REPORT

OF THE

CONSERVATOR OF FORESTS

FOR THE

YEAR ENDING 30TH JUNE, 1890.

PRESENTED TO BOTH HOUSES OF PARLIAMENT BY HIS EXCELLENCY'S COMMAND.

In Authority:

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FORESTS REPORT

FOR THE YEAR ENDING 30TH JUNE, 1880.

Department of Lands and Surrey,
(Forest Branch),
1st July, 1880.

Sirs,

I have the honour to forward herewith a Report of the forest and plantation work of the Department to the end of the financial year, 30th June, 1880.

I have the honour to be, Sirs,
Your most obedient servant,

GEO. S. PERRIN,
Conservator of Forests.

The Hon. J. L. Dow,
Minister of Lands and Agriculture.

OFFICE AND FIELD STAFF.

Upon receiving my appointment from you, and my instructions to organize the work of a Forests Department, considerable difficulty was experienced in the fact that the office accommodation was of such a character as to almost prevent any progress whatever during the first six months after inception to office, and that the work of inaugurating the new order of things was carried out from June to December, 1888, without any clerical assistance whatever. In the latter month Mr. A. W. Crooke, of the Lands Department, was transferred to the Forest branch, and a suitable room was placed at the disposal of the branch. In January, 1889, a fair start was made with the work. This increased so rapidly that the services of an additional clerk became necessary, and a temporary appointment was made. In October Mr. Stevens was appointed assistant clerk. About this time four additional foresters were sent to portions of the colony requiring supervision, and each placed under the immediate control and instruction of experienced foresters already in the service. About this time several vacancies occurred in the foresters' staff, caused by the retirement of Mr. John Kennedy, he having reached the age of compulsory retirement, the transfer of Mr. Giblet to the clerical staff, the promotion of Mr. Forrest, and the retirement of Mr. Johnson, who resigned on account of his advanced age.

These vacancies have been filled by the appointment of four officers, who are now undergoing a course of training at Macedon. As opportunity offers they will be drafted out into the forest.

Recently, Mr. Tattam, of the Lands Department, has been appointed to act as temporary draughtsman and assistant clerk, being transferred from the general Lands Office staff for the purpose, and the work of the branch is now proceeding more smoothly, work which had fallen into arrears being now proceeded with.

The office staff, as at present composed, is none too much for the heavy work of the branch, Messrs. Crooke, Tattam, and Stevens being fully employed, and likely to remain so.

The office accommodation is altogether inadequate, one room having to suffice for the Conservator and the officers above mentioned.

Another room is urgently needed, and arrangements might be made with the Department of Mines to vacate the room adjoining the present quarters, and hand it over to the Forest branch.
The office staff has given satisfaction in the performance of its duties. Mr. A. W. Crooke, the senior officer in charge, has been indefatigable in the conduct of the business of the office, and through his thorough knowledge of official business he has effected important improvements in the conduct of the work of the branch. In this he has been ably seconded by Mr. Stevens, assistant clerk.

In December, 1889, Mr. James Blackburne, senior forester, was appointed an Inspector of Forests, and a few months later Mr. Heathcote Wyndham was appointed to the vacancy for a second Inspector of Forests. Both officers are now engaged in the work of inspecting and reporting results to the Conservator of Forests.

The outside officers have carried out their duties satisfactorily, and, in some cases, meritoriously. Messrs. La Gerche of Creswick, Code of Heathcote, Stoney of Bairnsdale, Orde of Beaumont, and McCann of Sandhurst may be mentioned amongst these latter, whilst the new foresters, Messrs. Leech, McNamara, Hennessey, and Griffin are showing considerable aptitude, energy, and intelligence in the work of supervision. The superintendents of State nurseries and plantations have been most energetic, and the work of raising and planting generally has been carried out in the most satisfactory manner. Messrs. Firth (Macedon), Blair (You Yangs), and Love (Gunbower) have been indefatigable in their efforts to second the Conservator in the work of planting, and neither time nor trouble has been spared by these officers in forwarding the work of the Department. The foremen and nurserymen have seconded the efforts of their superior officers, and Messrs. Hartland, Patterson, Parry, and Young are deserving of credit for the energy and workmanlike skill shown by them.

The forest foremen, too, have done good work—Messrs. W. Freyer, J. C. Young, H. Dixon, Ritchie, and Hilet; and in their training and supervision at Macedon and in the forests show considerable energy and intelligence in carrying out the instructions given to them.

Notwithstanding the fact that 135 men have been employed, not the slightest friction has occurred amongst them, the whole of the employés of the Department having worked harmoniously, and with energy and intelligence, as the excellent nature of the work done shows most unmistakably.

THE TRAINING OF FORESTERS.

At present, in Victoria, it is almost impossible to obtain trained officers as foresters. They are not even to be obtained in England. In the United Kingdom, the foresters are men self-educated and practically trained in the small plantations of the old country. Beyond these their knowledge and practice rarely extend. They have no idea of the management of vast natural indigenous forests, or of saw-milling, or wood-cutting, as practised in these colonies.

These men would be, to some extent, tyros if placed in the Gippsland bush. It would take several years of Australian training to fit them for positions here.

During the last four years a forest school has been started at Cooper's Hill, in England, and here the students who take up the forest course are trained for India.

Prior to this school being established, Indian forest officers were trained at Nancy, in France. There are, of course, splendid forest schools in Europe, especially in Sweden, Norway, and Germany. These schools are conducted in a thorough manner, and the tuition in forestry is as perfect as hundreds of years of close observation and experiment among the woods and forests of the old country can make them.

Whilst the German, Swiss, Austrians, or Norwegian makes a first-class forest officer in his own country, they are not so successful elsewhere. They seem to have a difficulty in adapting themselves to new and strange conditions of forestry, under new skies and a new order of things.

Many of the English officers have been trained at Nancy, and of these many are holding the highest positions in the Indian service, which numbers 80 conservators, and about 3,000 inferior officers, chiefly composed of natives in the lower grades.

The superior officers are highly-trained men, many of them being military officers of high rank, the educational course at Nancy being of a semi-military character.

In late years a forest school has been established at Dehun Dun, India. Here the students, English and native foresters, are taught the rudiments of forestry as applied to Indian conditions.
In America, forestry is in its infancy, and in the Cape Colony forestry is coming to the front under an expert, Mr. J. W. Love. It will be asked: "Where are our trained men to come from?" The reply is: "From our own colony."

We have our agricultural colleges at Longonot and Doorkis. At the former the principal, Professor Brown (a son of the ablest of English foresters), is a trained and experienced forester himself. With such a man in our midst and such a college to work in, it is quite possible to start a forest course of study in connexion with the agricultural college.

A two years' course of agriculture and forestry combined would give us annually two or more trained youths for forest work. This would give an opening for the students to enter the Forest service. The course of study should include botany, chemistry of soils, geology, elements of surveying, drawing, and arboriculture.

After gaining the college diploma the students could then be drafted to Macedon for a six months' course of nursery work in connexion with the raising of trees and practical work of that nature.

After this occasion offered, they could be drafted out to the forests under the leading foresters, to be instructed in forest laws and regulations and forest management generally.

In three years a youth could gather much valuable information, and come into the forests with his mind well stocked with forestal and botanical knowledge.

Lectures on forestry could be given from time to time, and gradually a Forest school inaugurated, which would give us all the officers we required. It might also be made a sine qua non that admission to the Forest Department could only be obtained through the Victoria Forest School.

The forestry students might be termed "cadets," and two or more may be trained to be drafted each year on getting the college diploma.

Many of the present officers are painstaking, careful, and intelligent men, and are studying hard to make themselves acquainted with the true principles of forestry. Several young men are now at Macedon learning the methods of tree-raising and planting. These are drafted off as occasion requires into the forests as foremen, with a view to ultimately being appointed foresters.

THINNING THE INDIGENOUS TREES IN STATE FORESTS.

This is the most important work done by the Forest branch since its inception. The work was first undertaken in the Havelock State Forest, and gradually extended to the Creswick and Ballarat East State Forests. Gangs of men, under intelligent foremen, have been at work for some months past, and a large area of forest has been thinned out, several hundred acres having been gone over with the most gratifying results.

Thousands of young saplings from 8 to 10 inches in diameter, and 30 feet in height, are now to be seen in the Creswick State Forest. In another year or so many thousands of saplings will be available for the Ballarat mines as thinning, whilst the "high forest" will not be interfered with. This work is under Mr. La Gerche, the Chief Forester.

At Ballarat East the low scrubby bush has been taken in hand, pruned and thinned out with very marked results, considering the short time that has elapsed since the commencement of the work.

About 30 men are engaged in the work of renovation in the Ballarat district.

As Gunbower State Forest, on the Murray, a large gang of labourers is at work under Mr. J. W. Love, who has had large European and Canadian experience, as well as South Australian, and under whose supervision the Wirrabara Forests (S.A.), were thinned and pruned, as well as planted, in the first years of their growth.

The young seedling redgum of Gunbower for years past have simply been ruined by the dense growth, and if left in that state would have in time degenerated into a whipstick scrub. Now all this will be changed; acre after acre will be thinned, letting air and light into the young forest, the effect of which will be that the young trees will soon recover, and grow into saw-mill timber in the course of 25 years or thereabouts.
As soon as the necessary trained hands become available, the forest round Sandhills, the magnificent ironbark ranges, will be taken in hand and dealt with in a similar manner to the other forests. The other great forest centres will then be undertaken in the order of their importance.

The value of this work cannot be over-estimated. We have in this colony magnificent young forests, which only require energetic supervision and intelligent "thinning" to make forests of the utmost value to the community, and to supply all the wants of the consumer for all time.

In certain of the chief mining centres planting is not required—the indigenous forest is growing up fast enough for re-forested purposes. Our native timber trees would be hard to beat in the markets of the world for general utility; hence protection and thinning are the wants of our forests in the great mining centres, and these will be the care of the Department.

A nursery has been started at Gunbower Forest, and here it is intended to grow hundreds of thousands of sugar gums and blue gums; the former for the arid dry plains of the Avoca and Loddon, and the dry sandy mallee wastes of the north-west and northern portions of the colony; the latter for the mallee. It is proposed to grow these trees on the "bamboo" system in vogue in South Australia. The bamboo cases have, however, to be grown on a large scale before the system can be largely introduced. It will take two or three years before sufficient bamboos can be grown to keep the system going.

By means of the bamboo tubes young trees can be planted in dry districts with a limited rainfall with every chance of success, where no other system of planting would do. As many as 2,000 a day can be planted by one man.

All about 40 men* are now engaged in the work of thinning out the forest.

**Saw-mill Areas.**

The area system is working very fairly. It is not quite free from abuses, but these can be got over by regulations.

Under the present regulations, a saw-miller may take out area rights at 1 per 100 acres (up to a maximum of 1,000 acres) per month. It is thus possible for a saw-miller to take up 1,000 acres—rent £10 monthly—put on 100 or more men, and cut off all the timber in a couple of months, at a cost of only £20. The saw-miller may also take out another area in another forest, and proceed in the same manner.

The remedy for this is to license the fellers in connexion with areas, and limit the number of areas any firm or saw-miller may take up. The area system is not wasteful. It necessarily keeps out the splitter, who is the true and primary cause of waste, the saw-miller only taking the timber necessary for his trade requirements. During the year the minimum diameter at which timber can be cut has been raised from 18 inches to 24, and as the increase has been received by the saw-millers with approval, it bears out the contention that only large-sized trees are required by the saw-millers.

I am decidedly of opinion that the special area system is a good one, and until the "royalty" system is adopted I know of no better. It is not wasteful, because it does not pay a regular saw-miller to cut down trees unless he can use up the same at the mill.

The cutting of piles, telegraph poles, and undersized timber generally has been stopped, excepting under special licence and the personal supervision of a forester, in all the more important State forests, viz., Gunbower, Barnewal, Creswick, Wombat, Maryborough, Colquhoun, and Victoria Valley, and in all forests where a forester is in charge the destruction has been reduced to a minimum.

The cutting of the above description of timber is done under the "royalty" system, all trees cut being subject to the inspection and approval of the forester. It is proposed to extend this system gradually. During the past few months a determined effort has been made by the Conservator to suppress the sleeper hewers of Gippsland. These men were creating dire havoc in the forests of that part of the colony, and noting the terrible destruction of timber and open violation of forest regulations, instructions were given to the local foresters to seize all timber illegally cut, and clear the State forest of the offenders. This was done, and fresh licences were refused.

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*Since increased to a total of 135 men engaged in general forest work, exclusive of foresters and permanent officers of the Department.
PLANTATION.

A view of a plantation on a systematic plan showing roadway or fire-break through the blocks. These breaks can be ploughed or burnt off in between.

The left hand portion of the illustration shows the natural growth of the trees, whilst the right view shows the trees after pruning, &c.

The advantage of this treatment is obvious; the dense undergrowth serves to rob the stems of the tree of much of its nutriment; when this is cut away the sap and nutriment are absorbed into the stems instead of being wasted by dissemination through the branchlets and leaves, the result being that the tree shoots upward and forms "top" growth instead of lateral, and each tree vies with its neighbour in growing upward towards the light.

In all plantations where trees are grown systematically, they are planted at stated distances apart. In the accompanying illustration this is given as 8 feet. The first thinning would take place when the trees were about 6 years old, when every alternate tree would be cut out and be utilized for mining purposes in the form of props; the second thinning would be at the end of 12 years, this thinning provides timber for piles, telegraph poles, &c. The first thinning would leave the trees 16 feet apart, the second 32 feet, and these would form the permanent crop and would be allowed to mature in say 35 to 45 years.

Thus three crops of timber would be available during the entire term of growth.
The men called meetings, and endeavoured to enlist the sympathies of the press and members of the Legislature for their view of the case, but, to the credit of all those who had the true interests of the colony at heart, the action of the Department was cordially approved.

In various other ways the Department has striven to combat the destruction of timber. In Sandhurst the cutting limit has been raised from 12 to 18 inches in diameter, within a radius of 20 miles of that city.

In the Stawell district the cutting diameter raised from 12 to 18 inches.

At Rushworth and Heathcote special supervision has been organized. A senior forester, with two juniors, has been on one month in charge, with the result that fines, the heaviest in the colony, have been inflicted by a bench of magistrates, who recognize the importance of putting down with a strong hand the wilful and malicious waste of valuable timber. Nearly £20 per month has been recovered in fines, which shows that the supervision is good and the forests well looked after.

The foresters, upon the whole, are doing good work, but it is well nigh impossible to expect 24 men to watch the whole colony and keep an efficient look-out upon the thousands of persons whose direct interest it is to obtain the timber without licence.

**Area of Natural Forest Thinned out and Pruned.**

Under the immediate supervision of Mr. La Gerche, forester—

<table>
<thead>
<tr>
<th>Year</th>
<th>Location</th>
<th>Acres</th>
<th>...</th>
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<tbody>
<tr>
<td>1888</td>
<td>Ballarat and Creswick, under licence</td>
<td>...</td>
<td>1,467</td>
</tr>
<tr>
<td>1889</td>
<td>By forest gang</td>
<td>...</td>
<td>326</td>
</tr>
<tr>
<td>1889</td>
<td>South end</td>
<td>...</td>
<td>60</td>
</tr>
<tr>
<td>1890</td>
<td>Sawpit Gully</td>
<td>...</td>
<td>176</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>80</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>2,109</td>
</tr>
<tr>
<td>1890</td>
<td>Ballarat East State Forest, forest gang</td>
<td>...</td>
<td>430</td>
</tr>
<tr>
<td>1889</td>
<td>Havelock State Forest</td>
<td>...</td>
<td>120</td>
</tr>
<tr>
<td>1890</td>
<td>Wattles and gums (mixed)</td>
<td>...</td>
<td>40</td>
</tr>
<tr>
<td>1889</td>
<td>You Yangs—wattles and gums (mixed)</td>
<td>...</td>
<td>500</td>
</tr>
<tr>
<td>1890</td>
<td></td>
<td></td>
<td>1,890</td>
</tr>
<tr>
<td></td>
<td>Grand total</td>
<td></td>
<td>3,999</td>
</tr>
</tbody>
</table>

From the above figures it will be seen that the extensive pruning and thinning operations have been gone on with for the past two years, with the result that a large area of forest has been treated in a manner which will give good pecuniary results in a few years’ time. The total area thinned being 3,999 acres, as above stated.

**Planting Operations, Macedon State Nursery.**

At this nursery extensive operations have been carried out by the Superintendent, Mr. Firth, under instructions.

For many years the stock of trees was only sufficient to supply outside applicants for trees and a few institutions, the average being about 20,000 trees annually.

When taking over charge of the Forest branch, the nursery was found to be practically depleted of young stock. In consequence, it will take a couple of years to get a supply of deciduous trees of a size that will do credit to the nursery.

There appears to have been no record kept as to how the trees fared after leaving the nursery, and, consequently, there are no statistics of the number of trees thriving, or otherwise, of those distributed or planted.
Last season, 1888-9, there were raised from seed and cuttings the following trees:

* Pines of sorts ... ... ... ... ... 30,000
* Oaks ... ... ... ... ... 25,000
Planes ... ... ... ... ... 40,000
Poplars ... ... ... ... ... 11,500
Willows ... ... ... ... ... 11,000
Eucalyptus (most useful sorts) ... ... ... 23,500
Hedge plants, &c. ... ... ... 14,000

Total ... ... ... 155,000

The whole of these trees were raised at Macedon and Creswick nurseries, and were planted in permanent sites in the Government plantations as under:

Sawpit Gully plantation, Creswick State Forest ... 42,500
Havelock plantation, Carisbrook ... ... 41,500
You Yangs plantation ... ... 36,500
Mount Macedon plantation ... ... 14,500

155,000

In addition to the above large output of trees from the nurseries mentioned, an immense number of young seedlings were grown for the present season, commencing the 8th June.

The following is an approximate estimate of the requirements of these, and will serve to show the increasing magnitude of tree planting in Victoria by the Forest Department:

Distributed on “Arbor Day,” 21st June, 1890 ... 20,000
Free distribution to institutions, farmers, trusts, schools, cemeteries, &c. ... ... 60,000
Government plantations as under (rabbit-proof fenced)—
You Yangs plantation ... ... 50,000
Sawpit Gully plantation ... ... 40,000
Havelock plantation ... ... 40,000

210,000

In addition to the foregoing, during the season 1888-9, 74,000 trees were distributed free to public bodies, &c.

The total number of trees raised during 1889-90, including seedlings (one year and two years old), is at—

Macedon State Nursery (approximate) ... ... 700,000
Creswick (one year and seedlings) ... ... 100,000
Havelock (seedlings) ... ... 24,000
You Yangs (seedlings) ... ... 20,000

Total number of trees available for this and next season’s planting ... ... 884,000

Of these, 210,000 will be required for the present season, and 624,000 kept in stock for next year.

Total estimate of trees raised and planted and distributed to the public, &c., for 1888-9-90—

Raised during 1888 and planted, Government plantations, during season 1888-9 ... ... 155,000
Free distribution to public bodies, &c., 1888-9 ... ... 71,000
Required for this year’s planting ... ... 210,000
Seedlings raised for next year ... ... 624,000

Grand total ... ... 1,063,000

* Chiefly in commercial use.
The State nursery at Macedon has, up to season 1888-9, supplied the wants of public institutions. Finding that one nursery could not keep pace with the constantly increasing demand for trees, a second nursery was established, early in 1888, at Sawpit Gully, near Creswick, under Mr. La Gerche, the local forester.

Shortly after a thoroughly competent nurseryman of European experience, Mr. Hartland, was appointed, and a large number of trees were raised for last year, but the bulk of these trees were too small, and it was considered better to hold them over for another year.

During this winter the trees were shifted to the Australasian paddock, and a new nursery started there. This is now well under way.

At the same time Inspector Blackburne started the nucleus of a nursery at Havelock, and Mr. Young; a nurseryman of experience, was appointed to take charge. This nursery promises well, and a large number of one-year-old trees are planted ready for next season's distribution.

At Gunbower State Forest an important nursery has been started under Mr. Love, superintendent; Mr. Patterson, late foreman at Macedon, taking charge of nursery operations. Here extensive improvements have been carried out under Mr. Love.

It is intended to make this nursery the great depot for rearing and distributing the sugar gum under the lambo system.

In the course of another year or two it is expected that the output of trees from each of these nurseries will reach half-a-million. The following are the nurseries in the order of importance:

- Macedon State Nursery—Mr. Firth, superintendent; Mr. Parry, foreman.
- Tintara State Nursery (Gunbower Island)—Mr. Love, superintendent; Mr. Patterson, nurseryman.
- Creswick State Nursery—Mr. La Gerche, forester; Mr. Hartland, nurseryman.
- Havelock State Nursery—Mr. Blackburne, inspector; Mr. Young, nurseryman.
- You Yangs (a small local nursery)—Mr. Blair, superintendent.

At Macedon, the following trainees who are paid as labourers, are undergoing training in connexion with the Department at Macedon and Ballarat—Messrs. Freyer, Young, Dixon, Semmes, Beiles, Brecklebank, and Salmon.

The three recently-appointed foresters are also at Macedon undergoing a course of training prior to being sent out into the forests. These are Messrs. Ingle, Harvey, and Jenkins.

**Revenue**

It will be noted, on referring to the revenue return attached hereto, that the Forest Department has reached the point of being a remunerative Department of the State, the receipts being in excess of the expenditure.

The receipts from all sources, excepting those derived from grazing, amount to £18,202, whilst the expenditure is placed at £15,218, leaving a balance of nearly £1,000 in favour of the Department.

The above facts show that, financially, forest conservation is on the safe side, and that, as more intelligent supervision is exercised over the forests, the revenue must increase in the ratio of the protection and care bestowed on them, more especially if managed upon commercial principles.

Special note should be made of the fact that in the revenue statement of receipts there is no mention of grazing fees, i.e., the licensing of forest lands throughout the colony.

These receipts being credited to "General Territorial Revenue," the Forest Department receives no credit for the amount thus paid in, and, as this totals a large sum, probably several thousands of pounds sterling annually, it will be seen that the amount that should be credited to the Department annually is really a large one, and this in the face of the fact that very low fees are charged for grazing licences, whilst those in connexion with timber are of a nominal nature.

In South Australia more than half the revenue of the Department is derived from grazing fees, but in that colony the leases are issued for a term of fourteen years, and lessees are bound to fence the outside boundaries of the forests held under lease, as well as fence off any plantations which may be required in each year by the Department, the maximum quantity which may be so resumed being 1,000 acres.

The advantages covered by a long lease and security of tenure cause the forest lands to be eagerly sought for, and strong competition is excited in tendering for them. The rent per annum, with the above conditions attached to the lease, varies from 3d. to 2s. 6d. per acre, the latter price being given for first-class agricultural lands.

It will be seen, therefore, that the system of dealing with the grazing of the forests of Victoria is capable of vast improvement, by turning our annual licences into fourteen year leases with fencing conditions therein. The result of the present system is the multiplication of small lessees, sometimes there are half-a-dozen in one forest, when, of course, as no fence is erected, the country is overstocked, so that there is small chance of the seedling gums arriving at the sapling stage, because they are eaten off year after year. In consequence of the short term (twelve months only) there is little or no competition for forest lands put up to tender under section 119, Land Act 1884, and the colony gets a minimum of revenue with a maximum of forest destruction, as overstocking is everywhere recognised as being fatal to forest conservation.

It, the instances where commonage rights are held over forest lands, the results are bad for forest conservancy, the land being used as a mere grazing ground, to the detriment of the young timber, which would otherwise grow up and provide trees for future use.

Protection from stock will do more for the re-forestation of Victorian forests than thousands spent upon tree planting in Government plantations; but where a forest reserve is held for the convenience of a few owners of cattle, the original purpose for which the reserve was made is lost sight of. The Forest Department will require to regain possession of these lands.

Some of the principal forests are in the hands of a select few, who run the grazing for the benefit of the local farmers. The fees paid, for probably some of the most extensive grazing tracts of country in Victoria, are so small as to be merely nominal.

The low rate of rental may be judged by the fact that 65,000 acres of the redgum Murray Flats (Barmah and Yelinda State Forest) are let to a committee representing local residents for the small sum of £290 per annum, whilst the Gunbower State Forest of about 40,000 acres is let for the equally nominal amount of £130 to £180 per annum.

Both these State forests should be regarded as national estates from which large grazing revenue should be received, and this would undoubtedly be the case, if the reserves were blocked off and let by tender on a secure lease for a term of fourteen years.

There is no doubt but that if this were done, a revenue of between two and three thousand pounds sterling annually would come into the Treasury to the credit of the Forest Department.

The loss of revenue is by no means the worst part of the affair. Commonage means the taking out of the hands of the Forest Department the management of the grazing, and immediately a division of interest arises, as the power of dealing with the matter is relegated to a number of persons who naturally care more about the fattening of their cattle than the well-being of the forests.

The Forest Department should have complete control of the grazing on all State forests, and the sooner the fact is recognised the sooner will the forests become of use not only for grazing, but for the purpose for which they are, as a first consideration, intended.

F O R E S T  B L A N C H.

Estimate of expenditure for financial year 1890-91, including £360 for maintenance of grounds attached to Government Cottage, Macedon...£15,718

Probably not used ... ... ... ... ... ... ... ... ... £00

Balance ... ... ... ... ... ... ... ... ... £15,218
Receipts in connexion with Forest branch for year commencing 1st January and ending 31st December, 1889—

Priced licences, including fallers, jinkers, splitters, &c. ... ... £9,732
Sawmills ... ... ... ... ... ... ... ... ... ... 1,857
Sundry small areas ... ... ... ... ... ... ... ... ... ... 2,582
Sundry licences, including "thinning," tramways in State forests, stripping wattle plantations, &c. ... ... 1,256
Sale of Government property (timber, bark, &c.) and sundries ... ... ... ... ... 500
*Fines for 10 months and 10 days ... ... ... ... ... ... ... ... 295
Total ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... 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lengths and the knots bored out, they are then placed in heaps and covered with
loam, and there left for months, until, in fact, the following season, with the object of
partially rotting the hard outside casing of the tube. After undergoing this partial
rotting they are then carefully filled with fine sieved soil, and gently tamped
as they are filled in order to prevent hollow spaces being formed within the
tube. The bamboos are then taken to a pit specially constructed and cemented
inside; at the bottom of the pit sandy loam or sawdust is placed to the
depth of a couple of inches, and naked perfectly level. The tubes are then
carefully set "end on:" side by side, as close together as possible, to the number of
60,000 or 70,000, according to the size of the pit. After they are placed in position,
the planter, with a wooden mallet, taps the ends of the tubes and causes them to
assume a perfectly level surface, sand or sawdust is then filled alongside the tubes,
until the spaces are filled up, and nothing but small rings, the ends of the tubes, are
visible. One or more seeds are then dropped in each ring at the surface, and when the
whole are thus treated, fine dry sieved loam is loosely scattered over the whole
surface of the pit. Daily watering with a specially constructed fine brass rose is the
only operation now required, and proper covering to keep off frost or birds. In a few
weeks the young seedlings appear above the tubes. After remaining in the pit two
or three months, they are carefully gone over, and only one seedling allowed to remain
in each tube, the waker giving place to the stronger; this latter operation is performed
often at the end of the first month, before the seedlings have attained any size. When
the seedlings grow to 4 or 5 inches in height it is then time to plant them out. They are
then placed in brandy cases and sent hundreds of miles to their destination, and planted
as above described. The tubes when required for planting are carried in narrow
boxes (brandy cases cut in half lengthwise, with one or more partitions across), and slung
over the necks of the men carrying them. Each box will hold enough tubes to bring
the man back to the point of commencement, where he could refill his box and proceed
as before. Under the bamboo system of planting, the young trees receive no check in
their growth, and as soon as the roots appear from the bottom of the tube they at once
strike deep into the soil, and the tree grows vigorously. Failures are few, and these are
crushed by lady-filled tubes, or worms or beetles getting inside and eating the roots.

The accompanying illustration is by Mr. Love, Superintendent Gunbower
State Forest.

The most suitable eucalypts for planting for both mining and industrial
purposes may be found among the following species of the Eucalyptus genera:

1. Eucalyptus globulus ... Blue gum, Tasmania and Victoria.
2. E. Leucoxylon ... } Frembark } Victoria.
3. E. sideroxylon ...
4. E. sideroxylon ...
5. E. rostrata ...
6. E. cornynalx ...
7. E. viminalis ...
8. E. polyanthema ...
9. E. marginata ...
10. E. obliqua ...
11. E. macrobphylla ...
12. E. capitata ...

These do not, of course, comprise all the eucalypts which can be recommended
for industrial culture, but as, with one or two exceptions, they are all natives of Victoria,
and may certainly be classed as amongst the best of native trees for extensive
cultivation, therefore they are given due prominence here. At the same time, it must
be remembered that Western Australia has many eucalypts of probably equal value
to those mentioned above. New South Wales and Queensland undoubtedly possess
valuable timber of this well-known genera. Of the 170 species of Eucalyptus
scientifically described, probably 76 would be found of sufficient cultural importance
BAMBOO SYSTEM OF RAISING TREES FOR STATE FOREST PLANTING.

The accompanying illustration very nearly explains itself.

No. 1 shows the bamboo cut into 6-in. lengths, with the portion containing the joint cut out so as to leave the tube clear of all obstruction.

No. 2. Here the tubes are placed side by side as close as they can be put in the bed, or "pit," ready for the fine-sieved soil specially prepared to fill them.

No. 3 shows the filled tubes in readiness for the reception of the seed, after being tamped with the mallet A until a perfectly level surface is attained, when a final thin coating of soil is gently sieved over the top of the tubes, and thus covering the seed, shown by No. 4. B is an ordinary spirit-level used to insure uniformity of surface. C represents the sieve and heap of soil used in filling the tubes. E. Box showing method of carrying young seedlings and packing prior to sending away from the nursery. This box is used in connexion with the nursery. An ordinary brandy case is used to send the seedling tubes away to various parts of the country.

D. Interior view of above, showing wire rod divisions inside to keep the tubes upright when carrying from nursery to plantation. F. The young tree, after it has been planted a few months, showing the young roots bursting the case when partially rotted by being in the ground. G. The tube and seedling in position in its permanent site.
to warrant planting for industrial purposes, and it is also quite within the bounds of possibility that some 20 or 30 more might be improved by cultivation. It will thus be seen that we have no reason to doubt our capacity for raising or cultivating eucalypts for mining or other purposes when we have so large a range to select from.

Our hardwood trees are simply unapproachable for general utilitarian purposes; for durability, strength, desirability (easily split), and celerity of growth the Eucalyptus grandis of Australia are far and away ahead of all compare. Their reproductive character and fire-resisting attributes render them most valuable in countries where fire is an ever present danger. The growth of some of the species is wonderful, and it is known that in eighteen months they grow 20 feet high (E. amygdalina, Mountain Ash), whilst E. globulus has frequently been known to grow 18 to 20 feet in two years under favorable conditions. The young eucalypts, as a rule, grow at the rate of an inch in diameter yearly for the first six or seven years, after which the growth slackens, and no doubt the later periods may much alter in this regard.

The European method of counting annual rings (each ring representing a year) cannot be depended upon in Australia, where many severe checks in growth are experienced. Sometimes a tree will grow two or more rings in a year, according to early or late rain, or drought breaking up, alternating with frosts.

In all large mining centres it is of the utmost importance that the most thorough protection should be afforded the young growing timber, and this can only be given by constant and energetic supervision. This, however, is not at all. It is urgently requisite that State forests should be fenced, and the nearer these forests are to mining centres the greater the need of fencing. I am aware of the objection of the ordinary miner to fencing, but individual prejudice must give way to the paramount interest of the calling.

One of the most important axioms of forest conservancy is rest and quietude, i.e., freedom from trespass either of man or beast, and this is absolutely essential to rapid forest growth. This is where grazing, except under certain conditions, is so injurious.

It is idle to expect that a forest open to traffic on all sides, to trespass from cattle and their owners, to raids from wood-cutters, &c., can possibly continue to produce timber ad libitum. The results of such treatment are now to be seen all around the larger mining centres of Victoria.

The miner of Sandbrust, Ballarat, and other important centres must divert himself away from the idea that the forests are created solely to cut and slash about for his convenience in the present. He must recognize the fact that discretion in the cutting of timber for any purpose is a sine qua non to successful forest conservancy, and that such cannot be accomplished with the free and easy methods of the past. All timber should only be cut under trained supervision, for the reason that an untrained man will simply cut what he requires for his own use, without any regard to the future supply. Given a mixed crop of eucalypts, comprising several varieties, good, bad, or indifferent, &c, will probably cut the very trees which ought to be kept for future supply, simply because he is ignorant of their value, except for his own wants. The experienced forester or pruner will only cut the timber which ought to be removed, and leave standing those trees which are requisite for the future of the forest. This is an important difference, and the results of the two systems, over a number of years, would be startling, could they be studied side by side.

The miner is now awaking to the fact that one source of his wealth—the timber—by which he is enabled to earnt the yellow metal, is falling him. Timber he must have, or else give up the quest for gold. He asks the Government to step in and save him from the folly of timber destruction. To do this properly he must be prepared for sacrifices; he must submit to see the forest lands properly fenced and placed under strict supervision; he must give up his old ideas as to his rights to timber; he must recognize no rights save those of the Crown; he must be content to receive the timber from the forest according to the bearing capacity of that forest; he must submit to being heavily fined if he should transgress the forest laws; he must assist the forest officers in their work by moral and active support. If he does all this, there is a certainty of a regular supply of timber being available for his use.

The admirable lands now unalienated, and to a great extent unused, are of the utmost value to the scheme of general forest conservation throughout Victoria. These lands occupying, as they do, large areas in the neighbourhood of cities with large populations are most valuable. As the lands are taken up by the farmer and
the progress of agriculture goes on throughout the country timber must become scarce. Many of these areas comprise the habitat of probably the most valuable timber we possess—the ironbark. This tree is not only useful for mining, but it is also valuable for construction, and might be used largely in railway construction and many other industrial purposes. It is a singular fact that the ironbark is invariably associated with auriferous lands, the ironstone ranges of our mining centres appear to be the home of this most excellent timber tree. Here, then, we have whole districts in the immediate neighbourhood of Sandhurst, Maryborough, Tallbot, Heathcote, Chiltern, Inglewood, and other places where the ironbark luxurates and grows by millions. The Forest Department should secure all the valuable timbered ranges, now covered with a grand crop of ironbark and other valuable timber in the neighbourhood of the places mentioned.

It is a settled axiom, that from a fifth to a sixth part of a country should be placed under forest if the proper balance, climatic and otherwise, is expected to be obtained.

I am aware that this is considered utopian, and I am aware that such a large area is impracticable in Victoria, where the bulk of the land has already been selected. The idea, however, is only put forth in order to show the urgent necessity for keeping a close watch and guard over what has been reserved, and as a plea for still larger areas to be added to existing forests from the auriferous areas before they are alienated to the fruit-grower or selector. There are thousands of acres of such lands suitable for the fruit-growers and for forests there is ample room for both, and it is specially urged that the forestry interest shall be first considered, and then the selector can be dealt with as occasion offers.

In the neighbourhood of payable gold-fields, where claims are deep and likely to last, and proved leads are known to exist, it would be a good plan to lease small areas to the companies near at hand, for, say, eight or ten years, with full power of entry for mining on paying compensation (the value of the timber interfered with only, and at schedule prices) for the purpose of planting blue gums for mining purposes. These trees would be fit to cut, in eight or ten years, say, 8 to 10-inch props, and would cost about 10s. 6d. to say 27s. 6d. per acre for broad-cast sowing with blue gum seed, according to the nature of ground.

These areas could only be taken up on proved auriferous land, and not in State forests or timber reserves or areas designed for fruit-growing, to be solely for the benefit of lessees planting the trees. This is a subject which has been thrown out for the purpose of avoiding the matter under notice and discussion. It has nothing whatever to do with State forest conservancy, other than as a hint to some of our large companies to make timely provision for timber which they are bound to require before many years are over, and as a means of utilizing many thousands of acres now lying desolate and an eye sore to the onlooker.

**PINE PROTECTION IN STATE FORESTS.**

The proper protection of State forests from fire is a duty which must of necessity force itself upon the notice of a properly constituted Forest Department.

It is the first duty of a forest officer to study the best means of fighting the greatest enemy the forests have to encounter. The fire fiend is easily raised, and once started on its destructive career is very difficult to restrain. In America the pine forests are very inflammable, and it is by no means an uncommon sight to see miles upon miles of fine pine forests destroyed by fire. In many of the States the bulk of the forests have been destroyed in this manner. The pine forests of Europe and America have not the wonderful recuperative or fire resisting power of our eucalyptus forests. The fact of our trees being shedsiers of bark instead of leaves marks the eucalypt as being entirely adapted for hot countries, where fires rage periodically during the summer months. The eucalypt is to a large extent a fire resisting tree, some species more so than others. The well known stringy-barks (E. obliqua, E. macrorrhryhina, E. capitellata) are familiar instances known to all bushmen.

There are, doubtless, few old residents in the colony but have seen forests of this valuable timber tree alight from base to topmost branch, with a fiery furnace around their stems sufficient to roast a herd of cattle, not a leaf left, nothing but a blackened bare butt towering aloft to the sky, funereal and desolate looking. Yet,
after a heavy rainfall, behold, a few weeks afterwards, the blackened holts and bare branches put forth young shoots and leaves, and in a few months nearly all trace of fire is obliterated, and thus summer after summer forest after forest is burned, destroying saplings by millions, but the old sturdy pioneers of the forest still live on, and year after year continue to shed fresh seed upon the burnt-up ground, and then the saplings reappear as thick as ever under the genial influence of the winter rains.

Forest fires are undoubtedly periodic in character, and, like the rains, are destructive in cycles. A forest fire will spread and run its course with more or less damage, according to the hour or time it takes place, that is to say whether it is a day fire or a night fire. If the former, it is usually very destructive, and very often in extremely hot weather, with a high wind, kills off everything before it; as night comes on the fire tones down and creeps slowly through the forest, checked by night dews or even a slight moisture in the air caused by a sea breeze. The wind, too, falls, and a fire may be faced at such a time with little or no danger to human life. It is safe to assume that forest country, on the average, is burnt over once in six or seven years, and it is entirely owing to the fact that the innumerable small bush fires which take place at various times all over the colony—which apparently die out in the night time—rage furiously during the day—that immense conflagrations of the Black Thursday type are prevented.

Before the advent of the white man the natives use to fire the country to enable them to capture game, &c. In times of plenty this was neglected, and perhaps several years would elapse ere a fire of any magnitude west through the country, consequently the accumulation of grass (in the absence of stock) was enormous. An extra dry season, a native fire carelessly let, a whirlwind in playful mood, and whiff, the country was alight from end to end.

Black Thursday was the result of splendid seasons for grass, the absence of native fires, consequence upon the natives becoming lazy and attaching themselves to the white men instead of hunting, and the scarcity of stock, &c.

A second Black Thursday could not, under existing conditions, take place; but there is nothing to prevent whole districts being fired, especially after an unusually good season for grass.

Bush fires in forest country do an immense of harm, they cause trees to grow crooked, and also knots, rents, fissures, and faults of all kinds, and above all pave the way for insect pests.

The prevention of fire in State forests is a difficult question, and once it is solved the obtaining of straight, sound, well-grown timber for commercial use is only a matter of forest conservation.

In all forest management, it is important to remember that proper forest cover is a sine qua non to success. All trees in a forest should be just close enough to shade with their branches the ground beneath them. Once this continuity of shade is destroyed bad or faulty timber is the resultant factor. This is one great reason why the felling of timber should be under the supervision of competent foresters who understand the work and the reasons for the same.

Many persons urge as a reason why land should be thrown open "That there is no good timber on the land." These persons are not aware of the forest axiom, that bad timber is better than none at all, because of the shade offered by the former in giving "cover" to the land, and the same land if protected and placed under enlightened forest management would produce good timber in the place of bad, and very often, indeed, good timber is simply produced by the "protection" given the forest by a system of thorough supervision, which enables the forest naturally by reproduction to "thicken up," and, by thus naturally becoming more dense, grow saplings of a better class than ever grew before under natural conditions.

The cause of bush fires is nine cases out of ten is through the culpable negligence of persons whose business or pleasure takes them into the forest. The splitter drops his matches carelessly about or leaves a box on a stump. The bullock-driver throws a lighted match into the scrub or by the road-side. The swagman leaves his fire alight at the camp. The sportsman uses paper for gun-wadding, and starts a fire at almost every shot.

The First Act of Victoria is a dead letter, and police, selectors, tourists, sleeper-bewers, and contractors generally look upon the notice with indifference.
In this universal carelessness with regard to fire lies the secret of the immense destruction of our forests. Fire is indeed the arch-enemy of forestry, and the question naturally arises, how and in what way can effective fire protection be afforded the State forests of Victoria, in order that the evil effects of the terrible scourge may be mitigated or done away with?

1. All State forests worthy of the name should be placed in charge of intelligent foresters, whose duty it would be to watch for fire and when such occur obtain help and suppress same.

2. Stop "commanage" on State forests. This is a prolific source of trouble in the matter of fire, boys hunting for cattle are the chief culprits, burning out rabbits or "possums"; also the traffic incidental to the grazing of cattle, when the ownership is spread over hundreds of people instead of a few persons employed by lessee under a long tenure or lease.

3. To stop the indiscriminate camping and entrance of the public upon the lands devoted to forest conservancy, except under stringent regulations as to fire and other damage. The placing of splitters, wood-cutters, carters, and forest people generally under a code of regulations so designed as not to interfere with legitimate work in the forest, but also to protect them, and the forest as well, from outsiders who have no business to take them there.

4. To amend the Fire Act so as to bring the land-holder to justice who wilfully and carelessly fires his land without proper notice, and without taking the precaution of ploughing, &c., so as to save his neighbour from the effects of his carelessness, and also to compel every landowner or lessee adjoining a State forest or timber reserve to burn or plough a strip at least 40 feet wide round such boundary, as well as give notice to the nearest C. L. B. or forester in charge.

5. The fencing-in of the State forests to prevent traffic or restrict it to surveyed roads, where proper and efficient fire-breaks could be made by employees of the Department.

6. The formation of fire-breaks, running across a forest at stated distances apart, or round the outside boundaries, at any point where danger from fire was most apparent.

The method adopted in this latter case is very simple, and may be thus described:—A narrow strip of land is burnt a few yards wide under the immediate care of a strong gang of men. This strip is carried on for a few miles in any fixed direction, or following the top of a range, or along a roadway. Having reached the end or point fixed upon, a return is made at a distance of from 60 to 80 yards from the other, that is to say, a double strip is burnt a few yards wide each, and leaving some 60 to 80 yards between. When the second strip is finished, the men proceed to burn off the grass and rubbish lying in between, and thus a broad band of burnt country is presented as a break against any fire which may arise during the heat of summer. Three or four of these fire-breaks in a forest will prevent any extensive conflagration, and at the same time afford a convenient rallying-place for the men to combat a fire should the necessity arise. Under experienced firemen miles of a break can be burnt in a day. The principle involved is somewhat similar to that adopted by the Railway Department in burning off the grass from the various lines. If the various shire councils could be induced to adopt the fire-break system, at the cost of a few pounds annually thousands of pounds worth of valuable timber would be saved the country, and fewer ruined farmers would be left to bewail their want of foresight, and consequent loss of stock and grass.

The fire-breaks in the principal State forests were of the utmost use last season, and certainly helped materially to save the forests from fire. No less than 22 fires occurred in Ballarat and Creswick State Forest, but all were easily extinguished by the prompt measures taken to suppress them.

The plan of employing a few men in the forest during the summer months in forest thinning was found to work admirably, as the men were always available when required for fire work; and, as a good look-out was kept, the damage done was trifling in extent.

It is intended to continue this system in future in all the more valuable forests.
PRUNING TOOLS, METHOD OF PRUNING, &c.

Group 1.—Pruning knife, common pruning saw, bill-hook and saw combined, small axe or tomahawk.

Group 2 shows how a branch should be held whilst being cut or pruned. The upward stroke of the knife is assisted by the pressure on the limb forcing it back towards the tree, thus giving free play to the knife. By the tension thus caused the wood-fibre gives to the knife the more readily. If this action were reversed, the result would probably be that the cut, when three-parts through the limb, would suddenly break or tear, and a portion of the limb come away with a strip of bark or wood attached to it, and so cause wounds, &c.

Group 3.—Nos. 1 and 2 represent badly pruned trees. 3 and 4, similar trees properly pruned with a clean slanting cut, the latter showing the cut partially healed, which would throw off water, &c. Figure 5 shows the angle of the cut.

Group 4.—Long handled pruning saw, a most useful implement in forestry operations. It enables the forester to reach high above his head and saw off boughs or dead limbs, &c. The handle may be any length required.
As bush fires are less fierce at night than in the day, night-time is generally chosen to extinguish fires when practicable, and fire-breaks are always burnt off at night-time.

The practical results of fire protection were highly creditable to those foresters who had taken precautions as above, and Messrs. La Cerche, Gear, Code, Ferrest, and Stoney did good work in this direction; and by the well-directed efforts of the various foresters fires upon the State forests were not of a serious nature.

About 100 fires were reported, but these were suppressed at once, and only trifling damage was done. The cost of engaging extra men was very small, and the outlay was fully justified by the great good achieved, as several extensive conflagrations were stopped in good time. About 21 miles of fire-breaks were burnt in the various forests.

SUGGESTED REFORMS.

The present system of licence is a wasteful one and leads to constant abuse. The anomaly must be apparent of allowing a splitter the right to cut down trees for a period of three months for the sum of 5s. For this amount he can cut down trees 300 feet high, and if one does not suit him he can leave it, or select another, or take out one length and leave the rest to rot.

The royalty system, under which each tree is bought from the forester in charge, who marks and values it upon a royalty basis, at so much per cubic foot (no one being allowed to touch a tree unless marked and branded by the forester for that purpose) is the only remedy for the waste caused by the splitter and sleeper hewer.

Of course such a system entails the appointment of a forester for every State forest, and where a large number of mills are at work, assistant foresters; but the greater revenue derivable from the royalty system would amply pay for the extra supervision required. The royalty fees may be fixed low, but the waste would be stopped, as splitters would not care to buy trees, even at a low rate per cubic foot, because the loss in that case would fall on them and not upon the Department. The splitter would have to pay for the whole tree, less allowances made to him for sauls, hollows, or rotten timber.

The sleeper hewer should be excluded from the forests. His trade is to select young timber, which in three or four years would become fit for the saw-millers, and when a sleeper hewer gets into a forest he selects all the young timber and leaves the rest, and, as a necessary consequence, very often drives out the saw-miller. His stock-in-trade consists of an axe, a Saul, and set of wedges; yet he can, by means of a 5s. quarterly licence, start near a saw-mill and cut down the best of the timber, and, perhaps, ruin the saw-miller, whose plant has cost thousands of pounds.

The area system has its abuses, but the principle is a good one. A saw-miller may take up 1,000 acres as a special area; no one else has any right to cut over this area; no splitter or hewer may enter thereon. For this privilege, the saw-miller pays from £5 to £10 per month. If this sum were paid all the year round, there would not be much cause for complaint, but, owing to floods and the method by which the areas are cleared of the timber, they are generally held for a few months only and then abandoned, to be again taken up at some future time.

Next to the royalty system the special area licence is undoubtedly of value, but, in order to prevent certain abuses, it is requisite that licences should be issued to the fallers employed on these areas, because under existing conditions there is nothing to prevent a saw-miller putting 100 men to fell all the timber in a few weeks, and then abandon the area, and thus escape the rental of £5 or £10, as the case may be, per month.

The number of fallers should be restricted and licences taken out for each in addition to the area licence fee. This would stop the grabbing of timber and yet give a fair chance to every saw-miller, who would then cut his timber as required, and not lose his neighbour to see who could secure the most timber.

There should also be a time limit to the occupation of the areas, and a saw-miller should be compelled to clear off every matured tree which would cut into timber before being allowed to abandon the area; when abandoned that area should be closed for a rotation of years, say, 5, 10, 15 or 20, according to the growth of saplings upon the area at the time of abandonment.

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If this plan were adopted, the result would be that blocks would be always coming on for the saw-millers, whilst the timber therein, after the first clearing, would be nearly of the same age and size. This is most important, and is the true way to conserve the redgum timber. The greatest importance must be attached to the question of closing the redgum areas for a certain number of years, in order to let the forest produce matured timber.

Under the present system, the saw-miller is always "pottering" about the area, with little or no satisfaction to himself or to the Department. His timber is scattered, and very little of it, whilst the labour is expensive. Under the closing system the timber would grow up close together, and where one tree is available at present, twenty would be available under the rotation system, if properly worked by the Department. Working plans of the various forests would be required, showing the blocks, and full particulars of same noted thereon.

The closing of timber areas worked over by saw-millers should become the fixed policy of the Department. Portions of State forests could thus be closed for fixed periods, shown on the plans, and, when the timber was sufficiently matured, thrown open to the saw-miller. Say in 10, 15, 20, or 25 years, according to the rotation agreed upon, which is determined by the state of the timber at time of closing.

Certain forests could come under the special area system, and others under the royalty, when gradually the latter could be brought in, and become law.

An important part of forest reform consists of systematic thinning out of the young saplings in the indigenous forest. This most important work could only properly be carried out by men employed by the Department. This thinning system as has been mentioned, has already been commenced, and is giving thorough satisfaction.

It is not proposed that these reforms shall be simultaneously carried out all over the colony, because men have to be trained in the duties of supervision; all this takes time. It is therefore proposed to inaugurate the new system at Gunbower, Creswick, Maryborough, and Sandhurst. The first-named State forest offers exceptional advantages, because the old timber has to a large extent been cleared off, and what little remains can be disposed of by the Department under the royalty system, and the saw-millers now in the forest can carry on for some years to come, buying their timber from the Department at a fixed rate per cubic foot.

The efforts of the Department would be centred in the disposal of the old trees as fast as possible, in order to induce a fresh growth of saplings, to take the place of the old trees, by the natural process of regeneration.

Having brought Gunbower State Forest under the systematic treatment advocated above, Barmah and Yelimsa could be taken in hand, and so on all through the valuable Murray frontages so wisely reserved in the past.

It is to be understood that there is no intention of keeping a single matured tree from the saw-miller. When the timber is matured it can go, but not otherwise. When, however, a forest is closed, or a portion of it, the timber fit to be cut shall be so cut by the employés of the Department, and not by the saw-miller. This is done to prevent wanton destruction of saplings by careless felling of trees or careless driving of bullock teams within the closed area. In the open forest the saw-miller will cut the trees down. By thus bringing the royalty system gradually into force, and allowing the saw-miller to clear these areas of all matured timber above 24 inches in diameter, during, say, the next twelve months, hardship would not ensue to any serious extent.

It must be understood that as every tree matures upon a State forest, it is directly to the interest of the Forest Department to get rid of it to the saw-miller, because every year it stands the tree is deteriorating through decay; and, at the same time, preventing a new growth of saplings which would spring up in its place.

Gunbower Forest under closure for, say, fifteen years, would fairly astonish those not acquainted with the rapid growth of our eucalypts, and thousands of trees would be fit for the mill in that time.

With regard to royalty, it should be evident that the saw-millers have no real cause of complaint in regard to this matter, because those on the Murray are now paying royalty fees of 10s. per 1,000 superficial feet to the New South Wales Government, and by far the greater quantity of redgum used is from the New South Wales side of the river.
This quite disposes of the objections raised, that the trade would be ruined if royalty fees were imposed here and Gunbower closed to them. Even if this were the case, it is only postponing the evil day, which must come in the long run, when the redgum shall be quite exhausted on the Victorian bank of the river, and that, under existing conditions, is only a matter of time.

The saw-miller, with the timber-getter generally, must recognise the importance of forest conservation on systematic lines. Therefore the necessity for a radical change of existing conditions is self-evident over a system which is wasteful, does not provide for the future, is opposed to common sense, and therefore should be abolished.