VINCENT, Frederick d'A.

Notes and suggestions on forest conservancy in Victoria. 1887.
NOTES AND SUGGESTIONS

FOREST CONSERVANCY IN VICTORIA.

By FREDERICK D'A. VINCENT,
Deputy Conservator of Forests with the Government of Madras.
NOTES AND SUGGESTIONS ON FOREST CONSERVANCY IN VICTORIA.

INTRODUCTORY.

1. The Minister of Agriculture having requested me to furnish him with a report on the subject of Forest Conservancy, and to state specifically what provision should be made in a Forest Bill for Victoria, I now beg to offer the following remarks:

At the outset I was informed that, as a Forest Bill had already been drafted, which it was Mr. Dow's intention to lay before the Legislative Assembly before the close of September, the time for compiling this Report must be limited, if possible, to one month.

Under these circumstances it is evident that, in the time fixed, it will be impossible for me to treat the subject so thoroughly as I should wish. In this brief Report I shall therefore only be able:

Firstly, to roughly indicate the results of an examination of the present working arrangements; and,

Secondly, to make short recommendations regarding future work and legislation.

2. It must be obvious to any one acquainted with the subject and with the Colony, that the preparation of any Report doing justice to the subject must occupy considerable time. The first step must lie a careful examination of the existing forest areas. This, under the most favorable circumstances, would occupy some months, as I find that, except in the settled districts, where the areas are extremely small, comparatively little is known about the forests. Even for those better known, there are no records describing the distribution and growth of timber, the past out-turn, &c. To get over the ground without even making a careful examination of the tree growth, would take at least three months, and three or four months more would be required for going into all the details of past working and for drawing up proposals for the future.

In order, however, to approach the subject with some local knowledge, I have now visited the State Forests near Ballarat and Sandhurst, which are chiefly worked to supply pit-props and fuel for the mines. The other places I have visited are Bullarook and Wombat, a fine forest on the Dividing Range between Macedon and Creswick, which has been largely worked for the last 20 years; the Redgum forest on the Murray, at Barnham; the Crown land south of Colac, between it and the Cape Otway State Forest; the Colquhoun and Manera Forest, at the entrance of the Gippsland Lakes; and the Victoria State Forest, round Fernshaw.

The bad weather, ill-health, and want of time, have hitherto prevented my getting elsewhere, but the areas which I have seen are sufficient to give me a good idea of the present state of the forests and the results of present management.

CHAPTER I.—PARTICULARS OF THE PRESENT SYSTEM OF MANAGEMENT.

3. The Crown Forests are at present managed under the Land Act of 1884. They consist of—

1. State Forests.
2. Timber Reserves.

There is also the unalienated Crown land, which, although classed as pastoral and agricultural, and therefore open to selection, contains in many cases some of the best forest colony.

STATE FORESTS.—These have been chiefly selected under earlier Acts. They correspond to what are known as Reserved Forests elsewhere. They can nominally only be alienated with the consent of the Governor in Council. There are at the present time 26 blocks of State Forests, having an aggregate area of 664,710 acres.

TIMBER RESERVES.—These consist of forest areas which it is not intended to maintain always as forests. Their alienation is under the same restrictions as that of the State Forests, but Section 88 of the Land Act specially provides that, when any of the reserves were demed of their timber, they may be added to the pastoral or agricultural lands, i.e., that they may be thrown open to selection.

There are about 170 Timber Reserves, of an aggregate area of 690,732 acres.

The total area of both classes of reserves is 1,355,442 acres, or about 2 per cent, of the area of Victoria.

Since the accession of the present Government to office, in February, 1886, the area of the Timber Reserves has been extended by 117,979 acres, comprising 31 blocks mostly under 3,000 acres. From the Forest Report for 1874, the first that was published, I gather that the area
of the reserves was then 1,155,664 acres. Compared with the present area, it shows that in the last twelve years the increase in the area of reserves has been 1,172,778 acres. During the twelve years, 1875 to 1886, the area of Crown land alienated was over eleven million acres (11,079,413 acres—Lands Department Report, August, 1887). A comparison between these two figures shows most clearly what little attention forest conservancy and the selection of reserves have received. During these twelve years many changes have been made in the reserves, some areas being given up and others gazetted in their place. The Timber Reserves are often given up when selectors and others require the land, and they are therefore not entitled to be classed as reserves, by which is understood land permanently set aside for timber.

CROWN LAND.—The area of unalienated Crown land (excluding the reserves given above) is estimated at 28,866,914 acres. Of this, there are eleven million acres of valuable forest land, which is valued for forest purposes, and eleven million acres of rough mountainous country, not suited for cultivation. There are no means of ascertaining what areas are covered with forest.

4. The forests are worked entirely on the licence system, and modifications of it regulated by rules under the Act. The following are the different classes of licences issued:

Saw-mill Licences.—The right to occupy in a Reserve three acres with a saw-mill on payment of £10 a year and upwards. The maximum is £25.

Felling Licences.—The right to fell timber in Reserves for a payment of £5 a year for each man felling. On Crown land outside Reserves the rate is £1 only.

Jinker or Log Carting Licences.—The carriage engaged in taking logs to the saw-mill have to pay £12 to £18 a year. On Crown land the rate is £4 a year.

Tramway Licences.—For tramways taken through a Reserve, or being under a tramway, an annual charge of £10 a mile is made; £10 is the maximum charge for any distance.

Licences, giving saw-mill owners the exclusive right to cut wood in Reserves off areas not exceeding 1,000 acres, are also issued on the usual terms. Under the Act the payment ranges from £5 to £10 a month, the latter being the maximum rate.

Splitters.—Annual licences are issued for felling and splitting in State Forests and Timber Reserves, at £2 for the commoner woods, and £4 for redgum and ironbark. On Crown land the rate is £1 for the common woods, £4 for redgum and ironbark, and £10 for blackwood, pine, beech, oak, and sassafras.

Undergrowth Licences.—These are issued at £1 10s. to £5 per annum.

Grazing Licences.—The cost of these in Reserves is 4s. per annum per head.

Wattle Bark.—Licences to strip bark from September 15th to January 16th are issued at £1 10s. each.

No timber work has as yet been undertaken by the Department.

5. The Secretary for Agriculture, Mr. Martin, is at present in charge of the Forest Department, under the Minister of Agriculture. He has under him an Inspector of State Forests, a title which is quite a misnomer, as the officer filling the post has for many years had charge only of the nursery at Macedon and of a small forest on the Mountain, and has done no inspection work. There are also eighteen foresters under Mr. Martin. These officers, who receive salaries of from £10s. to £108 a year, are placed in charge of the State Forests and Timber Reserves. They also act as Crown bailiffs in charge of the Crown land in their circles, acting in that respect alone or conjointly with a Crown bailiff who has no forest duties. In several instances the foresters do bailiffs' work and act as rabbit inspectors.

6. No great success can be recorded under this head. The Inspector of Forests, Mr. Ferguson, is in charge of a nursery at Macedon, from which large quantities of plants are distributed gratuitously to the public. He has planted about 110 acres on the summit of Mount Macedon with oak, elm, maple, pines, &c. The situation is very much exposed, and, even if the trees grow, they will never give any wood of value.

Small plantations have been made at Majorca, where 200 acres have been planted with wattles, pines, and bluegums; at Havelock 300 acres, and at the Very Yanga 200 acres are enclosed and partly planted with the trees just mentioned. In such cases there has been no great success, except with the wattles and bluegums. The planting of eucalypts generally, and of English hardwoods especially, appears to me a mistake, as the latter are inferior to the indigenous trees. Rabbit-proof wire netting has generally been put up at prohibitive cost; and as along these large areas available for conservation, covered with the natural growth of eucalypts, plantations are quite out of place, and the money spent on them can only be regarded as wasted. Questioned times the area of natural growth could be well conserved with the same money. No accounts are kept up, showing the cost to date of the plantations. The sum expended last year was £3,600, not including supervision.

The Railway reserves bordering the line between Melbourne and Coliban, Queenscliff, JInd JInd and Horsham, have been partly taken up with wattles. These are generally good, and the work ought to pay its expenses. It is of course an advantage to have land already cleared and fenced, but against this there are many disadvantages which suggest themselves, such as danger from fire. Unless the Forest Department has control the land for a term of years—which does not appear to be the case—it is probable that the public will insist on the trees being cut when it finds that they cut off the breeze from towns passing along the line. It would probably pay better to have the plantations in one large block.
7. The Revenue in 1886 was composed of the following items:

Licences to cut Timber on Crown Land ........................... £1,383 Revenue and Expenditure, 1886.
Licences to cut Red Gum Timber ................................... 644
Licences to cut Timber from State Forests ....................... 926
Licences to collect Wattle Bark .................................... 228
Licences to cut Dead Wood .......................................... 22

TOTAL LICENCE FEES .................................................. £2,677

Saw-mill licences—
Rent of Saw-mill Sites .............................................. 1,711
Timber licences .......................................................... 750
Tramway Licences ...................................................... 286
Licences for the exclusive right to Cut Wood from certain Areas 1,582

TOTAL ................................................................. £7,552

The revenue amounted to £8,396, consisting of:
Salaries paid to Forest Officers ............................. £2,360
Allowances .................................................................. 1,131
Plantations, including the Inspector’s Salary ................ 1,905

Additional Salary of Mr. Martin and Clerical Staff ....... 592

TOTAL EXPENDITURE ..................................................... £9,998

The Revenue for 1886 was £7,181. Judging from the following statement, showing the number of licences issued annually during the last five years, it is probable that the revenue is gradually decreasing:

RETURN SHOWING THE NUMBER OF QUARTERLY LICENCES ISSUED DURING THE YEARS 1882, 1883, 1884, 1885, 1886, AND PART OF 1887.

<table>
<thead>
<tr>
<th>Year</th>
<th>Year’s Saw-mill Licences, at 2s.</th>
<th>Quarterly Falling, Collecting Bark, and Splitting Licences</th>
<th>Quarterly Tramway Licences</th>
</tr>
</thead>
<tbody>
<tr>
<td>1882</td>
<td>98</td>
<td>Felling on Crown Land, at 3s. 10d. ........................</td>
<td>186</td>
</tr>
<tr>
<td>1883</td>
<td>103</td>
<td>Felling on Crown Land, at 4s. 10d. ........................</td>
<td>183</td>
</tr>
<tr>
<td>1884</td>
<td>119</td>
<td>Felling on Crown Land, at 5s. 10d. ........................</td>
<td>191</td>
</tr>
<tr>
<td>1885</td>
<td>121</td>
<td>Felling on Crown Land, at 6s. 10d. ........................</td>
<td>189</td>
</tr>
<tr>
<td>1886</td>
<td>114</td>
<td>Felling on Crown Land, at 7s. 10d. ........................</td>
<td>193</td>
</tr>
<tr>
<td>1887*</td>
<td>109</td>
<td>Felling on Crown Land, at 8s. 10d. ........................</td>
<td>192</td>
</tr>
</tbody>
</table>

* Nine months only.

NOTE.—Saw-mill Licences.—The area for these is not fixed. Special Area Licences.—The area occupied is from 300 to 773 acres. Payment is assessed at about £1 per 100 acres per month. The total area thrown open on these terms, giving the number of right saw-mill licences in 1882, 1,943 acres; 1883, 1,943 acres; 1884, 4,383 acres; 1885, 10,733 acres; 1886, 10,693 acres; 1887, 2,973 acres. The rent is payable monthly, and some areas are only occupied for two or three months, and abandoned where unsuitable.

CHAPTER III.—INSPECTION NOTES ON SOME FORESTS.

3. The weather during the three months has been extremely bad, and in several cases impassable, owing to the roads being impassable. From the visit and from information obtained from the local foresters, from saw-mill owners, splitters, and others interested in the forest question, I have been able to collect much information, and to form some idea, I am told, a fairly accurate picture of the rest of the area.

Wombat and Bullarook Forest.

The largest forest visited was the Wombat and Bullarook Block, running without a break from Monbeach to Daviesford and Bullarook. The area is estimated at 195,200 acres.

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Enormous quantities of it have been sent away to Melbourne, Sandhurst, and Ballarat, one mill-owner informing me that he used to send away 1,000 tons monthly.

A large number of saw-mills are established in and near the forests. There were 36 mills in 1884, but several have since been removed owing to the scarcity of timber.

The splitters have cut more timber than even the saw-millers, but no details of their work are available.

The quantity of timber used by them is said to have been immense, most of the sleepers and fencing for the railways in the vicinity of the forest having been supplied by them.

The good timber is now almost all worked out, except in certain localities in the southern half of the forest, where some special areas have been given to saw-millers. In the portion which I visited, there are only second-class trees, with a certain number of bigger ones, which have been left for some fault.

There has been little or no reproduction, the whole of the young trees having been burnt, and there are no middled-sized ones coming up to yield timber some 20 or 40 years hence.

The useless waste and destruction that has gone on in this forest for the past 30 years defies all description. Under the extraordinary system in force, the saw-mill fellers and the splitters have been allowed to go in and cut when and what they chose. Everyone naturally took the finest, straightest trees, and, instead of properly working up the timber, the saw-millers have usually taken one log out of each tree, having the rest, which, although not quite so good as the butt-end log, still consisted of first-class timber.

The splitters as often as not left trees to rot where they had fallen, without even taking out the best, or selecting the branches of a felled tree, which killed or rendered useless almost as many trees as had been felled. Although at the time of my visit the ground was covered with logs, boughs, &c., I was told that the debris was a mere nothing compared to what it had been before the fires of 1885 and 1886 had cleared the ground.

The selection of the State Forest has not been well made here, for in the neighbourhood of Trentham, and in other places, such as on the Culbin River, some of the best forest has been left as Crown land, and inferior growth taken up for the Reserve. The forest is here, and similarly in other forests where there is a demand for pit props, appear to have great difficulty in protecting the young trees. No sooner is a tree of proper size than it is felled. One 7 to 9 feet prop is cut out, and being under the size fixed for felling in State Forests, it is passed along as crown land. The rest of the tree is wasted.

The Cape Otway Forests.

10. Owing to bad weather and to the roads being impassable, I was unable to visit the Otway State Forest, but I went through some of the Crown land which border it.

The original area of this forest, including the Crown lands, was probably about 200,000 acres, comprising as it did most of the county of Polwarth, south of Colac. About three-fifths of the area is covered with good forest, and, except within a radius of eight miles from Apollo Bay, and of seven miles from Colac, little timber has been cut as yet. It was originally proposed to form the greater part of this into a State Forest, but Mr. Longmore, when Minister of Lands, decided to throw part of it open to selection, and only a portion of the parish of Otway was declared a State Forest. Its area is nearly 30,000 acres. Outside the State Forest there are very large areas of forest on Crown land. Near Colac, the parishes covered with the best timber are Barongarook, Gerangamet, Natte-Murrung, and Vaughan, a whole of which contain magnificent stringy bark or massmate forest. The whole of this is still open to selection, but, owing to the soil being rather poor, only small parts have been taken up.

South of these, in parishes Mooringool, Barramunga, &c., beyond the Geelong Road, comes what is known as the Cape Otway Forest, although quite distinct from the State Forest of that name. It consists, in a great measure, I am told, of some of the largest timber in the colony, the principal trees being blue gum, stringy-bark, mountain ash, blackwood, &c. Owing to the pressure brought to bear on the Minister, the whole of this fine forest, with the exception of Otway parish, was recently thrown open, and at a Land Board, held within the last six or eight months, the greater portion was allotted. The majority of the selectors have not, I believe, seen the land.

None can have identified their allotments, as the survey is only now in progress, although the land is partially cut up into blocks on the map: and I can conceive nothing more opposed to the real interests of the community than selections being allowed on these terms. The country is unsuitable for cultivation, being extremely hilly and broken. There are no roads, and the cart track is simply traced in the mud for six months traffic in the year. For six months traffic in the year.

There is every reason to suppose that much of the land has been taken up for the sake of the timber—(a saw-mill owner informed me that he has taken 1,000 acres)—and even if this is not the case, small selectors can scarcely hope to make money out of land which costs £40 an acre to clear.

I now hear that many of the selectors will probably not take up the blocks promised them, in which case those so rejected will be reserved. As matters stand at present, the land is not an

* To reproduce is to seedlings, stump shoots, or root suckers to come up when the old timber is felled, reproducing the old forests that are cleared away, or resowing the area cleared.
the disposal of Government until such time as the selectors refuse to pay the survey fees. A great mistake has evidently been made in giving up this land.

The State Forest in Otway parish comprises a good deal of fine timber, but the country is very broken, and nowhere is the growth so good nor the lay of the country so favourable for working as in the parts further north allotted to selectors. It includes a strip some miles in width bordering the sea coast, which, although very suitable for agriculture, is said to carry no good timber. This might have been given up without harm. The forest in Krambruk parish, surrounding Apollo Bay, where some large saw-mills are at work, is also curiously omitted from the State Forests. The saw-mills were naturally placed where the best timber grew, and where there are the greatest export facilities.

11. From what I saw of the Crown land, it is clear that it holds a very large quantity of valuable timber. The fellings have been on a comparatively small scale, and less damage has been done by fire than in Ballock. although here, too, the trees are thoroughly charred up into the heart of the wood. The growth of stringybark on the Crown land of Yarragup parish is very satisfactory, and is, in fact, as admirable for building timber and furniture and for the young trees of all ages, that no better proof could be found of the want of system and care in the selection of reserves.

We have here a forest with probably few equals as regards position in the colony, which, although only 4 to 8 miles from a railway line, and 100 miles from the principal markets, is thrown open for selection to the Crown for the timber cut, inferior forests are taken for the reserve 20 to 25 miles distant from the railway, and quite cut off from it for cart traffic during the greater part of the year. There was never a better opportunity for forest conservancy and management than this Crown land offers.

**Ballarat and Creswick Forests.—Ellesmere and Axedale.**

12. To form some idea as to how the mining centres are supplied with timber and firewood, I have been to these State Forests.

The Ballarat and Creswick block, area 14,000 acres, is five or six miles from Ballarat. It is fairly well stocked with young eucalyptus up to 15 inches diameter. A portion of the area has been fenced, and at the time of my visit the crooked trees were being "thinned out" by the contractor, who undertook to do the work and to pay $2s. an acre for the right of removing the wood out.

This thinning is a great mistake, and it ought to be stopped at once. In the first place, if really required, it should not be entrusted to an irresponsible contractor, whose interests are to take out as much wood as he can. The man seemed to be cutting a lot of fine straight trees for props in addition to doing other damage.

In properly managed forests, the selection of the thinnings is always done by trained men. Here, however, no operation of that kind is required. In open forests like this, one reason for the trees growing crooked is that they stand too far apart, and that they have, when young, been often disturbed and bent down. To cut out anything now only aggravates the evil. Thinnings are rarely required in forests worked on short rotation for growing pitprops, &c., and their being suggested in this case, and in Mr. Martin proposing to carry them out in several other forests, shows how important it is to have operations directed by properly trained men and not by amateurs.

The forests near Ballarat have been much overworked, and are rapidly falling off in productiveness. The arrangements for licensing the cutters and for preventing theft are extremely bad, and no sooner does a tree reach proper size than it is stolen.

The Ellesmere and Axedale Forest, area 18,000 acres, lies to the north-east of Sandhurst, between it and the Campaspe. Close to it is a Timber Reserve, Wellsford and Sandhurst, having an area of 3,500 acres. These areas supply a large quantity of timber and firewood for the Sandhurst mines. They are fairly well stocked with young timber, amongst which is a good deal of ironbark. They are, however, worked on no system: the selection of the reserves has been badly made, and there are Crown lands bordering on them covered with forest equal to that selected. Licence holders are allowed to cut out anything they choose, in the class of forest for which their licences are issued. The taking of trees of any size being cut on Crown land, whilst in State Forests and Timber Reserves only those of a certain size may be felled. The reserves are not distinguishable from the Crown land, and as there is rarely any distinct boundary separating them, the local forester has immense difficulty in enforcing the rules. His movements are carefully watched, and, either

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1 Twenty-four inches diameter for Red gum and Ironbark, eighteen inches for other kinds.

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when he is at the other end of his district or on a moonlight night, it is easy to cut pit-props in the reserves and to carry them on to Crown land. I found matters exactly the same at Ballarat and elsewhere. The rules, and the arrangements made for enforcing them, show so little common sense, that it must be a heart-breaking task trying to enforce them.

To the south and west of Sandhurst there are thousands of acres covered with eucalyptus scrub. Originally, a fair iron bark forest grew there, but it was all cleared to provide wood for the mines, and the poor gravelly soil is now barren and worthless.

The Redgum Forests on the Murray.

13. The redgum forests grow on the low lands bordering the Murray and Goulburn rivers, and are usually flooded for some months annually. The principal ones are Bartinn, 14,900 acres, and Gumboower, 68,000 acres. Owing to the floods I was unable to see much of them, but by going through some similar forests on the New South Wales side of the river I obtained much important information.

Felling has gone on in the Victorian forests for the last 30 years, and most of the good timber has already been cut. The logs on which the mills are now working appear to be inferior; they were often crooked and hollow, and the sawing return shows that great waste occurs in working them up. It is only rarely that more than one log is cut from a tree, and a large quantity of good timber is left to rot on the ground. The ground appears to be well covered with seedlings, which ought to grow up rapidly if care is taken to keep out sheep and fires. These seedlings will not be of timber size for 50 or 60 years, and it is to be regretted—especially as the redgum timber is so valuable—that a neglect of these precautions has resulted in there being no middle-aged trees coming on to replace the mature timber cut. The end of the timber supply from these forests is already visible.

I am informed by saw-millers that large areas of land along the banks of the Murray, carrying more or less redgum, have been given up to selectors, who took the land solely for the sake of the timber, which they sold at a considerable profit. Mr. J. Shackell, the member for Rodney, says that he knows of very many blocks of land being taken up, from which £6 to £8 an acre was realized by the selector for the redgum timber alone.

14. From the map supplied me I understand that a broad strip of land bordering the River Murray, from the Tambo River in Gippsland to the junction of the Murray and Murrumbidgee, a distance of several hundred miles, has been notified as a reserve for the Murray pine. The protection of this interesting tree has, however, been entirely neglected. It has been cleaned everywhere, and nearly all the land where it stood has now been alienated.

The Gippsland Forests.

15. Although this portion of the colony is supposed to contain vast forests, it will no doubt be heard with surprise that the only State Forest there is Colquhoun and Manera, at the Lakes entrance. The only other reserve in East Gippsland is a Red gum Timber Reserve—Congulmening, 10,000 acres in area—to the west of Sale. In Buln Buln there are five Timber Reserves, of which the aggregate area is 62,000 acres. The selection of reserves is extremely backward, and although there are still large areas available in North and East Gippsland, such as about 70,000 acres of stringybark forest on the Nicholson River, all the good forests appear to have been taken up in Buln Buln county, especially those which are most accessible. A few years ago the forests in the latter county are said to have extended over more than 800,000 acres, comprising some of the finest blugum and blackbutt timber in the colony. The trees were so big that they had to be felled from platforms 15 to 20 feet high, and the tall stumps will long remain to remind us of the neglect which the Forests have received. There may still be some areas left which are worth preserving, and the matter should receive the earliest possible attention. The same remark applies to the redgum forests between Sale, Bairnsdale, and the Tambo River. Every effort should be made to save whatever remains unsold, and to reserve all areas on which the survey fees have not been paid.*

The Colquhoun and Manera Forest.

16. This forest is situated between the Tambo and the Snowy River, abutting on Lake King, and running thence about 20 miles north. Its area is given at 8,500 acres. Along the Lake shore, and between it and Swan Reach, there are principally box, with some ironbark, stringybark, gum, and blackwood. The growth of the box is magnificent. The trees run up to a height of 60 or 80 feet without a branch, with stems 10 to 14 feet in girth, as clean as straight as gun-barrels. Some of the logs brought into the mill have given 2,500 sup. ft. and trees giving, 3,000 to 4,000 feet are common. In the portion which I visited, the large

*It may not be out of place to draw attention to the system on which lands have been frequently thrown open to selection, regardless of all considerations. When the Land Act was passed in 1884, the county maps were hurriedly coloured by the Surveyor General (Mr. Skene), without consulting any other departments, such as the Forest or the Mining. In Buln Buln, for instance, the whole of the county was shaded either brown or blue (i.e., open for selection or for grazing leases), the nature of the country, whether billy or freehold, or covered with good forest or bad, being a subject not deemed worthy of notice. In consequence of this, some of the most important ranges, as the Strzelecki, have been occupied up to their summits by selectors, instead of being retained, as their position evidently requires, for permanent reserves. It is therefore of the utmost interest to the country to give the Forest and the Mining departments first an opportunity of selecting the land they require. I cannot too strongly urge that this be done in future.
box trees average two or three to the acre, but in places there are many more, and I was
informed that far finer growth would be to be seen little distance further in. The forest is cer-
tainly one of the finest in the colony, and it is all the more valuable from the ground being well
stocked with very promising young trees of all ages, and from its being very evenly worked.
The ground undulates gently, and runs in long broad spurs down to the Lake; the timber can be slid
down within two or three weeks, which can take it to the mill. Of underbrush (dummy) there is
comparatively little. It ought, therefore, to be easy to stop fires. There is very fair grass, and
grazing suggests a source of considerable revenue.

The box timber is considered one of the best in the colony, and this forest is, I understand,
the only one where long beams, 40 to 60 feet in length, can now be had. The trees, when cut up,
can be used for beautiful, clean-grained wood, with very few splits.

Mr. D. Munro and Mr. Hogg are now working here. The former has got three
saw-mill sites in his own name, and I hear that he has put in dummy's who hold two more.

This makes a total of five sites, or, allowing the usual one square mile to each, he has an area of
3,200 acres under his control. He has only one saw-mill erected, and I understand that there is no
intention of putting up more. Mr. Hogg has one site in his own name, and one in the name of a
dummy.

The work going on in the forest is of the usual character. The trees are filled higher than
they need be. In cutting out the logs there is less waste than usual, for the "fallers" are paid
by contract at 5s. a 1,000 feet, and the fine straight trunks give a high percentage of first-class
logs. A good deal of wood is however wasted, and I saw some 20 feet logs left, although
perfectly clean and straight; trees are also left to rot because they are slightly hollow at the
butt. The work, is, however, much more carefully done by Mr. Munro's manager than by most
of the saw-millers, and he probably utilizes much wood and does more with less than can be
expected, so long as it is not to the licensee's

No attempt is made here, or elsewhere, to utilize the tops and branches, which have strewn
about everywhere, and promise to make a fine blaze and to kill a great number of trees before long.

A clause in the saw-mill lease requires the tops and branches to be cut up, stacked, and
burnt, within a month after felling, but the felling licence is not the faller's name, and the
obligation to comply with the rule rests on him and not on his employers.

To secure a conviction for a breach of the rule, the forester must, according to the local
magistrates, have seen the men "fall" the trees. This he rarely does, as the fallers take care never
to let a tree fall when the forester happens to be near.

To meet the difficulty some foresters have caused the saw-millers themselves to take out the
licence of this kind, which is only one of many, should be left to the foresters, instead of being settled by a uniform rule for the whole of the colony. Petty
details, which are the essence of successful working, are unfortunately left unnoticed by Mr. Martin.

17. I must also point out that no boundaries have been fixed for Mr. Munro's felling
operations. His men go all over the forest, within two or three miles of the mill, and, after cutting a
dozens trees here to-day, go a mile further on to-morrow. In every other forest that I have visited
the saw-millers are allowed to work as far from their mills as they choose to go. If boundaries
are cut, it is only because two saw-millers quarrel, and necessitating a mutual understanding, it
must be. provided he can get his licence extended, there is nothing to prevent Mr. Munro or any

Mr. Munro's manager tells me that they had secured four to five square miles of the forest, and
that 40,000 super. feet, or about 80 logs, was considered a good week's cutting.

For this about £118 appears to be paid annually, viz.:—

<table>
<thead>
<tr>
<th>Description</th>
<th>Price (per 1,000 feet)</th>
</tr>
</thead>
<tbody>
<tr>
<td>5 saw-mill sites, at £10</td>
<td>£50</td>
</tr>
<tr>
<td>4 felling licences, at £5</td>
<td>20</td>
</tr>
<tr>
<td>3 jinker licences, at £16</td>
<td>48</td>
</tr>
</tbody>
</table>

The rental amount, if 56 square miles are occupied, comes to about £6d., or, supposing
that 40,000 super. feet are cut weekly during 40 weeks in the year, the royalty received by
Government is 1s. per 1,000 super. feet. I am told that Mr. Munro has a mill on the Tanbou, where
he buys wood standing on private land at 13s. to 20s., per 1,000 super. feet. Even if he
does not pay quite what, this price is constantly paid for timber very inferior to the box which
Government is giving in this forest at 1s. The local (Lake-side) value of this box wood is
about 100s. a 1,000 superficial feet, excluding, of course, the long beams, which fetch fancy prices,
and the wood which are being supplied by the Lake's Entrance works at £25. The reader can
judge whether Government receives a fair royalty.

Mr. Martin thinks that the men are not demoralized, but I have good evidence to prove that Mr. Munro has an
interest in the sites, and that the men are spoken of by his own men and by every one else on the spot. If Mr.
Munro can arrange to hold 5 or even 10 sites he is not to blame, but the entire want of care and intelligence in administer-
ating the rules, which, though bad enough, are sufficient to prevent abuses of this kind. Everyone makes the best bargain he
can, Government is trying to transact its business in the most mercantile way, and to shut out its eyes to facts which are patent to a stranger
like myself, the interests of the country must suffer.

B. 631. B.
It is a very great pity that saw-millers and splitters should have been allowed a footing in the magnificent forest, and steps ought to be at once taken to stop further destruction. Their work should be confined to properly demarcated areas, and within this they should clear block after block.

The granting of five or undoubtedly three mill sites to one man appears to be contrary to the spirit of the rules and a great injustice to other men, especially when the clause about putting up mills is not enforced. 6

It would also be as well to ascertain, in future, that the licences are not given to dummies.

There are not many splitters at work now, but a large number of ironbark trees have been killed by removing the bark, and a number of wattles have been stripped when too young.

CHAPTER III.—GENERAL REMARKS ON PRESENT MANAGEMENT.

18. From what I have said above it will be understood that I am very unfavorably impressed with the present state of the forests. Wherever I went they told me that the neglect or careless management has been rampant everywhere, and disastrous in its effects.

In newly settled countries, which are largely covered with forest, and where much extravagance and waste. But, as it has long been known that the area of good forest in the colony was very limited, and that supplies of timber were running short, I have estimated that more effective measures have not been taken to prevent further waste.

19. The present arrangements with this view are quite puerile, and so ill-conceived that they can scarcely be seriously discussed. In the first place the distinction between State Forests, Timber Reserves, and other Crown land can only lead to difficulties.

The boundaries of the respective areas have been selected with little regard for the real requirements of the case. Little care, so far as my inquiries go, has been taken to select as State or Reserved Forests the best forest and that most conveniently situated for export. The local officers, or indeed any one else, could give numerous instances of the best forest being given up to selectors, or kept as Crown land for splitters to work in, at a minimum charge, that which was more remote being reserved for the State.

The best examples of this are the Cape Otway forest, described above, and the magnificent forests in Balm Balm county, and elsewhere along the Gippsland line. Many other instances will recur to every one who has been a short time in the colony; and the one thing about which all agree is the wild way in which large areas are thrown open to selection by the Lands Department, long after Mr. Ivey and others had drawn attention to the matter.

20. This neglect to make a proper selection of reserves would cause less difficulty if the responsible officers were allowed to manage all the Crown land, pending selection, on the same principles as the State Forests and Timber Reserves.

Instead of this, they are told that licences are to be issued for them at one-half to one-fourth of the State Forest rates, and that trees may be cut there free of any of the restrictions as regards size, &., applicable to trees on the other side of the imaginary line, dividing the two classes of forest.

Crown land licence holders have often rights-of-way through the State Forests, and possessing a cart with undersized wood, it is practically impossible for a forester to say where the wood comes from.

Note.—It may be noted here that no effort has been made to prevent tracks being made through the State Forests. Men are allowed to make them in all directions, A private landowner would, of course, try to keep out trespassers, and insist on people keeping to the path. In the case of Government, the simplest precautions are neglected.

21. But the terms on which licences are issued here are chiefly to blame for the waste and destruction which have gone on everywhere. The working of forests by issuing licences or permits is, of course, nothing new, having been tried, and in turn, abandoned, in nearly every British dependency; but elsewhere the licences are only issued for cutting a certain number of trees or removal of certain produce. In Victoria the licence-holder has virtually the right to cut as many trees as he desires, to remove them or abandon them; he has the right to range at will, during the currency of his licence, in all the forests of the colony, whether in Gippsland, at Cape Otway, or on the Murray, coming under the class for which the licence is issued.

The rates for licences are regulated by the Land Act and by regulations under it, and although I have already given them, as they are somewhat complicated, it will be useful to show again how low they are.

Saw-millers have to pay annually—£10 a year for a 3-acre block on which to site the mill; £5 for each feller, or, say, £20 a year for a 100-acre site, £12 per year for each carriage, or, say, £24 for a half-sized mill. A tramway is made at the licence fee of £10 per mile has to be paid.

* Whether this rule is good or bad is another thing. The licences were issued under it, and if it is enforced in one case, it should be in others.
The total, therefore, comes to £64 a year, for which the saw-mill has the right to cut what he chooses. Saw-mills not being allowed closer together than one mile, their owners always have a circle one mile in diameter where they can cut. Often a still greater extent is available, and I believe that five or six square miles is the area which a mill practically gets. Inside this the man has the monopoly, supposing splitters do not come in.

Saw-millers may also be given special areas to cut in. Here they have the exclusive monopoly of the area. The charge for these, which are not to exceed 1,000 acres, is £5 to £10 a month. This covers all charges, such as saw-mill, feller, and jinker licences. Once provided with licences, the "fullers" working for the mill can cut as much and leave as much as they choose.

It is seldom that more than one log is taken out of each tree, and a vast quantity of very good timber is wasted. Whole trees are often left when the butt end is found to be rotten and hollow, and in many cases trees are cut much in advance of the mill requirements, and never carted away.

22. The waste of the saw-mill is nothing compared to that of the splitters, working on quarterly licences at 5s. to 10s. They leave the whole forest strown with trees felled and rejected for not splitting quite true. Judging from the state of Bullarook, I should say that, for every tree split up, two at least are wasted; and even when some part of the tree is split into posts and rails, only 9 to 15 feet of the trunk is used, and the rest of the fine timber abandoned.

Part of the rejected stuff would have been utilized by saw-mills if the splitters had been kept out, and the mill-owners complain that, after they have erected a mill, the splitters cut the best trees near it. There is then a race between the men as to which shall cut and claim the wood, leading often to many more trees being cut than are required. Splitting in itself must always be a very wasteful plan for converting timber, less of course in the case of posts and rails than in the case of railway sleepers, where fully two-thirds of the wood is wasted in altering the logs into square sleepers, not to mention that of the trees rejected for splitting badly. I see that Mr. Dunlop himself, in another memoir of the forest question before the Royal Commission, says precisely the same thing, viz., that the splitters waste two-thirds of the trees, and that, at most, one or two sleepers are taken out of each tree. Yet although this must be obvious to any one, several hundred men were allowed to split sleepers in Bullarook for a considerable time, and it is now going on in the Red gum Forest at Coonongmerang and elsewhere.

23. Little restriction is shown in the number of licences issued. The saw-mill licences are issued freely by the Secretary for Agriculture, provided the proposed site of the mill is not too close to that of another man, and work is allowed to go on all over the forest as if the sole object of Government was to get rid of all the wood as rapidly as possible, and there were no such thing as a future.

Several licences for the same forest are issued to one man or to his dummy, without any condition as to the erection of a mill within a fixed time.

The licences for splitters, fellers, jinkers, and wattle-bark collection, known as "priced licences," are issued by local Receivers of Revenue without any reference to the foresters or Crown bailiffs, nor are the former always supplied with particulars of the licences. All "priced licences" are current everywhere throughout the colony, and no forester can tell what men are working in any particular forest. The purchase of licences is open to all, and well-known offenders are given every facility for continuing their depredations. There are, I understand, a great many good mills on

<table>
<thead>
<tr>
<th>Area-Acres</th>
<th>Hold for</th>
<th>Total Payment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Murray River Saw-mill, 1886-7</td>
<td>1,000</td>
<td>£40. Abandoned.</td>
</tr>
<tr>
<td>960</td>
<td>2 months</td>
<td>£20. Do.</td>
</tr>
<tr>
<td>830</td>
<td>1 month</td>
<td>£9. Do.</td>
</tr>
<tr>
<td>640</td>
<td>1 month</td>
<td>£7. Do.</td>
</tr>
<tr>
<td>500</td>
<td>1 month</td>
<td>£6. Do.</td>
</tr>
</tbody>
</table>

The following figures show the average number of months for which each of the special areas was held during the last six years: - 1882, 2 acres, held for 12 months; 1883, 2 acres, held for 12 months; 1884, 7 acres, held for 8 months; 1885, 16 acres, held for 7 months; 1886, 12 acres, held for 9 months; 1887, 9 acres, held for 3 months.

The matter assumes a much more serious aspect from the very large area given under this rule, viz., 25,000 acres in 1886, and 14,000 acres in 1887.

It was only on assisting a clerk to take out the special area figures, which it was certainly not my duty to do, that I by chance discovered these facts. My inquiry into the Forest question has been rendered far less easy than I expected it to be, owing to the difficulty of securing information or assistance from some of the officers at head-quarters. The particular piece which I have collected have been obtained chiefly from the local foresters, Crown bailiffs, and others.

2 The same thing constantly occurs between splitters. A man finds a clump of 10 or 12 good trees, and tells the

2 The fact that more than one log is taken out of each tree, and a vast quantity of very good timber is wasted. Whole trees are often left when the butt end is found to be rotten and hollow, and in many cases trees are cut much in advance of the mill requirements, and never carted away.

When a man has discovered a clump of 10 or 12 good trees, and tells the
private land which systematically steal Government timber. It is also said that when timber is cut on land held under section 32 of the Act, it is generally done by unlicensed men, who come in, breaking down the fences and spoiling the pasture. In as far as this section aims at preventing the lessee from cutting the timber on the land he occupies, it works very harshly. The lessee may not cut a tree, and yet any man holding a 5s. quarterly licence, or saying that he does, can come in and break down the fences without any notice.

24. Looked at from either the standpoint of the Revenue Collector or from that of the Forest Conservator, the licence arrangements appear equally bad, and I do not think that any one could have seriously intended them as a protection to the forest, or to the revenue, but on the contrary, that they have seriously endangered both. Without doubt the licences allow the cutting to go on irrespective of quantity, the forest, without regard to the annual growth of the timber going on or leaving the mill. They send in returns obtained from the saw-millers, whose interest it is to underrate their cut and to misdescribe the timber, whose interest it is to understate the size of each log, and the profits of the licensee. The returns are printed in the Annual Reports, although probably much more forcibly than in any other case.

25. We are frequently told that the licence fees press hard on those employed in the timber trade, and I therefore regret extremely that I have been unable to secure some accurate returns showing what the licence fees come to per 100 super. feet on the wood in the rough and when sawn. As the lessees allow the cutting to go on irrespective of quantity, the forest, without regard to the annual growth of the timber, going on or leaving the mill. They send in returns obtained from the saw-millers, whose interest it is to underrate the size of each log, and the profits of the lessee. The returns are printed in the Annual Reports, although probably more accurately.

Takings, however, from the Report of 1884, the mill worked by Garnsworthy and Smith at the Lakes Entrance, employing—

| 3 fellers at £5  | £15 |
| 2 jinkers at £12 | 24  |
| 1 saw-mill licence| 10  |

Total cost licences £49

The mill uses 25 logs a week on an average, the average out-turn of each being 1,000 feet superficial.

The cost of preparing the wood is said to be 8s. per 100 feet superficial, which probably includes the licences, &c. This leaves a profit of 2s. a 100 feet, the sale price being 10s.

The profit would, therefore, be £1.4 a log, or £37 a week.

Two weeks' work would pay the licence fee, and in all probability one week's good work would do it, as I notice that the price of preparation in this case is much higher than that given by other mills.

On these figures the licence fees would come to be 9d. per 100 feet superficial actual out-turn, or say 4 per cent. on the profit made by the mill, or less than 1 per cent. on the market value.

This will, I think, show that the licence fees are at present absurdly low, and that they do not represent a fair royalty charge, which in other countries represents 10 to 25 per cent. of the market selling price.

It should be specially noted that the payment is calculated on the actual out-turn, not on the cubic contents of the timber in the rough. Also, that the engine is fired with wood, for which no payment whatsoever is made.

The royalty charged on second-class wood in New South Wales is 1s. per 100 super. feet in the rough. There are mills on the Murray sawing both New South Wales wood, on which that royalty is paid, in addition to a heavy area fee, and Victorian wood. For the latter, although the charge is less than 1d. per 100 feet, we are told it is too high.

My figures, which I find agree with those worked out by Mr. Ivey twelve years ago, will no doubt be disputed, but they are in the main correct, and my own private inquiries show that the profit is much greater than that shown here.

For instance, Mr. Munro is now cutting in the forests where Garnsworthy and Smith worked. On reference to para. 17, it will be seen that he only pays 1d. per 1,000 super. feet, or, say, one-sixth of what the latter paid. This is because he has a tramway and other good features, and works 80 logs weekly instead of 25. It is only another of the many anomalies of the present system, which permits one man to cut, for practically the same fee, three times as much as another. I say the same fee, as Mr. Munro only occupies several mill sites to keep out others, but he gets more timber.

I hear that, although the trade is not so profitable as it was, owing to the imports of foreign timber, there is nothing to complain of really, and the following facts speak for themselves—

1. That the number of saw-mills is increasing, whilst none of the old saw-mills are going out of it.
2. That the Victorian mills are able to pay much higher prices for timber than in New South Wales, and that they are most anxious to get it.
3. That a great many mills are glad to work entirely on private wood, paying the same 20s. per 1,000 feet super, for stuff inferior to that sold by government at say 1d. to 3d. per 1,000.

No saw-mills never take it into account when they frame their estimates.

*If the timber cost more to the saw-miller, he would not waste it when a man was as in S. O. buys a whole tree at per cubic foot. If it was varied how little it profits if when is done with it. The only way to make men careful with the timber is to make every tree and make them pay for it at per cubic or 100 cubic foot.
26. Another reason, for the complete disorganization which exists, appears to come from forest operations not being directed by a trained forest officer. There is no superior officer to visit the different forests periodically, and to organize the work, and to submit annual progress reports to Parliament. Forest management requires a great deal of previous training and experience. In Germany the officers go through a course of seven years before they are placed in subordinate positions. In India they are trained for three years, and it is useless to expect anyone who has no previous knowledge of the work to organize satisfactorily a proper forest department from the most scanty materials, and in the face of the greatest opposition. This task has, however, fallen on Mr. Martin, the Secretary for Agriculture, who, handicapped as he has been by want of experience in forest work, has done some good. Unfortunately his other work has denied him the advantage of going on frequent tours of inspection, and he has thus been unable to go into the practical work with his subordinates.

The absence of an inspecting officer has been very unfortunate for the foresters, who, when appointed, and with no previous experience. They have had to work for many years, in some cases after eight years, each. man adopting his own system, without any advice or assistance, the forests looked after as if never having been visited by a superior officer. Some of them have done extremely well, but the advantage of periodical inspections would have been very great, and would probably have resulted in some sort of method being followed in the work.

The Secretary for Agriculture not having been on these tours of inspection, is necessarily ignorant to a great extent of what was going on. He has had to depend on the foresters’ reports for his information, and as these were written by men who had no ideas of proper forest management, it is not surprising that Parliament, and the country generally, should be unacquainted with the real state of affairs. Inexperienced though Mr. Martin is in forest matters, neither he nor any one else could go through the Government forests in the colony without noticing the awful destruction going on.

Mr. Martin has, however, only been able to visit the principal forests once a year, he would have been able to write proper reports on them for submission to Government and Parliament. I feel sure that, then some remedy would have been provided, and many of the forests would probably have been saved.

It should be noted that the Annual Reports, little use though they are in their present form, do not appear regularly. Their publication began in 1873, and was continued up to 1875. In 1883 and 1884 reports were published, and, since then, their publication has been stopped. This is a mistake. Everything that has been done during the year ought to be placed on record in such an important branch of the service.

The Future Supply of Timber Endangered.

28. The important question at present is the future timber supply. Are the forests, in their present state, able to supply all future demands on them without impoverishment, and can the future be looked to without misgivings?

The answer can only be an emphatic negative, and I fear that the future timber supply is to a great extent impoverished.

From the published reports, and from other sources, I gather that the principal forests in the colony which contain any quantity of mature timber are—

1. The Otway forest, of which the best part has just been alienated.

2. The Murray River forests, where there is said to be a supply for the next six to eight years.

3. The Bellarook forest, where some of the saw-mills can be supplied for ten years, but which is worked out in parts.

4. The Gippsland forests, said to be of very large extent, but which are really mostly alienated.

The whole of the other accessible forests have been more or less worked out, and contain only unworked timber. It appears likely that Gippsland will soon be the only large source of supply. In the case, however, the future can only be regarded with concern, even if the demand for timber in the future is to be no greater than at present.

A large increase in the consumption may be safely anticipated, taking into account the increased in population, the present rapid extension of quartz mining, and the increased growth of timber on private lands, there is likely to be a great scarcity of timber in the next ten or fifteen years.

Already the mining community complain of the great increase in the price of firewood and timber, and the neglect in which the large areas of Crown land in the vicinity of the mines receive.

Firewood costs now 30 to 40 per cent, more than it did four or five years ago, and there is a universal complaint that the timber now supplied for props, laths, &c., is very inferior and immature.
CHAPTER IV.—GENERAL REMARKS ON THE REQUIREMENTS OF FOREST CONSERVANCY.

29. This brief review, explaining the present condition of the forests, will make the remarks which I now have to offer regarding their future management more easily understood. The details which I have given are, I regret to say, not nearly so ample as I should desire, owing to the great difficulty in obtaining information and figures which can be made use of. This is unfortunate, for the closer the inquiry into the present arrangements, the more necessary will a complete change appear.

30. The immediate causes of this are the bad licence system, the ill-arranged classification of State Forests and Crown lands, an absence of professional foresters to direct operations, and the neglect to reserve the best natural forests. The foresters, and others who appreciate the necessity of preserving the forests, have frequently drawn attention, I believe, to the urgency of a systematic selection of forest reserves throughout the colony, insisting that it should precede any further alienation of Crown lands. Yet nothing is done. Occasionally an application for forest land is sent to the local forest officer to report on, and refused on his recommendation. The report is pigeon-holed and lost sight of. The next applicant may secure the land, a report from the there-ter from the tramway licence, that the timber carriage licence be reduced from £12 to £2; that each saw-miller should be allowed to select 320 acres in the forest; that his cattle should be allowed to graze over 1,000 to 2,000 acres of forest land adjoining; and that his machinery and buildings should be regarded as improvements. I believe they also asked that the new Forest Bill might be submitted for their approval.

32. As an instance of this system, according to the newspapers, only a few days ago a deputation waited on the Minister of Lands, asking that the saw-millers should be relieved of the tramway license, that the timber carriage licence be reduced from £12 to £2; that the "sawmillers'" licence be reduced from £12 to £5; that the saw-millers ask that this may be reduced by more than half, giving, as a ground for consideration, that their mills cost £500,000 and that they spent £100,000 annually on labour and railway carriage. The whole of this expenditure was of course an ordinary commercial speculation, and yet the State must be robbed of forests worth many millions to foster the industry, or, in other words, to support the saw-millers. However, the deputation partly succeeded in its object, as it was announced that the tramway licence would be abolished.

33. The saw-mill trade is not an industry in the proper sense of the term, and it in no way benefits the country. In addition to being given the free run of the forest, it is further assisted by heavy protective duties, which in 1885 amounted to £36,800, and in 1886 to £50,360.

This concession means much more than it would at first appear. A man will save the tramway licence fee, and where he before waited three jinkers one will now be sufficient. The tramway will enable him to remove far more timber than if he had cut it by hand. **This is the same principle which is now being followed in the case of the railways. The railways are being used by the coal owners to transport their coal and the timber owners to transport their timber.** The saw-millers are thus enabled to get their timber at as low a price as £100 an acre.
33. It is this influence of the electors and of their representatives which gives one little hope of the forests ever receiving proper treatment until the forest question is made a national one, and removed from the areas of party politics.

34. It is scarcely necessary to expatiate on the importance to the colony generally of a good forest administration, of the advantages of an adequate supply of timber, fuel, fencing material, &c. nor on the general climatic influences of forests and on the effect they have on the springs and rivers.

Where in a newly-settled country like Victoria there has been much forest and tree growth, and where people in the pursuit of wealth do not allow themselves time to look round and consider what changes are going on in the country, it is easy to be misled by undefined, vague ideas, such as "useless forests," which have always proved so deceptive. Trustfully a few give themselves a thought as to what changes are going on in the country, change the index of population and to the rapid alienation of Crown land, or, even if they do, they confound themselves with the idea that the forests will last their time. It is also frequently otherwise, course quite wrongly, that it will be easy to make plantations and to grow timber when the native forests are exhausted. Every one then jumps in the scramble for land, and the Government being only temporarily in power allows matters to go on having saved the surface.

By founding a so-called Forest Department, which is worse than useless, in that it imports a false notion of surplus to people who cannot inquire into its working.

There is general indifference as to the future, and people are satisfied if there is a prospect of supply outlasting the present generation.

35. The large imports of timber into the colony, which, in 1880, were valued at £1,163,000, help at present to keep down the price, and, in this way, attention is diverted from the subject. It should, however, be remembered that in some of the countries, which supply this wood, the forests are almost exhausted. For instance, the Eucalyptus woods in New Zealand cannot last more than twenty years longer, and as no new sources of supply, there or elsewhere, can be opened up the imports are certain to drop off soon. There will then be great scarcity of timber, and the nation will have to spend millions on restoring the native forests, instead of receiving considerable net revenue from them, if they had been taken in hand at the proper time.

36. The primary object of forest conservancy everywhere is, by the formation and management of large State Forest Domains, to maintain a certain area of the country under forest, both for the sake of its climatic influence and for satisfying from the annual growth all the ordinary timber requirements of the country. The maintenance of a constant supply of timber and firewood is of the greatest importance in all countries, but nowhere is it so important for the general welfare as in Australia, judging from the numberless purposes for which wood is absolutely essential. Here the majority of houses are built of wood, and nearly all the fencing, for which comparatively little wood is used in Europe. The consumption of timber for mining purposes is very large, and in each of these three instances the demand is largely increasing, especially the demand on the State Forests, a large portion of the wood used for building and fencing purposes having until recently come from land taken up on selection.

To provide timber for these and other purposes it is absolutely necessary that a large area of forest should be kept up by the State, which is generally able to secure the continuity of policy which is absolutely essential to success. The area so maintained must not only be sufficient for the present, but provision must be made for the country being at some future time thickly populated.

37. Properly-directed forest management is not antagonistic to the development of the country, as we often hear from its opponents, who, whilst professedly anxious that finance be made for the increasing population, really have only their own interests in view.

The operations are not directed to restricting the fullest extension of the agricultural and pastoral industries. As soon as genuine efforts are made to open up the country, forest management restricts itself to the areas absolutely necessary for maintaining a supply of timber sufficient for the population—present and future. These areas, called Reserved Forests, are kept under forest in perpetuity. The areas which are not to be kept under timber are thrown open to selection; the forestry confining himself to the prevention of useless waste and destruction of the timber growing on them pending such selection. In this he represents the State as the landlord, and sees that a proper royalty is paid.

The position of the State with regard to its forests and waste lands is so often misunderstood that I may be permitted to draw attention to it. The Crown is too often regarded as a State landlord instead of as a universal trustee with a large and valuable property, which it has been done for the public good and to protect against numberless forms of trespass. In endeavouring to punish forest offenders, the courts have regarded the State not as a trustee for the nation, but as a landlord whose endeavours to protect an unjust monopoly ought to be thwarted in every way. At present public interests suffer to benefit only a few individuals who are engaged in timber work, and who take advantage of the incomplete state of the law. The forests can only receive proper treatment when regarded from the standpoint of a large national property, handed down to us by our past generation, and which we are bound to maintain in a state of unimpaired productiveness for the benefit of the present and future generations.

38. This leads to the question of whether forest conservancy pays its own way. Now, in Victoria, it cannot be said to do so at present, for, although the receipts are £2,500 in excess of the present expenditure, the capital value of the forest repleted by the land, by the stock of standing timber, &c., is many millions.
timber, and by the fertility of the soil, is being rapidly reduced. The forests are, therefore, being worked at a loss. This ought not to be, however, for forest conservancy, wherever it has to deal with large natural forests, pays its own way handsomely. If properly conducted, it brings in a large net revenue, and in addition improves the value of the forest. For instance, in India, where the facilities for bringing the timber to market are very poor compared to those here, the gross revenue is now £1,400,000, and the surplus revenue not far short of half a million, all of which is taken into the general revenue, as the expenditure of £200,000 includes all the charges for protecting the forests from fire and for planting. The forests are becoming more and more valuable every year, notwithstanding the large revenue made from them. In Prussia, the surplus forest revenue is over £1,000,000.

39. The reason why operations do not pay here is that the State does not receive a fair royalty on the wood cut. The royalty, instead of being a fixed proportion on the sale value (say 10 to 25 per cent.), is, as I have shown, a nominal charge only. In addition, nothing is paid for the gross waste of wood, which does not occur elsewhere, steps being taken to utilize all. I am convinced that forest operations ought to pay here extremely well. The growth and vitality of the eucalyptus are most remarkable, the soil and climate are favorable, and the forest requires far less care and attention than in tropical countries and in Europe. Fencing is not required, and, as there is absolutely no necessity for planting, I know of no other country where the work, intelligently conducted, can be done so cheaply. I specially mention this, as I have sometimes heard it suggested that proper forest conservancy will require a large and increasing expenditure from general funds, an erroneous idea, of which I hope the Government will at once free itself. It is only necessary to levy a fair charge on the produce removed to provide funds ample for all the operations, and to produce before long considerable net revenue.

The decision as to the future rests entirely with the country. The question is:— Are the electors prepared to allow the saw-millers and splitters to devastate the remaining forests, robbing them and their children of their supply of timber and firewood, and risking some of the climatic changes which are traceable to the destruction of forests? Are they prepared to sacrifice this source of large and increasing revenue to the demands of a limited class? It seems to me that sensible men can give only one answer, and that the country, when it learns the exact state of affairs, will authorize the Government, which has only inherited from previous administrations the present bad arrangements, to settle the question once for all on a proper basis.

PART II.—SUGGESTIONS REGARDING FUTURE MANAGEMENT.

40. I propose arranging my remarks under the following heads:—

1. Legislation—including consideration of the present law applicable to the Forests.
2. The Management of the Forests—comprising the selection of the reserves, their management and that of the Crown lands, the timber sales, &c.
3. The Protection and Improvement of the Forests.
4. The Organization of the Staff.

CHAPTER V.—SUGGESTIONS ON THE LEGISLATION REQUIRED.

41. The first step towards organizing matters on a proper basis is the passing of a Forest Act regulating—

1. The selection and management of Reserved Forests.
2. The management of the Crown Lands left after the Reserves have been selected.

The necessity for a new Forest Act has, I understand, been frequently brought to the notice of Government, and more than one has been drafted.

42. The existing law is defective for the following reasons:—

The Act introduces unworkable distinctions between State Forests, Timber Reserves, and Crown Lands, the effect of which has been subsequently aggravated by the rules. No proper provision is made for the formation of State Forest Reserves, nor for their permanent retention as such.

Instead of proper selection and demarcation by competent officers being insisted on, the only clause in the Act permitting of reserves being formed is the concluding sentence of clause 6, by which the Governor in Council may increase or diminish the area of land in any of the different classes. As the Governor has no executive functions, this really means the Land Minister of the day, and scarcely forms sufficient guarantee for the reserves being permanently kept up. When once formed it might be better to vest in Parliament the authority for diminishing the area.

In India, although the local Governments may form Reserved Forests, it is only by an order of the Supreme Government that they can again be given up.
The Act, instead of permitting forest produce to be sold on such system as seems best—by auction or otherwise—permits only of the licence system being adopted. The rules regulating this are badly drawn up, and make a bad system even worse than it need be. The seigniorage payable in the form of licence fees is absurdly low, and bears no proportion to the selling value of the timber. In other respects the Act is difficult to work, especially the clauses relating to the protection of the forests.

The penal clauses have proved almost ineffectual, owing to their leniency. In addition to the Land Act, there still remains in force the licence clauses of the Forest Act of 1876. This Act forces the control of the Crown lands made over to them. It has never been put into force, and it is no doubt quite unworkable. Its repeal has long been proposed. Local boards, such as shire councils, are sometimes exposed to local influences which they are powerless to withstand. A subject of such vast importance to the colony as the forests should be placed under the central Government, which is presumably unflattered by local interests.

43. The licence system, as I have said elsewhere, has been found in every country in which it has been tried—often when subjected to better regulations than here—to be the most wasteful and unpractical of all the many plans for collecting forest revenue. Chapters might be written to prove this, but the best argument is to take a trip to one of the forests which has been worked on licence, or to consider the analogous case of a market gardener selling passers-by the right to pick fruit from his trees instead of selling it in his shop. It is perfectly clear that the garden would soon be in a state of great disorder, the trees and beds would be injured, and there would in all probability be great waste. It is precisely the same as a forest, except that control is a hundred times more difficult.

44. As a change, it has been proposed to give over very large areas (i.e., not exceeding 3,000 acres) to saw-millers for a term of years, at a nominal rent of one shilling an acre, the splitters being confined to areas not worked by the saw-millers.

I am told that by allotting special areas to the saw-millers that they will, in their own interests, protect the forests. They may, it is true, take some care to make the area last as long as they can, in order to get the utmost value out of their buildings and machinery; but still there is certain to be great waste, it being found everywhere, even when the forest is worked by Government agency, that there is great waste and damage unless supervision is most complete. To expect a contractor, who looks only to getting the maximum return for his money and has no permanent stake in the forest, to get the utmost value out of the standing timber, to waste none, and, at the same time, to protect the younger trees, is nothing less than absurd, because these objects are incompatible with one another. Many Governments are forced to work their forests themselves, because private contractors will not do the felling properly, and I fail to see much chance here of a sudden reform from the greatest possible waste to an ideal system of working.

Any practical man would say precisely the same, and he would tell us that it is pure bood to expect any one to do what is directly opposed to his own interest. For instance, in speaking of forests let on grazing leases, Mr. Shackell, M.P., says, in his evidence before the Vegetable Products Commission, "That no member of the Commission, if he had 6,000 acres on lease, would think of the young trees at all—he would do the best he could for himself."

45. I also invite attention to the rate suggested for these special area licences. The special area rule gives up to 3,000 acres for 4s. per acre per annum inclusive of all charges. Only the best virgin forests, holding 5,000 to 6,000 cubic feet to the acre, are accepted; and it appears to me incorrect that one should be given the exclusive right to clear them, and to remove the wood or to leave it to rot for this entirely inadequate charge. The forest handed over represents the growth of at least 150 years. It would take fully that time and great expenditure to grow it again. If the rent payable is divided by the time the crop takes to grow, it will be seen that when a forest is rented for timber cutting it brings in far less than when leased for pasture. How long is this land to be held? Is it to be thrown up when the license expires (para. 21, footnote) or will it be let for a fixed term of years? What, too, will the splitters say to this huge monopoly being created? Are they to be kept out of the forest to accommodate a lucky saw-mill owner? The rent suggested for the saw-mill area, which does not give the renter the exclusive right to fell in the area, is even lower, being £15 per 1,000 acres, or 3s. 6d. per acre per annum. The licence may run for seven years, so that the rent would be altogether about 2s. an acre for cutting out all the good timber and ruining the forest. The rent of Crown pastoral land in Victoria is 3s. 6d. per acre, and at present I believe grazing rents are generally higher than these paid for timber areas.

Again, as I have shown in para. 17, the incidence of the licence fees is extremely unfair. The owner of a large saw-mill using 80 or 100 logs a week pays no more than a man using one-fourth of that quantity. The former may work out an area in six months on which the latter would pay rent regularly for several years.

46. Another of the many objections to the proposed licence system is that it leads to favoritism. If one man is to be given the exclusive right to cut on 3,000 acres or even on 500, tenders should be called for or the lease should be sold by auction, and certainly not allotted privately as at present.

In one of the forests visited by me, a Member of Parliament, who owns saw-mills, has been recently allotted a special timber area of 700 acres in a forest where I heard other men had been refused,
Every system which does not sell to the highest bidder will undoubtedly lead to abuses and complaints. "Why," I was recently asked by a man living close to a large forest, "should the forests be reserved?"—has now got the exclusive right to all the timber for several square miles round my holding. He is destroying the whole of the forest, for which he pays almost nothing, and yet I cannot get a single tree." The complaint is quite just. The forests are only reserved to benefit the saw-millers, and a man, who takes some interest in the State Forest near his residence, naturally complains when he sees it being cut down for a fee, which does not represent the one-hundredth part of the value of the timber.

47. For the management of proper State Forest Domains an Act is required on lines entirely different to those hitherto followed, and I would most strongly urge on the Government the absolute necessity of this as a basis for all future work. We want a law giving full legal powers for the protection and disposal of the natural growth on all Crown land, so as by securing a cheap and permanent supply of timber and fuel, by making climatic influence attributed to having a proper proportion of the country under forest.

As to the form which the Act ought to take, I recommend that it should be on the lines of the Indian Act, considerably modified to suit local circumstances, and that the New Zealand Act be introduced.

48. The Indian Act divides the forests into—(1) Reserved forests; (2) Village forests, and (3) Lands at the disposal of the Government not included in either reserved or village forests.

Chapter II. of the Act, dealing with reserved forests, provides for the formation of an enquirer into the prescriptive rights and privileges of the people living near. This is necessary here, as the land is free of rights. It also provides for the protection of the Reserved Forests. The details involved in the working of them, i.e., the sale of the timber and other products are dealt with by the Act, but are left to executive orders of the Government and departmental management. The forest officers are expected to make as much revenue as they can out of the reserves, but at the same time they are responsible that the future yield is not endangered.

Chapter III. deals with the formation and management of the village forests, which are not required in Victoria.

Chapter IV. deals with the land at the disposal of the Government other than reserved forests and village forests. Its provisions here would apply to the Crown land.

The succeeding chapters provide for a duty being levied on foreign timber, for the control of the transit of timber by land or water, for the disposal of drift wood, the last being a matter of small importance in this country of heavy hardwood timber; for the judicial procedure under the Act, for the punishment of cattle trespass in reserved areas, and for defining the duties of forest officers. The concluding chapter permits of rules being issued by Government for regulating the duties of forest officers, &c.

49. The New Zealand State Forest Act of 1885 differs considerably from the Indian one. The main difference is that all forest lands set apart by the Governor are considered State Forests, which by regulations dated Oct. 1, 1886, are divided into Mountain Reserves, Forest Reserves, and Timber Reserves. The Minister is authorized to fix the timber for the preservation of the timber until it can be profitably converted. When the land is cleared it passes under the Waste Land rules. The Act authorizes the Governor in Council to appoint one of the members of the Executive Council to be Commissioner of Forests, in whom the control of the reserves is invested.

Reserves can be transferred by the Commissioner from one class to another. The Minister being only temporarily in office, occupies, although nominally a Commissioner, exactly the same position as the Minister for Lands here. His appointment will probably not secure that continuity of policy which is so essential, and the fact that he can transfer land from one class to another is a weak feature of the Act, and may lead to the important Mountain and Forest Reserves being transferred to the Timber Reserves class, and to their being then soon afterwards abandoned. The Reserves, once decided on, should be absolutely unalienable without the consent of Parliament, and placed out of the reach of political pressure. A novel feature in the Act is the formation of a State Forest Fund, to which, for meeting the cost of work and improvements, forest revenue of all kinds—including rent, fines, penalties, and the value of confiscated articles—is to be credited. The Commissioner is also authorized to borrow, and to credit to the Forest Fund £50,000, repeating in 20 years, for spending on the development and improvement of State Forests.

Whether this is a good feature or not is difficult to say, until the system to work on is finally determined. The principle of a Forest Fund is scarcely correct. The administration of the forests is quite as much a branch of the regular administration of every country as the Judicial Service. Both are one of the necessities of civilization, and ought to be kept up out of current expenditure. If conservancy is seriously taken up, and the forests are to be worked on a proper commercial basis, as on the Continent and in India, I then think that a Forest Fund is not required, as the revenue would always exceed the expenditure. If, on the other hand, all forest produce is still to be sold for one-tenth of its value, the present surplus revenue might be funded, so as to provide an expenditure when the forests are all cleared. Money should in no case be borrowed. If the forest revenue will not pay when there is virgin growth to clear, they are not likely to do so later or to pay interest on a loan.

The rest of the Act controls the work, and provides for the appointment of a proper school and for a Forest School being established.
The licence regulations under the New Zealand Act are, that any one wanting to cut timber applies for a block limited to 200 acres for saw-mills, and 20 acres for hand-sawyers. The land is surveyed at the cost of the applicant, and then the standing timber is valued and charged for at a royalty varying from 3d. to 2s. per 100 feet super. Splitters are only allowed on land cleared of milling timber. They pay 4s. per 100 posts or rails.

50. It would take some time to draft a Forest Bill, and I must therefore content myself with noting the principles on which I would recommend for adoption here.

The Act should apply to all land at the disposal of Government, and should form the basis for all forest operations.

Its principal objects would be—

1. For the division of the land at the disposal of the Government into—
   (a) Reserved Forests.
   (b) Other Crown land.
2. For the management of both of these classes of land.
3. For controlling timber in transit by land or water.
4. For the collection of drift, stranded, sunk, or other timber.
5. For the legal procedure and penalties, and for the duties of forest officers.
6. For the prevention of cattle trespass in Reserved Forests and in other areas specially closed.
7. For the protection and disposal of all forest produce, i.e., timber (trees and wood of all sizes, and stumps), plants, grass, leaves, moss, ferns, flowers, seeds, fruit, bark, gum, resin, charcoal, honey and wax, minerals (including stone of all kinds), soil, and gravel.
8. For the establishment of a Forest School and its endowment.

51. In pursuance of these objects, the following are the chief points for which the Bill should provide:

**Of the Direction of Forest Operations.**

1. That the Governor in Council be empowered to appoint a Commission, consisting of three members, for the purpose of administering the Act.
2. That at least one of the Commissioners shall be a competent forest officer, and that the Chairman or Senior Commissioner shall have had proper professional education and training.
3. That subject to the provisions of the Act, all Reserved Forests and Reserved Crown Land, proclaimed or notified as such, shall be deemed to be in the possession of the Commissioners and under their control. The grounds on which the appointment of Commissioners is suggested will be found in Chapter IX.

**Of Reserved Forests.**

1. That the Governor in Council may constitute any land at the disposal of Government a Reserved Forest. Land at the disposal of Government to be held to mean land in respect of which no right of private ownership has been acquired. Of the classes under section 6 of the Land Act it would comprise:
   - Unalienated pastoral and agricultural lands.
   - Auriferous lands.
   - Swamp lands.
   - State forests and timber reserves.
   - Water reserves.
2. That the order constituting a Reserved Forest be published by notification in the Government Gazette. That it shall set forth the situation and boundaries of the reserve and the public rights-of-way through it; also the consequences which will ensue in consequence of such notification.
3. That within six months of such notification the boundaries of the forest shall be clearly demarcated.
4. That the forest shall be considered reserved and subject to the provisions of the Act from such date as may be fixed by the notification.
5. That a fine not exceeding £5 shall be provided for any person who, in a Reserved Forest—
   (a) Trespasses, or pastures cattle, or permits them to trespass,
   (b) Causes damage by negligently felling any tree, or cutting, dragging, or carting timber,
   (c) Strips off bark or leaves or otherwise damages any trees.
   When the damage exceeds £2, the penalty should be double the amount of the damage.
6. That any person who—
(a) Clears any portion of the forest for any purpose whatsoever,
(b) Sets fire to any Reserved Forest, or who lights or carries fire in any forest during such season as it may be forbidden by the Commissioners, or who leaves fire burning in such manner as to endanger the forest,
(c) Quarries stone or minerals, burns lime or charcoal, collects, submits to any manufacturing process, or removes any forest produce,
be punished with imprisonment which may extend to six months, or a fine of £50, or both, in addition to compensation for the damage done.

7. That the above shall not prohibit any act done in accordance with rules made by the Governor in Council, or with the permission, in writing, of a forest officer.

8. That the boundaries of a notified Reserved Forest can be only changed by Act of Parliament.

9. That the Commissioners, with the approval of the Government, be empowered to acquire land for the purposes of this Act, and to take up under the Lands Compensation Statute, when situated within the limits of a reserved forest.

10. That the provisions of the Act shall apply to all State Forests formed under the present or earlier Land Acts.

11. That the minimum rates at which forest produce may be sold in Reserved Forests be fixed by the Commissioners, subject to the approval of the Governor in Council, but that, subject to such minimum, the Commissioners be at liberty to sell the produce when, how, and for what price they think fit.

Of the Protection of the Trees on Crown Land not included in Reserved Forests.

1. That the Governor in Council be empowered to set apart as Reserved Crown Land, and to vest in the Forest Commissioners, such Crown land as may be deemed desirable. My reasons for making this division will be found in Chapter VI.

2. That the Reserved Crown Land remain under the control of the Commissioners until the timber has been cleared, and the land has no more value for forest purposes.

3. That Reserved Crown Land may at any time be declared Reserved Forest.

4. That the penal clauses relating to Reserved Forests be applicable to Reserved Crown Land.

5. That forest produce be disposed of in the same way, and on the same terms, as in Reserved Forests.

6. That no person shall make use of the pasturage or natural produce of any land not being Reserved Forest or Reserved Crown Land, except in accordance with rules which may be prescribed by the Governor in Council.

7. That any act prohibited by these rules, may only be done by and with the written permission of a forest officer, empowered by such rules to give permission.

This comprises the principal subjects which require notice. In other particulars, such as the penalties and procedure under the Act, the duties of forest officers, the impounding of trespassing cattle, the rules regulating the rewards paid to informers, the lines of the Indian Forest Act might be followed with advantage, after due consideration, for local circumstances.

If it is decided to establish and endow a Forest School, authority for this might be given in the Indian Forest Act. I would finally urge that in drafting any Act or Rules, care be taken, as far as possible, to remove all cause for subsequent disputes.

The procedure under the Act should be simplified as far as possible, but it is absolutely necessary that no legal difficulty should arise in the Forest Commissioners or in their subordinates enforcing its provisions.

No doubtful point should be left to rules to be issued by the Executive Council, whilst, on the other hand, the Act should not bind the Commissioners to follow certain lines which practical officers would at once know as unworkable, or which are at least tentative.

That any Act, before it is passed, must be carefully considered by practical men is quite essential. The provisions required should be first put in the rough by a forest officer, and then drafted into legal form.

CHAPTER VI.—THE FUTURE MANAGEMENT OF THE FORESTS.

Classification of the Areas and the Selection of those to be Reserved.

52. I shall now explain how the proposed Forest Act, which will provide for the protection of all the land belonging to the Crown, whether reserved or unreserved, ought to be carried out. The enforcing of its provisions will mainly devolve on the Forest Department.

The Act recognises two classes of land—the Reserved Forests, which will, of course, be a Forest Department charge, and other Crown land. It must be considered how much of the latter should be placed under the Forest Department. Its area is very extensive, and although after the reserves have been selected it will be considerably reduced, they will be far too extensive for the Forest Department to control entirely.
There will be many areas which contain good timber but which from their size, position, or for some other reason, are not considered worth forming into reserves.

It is desirable for the sake of preserving the timber, to place these under the charge of the special Forest Department.

On the other hand there will be found large areas which are too thinly covered with trees to be worth any special attention.

At the outset therefore, and whilst the Reserved Forests are being selected, I propose to divide the Crown land into two categories:

(a) Reserved Crown Land.
(b) Ordinary Crown Land.

The first will be under the charge of the Forest Department, together with the Reserved Forests—the latter will remain under the Lands Department.

The provisions of the Forest Act will apply equally to both, although usually enforced by officers of different departments.

53. In view of the Crown land being alienated in course of time, it will be necessary to make some special rules regarding the occupation of the Reserved Crown Land by selectors. It will carry a large quantity of timber, and, bearing in mind how short the supplies of the latter are, it is urged that none be given up before the timber is cleared, unless full payment for the standing timber is made. It will then become very much what the Timber Reserves are now, except that it will only be given up when the timber is really cleared. The areas will no longer, I hope, be mistaken for permanent Timber Reserves, the intention being only to utilize the timber and to relieve the demand for it made on the Reserved Forests, and to aid the latter in recovering from the effects of past mismanagement.

I need only observe that if this arrangement is not adopted, and the Reserved Crown Land is given up, regardless of whether it carries good timber or not, there will be immense waste of good material and great loss of revenue which the country can ill afford.

The Ordinary Crown Land.

54. On the ordinary Crown Land, which will, according to the foregoing suggestions, be thrown open to the selector, the aggregate quantity of timber will be considerable, although the trees will be scattered.

The protection of the timber will rest with the Crown bailiffs, working under the Lands Department, but it will be well if its sale is placed in the hands of the Forest Department, which would then control the disposal of all Government timber in the colony. This system is now followed in India, after much harm has been done by some of the forest lands being controlled by the Forest Department and some by the Civil Department; timber cutters are now no longer able to play one department off against the other. If the sales are under divided control, the prevention of theft from the Reserved Forests will be infinitely more difficult, while the receipts from the ordinary Crown land will be a tithe of what they would come to, if the disposal of the timber rests with the forest officers.

The Selection of the Reserved Forests and Reserved Crown Land.

55. Assuming that the proposed classification of the forest lands will be adopted, the first step will be to select the Reserved Forests and Reserved Crown Land. On a proper examination of the existing forests and a careful selection of the reserves will depend entirely the future success of the first operations.

The whole of the colony should be carefully gone over by competent officers, and the forests examined in detail and systematically, county by county, to ascertain what forests are left, where the best blocks are situated, and their extent.

The principal points to be considered are the growth of timber, the size and age of the trees, and the mixture of the species; the soil, the area of the block, its distance from the principal markets, the means of working out the timber, &c. Good forests and those close to good markets and connected with them by good roads, &c., are to be preferred, of course, to inferior and more remote ones. Generally speaking, it is not worth while forming blocks of Reserved Forest under 50 acres in area, although the position of the forest and its proximity to the markets will have great weight in coming to a decision. No blocks should be taken under 100 acres, for so small an area is expensive and difficult to protect as one ten times its size.

In carrying out this work, the existing reserves and all the Crown land must be carefully examined, for the boundaries of the former have, in many instances, been selected with little judgment, and, as I have stated before, they do not always include the best forests.

The results of the examination made must be carefully entered on the county maps, which should show the growth on all the land belonging to the Crown. Whilst this examination is being made rough proposals for forming blocks of Reserved Forest or of Reserved Crown Land must be drafted up. The selection must be made on the spot, the boundaries being roughly selected, to admit of their being described intelligently in a gazette notification. In some cases they may be even roughly laid down on the ground by blazing the trees, &c.

* No great accuracy is required, and no surveying should be done; three to four square miles or more can be got over daily.
56. On the examination being completed for a county or for a number of parishes, the rough proposals should be reconsidered, and, when finally drawn up, they should be submitted to the competent authority, probably the Land Minister, for sanction. When this is obtained, and the forests are gazetted, the boundaries must, in the case of Reserved Forests, be carefully demarcated and marked off by permanent boundary-marks.

For proper conservancy it is essential that the boundaries should be very clearly defined by broad roads, or by some prominent natural feature, which will remove all excuse for trespassing inside the reserve.

For the Reserved Crown Land the demarcation need not be so complete, but here, too, well-defined boundaries will be of great assistance.

57. As to what area of Reserved Forest should be taken up, no opinion can be given until a proper examination of the country has been made. One-fifth of the area is often quoted as the proper proportion of forest, and in some countries it is more. The most that can probably be obtained here would be about 10 per cent. This would mean about 5½ million acres, and, considering that the area of rough and mountainous country unsuitable for occupation is computed at 11 million acres, there should not be the least difficulty in securing this area. The 5½ million acres will be permanent reserves only; they do not include the temporarily Reserved Crown Land.

The working season will, in many parts of the colony, be limited to six or eight months in the year, yet, nevertheless, the greater part of the selection work ought to be finished in two years if several parties work at it under proper direction.

Whilst selection is in progress, and until all the reserves are selected, it is necessary that the alienation of all Crown land should be restricted as far as possible to those areas where there are no forests. This is most important, as we shall have the best of them taken up before the forest surveyor can go round.

CHAPTER VII.—THE WORKING OF THE FORESTS AND THE MANAGEMENT OF THE TIMBER SALES.

59. It will now be necessary to say a few words as to how the areas under the Forest Department should be managed, the different heads being:

1. The system on which the forests should be cleared.
2. The licence system and the mode of selling the timber.
3. The price at which timber, &c., should be sold.
4. The sale of wattle-bark.
5. Grazing revenue.
6. Revenue from minor produce.

The remarks apply specially to the Reserved Forests and Reserved Crown Land, but the same principles will naturally be followed mutatis mutandis in managing the unreserved land.

The System on which the Falling of Timber should be Regulated.

60. The most radical change of system is necessary here to regulate the quantity of timber cut annually, and to introduce some order, to prevent waste and damage, and to secure fair royalty on the timber cut. At present there is no restriction in the number of licences issued, and cutting is allowed in the forests as if the supply of timber was inexhaustible, and regardless of all thought for the young trees which are coming on to take the place of those which were cut. The fellers are allowed to work over very large areas, constantly disturbing and breaking down the younger growth by falling trees and by carts. In future, the forest ought to be worked in strict rotation, and according to a plan of operations.

The system of working by blocks must be followed. Instead of the fellers working ten years over say 500 acres, constantly disturbing the young seedlings and half-aged trees by their falling trees and the carts, operations must be confined to a 50-acre block annually, and the timber systematically cleared out by removing all the trees of marketable size.†

At the end of the year the block will be closed entirely, to admit of the natural seedlings and saplings growing up, and no one will be allowed to cut there again till the trees have stood the full term of their rotation. No restriction would usually be put on the size of timber cut.†

The blocks, as proposed elsewhere, would be sold by auction, and the purchaser would have the right to cut whatever he liked during the currency of his lease. In an Australian forest it

* Not necessarily mature, but timber for which there is a good sale, whether as sawn timber, pit-props, &c.
† The rules now current restricting the size of trees to be felled will, of course, be cancelled. They have never done any good, and could never be enforced, except with an army of foresters, when every licensee is allowed to cut wherever he chooses. The new system is, in an area of 10,000 acres, to confine felling to say 100 acres, which can be easily watched. Any one cutting elsewhere commits an offence, whatever the size of the tree.
would be little use binding down the purchaser not to cut the small trees. It would only pay him to cut trees over 15 inches diameter, and it is just as well to get all these out as to have them broken and spoilt by the falling of the larger timber. If all the trees are cleared we get afterwards a forest of uniform age, which grows better than one of mixed age, and is also easier to manage.

The plan of operations to which I refer is known as a working plan, which, in its simplest form, is a scheme of management based on the annual yield of a forest, according to which a certain area is allotted for cutting annually. For instance, supposing the trees in the forest near Ballarat, which I hope to see worked only for pit-props, can grow to the right size in eighteen or twenty years, then twenty years would be fixed as the rotation, and the area to be cleared every year would be the area of the forest divided by twenty. One-twentieth of the total area would be cleared this year, and then left for twenty years, i.e., until the rotation expired, when the same portion would be made clear. If this system is applied to each forest, the rotation or period for which the trees have to stand being fixed in each case after considering the soil, climate, &c., and the purpose for which the timber is required, it will be known what area can annually be cut without damaging the forests and reducing the future timber supply, although it does not follow that it must be cleared. The trees can stand longer, but they must not be cut younger than the working plan lays down. Usually, these working plans will only be drawn up for the Reserved Forests and not for the Reserved Crown Land. But the latter should, nevertheless, be cut in strict rotation. On the ordinary Crown land this is not necessary. To make accurate working plans would take some time, but rough estimates of the area, which may be safely cleared annually, can be readily made when the area of the forest is known.

The operations must be carried out entirely in accordance with the provisions of the working plans, and sufferings must never be anticipated.

61. It should be noted that, as the future timber supply will depend entirely on the Reserved Forests, they must be treated with great caution until the working plans have been drawn up, and we can be certain that too much is not being cleared. The Reserved Crown Land need not be so tenderly treated, for although the forest there will be carefully protected, it will not be permanently kept up, and the timber may be generally cut when it has reached maturity, although here, too, the future timber supply and the revenue must be thought of. Because the working plans allot certain areas for clearing annually, it does not follow that the wood must be sold then.

If the market price is too low, the felling can be put off for a year or two, the supply being in accordance with the demand.

The Licence System and the Mode of Felling the Timber.

62. The licence system cannot continue as at present, and I recommend its abolition at the earliest possible date, steps being taken to have work conducted on the same lines as in properly managed forests elsewhere. With working plans for each forest, we shall know the area which can be cleared in each year, and, starting on this basis, the plan adopted in France, Germany, India, &c., is (a) either to cut the timber on these areas on Government account, the wood being afterwards sold by auction, or (b) after a valuation of the standing timber has been made, to sell it standing, the purchaser being allowed a fixed time to cut and cart it away. It is on the latter plan that I would advise the sales here being conducted in place of the licence system. Its adoption ought to offer no difficulty, and it might be introduced at once.

A forest of, say 100,000 acres, which, with a rotation of 100 years, would give an area of 100 acres to be cleared annually.

The right of clearing five annual allotments might be sold by tender or auction at an upset price based on a fair royalty on the estimated quantity of timber. This would give an area of 500 acres in one block, which would be quite sufficient to warrant a saw-mill being put up. The work would, of course, be confined to a block of 100 acres during each year, and at the expiry of the twelve months that block would be deducted and work begun in another. The purchaser would usually have the right to cut whatever he chose, whether milling timber, props, posts, or rails. In some cases it might be restricted to trees of a certain girth, but until supervision is provided to see that rules are observed, it is better not to make them, and to secure additional revenue by working out even the smaller trees. The purchaser would, of course, pay no licence fees of any kind, the saw-mill site being given free, and also permission to make tramways, timber slides, &c. In fact, every facility should be offered him.

63. The men working under the present licence rules would probably at first hesitate to accept the new system. It is as well, therefore, to point out that they will work under terms far more favorable than at present. They will be free of all interference from saw-mills and splitters, and will have a secure tenure for say five years of the area purchased. Instead of paying licence fees, they will have to give Government a fair proportion of the market value of the timber, which will, I feel sure, be at once recomputed by a general rise in the price of timber. The timber market is somewhat disorganized at present, and as the hardwood saw-mills say that this comes from the large imports of foreign timber, they asked for an increase in the import duty, and a reduction in the licence fees. My inquiries show the fall in the price of hardwood timber is due very much to the market being overstocked. Any man with £400 can set up a saw-mill regardless of the demand for timber, and the market is flooded with scantlings from private land.

The licence system to be given up, and the annual selling allotments to be sold in blocks.
Under the system proposed, the timber sold will be limited in quantity, and the interests of both Government and the purchasers will be to keep up the price. This ought, I think, to place the trade on a more satisfactory and permanent basis, which will ultimately lead, I hope, to larger and better machinery being put up in central situations, the annual felling allotments being leased for say 10 or 15 years.

64. As regards the saw-mills which are still at work in the forests, it is obvious that some settlement must be made, and I should suggest that the licences under which they now work be extended for two or three years, to give the owners a fair return for the cost of installation, although, as they only hold annual licences, they cannot claim the concession. At the same time they ought to be restricted to an area of 400 or 500 acres of the forest in the vicinity of the mill. They should be clearly given to understand that, when this is worked out, no further land will be given them. No change of saw-mill site should be allowed.

65. No new saw-mills ought to be allowed in the forest, except on the terms suggested above, viz., the allotment of a block at an upset price, the annual fellings being strictly confined to the limits laid down by the working plans. Some of the largest saw-millers are now preparing to work one of the best remaining forests in Buin Buin, but I trust that these remarks will prevent the licences being issued.

66. The settlement with the ordinary fellers and splitters is more difficult. The present arrangements are so thoroughly rotten, that I feel sure no one will hesitate in supporting a recommendation that they be entirely changed, and that in future, if splitting must be allowed in the forest, it should be only on the same terms as timber is sold elsewhere. Splitting is so very wasteful, whether for posts and rails or sleepers, that it ought to be discouraged as far as possible. Time will, however, be required to make the change, and there will be some time be a large demand for split timber. A large portion of this will probably be provided by the men who lease the annual felling allotments, and who will try to make money by splitting the timber under milling size.

To provide other splitters with work a small portion of the felling allotments might be reserved, or they might be allowed to work in a portion of the allotment cleared by the saw-miller in the previous year, if there is much timber lying about. The latter appears to be the system followed in New Zealand, but there the purchaser of the allotment only cuts out the milling timber.

Whatever arrangement is come to, I cannot too thoroughly impress on Government the necessity of only allowing the splitters to cut the trees marked and measured, and there will be some time be a large demand for split timber. A large portion of this will probably be provided by the men who lease the annual felling allotments, and who will try to make money by splitting the timber under milling size.

The system which appears most likely to succeed here, and at the same time to be the fairest is—

1. To sell all timber by auction or tender at an upset price. The timber to be sold standing.

2. The upset price be calculated on the rough timber, and that it be fixed at 5 to 15 per cent. on the average local selling rate of the converted material.

Thus, supposing the selling price of redgum scantling is 10s. per 100 super. feet, the upset price at 5 per cent. on 10s. would be 6d. per 100 super. feet of rough timber.

The upset price would, of course, be higher in those forests close to markets than those more remote, the cost of converting and of marketing the latter being much greater. It would have to be fixed for each kind of timber, the rates being the same on all classes of lands, whether reserved or unreserved.

Sales of Wattle Bark.

68. The present license system works badly, and the proper way to manage forests which are worked for wattle bark is to manage them under a working plan. The area fixed for stripping in each year should be sold by auction. Stripping should be only allowed from 1st September to 31st January. The men might be allowed to cut what they like, and we should then, no doubt, get a greater uniformity of age, which has many advantages for purposes of control, &c.

The revenue, by working the sales in this way, will probably be much greater than that obtained by issuing licenses.

Grazing Revenue.

69. I wish to draw attention to the fact that much revenue might be made out of the forests by allowing limited grazing. Most of this is now lost. Both the eucalypti and the wattles suffer very little from browsing, and if a limited number of cattle are allowed in, the damage done is insignificant. By grazing down the grass, there is much less chance of fire spreading, which is no small advantage. Sheep and goats must be rigorously excluded, for both of them, especially the latter, prefer young tree-shoots to coarse grass.
Revenue from Minor Produce.

70. In India the revenue from minor produce, i.e., from grass, tanning barks, dye-stuffs, fruits, myrobalams, etc., is very large.

The subject deserves attention, as it is probable that some valuable by-products, such as grass for paper-making, new tan-stuffs, kino, etc., are to be found here.

71. In concluding this chapter it is necessary to remark that in future the control of the forest operations and of the forest revenue should rest with the Forest Department.

Whatever action be taken on this report, forest operations will, to a great extent, be on their trial, and, to make it a fair one, the officers responsible must be allowed free scope for controlling operations.

The broad lines on which the work shall be carried out, being fixed by Government, the responsibility for its success should be put on the forest officers, who ought to be given full discretionary powers in controlling the sales of timber, the issue or refusal of licenses, and the forest revenue generally.

It is scarcely necessary to say that if forest operations are to pay their way, the officers must be trusted as much as the servants of a private landowner, and they must similarly be allowed to exercise their judgment as to whether forest produce should be sold or not at the price offered.

If common-sense business principles are followed, forest operations are certain to pay.

Chapter VIII.—Protection and Improvement of the Forests.

72. Under this head the points to notice are—

1. Protection. Patrolling the forests and the prevention of trespass and theft.
2. Works of Improvement.
   a. Plantations of eucalypti, wattles, and exotics.
   b. State Nurseries.
   c. Thinnings.
3. Fire protection.

73. Protection.—Every one is at present allowed free access to all parts of the forests. Roads are made in all directions, and nothing is done to hinder unauthorized persons going off the established public paths. Whilst such opportunities exist, the forests cannot be properly protected, and it would be singular if advantage was not taken of them to steal much timber.

Whilst going on their rounds the foresters often come across men who have been frequently convicted of timber stealing, and yet, although morally certain that the men are there for some illegal purpose and that they have axes hidden in the grass, they are powerless to act.

A change is imperative, the first thing being to define all the public roads passing through the forests and then to make people keep to them.

The boundary lines must be always kept clear of undergrowth, and plainly marked off; they must be regularly patrolled by the foresters, who should have their head-quarters near the principal forests, and not a long way off as is often the case now. All unauthorized persons must be kept out of the forests as far as possible, and the protection of the State timber taken in hand as seriously as if it really was money, instead of only representing it.

Fencing, I may as well add, is not required, and as forests are protected elsewhere without it, the same may no doubt be done here with care and patience.

Power should be taken under the Act to make transit rules for regulating the transport of timber. Under these, all timber brought out of the forests would have to follow fixed routes, and to pass the checking stations. The timber would have to be covered by passes, and all not so covered would be stopped.

Works of Improvement.—The Reproduction or Restocking of the Forest.

74. There appears to be much misconception as to the system on which a forest, in which the timber has been cut, should again be stocked with timber trees.

I shall, therefore, explain, in a few words, how forests are managed.

I take the beech as a typical tree, and corresponding to the eucalyptus. It is grown in three classes of forest:

1. High Forest. —Here the tree is grown from seed; it stands for 120 to 150 years until it reaches maturity. High forest is generally grown for timber.

2. Coppice. —The rotation of this is from 15 to 20 years. It grows chiefly from coppice or stump shoots. The trees being cut when young, send out numerous shoots, which in the period of the rotation grow to the size of small poles. Coppice is chiefly grown for firewood and charcoal, and gives a fair yield on inferior soil, where high forest would not grow. It cannot stand more than 30 years; the usual rotation is 15 to 20 years.

3. Coppice with Standards. —This is really a mixture of coppice and high forest, as its German name "mittle wald," or middle forest, implies. The coppice is cleared every 15 or 20 years, but instead of everything being cut, from 30 to 50 saplings (generally seedlings) are left to grow into large trees. They stand for 2-3 rotations, that is for 30 to 75 years, being gradually thinned out at each sending to make way for younger trees.
The High Forest is reproduced almost entirely by natural means. Supposing the rotation to be 120 years, the felling begins when the trees are 120 years old, and extends over 6 or 8 years, the trees being gradually cleared away in three or four distinct operations.

The first of these is intended to give the trees more room to develop their crowns, and to produce a better crop of seed. A good seed year is watched for, and after the seed has dropped, about half the trees are cut out to give the seedlings sufficient light and air.

If this operation is successful, and the ground is well covered, the rest of the trees are cleared away in two operations, four to six years after the seedling has taken place. The ground is by that time fully restocked with young beech trees. If there are blanks or places bare of trees, they are planted.

Coppice Forest is almost entirely reproduced by the stump shoots, which grow up after the fellings. Some seedlings spring up, of course, but not many.

The other trees are managed similarly to the beech, the ground being restocked almost entirely by natural means. The same principles will have to be followed here, the main difference being that the eucalyptus grows in shade much better than the beech, whilst the shade is much less dense. In a dark beech wood nothing grows. Here there are usually hundreds of young seedling eucalyptus of all ages ready to take the place of the large trees we cut. All they require to grow up is light, protection from fire, and freedom from disturbance after the fellings, which may take place at one operation.

The eucalyptus also coppices far better than the beech, and it will, of course, usually be grown as high forest from seed; but in the forests near Ballarat, Sandhurst, &c., where there is a great demand for small timber, coppice will pay best.

If properly managed, I feel sure that the restocking of all Australian forests, whether from seed or from coppice, may be done entirely free of expense, if fires can be kept out, and the young trees can be left undisturbed for ten years or so.

Plantations of Indigenous Eucalyptus.

76. After a forest has been so hacked about, burnt, and otherwise ill-treated for a number of years that most of the natural tree growth is destroyed, many ill-informed people tell us that planting will soon restore the timber. I find that some of the witnesses before the Vegetable Products Commission seriously speak of the existing forests being cleared and then replanted at the cost of the State, in turn, I presume, to be cleared again for the benefit of the timber traders.

Every amateur imagines he understands the whole art of planting, and because he has succeeded, without great difficulty, in getting trees to grow in his garden, he thinks that planting offers no difficulties. He would have the State plant large areas with a great variety of trees, of whose suitability to the Australian climate little is known. In reality no process demands more thought and constant care. The planter has to look to geological and atmospheric conditions— one species answers for one soil, another for another. Although the English woodland and gardeners imagine that they understand the whole art, all foreign students are agreed that, as a class, with some exceptions, they are grossly ignorant. The general aspect of the woodlands in Great Britain and of the plantation work in the colonies bears out this unfavorable view.

The real facts are quite contrary to the popular ideas as to planting. In the first place, successful plantations on a large scale are most difficult to make, especially in countries where the peculiarities of the soil and climate are not fully understood, and probably nowhere more so than in Australia. Wonderful though the growth of the eucalyptus is, it is known to be difficult to grow on land from which it has once been cleared, and from which the top layer of vegetable mould has been washed away. Even when the plantations are apparently a success—that is, where they grow well for first ten years—but by no means follows that they will reach a mature age, nor, even supposing they do, that the timber will be as valuable as that grown under the natural conditions. It is almost certain that it will not be so valuable, and, judging by the experience of experimental plantations elsewhere, the outlay will be found largely in excess of the return.

77. In countries where forests are properly managed planting is, as I have already said, never done until all chance of the natural indigenous growth reproducing itself has failed. In Germany, for instance, the principal forests are of beech, Norway spruce, and Scotch fir. The beech forests are almost entirely reproduced by the seed from the trees. The spruce and birch reproduce them well in some parts, and planting is never thought of until all hope of their doing so has failed.

In India, plantations are, with three special exceptions, confined to the areas quite bare of trees, or where the scanty rainfall offers no chance of nature doing the work for us.

In South Australia, as the land planted has never been covered with trees, plantations are often unavailing; but, promising though they are, it by no means follows that they will look equally well five or ten years hence. Their success can only be proved by time, and until then planting all sorts of eucalypt and pines, in soils and climates quite different to those of their natural habitats, can only be regarded as an experiment. The same may be said to apply to all experiments: no reasoning can be more false than to conclude that, because pines or other trees, when young, grow well in gardens or parks, that they will form forests and give good timber.

The cost of large plantations is alone sufficient to prevent our making them. We should have to plant an enormous area in Victoria with, say, two and a half million acres of forest and a rotation of 100 years. As the work would not cost less than £5 an acre, it will be seen what the expenditure would be, and what probability of our getting it back. The area of the
Indian Government forests, placed under systematic management, is not far short of 60 million acres. If we had to rely on planting, the expense would be gigantic.

78. The forester’s proper work is the conservation of the natural forests. His attention should be wholly directed to this until the indigenous trees fail to reproduce themselves. He may then, and only then, begin planting. On these grounds plantations would, in my opinion, be entirely out of place here. With the minimum of attention, the eucalyptus reproduces itself splendidly; in fact, far better than any tree out of Australia. Planting ought never to be required in Victoria.

Wattle Plantations.

79. There is little doubt that these may be made to pay extremely well, but the remarks that I have just made apply equally to the wattle. There are very large areas more or less covered with the trees. Both time and money can for the present be better spent in preserving these, and in making them secure against the selectors and against theft, than in making plantations. After a few years wattle plantations might be commenced. In selecting the reserves, areas suitable for the growth of the tree, and close to the market, might be specially taken up with that view.

Plantations of Exotic Trees.

80. As the planting of exotic trees, and chiefly of pines, has been urged strongly on the Vegetable Products Commission by many influential witnesses, including Baron F. Von Mueller, it may not be out of place to give a word of warning. The advice I allude to has been given owing to the great want of an indigenous soft wood.

It is argued that because the young trees grow in the parks and gardens three times as fast as in their native homes, that they will stand there till they are mature and give valuable timber. Now it is improbable that the trees will grow to any great age; and, in any case, it may be taken as a fact that the rapid-grown timber will be as valueless, compared to that given by them in their native habitat, as the English-grown cedar and spruce are to the Himalayan and Norwegian.

Some day a tree may be found which will give good soft-wood timber in this climate, and I see no reason why small experiments should not be made in that direction.

But expenditure ought to be very limited, and little time should be given to it until the forests are selected and demarcated, and everything else is in full working order.

The State Nurseries and the Free Distribution of Plants.

81. A forest nursery is now kept up at Macedon at great expense. It does not appear to serve any useful or practical purpose, and I recommend that it be given up.

The Government plantations which it supplies with plants are never likely to be of any commercial value. The one on Mount Macedon is not promising, and the land might have been planted with blue gum for one-hundredth part of the money.

For forest purposes, as no planting ought to be undertaken, no nursery will be required.

The State nursery also supplies farmers and others with large quantities of plants free of charge. I question the wisdom of this. The recipients get usually exotic plants, which they do not know how to manage, and to which, as they cost nothing, they attach little value. I am told that the plants are often carelessly planted out, and left unwatered during a long drought, and that often they are injured.

It would, I think, be as well for Government to discontinue supplying plants. They should certainly not be distributed gratis. It pays extremely well to grow them if there is a fair demand, and I feel sure that nurserymen can supply them to the public at cost which, although nominal, would be sufficient to secure their being planted out with greater care. If plants cannot be had from nurserymen, some of the public gardens could supply them. It is certainly not right that the services of the highest-paid forest official should be wasted on this instead of being devoted to his legitimate work.

Thinnings.

82. I need here only repeat what I have already stated, that thinnings are not required in the eucalyptus forests. The timber, when the trees are close together, is straighter and better than if they stand far apart, and any thinnings such as the one now going on near Ballarat, by which the contractor is supposed to cut only the crooked trees, must do great harm. When thinnings are really required, the trees to be cut out must only be marked by a man who understands why thinnings are made, and can be trusted to distinguish between dominant and suppressed trees. At present the foresters do not know anything about it, and thinnings should never be thought of.

Fire Protection.

83. Although notices have been issued warning the public against firing the forest, the fires have not been much checked. All forests appear to be swept by a fire whenever there is sufficient undergrowth to burn, which is every second or third year. Many of them are now nothing but masses of black poles, the trunks of the trees, especially the stringybarks, being thoroughly charred right up into the crowns. The fires are said to rush along from crown to crown, the leaves and twigs being burnt up, and the whole of the undergrowth including all the seedlings and saplings being destroyed. In some forests the severity of the fire appears to be aggravated by the large quantity of timber left on the ground by the saw-millers and splitters. Fortunately most species
of the eucalyptus suffer much less from fires than other trees, the only kind which a fire kills
outright being the thin-barked mountain ash (E. angulata). Some of the younger ones are killed,
but although the bark, especially of some kinds, appears to be very inflammable, and to be often burned
on both stem and branch, most of the trees soon come into life again with great vitality. The fire
does, however, more harm than would at first appear by throwing back the growth, by starting not
near the ground and elsewhere, by injuring the timber, &c., whilst it causes very serious loss by
repeatedly destroying all the saplings and seedlings. In some forests fires have been so frequent
that there are now no seedlings at all, and the scorched crowns bear less seed than formerly.

84. Steps should at once be taken to prevent these fires. The public should be kept on
during the dry season, and, as soon as the reserves are selected, a regular system of fire protection
should be commenced by clearing fire-lines to prevent the fires from spreading. In forests in which
the trees are beyond the reach of cattle, fires may be rendered less severe by allowing the grass to
be grazed down. Of course, the lessees must not be allowed to burn down the undergrowth to get
succulent grass for their cattle, as they have done in several cases lately.

CHAPTER IX.—ORGANIZATION OF THE STAFF.

85. Important though the Forest Act is, nothing yields in urgency to the creation of a
competent staff to administer the law and to carry out all the operations of forestry. I would,
therefore, specially press the necessity of this on the attention of Government, success
hinging on it perhaps more than on anything else.

The suggestions which I have to make consist in a complete change from the present
arrangements. If the faults which I have pointed out are not considered sufficient to justify the change,
a more intimate inquiry into the work, than my time and position would admit of, will, I
feel sure, prove that my conclusions are correct.

86. The following are the principal suggestions offered:—

1. That the Forest Administration be formed into a separate department, and placed
under a responsible Minister of the Crown, to be appointed Minister for Forests.
2. That as in the case of the Railway Department, three Commissioners be appointed
as a corporate body to administer the Act, and to direct Forest Conservancy
operations. That the Reserved Forests and Reserved Crown Lands be vested in the
Commissioners.
3. That at the head of the Commission a forest officer of considerable experience be
placed to act as Chairman, or Presiding Commissioner. That he be responsible
for carrying out the business of the Commission, being empowered in his
executive capacity to give orders regarding the details of practical work without
previously consulting his fellow Commissioners.
4. That the services of a trained forest officer who has had experience in the organiza-
ion of large State Forests, be obtained to fill the office of Chairman, and to
reorganize the work on the principles here laid down.
5. That the colony be cut up into divisions, each of which shall be placed in charge of
an executive officer, having under him foresters patrolling one or more forests.
6. That a properly graded staff of executive officers be organized to take charge of the
operations in the divisions, and to supervise the foresters.
7. That a graded class of subordinates be formed to take charge of one or more forest
under the executive officers.
8. That a Forest School be established to provide training for both the superior officer
and the subordinates.
9. That elementary instruction in arboriculture be given in the primary schools.

87. Regarding the first suggestion that the forest administration be formed into a distin-
department, I need only remark that in adopting it the colony would be following the lead of other
countries, where the forests are managed by officers who have all gone through a special course of
training.

The existing arrangement of placing the forests under the Agricultural Department can only
be regarded as temporary. The Secretary has neither the time nor the knowledge requisite for
directing the operations of a department which is second to none in importance.

88. The second suggestion is, that operations should be directed by a Commission of three
members, of which at least one be a forest officer of sufficient age and experience to act as
Chairman.

The proposal is, I am aware, a novel one; but, after careful consideration, it appears to offer
the easiest solution of a most difficult question. I therefore hope that it will commend itself to
Government.
It occurred to me at first that it would be sufficient to place the department in charge of a properly qualified officer, who, taking the place of a provincial conservator in India, would manage the work under the orders of the responsible Minister. I now see that this part of the Indian system could not safely be adopted here, owing to the pressure to which the Ministers here are constantly exposed. As I have already stated, depredations are constantly organized, and a Minister has often to yield against his will to local interests.

Successful forest administration cannot be carried on upon these terms, and if any good is to be done there must be a far greater degree of permanency in the arrangements than could be secured by the ablest departmental chief. The latter could only act as the professional adviser of the Minister, and could never occupy an independent or influential a position as a body of Commissioners.

Indeed, if once we admit the necessity of forming large State Forest reserves, and of removing their administration as far as possible from political influence, the appointment of Commissioners appears to be the only possible solution of the difficulty.

89. The chief advantage of having a Board of Commissioners would be that forest conservancy could be organized on a permanent basis. The Board would have a semi-independent position, like that managing the railways, and be responsible only through the Minister to the country for their work. An individual could never be given that position.

It would relieve the Minister of the onus of having to decide on his own responsibility matters involving possibly enormous loss of forest revenue or injury to the reserves. He could safely fall back on the opinion of the Commissioners, which, ordinarily speaking, would be accepted. This would relieve him from any personal vexation, to which he is now exposed, if an application made by an influential body of electors is refused.

The public would naturally accept the decision of the Commission more readily than that of an individual, and I am also disposed to think that the Commission would show far better results than an individual officer. It would especially secure continuity of action, which is so essential to success, and yet most difficult to secure in the case of a small department.

90. The expense of putting the forest administration in Commission should not be great. The Chairman would be an officer exclusively employed on forest work, and drawing a salary of, say £1,400 a year. The other two Commissioners need not be entirely engaged in forest duties. At first there would not be sufficient work for them. They might be officers of position employed in other branches of the Government service, who could devote a portion of their time to forest work, receiving of course special remuneration. It would not be difficult for the Public Service Commissioners to find officers suitable by past experience and training for the post, and likely to take an interest in forest operations. They must, of course, be men of some standing and of mature judgment, whose opinions are certain to carry weight, and who are unhampered by any present or past associations. Their appointment would, of course, be an experiment, and if the proper men are selected, it may work even better than that of men specially appointed to the service.

The question of immediate expense is not, however, so important as the principle involved, and even if the three Commissioners had to be specially employed, the two junior ones receiving salaries of £1,000, the Commission would prove itself more economical in the long run. If the question is not properly taken up now, it will cost the country infinitely more a few years hence.

91. The exact mode in which work would be conducted by the Commissioners cannot be gone into at length. I would only suggest that the Chairman, being the forest expert and the one permanently engaged in managing the departmental work, should be authorized to give orders on matters of detail without consulting his fellow Commissioners. He should occupy a position corresponding to that of managing director of a company. The whole Board being responsible for decisions on matters of policy and any new departure, the Chairman seeing that the orders of the Board were carried out on the lines laid down. Each of the Commissioners would be of equal status, but the two who were not forest experts would probably be guided in matters of professional detail by the opinion of the Chairman. This would not, however, affect their usefulness any more than a railway director having to be sometimes guided by the engineering or traffic officers.

92. When forest work is seriously taken in hand, I would strongly urge the necessity of obtaining, even if only for a time, the services of an experienced forest officer to direct operations and to establish them on a proper footing. Forest management requires considerable training and great experience, and the duties of the practical head of the department during the next few years will be more important and difficult than subsequently. It will be a most critical time, and unless the Government has at its right hand a competent expert, it is certain that many mistakes will be made, risking the entire future of the forests.

I should, therefore, suggest that steps be taken to obtain from India the services of a competent man to direct the work during, say, the next five years. I am certain that the interest of the colony would be served far better by paying a higher salary to a properly trained man than by trusting to some one obtained locally, who has no knowledge of theoretic and practical forestry, and has, especially, no experience in the organization of work on a large scale. The staff at present employed contains no one fit for the post. I am by no means certain that the services of such an officer could be obtained, as the Indian Government has no officers to spare, and naturally does not readily give up its best men; but I must strongly recommend that one be secured if possible. A salary of £1,300 to £1,500 a year would have to be paid, 1,000 to 1,600 rupees per month being the pay of an officer in a similar position there.
93. As it may be suggested that a forester can be obtained for a lower salary from Scotland to fill the post, it is as well to point out that the forests in Scotland are managed more like plantations than like the large State domains in Germany, France, India, &c. None of the men there have the knowledge required for managing large reserves, or for organising a State Forest Department, such as I hope to see formed here. If engaged for the task, he would only be able to bring to bear his small experience on some Scotch timberman’s property, and he would be quite at sea in trying to manage a very large area of forests and a considerable staff of subordinates. Of a system of Reserved Forests and Reserved Lands, of selection and demarcation, etc., few of them have ever heard. It would be absurd to think of having such a man for the important position he would occupy as Chairman of the Commission.

The reason why I suggest the services of an Indian officer being secured is that India is the only British Dependency where the forests are managed on the correct principles. The service there consists of the only body of Englishmen who have received a proper forest training at the Continental schools.

The extraordinary success which has attended the work in India proves that these principles are applicable to all tropical climates and the tropics, and fully warrants anticipating equal results here. In having an Indian officer, the colony would follow the lead of the Ceylon Government, which, at my suggestion, has recently secured one for five years, to re-organize forest work. There can be no two opinions as to the importance of having a competent man for the post, and looked at only from a revenue standpoint, the salary paid to him would. I am convinced, be repaid many times by the increased revenue, and by the savings he would effect.

94. Under the Forest Commission it is necessary that there should be two classes of officers:

1. The controlling or executive staff.
2. The subordinate or protective staff.

The forests are at present looked after by foresters, who are all directly subordinate to the Secretary for Agriculture. As operations are extended, the Commissioners will not be able to supervise sufficiently the whole of the foresters forming the subordinate staff, and it will be necessary to create a superior grade of officers to take charge of the four or five districts or divisions into which the colony should be divided. They will reside in the centre of their divisions, and supervise the foresters’ beats.

95. Constant inspections are so essential to success that no advocating the creation of a proper graded staff of divisional forest officers will require little explanation.

In India we have two classes of officers, called Deputy and Assistant Conservators in charge of districts or divisions, having under them a large body of subordinates. They have been educated for three years at the Forest Schools of Europe before coming out to the country, and many of them will ultimately become conservators. I would advise the adoption of the same system here, and that assistants be appointed to hold charge of the divisions into which the forests are divided. Their duties would consist in inspecting the foresters’ beats, in managing the sales of forest produce, and the collection of the revenue in their divisions, in selecting the reserves, &c.

It will be desirable to have a properly graded service, with salaries sufficiently high to attract men of education, and to permit of their going through a special course of training in forest management, practical and theoretical.

96. Under these executive officers there will have to be the subordinate or the Protective Staff, consisting of foresters. Their duties will be patrolling the forests to prevent thefts, controlling the men working there, &c., &c.

There would be, of course, men of smaller qualifications than those admitted into the controlling staff, the two branches of the service being quite distinct. The terms offered should, however, be such as to attract good men, the service being graded, and offering some prospect of an increase in pay of which there is at present no chance. Liberal travelling allowance should be given, and men should no longer be out of pocket when they travel.

Establishment of a Forest School.

97. The necessity of establishing a Forest School for providing properly trained officers at another point to which I would invite attention. If trained men are required here now, they must as I have already pointed out, be obtained from India or the Continent, unless use is made of the course of training recently established at Cooper’s Hill.

This offers many disadvantages, and, as soon as proper forest management is commenced, there ought to be abundant opportunity for the practical training of young men desirous of entering the service. For their theoretical work, I suggest that the central Agricultural College, which is now proposed, be made use of, a Lectureship on Forestry being added.

*Some interesting particulars regarding the dearth of properly educated foresters in England may be had by reference to the Report and Evidence of the Select Committee on Forestry, which has just been published. The Times says that the report shows the British woodlands to be managed by rule of thumb, and that if an Englishman wants to plant in Gloucester or Pits he must go to Germany or France to learn.

I need only say that this suggestion was only made after I had ascertained that the proper expert could not be had elsewhere. I am not in the least prejudiced in the matter. After making inquiries from Mr. Thos. Dyer, the Director of Kew Gardens, and others, the Ceylon Government found that the reputation of an Indian officer was the only sure one. To attract a good man, and to induce him to give up prospects of rising to the highest posts in India, a liberal salary must be offered.
98. The course for the students to go through would be—

Elementary Botany and Physiology of Plants.
Geology.
Chemistry and Physics.
Mathematics.
Land Surveying and Levelling.
Entomology.
Book-keeping.
Elementary Agriculture.
The Theory and Practice of Forestry.

The natural sciences, mathematics, and surveying, could all be taught by the ordinary agricultural college staff, the forest students attending the same lectures as the others. The only special lectures for them would be those on the management of forests, of plantations, &c., &c. For practical instruction in forestry it would be necessary to attach to the school a forest of not less than 4000 acres, with fairly good soil. This would be under the lecturer on forestry. The students would learn much about the practical management of forests, the making of plantations, &c.; but it would be wise to supplement the course with about nine months' practical work in forests away from the school. Three months of this might precede the college course. The students would then go there knowing exactly the kind of work required of them in the exercise of their profession, and they would then more readily apply the theory.

99. I would urge on Government the necessity of providing for the expenses of the Forest School by an endowment of land, similar to that given for agricultural education. At first the Forest School will be on a small scale, but as soon as the country is fully alive to the importance of educating the men placed in charge of forests, both Government and private, a separate college will have to be started.

In Germany the number of Forest Schools outnumbers those for agriculture, and although there is no college in England where forestry is taught, notwithstanding the urgent necessity for it, there is no reason for neglecting the question in Australia.

New Zealand is establishing a Forest School, and, with an educational system so complete as that of Victoria, forest training cannot long remain neglected. If a Forest School is formed here, it will be characteristic of the advance which the colony makes compared to that of the mother country.

Elementary Instruction in Arboriculture.

100. Besides drawing attention to the necessity for providing advanced instruction in forestry at a college, much useful instruction in arboriculture might be given in the primary schools of the colony by the ordinary masters, or by those specially qualified. This would certainly be the means of spreading much useful information, and it might tend to a great deal of planting being done on a small scale. Australia presents a great contrast to Europe in the small attention paid to planting. Although the heat of the sun in summer is intense, little avenue or ornamental planting is done in the towns. In Melbourne there are no good avenues, and very few streets are planted. The trees that are put out are often the wrong kinds. For instance, the oak is very commonly used in Melbourne, yet in Europe it is rarely seen in the street, owing to its slow growth, and to its suffering from the smoky atmosphere of cities. Instead of using strong, well-rooted trees, sickly saplings are put in, with no roots. In Adelaide, where the necessity for shade trees is even greater, there seems to be even less planting done. The larger landowners do some planting, but much of it fails for want of soil. The selectors rarely plant trees round their premises for shade or to protect their stock, and one sees most of the houses standing on a bare plain without a tree near. In Europe everything is different, and the first thought of every one is to plant a few ornamental trees to set off his house, to sit under, or for profit.

The neglect of one of nature's most beautiful gifts is probably due to ignorance about the simplest operations of arboriculture, and elementary instruction would, I feel sure, be the means of relieving this and of awakening interest in the work. Some of the primary school teachers might be specially qualified to give instruction in the nature and characteristics of plants, and in the elementary principles of arboriculture and agriculture, by a short course at the Forest School.

They would then be able to instruct the junior classes of their schools in the habits and uses of the principal fruit and ornamental trees, in the best methods of growing them on different soils and situations. Practical demonstration might be given by attaching to the school a small nursery to be kept up by the children, and working there could not fail, I think, to awaken in their minds an interest in tree growing, which might have far-reaching effect. Nothing is easier than successful tree planting, yet how often does it fail. The reason of this is that it is usually done regardless of all natural laws and conditions. The seeds and plants are often difficult to buy, and after one or two failures the attempt is abandoned.

The nursery attached to the school would show people how the seedlings should be managed, this being often a difficulty; and to a limited extent it might supply the children with trees to take home to plant. Interest in the work, once started, would never die out, and the children would be the means of probably interesting their parents in the work.

Instruction might go even further, and it would not be difficult to impart a knowledge of the general structure of plants, and of their anatomy. The principal points connected with the
germination of seeds, the mode in which plants obtain their food, &c., might be stated in a manner to interest children and be made a grand means of developing their faculties of observation and judgment.

In many of the scholars this would develop a lively interest in the processes of agriculture, gardening, and farming, which would, in the case of some, lead to their coming to the college for private instruction, or with a view to entering the Government service. The elementary education would, in any case, form a splendid groundwork for future instruction, and would often, even when no further instruction was given, so quicken the powers of observation as to lead to this or to some other branch of natural science being studied in after-life.

All the teachers could not, of course, attend the lectures at the school, and I contemplate only having instruction given by a certain number of itinerating teachers, each of whom would be placed in charge of all the schools in a given district, attending each for, say, two hours a week.

Prizes given to the children for well-grown plantations and gardens would be an easy means for helping the instructors.