about one hundred and fifty waggons.

The most important point in connection with this estate is its geographical position, in as much as it possesses two harbours, which are capable of coping with the large export of timber carried out by this company.

Special attention has been paid to ensure the safety of vessels loading timber at either of the company's ports. Very elaborate moorings have been laid and buoyed. A pilot and tug boat are stationed at Hamelin always in readiness to bring ships to a safe anchorage. Steam donkey engines are provided on the jetties to load and unload the cargoes. Fresh water is laid on from natural springs so that ships can always obtain a sufficient quantity for the longest voyages.

In addition to the above, large workshops have been erected, *viz.*, blacksmiths', fellers', moulders', wheelwrights', &c., and these being all well equipped with the latest machinery, effect all necessary repairs, and a large proportion of new work such as the building of railway trucks, whims, &c., thus saving considerable expense.

Telephone lines have been erected from the various centres to the head office at Karridale.

For the convenience of the employees, general stores are situated at each mill, where every requisite can be obtained.

The trees growing upon this property are Karri and Jarrah, Jarrah chiefly, with the usual intermixture of Red Gum, and occasional patches of Black Butt and Yate Gums.

Some of the trees are of exceptional heights and sizes, and one, King Karri, contains no less than 120 loads of timber in the rough.

About two-thirds of the whole area of the Concession and freehold lands are covered with Jarrah trees.

Although there is nothing in the conditions of the lease to prevent the young trees being utilised, or of any spoilation of the forest taking place, I must admit that the matured timber only is being used upon this area.

I was much pleased with the evidences of reproduction which have taken place all over that portion of the Karri belt which has been denuded or cleared of its original matured crop.

Here I found that the young trees are coming up all over the ground cut over, and that at least 20 to 30 fine young trees have taken the place of every matured or large tree which has been cut down for the mills.

This reforestation is very marked, and is a valuable ocular demonstration, without any artificial assistance, of what may be done in this way by Nature if allowed to have her own way, in the continuity of the forest wealth of the country.

In many places, some of these trees are now over forty feet in height, and from ten to fourteen inches in diameter, and if a little attention was paid to them in regard to thinning, pruning, &c., an excellent second crop would be the result.

B.—SPECIAL TIMBER LEASES ISSUED UNDER CLAUSE No. 96 OF THE TIMBER REGULATIONS OF 1886, AND NOW EXISTING.

Under Clause 96 of the late regulations, a very considerable extent of forest land has been recently taken up.

As the rents which have been paid fall due, the several areas are renewed as provided for in the Land Act of 1898, the principal features of which are as follows :—

- (1) Applications will be received for the exclusive right to cut timber upon any Crown Lands of the Colony.
- (2) Such Leases to be called "Timber Leases." Every Lease shall be surveyed by the direction of the Minister, but the Lessee shall pay the cost of such survey when required to do so.
- (3) Every application for a Timber Lease shall be accompanied by a deposit of half the yearly rent, which shall be forfeited if the application is abandoned or not proceeded with within thirty days from the date of approval.
- (4) The rent of a Timber Lease shall be paid half-yearly in advance, and shall be at the rate of £20 per square mile, or fraction of a square mile, included in the lease.
- (5) Timber Leases shall be granted for a term of not less than one year, and not exceeding 25 years, and no Lease shall include an area of more than 75,000 acres.
- (6) Lessees, within two years from the date of the Lease, shall erect within the areas substantial and fully equipped sawmill plants of sufficient power to cut up at least five loads of sawn timber per month for every square mile comprised in the Lease, and shall keep this in good working order during the whole term of the Lease.

(7) Where Timber Reserves do not exist, the Minister may grant permits to farmers and settlers to remove timber for their own improvements only.

(8) Lessees to protect seedlings and saplings.

(9) When the matured timber is fully removed, the Government may take possession of the land for conservation purposes.

(10) Except for gardens required by the Lessee's employees, no cultivation of the land is allowed.

(11) The construction of Tramways allowed for the removal of the timber.

(12) Leases may be mortgaged, transferred or surrendered.

Only some of the leases are as yet being worked, but in the following pages I shall devote a few lines to each of the whole number under their respective headings.

Following are the Leases :—

Wright's Mill, Boyanup.

This is owned by Mr. A. B. Wright, of Perth.

It consists of a small eight-horse power engine, and all the usual benches and saws in connection with a small plant of the kind.

The out-put is only about eight loads per day, which is sold locally.

The mill is situated about three and a half miles from the Boyanup railway station on the Bunbury-Donnybrook Railway.

The timber is all Jarrah, and obtained from an area of 1280 acres held under the ordinary Special Timber Lease.

The Westralian Jarrah Forests Coy., Limited.

This mill belongs to the Westralian Jarrah Forests Coy., Limited, a company which was formed in London in July of last year.

The property embraces an area of 50,000 acres, part of which comes within the Greenbushes tin-mining area. I have seen some very fine specimens of Jarrah trees growing here. The site is almost the highest spot of the Darling Range, being about 900 feet above the sea level, and the country, being of a hard iron-stone formation, the Jarrah is growing upon what may be regarded as its natural home and surroundings.

The Company has lost no time in pushing ahead with its works, for in the short interval of the few months which has elapsed since its formation, there is already a mill at work employing a good number of men, and quite a little settlement has already been established around the mill.

There will also shortly be added to this mill an extensive and entirely new and modern saw mill plant, which has just arrived from England and which, when erected, will be capable of turning out a large quantity of timber annually.

In addition to the many improvements already effected, I observe that the Company has also constructed a very fine railway of over two miles in extent connecting the mill with the Government Greenbushes Railway Station. The whole of the works and the manner in which they are pushed forward, are entirely due to the Company's representatives here.

It is almost needless to remark that the whole area embraced is Jarrah forest.

The Preston Jarrah and Moulding Mills.

This is owned by Messrs. Baxter and Prince.

The plant consists of two mills, comprising a united motive power of 28 horses.

The property is situated about four and a quarter miles from the Bunbury-Donnybrook Railway, with which it is connected by a tramway, upon which a small locomotive is run.

The timber is all Jarrah, and is obtained from a leased area of 2,560 acres.

There are usually 32 men and 37 horses employed in connection with this establishment.

The Excelsior Sawmill.

This is situated at Chidlows Well and belongs to Mr. C. H. Brown.

Formerly, the plant belonged to the U.A. Timber Company, from whom the present owner purchased it.

There is a nice little mill with a 16 horse-power engine and the usual fittings of a serviceable concern.

The output is only about two loads per day, and this is sold principally for mining and building purposes.

The timber is Jarrah, and is obtained under license from the townsite and other adjoining Crown lands.

Scott's Mill, Bridgetown.

Mr. James Scott is the owner of this mill.

It is situated in a good patch of Jarrah country within four miles north of Bridgetown, and is close to the Bridgetown-Donnybrook Railway.

The plant consists of one 14 horse-power engine with the usual sawmill fittings.

The output is not very large and is all sold locally.

There are usually about seven men and eight horses employed in connection with this work.

The North Dandalup Sawmill.

This is owned by Messrs. Sherer, Weatherhead and Company, of Pinjarrah.

The timber cut is all Jarrah, which is obtained from 1280 acres leased from the Government.

This area is upon the Darling Range to the eastward of Pinjarrah.

There is one mill which has a 16 horse-power engine.

The output is about ten loads per week.

Seven men and five horses are usually employed here.

The Millars' Karri and Jarrah Forests, Ltd.

Under the above heading, I shall refer generally to the Wagerup (Yarloop) and Ironpot (Mornington) Saw Mill areas.

These areas were taken up in 1895 by Mr. H. Teasdale Smith on behalf of Messrs. C. and E. Millar, who have since floated them, with others, into the "Millars' Karri and Jarrah Forests Coy., Ltd."

The area of the two stations has since been increased and now embrace a forest of 150,000 acres.

The output of Wagerup (now known as Yarloop) was, in 1895, about 600 loads per month. This has been increased to 3,000 loads per month, produced by four mills, which are strong and well built, everything here being upon a very sound and substantial basis.

Altogether, about 700 steam horse-power is in use upon this estate.

Twenty miles of railway have been constructed, and three locomotives and 100 trucks are used in logging and in the freighting of the sawn timber. These appliances are all that could be desired.

In connection with the works, there are the usual blacksmiths', carpenters', and fitters' shops, all supplied with the requisite tools and machinery. The steam power for the fitters' shop is supplied by a 16 horse-power new engine.

A large planing machine has recently been added to the Yarloop plant.

A store is kept in connection with the establishment, and there are the necessary cottages and huts for the manager and the general employees. There is also a well-built hospital capable of accommodating eight patients.

The forests are all Jarrah and occasional clumps of Blackbutt on the good soil. The timber is of excellent quality, and the forests yield the usual average of Jarrah areas.

A good feature of the place is that it is abundantly supplied with water, so that no trouble will be experienced in selecting sawmill sites at any time.

The output consists chiefly of street-blocking for the European market and sleepers and wharf timbers for Africa. The timber is shipped from Fremantle and Bunbury.

At the Mornington (Ironpot) area, which is in course of development, two large mills have been erected. These have now commenced cutting, the output going about 1,600 loads per month; and two more mills of a like capacity are being erected.

Thirteen miles of railway have been constructed at Mornington, and are suitably equipped with locomotives and trucks.

Large workshops have been erected, the power to drive the machinery being supplied by a 16 horse-power engine. The wood-planing and dressing machines at this station are by McDowell & Son, and are capable of planing and working timber up to 18in. x 6in.

The Gill McDowell Jarrah Company, Limited.

Since the issue of my report in 1896, the old and well-known firms in this Colony of Gill & Co. and Mr. Joseph McDowell have amalgamated, and together have been floated in England under the name of "The Gill McDowell Jarrah Company, Limited."

Mr. F. D. Goode (the late Manager for Gill & Co.) has been appointed Manager of the combined companies.

According to information received from Mr. Goode, the following is an account of the present plant of the Company.

THE SAVYERS' SAWMILL PLANT.—This mill was started by Mr. E. G. Lacey, from whom it passed into the hands of Messrs. Gill & Co.

The original lease of 2,880 acres, comprising an area of Jarrah forest taken up in connection with this establishment, was granted in October of 1882 for a period of 14 years, and was afterwards renewed for seven years. A further area of 2,560 acres was subsequently acquired from time to time by Gill & Co., so that at the present time the amount of forest land held in connection with this establishment embraces an area of over 5,000 acres.

The site is in the Darling Range, close to the Eastern Railway, and is only 33 miles from Perth.

The mill consists of two engines, with a combined strength of 33 horse-power. It is well equipped with all the necessary benches, saws, &c., of a good going concern.

Forty men are employed at this establishment, and 30 horses represent the live stock used on the place.

The mill is connected with the Government Eastern Railway by a branch line about one mile in length.

The weekly output is about 80 loads, and is chiefly used for local consumption.

THE WAROONA MILLS.—The company has also erected mills at Waroona in connection with the timber properties of the old firm of McDowell & Co.

These mills are situated about a quarter of a mile from the Government South-Western Railway, to which they are connected by a branch line about one mile from Drake's Brook Station, the Junction being called Waroona.

Since the company took over McDowell's Mill, extensive alterations and additions have been made, besides the erection of an entirely new mill at Waroona.

The company has the exclusive right to cut over about 21,000 acres of forest land in the hills near Drake's Brook. This is held under the Special Timber Lease clause.

There are five mills in all, and their steam power is represented by 10 portable engines—three 20 horse-power, five 16 horse-power, one 14 horse-power, and one 10 horse-power.

These mills are all fully equipped with the necessary benches, breaking down and docking saws, and are thoroughly up to date in all details.

A "Robinson" planer forms part of the plant. This is used for dressing flooring, weatherboards, &c., and running all classes of moulding.

There is also a six horse-power vertical engine for assisting to expeditiously handle the logs as they are brought in from the bush; and a compact workshop and brass foundry, driven by a five horse-power horizontal engine, is at work adjacent to the mills. Here, the greater part of the repairs are carried out.

Two steam pumps (a Tangye and Worthington) supply water to the mill engines and locomotives; and for the domestic supply about two and a quarter miles of piping have been laid on to a spring from the ranges, from which water gravitates into tanks at the mill for distribution to the various buildings.

About 350 men are employed at these mills, and the hauling plant consists of 150 horses with the necessary whims, jinkers, wagons, &c.

Three locomotive engines with three sets of log wagons are at work bringing the logs from the bush landings to the various mills, there being about 14 miles of tramways and sidings laid down for this purpose.

The quality of the timber is excellent, and the company is now exporting largely for the London market, where the timber has been highly spoken of.

The capacity of the mills is about 750 loads weekly, and other additions are now being made to the plant which will materially increase this.

This company has also the cutting rights over 80,000 acres in the Nelson district, and preparations have been instituted for opening up those properties with a view to exporting timber from the Vasse and Bunbury Jetties.

The timber from the Waroona Mills is all exported by Fremantle.

The Bunbury Jarrah Company.

This company has just been floated in London under the above name. It possesses 21,600 acres, situated in what is known as the Wellington District of the Colony.

There are four blocks in all, and although not contiguous they are all close to the South-Western railway, and are therefore within easy access of a shipping port.

Bunbury will be the port of shipment.

Up to the present nothing has been done towards developing the property, but steps are now being taken to run a railway of eleven miles in length from the nearest block, connecting with the Perth-Bunbury line. The company has also arranged for the erection of one or two mills, with all the modern appliances, so that the export of timber will be begun at an early date.

The Imperial Jarrah Wood Corporation, Ltd.

This property is that which was originally known as the Quindalup Sawmill.

It was lately disposed of to an English company, which has adopted the above name.

Mr. J. H. Yelberton is still connected with the establishment as manager.

All the forests, mills, and jetty at Quindalup, are now the property of this company.

Mr. Yelberton informs me that it is intended to shortly erect several new mills of modern appliances, and that a large export of timber is intended.

The old mill is still in existence and doing good work.

The company contemplate extending the present jetty and running it out into deep water, where large ships may be comfortably loaded.

The Donnybrook Mill.

This has recently been disposed of to the Imperial Jarrah Wood Corporation, Ltd., and has been removed to a place called "Newlands" about eight miles from Donnybrook where a tract of some 3,000 acres of Jarrah country have been leased from the Government in the usual way.

The Jarrah Timber and Wood Paving Corporation.

Since the publication of my Report, issued in 1896, upon the Forests of Western Australia, all the forests, mills, and the other congeneric interests of Mr. J. C. Port, of Bunbury, have been purchased by an English company, which now conducts the affairs relating thereto, under the above name.

Mr. J. C. Port, as manager, still conducts the various businesses.

The head office of the company in London is at Broad Street House, and that of Western Australia in Bunbury, where it has a large timber yard and complete planing and moulding machinery.

The timber of this company is all shipped from Bunbury.

The mills are all in the vicinity of the Collie Coal Fields Railway, and are situated on the plateau of the Darling Range running between the Collie and Brunswick rivers. They command a supply of excellent Jarrah timber.

The mills, &c., acquired by this company are as follows:—

COLLIE MILLS No. 1.—This was purchased from Mr. J. C. Port early in 1898, with about 10,000 acres of timbered area and freehold land, together with about 40,000 acres acquired from the Collie Range Syndicate.

At present the timber cut at this mill is taken to the Lunenburg Railway Station by means of a wooden tramway, but a steel railway, now being constructed, connects this and the corporation's other mills with the Government Railway about a mile south of Lunenburg Station. This establishment was started in 1893 and consists of a 25 horse-power engine and boiler, a 15 horse-power engine and boiler which has just been added to increase the output, a donkey engine pump, a very fine and well arranged vertical saw, three ordinary saw benches, and a cross-cut and lathe.

At present there are about 40 men employed here, and there are some 25 horses and about 40 bullocks engaged in hauling logs and removing timber to the railway line.

The output is about 100 loads per week and the timber is so uniformly good that about 75 per cent. of the whole brought in to the mill is turned into marketable stuff.

COLLIE MILL No. 2.—This mill is on the Coalfield Railway and about one mile south of the Lunenburg Station, and has been erected since the corporation took over the property, and being of a modern kind, is a most complete one.

It consists of two engines of 50 horse-power combined, and which is supplied with two boilers. There is a breaking-down saw, fitching saw, rip bench, pendulum cross-cut, and emery machine, &c. A vertical frame is in course of construction, and when completed will increase the output very considerably.

About 40 men are employed upon this mill, and some 18 horses are engaged in the work of hauling logs.

The output is about 100 loads per week.

COLLIE MILL No. 3.—This mill is situated about one half-mile to the south-west of No. 2, or at what is known as the "Sandy Patch." Here there is a magnificent belt of Jarrah timber and an abundant supply of nice water.

This mill is partly composed of the plant from the old 24-mile mill, which was brought from Donnybrook by the Corporation in order to concentrate its work and obtain an uniform good quality of timber.

The mill employs about 40 men and 12 horses, and the output is about 100 loads per week.

Atkins and Law's Mill.

This mill is situated on the Collie Railway and about one and a half miles from the Lunenburg Station.

About 30 men are employed here, together with 20 horses.

The output is about 65 loads per week.

This mill is rented by the "Jarrah Timber and Wood Paving Corporation, of which Mr. J. C. Port is manager.

It is principally employed in cutting local orders for that body.

The timber being cut is all Jarrah.

The Hannans Saw Milling Company.

This Company has leased 21,460 acres from the Government, and upon one of their blocks a sawmill has been erected.

The engine is only a 14 horse-power one, but it is very effective.

The weekly output is about 66 loads, which is all used locally.

As a rule it is conveyed by wagon into the Pinjarrah Station.

In connection with the mill there is a wooden tramway of about one mile in length, which runs into the forest and conveys the logs to the sawmill.

As a rule there are 27 men and 34 horses employed here.

The Cookernup Jarrah Company.

This is owned by the J. M. Ferguson Limited Company, whose head quarters are in Perth and Fremantle.

This property was only recently acquired by Mr. Ferguson from the late owner, Mr. McCoy.

The old mill is only a 12 horse-power one, and the output is about 42 loads per week.

There are four and a half miles of tramway running from the mill to the station at Cookernup.

The timber is all Jarrah, and is leased from the Government in the usual way.

Permission has been given to the company to cut the old matured trees on Timber Reserve 3169 at a royalty of 1s. per load.

There are 20 men and 14 horses employed in connection with this establishment.

The Jarrah Wood and Saw Mills Company.

The property of this company is all leasehold, taken up from the Government.

It embraces 58,248 acres, together with over 14 miles of tramway, also leased from the Government.

There are two old mills on the property with the necessary plants and machinery. The latter includes two 25 horse-power boilers, two vertical breaking-down saws, two travelling rack benches, four running out benches, one docking bench, besides six timber wagons and tools of various kinds.

The leased land, mills, &c., form part of the old Ballarat Concession, which was purchased by the Government some years ago.

At the end of the tramway, near Busselton, there is an old private jetty, which will no doubt be utilised by the company.

Operations have not yet been begun, but the company is now constructing a line of railway as an extension to that already in existence, and the mills are being thoroughly renovated in order that the export of timber may be begun at an early date.

The property is situated within a few miles of Busselton.

The Ferguson Jarrah Forests.

Some 50,000 acres were taken up in 1886 by Mr. Howard Taylor, M.L.C., which area has since been transferred to and are amalgamated with the Canning Jarrah Company.

These are also in one block, and comprise an area of very excellent Jarrah forest.

No operations have, up to date, been begun upon these leases, but I believe it is contemplated by the company to begin work very soon.

The block is situated only about 18 miles south-west of Bunbury, and I believe that, before operations are begun, it is intended to connect the forest by railway to join the Government line at Dardinup upon the Bunbury and Donnybrook Railway. By this means the forest will be in direct railway communication with the already famous shipping port of Bunbury.

The forest is a very fine one, and good results will, I think, eventuate.

The Australian Hardwood Company.

This company was formed in 1896 and is incorporated under the above name.

It has leased from the Government an area of 55,000 acres.

These are all in one block, and altogether comprise a fine area of Jarrah forest country.

These are all situated upon the River Murray, in the Murray and Wellington districts.

They are situated about from 15 to 20 miles from Pinjarrah, which is one of the principal stations upon the Perth-Bunbury railway line.

It is now under consideration to construct a branch railway line from Pinjarrah eastwards to the Williams. Should this be carried out, this line will run through the northern portion of this company's leases.

This company has not yet begun operations upon its leased land, but I understand that preparations are now being made to begin these at an early date.

The McBean Timber Company.

An area of 300,000 acres has been taken up by a company under this name.

This is situated in the Karri country lying between Brook's Inlet, eastward to the Great Southern Railway. This embraces some fine forest of both Karri and Jarrah timber.

Nothing has yet been done to develop the property, but I understand that it is the intention of the company to connect its property by rail with the Great Southern Railway near Mount Barker, and to export its timber from the shipping port of Albany, where there is excellent facilities for work of this kind. Large ships can be loaded there with ease and safety.

Parkerville Saw Mill.

This is owned by Messrs. W. B. and T. Sexton, trading as Sexton Bros.

The mill is situated about 1 mile from Parkerville and 21 miles from Perth.

There are two engines connected with this saw mill, one of 12 and the other of 10 horse power, the latter engine usually working the planing machine.

The logs are obtained from a Jarrah Timber Lease of 1,280 acres, and also by ordinary license from surrounding Crown Lands.

Messrs. Sexton Bros. having a timber yard in Perth, dispose of much building timber through that agency. An average of 8 loads of sawn stuff is daily produced at this mill.

An average number of 20 men find employment at this establishment, and 10 horses are usually employed in hauling logs and sawn timber.

Kelmscott Saw Mill.

This is owned by Mr. E. A. Buckingham, and is situated about 4 miles from Kelmscott, and about 3 miles from the Canning Mills.

The logs for the saw mill are obtained from about 3 square miles of Crown Lands, and the daily output is from 3 to 4 loads of sawn Jarrah timber.

The engine is of 12 horse power, and the necessary plant is of a serviceable nature.

Six bullocks and three horses are connected with the mill, and at present 8 men are employed.

Higg's Armadale Saw Mill.

This is owned by Messrs. Higg Bros., and is situated about 7 miles from Armadale Station on the South-Western Railway.

The mill possesses a 14 horse power engine, and has a daily output of 13,000 super feet of timber.

The logs are obtained under ordinary timber licenses from Crown Lands adjoining, and the sawn timber is principally sold at the Messrs. Higg Bros.' timber yard in Perth.

Some 20 men and 16 horses are usually employed here.

The timber is all Jarrah.

Armadales Timber Company's Saw Mill.

This saw mill is situated on the old Albany Road, and is distant some four miles from Armadale Railway Station.

The engine is a 16 horse power one, and the establishment has a daily output of 10 loads of sawn stuff.

The logs are obtained from a Timber Lease held by the firm and also from private property belonging to Mr. Butcher adjoining.

The timber is obtained from a Special Timber Area, and is of a generally good quality.

Ten men are employed by the company, and some 9 horses and 6 bullocks accomplish the log hauling and timber carting.

White Gum Gully Saw Mill.

This establishment belongs to Mr. James Byfield, of Northam, and is situated close to Woorlooloo Station, and about 36 miles from Perth.

The mill has a 16 horse-power engine, and the internal arrangements are convenient for the work of the establishment.

The timber is obtained under license from a large area of Crown lands, and the daily output is about three loads.

There are at present seven horses and eight men engaged at work at the White Gum Gully Saw Mill.

Forsyth's Helena Saw Mill.

This is now owned by W. C. Forsyth and Co., but formerly held by John Dunton and Co.

This mill is conveniently situated and possesses a 16 horse-power engine, turning out an average of three loads of sawn timber, which is disposed of largely at Fremantle, where the firm has a timber yard.

At the Helena Saw Mill some six men and five horses are employed.

The logs are obtained principally from Crown lands in the vicinity of the mill.

Helena Saw Mill possesses a moulding machine and the timber is worked to the best advantage and used for a variety of purposes.

The timber is Jarrah chiefly, with a little Wandoo.

Smith's Mill.

This is now being leased by Mr. Albert King, and is situated in close proximity to Smith's Mill Railway Station.

The engine is of 10 horse-power and about two loads of sawn timber are produced daily.

The logs are obtained under ordinary licenses and yield strong durable timber, disposed of principally in the Perth market.

Some five men and four horses are employed at Smith's Mill.

The timber cut is Jarrah and Wandoo.

Guppy's Helena Saw Mill.

This saw mill is owned by Mr. W. F. Guppy, of Guildford, and is situated about four miles from Gooseberry Hill, which place is located on the Canning Jarrah Co.'s tram line.

Helena Saw Mill possesses a 12 horse-power engine and produces from four to six loads of sawn timber daily.

Eight men and seven horses are employed at this establishment.

The timber is Jarrah and Wandoo entirely, of good quality, and is the product of 12 square miles of country held by the proprietor under timber lease.

SAW MILL OUTSIDE OF GOVERNMENT JURISDICTION.

This reference to the mills and other special timber leases, which are building up the timber export trade of the Colony, would not be complete were a reference not made to the Torbay and Denmark River properties, belonging to the Millars' Karri and Jarrah Forests Limited, but formerly owned by Messrs. C. and E. Millar, who have been second to none in the Colony in their endeavour to foster and develop this branch of the country's resources.

These estates are situated within 40 miles from the port of Albany and were acquired by the Messrs. C. and E. Millar some ten years ago, partly from the West Australian Land Company and partly direct from the Government. The timber upon them has been worked ever since, first by the Messrs. Millar and then by the company floated in 1897.

The timber is principally Karri upon the hills, with a bottom fringe of Jarrah and Red Gum.

The estates possess some very fine and extensive blocks of Karri with their fringes of Jarrah

During 1895 the Messrs. Millar secured the freehold of 30,000 more acres of Karri forest from the company, and very extensive operations have been in progress there ever since.

This area is situated upon the ranges in the neighbourhood of the Denmark River, and undoubtedly embraces some of the finest Karri forests in the country.

The works are connected by rail with Albany, where large vessels can load at any time at the Government jetties. The railway is simply a continuation of that to Torbay, and is 37 miles in length, 27½ of which belong to the timber company

Situated upon the Western bank of the Denmark River, the works are beautifully placed and command an excellent position for good work.

There are now three mills in full working order, each fitted with a vertical saw, two circular benches, a picket bench, and two docking saws.

The combined motive power of the mills is about 750 h.p., supplied by horizontal engines.

Some 400 men are here employed, and 160 horses and 100 bullocks are a special feature in the working.

Over ten miles in length of tramways have already been run into the forest for the purpose of conveying logs to the mills, and more tramways are in course of construction. These lines are worked by four Baldwin locomotives and 140 trucks.

The output of this extensive establishment (consisting principally of Karri, though some Jarrah of good quality is also sawn) amounts to about 750 loads per week when all the mills are running.

A portion of the Denmark land, near the mills, has been surveyed into 100 building blocks, upon which cottages have been built, mostly four-roomed and iron roofed. These are let to the men at nominal rents. The population of the settlement amounts to upwards of about 1,000 souls. The place contains a public hall, billiard saloon, barber's shop, tailor's and bootmaker's shops, several boarding houses and a large schoolroom. An hospital is in course of construction.

There is, further, an extensive store, which, with a butchering business, is run by the company, and there are very large, well designed, iron-roofed blacksmith's and fitting shops (driven by a 20 h.p. engine), with feed and mill stores and engine and oil sheds. Very comfortable offices and dwellings have been erected for the manager and his assistants. The offices are connected by telephone with the shipping establishment in Albany.

Altogether, this is an extensive and well organised business, turning out a very large quantity of fine timber, which is exported to England, the Continent of Europe, America, South Africa and India. There is also a considerable local trade with Albany in firewood.

The total output of Millars' Karri and Jarrah Forests Limited Company for the years 1897 and 1898 amounted to 72,000,000 super feet of sawn timber, besides piles and hewn timber.

SECTION VIII.

THE PLANTING OF EXOTIC TIMBER TREES.

I am of the opinion that the country is capable of growing with success any of the trees which produce the bulk of the ordinary timbers which we are importing from all parts of the world.

There is a variety of both soils and climate within the area of this Colony, and I do not see why many of the world's most valuable timbers cannot be grown here. We annually send out a lot of money for what are generally known as "soft woods," and if these can be grown within ourselves a very good result will be achieved.

The timbers which we import are undoubtedly a necessity, and therefore cannot be done without in the present system of constructive works.

As a rule, our timbers are too hard and heavy for the every-day sort of work, and therefore the "soft woods" of other countries are imported for our requirements in this line.

Now, it is all very well for us to depend, for a time, upon getting a regular supply of these sort of timbers from other countries, but we must look to the possibility, and it is not improbable, to the fact that in time the supplies will become, if not altogether exhausted, at least so impoverished as to become practically unable to supply our wants. It therefore behoves us to look to the future, and endeavour, if possible, to supply our own wants.

The following list embraces some of the principal exotic trees, both soft and hard wood, which supply us with our imported timbers, which I think can be successfully grown in the Colony.

Acer campestre.—The common British maple. Height, 50 feet, grows in fairly good rich soils. The timber is soft, compact, and fine-grained, and is used for machinery, furniture, mathematical and musical instruments. The rich soils in the Karri belts would suit this tree well.

Acer negundo.—The Box-elder of North America. Height, 50 feet. It is a fast grower, and makes an excellent shade tree; wood soft yellow in colour, and streaked with violet ribs. Used in furniture making and turnery. Its introduction to the chocolate soils of the South-West would be a success.

Acer nigrum or *saccharinum*.—The Sugar Maple of North America. A large tree attaining 80 feet in height, and over 3 feet in diameter. It is the principal maple of Canada and the Northern States. Wood, hard, strong, tough, close-grained, and generally valuable for furniture making, wheelwright works, piano frames, saddle trees, turnery, etc. Produces the "Bird's-eye" timber of commerce. A handsome specimen, and makes an excellent shade tree for streets and avenues. Prefers deep loamy soils such as are found in the Karri belts. Sugar is made from the sap, and the bark yields several kinds of dyes.

Acer pseudo-platanus, or the ordinary Sycamore so common in Britain. A hardy, handsome tree, reaching a height of over 90 feet, and occasionally 4 feet in diameter. The wood is fairly soft, compact, and in great request by the turner, cabinet-maker, and in the making of musical instruments, mangles, dishes, presses, printing works, foundry patterns, etc., etc. It makes a very ornamental shade tree; grows in sandy or clayey soils, and is generally hardy. Suitable sites could be found for this tree.

Acer macrophyllum.—The long-leaved or Oregon Maple. Height, 80 feet; prefers deep moist soils. The wood is hard, close-grained, white in colour, beautifully streaked, curly, and in great request for furniture and general ornamental works. Baron von Mueller says that the inner bark is used for making mats, hats, and baskets. Forms a good shade tree as well. The soft, moist valleys of the South-West would suit this tree admirably.

Acer platanoides.—The Norway Maple. A large tree, 70 to 80 feet in height, and over three feet in diameter. The wood is soft, pale in colour, and used for the making of gun stocks, furniture and various articles of the turner. Makes a very fine ornamental shade tree, is very hardy, a rapid grower, and delights in fairly good soils. This is another maple which could be fitted with suitable sites in our moist country.

Acer rubrum.—The Red or Swamp Maple of North America. Delights in deep, swampy situations, but grows in dry places as well. The timber is used in turnery, saddlery, gun stocks, and furniture; it is of a very handsome grain, and polishes beautifully. The tree is suitable for ornamental and shade planting. If planted in the chocolate and rich soils of the Karri country it would do well.

Araucaria excelsa.—"Norfolk Island Pine." A tall tree, reaching over 200 feet in height, and from 8 to 10 feet in diameter. The timber is a soft wood, and is largely used in flooring, ship building, etc.; grows in all sorts of soils, and is suitable for planting within the influence of the sea, in which position it is found naturally. This tree would do well here anywhere along the seaside of the South-Western Division.

Araucaria cunninghamii.—"The Moreton Bay Pine" of New South Wales and Queensland. This is also a large tree, and I have seen it on the Northern Rivers and mountains of New South Wales over 200 feet in height, and 7 feet in diameter. The timber is strong, durable, flexible, and close-grained, and is used in Sydney and Brisbane for general house building, shipping, etc. This tree produces the "pine" timber of that part of Australia. It is a valuable tree, and deserves extensive planting in suitable sites here, which could be found on the coast line in the semi-tropic parts of the Colony.

Abies Douglassi, or "The Douglas Fir."—This fine tree is a native of California, where I have seen it over 200 feet in height and 8 feet in diameter. It is a rapid grower, and the timber is valuable, being strong, elastic, soft, free from knots, and is used for ship and house building, carpentry, and furniture making; it is largely exported, and forms the "Red Pine" of commerce. Grows best in deep rich soils. It would luxuriate in the chocolate ranges of our Karri regions.

Abies pectinata, or the "Common Silver Fir."—Indigenous to the mountains of Northern Europe. Attains a height of 100 feet and 2 to 3 feet diameter. The timber is light and tough, and furnishes a valuable building material. The tree delights in sandy loams upon mountain ranges. Places could be found for it in the cooler parts of our Darling Range.

Abies excelsa.—"The Norway Spruce Fir."—A fine tree reaching to 150 feet in height, and 5 feet in diameter at the base. It is a common tree in Northern Europe, especially in Norway. It produces the "White Deal" of commerce, and forms chiefly the great timber trade of the Baltic. The wood is soft, easily worked, and in much request all over the world. It likes a good strong soil in fairly cool situations, and would, therefore, I think, thrive well in our Southern uplands.

Catalpa speciosa.—The American Catalpa tree. A splendid fast growing tree which does well in Australia. Attains a height of 100 feet, and a diameter of over 3 feet. The timber is light, but of great durability, and is excellent for railway sleepers, bridge, and general outdoor constructive purposes; it is easily worked, and makes good shingles. I grew the tree with considerable success in South Australia, and I think this could be done here also.

Cedrela Australis.—The Red Cedar of Queensland and New South Wales. One of the finest of Australian timbers for furniture making; it is light, red in colour, seasons rapidly, and polishes beautifully. I think its introduction here would be a success. It grows over 100 feet in height, and up to 10 feet in diameter.

Cupressus Lawsoniana.—"Lawson's Californian Cypress." A tree 150 feet in height, and 5 feet in diameter. An excellent timber for building purposes, being durable, light, elastic, free from knots, very fragrant, and easily worked. The deep humid valleys of the South-West would suit it well.

Cupressus sempervirens.—"The common erect Cypress." Plantations of this tree would be a valuable introduction to the Colony. The slopes of the Blackwood and the rich soils in the Karri country would suit it admirably. A tree of great age, and attaining a height of 100 feet and 3 feet diameter. The wood is almost imperishable, light in weight, reddish in colour, and is largely used for indoor house-building, &c. Suitable for our limestone belts in the South-West.

Cupressus torulosa.—"Nepal Cyprus." This is worthy of culture for its fragrant timber, which is used in furniture making, &c.; also suitable for calcareous soils.

Carya alba.—"The Shell-bark Hickory." I am of the opinion that the hickories would do well with us in certain parts. This one grows to about 90 feet in height and over 2 feet in diameter. Its timber is tough, strong, elastic, and suitable for buggies, axe handles, shafts, spokes, &c. Our South-Western soil and climate would suit it well.

Carya tomentosa.—"The White-heart Hickory." Attains a height of 60 feet, and 2 feet in diameter. Prefers ordinary loamy soils without much moisture. Wood very strong, elastic, heavy, and hard. This timber is largely used in the construction of the well-known chairs of commerce, axe and other handles, and wheelwright work of all kinds. In the Karri rises of the South-West plantations of the tree would do well.

Carya oliviformis, or "The Pecan-nut of North America." A fine handsome tree, a rapid grower, and does well in deep, moist situations. The timber is strong, elastic, heavy, compact, and largely used in the manufacture of implements, furniture, &c. It would do well in our humid belts.

Carya glabra.—"The Hognut Hickory." A tree 90 feet high, and 3 to 5 feet in diameter. Wood very tough and strong. Greatly in demand for axe handles. This would be a readily adaptable introduction.

Castanea sativa.—"The Sweet Chestnut Tree of Europe." This might be grown for either its timber or the nuts. Our Southern soils are suitable for its successful growth. Its timber is strong, durable, and used for many purposes, including those of staves, hoops, carving, and furniture.

Dammara Australis.—"The New Zealand Kauri Pine." This valuable tree is really worth trying here. I think it would succeed in the higher Karri regions. Its timber is well-known, being in daily use in all the Colonies. The tree grows to a large size and great age. There are a few good specimens to be seen in the Botanic Gardens, Perth.

Fraxinus Americana.—"The America White Ash." I have seen this tree 90 feet in height, and over 2 feet in diameter. A rapid grower, and likes rich soils and moist places like our Karri country. The timber is tough, elastic, white in colour, with great tensile and compressive strengths. Largely used for buggies, machinery of all sorts, chairs, shafts, staves, pulley-blocks, oars, furniture, and all other works requiring great strength and elasticity. Grows well in South Australia, where a whole buggy was recently constructed out of trees planted by me only 17 years ago. I am convinced that this tree would be a great success here and supply a considerable want.

Fraxinus excelsior.—"The English Ash." This is another large tree, and will grow well here. It delights in deep rich strong soils. The timber is tough, strong, elastic, and used for similar purposes as those credited to *Fraxinus Americana*.

Grevillea robusta.—"The Queensland Silky Oak." Attains a height of 100 feet, and 2½ feet in diameter. Timber strong, elastic, durable, and has a very fine mottled grain, which shows well when dressed up; it is therefore suitable for furniture making. It is highly recommended as staves for wine casks, as it does not impart any foreign flavour to the wine. Will grow well here, even outside of our humid belt.

Juglans nigra.—"The American Black Walnut." This tree supplies the bulk of the American walnut timber of commerce. Grows a fine tree over 90ft. in height and 4 to 5ft. in diameter. Prefers deep rich soils to grow in. The wood is dark-brown in colour, tough, strong, and durable; it takes a fine polish, and is in great demand for gun-stocks, furniture of all kinds, and ornamental fittings in houses. The chocolate soils in our Karri regions, combined with the humid surroundings, would grow this tree to perfection.

Juglans regia.—"This is the common "English Walnut." Produces the well-known walnut timber of commerce. Grows to a large size, 80 to 100ft., and 3 to 4ft. in diameter. The wood is in great request for fine furniture and house decorations.

Larix Europea.—"The Common European Larch." Attains a height of nearly 100ft. and an average diameter of 3ft. at base. Grows best in deep, friable soils with a fair amount of moisture. A most valuable timber tree, now largely planted in Britain. It came originally from the Alps in Switzerland. The wood is highly prized for ship building, staves for casks, and general works about buildings. It is one of the most lasting of our so-called pine timbers. A fast grower, and available in its young stage. I am convinced that it would grow well here in selected spots.

Pinus strobus, or "Weymouth Pine." This is the tree from which the well-known "white pine" of commerce is obtained. It is indigenous to most parts of Canada and the Northern States. I have seen it 200ft. in height and 4ft. in diameter, which may be taken as its average size. Grows on poor soils.

Pinus ponderosa.—"The American Heavy-wooded Pine." A large tree from 200ft. to 300ft. in height and up to 8ft. in diameter. Prefers rich deep soils. The wood is hard, strong, heavy, and durable, and is of a yellowish colour, and is one of the principal timbers of commerce. On the hillsides of the southern districts of the Colony, plantations of this tree could, I think, be successfully grown.

Pinus insignis.—"The remarkable pine of California." I have seen this 200ft. in height and 3ft. in diameter, growing in dense forests along the foothills of the ranges between San Francisco and Monterey. It is therefore a coastal tree. Prefers a good, deep, loamy soil. It is a rapid grower and this climate suits it admirably. The timber is not considered of first-class quality, but produces a fair deal and is used in California for railway sleepers. Our humid districts of the South-West would produce excellent plantations of the tree. It has been planted with great success by the Forest Department of South Australia.

Pinus halepensis, or the "Allepo Pine of the Mediterranean." Grows from 50ft. to 90ft. in height, and 3ft. in diameter. The timber is white, soft, and of good grain. Used for ship and house building. A rapid grower and not particular as to soil.

Pinus pinaster, or the "Cluster Pine of Southern Europe." Attains a height of from 60ft. to 80ft., and 3ft. in diameter. Used for house building and fruit boxes. An excellent tree for sea-side planting. Delights in sandy soils and therefore a tree of considerable value for planting our coastal sand hills and sandy plains. For this purpose it has been largely used in France and the Cape of Good Hope, where it was successfully grown by simply broadcasting the seed.

Pinus Lambertiana, or "Lambert's Giant-coned Pine." A fine tree, attaining sometimes to 300ft. in height, and 7ft. in diameter. The timber is white and soft. It grows well on sandy soils somewhat removed from the coast; suitable therefore for planting upon our inland sand plains.

Pinus pinea, or the Stone Pine of the Mediterranean, attains a height of 60ft., and 2ft. to 3ft. in diameter. The timber is white, and very resinous. Although not a first-class timber, it is used locally for house building and furniture making. Not very particular in regard to soil, and grows well upon limestone formations. It would therefore be a valuable tree to plant upon our calcareous belts.

Pinus excelsa, or the "Lofty Pine of the Himalayas," grows at great elevations to 150ft. in height, and from 2 to 3ft. in diameter. The timber is close grained, soft in texture, and ranks as a timber of considerable value in India. Would, I think, succeed on the slopes of the Darling Range.

Pinus Australis, or "the American Yellow Pitch-Pine." A common pine in the Southern States of America; grows 60ft. to 90ft. in height, and 3ft. to 4ft. in diameter; wood hard and durable; used in ship-building, etc. From this tree the greater part of the tar, pitch, and turpentine is obtained. Prefers light sandy soils, and therefore suitable for planting upon our sandy wastes.

Pinus radiata, or the "Radiated-cone Pine of Upper California," grows to 100ft. in height, and 3ft. in diameter, is a purely coastal tree, and therefore suitable for planting on our coast sand hills. Good timber, and used for boat building. It is often confounded with *Pinus insignis*.

Quercus pedunculata.—"The Common English Oak." This grows all over Europe and the Northern parts of Asia and Africa. It is well known as the historical tree of Britain, and needs no description here. It prefers good strong clayey soils. I am convinced that plantations of the tree here would have a wonderful success. It would produce timber in half the time required to do the same in Europe. It is easily raised from the acorns, and plantations of it could be formed in a few years' time. The valleys and slopes of the Darling Range, and the flats of the Blackwood, Gordon, Warren and Donnelly Rivers would supply sites well suited to the tree.

Quercus sessiliflora, or the "British sessile-flowered Oak." The remarks about the previous oak will apply to this one also. The timber of both is almost unequalled for strength and durability.

Quercus Suber.—"The Cork Oak." Indigenous to South Europe chiefly, where it is cultivated for the production of the cork of commerce. The bark is removed at times without killing the tree. Grows to a height of about 50 feet. It is evergreen and makes a shady and very ornamental tree. The soils and situations of the river flats, and the richer hill slopes of the South-West, would raise this tree successfully.

Salix alba, *S. purpurea*, *S. rubra*, *S. triandra*, *S. Forbyana*, are a few of the most valuable willows which should, I think, be grown here for basket and other wicker works. These will grow well in the deep moist soils of our swamps and river banks. The time will come when baskets will be much required in the Colony in connection with the fruit production, and the formation, therefore, of osier beds must, of necessity, become a profitable industry. The trees are easily raised from cuttings, and soon produce marketable material.

Ulmus campestris or "The English Elm."—This is a fine, well-known tree. It reaches heights 80 to 100 feet, and 4 to 5 feet in diameter. Its timber is one of our most valuable importations, is of great durability, very elastic, and tough, and is largely used in wheelwright works, buggy and machine manufacture, and furniture generally. It is easily propagated by cuttings, layers, or seeds, and likes a good strong soil to develop properly in. Such sites can easily be obtained here, and thus, in my opinion, its production is only a matter of application.

Ulmus montana.—"The Scots or Wych Elm."—This is another valuable elm, which will do well here. It likes a strong soil, and in this will grow to nearly 90ft. in height, and 3 to 4ft. in diameter. In Scotland it is a common tree, but its habitation extends to England and other parts of Europe as well. I can recommend it for planting here. It is a rapid grower, and the timber is valuable for the construction of agricultural implements, railway wagons, plough handles, carts, &c.

Ulmus suberosa, or "Cork-barked Elm."—A fine tree growing to 50ft. in height. It is a rapid grower, and does well everywhere in Australia. The timber is fine grained, tough, flexible, and very durable; used for furniture making, pumps, keels, gunwales, agricultural machinery, &c. As a shade tree for street planting it is highly suited.

Populus alba, or "White Poplar."—This is one of the European Poplars. The timber is soft, light, white and stringy, not subject to swelling or shrinking, and is largely used on the Continent of Europe in the manufacture of toys, trays, shoe-soles, wooden plates, flooring, cart and wagon bottoms, packing cases, cabinet work, and musical instruments. It delights in good alluvial soils, and could easily be produced on the banks of the Blackwood and Warren Rivers.

Populus fastigiata, or "Lombardy Poplar."—This well-known tree is indigenous to Europe generally, and is there found ranging from 120 to 200ft. in height, with diameters from 3 to 6ft. It is a rapid grower and delights in soils of a rich moist character, but will also thrive in sites of a poorer nature. The timber is light, and although not particularly durable, is used for posts, rails, sheep-hurdles, and other rural works for which lightness is more important than durability. It would grow well in the valleys of the Southern rivers.

Populus Canadensis, or the "Canadian Black Poplar."—Grows on strong loamy soils, and from 80 to 100 feet in height. The wood is light, soft, and hence suitable for packing cases and turnery. Would grow well in the South-Western districts.

Populus nigra, or the "Common Black Poplar." A native of Europe, where it attains a height of 90 feet, and 3 feet in diameter, growing rapidly and forming an ornamental tree. The wood is yellow, soft, splits easily, and is used by wheelwrights, turners, and cabinet-makers. Delights in moist soils with strong sub-soils. Suitable for river flats in the South-West.

Populus canescens, or the "Common Grey Poplar."—Distributed over North-Western Europe where it grows 80ft. in height, and the timber is used for rollers, packing cases, turnery, flooring boards, and other purposes requiring soft woods. Like the other soft woods enumerated, it would grow well in our Karri regions.

Robinia Pseudo-Acacia, or the "American False Acacia or Locust Tree."—This is a rapid grower, very hardy, and will grow in almost any kind of soil. The timber is valuable, close grained, hard, and beautifully grained, and is used for wheelwright, shipwright, and cabinet-makers' work. It weighs 50lbs. per cubic foot, and has great endurance underground. I recommend it for planting here.

Sequoia gigantea, or the "Mammoth Tree of California."

Sequoia sempervirens, or the "Red Wood of California."

These two trees form the only members of the *Sequoia* family and constitute the mammoth trees of California. The timber of both is light, soft, and brittle, although close grained, and is used there for various commercial purposes. I recommend them here more for ornament than utility.

Such, then, is a descriptive list of those exotic trees which I think might, with confidence, be introduced here for the purpose of, in time, providing us with the soft and other timbers which we are now importing for our ordinary constructive purposes. The list is a somewhat lengthy one, but still does not embrace all the trees which might be tried for the purpose named, but those enumerated are the principal ones which I think might suit our soil and climate, and a fair trial of them should certainly be made.

SECTION IX.

THE STATE NURSERY.

Since the publication of my 1896 Report, and in accordance with my recommendations therein, a State Nursery has been established at Drakes Brook on the South-Western Railway line.

This consists of 15 acres of bottom land and 100 acres high-lying forest country suitable for a horse paddock.

There is a seven-roomed timber house and out-buildings upon the property.

The Nursery has now been in existence about two years, and various improvements have been effected upon it. A windmill has been erected, and a large bush-shelter shed for the protection of the plants grown in pots, has been put up.

The soil upon the bottom lands is of a deep, black, rich, alluvial character, highly suited for the raising of such plants as Oaks, Elms, Sycamores, Catalpas, Walnuts, and other valuable deciduous trees.

What is known as Samson's Creek runs through the bottom land, and the water from this is pumped up by the windmill referred to, to the shade house for the use of the plants raised there.

The site of this Nursery forms part of the DeHamel property recently repurchased by the Government.

I find the site well adapted for the growth of most kinds of introduced trees, and I think that good results will ensue from the establishment.

As I go to press, there is something like 200,000 plants being raised in this Nursery.

These consist chiefly of:—

Euc. corynocalyx	Ceratonia siliqua	Dracaena Draco	Frenella Verucosa
Euc. callophylla	Phoenix dactylefera	Catalpa Speciosa	Virgilia Capensis
Acacia pycnantha	Grevillea robusta	Platanus occidentalis	Laurus Camphora
Acacia dealbata	Lagunaria Pattersonii	Fraxinus Americana	Cedrela Australis
Acacia melanoxydon	Schinus Molle	Ulmus campestris	Lygustrum lucidum
Pinus canariensis	Euc. ficifolia	Quercus robur	Cupressus tor ulosa
Pinus halepensis	Euc. citriodora	Populus alba	Cupressus sempervirens
Pinus insignis	Acacia Baileyana	Populus dilatata	Cupressus horizontalis
Pinus pinaster	Sterculia diversifolia	Salix aurea	Cupressus macrocarpa
Pinus pinea	Ficus Macrophylla	Silix Viminalis	Cupressus pendula
Cedrus Deodara	Ficus Australis	Tamarix gallica	Syncarpa Lanrifolia
Pittosporum undulatum	Agonis flexulosa	Melia azedarach	Leneadendron Argentum
Syncarpia Laurifolia	Sterculia Acerifolia	Callitris arborea	

SECTION X.

THE NEW FOREST ACT.

In my original Report on the Forests of Western Australia, published in 1896, I intimated that a Forest Act and Regulations were much needed in the Colony, and I am now glad to say that these have been carried into effect.

Unfortunately, however, in my opinion, these have not been framed exactly as I should have wished, but nevertheless the fact remains that they are now in existence.

Of course, amendments to the Act may be made during the Session of any Parliament, and it only wants the approval of the Minister to undo or make regulations at any time.

This Act and Regulations form part of what is known as the Land Act of 1898.

I do not apologise for inserting the following almost exact copy of the clauses which refer to our timbered lands:—

1. A timber license, authorising the licensee to fell, cut, split, and remove any timber growing or standing on any Crown lands in the locality named in the license, for the purpose of logs for saw mills, fencing, shingles, laths, buildings, or railway sleepers (but not to cut hewn barks, piles, telegraph or other poles), subject, however to the Minister, during the currency of such license, to reserve from cutting any part of the land in such locality.

A similar license must be obtained by every person engaged only in removing the timber dealt with under a timber license.

2. A wood cutter's or charcoal burner's license, authorising the licensee to cut or split fire-wood from any live or dead wood growing or lying on any Crown lands in the locality named in the license, and to remove the wood or charcoal, cut, split, or burned.

A similar license must be obtained by every person engaged only in removing the wood dealt with under a wood cutter's or charcoal burner's license.

No license shall be necessary for cutting, obtaining, and removing dead wood lying on Crown lands, for domestic purposes, but not for sale.

3. A sandalwood license, authorising the licensee to fell, cut, and remove any sandalwood growing upon any Crown lands in the locality named.

A similar license must be obtained by every person engaged only in removing the sandalwood dealt with under a sandalwood license.

4. A wattle bark license, authorising the licensee, during the months from August to December inclusive, or during any such months, to strip and remove wattle bark upon the Crown lands in the locality named in such license.

A similar license must be obtained by every person engaged only in removing the bark dealt with under a wattle bark license.

5. A bark license, authorising the licensee to strip and remove the bark, or to remove the gum from trees other than wattles, bark or gum of which contains tannic acid, upon such terms as the Minister may think fit, upon the Crown lands described in such license.

A similar license must be obtained by every person engaged only in removing the substances dealt with under the last mentioned license.

6. The fees for the several licenses herein and otherwise shall be as follows:—

Timber License, per month per man	...	...	...	£0 10 0
Woodcutter's or Charcoal Burner's License, per month per man				0 5 0
Sandalwood License,	do.	do.		0 5 0
Wattle Bark License,	do.	do.		0 5 0
Bark and Gum License,	do.	do.		0 5 0
Felling and Hewing Piles, Poles, and Barks License, do.		do.		3 0 0

Licenses to Cut Piles, Poles, and Barks.

7. The Minister may, subject to this Act and the Regulations, grant a license to fell and hew timber to be used or exported as piles, poles, or barks from unoccupied Crown Lands.

Timber Leases.

8. The Minister may, subject to this Act and the Regulations, grant leases of any Crown lands giving the lessee the exclusive right (except as hereinafter provided) to cut, remove, and sell any kind of timber, or any piles, poles, barks, or other hewn timber growing or standing on the land comprised in his lease, at the rental and subject to the conditions hereinafter prescribed. Such leases are hereinafter called "Timber Leases." Every timber lease may be surveyed by direction of the Minister, but the lessee shall pay the prescribed cost of such survey when required to do so by the Minister.
9. Every application for a timber lease shall be made to the Minister and shall be accompanied by a deposit of half the year's rent, which shall be forfeited if the application is abandoned or is not proceeded with within thirty days from the date of approval; but the amount so deposited shall be returned if the application is refused by the Minister which he has power to do.
10. The rent of a timber lease shall be paid half-yearly in advance, as prescribed by section one hundred and thirty-six of the Act, and shall be at the rate of Twenty pounds per annum for each square mile or fraction of a square mile included in the lease.
11. Timber leases shall be granted for a term of not less than one year, and not exceeding twenty-five years; no lease shall include an area of more than seventy-five thousand acres, and except as hereinafter provided, no person or corporation shall hold more than the aforesaid area of seventy-five thousand acres; Provided that any person or

- corporation (now) holding a special timber license or licenses under the Land Regulations of 1887 shall have the right to hold the same under the provisions of this Act, notwithstanding that the total area of such special timber license or licenses may exceed seventy-five thousand acres.
12. Special timber licenses granted under the Land Regulations of 1887 shall not be renewable at the end of the yearly term for which rent has been paid; but the holders shall have the option of a lease under this Act of the land comprised in the expired license or licenses.
 13. The position of timber leases and the arrangement of the boundary lines thereof shall be subject to the approval of the Minister, and any description or boundary may afterwards be amended.
 14. A lessee of a timber lease shall within two years from the date of his lease, or within such longer period as the Minister may decide, erect within the area a substantial and fully equipped saw mill plant, of sufficient power to cut up at least five loads of sawn timber per month for every square mile comprised in the lease, and shall keep such fully equipped saw mill plant in good working order during the whole term of the lease.
 15. Where timber reserves for farmers and settlers do not exist, the Minister may grant permits free of cost to farmers and settlers to cut any kind of timber for their own use on their own farms, lands, or pastoral leases only, upon a timber lease, but not within a mile of any saw mill; and the lessee may require any persons not in his employment who cut, split, or remove wood, or strip bark in such area to produce their licenses or permits, and in default of such production may treat them as trespassers.
 16. (1.) The lessee of a timber lease shall, as far as practicable, protect all seedlings and saplings, and, as the timber is removed, persons appointed by the Minister may, notwithstanding the lease, enter on the portions of the lease which are being cleared of timber for the purpose of replanting such portions.
(2.) No part of a timber lease shall be cultivated with the spade or plough without the Minister's permission, except as gardens for the benefit of the lessee or his workmen.
(3.) Persons employed by the lessee in doing the acts authorised by the lease may do so without license from the Minister.
 17. (1.) A timber lease shall authorise the lessee, without charge, to construct railways and tramways on and through the area comprised in his lease, and to haul timber to and from the mills, and subject to the Governor's approval, on such conditions as to carriage of passengers and merchandise as he may think fit, to connect the railways and tramways with the most convenient Government or private railway, and to lay down such railways and tramways through Crown lands outside the area.
(2.) If the lessee surrenders or abandons the whole or any portion of a timber lease he may, with the approval of the Minister, retain possession of and use so much land as may be considered necessary by the Minister on which are erected any buildings, saw mills, machinery and plant, and may continue to use the same, and may also continue to use any railways and tramways standing on the said timber lease, and may connect such railways and tramways with any subsequently granted lease for the purpose of cutting the timber thereon.

18. A Timber lease may be mortgaged or transferred in accordance with the provisions of this Act.
19. The lessee of a timber lease may, with the approval of the Minister, at any time surrender the whole or any portion of his lease from which he has denuded the timber, and in that case a reduction in the rent of the lease shall be made in proportion to the area surrendered: Provided that, unless in special cases, the area surrendered shall not be less than one thousand two hundred and eighty acres.
20. A pastoral lease may be granted over any land held as a timber lease, and a timber lease may be granted over any land held as a pastoral lease.

Selection and Purchase within Timber Leases.

21. No application for the purchase of any land comprised within a timber lease shall be granted by the Minister, unless such land has been first resumed from such lease as provided by the following section of this Act.
22. Subject to this Act and the Regulations the Minister may, with the approval of the Governor, resume any portion of a timber lease which has been in his opinion practically denuded of marketable jarrah, karri, or tuart timber, or on which no marketable jarrah, karri, or tuart timber in his opinion is growing, or which in the opinion of the Minister ought to be resumed for cultivation, and, upon notice of such resumption being published in the *Government Gazette*, all the estate and interest of the lessee in the land so resumed shall thereupon become vested in Her Majesty absolutely to all intents and purposes as if the same had been surrendered by the lessee, without making any compensation to the lessee; and the opinion of the Minister, as aforesaid, shall be binding on all parties and without appeal: Provided that the lessee shall have the exclusive right for six months after any such resumption of cutting and removing from any land so resumed any jarrah, karri, or tuart timber which he may desire to cut and remove. The land so resumed may, after being surveyed, be dealt with or disposed of under the provisions of this or any other Act relating to Crown lands. On any such resumption being made the rent reserved by the lease shall be proportionately reduced.
Provided that no such resumption shall be made until notice, in writing, of the intention to resume has been given to the lessee, inviting him, within thirty days from the date of such notice, to show cause to the Minister against such resumption being made, and provided further that such resumption shall not include, without the consent, in writing, of the lessee, any land situate within forty chains of any saw mill upon the timber lease, or within one chain from the line of any railway or tramway authorised, constructed, or in course of construction on any such timber lease for the purpose of carrying timber to and from any saw mill.
23. In making surveys for selection of lands resumed from any timber lease, it shall be the duty of the Minister to provide for roads and railway routes likely to be required by the lessee for present or future requirements, and the decision of the Minister in this respect shall be final and binding on all parties. In all deeds of grant issued of lands resumed from a timber lease, power shall be reserved to the Governor to resume any portion of such land required for roads or railway routes, and the Governor is hereby authorised to exercise such power of resumption as he may think fit in the interest of the timber lessee, or for public purposes, provided that not more than one-twentieth of the whole area of any location shall be so resumed without compensation.

General Provisions as to Timber, etc.

24. Unless otherwise specially provided in the license, all timber, or wood, or trees cut, felled, sawn, or split by the holder of a license must be removed from the portion of Crown lands specified in the license during the currency of the license, and if not so removed shall revert to the Crown unconditionally; but the Minister may, on application, extend the period for removing such timber or wood on such terms as he may think fit.
25. The Minister may at any time revoke any license in the event of the non-observance by the licensee of any part of this Act, or of any regulations made under the authority thereof.
26. Every person who shall fell, cut, saw, split, or bark any timber, wood or tree without a license, or not being authorised thereto by a license, or shall do any act under a license, but in a place not included therein, shall, on conviction, pay a fine not exceeding One hundred pounds, and shall render any license he may hold liable to forfeiture.

Under the Act the following Regulations have been approved by the Hon. the Minister, and now form portion of the laws regulating the timber industry of this Colony:—

1. The standard sizes at which the various trees may be cut under the Act are respectively as follows, measured at three (3) feet from the ground with the bark on:—

Kinds of trees.	Minimum circumfer- ence of trees allowed to be felled.	Kinds of trees.	Minimum circumfer- ence of trees allowed to be felled.
Jarrah	60 inches.	Tuart	60 inches.
Karri	90 "	Sandalwood	15 "
Wandoo	35 "	Banksia	15 "
York Gum	35 "	Sheaok	25 "
Morrell	35 "		

All other trees by arrangement with the Conservator of Forests.

2. Each license will be available only by the person named therein as licensee, and will not be transferable except by the special permission of the Conservator of Forests or other officer authorised for the time being to issue licenses.
3. No tree or trees shall be felled so as to obstruct any road, track, or water course. Anyone infringing this Regulation shall forfeit his license, and will render himself liable to prosecution.
4. All persons cutting timber under one or more licenses extending over three (3) months in any one year shall brand all timber cut by them with a brand registered in the office of the Woods and Forests Department, Perth, and in default shall forfeit all such timber, and shall be liable to the penalties for the breach of this Regulation.
5. Piles, poles, dead and fallen timber, and matured timber upon Reserves and State Forests, may be sold by the Conservator of Forests, upon such terms and conditions as may be approved by the Minister for Lands.
6. The cutting or removal of Kurrajong trees of any kind or size whatever is absolutely prohibited throughout the Colony.
7. Every licensee must show his license whenever production thereof is demanded by an officer of the Woods and Forests Department.
8. Where any person or persons, without express written authority, strip bark from any standing tree for the bark only, the Conservator of Forests and the officers of the Woods and Forests Department acting under him are required to prosecute such person or persons as for a malicious injury to property under the Statute in that behalf.

9. The cutting of piles and poles upon Timber Leases is only allowed as necessary thinnings of the forests, and when it can be shown that these are being removed indiscriminately without regard to the future maintenance and welfare of the forests, the Minister for Lands may intimate this irregularity to the lessee, and instruct an officer to point out to the lessee how this thinning should be done, whose directions shall be adhered to by the lessee, and any departure therefrom shall entitle the Minister to forfeit the lease.
10. A license to cut and remove piles, poles, and balks shall only authorise the licensee to cut and remove the same from such Crown lands as may be described in the body of the license, and subject to such conditions as to size and thinning of the forest as the Conservator of Forests, with the approval of the Minister for Lands, may direct.
11. The Minister may grant a permit to any person to cut and remove a certain number of specified trees from any unoccupied Crown lands or timber reserves as he may think fit, on the terms and conditions to be in such permit prescribed.

SECTION XI.

SETTING APART PORTIONS OF THE TIMBER AREAS AS "STATE FORESTS" AND
TIMBER RESERVES.

The following remarks occupied a place in the first issue of this report, and as they are still applicable, I re-insert them here:—

One of the first things which should be done here in connection with the forest question, is the selection and dedication of certain portions of the forest areas as "State Forests" or "Forest Reserves," so that they may be at once placed under a defined system of conservation.

It will, no doubt, be urged by many that there is no particular hurry for any such steps being taken at present; that the country is too young yet for any particular scheme of conservation; that the forests are of vast extent and need no special care or attention for a long time to come; and that no damage will result from delayed action.

A fallacious idea, which has led to the ruin and comparative annihilation of many of the forests of the world, and to a complication of events which become so vast and onerous as to prevent remedial measures being taken, unless at enormous sacrifices and pecuniary loss.

There is no time better than the present, for doing what must eventually be done, if we mean at all to make the most of this grand heritage that nature has given us, and keep the forests up to a standard of permanent supply and usefulness.

To let the matter stand over for a time means loss of country only suitable for forest purposes, a deterioration of supply, a loss of legitimate revenue, and an increased liability in regard to rectifying rights and privileges which may be incurred meanwhile.

These are all matters which should be at once recognised as likely to occur if the question is deferred for any length of time.

The country is now being gradually absorbed and taken up under the "Homestead" and "Poison" clauses of the Lands Act, but as these selections are frequently obtained for speculative purposes only, and may, if they do not already, include some of the best portions of our forest lands, it will be, I think, at once conceded that some immediate action is necessary in order to settle the matter at once, and thus place a selected area of the country apart for forest cropping only for all time to come, and beyond the reach of individual acquirement.

There is plenty of land in the country, outside of the best forest areas, for settlement of all kinds, and to prostitute the former, with its exuberance of timber, to the varying and unstable requirements of ordinary settlement would be an unsound policy, to say the least of it.

It is generally looked upon as a standard matter for consideration, that a certain area only of a country should be kept or placed under forest. In this case, however, I am of the opinion that no defined rule for guidance should be laid down, as the forests are confined to a very limited area of the country, and must be dealt with only as regards legitimate settlement, and not with any bearing upon their hygienic proportion to the whole area of the country.

I do not think that there is any chance of a greater area being reserved than is necessary. The requirements of the country in this line are just as much as the country can afford to give. In fact, I do not hesitate to say that, if even the whole of the principal forests lying in the South-Western division of the Colony were reserved, these would not comprise a greater area than the country could devote to this branch of her economy without over reservation. It is, I think, better to err on the safe side and set apart more area than, perhaps, we actually want; as it is far easier and more diplomatic to give away area not absolutely required, than have to resume land for forest cultural purposes afterwards.

I have more than once stated in this document that much of the forest land in this Colony is unfit for cultivation. For ploughing and ordinary agriculture a large percentage of it is absolutely worthless; and although, no doubt, this might be improved by ringbarking for pastoral purposes—the gain derived therefrom by the growing of a few more blades of grass—the loss to the State in the absolute destruction of the forest is a matter of grave responsibility to those who carry it out, or even countenance it in any way.

Forests are the natural regulators of climate, and, therefore, it is man's duty to see that no action of his, in regard to these, leads to any disarrangement of nature's balance.

However, be this as it may, I think it will be allowed, without any attempt at dissent, that it behoves the Government to reserve as much of its forest area as is consistent with the legitimate settlement of the districts in which they are situated.

By "legitimate settlement" I certainly do not mean to infer that, wherever there is good soil in the forest areas, these should be left open for settlement without any consideration whatever to the standing crop now upon them. Such a decision would be absurd in the extreme; as, although we find the Jarrah growing most luxuriantly upon apparently very poor soil, still it does not follow that all trees will do the same.

We want portions, at least, of some of the State forests to have soil of the very best description, so that we may experiment with and probably successfully grow the soft woods of commerce. Besides, it is a fallacy to suppose that all trees will grow and come to perfection in any sort of soil; nothing is further from the fact than this idea. Indeed, it may safely be accepted as an established fact, that the better the soil the larger will the timber be which is grown upon it.

I claim therefore that the forest reserve question should not always be dominated by that of the popular cry, "the settlement of the land."

This thirst for the opening up of the land, to the detriment of the forests, is not always productive of national good, and ought not, therefore, to be always listened to. To my certain knowledge, it has been the ruination of some magnificent natural forest country in some of the other Colonies.

It is therefore a matter for careful consideration, this dual question of land settlement as against forest reservation; the two are intimately connected here, owing to the circumstance that the best forests and the best land in the Colony are found together.

Of course, a considerable area of what we recognise as forest land has a comparatively poor crop of trees upon it, and this undoubtedly should be open for settlement. There will be no difficulty about that question; where the trouble will arise is in regard to the disposal of the richer valleys and flats which we find all over the forest area. However, these are plentiful, and I do not, therefore, anticipate any real difficulty in arranging matters so that there will be plenty of room for settlement as well as reserved forests.

Without questioning in any way the fact of such being done, it certainly appears to me very strange that the Government should give away fine forest land for 10s. an acre, the timber upon which is worth at least £20. Surely there is something wrong here.

No doubt, the Regulations under which land can be procured in this way were framed at a time when the Colony was not what it is now, and I therefore feel assured that steps will soon be taken to remedy this now absolutely dangerous feature of the Land Laws.

To select and demarcate these proposed "State Forests" will, it will therefore be seen, be a work of some considerable time, and requiring careful discrimination so as to avoid unnecessary locking up of land which can more properly be left for settlement.

An important matter of this kind should not be done hurriedly, but carefully considered from all points before a final decision is arrived at. No doubt, if absolutely necessary, the lines of demarcation can always be altered; but this leads to absolutely unnecessary labour and alteration, besides possible infringement of property rights and expected possibilities, which can be avoided by careful consideration at first.

As the country to which this report has special reference is practically nearly all timbered land, I think it would be advisable to start with some preconceived idea or system in regard to the general position of the proposed State Forests; and thus, some idea being formed of the localities where it is considered advisable that reserves should be established, it would be a simple matter, in dealing with the country later on, to provide for these reservations.

In making the selections for permanent reserves, the following points should be borne in mind:—

1. Physical configuration of the country.
2. Climatic considerations.
3. Class of timber.
4. Quality of soil.
5. Suitability for reproductive measures.
6. Contiguity to railway and port.
7. Requirements of neighbourhood.

Natural features, such as rivers, creeks, and mountain ridges should, as far as possible, be accepted and defined as the boundaries of reserves. These are always permanent and more easily recognisable than artificial areas.

No land should, in my opinion, be sold in the neighbourhood of these proposed forest areas until a report has been obtained from the Forest Department, as to whether or not the proposed alienation is advisable, or otherwise, from a forestal point of view. Having obtained this, the Commissioner can then judge as to whether or not it should be thrown open for sale.

Starting upon a system of this kind, and carrying it out upon all occasions as required, in the course of time a thorough scheme of "State Forests" would be developed, and having these carefully demarcated, gazetted, and placed under the Act beyond political reach, such a thorough, complete, and well thought over method of Forest conservation would be established in the colony as would enable the Department of Forests to not only secure a handsome and permanent revenue, but place the timber industry of the colony upon a sure and lasting footing.

In a large country like this, with its fine natural forests, there should not be less than four million acres reserved for forest purposes.

I am glad to say that since the foregoing lines were written, steps have been taken in the direction indicated.

The present Minister—the Hon. George Throssell—is keenly alive to the importance of reserving certain areas of our forest lands all over the colony, and, up to date, something like 60,000 acres have been set apart as Timber Reserves for the use of the local settlers.

The subject of reserving large areas as State Forests has not yet been dealt with, but Mr. Throssell—should he remain in office—intends to deal with the subject at an early date.

Of course, practically, all the Crown Lands in the Colony are reserved, and all applications for the alienation of timbered Land are referred to the Forest Department to say whether or not they contain timber which ought not to be parted with, and we refuse if they do. Our forests are therefore at present perfectly safe, and there need not be any alarm as to these being gradually lost and alienated from the country. Of course there is always the fear that a change of Government might alter this state of things, so that the permanent dedication of large areas as State forests, as pointed out, should be undertaken without delay. This fact I desire to draw the present Minister's attention to, and urge that the work occupy his attention at an early date.

The present "Timber Leases" are only utilising the crop of matured trees which are now ready for the axe, and should therefore be removed for the younger crop coming on.

SECTION XII.

THE INSPECTION OF TIMBERS FOR EXPORT.

Now that there is a large quantity of our timbers being exported to all parts of the world, and as, if we be careful to see that only the very best articles are sent abroad true to name, this exportation is likely to increase and become a permanent industry, it behoves the Government to see that customers are supplied only with the very best articles and those which will be a credit to the Colony.

Our timber industry has now become one of the recognised assets of the Colony, and its maintenance should be one of the standard aims of the Government, and all matters in connection with it should be of the most reliable kind, so that outsiders may depend upon this being the case.

We are now commercially recognised as a timber exporting country, and therefore we should do our best to keep up the standard of the wares which we profess to supply.

The outside world expects us to see that there is no departure from this, and it would be a very grand advertisement if it were known and remarked upon everywhere that whatever timber is obtained from Western Australia may be accepted as being of the very best quality and of the kind which it is said to be and sold as. This would be a proud position to hold, and to obtain which we should make every possible endeavour.

I think that, to acquire this very desirable end, it requires, and can only be obtained by, Government aid and regulation.

We have, fortunately, several kinds of timbers of a superior class, and each suited to its own particular purpose, but as more than one of them resemble each other in general outward appearance, which is very deceiving to the general eye, it is very essential that only the particular kind applied for should be supplied.

Some of these timbers are to be found intermixed with one another, and it is only natural to suppose that the merchant will supply that which is easiest and less expensive to procure.

I trust that these remarks of mine will not be taken as applicable to any particular company or firm now in existence. My object is only to deal with the matter generally, and to warn the Government against the possibility of what could be done.

How then can the Government act in order to ensure that nothing but the correct article is supplied as ordered? It certainly does seem strange that precautions are necessary in order to ensure this being done, but in these days of competition it is highly necessary that they should be taken.

Of course, I am only referring to timbers which leave the Colony, and not to those which are used here, although I regret to say that even within ourselves the wrong kinds of timbers are sometimes supplied without compunction.

I think that no timbers should leave our shores until passed by the Government and with the Government brand upon them indicating what they really are.

Government Inspectors of Timber should be appointed and these stationed at the principal ports of shipment.

The duties of these officers would be to pass and brand all the timbers as they come from the mills.

At present, the ports of shipment are Fremantle, Geraldton, Bunbury, Busselton, Hamelin and Albany.

It would take at least two good men to undertake the duties of Inspectors, and they would require to be always available when wanted.

To undertake the duties properly, really first-class officers would be required whose integrity would be beyond a doubt.

These officers would of course be entirely under the Conservator of Forests, whose certificate as to quality, sizes, &c. could be obtained as the shipments occurred.

I am sure that something of the kind indicated should be instituted, and I feel certain that if this were done much satisfaction would result, not only to the sellers and buyers, but to the Colony at large.

No doubt there would at first be considerable opposition made by some of our mill owners, but this would soon cease as the benefits became apparent. At the same time, the Government should consider the question in its relation to the good of the whole country and not to the whims of a few individuals.

There is no reason why the employment of these inspectors should not be paid, in some proportionate way, by the sawmill owners.

Of course, the matter wants going into thoroughly, and I only throw the idea out now as a "feeler" to more specific elaboration.

SECTION XIV.

REFERENCE TO PLAN.

The plan accompanying this report was specially prepared for it by N. J. Moore, Surveyor, Bunbury, who accompanied me during my inspection of these forests. I think that it may be accepted as giving a fairly accurate idea of the areas covered by our principal timber trees.

It must be clearly understood that no one tree in any locality predominates to the exclusion of all others, but the colours referring to the specific trees show where these form the principal crop upon the land.

It will be seen that the Red Gum has only been allotted, comparatively speaking, a small portion of the area embraced in the plan, although, as a matter of fact, this tree is more or less found inter-mixed all over the Jarrah and Karri areas.

In this plan more particular attention has been given to the principal commercial timbers of the Colony, and the boundaries of these may be accepted as fairly correct for all practical purposes.

This plan accompanied my first report upon these forests.

SECTION XV.

DESCRIPTION OF PLATES.

All the illustrations given in this appendix to the report were specially prepared for it. They are reproductions of photographs taken by artists specially employed by various timber companies, who are referred to in each case.

I consider that the photographs of the forest scenes are not only instructive, but make the report much more interesting than mere printed matter. Besides this, they enhance the value of the references made to the respective company's leases. A glance at these will give readers more insight into the respective value of the leased areas than any amount of writing would do.

The plates are numbered and referred to by these figures in the following description of them:—

1. Pictures 1, 2, 3, and 4 were supplied by the West Australian Jarrah Forest Company. Their leases are fully described on page 41.
 - No. 1 is a "View in the Jarrah Forest," and represents a typical Jarrah tree. Although the leases are very fine ones, this tree is certainly above the average of the forests there; it is, however, only one of the many which grace these leases. As will be seen from the photograph the tree is well balanced and straight, and therefore the timber which it contains is of a sound and generally even character. I may say that this is the general quality of the timber here.
 - No. 2. This represents two teams of horses with jinkers arriving at the mill from the forest with logs for cutting up.
 - No. 3. This represents a more general view of a portion of the jarrah forests here. It will thus be seen that the trees here are pretty thick upon the ground and apparently of a sound straight growth.
 - No. 4. In this we have a view of a portion of the company's private railway. This has been well constructed in every respect, and is of the same gauge and weight of rails as those of the Government lines.
2. The next four photographs are of the timber leases held by the Gill McDowell Co.
 - No. 5. This view is one taken in the heart of this company's leases. It shows some of the Jarrah trees there. The picture is certainly not a picked portion of the forest but is fairly representative of what the Jarrah forests are here.
 - No. 6. This represents a back view of the principal mill at Drake's Brook, with logs on the tramway to the mill. This mill is a very fine one indeed and has only been recently erected, since the amalgamation of the Gill and McDowell Companies. The Government South-Western Railway Line, between Perth and Bunbury, passes the mill within barely half-a-mile, but is not seen in the picture. The company's railway connects with the line in question.

- No. 7. This shows horse teams hauling logs to a siding in the tramway. The stock here is of a superior character and does its work well. The scene represents the usual rough-and-tumble work of the log-getter.
- No. 8. Here is represented a train of logs being taken from the forest to the saw mill at Drake's Brook. As will be seen, the train is passing over a trestle bridge on the company's private railway. The scene is a good one and shows the extreme down grade at which these private lines have sometimes to be made in the forests.
3. The next four photographs belong to the M.C. Davis Co., at Karridale.
 - No. 9. Here we have a view of the private jetty at Hamelin harbour. At the end of the jetty appears one of the company's private boats being loaded up with timber. The acquisition of this private harbour is a special feature of this concession.
 - No. 10. Here we see a load of logs being taken from the forest to the company's mill at Karridale. This is being done upon the company's railway. The logs shown are simply enormous and only show to what a great size the karri tree attains. The nearest log, as shown in the photograph, is nearly eight feet in diameter, and the timber is perfectly sound even at this size.
 - No. 11. Here we see a team of some seventeen horses hauling one of the largest logs shown in the previous picture, to the railway siding, where it is placed upon the truck as represented. The log in question is a very large one indeed, and it is all the horses can do to haul it through the forest to the tramway. The view shows many matured Karri trees still standing, and only waiting for the fellers to come along.
 - No. 12. This represents a picture of "King Karri," which is one of the largest trees of the kind which I have yet met with in these forests, or, in fact, in the Colony. The view of this stupendous monster is simply wonderful, and it has to be seen to be appreciated.
4. Views 13 to 16 have been supplied by The Jarradale Forests and Rockingham Railway Co.
 - No. 13. This shows jetties one and two at Rockingham. These jetties are the private property of the Company, and are connected by rail with the Company's concession and saw mills at Jarradale. The picture represents no less than three large vessels lying alongside the wharf ready for being loaded up. The harbour here is a safe one, and well adapted for the export of timber.
 - No. 14. This is another view of the jetty at Rockingham. In order to give an idea of the depth of water here, it will be seen that the large intercolonial steamers are able to call here. The view represents the steamship "Karrakatta" lying alongside the jetty taking in some Jarrah for the Eastern Colonies.
 - No. 15. Here we see a train load of sawn timber on its way from the mills in the forest for shipping at Rockingham.
 - No. 16. This shows the Jarrah being cut in the forests at Jarradale.
5. The next four pictures represent scenes connected with the Karri Forests at Denmark, the property of The Millars' Karri and Jarrah Forests Company.
 - No. 17. Here we have a general view of a Karri Forest. From this it will be seen how thick and straight the trees of this kind are growing in the forest.
 - No. 18. Here is seen a train of Karri logs being taken to the saw-mills at Denmark.
 - No. 19. From the saw-mills at Denmark to the shipping port at Albany is a distance of about 40 miles. From the mills to Albany the Company has a very fine railway. Our view represents a train load of sawn timber being conveyed along this line from the mills to the shipping port.

No. 20. Here we have a view of Karri trees being cut for the saw mills. This gives a very good idea of how a clump of Karri trees looks in its virgin state.

6. Photographs from Nos. 21 to 24 have been supplied by The Canning Jarrah Forests Co.

No. 21. Here is shown a venerable Jarrah tree. The girth of this monster is 32ft. at the bottom. It is said to be sound, and rises some 38ft. to the first branch. It is certainly a beautiful tree, and only shows what our Darling Ranges can produce.

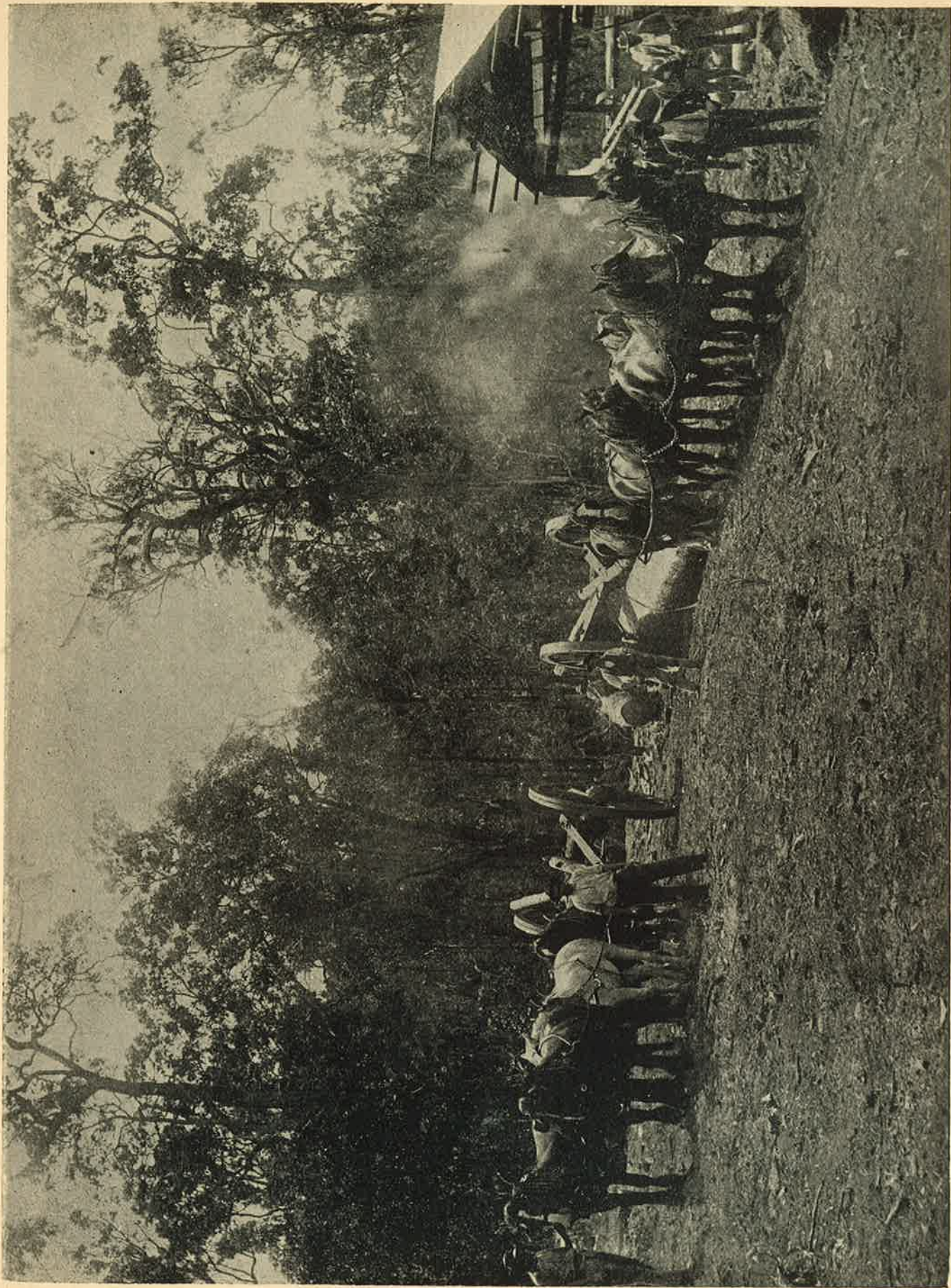
No. 22. Here we have a representation of a portion of the general forests of this Concession.

No. 23. This shows a train of logs being conveyed on the Company's railway from the forest to the saw mills. The railways here and the engines and other plant required for working them are of an excellent kind, and do the work well.

No. 24. This scene represents what is known as No. 4 Saw-mill, which is stationed at "Death Adder" Valley. Some excellent work is done here, and a lot of fine timber is being turned out.



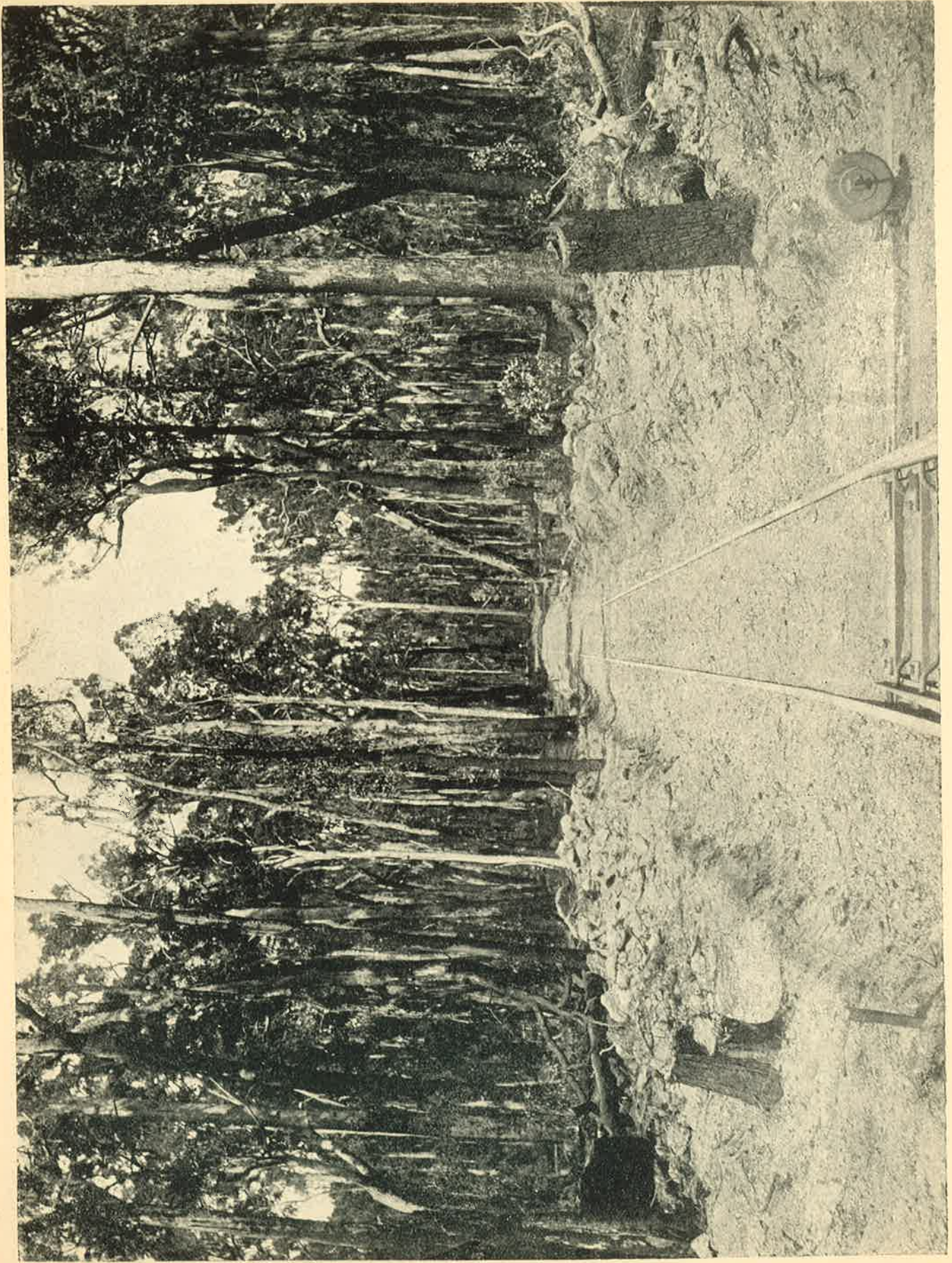
1.—View in the Jarrah Forest.



2.—Teams Arriving with Jarrah Logs.



3.—View in the Jarrah Forest.

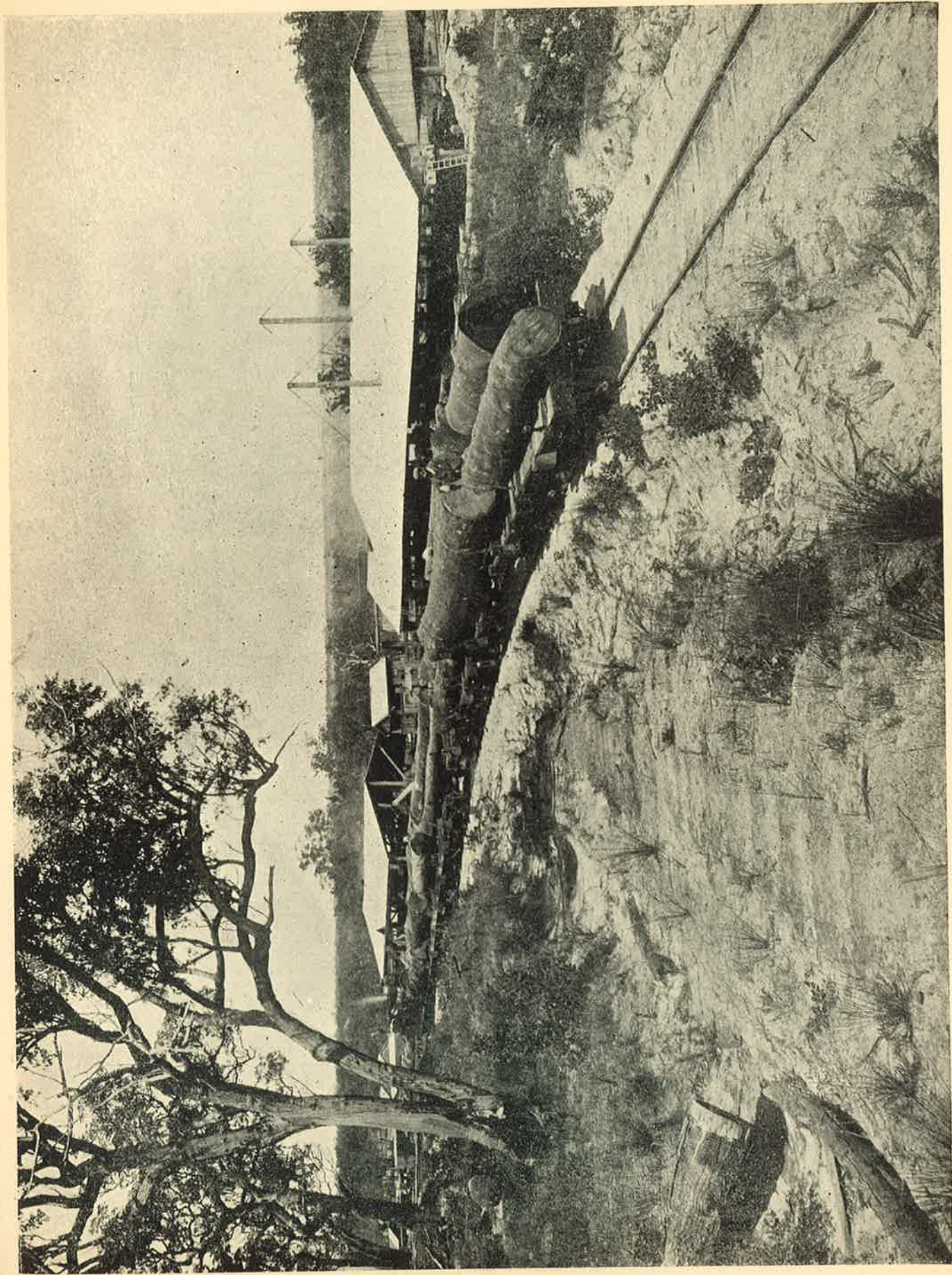


4.—Portion of Company's Private Railway.

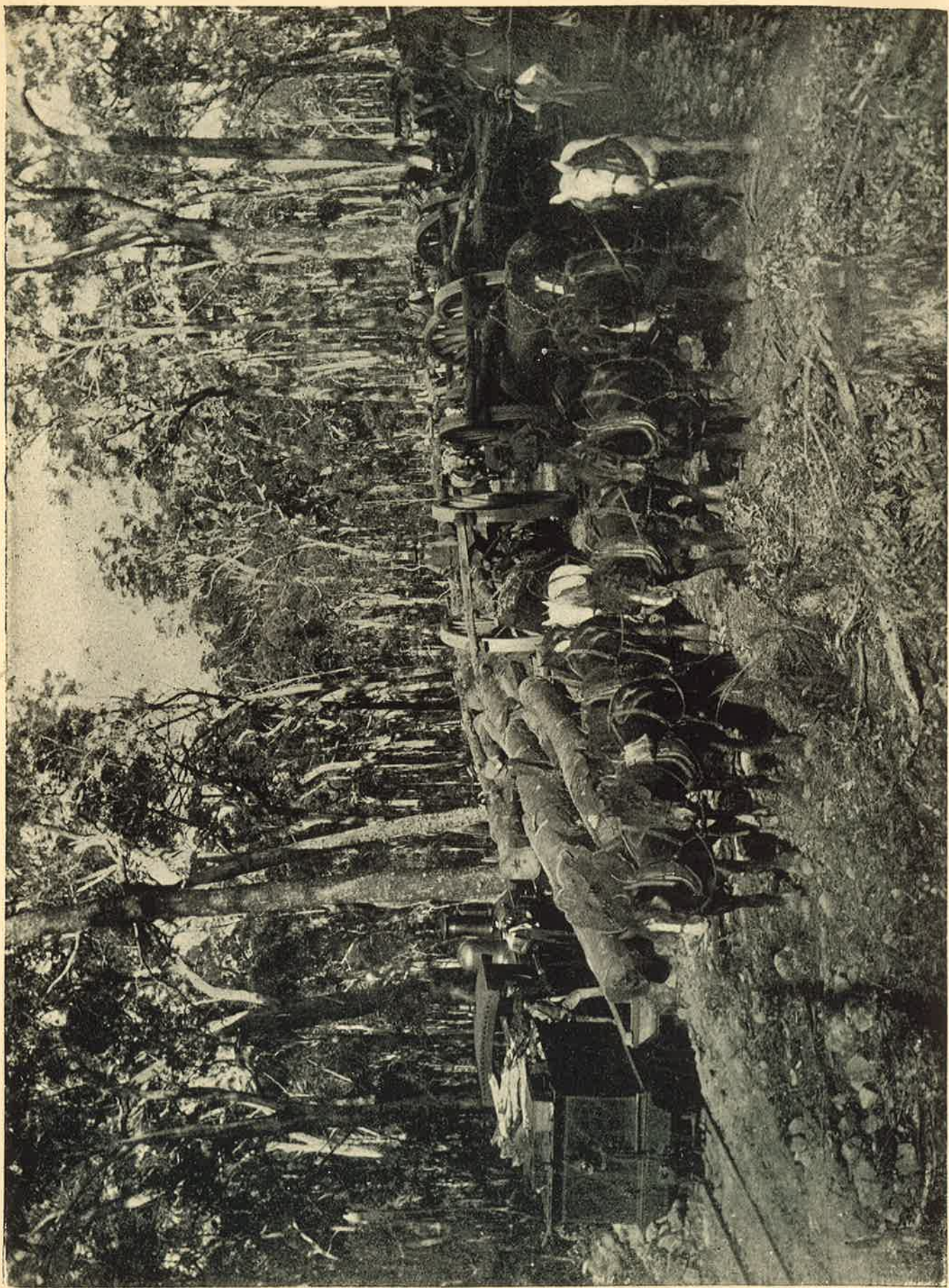


5.—View in Jarrah Forests.

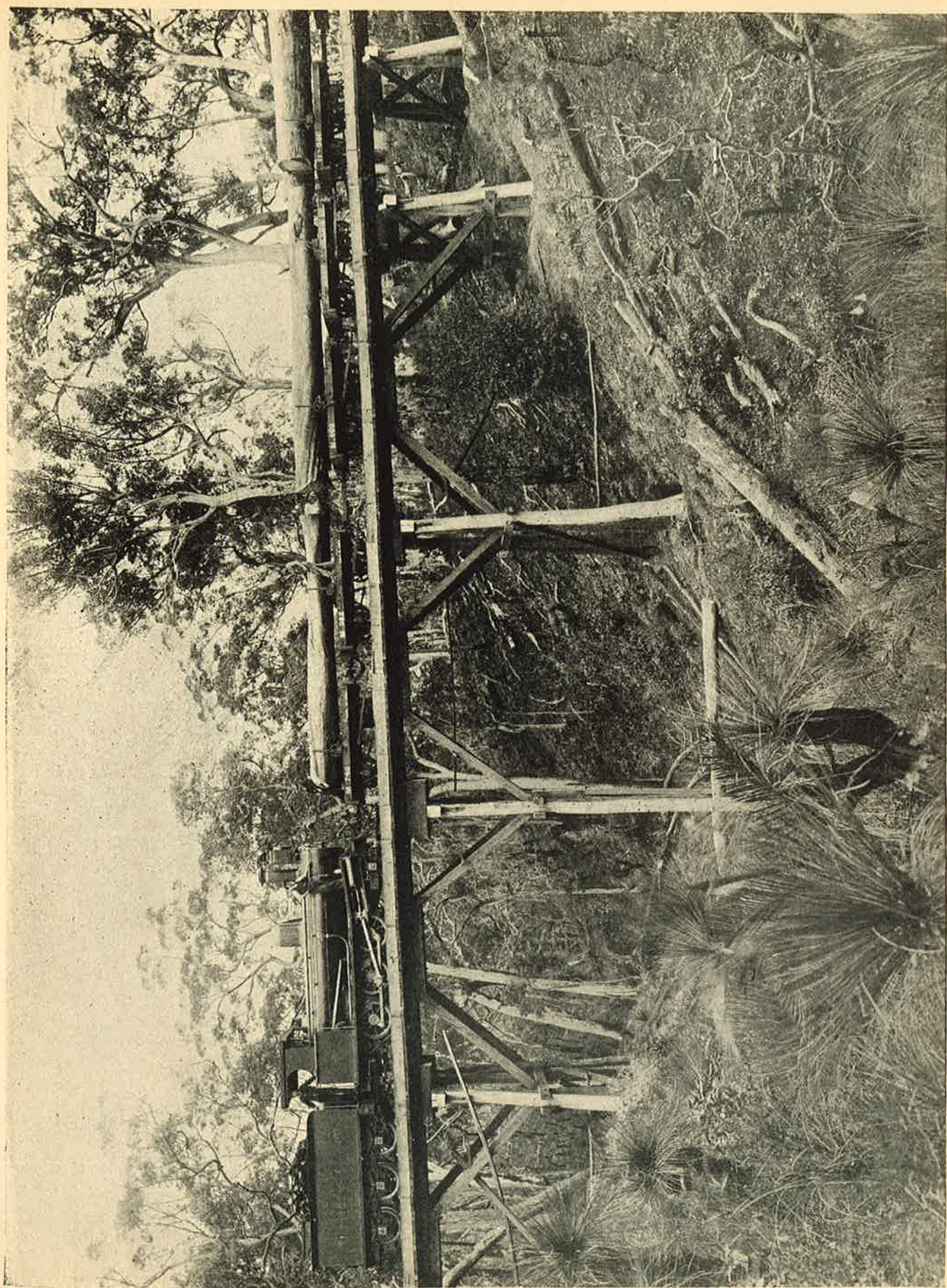
Property of Gill & McDowell J. Co. Ltd.



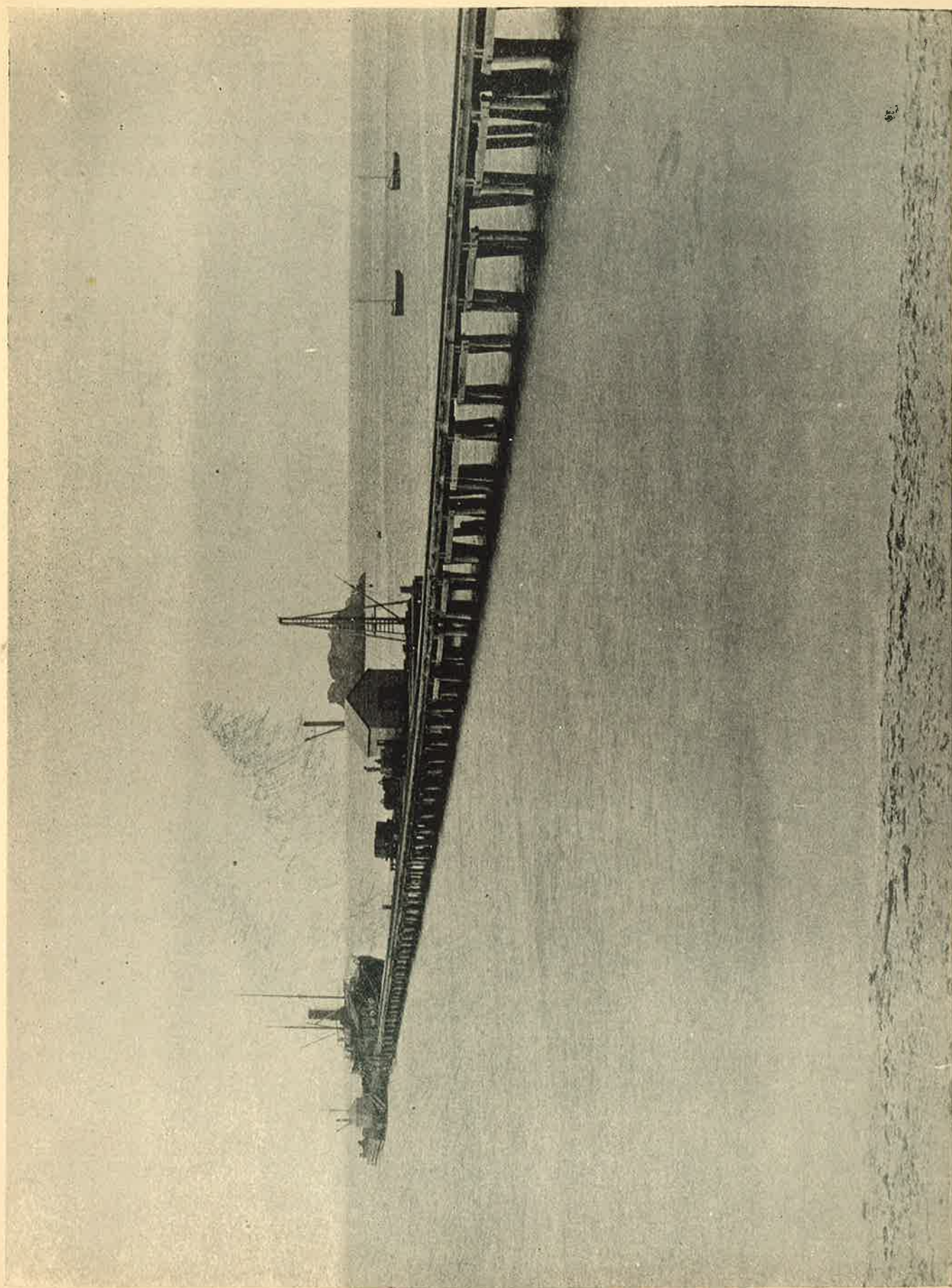
6.—Back View of Principal Mill with Logs on Tramway



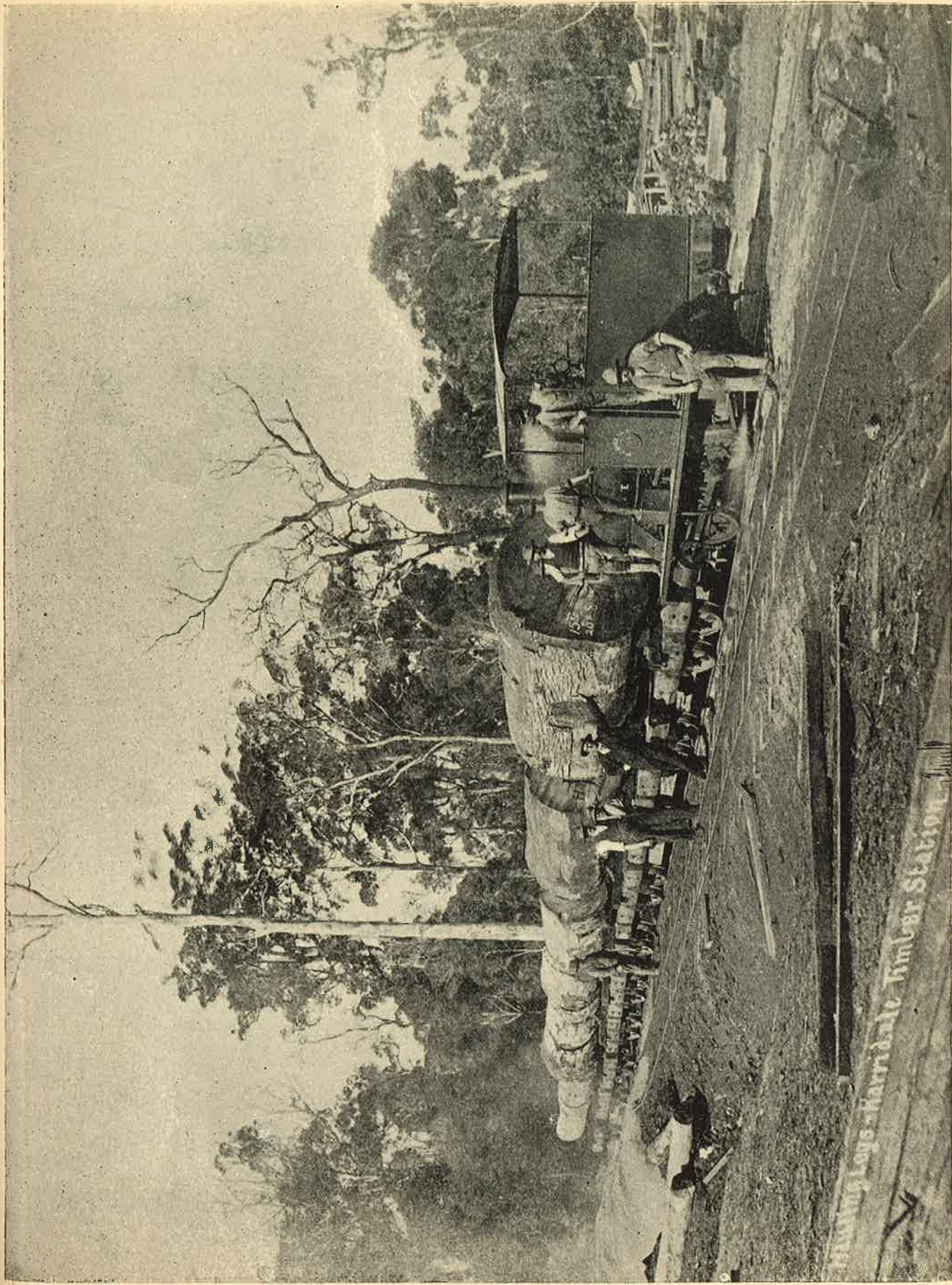
7.—Hauling Logs to Tramway.



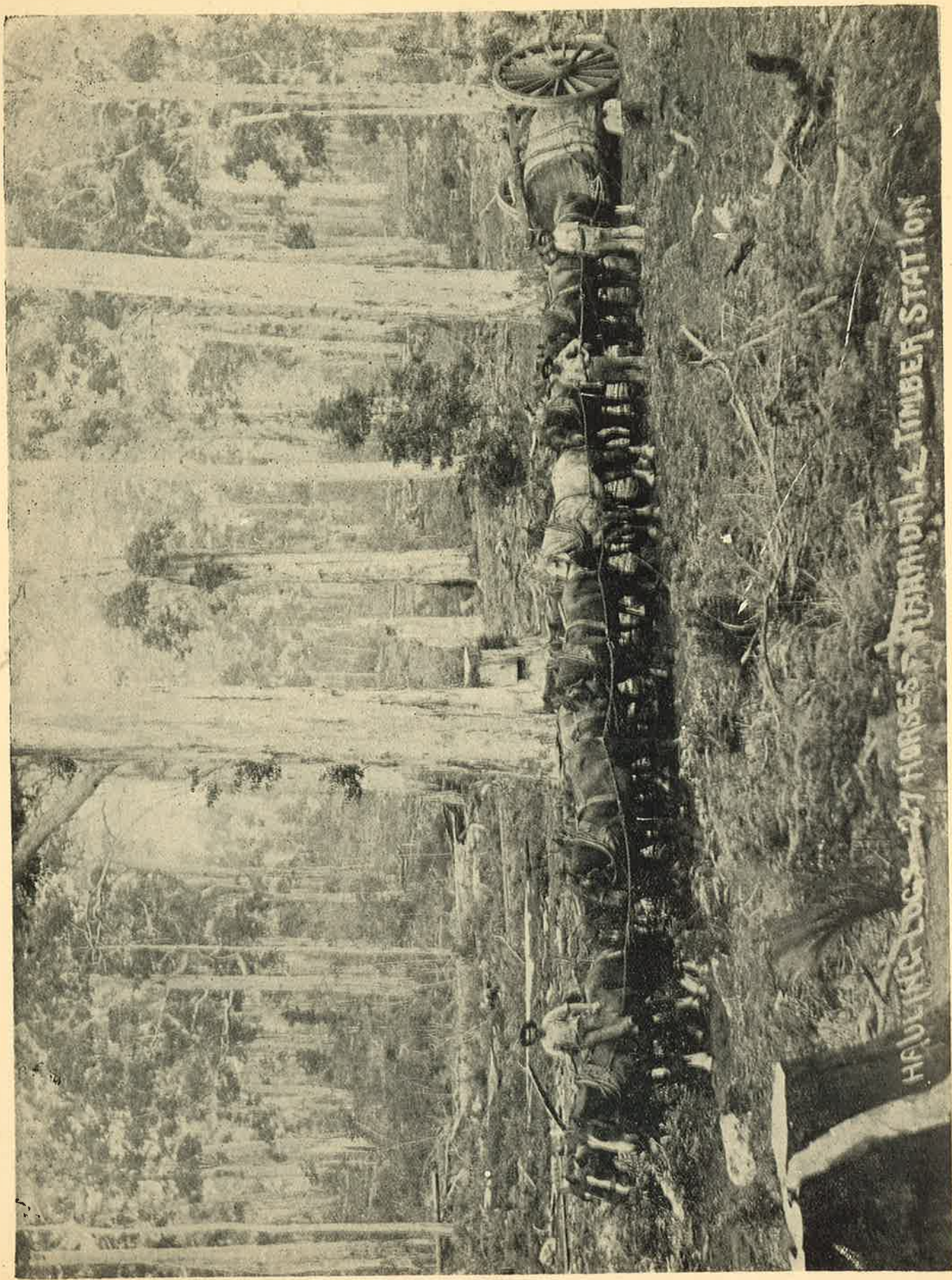
8.—Tramway Bridge to Forest



9.—Shipping Timber—Hamelin Harbour.
One of Company's Private Boats.



10.—Load of Logs for Mill.



ii.—Hauling Logs.



"KING KARRI" 242 FT X 40 FT

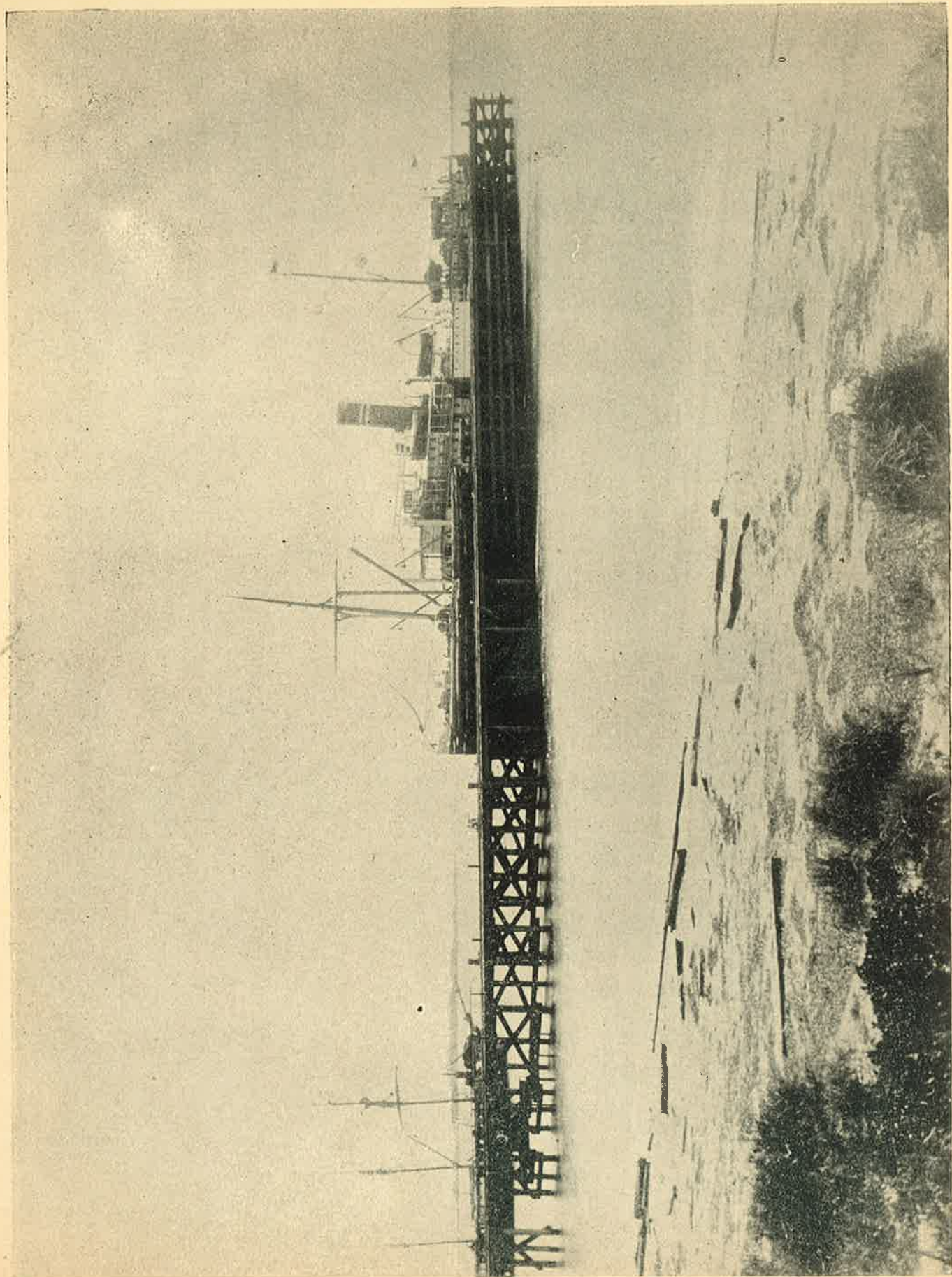
12.—View of Forest,
Shewing "King Karri," 242 feet high, 40 feet circumference.

Property of M. C. Davies K. & J. Co. Ltd.

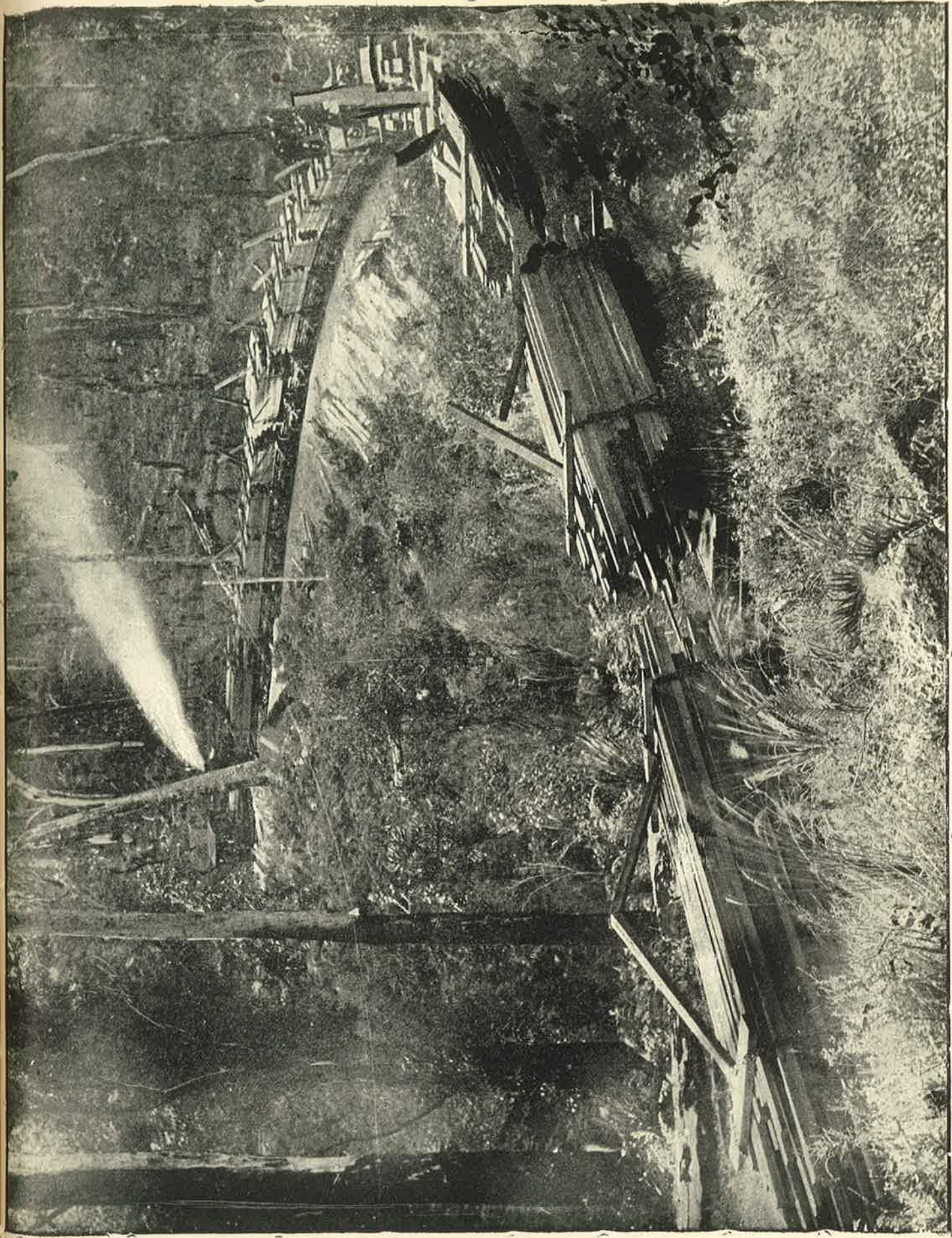


13—No. 1 and 2 Jetties, Rockingham.

Property of Jarrald & Co. R. Ltd.



14. - S.S. Karrakatta at No. 3 Jetty, Rockingham.



15.—Train of sawn Jarrah.



17.—Karri Forest, Denmark Hills.



18.—Train of Karri Logs, Denmark Hills.

Property of Millar's K. & J. P. Ltd.



19.—Train of Sawn Karri for Port Albany

Property of Millar's K. & J. P. Ltd.



20.—Falling a Karri Tree, Denmark Hills.

Property of Millar's K. & J. F. Ltd.



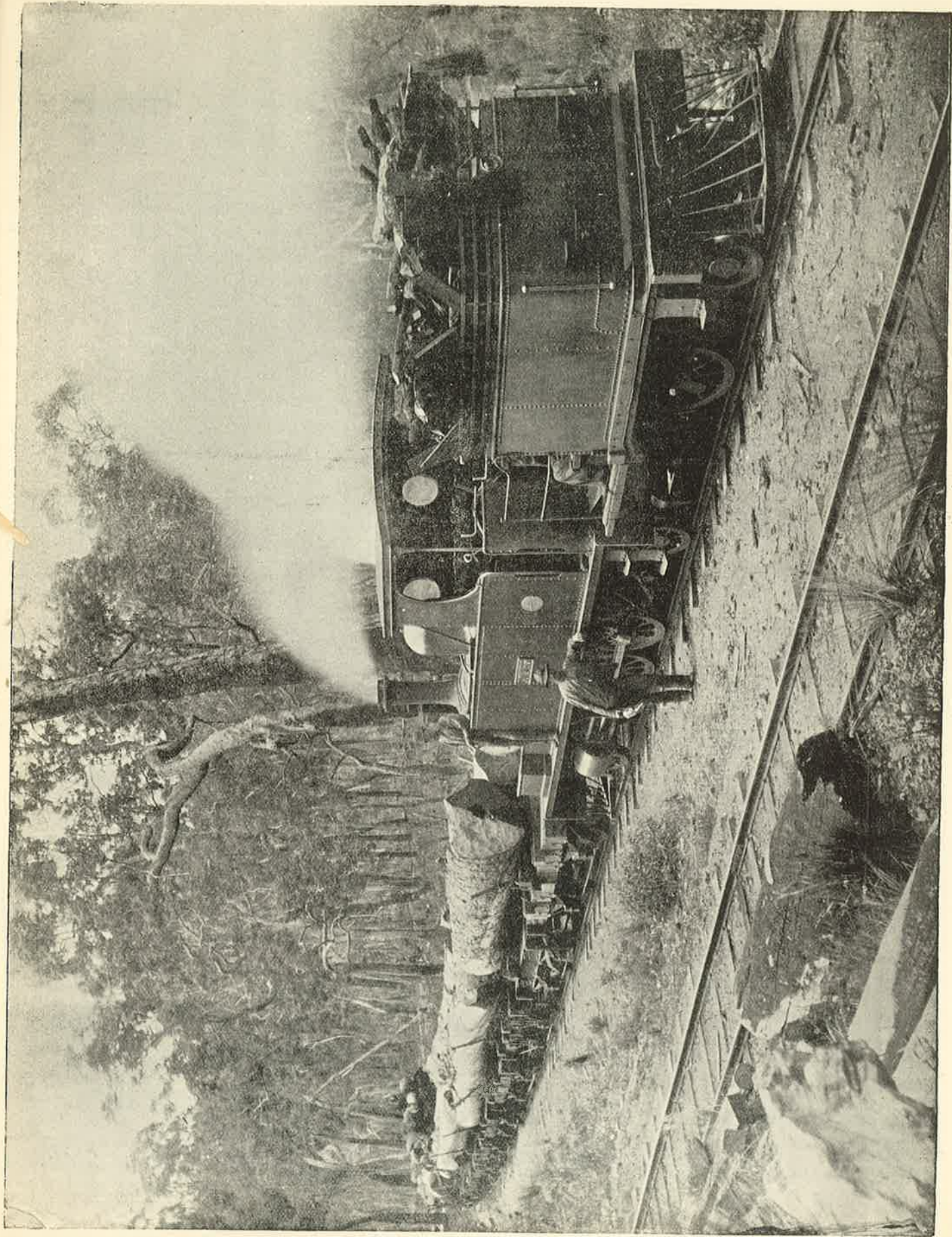
21.—JARRAH TREE (32ft. Girth.)

Property of The Canning Jarrah Timber Coy.



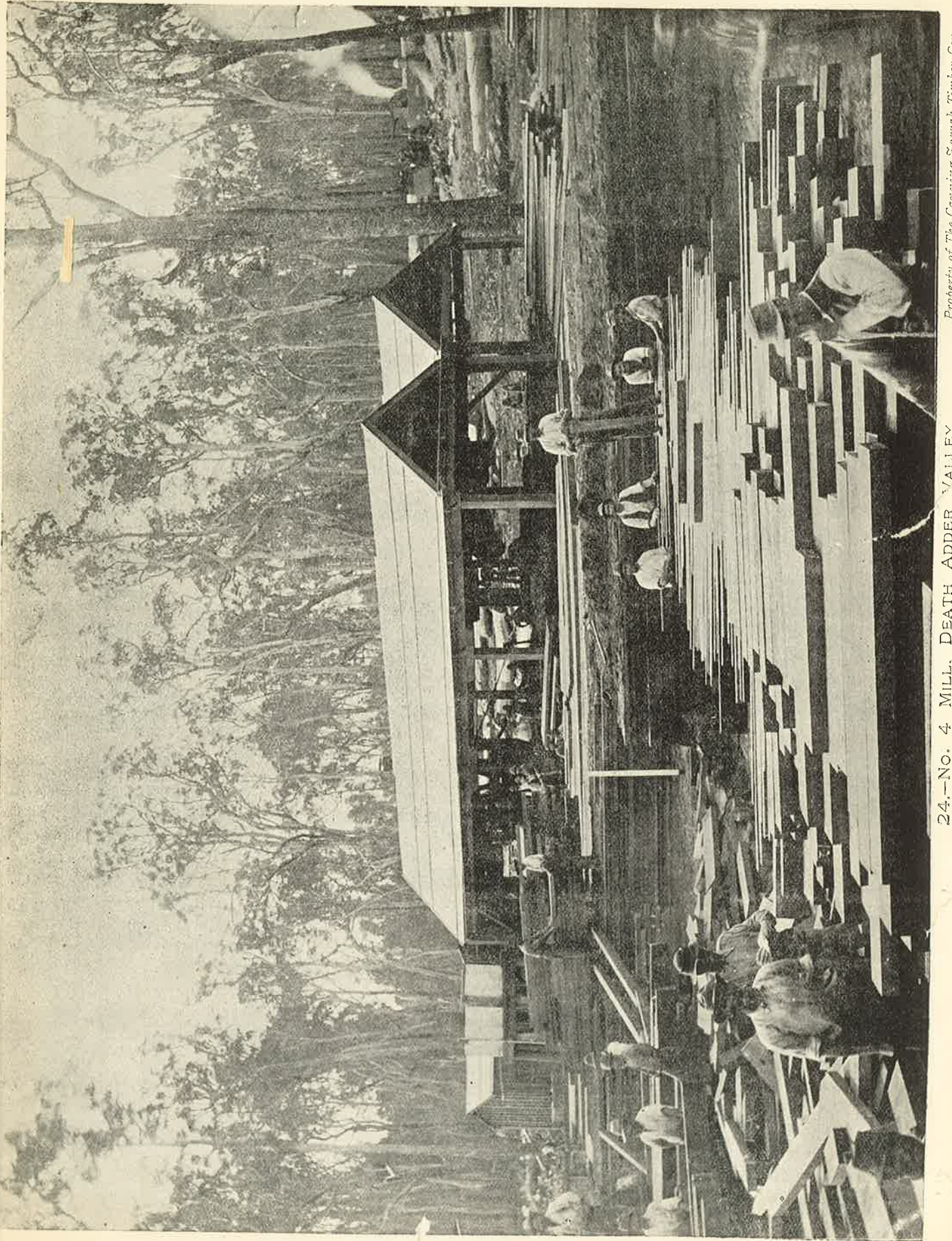
22.—VIEW OF JARRAH FOREST.

Property of The Canning Jarrah Timber Coy.



23.—LOG TRAIN.

Property of The Canning Farrah Timber Coy.



24.—No. 4 MILL, DEATH ADDER VALLEY.

Property of The Canning Jarrah Timber Coy.

SKETCH MAP
of
PART OF SOUTH WEST DIVISION
OF
WESTERN AUSTRALIA

Showing
**APPROXIMATE POSITION OF
TIMBER FORESTS**

To accompany Conservator of Forests Report

COMPILED BY N.J. MOORE

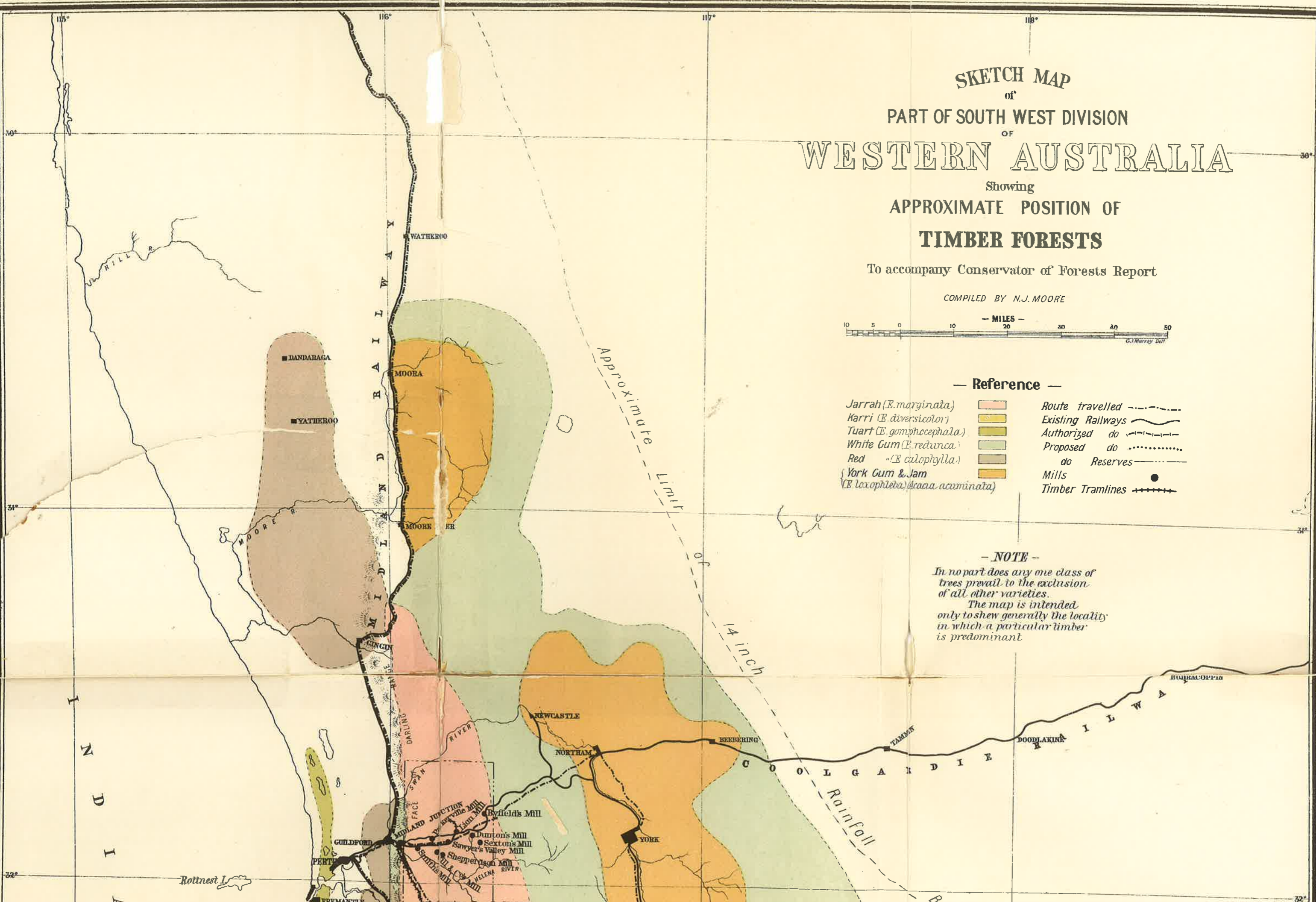


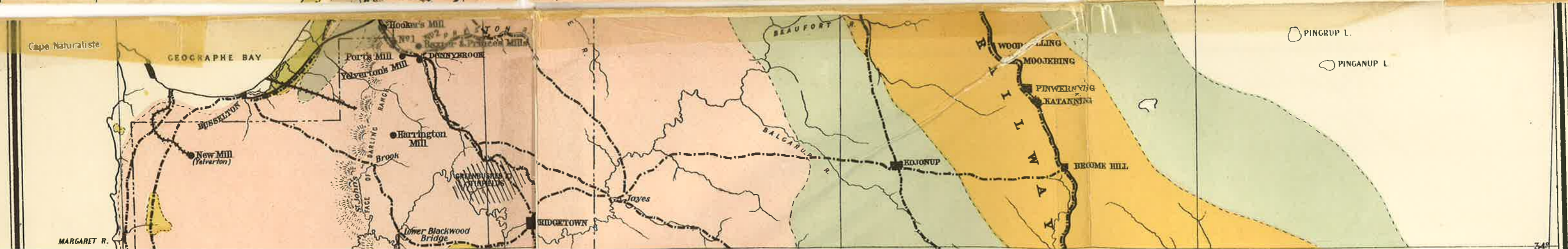
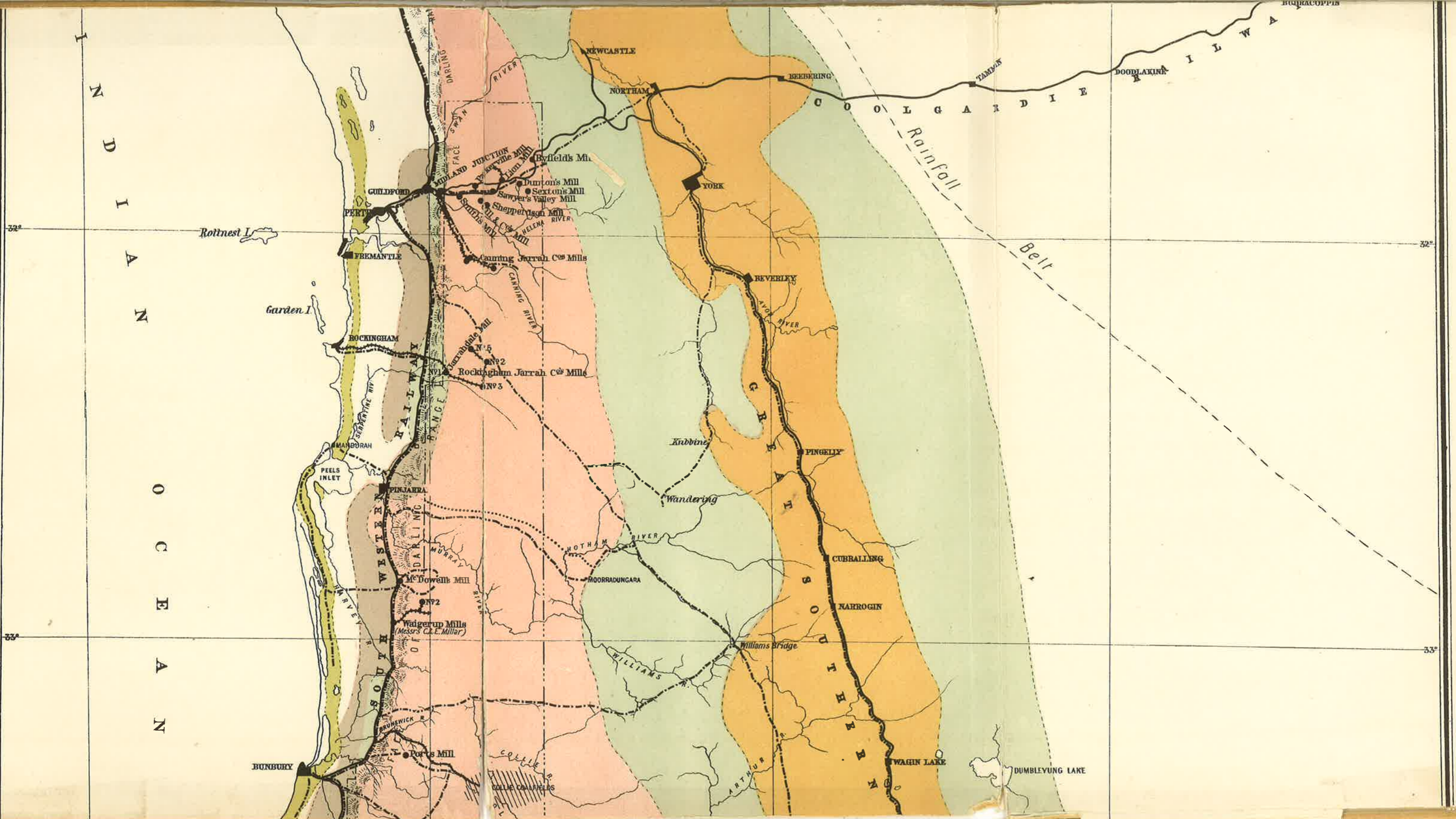
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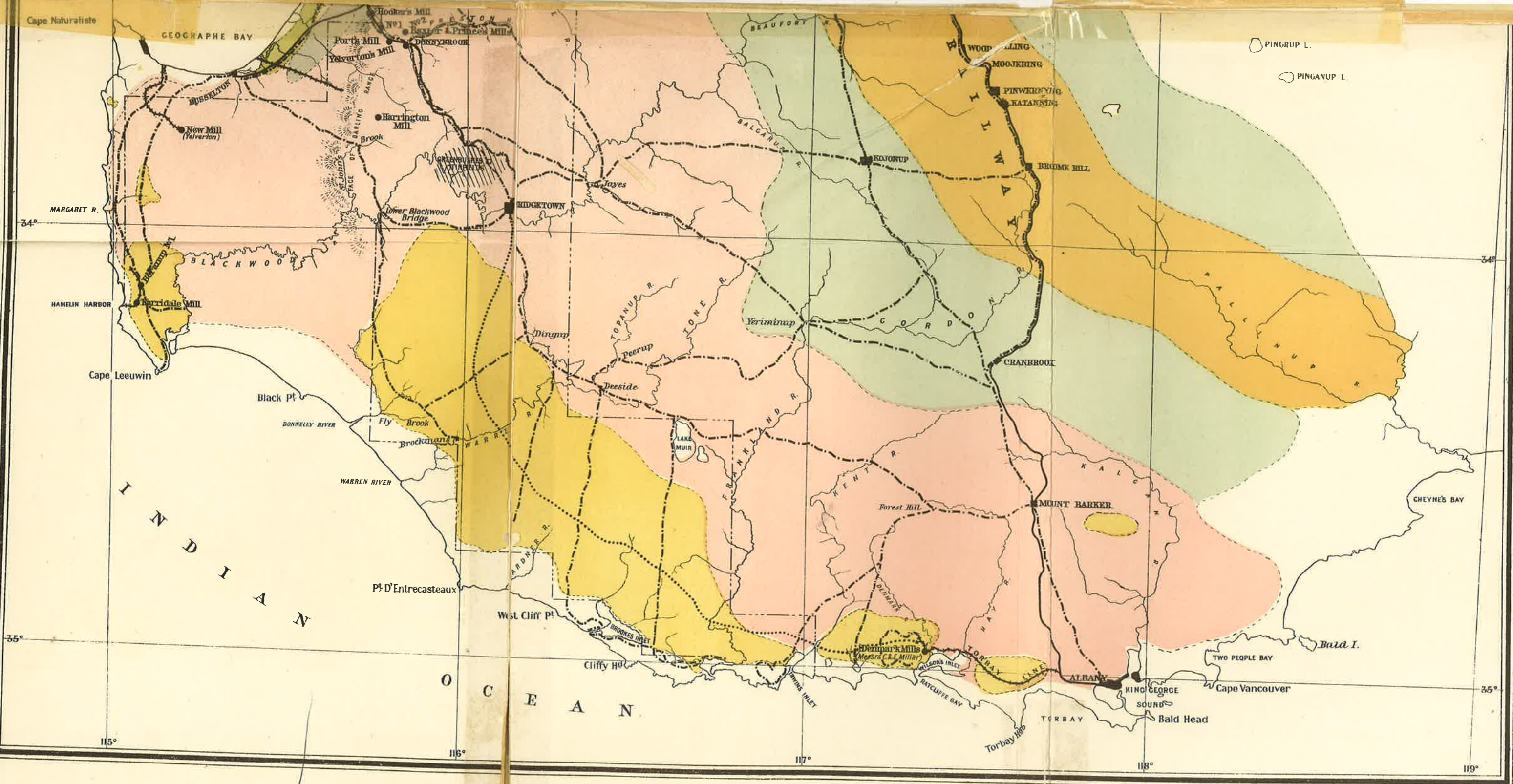
Jarrah (<i>E. marginata</i>)		Route travelled	
Karri (<i>E. diversicolor</i>)		Existing Railways	
Tuart (<i>E. gomphocephala</i>)		Authorized do	
White Gum (<i>E. rudunca</i>)		Proposed do	
Red (<i>E. calophylla</i>)		do Reserves	
York Gum & Jam (<i>E. loxophleba</i>) (<i>Acacia acuminata</i>)		Mills	
		Timber Tramlines	

— NOTE —

In no part does any one class of trees prevail to the exclusion of all other varieties.
The map is intended only to shew generally the locality in which a particular timber is predominant







Cape Naturaliste

GEOGRAPHIE BAY

Port's Mill
Yelverton's Mill

Harrington Mill

Lower Blackwood Bridge

RIDGE TOWN

Jayes

Yeriminup

CRANBROOK

MOUNT BARKER

Pt. D'Entrecasteaux

West Cliff Pt.

Cliffy Hd.

Eden Park Mills
Messrs C.L. Millar

ALBANY

KING GEORGE SOUND

Cape Vancouver

PINGRUP I.

PINGANUP I.

Bald I.

34°

34°

35°

35°

115°

116°

117°

118°

119°

I
N
D
I
A
N

O
C
E
A
N

MARGARET R.

HAMELIN HARBOR

Cape Leeuwin

Black Pt.

DONNELLY RIVER

WARREN RIVER

Brook

Deeside

LAKEMUIR

Forest Hill

Forest Hill

TORBAY

TORBAY

Bald Head

CHEYNES BAY

TWO PEOPLE BAY

BLACKWOOD

Blackwood Mill

Fly Brook

Brook

Warren River

Brook

Brook

Brook

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BUSSELLTON

New Mill (Yelverton)

St. John's Brook

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BALGARUP

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BEAUFORT

BEAUFORT

BEAUFORT

BEAUFORT

WOODHILL

MOOJKING

PINWENING

KATAKING

BROOM HILL

ROJONUP

CRANBROOK

CRANBROOK

CRANBROOK

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