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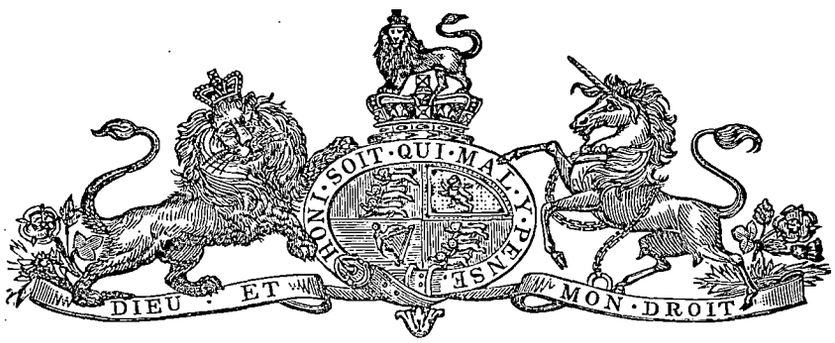
1887.

PARLIAMENT OF TASMANIA.

WOODS AND FORESTS OF TASMANIA:

REPORT OF THE CONSERVATOR OF FORESTS, 1886-7.

Presented to both Houses of Parliament by His Excellency's Command.



Crown Lands Department, Hobart, 25th July, 1887.

SIR,

I HAVE the honor to submit my Second Annual Report upon the Forests of Tasmania, to June 30th, 1887; also an exhaustive Report upon "The Systematic Conservation of the Woods and Forests of Tasmania."

The first shows the extent of preliminary work effected in the examination of the Forests of the Island, whilst the second deals altogether with the future benefit which might accrue to the Colony from the carrying out of a regular system of Forest Conservation, if dealt with in a liberal spirit.

In this latter Report I have gone fully into the subject, and can only trust that its very practical nature may atone somewhat for the wearisome details and the great length of the Report.

I have the honor to be,
Sir,
Your most obedient Servant,

GEO. S. PERRIN,
Conservator of Forests.

The Hon. E. N. C. BRADDON, *Minister of Lands and Works.*

REPORT upon the Systematic Conservation and Management of the Woods and Forests of Tasmania, by GEORGE S. PERRIN, F.L.S., *Conservator of Forests, (Fellow of the Royal Society of Tasmania.)*

IT is now universally admitted that the systematic and profitable carrying out of the Forest conservation of any country can only be effected by large areas of forest land, or by means of blocks of land, not necessarily timbered, specially dedicated to that purpose, in order that strict supervision may be carried out upon every such area or block, to secure economy of management; the protection of forests from their greatest enemy—fire; to prevent unauthorized entry, and the removal of timber without the payment of licence fee or royalty dues; also the regulation of grazing, and the economical and systematic collection of timber fees, and economy in the expenditure of public money by the concentration of labour upon State forests, instead of spreading operations over a wide, and, in most cases, unprofitable area of country.

Forest conservation best carried out by means of large reservations of forest and other lands specially dedicated to the purpose.

The authorities in support of the above system are:—

1. *The Forest Conservation of Switzerland,* by means of Communal and State Forests, that is, forests acquired at great expense by the Government and various Communes from (in many cases) private owners, and the buying up of forest "rights" possessed by these owners for ages; the removal of timber from the forests under a regular rotation system, and the re-planting of the land. The management of these forests and plantations is probably the finest in the world.

The State and Communal forests of Switzerland probably the best managed in the world.

Indian system of Forestry.

2. *The Indian System.*—The demarcation and laying off of immense tracts of forest land; the protection of the timber from fire; the removal of trees in regular rotation at periodical cycles or intervals of time; the raising of revenue by means of royalty fees; together with the appointment of Chief Conservator and Deputy Conservators (numbering about 300), Foresters, and a perfect army of forest guards, the latter chiefly natives.

The French system of Forestry.

3. *The French System of Forestry*, under highly trained men, specially educated at the Forest School at Nancy. The reservation of the forests of the country; their scientific culture and improvement; the systematic and regular removal of timber under known laws and regulations, in force for a century or more.

British and Colonial system.

4. *The British and Colonial Systems of Forest Management*, including the formation of plantations; the care and proper management of virgin forest lands, of vast extent and importance to the Colonies.

Besides India, Forest Conservation is carried on under Government sanction and expenditure in the Islands of Cyprus and Ceylon; whilst Canada, Cape Colony. New Zealand, and the various Colonies of Australia have inaugurated schemes of Forest Conservation which will materially affect the future welfare of such countries in a marked degree, and more than compensate the various Governments for the outlay incurred.

The benefits of the system in South Australia.

As South Australia has taken the lead in Forest Conservation (being in dire need of it) in the Australasian Colonies, and is proving indisputably the benefits to be derived therefrom in the most emphatic manner, besides gaining year by year in popularity, not only in the Colony itself, but also among her neighbours, it is only just that the system there in vogue with regard to the practical administration of the forest lands should have great consideration, in consequence of the undoubted success there achieved; and in order that anything I may advance with reference to the South Australian system may have due weight, I may mention incidentally that I was for six years connected with the management of three of the five or six leading Reserves of the Colony, and that these three State forests were the only timbered lands from which revenue in connection with the forests of the Colony was derived.

The South Australian system briefly stated, then, is:—

The objects of the South Australian system of Forestry.

1. The laying off of State forests in the best timbered country, and plantation reserves in various parts of the bare or thinly timbered districts for the production of a superior class of timber to that growing indigenous to the locality; its sale under regulation; the collection of royalty and fees from licences, &c.; the natural regeneration of forest lands; the regulation of grazing, and the collection of fees thereunder: the objects being as follow:—

Supply of timber to public works—first-class and true to name.

A. To supply a continuous and known quantity of first-class timber, *true to name*, to the Government for all Public Works, including the supply to Government Contractors of timber for railway sleepers, all of which are cut under the direct supervision of the Forest Officers.

Supply to farmers and others.

B. To supply building material, firewood, &c. to the holders of adjoining farms and the inhabitants of the towns or villages in proximity to such State forest.

Climatic reasons for State Forestry.

C. For climatic reasons; the improvement of the rainfall; the prevention of floods, in the retention of the water in the soil instead of rapidly flowing away, as is customary on bare exposed places; the toning down of the winter cold, and the cooling of the heat of summer, by means of the respiration of leaves and their exhalations and influences in the decomposition of malarial and other effluvia. In the immediate effects produced by trees in preventing by their shade, shelter, and fibrous roots, landslips in hilly or mountainous country, and the vegetable soil from being washed down the slopes of mountain sides into the valleys below; by the shade and shelter provided farms and other properties from prevailing winds or the effects of cyclones, together with the increased fertility afforded such lands by the moisture always to be found in the neighbourhood of forests.

Administration of the reserves.

2. The direct management of each State Forest by means of a Forester or Officer in charge, with Staff under him, consisting of Nurserymen, Foreman, and Labourers as required. For example, Wirabara Forest employs a Forester, Nurseryman, Foreman, six to eight Labourers, and several Cadets, or probationary Foresters, practically learning the duties of forest management.

Nurseries, and instruction of the cadets, &c.

3. The establishment of a Forest Nursery for the rearing and propagation of trees for the plantations and to give away to farmers; the instruction of the Cadets in nursery work; the erection of forest buildings, and houses for Foresters, Nurserymen, and Cadets, &c.; of sheds, propagating pits, fencing, and the planting of seeds.

Planting of bare exposed plains for shelter to farms and stock.

4. The planting of bare open plains in the interior and on all the reserves; in some places the grubbing out of inferior trees, and the re-planting of other valuable non-indigenous trees in their places.

Thinning and pruning of forest

5. The thinning-out of all ill-shaped or stunted saplings or old useless trees; the destruction of scrub; the sale or disposal of dead-wood to encourage "natural reproduction," and to open

up the forest to the influences of light and air; also a system of selling the fully-matured timber by "natural selection," *i.e.*, the removal of matured trees *only* within a given area, and the *marking* of all such trees as they are sold by the Officer in charge of the reserve; as well as by the strict supervision of persons engaged in felling timber in the various forest reserves. — trees, and marking of all matured timber prior to felling.

6. The leasing of forest reserves in suitable places under long leases and certain fencing conditions. All receipts from grazing in plantations (horses only), on forest reserves (sheep only), timber sales, &c., are credited to the Department; long leases being granted for the term of fourteen years, giving the Government right to resume at any time on payment for all improvements (under arbitration), all such to be delivered up, reasonable wear and tear being allowed, in good order and condition at end of term. — The leasing of forest reserves, and receipts therefrom.

7. In the early summer months gangs of men are sent into the forest under the charge of a Foreman or experienced Cadet, and these prune and thin out useless saplings, cut down old rotten trees, pile them together in heaps, which are then burnt out of the way, or sold for firewood at very low rates to induce rapid clearance. By thus serving any portion of a forest the result is that only the best and straightest timber is left standing. After subjection to such treatment, more especially when some millions of trees undergo the process, it is surprising the effect produced on a forest, such improvement being wrought at a small cost when compared with the valuable after results to the timber as a whole. — The improvement of the forest by gangs of men pruning and cutting old useless trees, &c.

8. Grants of money are annually voted to the Department, and all the expenses are paid from this vote, except the salary of the Conservator, who is on the Fixed Professional List. — Expenditure.

The above comprises the chief points of the South Australian system of dealing with the forests of that Colony; and after a lengthy experience of the Colonies, as a whole of 25 years, I do not think a better nor a less expensive one could be inaugurated.

After six years' experience as a Forester in the South Australian forests, and having closely watched the effects of the working of that system, I have no hesitation whatever in recommending a somewhat similar method of dealing with our Tasmanian forests, with certain modifications necessary in consequence of the very much smaller revenues enjoyed by this Island Colony, and differences of forest resources, &c. — A modification of the South Australian system of forest management for Tasmania advocated.

In the further treatment of the matter as a whole, I deem it advisable to treat each subject for consideration under its respective sub-head or section, as follows:—

Section I.

The Proper Selection of State Forests or Timber Reserves.

The selection of State forests in any country is a matter of grave moment and of paramount importance to the future of its timber industry, inasmuch as the proper selection of these reserves dominate in a great measure the future well-doing of the community with regard to its industries, and as affecting the general prosperity at large; and doubly is this so with regard to a small insulated community such as Tasmania, which depends so much upon the shipping interests, because it is plainly to be seen that if the timber industry be swamped through the widespread location of the people on the lands to the destruction of the fine timber thereon, the occupation of the shipmaster, of the trader or agent, of the sailor, and of the hosts of people dependent upon the shipping interests, will be almost ruined, and Hobart as a timber port will come to a very low ebb indeed. — The importance of the careful selection of State forests as affecting the timber industry of the future.

It is a generally recognized fact that unless a certain proportion of the land is allowed to remain under timber, all kinds of evil effects are bound to ensue in the course of time. These causes may be slow, but they are none the less certain in their effects, and desolation and ruin to trade and the industries of a country invariably follow the entire or extensive denudation of its forest lands. A notable instance of this occurs in the island of Cyprus. — A certain fixed proportion of forest should be reserved of the total area of a country.

It is, therefore, highly important that State forests should be well and carefully chosen; that a proper judgment and knowledge of the effects produced by woodland in masses of the meteorological and hygienic properties of forests should be carefully exercised, as materially affecting the comfort and well-doing of the people in their vicinity.

All these are matters of grave importance and of very great national interest to the people of any country; therefore the selection of the State forests should be effected with special care, having a due regard to the utility and effect of the reservation upon the country around. In declaring State forests in any locality, the following conditions should be observed:— — Conditions required for the proper selection of State forests.

A. The direction of the prevailing winds; the present and future requirements of the neighbourhood as regards timber supply; the altitude of the hills, and the shelter afforded forests by such; the water supply of rivers and their tributaries, the watercourses, and more particularly the head waters of the same, having regard to the effects produced by the erosion of rocks, and the carrying away of "humus" down the slopes of the mountains and the deposit of *detritus* into the mouths of rivers or harbors by means of flood-water from the higher to the lower levels, and the

numerous landslips which invariably follow the denudation of mountain slopes and hillsides of their timber, all these silting up and obstructing the navigation of streams and harbours, &c.

Timber for public works, &c.

Climatic influence of "State forests."

B. The timber requirements of the neighbourhood with reference to Public Works in the first place, and, secondly, of the wants of the people living in or near the adjoining towns. The climatic influences of trees in masses, in giving shelter and warding off the cold winds from the interior, and protecting the agricultural lands from evils incidental to the extensive deforestation of whole districts in the highly reprehensible practice of "ringbarking" trees, one fraught with much danger to pastoralists as well as to agriculturalists, though profitable at first in the increase of grass, at the *expense of the soil,* but eventually prolific in disease, increasing as the years roll on in the stunted growth of stock and the lessening of their increase; and all this directly traceable to the want of shelter from the cold bleak winds of winter, appearing at length in the various forms of disease known as fluke, hydatids, and lung-worm in sheep, and other diseases in cattle.

C. The increase of the timber supply for public and private use; the regular removal of matured timber by "rotation of crops;" the planting of useful timber trees in place of useless scrub and stunted indigenous timber, together with the protection of the young growing saplings.

The systematic removal of timber and planting of useful trees.

The abuses of the present licence and survey fee system.

D. The systematic disposal of forest produce with a view to the raising of "revenue" on a sound commercial basis; that is, the receipt of the actual *State* value of the product on the ground from the consumer, in contradistinction to the present ridiculous system of giving a man the right to cut, waste, and burn—if he like—whole acres of valuable timber in the removal of a dozen trees or more, or for the paltry consideration of the survey and licence fee of 20*s.* per month—as a man can under either system burn, ringbark, root out, or destroy hundreds of acres of Crown lands adjoining his own, and thus spoil for future use beds of the most valuable timber lands the Colony possesses.

The sale of timber for revenue.

Forest reserves should be near water, rail, or road carriage, or centres of population.

It is of the utmost importance to the future working of the forest areas with regard to the raising of revenue, their utility to the State, the economical removal of timber, and its sale to the best advantage, that all forest reserves should be situated as near as possible to water or rail carriage, and failing either, to roads or the centres of population; always bearing in mind, as the years roll on and settlement increases the timbered lands will quickly disappear and give place to farms or grazing areas, without a single thought on the part of the occupiers of future timber supply for even domestic purposes.

It is in the future aspect of the question that the wisdom of reserving large, well-defined State forests will show the people the value of forethought in this matter, as they will then be only too glad to fall back upon the Government State Forests for wood for domestic use and the shelter provided by them for their stock, to say nothing of having the comfort and satisfaction of an abundant and ever available supply of timber at a moderate price, together with the advantage of increased rainfall induced by the presence of trees, and the consequent increase of crops.

The divisions of State reservations.

In the laying off of reserves, it is proposed to make the following subdivisions:—

1. *State Forests* .. { (*a*) For timber and revenue purposes. (*b*) Climatic, and the preservation of head waters of rivers, lakes, &c.
2. *Timber Reserves* { (*a*) Mining on permanent goldfields. (*b*) „ temporary „
3. *Plantations* ... { (*a*) Wattle growing. (*b*) The introduction of valuable trees.
4. *Firewood Reserves*—For the supply of City or Township.

State forests.

It is proposed to make the first of these of large area, to be permanently set apart for timber production, and where the work of a Forest Department will be carried on chiefly. On these fencing and building improvements, when required, and all forest work connected with the rearing of trees in the forests or in the plantations, will be carried out under strict supervision. These forests will be closed to all timber operations except that known as "natural selection," or the choosing of old or thoroughly matured trees, over recognised areas, in given cycles of years.

Working plans, &c.

Natural regeneration.

These areas to be determined in rotation, and shown on a working plan of each State forest, and no tree will be allowed to be cut unless the same be thoroughly mature, and all those cut to be marked and branded by the officer in charge. The young trees on these areas will, by judicious thinning out and the clearance of surrounding scrub, be stimulated into a healthy growth, and thus the "seedlings" will thicken up in immense numbers and form extensive natural forests, and by their dense growth keep down scrub and other rubbish, aided by the Forester in charge and his men. By thus treating the forests, the necessity of expensive plantations is almost entirely done away with, except when it is desired to introduce and grow trees of a more valuable kind than those indigenous to the Colony.

State forest to be divided off into "working areas."

The State forests will be divided off into working areas sufficiently large to permit the establishment of a mill upon each area, if considered desirable, and every such mill shall be subject to all duly authorized forest laws or regulations. Working areas to be taken up in rotation, and as soon as all the timber *(matured)* has been

removed from the block so worked over, it is proposed to close it for a long period of time, say forty years, during which periodic thinnings of the young trees will take place, in order to give room, light, and air to the remainder, until the trees so treated arrive at maturity, when they in turn come in once more and are cut down and sold, when the same process is repeated *ad lib.*

Rotation of areas of woodlands.

This is a practical system of rotation of area of crops on the natural selection basis. Its extreme simplicity is in its favour; and, as far as my experience goes, it is the only course open to the Colonies, considering the peculiarly dense nature of the forests of Australasia, and the requirements of the people.

"Natural selection."

By thus treating our State forests, we shall always have an abundance of first-class marketable timber available, and that at a minimum of cost to the State, as the planting of our native trees will be rendered unnecessary, that operation being performed by dame Nature herself, aided and fostered by the skill and knowledge of the Forester in charge.

Regular supplies of timber secured.

2. *Timber Reserves.*—These may be of a temporary character for the use of miners on goldfields of a limited or unproved nature, or where the population is migratory in its habits; but in the case of permanent goldfields, mining reserves must partake of the character of State forests, and eventually merge into them; they should be kept intact, and strenuous exertions offered against their curtailment or disuse. Under proper management they should grow all the timber required for the mines, including firewood: as, however, I have devoted a separate section of this Report to this subject, I shall pass on to the next.

Timber reserves for mining purposes.

3. *Plantations.*—For the purpose of growing valuable non-indigenous trees, enclosed plantations are absolutely necessary, and should be formed, when intended for revenue purposes *only*, in the State forests, as the most careful and constant supervision is necessary, because it is only in these when under supervision that this constant attention can be given, and at a minimum of expense, as the attention bestowed on a State forest can also be extended to the plantations growing therein without additional expense, and at the same time general forest work can go on, such as digging holes for trees, pruning, and the systematic thinning out of young timber at various stages of growth. This can only be done by intelligent and skilful subordinates, practically acquainted with forest work, under the direct supervision of the Conservator of Forests.

Plantations in State forests.

Supervision by skilful men required.

Should Parliament vote funds for the purpose, it is proposed that when the chief State forests are demarcated, and boundaries mapped out, that plantation enclosures (say 100 acres) shall be fenced and planted with the best and most useful timber trees of the old world, as far as the soil is found suitable to their growth.

Proposed plantations if funds voted, &c.

In the event of these plantations being formed on one or more State forests, it will be necessary that a caretaker or acting forester be appointed over the forest in which the plantation is formed.

Acting Forester required.

In view, therefore, of the limited sums which may be voted for this purpose, it is not advisable to scatter these plantations over the various State forests, but choose one or two of the principal reserves, and gradually extend operations as finances improve and the years go by.

Plantations of great value may, however, in exceptional cases, be made in places where it is not necessary to proclaim a State forest. Maria Island offers just such an exception, as here considerable areas of land might be specially reserved for the growth of Conifers and other European, American, and Indian trees, which would thrive magnificently in the Italian-like climate of that favoured island. Here a hundred acres annually could be enclosed and planted, whilst under the patriarchal rule of Signor Bernacchi the supervision required would be almost nominal, as I am sure the cordial co-operation of the Signor would be gladly given in so good and patriotic a cause.

Planting in special localities.

Maria Island especially suited to the growth of European, American, and Indian trees of great economic value.

So far I have spoken only of plantations of trees likely to prove valuable on account of the timber they may produce; but now I shall notice a most important economic vegetable product; viz., wattle-bark. In this portion of my report I shall only refer to the matter incidentally, as the whole question of the wattle-bark industry is too important to be dismissed with few words. It is therefore my intention to compile a special report, in which I shall deal most fully with the whole subject. Plantations for the growth of wattles could readily be formed all along the eastern coast; and the neighbourhood of Swansea offers peculiar facilities for the prosecution on a large scale of this important industry. Both the black wattle (*Acacia decurrens,*) and the silver are indigenous; the latter from its useless character as a tannin-producing tree—or its low value rather—is on the increase, and threatens to entirely supersede the former if not checked in some way. This tree, silver wattle (*Acacia dealbata*), should be destroyed, and only the black wattle allowed to grow.

Wattle plantations advocated on large scale on the eastern coast of Tasmania

In the event of Government wattle plantations being laid down on the East Coast, it will be found necessary to destroy silver wattle, and near the coast line plant the South Australian or golden wattle (*Acacia pycnantha*), which is the finest tannin producing tree in the world, and is specially adapted in every way for systematic and extensive planting, as it is tractable under cultivation, and stands pruning to any extent. Both of these wattles require 8 years' growth before they are ready to strip, and in planting the latter care should be taken to plant very much closer together than in the case of the former; 10 feet is a good distance apart for black wattle, and 6 feet for Adelaide wattle. After *once* sowing, a plantation should reproduce itself as soon as the first crop is removed, but this is a slovenly system, and I cannot recommend it, as I prefer to *plant* the seed for each crop raised, which can be done at a nominal cost after once a plantation is fairly started. In places where danger of fire exists, it is well to divide

Government wattle plantations—the introdnction of the golden or Adelaide wattle (*A. pycnantha*).

Adelaide wattle to be planted 6 ft. apart, black wattle 10 ft., in rows.

Fire-breaks or roadways round wattle blocks.

the plantations into 10-acre blocks, with roadways right round each block one chain wide; these serve as fire-breaks, and also give access to the crops for the expeditious removal of bark, besides affording open spaces for stacking the bundles as they are brought from the trees. But it is as fire-breaks that the roadways are mostly required, as they can be readily burnt off or ploughed every summer, and thus afford admirable protection to the blocks and the crops as a whole.

Tannin matter in highest state of perfection at end of eighth year from sowing.

The tannin extract is present in the bark, and is in the best condition at about the end of the eighth year; after that it rapidly deteriorates. Hence the importance of stripping the bark just at the tree's maturity.

In connection with the subject of the wattle bark industry, I feel it my duty to direct special attention to the present system of licences for wattle bark stripping, and strongly advocate that it be done away with, as it is prejudicial to the best interests of the Government. In my opinion "wattle districts" should be proclaimed, and all lands disposed of by tender or by public auction in blocks of 1000 to 2000 acres each. My reasons for urging this course may be found in Parliamentary Paper No. 158, Session 1886, "Bark Stripping Licences."

Firewood reserves for cities and towns.

4. *Firewood Reserves.*—These are small areas specially reserved in the neighbourhood of cities, towns, and villages for the purpose of growing firewood for the use of the people; and as the advantages of declaring these reservations are so obvious, more especially in the vicinity of centres of population, I need not enlarge upon the subject, except to point out that when they are declared they should be made of a permanent character, and placed under central official control, when proper regulations would be devised and issued to local bodies to act as caretakers and collectors of revenue, &c.

Saw-mill reservations.

Sawmill Reserves.—These are of a temporary nature, and are intended to protect the interests of the millowners by preventing the encroachment of the selector upon sawmill areas in forest country.

This is entirely a matter for the Legislature of the Colony, and forms no part of the forest conservation scheme, and is only noticed here in consequence of a special report having been prepared upon the subject, in which I have dealt exhaustively with the matter.

These sawmill reservations must *not* be confused with State forest or timber reserve conservation, because in the course of a few years the land sought to be reserved must in the natural course of events be eventually occupied by the selector, when the sawmillers must either close or remove their plant to the State forests.

The main object to be achieved by these reservations is the removal of the first-class timber off these lands *prior* to selection, in order that the timber may be removed at a profit to the Government as well as the millowner, and allow the selector to come *after* and take up the land on its being partially cleared.

Saw-millers to pay Royalty on blocks of land at a valuation or lump sum per block per annum.

The sawmiller to pay a royalty on the timber-carrying capacity of the block he leases, at per 100 feet on a fixed valuation, or a lump sum per block of 50 acres per year, the timber to be cleared off in a given number of years.

This is an important matter, and should be dealt with in the present Session of Parliament. At present thousands of acres of the most valuable timber lands the Colony possesses are being yearly hacked and destroyed by the fires of the small selector, when, by some such system as is above advocated, the lands might be first cleared of timber, and then sold as *improved lands.*

Care in selecting forests.

In concluding this portion of my Report I would simply point out that if forest conservation is to be carried out successfully, and at a future profit to the Government as well as to the credit of the officials in charge of it, then it is essential that State forests should be selected with a due regard to the interests involved. It is a common and very fatal error to suppose that forest trees can grow anywhere—the poorer the soil the more suitable for forest reservation. This is only true when conservation is looked at from an ornamental or climatic point of view.

Good soil necessary for the remunerative cultivation of trees.

Yet, if tree-growing is to be made a commercial success, and is undertaken for revenue purposes, it is obvious to the meanest comprehension that the richness of the soil is a *sine qua non* to success; that where the soil is rich in *humus* there trees will flourish and produce good timber, if the subsoil be deep enough and of a suitable character.

Soil and geological conditions of growth.

Trees, like animals, are gregarious in habit, and the geological conditions required for their growth vary with the varieties of trees to be introduced; some succeeding on sandy ground with clay subsoil, and others on chocolate or rich black soil of valleys or river flats; others, again, on mountain sides of great altitude. From these facts it is, I think, conclusively shown that State forests should be chosen in places where the natural-grown timber exhibits, by its enormous bulk and great height, that the land or soil is peculiarly adapted to its growth.

Where local timber is good, costly experiments in timber growing not required.

In such cases there is no need of costly experiments, testing of soils, and the spending of money in experimental plantations (except in the case of some introduced trees.) Nature teaches us a valuable lesson on the spot, and it only remains for us to take advantage of it. It is necessary in the selection of forests for State purposes to note the nature and chemical composition of soil at various altitudes, the position they occupy with regard to means of transit or outlet for forest produce, also the influence they exert on streams.

The effect of the destruction of forests on rivers and navigable waters.

This latter is very important, as it is a well-known fact to all experienced foresters that the drying-up of streams *has* followed the denudation of the timber lands from the banks of rivers or headwaters of the same, not only in causing a diminution of the water supply of these streams, but also in *silting up* waters *at one time navigable*,—thus bringing ruin and dismay to residents of seaports, maritime cities, and towns, and costing enormous sums for dredging operations. Here

is a fact for our Marine Boards to dwell upon, especially as regards such rivers as the Tamar, Mersey, and Leven. Continue the deforestation process a few years more along the banks of the Mersey, and cut down the timber on its head-waters, and plenty of employment will be found for half a dozen of Messrs. Kennedy & Sons' steam dredgers in future years, instead of one, as is now the case.

The "scour" of the mouths of rivers largely dependent on the timbered lands along their banks.

These facts are matters of history, and can be readily proved if required, and they should be borne in mind by the residents of Tasmania, and more especially by those of the north-west and northern portions of the Colony, as the very *existence* of the streams is threatened, which now run so strong and clear, and with a scour powerful enough to keep clear a passage to the sea. Destroy the timber in the same ratio in the next five or six decades as has been done in the past 50 or 60 years, and I venture to assert that the then condition of the rivers will considerably astonish persons who might have seen them in their prime, when the rich soil, which, in the course of a few years, may be or had been producing grand crops, will be precipitated into the rivers and form the mud-banks, requiring the aid of a dredger to take it out to sea.

Cosmical influences of tree masses work silently in the interests of population.

It will be readily seen that State forests must *not* be left to chance selection; the varied interests at stake are far too grave to trifle with the subject. It is not simply a question of timber supply to a few splitters or a few saw-mill proprietors, nor even a matter of the convenience of the agriculturalist or pastoralist, or the supply of firewood to the town and villages, or the conserving of the water supply of a particular city or locality; but it is when all these wants are taken in the aggregate, together with the peculiar cosmical influences of forests, working in many ways silently, and for the most part unknown to the great majority of people, who see the *effects* produced, but not the *causes*, that the lesser wants of individuals or of localities fade into comparative insignificance when compared with the grave results which are of stupendous importance to the trade, industries, and vital condition of the population of a country, and may be averted by rigorous repressive measures in lands where such influences are recognised.

Reserves to be selected in places suitable for them.

It is therefore proposed to select State forests and plantations, including timber reserves, in various parts of the Colony, in places deemed suitable for the same, care being taken to interfere as little as possible (except in their own interests) with the settlement of the agricultural lands and possible future injustice to landholders and farmers through the extensive destruction of timber.

To be closed for certain period.

Some of these State forests may be closed for a number of years in order to allow the young trees to grow up thickly, and where old timber exists it can be worked out on the natural selection system, being marked and measured by the Forest Officer on the spot, and sold by the 100 superficial feet or at per cubic foot (Royalty) as in South Australia.

The clearing off timber from defined blocks.

By these means certain defined blocks are cleared of the old or matured trees, and the young growth is left to spring up spontaneously, and thus take the place of those removed. This system is simple and effective, and combines the advantages of strict supervision with the expeditious removal of the old trees, as none under a certain girth are allowed to be removed. When a block has been thoroughly gone over, the useless remaining trees may be either ring-barked or cut down, all rubbish burnt off, and the block then left to spontaneous natural reproduction, receiving regular attention in the keeping down of scrub and periodic thinnings of the saplings as required. Thus this block will produce a crop of trees as near as possible of a like age, which will be allowed to mature; other blocks, in the meantime, being worked over and treated in like manner. In this way a scheme of proper rotation of crops is inaugurated, whilst regular attention is given to the pruning of young trees, and the judicious thinning out of the same, as part of the ordinary forest work.

The burning off of old trees and rubbish to induce spontaneous growth.

Young crop of trees nearly all of same age.

The best available timber lands should be chosen for State purposes.

In order to carry out this or, indeed, any system, it is imperative that the State should retain the best and most easily worked timber now growing on Crown lands, because it is the present wealth of matured timber which should yield a revenue sufficient not only to pay current expenses but provide funds for future expenditure as well, and should be looked upon as the reserve fund or *capital* of every State forest. Unless this be recognised it is not possible to carry on at a profit the conduct of State forests under a system of assigning nearly worthless third-rate land or rocky mountain chains for the purposes of tree-growing. This mistake was made in South Australia in one or two instances, and it has been proved so from the fact that the best and most flourishing results of tree-planting have been obtained from those reserves possessing first-class agricultural land, as at Bundaleer and certain portions of Wirrabara, whilst the inferior reserves, consisting of bare, rocky hills, or sandy, heathy, fern-covered rises, are but little the better for the expense they entail on the State by the cost of supervision, &c.

Good soil necessary for the growth of young trees.

Section III.

Administration.

When State forests have been demarcated, and properly surveyed, and plans of same drawn to scale, a thorough and close examination of each forest reserve is necessary—

Examination of forests necessary.

A. For the purpose of determining the quantity of matured timber on the various blocks, the best and readiest means of its removal with the least possible injury to the surrounding vegetation, and the cutting of tracks to give access to the forest.

Sites for buildings, &c.

B. The selection of convenient sites for building residences, and huts, &c. for employés.

Nursery.

C. The formation of a nursery or nurseries as may be required for the propagation and distribution of young trees in forests and to landowners generally at Government expense.

Roadways, &c.

D. The selection of proper routes for tramways to tap the timber contained in the various blocks in order to get it out to the best advantage.

E. The selection of plantation sites for the growth of introduced trees.

Forester in charge of reserve necessary.

In order to carry out such work as is above proposed, it is necessary that each State forest, as it is taken in hand, should be placed in charge of an active, intelligent, and fairly educated man, capable of directing and supervising the various forest operations in accordance with known forestal laws and regulations, under the immediate supervision of the Conservator of Forests.

Acting foresters to be employed until trained officers are available.

As specially trained men are not readily procurable in the Colonies, young active men might be appointed acting foresters for several years, until such time as cadets having special training for forest work are in a position to become foresters or officers having charge of individual State forests; and, where practicable, two or three, if situated at a reasonable distance from each other, and if only one of these be under active forest operations.

Cadets for forest work.

In order that properly trained men may be forthcoming in the future, and that skilled officers only may be employed in the forest service, it is, in my opinion, highly desirable that three or more cadets be selected from the best schools of the Colony, with the object of being specially trained in forest work.

Attainments.

These youths would be required to pass an examination—

1. As to their physical strength and powers of enduring bodily exertion or fatigue.
2. Educational attainments.
3. Good character.
4. Age not to exceed 16 at time of application.

To go through a two years' course at an Agricultural College.

These cadets on leaving school would be expected to go through a two years' course of instruction at one or other of the Agricultural Colleges (either Dookie, in Victoria, or Roseworthy, in South Australia,) or other approved place of known reputation where scientific agriculture, embracing forestry, is taught.

Subjects for examination to entitle to "a pass."

Cadets desirous of becoming officers of the Forest Department would be required to pass an examination in the following subjects :—

1. Simple Surveying, with use of Theodolite, &c.
2. Botany and Economic Forestry.
3. Elements of Geology,
4. Elements of Chemistry, } as applied to soils, manures, &c.
5. Book-keeping.
6. Levelling and Road-making, principles of, &c.
7. The Management of Stock, Machinery, &c.
8. A Practical course of Nursery work in the rearing and transplanting of trees.

Training of cadets in nursery work, &c.

After having successfully passed through a two years' course of instruction (a longer time if possible,) as above—together with a practical course of nursery work, ranging from six months to twelve, in some botanic garden or well-known first-class nursery, either here or in the other Colonies as may hereafter be arranged—during which time a knowledge has been gained of the sowing of seeds, the management of forest trees chiefly, and of plants generally, in their preliminary or nursery stage, of transplanting, of potting, and the sowing of seeds in bamboo tubes,—in fact, to nursery work generally as applied to tree raising,—cadets might then be drafted off in accordance with their testimonials of ability to the State forests in the order of their importance, and there take up the practical management of the forests under the immediate direction of the Conservator, when they would cease to be cadets after 12 months' forest work, and be known thenceforward as "Foresters;" the incentive to hard work at the Training Schools or Colleges being order of seniority according to the special ability shown in the results of their studies, &c.

Training for the position of "Forester."

Foreman required to overlook the work of labourers engaged in forest operations.

In the meantime, a steady, active foreman, with some idea of planting, should be employed on each State forest in which work is about to be inaugurated, in order that labourers may be under constant supervision, otherwise much damage may be caused to the forest if work be done hap-hazard and without due care. The labourers, with their foreman, should be permanent

hands, because work can always be found for a few men. When extra labour is required, men can be put on at any time, when the permanent labourers can, from their own practical knowledge, direct the work of new comers, and thus secure efficient discharge of duties.

Office.

With regard to Office work.—The Conservator being so much away from office, it would be requisite that assistance should be given him in the clerical work. For some time to come a cadet only will be required, who might thus qualify himself for a higher position as the work of the deparment progressed, or as planting operations assumed larger proportions.

The above is a draft outline of what I consider *ought* to be done to secure an efficient Forest Service. As it is important that no time should be lost, I make these suggestions, trusting they may be carried out, either in their entirety or with such modifications as may be found necessary to meet the exigencies of the service.

Results of forest work must be awaited patiently.

In the consideration of these proposals, it must be borne in mind that an enlightened system of forestry for any particular Colony is not to be grasped in a year or two ; time is an essential factor in the proper understanding and the effectual working out of any forest scheme. Trees are proverbially slow in growth, hence the results of forest conservation must be patiently awaited, because many unforeseen vicissitudes may arise to delay operations, and years must elapse before plantations become profitable to the country.

Caution necessary in forest planting at first.

For these reasons it is necessary that care should be taken in the preliminary stages of planting, or forest work, as undue haste or ill-considered plans may be productive of disastrous loss in future years. It is better, therefore, to proceed cautiously, and commence operations on a small scale at first ; as these become successful, gradually extend them, as our knowledge and experience of the Colony and its native products increases, thus keeping down the expenditure as low as is commensurate with the interests involved.

Power to Conservator.

If the forests of the Colony are to be properly protected in the interests of the Government, it will be necessary to grant much larger powers to the Conservator of forests than he at present possesses, to enable him to successfully cope with the difficulties connected with the inauguration of a new system in the Colony ; and drastic measures will have to be provided to meet and counteract the numerous *abuses* which undoubtedly exist.

Present condition of forests deplorable.

At present, affairs connected with forest produce of the Colony seem to be in a state of chaos, and the whole subject requires the careful consideration of Parliament, when it is to be hoped that stringent repressive measures will be embodied in a " Forest Trees' Act," in which severe penalties will be secured, and a criminal clause inserted to provide for imprisonment in certain cases.

Method of dealing with Huon pine on the West Coast.

The conservation of the pine on the West Coast is a matter requiring urgent consideration. The only feasible plan in dealing with the wild, unexplored regions of the West Coast is to declare districts, and allow the men within those districts to get the pine out the best way they can, and charge a small licence fee for the *right* to cut, and royalty on all the pine shipped from the nearest port.

Difficulties in the proper supervision of the pine-cutters.

It is utterly impossible to supervise the cutting in the present trackless condition of the bush ; and a man with 60lbs. of provisions strapped to his back, with tomahawk in hand, cutting his way through tangled " banera" or " horizontal," mile after mile, would be certainly not likely to trouble the pine-cutters with over much supervision. As districts become cleared of the matured pine, they may be closed, and others opened up in succession.

Gangs of men to cut out scrub and allow young pine to grow.

In places such as Kelly's Basin, and the mouth of the Gordon, where all the *old* trees were removed in the " settlement" days, areas could be set apart, and gangs of men got to work to thin out the immense growth of *young* pines which now cover the ground, and thus form natural plantations of this valuable tree on the spot, at no other expense than the labour of thinning and keeping down scrub.

The supervision of the waste lands of the Crown other than forest reserves.

The foregoing section only deals with forest conservation as applied to specially reserved lands. There is, however, another phase of the question, and that is, the supervision of the timber lands of the Colony unselected, and *not* reserved for any particular purpose—waste lands of the Crown.

Crown Lands' Rangers.

In a small Colony like Tasmania it is possible to place the whole of the timbered lands under one central and controlling head, but this entails a large amount of work not strictly in accordance with forest conservation, because it is necessary that special officers should be employed in district supervision. In the other Colonies these are termed Crown Lands Rangers ; here the work is best carried out by the Territorial Police.

The Crown Lands Bailiffs' work unsatisfactory as a whole.

The appointment of bailiffs is very unsatisfactory, as the duties of the position are performed in a perfunctory and careless manner (with a few honorable exceptions). I venture to assert that only about one-third of the men who make a living by splitting on Crown lands apply for licences ; the rest " chance it," or trust to the dense jungle of vegetation to hide their doings from the bailiff. The Territorial Police do good work in enforcing the licence system, but in many cases their work in this direction is capable of vast improvement. So long as the appointment of bailiffs is confined to the police there is not much harm done, but it is when these officers are appointed from the residents of country districts, receiving no pay, and merely

System works badly.

holding the position as being one of authority in a small community, that the evil appears, as these persons are practically their own masters, and are not amenable to supervision. The whole system wants revision, as it is working badly, and against the interests of the Government.

As matters now stand, a constable may be made a bailiff, and be thus, in matters relating to a bailiff's duties, independent of his Superintendent, whilst a private individual may possess more power than either.

I think all Superintendents of Territorial Police should be bailiffs by virtue of their position, unless cancelled by misconduct; and that when a constable who has been appointed a bailiff for a particular locality resigns or is transferred, his bailiffship should thereupon cease, and his successor be appointed in his room.

The supervision of the duties of Bailiffs of Crown Lands handed over to Conservator of Forests.

I allude to this matter here because the supervision of the duties of Bailiff of Crown Lands, with regard to timber only, has been handed over to me as Conservator of Forests and Crown Bailiff for the whole of Tasmania; and as the correspondence and the attention necessary to these duties cause a large increase of official work, I am naturally anxious that the system under which the work is carried out should be as nearly perfect as possible; hence these suggestions.

Mounted men for defined districts are required to properly supervise Crown lands.

Undoubtedly, if efficiency in the supervision of all matters connected with the forests of the Colony be desirable, then special officers, as in the other colonies, who are connected with the Police Force, and *mounted*, must be told off to certain districts, which they supervise thoroughly, having no other duties to perform, the whole of their time being devoted to looking after the timber and the various licensees.

Eight or ten such officers would thoroughly supervise the whole of the waste lands, excluding State forests, with which they would be in no way connected, except in the looking after of mining reserves or forests not under active supervision of forest officers.

Colony greatly benefited by such appointments.

I feel sure that if special officers be detailed for this work the revenue from licences and receipts from sales of seized timber would be many times larger than it is at present, whilst numerous existing abuses would be brought to light and rectified. The services of these officers could also be utilised by the Mines Department in the collection of licence fees and general supervision of goldfields; also the inspection and reporting on credit lands and pastoral leases, and thus do away with the present cumbrous Crown Bailiff system at present in vogue.

Greater power given to Conservator to enable him to deal decisively with abuses, &c.

In all these reforms it is evident that the power given to the Conservator must be such as will enable him to deal with forest matters in a vigorous spirit, and enforce regulations devised for the common good in a way which will create dismay to evil doers, and yet assure to him the moral support of the Government, the press, and the people, when the dissatisfaction of the few malcontents, to whom "the *present* is everything, whilst the *future* can take care of itself," and whose opinions being solely dictated by selfishness, can be regarded with the utmost indifference.

Section IV.

Plantations.

The formation of plantations.

The introduction and planting of valuable timber trees from various parts of the world into Tasmania is entirely a matter of expense. If money be provided in a liberal spirit there need be hardly any question of failure in the matter, as the climate of this Island is so eminently adapted to the growth of extra-tropical trees or plants—ranging as it does from the Italian-like climate of Maria Island and the East Coast to the almost semi-Alpine districts surrounding the Lakes of the interior and of the West Coast.

The selection of areas for tree-planting.

In selecting plantation sites, good judgment and a knowledge of the nature of tree-growth and their requirements in the way of soil, should be evinced by those taking the matter in hand, because if the soil be suitable, and trees be well grown, healthy young stock, and adapted to the site chosen for their permanent position, successful results may be looked for.

Healthy young nursery stock required for successful planting.

In planting forest trees, it is highly requisite that the young trees should have special treatment in the nursery, prior to planting out, in order to induce free *root growth*, as very much depends upon this for their future success when placed in their permanent positions. Trees for planting out should have plenty of fibrous roots, and unless this condition be observed, it is generally found that they fail or become stunted, turn yellow, and die off; hence the importance of rearing trees in the manner referred to above, together with the avoidance of plants with small tapering tap-roots, which perhaps have never been transplanted in the nursery since they were grown from seed.

In the planting of valuable timber for commercial purposes care must be taken that only the most useful and saleable timber is planted, that is to say, that most in use in various parts of the world.

It will probably take from 40 to 60 years to mature a plantation of pines—so that results of planting must not be looked for as a matter of a few years only. A certain amount of revenue might be obtained from these plantations within that time, in the sale of thinnings at periodic intervals—but the bulk of the tree crop would not be available before the time stated above.

Time required to mature plantations.

Tasmania, with New Zealand, above all the other Colonies, possesses advantages in facilities for timber production—its "exploitability," and means of transit afforded by the numerous navigable streams and estuarys of the sea around their coasts.

The advantages possessed by Tasmania and New Zealand over the other Colonies in timber culture.

The carriage is thus reduced to a minimum of cost, rendering extensive competition by the Colonies in the matter of timber growing, except for purely local use, well nigh impossible, when the character of their forests—the distance from navigable water—the heavy railway freights, and the additional labour in handling the timber so many times—is considered.

In the system of forest conservation proposed for Tasmania, the planting of valuable introduced trees will in future years play a most important part in the industrial products of the Island.

The planting of introduced trees advocated.

The formation of plantations in this Colony is rendered very much less expensive than in the other Colonies, as here *one* central State Nursery for the rearing and propagation of young forest trees only is necessary—or at most *two* for the whole Island—as trees can readily, and without loss of time, be transmitted from one end of the Colony to the other to the various plantations as required. Before planting operations can be attempted on a large scale it will be necessary to select a central nursery site, and commence the rearing of the trees required. To do this in a proper manner, the services of a qualified nurseryman who thoroughly understands the raising of forest trees must be secured, and, for a time at least, a certain amount of labour will be required in the preparation of the nursery for the purpose stated; when in full work, one or two assistants only will be required, and if cadets are brought into use, they can here learn the necessary work to qualify themselves for passing as foresters in the new department, and thus make the nursery useful as a training institution, as well as distributing trees to the country.

A properly qualified nurseryman required in the event of the establishment of State Nursery.

All cadets waiting for appointments as foresters could thus utilise their time, either in the nursery or on one or other of the State forests, and be drafted off as occasion required.

Cadets qualifying for a forester's position at nursery.

In South Australia the inauguration and working of these nurseries is the life and soul of the extensive tree-planting movement in that colony.

In such a matter there must be no divided interests involved. It has been found impracticable to grow plants for forest purposes at the local Botanic Gardens, because the interests are divided; hence it is absolutely necessary, if operations are to be carried out on a large scale, that the nurseryman in charge of the central nursery be responsible to the Conservator for *all* his work, in order to ensure a successful issue to planting operations.

Nurseries should be formed solely under Forest Department.

It is proposed, in the course of years, or as funds for the purpose are provided, to form plantations in suitable places, as follows :—

1. Plantations for the supply of timber, of a superior class to the native timber, as may be considered suited to the colony. The following are some of those to be recommended :—

Trees suitable for planting in Tasmania.

Pines—Pinus Insignis	Remarkable, or Californian Pine.
„ Halepensis	Aleppo Pine.
„ Maritima	Maritime Pine.
„ Sylvestris	Scotch Pine.
„ Austraica	The Black Austrian Pine.
„ Laricio	The Corsican Pine.
„ Pinea	The Stone Pine.
Oaks—Quercus pedunculata.....	The Common English Oak.
„ Sessiliflora	The Common Sessile flowered Oak.
„ Cerris	The Turkey Oak.
Ash—Fraxinus Excelsior	The Common English Ash.
„ Americana	The American White Ash.
Elms—Ulmus Campestris	English Elm.
„ Montana	Wych Elm.
„ Suberosa	Cork Elm.
Planes—Platanus Acerifolia	The Maple-leaved Plane.
„ Occidentalis	The American Plane.
„ Orientalis	The Oriental Plane.
The Catalpa—Catalpa Speciosa	The Catalpa Tree (American).
Cedars—Cedrus Deodara	The Indian Cedar.
„ Libani	The Cedar of Lebanon.
„ Atlantica.....	The Mount Atlas Cedar.
Eucalypts—Eucalyptus Corynocalyx..	Sugar Gum, S.A.
„ Hemiphloia...	Box Gum, Vic., S.A.
„ Rostrata.....	Red Gum, Vic., N.S.W.

Eucalypts—Eucalyptus	Marginata ...	Jarrah Gum, W.A.
„	Cornuta	Yate Gum, W.A.
„	Diversicolor..	Karri Gum, W.A.
„	Callophylla...	Red Gum, W.A.
„	Siderophloia..	Red Ironbark, Q.

And numerous others as may be thought suitable.

Wattle plantations.

2. The formation of Wattle plantations for the production of wattle-bark.

The formation of plantations along railways for the purpose of growing railway sleepers in the Midland Districts for future use.

3. The formation of plantations *alongside railway lines* in various parts of the Colony for the cultivation of the more valuable trees specially suitable for sleepers for railways, such as Blue-gum, Red-gum (Vic.), Sugar-gum (S.A.), Jarrah (W.A.), and Box (Vic., S.A., and N.S.W.) All these trees are most valuable for the purpose, and could be grown for future railway use, as well on the spot as scores of miles away. Such plantations as these would form valuable auxiliaries to the Public Works Department, and amply repay the cost of their planting (say in the Midland District) in the course of years.

Plantations, Lake Districts.

4. The formation of experimental plantations in the Central Lake Districts to encourage landowners to plant trees for shelter purposes.

Pine on the River Gordon, &c.

5. Plantations of our own valuable Conifers on the banks of the Gordon, on the Queen River Reserve, Port Davey, and other places; and the reclamation of the young Huon Pine at the mouth of the Gordon and Kelly's Basin.

Indigenous pines to be planted.

The following indigenous pines of Tasmania should be cultivated, and I have no doubt they would improve in quality of timber in time:—

1. Huon Pine.
2. King William Pine.
3. Celery-top Pine.
4. Oyster Bay Pine.

The latter only grows on the East Coast; it might be greatly improved by close growing, and become a very useful timber, though never a large tree.

Again, a number of valuable New Zealand trees might be introduced here with considerable advantage. These could be tried on the West Coast, on the Gordon, and at Maria Island.

King William Pine.

The treatment of *Arthrotaxis* timber must be on different lines to that adopted for Huon: the former affects low hill tops and sides of ranges, whilst the latter is invariably found on the flats or swampy ground. It will be, therefore, necessary to fall in with the natural inclination of the tree, and plant it on the higher lands accordingly.

Planting along railways within fences deprecated.

Before concluding this Section, I may state that I am opposed to the planting of railway lines with either Wattles, or any other trees, except under very special circumstances, for the following reasons:—1. The want of supervision.—2. Liability to fire.—3. Destruction by goats, sheep, fowls, &c.—4. The nuisance to the railway people in burning off grass for the prevention of fire.—5. The danger to railway lines when trees grow up, &c.

I have no objection to blocks of land alongside railways for the purpose of tree-planting, as they can then be looked after properly, which never can be done when straggling along miles of a railway open to depredation of every kind, from platelayers and other railway employés, during the whole period of their growth.

Section V.

The Encouragement of Tree-planting in the high Central Lake Districts of Tasmania, and among the Landowners of the Colony.

This is a subject of grave importance to the grazing and agricultural community, and affects the general interests of the Colony in no small degree.

The Central Lake Districts of Tasmania.

The high table-land of central Tasmania comprises a large area comparatively treeless. It is of considerable altitude (about 2000 feet above sea level), and its general characteristics are marshy flats, rolling downs, and hills of moderate elevation. The lakes are numerous, some very large, and others, again, mere swamps.

Elevated lands exposed to the freezing winds from ice-floes, &c.

The whole of this elevated plateau is exposed to the full force of the cold westerly hurricanes, whilst icy winds from the south, off the snow-clad western and south-western mountains, give a rigour to the climate nowhere else to be found in Tasmania.

In the winter months the cold is intense, as the frozen winds, passing over the ice-floes of the Antarctic circle, strike with full force the elevated lands of the interior, causing snow to lie on the ground, at times too deep to be pleasant.

In consequence of the bleak nature of the country agriculture has made no headway, though the land is fairly good, and is free from the dense timber scrub so peculiar to the rest of the Colony. The pastoralist, consequently, claims this country for his own ; but the cold, in a great measure, also militates against the successful carrying out of pastoral pursuits, and the major portion of the country is used for "summer runs" only, sheep generally being removed as the winter sets in to lower altitudes, the cold being found so severe as to interfere with the natural increase of the flocks, without which there can be but little profit. This state of affairs shows beyond question that shelter is required for the flocks and herds of this region, and that if tree-planting was extensively practised, as it undoubtedly ought to be, a different state of affairs would be brought about in the course of years as the planting became more general and masses of timber increased, giving both warmth and shelter to the stock, and also to the land itself, enabling it to longer retain the effects of the sun's rays in the soil.

Their bleak and elevated position check agricultural and pastoral pursuits.

Shelter for all exposed lands is absolutely necessary, and may best be provided by tree growing.

The systematic planting of this country by private owners of land, as well as by Government, would ultimately produce a wonderful change in the climate, soften the rigorous nature of the ice-laden winds, and give comfort and shelter to the stock depasturing thereon.

The planting of trees in belts and lines across open plains much exposed to winds has been tried with the happiest results ; and all efforts in this direction in other countries have proved the wisdom of the proceeding in the increased yield of cereals, the extra fecundity of stock, and the amount of comfort bestowed upon them by the shelter provided, to say nothing of the additional capabilities of the soil in growing better class fodder of a sweeter and more nourishing character than is obtainable under present conditions.

Planting in belts and lines along fences.

It is, therefore, in the power of the landowner to largely augment the value of these exposed lands, and alter, in a great measure, the climate if he so choose.

Of course, individual efforts are in vain ; it is only by united action upon a large scale that the results as above described can be brought about. It is, however, astonishing the effects of these tree lines when planted along fences, even in the small and, apparently, secondary consideration of shelter ; and money thus spent is money well laid out.

Planting trees will mitigate the severity of climate whether for heat or cold.

If, therefore, landowners will note these remarks, and, by joining in heartily with any scheme which has the amelioration of the climate in view and provide shelter for their flocks, it is quite probable that thousands of sheep will be found in the place of hundreds, as at the present time. Co-operation among themselves is, however, necessary, and if the Government will give encouragement to the tree-planting movement by means of a bonus on every acre planted, and at the same time supply trees to all willing to plant them gratis, the first important step is gained ; and there is no reason why such a good work, and one fraught with interest to the whole Colony, should not be undertaken at once, or as soon as the necessary arrangements can be made.

Government aid by means of bonus and free distribution of forest trees.

The formation of plantations by the Government in the Lake districts in various exposed parts would give a wonderful impetus to tree-planting among landowners, and demonstrate in a practical way the feasibility of the scheme, and in time its utility from a climatic point of view.

Government plantations.

These plantations would also act as educational mediums, and enable landowners and others to see for themselves the kind of trees growing there, in order that their suitability or otherwise for exposed or high-lying semi-alpine localities might be shown, without the expense of experimental planting on their part, as well as to avoid the annoying failures consequent upon a want of knowledge of the nature of trees, &c.

The most suitable trees for planting for information of landowners, &c.

The effect of a few millions of trees judiciously planted would have material influence in toning down the severe alpine nature of the climate, and by so doing promote the growth of grass, and in the course of years, as the planting progressed, the land would become more fit for agriculture and its value greatly increased, probably trebling its stock-bearing capabilities.

The effects of trees in large masses in increasing the value of land.

These benefits, important as they are, by no means constitute the main results obtainable, as the re-foresting of such an extensive area of land of such high altitude in the very centre of Tasmania must exert a most important influence upon its eastern and north-western coasts, as extensive plantations, Government as well as private, when in full vigour of growth would aid greatly in intercepting the cold and freezing winds from the south and west, and materially assist in the suppression of severe frosts, by means of currents of warm air, obtained by the chemical action of trees in masses on the atmosphere ; and instead of these cold winds which now periodically blow from the highlands over the lower midland districts around Campbell Town, Fingal, Deloraine, and other places, the warm air supplied from woodlands or forests 2000 feet or more above their level would have a wonderful effect in ameliorating their influence upon the exposed plains and cleared lands below, both grazing and agricultural.

Trees by chemical action on the atmosphere cause warm currents of air.

All these conditions trees can, and will fulfil, as they exert a prodigious power for good; the fact that they do so is now beyond question, and this is proved by the almost universal recognition of the value of trees in relation to land ; a striking example of this fact is shown, inasmuch as all the best land in Tasmania is heavily timbered.

The value of trees in relation to land.

The reason is simple, and should be readily understood. All lands obtain their fertilising qualities directly from vegetable matter or *humus* deposited by plants or trees as well as from the mineral matter extracted from the soil by their roots.

The formation of soil by means of tree and plant life.

By means of heavy rains and flood-waters of streams and small water-courses, *detritus* or soil is washed down from hill sides, or deposited on lower levels, and thus rich alluvial flats or valley lands are formed in course of ages. In rocky ground trees aid the formation of soil by the splitting and upheaving of rocks by their root-growth, thus letting in air and causing these rocks or stones to crumble to pieces and rapidly decompose, and at the same time give up their mineral constituents for the use of the tree, paving the way for the manufacture of soil. It follows, then, that tree-planting must enrich the land; and the converse of this is the case when the land is completely denuded of timber, as it slowly but surely loses its fertility year by year unless artificially renovated; but manuring does not go far enough, and fails to achieve an important object; it certainly provides nutriment of a kind for the crops, but there are many other wants which are best supplied by trees, of which shelter forms an important one.

Artificial treatment of land insufficient to wholly restore fertility to worn-out lands.

Noxious weeds, &c.

Hence it is that land under artificial treatment gradually sours, and produces dandelion, Californian thistle, wireweed, and hosts of noxious vegetable growth too numerous to particularise, to the great detriment of the crops or grass, and certainly to the land itself, which ultimately fails to produce the heavy crops—perhaps at one time such a source of pride and of profit to their owners—and dwindling year by year as time rolls on, until no profit at all is made on the crop.

The right use of trees of value to the agriculturalist.

Let our agriculturists note these facts well and lay the lesson to heart, and they will soon learn to look upon trees as their best friends, and that the right use of them will help on their farming operations in a wonderful degree, whilst the manure heaps will go very much further in the fields than they do at present.

I trust the Government of this colony will take up this matter in an enlightened spirit, and that the people generally will recognise the importance of these suggestions.

Government encouragement to tree-planting.

If the matter be treated liberally, and with an energetic desire to show the mass of the people how to plant, and what to plant; to give the trees required gratis, as is done in South Australia; also authorise the bestowal of a bonus upon every acre of land successfully planted, or upon every thousand trees grown, the trees to remain the property of the planters on completion of five years from date of planting, when the bonus can be claimed, I have no doubt but that great and important results will follow, mutually advantageous to the Government and the people, by bringing in a large area of valuable land fit for any purpose into profitable cultivation, instead of the comparative uselessness in which it now lies. With the spread of the wave of population from the old world, and consequent rush for the virgin lands of the new, it is highly improbable that the country above referred to will remain in a state of nature for many more years, as the dearth of good land in the cooler regions of Australia in the near future, for selection, will cause surplus population to hunt up for more of such land. Tasmania offers advantages required when a rush, sooner or later, will set in upon her shores, and the socialistic tendency of the age will demand the bursting-up of the big estates by taxation or otherwise; hence it will be to the interests of the landowners to be "up and doing," so as to increase the value of the land by substantial improvements, as soon as possible, in order that more remunerative prices than is obtainable at present may be secured when the cry "We want the land" is upon them.

The advancing tide of population in Australia will cause land in Tasmania to increase in value.

Section VI.

Royalty Charges and Licence Fees derived from State Forests, Timber Reserves, and Crown Lands.

Revenue from Royalty Dues.

The consideration of Royalty dues upon all timber cut in State Forests or Timber Reserves opens up the whole question of revenue from these sources.

Unless a Forest Department has its revenue derived from sales of timber which, under ordinary circumstances, ought to yield a return considerably in excess of current expenses, it is quite evident that the money required for the successful carrying out of its operations must come from the Government, and be voted by Parliament in the same manner as for other Departments, and in order that a satisfactory balance sheet may be annually presented, it would be necessary that all receipts from grazing over forest areas, sales of timber, and timber licence fees, should be credited to it; and, on the other hand, all sums expended must likewise be shown in order that its financial position may be seen at any time.

State forests generally unprofitable in the first years of their existence.

It is very seldom indeed that a Forest Department can be made to show a profit on the outlay incurred in the first few years of its existence; the reverse of this is usually the case; but by judicious management, after several years have elapsed, and where plantations are undertaken, their prospective value increases enormously in a very few years; as for example, the South Australian Reserves, which for many years bore a merely nominal value, represented by the acreage held, after the lapse of five or six years, when buildings, fencing, and other im-

provements, including the formation of plantations costing several hundreds of pounds (and some hundreds of thousands of valuable trees, chiefly pine, had been planted), rose rapidly in value, and plantations which in the first year of their growth were comparatively valueless or limited to their actual cost, are now most valuable. For the sake of illustration we will suppose at three years old the valuation might be, say 1*d.* per tree ; at 4 years, 6*d.* ; eight years, 1*s.* ; 12 years, 2*s.* 6*d.* ; 15 years, 5*s.* ; 25 years, 10*s.*, and so on until maturity is reached. These figures are merely quoted to show in what manner the actual value of a plantation increases in relation to its age when trees are grown for commercial purposes.

The value of trees in plantations.

As years roll on so the value of each tree grown increases (*i.e.*, when valuable trees of acknowledged utility are planted), and the sum represented by their totals on reaching their maximum value, or on attaining maturity, fairly astonishes those persons who have never given the subject deep consideration.

In this connection it would be well to note the results attained by the South Australian Forest Department up to last year. In a little over nine years the valuation of the property of the department has risen from some £25,000, representing the value of the natural forests to that of last year, £150,000, which is the valuation placed upon buildings, fencing, and plantations *only*, or, in other words, the value of the work of planting valuable trees during that period, and not including the natural forests at all.

Result of planting in South Australia.

These figures are eminently satisfactory, and speak volumes in favour of State-aided plantations, and unmistakably show the profit to be derived from them if taken up in an energetic and enlightened spirit.

In State Forests, where it is intended to work the timber to the best advantage, and initiate a thorough scheme of natural regeneration on the rotation system, the Licence Fees may be collected by three methods—

Methods of collecting fees.

1. By the ordinary License system at per week or per month, cutting only *matured* trees which are marked for that purpose by Forest Officer : — The Licence system.
2. The sale of all matured timber under a sliding scale for 1st, 2nd, and 3rd class timbers at per cubic foot " Royalty," or at per hundred superficial feet. — By Royalty fees.
   Trees only to be cut which are marked and approved by Forest Officer *before felling*. These may either be measured as they stand or after they are felled, as per arrangement made.
3. The sale of posts, rails, palings, shingles, scaffold poles (thinnings only), or matured or old trees for firewood and other purposes, and deadwood for firewood. In the case of the first-named a royalty charge at per hundred at certain fixed rates, under regulations to be approved by the Minister of Lands, together with their removal under certain conditions ; and the latter at per load for firewood, and matured third-rate trees so much each, according to valuation made upon the spot. — The sale of posts, rails, shingles, palings, poles, &c., at per 100 Royalty.

The first of these methods may be laid aside as being not only wasteful of good timber, but as giving too much liberty to the splitter or other person to do as he likes with the forest, and causing more damage to young trees in a few hours than their licence fees would amount to in a lifetime, to say nothing of the lack of " revenue " such a system entails.

Licence system in State Forests condemned.

The licence system, then, is only applicable to Crown lands, *i.e.*, waste lands of the Crown, where full supervision is impossible, and the collection of fees is placed in the hands of the Police or Crown Bailiffs.

Applicable to Crown or Waste Lands only.

The imposition of a royalty on timber is one of the backbones of State forest conservation, and is in universal use throughout the forestal world. I therefore advocate Nos. 2 and 3 methods of collecting revenue, because it will be found that, in dealing with small consumers,—such as splitters, farmers, and others,—that No. 3 will be found the readiest method of collecting fees by the Forester in charge of the reserves, whilst No. 2 will deal with large orders, and in the valuation of timber supplied to the Public Works Department.

Royalty the backbone of State Forestry.

There is no doubt for many years to come the owners of private lands containing timber will be formidable competitors of the Government reserves, for the simple reason that they will be anxious to get rid of the timber in order to utilize the land, and sacrifice it at the same time. In course of years this will end, and the Government reserves being looked after in the interim, will come in for use of their valuable stores of wood, and become of more value as the timbered lands are restricted to a few private owners and the Government State forests, as it is found that the former always disposes of the timber with a view to its speedy removal, without any thought of future requirements.

The destruction of timber by land-owners.

It is here that State forestry is so valuable to a community, as immediate profit, to the detriment of future supplies, is not looked for: utility, and the supply of wood, both to the present and future generations, should be the main object of conservation of areas of woodland.

The advantages of Government Forests.

In South Australia royalty is charged on all timber going out of the forest at a certain fixed rate, according to the quality of the timber, under regulations approved by the Governor

Royalty system in South Australia.

in Council; and the charges being thus known, contractors and others tender in the ordinary way, simply adding the forest charges on to the amount of their tender, and these royalty charges are paid before the timber leaves the forest, or by special arrangement, as may be agreed upon.

Forests are credited with all the timber produced in them.

Each particular forest thus gets full credit for *all timber* supplied by it, and the contractor or other person takes only such trees as are marked and approved by the Forest Officer, the former, of course, having the right to refuse to take a tree if deemed unsuitable for his purpose; but having once chosen his tree or trees, he is bound to all forest regulations as published.

The method of choosing trees for contracts for Public Works, &c.

In choosing trees the *modus operandi* is simple. The contractor, his foreman or trustworthy man, with the Forest Officer, proceed into the forest and select trees subject to the approval of the Forester, when, if both agree, a chip is taken out, and the officer brands the tree with a sharp blow of a tomahawk on which the letters F D are impressed. In open forest land this operation can be performed with fair speed, and I have myself marked two hundred trees in a day.

The marking or branding of trees disposed of to a purchaser or contractor.

In heavy forests the work would of course be much more laborious; but as the trees are so much more bulky here than in South Australia, a smaller number would last probably months if the timber was very large, so that, after all, very little time is lost by the contractor in selecting his trees; and in the Colony mentioned above, the system works most admirably in the fine open forests, which are free from scrub.

Trees blazed after marking.

All trees so selected are blazed, and the "fellers" follow the marking party and cut them down at their leisure.

Such is the system of "royalty" in the sister colony; and this method of selecting timber for the saw-mills and for public and private use is, undoubtedly, the best that could be devised; and although some considerable opposition was at first shown to the system, chiefly because it was new, the malcontents gradually dwindled away, and the very men who were loudest in their condemnation of it—the splitters—are now its warmest supporters.

Section VII.

Mining Reserves, and the Protection of Pine on the West Coast.

The selection of mining reserves must, of necessity, depend upon the progress of the goldfields, their permanent nature, and the lasting capabilities of the mines in the neighbourhood of such reserve.

Importance of mining reserves.

Where mining is firmly established, and the "leads" are deep, it is essential in the true interests of the miner that steps should be taken to procure the special reservation of Crown lands for forest purposes around such permanent fields, and as near thereto as possible, in order that regular supplies of timber may be kept up for the use of the mines.

All such reserves should be regarded with the utmost respect by mining managers, diggers, and the shareholders of every permanent claim on the goldfields.

Increased cost of timber to mining communities in consequence of lack of timber lands in the neighbourhood of goldfields, &c.

The advantages of proclaiming reserves for mines.

It has been found, over and over again, that as soon as the timber around a permanent diggings becomes exhausted on Crown lands, a raid is made on private lands, and thereupon firewood and other timber jumps up in value at once, and for a time matters go on fairly well. Very shortly the private supplies cease, and the cry then is raised, "We have no timber—no firewood, unless we cart six or eight miles, and have to pay 50 to 100 per cent. on prices of a few years ago." Now, mining reserves, properly managed, would prevent this: 1st, because no waste would be allowed; 2nd, the timber would be protected from injury; 3rd, only certain trees of a given girth would be allowed to be cut; 4th, the utilisation of all the small wood for firing purposes; 5th, the encouragement of the natural growth of young saplings; 6th, the raising of trees in sufficient numbers to meet the demand for timber at any time.

The consumption of wood by mining companies of any importance is enormous, whilst the same may be said with regard to firewood in a mining town, more especially where several large claims are unceasingly at work and employ hundreds of men.

The destruction of the Victorian Forests in the neighbourhood of mining towns.

To persons familiar with the great diggings of Victoria—Ballarat, Sandhurst, Castlemaine, Clunes, Maryborough, and hosts of other familiar places—they will remember the frightful desolation wrought among the fine forests which once surrounded those places.

The loss entailed on mining centres by non-reservation of forest lands.

In 1851 Bullarook Forest—one of the best timbered regions of the Colonies—stood in its virgin prime, and possessed, it was *then* thought, timber sufficient to supply all the gold mines in the world. Twenty years later, what was its condition? The bulk of it selected, the rest hacked, burnt, and partially destroyed by the very people who required it most—the digger and splitter—both dependent upon the mines for their livelihood. At the present time companies have now to pay heavy freight charges on timber brought from great distances, in the place of that

near to hand so recklessly destroyed in years gone by. For years this great forest stood a standing reproach to the Government of Victoria, who, however, have at length awakened to their responsibilities and proclaimed reserves, and thus atoned for the errors of the past. Twenty-five years ago a fine forest existed just outside Clunes, and extended for miles in the direction of Majorca. That has disappeared, and eighteen years ago when I passed through that country, I saw millions of fine saplings, forming dense young forests for miles. Had that timber been conserved *then*, Clunes would this day be well supplied with timber worth thousands of pounds to the mining community, instead of, as is now the case, paying heavy rates on all they use, whether for domestic or mining purposes, when the money thus spent would go to swell dividends or keep mines going (until, perhaps, deeper "leads" were struck) a little longer to the benefit of miner and tradesman alike. These are facts which appeal to the mining community at large. In Tasmania we have few permanent "fields," but there are several which are likely to become such, and chief of these is Beaconsfield.

Case in point stated.

This mining centre is very nearly surrounded by private lands, though a considerable area is reserved as "mineral lands." A few years ago the whole of this reservation was thickly covered with timber, but it is gradually becoming less year by year in consequence of the constant raids made upon it.

Beaconsfield Forest Reserve.

Even now the people are treating with private owners for their timber, and in a few years' time this will fail, as did the Crown lands close by. Mining props and slabbing are not easily obtainable, and as the years roll on the difficulty will increase. The "pinch" is not yet felt as regards firewood; when it is, there will be a hue and cry, and the intelligent miner will find out that the tender mercy of the private owner is only regulated by the system "of the greatest profit to the man in possession."

Results of allowing reckless waste of timber, or of throwing open reserve to firewood carters.

Perhaps when prices run up 50 to 100 per cent., the cry will be raised, "The Government should make reservations." Now this is what the Government has done, but a certain section of the community, thinking only of the *present*, and not at all of the *future*, clamour for the throwing open of this small reserve to the public. Now, supposing this were done, the result would be that some few dozen people would be benefited temporarily at the expense of the whole mining community, when perhaps for a few months timber would be fairly plentiful, and, after that, chaos. A timber reserve in name only would mock the housewife crying out for firewood, or the miner for his props and slabs.

As matters now stand, Beaconsfield has a reserve for timber, and a very good one it is, provided it be strictly protected. It is well situated, and close to the town (about 2½ miles away). Under proper management it is capable of supplying the district with all the timber required. If the people of Beaconsfield desire to have timber and firewood at reasonable rates in the future, they will do well to watch with jealous care every foot of this reserve, and strenuously resist every effort made to abolish it or curtail its dimensions.

The advantages possessed by local timber reserve.

I regard this reserve as one of the most valuable in the Colony, chiefly from the fact that there is a market for its timber outside its immediate boundaries; and, failing that, a market in Launceston before very many years shall elapse.

Usefulness of timber reserve.

This reserve is capable of being developed for the good of Beaconsfield in a remarkable manner, and is one of the first reserves I have to recommend should be taken in hand for forest purposes.

From the opinions I have expressed in the foregoing Report, it will be seen that I object strongly to the *use* of young immature saplings for mining props (except they are taken from the forest as thinnings only). Such a course, if persisted in, can only result one way, *i.e.*, failure in the supply of timber in years to come.

The sale of young saplings for props deprecated.

In order to meet this demand for props, which present and future operations in mining will produce, I have to propose that some hundred acres of this reserve be fenced in, and the enclosed portion, as well as the whole of the reserve, be placed under the strictest supervision. By this means, shutting out cattle and sheep, and warding off trespassers, the young growth of the gums will be allowed to come up naturally; and in certain places found suitable, plough or harrow in seed of the George's Bay ironbark (*E. crebra*), also seed of the true ironbark of Victoria, of which the former is a variety. These trees would be invaluable to the mining community, as the timber is hard, dense, and solid, and possesses lasting qualities of a high order, and very far superior to the inferior stringy-bark growing in the locality: posts are known to exist at Swansea which have been 40 years in the ground, and are sound to this day. This, then, is the class of timber wanted for mining requirements, which can easily be supplied under an enlightened system of management. In the event of a State nursery being inaugurated, it would be possible to plant 100,000 ironbark trees every year by means of the "bamboo system" of planting, and if this were done, millions of gums of the best quality could be grown in a few years.

The planting of useful trees proposed, such as Victorian and George's Bay Ironbark.

By the enclosure of 100-acre blocks every year, or every two years, dense masses of young trees would spring up naturally over the ground; these, at stated periods, would require thinning out, whilst useless scrub could be kept down, allowing none but useful trees to occupy

Planting within enclosed fence to encourage natura growth of indigenous timber.

the ground. Within these proposed areas all the matured timber would require to be cut down, thus providing work, as well as firewood slabs and other timber, for the people.

If this scheme be carried out it will be necessary that stringent penalties should be enacted and strictly enforced, and no person whatever allowed to cut timber upon the reserve except under proper authority.

Strict supervision necessary.

For reasons above stated, it behoves the people of the district to be watchful of this public property, and help the police and forest authorities in the repression of acts of vandalism or illegal removal of timber, to the utmost of their power.

The necessity for the removal of the matured trees.

The matured timber now growing upon it can be utilized at any time it is required, and be either cut up into slabs, props, or fencing material—or even firewood, if unsuitable for other purposes; and the sooner these trees are removed, the better chance there is for the young ones to spring up and arrive at maturity.

The retention and enlargement of the reserve advocated.

I therefore, in the most unmistakable terms, advocate the retention of this reserve in its entirety, and, if possible, would suggest an increase in size by encroaching on the mineral lands for that purpose, thus securing the young trees already springing up on the desolated lands, and which are now growing under difficulties.

The buildings at Port Lempriere Quarantine Reserve utilized.

This reserve might be worked in conjunction with the Quarantine reserve at Port Lempriere, where I have proposed the establishment of wattle plantations; all necessary accommodation is there supplied for employees, and a caretaker placed in charge of the Government buildings would have the active supervision of the timber reserve as well.

Necessity for Legislative action in *re* pine and blackwood.

With regard to the conservation of the pine on the West Coast, and the blackwood on the North-West Coast, these are matters which require urgent legislative action, and should be brought before Parliament as soon as possible. In my previous reports upon the subject I have dwelt most strongly upon this necessity, in order that the matter may receive that attention its importance deserves.

The shipment of blackwood to Victoria.

Pine is, I believe, worth 30*s*. per 100 super. feet, but if its value can be increased by the imposition of a good stiff royalty, the result will be that the local people will take more care of it. I should also advocate the imposition of a heavy duty upon blackwood shipped from Tasmania; we shall require all we can produce for our own railways; and the timber is being sent out of the Colony in bulk for the price of ordinary stringy-bark, or very little more, and Victorian contractors come over and take it away by shiploads without let or hindrance, save the paltry licence fee, and even that is not paid in nine cases out of ten.

Pine Regulations awaiting Parliamentary sanction.

Regulations for the sale and disposal of pine have been ready for some months, awaiting Parliamentary sanction, but before this is given it will be found necessary to strengthen the hands of the Conservator in carrying out the arduous duties he has to perform on the West Coast; and an amendment of the "State Forests Act" is urgently required to provide for various matters, including the fixing of heavier penalties than are provided for at present. It must be borne in mind that unless regulations are strictly enforced, and are of a stringent nature, it will be impossible to carry them out in so densely timbered a country as that of the Gordon and Franklin Rivers.

Conclusion of Report on Forest Conservation.

In concluding this Report upon the Conservation of the Woods and Forests of Tasmania, I have to apologise for its great length; but in dealing with matters of this nature it is not possible to avoid going into detail, as the whole pith and substance of forestry depends upon these apparently trifling matters; therefore, at the risk of being verbose I have ventured to fully ventilate this important subject of forest conservation, in order that those persons who are unacquainted with forestal lore—and their name is legion—may be able to grasp and understand the value of systematic forest culture when undertaken in a liberal and enlightened spirit. Scientific forestry is a grand thing, but, unfortunately, the more scientific it becomes the more the expenses increase in due ratio, hence a combination of science and practice is desirable; and I therefore venture to think that the practical nature of this Report will commend itself to those in authority, and can only trust that some, if not all, of the recommendations and proposals will be carried out in course of time.

I shall now proceed to deal with the retrospect of the duties of the past year, as forming the usual contents of my Annual Report.

ANNUAL REPORT, 1886-7.

SECTION VIII.

SUMMARY of Duties performed by Conservator in the Inspection of Forest Country round Saw-mills for Reservation, together with List of Reports submitted to the Minister of Lands and Works, and other matters, including List of Timbers shipped to Agent-General in London.

1886.

July 1, 30. Office and clerical work in connection with First Annual Report on the Woods and Forests of Tasmania.

Aug. 2, 3, 4. Visit to Cleveland in connection with Crown Bailiff's duties, and inspection of land for plantation purposes.

5, 8. Inspection of Forest Reserve at Beaconsfield, and timber lands generally.

9. At George Town and Lefroy, inspecting Timber Reserve.

13. Returned to Hobart.

30. Inspected Forestier's Peninsula, East Bay Neck, Eaglehawk Neck, and timber lands in their vicinity, also at Taranna and Long Bay, Port Arthur.

Sept. 10. Returned to Hobart office.

21. Inspected Altamont Township Reserve, Crown Bailiff purposes.

30. Office Reports on Timber Reserves.

October 6. Visited Port Cygnet, and inspected timber lands round Peppermint Bay, Garden Island Creek.

9. At Victoria, inspecting timber lands.

13. Expedition to the River Picton and its junction with the Huon.

18. Returned to Hobart.

25. Visited Maria Island, and thoroughly inspected timber on northern portion of island; found southern portion useless.

Nov. 1. Returned to Hobart office.

28. Report on Maria Island; office work generally.

29. Left Hobart for the purpose of inspecting forest lands in the neighbourhood of saw-mills, and to prepare a special report on the same.

Dec. 1, 5. Arrived at Recherche, and inspected lands around mill, also in neighbourhood of S.E. Cape and Lower Recherche.

6. Expedition into unknown country at back of Recherche.

8. Expedition on Mr. Innes' track to Port Davey up the Lune Valley to the west side of La Perouse Ranges, and the discovery of two small lakes, and to the heads of the Lune, D'Entrecasteaux, and Picton Rivers.

12. At Hastings; inspected forests round mill.

13. Southport and Lady's Bay; returned to Hobart.

18. Resumed forest inspection round mills for special report.

21. Visited Messrs. Judd and Chesterman, and the country lying under Adamson's Peak.

23, 24. Visited Messrs. Pulfer and Drysdale's mills at Port Esperance; returned to Hobart.

1887.

January 10. Resumed saw-mill inspection of reservations, and arranged for timber samples to be sent to Hobart for shipment to London.

11. Visited Mr. John Hamilton's mill at Surges Bay, and examined the fine timber lands here carefully as well as dense nature of forest would permit.

12. At Geeveston.

13. At Garden Island Creek.

14. Returned to Hobart.

February 16. Office work in connection with Special Report on Saw-mill Reservation and the shipment of Tasmanian Timber for London.

17. West Coast Overland Expedition from Hobart, *viâ* Ouse, Lake St. Clair, Mount Arrowsmith, the Collingwood Valley, Mount Lyell, the Queen River, to Strahan, Macquarie Harbour.

March 4. Mount Heemskirk, the Pieman to Waratah, 17 days in all.

6. At Emu Bay, Table Cape, to arrange for timber for London.

9. Returned to Hobart.

30. Left Hobart to inspect the timber on Bruni Island, at Adventure and Cloudy Bays.

April 2, 5. Inspection of forests round Mr. Gray's mill, Great Taylor's Bay; at lighthouse.

6. Inspected timber lands, North Bruni.

7. Returned to Hobart.

17. Office reports on various trips, &c.

18. Left Hobart for Carnarvon to inspect forests in neighbourhood of Wedge Bay and country at back of Port Arthur.

20. Walked across to Parson's Bay and camped out with splitters, and inspected timber lands, &c.

22. Returned to Hobart.

May 6. Visited new road to Mount Faulkner to enquire into complaint *re* cutting of firewood to damage of road, as Bailiff of Crown Lands ; cutting stopped.
31. Office work, &c.
June 2. Started on journey of inspection of East Coast *viâ* Spring Bay, Swansea, Avoca, Fingal, St. Mary's, St. Helen's, and inspected wattle lands, site of new mill at or near Ross Forest Reserve, and inspected with considerable interest the iron-bark forest of George's Bay, and the capabilities of further development of the wattle industry on the whole of the East Coast.
13. Visited Weldborough as Crown Bailiff, and held enquiry into seizure of timber by local Bailiff: seizure confirmed.
15. At Beaconsfield, inspecting Quarantine Reserve.
17. Returned to Hobart.
30. Office and clerical work in connection with Annual Reports.

Reports submitted to the Hon. the Minister of Lands and Works.

1. (October 1, 1886).—Recommending portion Forestier's Peninsula for State Forest Reservation.
2. (November 8, 1886).—Report on the timber resources of Maria Island, with recommendations thereon.
3. The present State of Mount Wellington, and the destruction of timber, ferns, and plants, &c., with important recommendations as to future management. (November 23, 1886).
4. Draft of proposed Pine Regulations. (January 12, 1887).
5. Report on Adventure Bay Timber, Bruni Island. (April 18, 1887).
6. Report on Saw-mill Reservation, Southern Tasmania. February 5, 1887).
7. Report on Wedge Bay Forest Reservation. (May 4, 1887).
8. Report on Timber shipped to London.
9. Report on Regulations for the disposal of wattle on Crown Lands by tender. (June, 1887).
10. Quarantine Station, River Tamar, with recommendations and estimate of receipts (proposed) and expenditure in the planting of 100 acres of wattles. (June 23, 1887).
11. Annual Report, 1886-7, including exhaustive Report on the Conservation of the Woods and Forests of Tasmania.

Shipment of Timber to London.

The following are the particulars of timber which have been supplied to me by various mill proprietors for shipment to the Honorable Adye Douglas, Agent-General for Tasmania, for the purpose of being tested, and to ascertain if a profitable market could be opened up for our surplus timber in the English manufacturing centres of industry.

Two separate shipments were forwarded in February and March of the present year ; one from Hobart per barque *Helen*, and one from Launceston per barque *Corinth*.

The timber supplied me at Launceston was forwarded by Messrs. Norton Smith from Burnie and Messrs. Moore and Quggin from Table Cape, and was a first-class lot.

The Hobart shipment was fairly good, but, owing to the half-hearted and dilatory manner in which samples came to hand after being promised by the Southern millowners, the inspection so necessary to ensure correct description could not be given by myself personally. This is to be the more regretted as ample time was given, and repeated notices posted to those concerned to send the timber up for shipment. At the last moment, as it were, I had to go round the various timber yards and select what timber I could get in Hobart, when Messrs. Chesterman, Ford & Harris, and Risby Brothers cordially responded to my request for sample timber, and each sent a collection to the vessel's side free of cost. Of the five or six who had promised to send timber, Mr. John Hay, of Hastings, was the only sawmiller down Channel who sent any up to Town in time to be inspected by myself.

After my departure in February last with the late Mr. C. P. Sprent for the West Coast, several shipments arrived from Messrs. M'Dougal & Co., Recherche, H. Judd, Port Esperance, John Geeves, Geeveston, and W. Drysdale, Port Esperance. These were inspected and passed by Mr. Bradley, of the Public Works Department; Mr. John Hay supplementing his former lot by sending 3000 superficial feet as a private speculation.

The following are the particulars of shipments sent :—Nos. 1 to 14—Myrtle logs and flitches. Nos. 1 to 4—Three pieces pine celery-top. Nos. 5 to 7—Two pieces blackwood. Nos. 8, 9—Five pieces stringy-bark (10, 14), and were sent by Mr. Norton Smith from Burnie. The myrtle logs were, No. 1—15ft. 5in. × 2ft 6in. dia.; No. 2—12ft. 9in. × 2ft. 8in. dia. The flitches were—12ft. 7in. × 2ft. 8in. × 10in ; 12ft. 7in. × 2ft. 8in. × 9in. (2.) The 5 stringy-bark sleepers were 12ft. × 2½in., 9 × 5—14 pieces in all.

Messrs. Moore & Quiggin sent as follows :—Nos. 15, 16, and 17—Stringy gum (*hybrid* sp.), 16ft., 10 × 4. Nos. 18, 19, and 20—Gumtops (*E. Siberiana*), 16ft., 10 × 4. Nos. 20 and 21—Two pieces blackwood (about 16ft.) All this timber was shipped per *Corinth*, and marked with white paint, and branded " Tasmania," and every piece numbered consecutively.

Messrs. Ford and Harris forwarded timber as follows:—Nos. 1, 2, 3—Blue gum (*E. globulus*) 4 × 4, 13ft. 6in., 6 × 3, and 3 × 3. No. 4—Stringy bark (*E. obliqua*) 8ft. 6in., 4 × 7. No. 5—Stringy-bark, 9ft. 4 × 4. No. 6—Swamp gum (*E. amygdalina*), 14ft., 7 × 2. No. 7, 8, 9, and 10—(*E. obliqua*)—Stringy-bark, 16ft., 8 × 4; 16ft., 6 × 3; 14ft., 6 × 4; 14ft., 6 × 4.

Messrs. Risby & Co. sent some splendid timber (stringy bark), from Adventure Bay, as follows:—Nos. 12, 13, 14, and 16—9ft., 9 × 5. Nos. 17 and 18—9ft., 8 × 4, 6 × 4. No. 19—One piece blackwood, 8ft., 9 × 3. No. 20—One pair stringy-bark cart-shafts. No. 21—One pair blue-gum felloes. Nos. 22-23—Two pieces Huon pine, 4ft. 9in., 5 × 4; 3ft. 6in., 6 × 4. No. 24—One pair blue-gum felloes. No. 33—Six blue-gum spokes.

Messrs. H. Chesterman & Co. sent Nos. 26-32—Pieces blue-gum, 7ft., 4½ × 5, 4½ × 4½; 8ft., 6 × 5, 5½ × 5½; 10ft., 7½ × 7½, (1 pair shafts not sent.) Nos. 34-37—Stringy-bark, 17ft., 4 × 2, 2 pieces; 12ft., 3 × 2, 2 pieces. No. 38—Piece blue-gum, 10ft., 3 × 2. 39 & 40—2 pieces stringy-bark, 10ft., 3 × 2.

Mr. John Hay, Hastings, Nos. 41-47—5 pieces blue-gum, 9ft., 8 × 6; 2 pieces, 14ft., 9 × 3. Nos. 48-56—Blue-gum, 14ft., 9 × 3. Nos. 57 and 58—2 pieces stringy-bark, 14ft., 3 × 2. Nos. 59-66—Blue-gum, 14ft., 3 × 2. Nos. 67-68—2 pieces pencil cedar, (*Acacia melanoxylon*), 6ft. 6in., 6 × 3. Nos. 69, 70—2 pieces white myrtle (*Fagus Cunn.*), 5ft., 3 × 3. No. 71—Sassafras log, 2ft. 12in. diameter (*Atherosperma moschatum.*) No. 72—Small blackwood log, 5ft., 18in. diameter. Nos. 73-76—4 pieces, sleepers, stringy-bark, 9ft., 9 × 5.

Mr. Graves, of Southport, did not send timber, though written to more than once upon the subject; but I managed to get two sample sleepers from the Government Storekeeper, which were of excellent quality, and had been lying in the yard for three years. These were branded by Mr. Graves, and sent up to Hobart as samples for contract for railway sleepers. I also obtained two others, marked H. Chesterman. These 4 sleepers were numbered 77, 78, W. Graves; 79, 80, H. Chesterman; and were blue gum, thoroughly seasoned, being sent to London to show the lasting capabilities of this timber in the open air, after being exposed for three years to wind and rain in stores yard, without any care whatever.

Geeveston.—Two pieces, Nos. 81, 82, were from this celebrated timber district, and were fine pieces of blue-gum *decking* timber for wharves, and were obtained from the Marine Board, through the courtesy of the Master Warden, F. H. Wise, Esq. This completed the list of timber supervised by myself; and the whole were very fair specimens of our best timber.

A few days after I left Hobart for the West Coast, timber from several sources came in with a rush; and these were kindly inspected and passed by Mr. John Bradley, Timber Inspector of the Public Works Department, instructed by the Hon. the Minister of Lands.

Messrs M'Dougal & Co., of Recherche, sent a fine lot of myrtle and 10 pieces stringy-bark. Nos. 83-92, 9ft. × 4½in., 6ft. × 6in. Nos. 93, 96, 102, 103—12ft., 3 × 3, red myrtle (*Fagus Cunn.*) Nos. 94, 95, 97, 99, 100, 108—12ft., 3 × 2 red myrtle. No. 98—12ft., 5 × 2. Nos. 101, 109, 12ft., 6 × 2. No. 104—12ft., 10 × 6. Nos. 105, 106—12ft., 8 × 4. No. 107—12ft., 10 × 5.

Mr. John Judd, of Port Esperance, sent a number of specimens, which were not intended for London at all, but were shipped in error. A number of samples of native woods were also shipped, which were sent from Mr. John Hamilton's mill at Surges Bay, but I have no record of these in the office, and they were apparently not numbered. These were 3ft. blocks.

Mr. John Geeves sent from Geeveston Nos. 118 to 129—10 pieces blue-gum, 10ft., 9 × 5. Nos. 114-117, also 112, 113, consisted of specimens of native hickory, blackwood, swamp-gum (boards), and stringy-bark, gum-top (boards), from Mr. Judd.

Mr. Drysdale, from Port Esperance, sent Nos. 110, 111—Blue-gum, 2 fine seasoned pieces.

The planting of the streets in Municipal Towns or by Road Trusts.

Miscellaneous.—During a late trip down the East Coast in June last, I was consulted by members of the Road Trust of the St. Helen's District *in re* the planting of trees in the public streets of the town. I inspected the streets, and proposed sites for tree-planting, and prepared a list of trees suitable to the locality; and I am pleased to note that the Trust has gone to work in an energetic manner, and the trees recommended have been planted.

As the improvement of the streets of the country towns may be looked upon as useful as well as ornamental, I shall always be happy to give advice on this matter to anybody taking up tree-planting for the improvement of streets, and trust that many of our railway stations may also be taken in hand, and thus made much more attractive than at present.

I have to acknowledge, with thanks, the receipt of the following Reports (official) during the past year:—

1. From the Secretary of Mines, New South Wales: Forest Reports, books, pamphlets, &c.

2. From Professor Kirk, New Zealand: Forest Reports, 1885-6.
3. From J. E. Brown, Esq., F.L.S., South Australia: Forest Reports, 1885-6.
4. Vegetable Products Commission, Victoria: Progress Report (3), 1886; from the Secretary.
5. From Baron Ferdinand von Mueller, K.C.M.G.: Leaflets from various publications announcing the discovery of new plants.

Office accommodation, lack of, &c.

Office Accommodation.—In this matter I feel I have just cause for complaint, as at present I am a veritable "Ishmael" of the Lands Office. The room allotted to me having been "jumped" by the Mining Department, I have no place for papers, letters, &c., whilst a small though valuable private library (works of reference, &c.), and a number of valuable natural history specimens, are slowly but surely being spoiled through the lack of proper accommodation.

Distance travelled.

Distance travelled in Tasmania since 30th June, 1886.—At a rough estimate the distance travelled over during the past 12 months has been nearly 4000 miles, of which quite one-fourth has been performed on foot, in consequence of the lack of horses—and, indeed, in many cases, of civilization generally.

Sample Woods donated for Museum purposes.—Eleven pieces of fancy woods were received from Mr. F. Kayser, of Waratah, for museum purposes. It is proposed to have these polished and set in position as soon as accommodation is found for them.

Section IX.

Exploration of new and little known Country.

Exploration of new country in the Southern and Western Districts of Tasmania.

During the past year several expeditions into country hitherto deemed inaccessible have been made, thus enabling me to obtain an insight into the trials, dangers, and discomforts which the hardy pioneer—the digger—has to put up with in his search after the precious metal.

These expeditions, though occupying but a very short time in the several journeys, have been of much use in enabling me to form an idea of the main forest features of our excessively wild Western, and comparatively unexplored, country.

Southern portion of the Colony.

Two of the short journeys made were in the southern part of the Colony, and included country not hitherto, or only partially explored.

The principal object of these journeys was the discovery of Huon pine, blackwood, and forest timber generally, and, with the exception of the forests and timber named herein, the result was a decided failure, as the bulk of the timber lands any distance back from the eastern coast line (or south-eastern) is of the most inferior character.

Expedition to the Picton River, at its junction with the Huon.

Expedition to the River Picton, and its junction with the Huon.

On the morning of the 13th October I left Victoria, accompanied by Mr. Heron, District Engineer, and two others. We reached the Arve River at mid-day, and proceeding some few miles further on, camped for the night at the Arve "Eddy." The country passed through was not very interesting, and the route from She-oak Hills to the Arve skirted the base of the ranges flanking the Huon, and, just before reaching the Arve, the ranges recede southward and form the valley of that river. It is densely timbered, and a large quantity of good blackwood is growing a few miles from the mouth of the river, and splendid timber, both blue-gum and stringy bark, is to be found in abundance. The open forest land previously met with terminates at the Arve, and a few miles further on button-rush plains, with heathy scrub and open forest, are met with until the "Picton Forest" is reached.

The River and Valley of the Arve.

The timber resources of the Picton Forest.

Camping for the night at a place known locally as the "Arve Eddy," some six or seven miles from that river, we pushed forward early next morning and reached the "Picton Forest," after travelling about six miles. Here a considerable area of fine agricultural land exists, covered with good timber, chiefly peppermint *(E. amygdalina)*, stringy bark *(E. obliqua)*, celery-top pine *(P. rhomboidalis)*, blackwood *(A. melanoxylon)*, Huon pine *(D. Franklinii)*, with other smaller trees and scrubs, including pear-tree *(pomaderris)*, the latter denoting good land; also young trees of Huon pine in isolated places.

Good land and rich flats on right bank of River Huon.

The right bank of the River Huon is very heavily timbered from a point nearly opposite the She-oak Hills, and from the confluence of the Russell River with the Huon numerous rich flats will, I think, be found extending some distance back from the river, that is, judging from the luxuriance of the vegetation and size of the trees.

Practicable road or railway route *viâ* Picton Forest to Upper Huon.

Should railway communication ever be desirable in years to come in order to open up the Craycroft and Lake Pedder country, a route could easily be found as far as the River Picton on the left bank of the Huon, which would tap the good land in the "Picton Forest," or, by crossing

SKETCH PLAN OF
THE LAPEROUSE RANGES

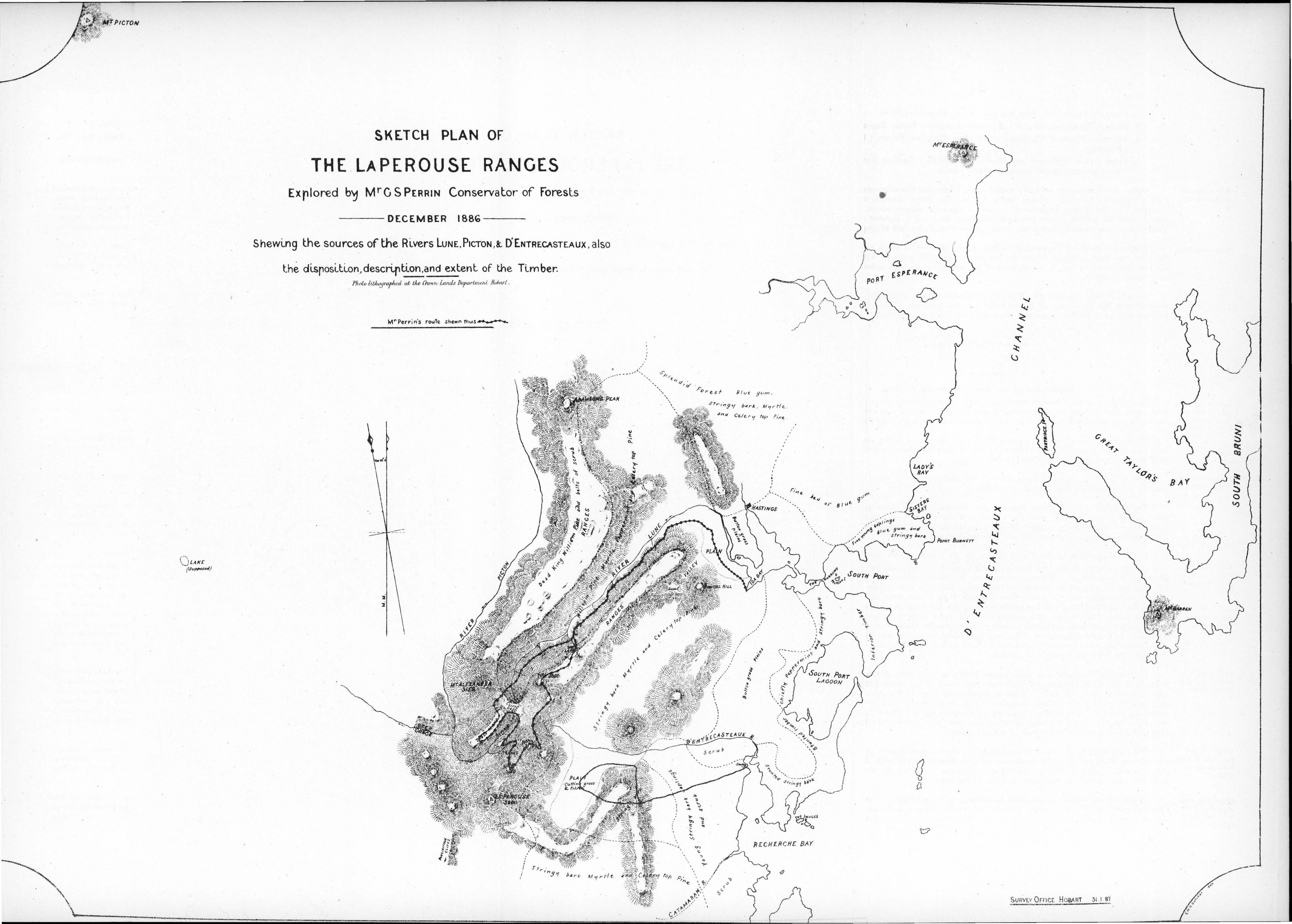
Explored by Mr G S PERRIN Conservator of Forests

DECEMBER 1886

Shewing the sources of the Rivers LUNE, PICTON, & D'ENTRECASTEAUX, also the disposition, description, and extent of the Timber.

Photo-lithographed at the Crown Lands Department, Hobart.

Mr Perrin's route shewn thus



Mt PICTON
Mt ESPERANCE
PORT ESPERANCE
CHANNEL
D'ENTRECASTEAUX
GREAT TAYLOR'S BAY
SOUTH BRUNI
Mt BARREN
PARTRIDGE I.
LADY'S BAY
SISTERS BAY
POINT BURNETT
SOUTH PORT
SOUTH PORT LAGOON
HASTINGS
Splendid Forest Blue gum, Stringy bark, Myrtle and Celery top Pine
Fine bed of Blue gum
Fine young saplings Blue gum and Stringy bark
Interior timber
Chiefly Peppermint and Stringy bark
Stunted timber
Stunted Stringy bark
Button grass plains
Button grass plains
PLAIN
LUNE
RIVER
RANGES
VALLEY
CONICAL HILL
PICTON
RIVER
Dead King William Pine and belts of Scrub
Celery top Pine
Stringy bark Myrtle and Celery top Pine
LAKE (Supposed)
M.M.
Mt ALEXANDRA
D'ENTRECASTEAUX R.
Scrub
PLAIN
Cutting grass & Tiri
LA PEROUSE
Stringy bark Myrtle and Celery top Pine
Young Stringy bark and Scrub
CATAMARAN R.
Scrub
RECHERCHE BAY
THE IMAGES
SURVEY OFFICE HOBART 31.1.87

the River Huon near the mouth of the Arve, cut the fine river flats on the right bank of the former.

Considerable engineering difficulties would be met with on the right bank of the Huon until the mouth of the Arve was reached, as high precipitous hills to the water's edge extend for some distance above the junction of the Russell with the Huon. These hills could be avoided by keeping to the left bank as far as the Arve, and thence across the poor land (button-rush and heath) to the first-class land in the "Picton Forest." Difficulties of route on right bank.

Huon pine is very scarce, and is only seen occasionally on the banks of the river, and but few young trees came under notice—none at all of any size—the matured ones being cut years ago. Huon pine scarce.

On reaching the Picton, we crossed the river on the suspension bridge, which was very shaky, and it required no little nerve on the part of those using it to do so, from the decidedly insecure appearance of the guys or wire "stays" supporting the structure, which, sunken in the middle with the planking twisted over, swayed dangerously from side to side at every footfall, at a height of some 40 feet above the boiling and swiftly rushing waters of the river. Bridge over Picton in shaky condition.

In spite of the dangerous character of the bridge we found time to note from its centre the bold snow-capped peak of Mount Picton some nine miles south west. On recrossing, we commenced our return journey, and again camped at the Arve "Eddy," reaching Victoria on the lower Huon, the evening of the following day (16th). Mount Picton.

Expedition to Plain at the back of Recherche, at the foot of the eastern slope of Mount La Perouse.

On the 6th December, with Mr. Cuthbert, of Recherche, we made our way through dense timber scrub at the back of the mill almost due west to plain situated some four or five miles in the direction of La Perouse and towards the head of the D'Entrecasteaux River. Expedition to head of D'Entrecasteaux River and Plain at foot of Mount La Perouse.

This plain—so called—was certainly clear of large timber, but if cutting-grass (*Cladium psittacorum*), 8 feet to 12 feet high, and dense tea-tree scrub of equal height, can be called a "plain," then imagination must be greatly at fault.

In this journey but little timber suitable for useful purposes was seen, and apparently the little there is is confined to the banks of the D'Entrecasteaux and a low range of hills extending from that river in a S.E. direction, thence joining the wooded foot-hills of Mount La Perouse and the timbered lands of Lower Recherche around the head waters of the Catamaran Creek. (See plan herewith.) Timber scarce and only growing close to the coast.

After crossing this range the plain (?) is met with, and extends back towards the foot of La Perouse for some miles, having clumps and belts of trees alternating with tea-tree scrub and cutting-grass so thickly matted together as to bar our progress, except by climbing over it. Tea-tree scrub and cutting-grass (*Cladium psittacorum*).

Some portions of the land appear to be of fair quality, but liable to inundation from the D'Entrecasteaux in the winter.

After struggling through the heavy scrub we emerged into a fairly open space, and as the day was cold we foolishly lit a fire, and bitterly regretted the act half an hour afterwards, as it spread so rapidly that we had to beat a precipitate retreat, and for some two hours were in imminent danger of being burnt, but, fortunately, rain set in and stopped the fire just as we were completely exhausted with our battle with the cutting-grass scrub and the blinding smoke. Danger of lighting fires in scrub.

Expedition to La Perouse Ranges, the Valley of the Lune, and the high Table-land on the Western or Picton fall of Mount La Perouse.

On the 8th December left Ida Bay, accompanied by Mr. E. Tyler, and, following the track cut out by Mr. Innes some five years ago up the valley of the Lune river, we camped at a place some fourteen miles from Ida Bay. Next morning we made an early start along a track by no means distinct, on account of the undergrowth and the fallen trees lying across it in all directions. Each day we passed through a fine forest of peppermint gums (*E. amygdalina*) of very large size, and apparently of extra good quality, though not numerous, being scattered among the myrtles and other trees, including celery-top (*Phyllocladus rhomboidalis*) and King William pine (*Arthrotaxis selaginoides*), with other vegetation common to the forests of Tasmania in abundance. Expedition to the Western or Picton fall of the La Perouse Range and the sources of the Picton River. Timber, &c.

After proceeding along the deep gorge or valley of the Lune for some miles it "pinches" in, and the crags and serrated summits of the rugged rocky table land connecting Adamson's Peak with the mountain system of the La Perouse range closely approach the opposite range of hills running north of the latter. Valley of the Lune River.

The track rises in altitude rapidly, and at 2000 feet (aneroid) we stand above the surrounding vegetation, and obtain a grand view of the Lune valley: huge precipices and waterfalls leaping over high cliffs appear in view. Crossing several small streams we suddenly found Altitude 2000 feet, (aneroid).

Taylor's Grave.

our path barred by an old axe stuck in a stump with the handle across the path. This implement Tyler suggested probably belonged to the unfortunate man Taylor, who was frozen to death in this vicinity some five years ago. All doubt upon the matter was quickly set at rest, for on looking about I saw a small terrace a few feet below the path; jumping down on the ledge below, I grasped a small stone half hidden by moss, ferns, and dead leaves, and there sure enough was the dead man's skull exposed on my removing the stone. The burial had evidently been hastily performed by the relief party, on account of the extreme cold, some of the members of which also nearly perished. Hastily replacing the stone, and scraping fresh earth, dead leaves, and ferns over the grave, and then blazing a tree at the head, we retired, somewhat saddened at the discovery of so ghastly a relic of a bushman's fate.

The head waters of the Lune River.

A few miles further on the route became more difficult, and the ascent steeper, whilst the valley still narrowing rapidly, was now only a half mile wide, and on mounting a rather steep hill we again left the shelter of the timber, and obtained a most extensive view of the valley we had toiled along so far, and of the double-headed peak of Adamson, north-west of our position. Another half hour's climbing brought us to the top of the table land at the head of the Lune, and close to Mount Alexandra; here we left Mr. Innes's track for good, and stepping out over the flat plateau we found ourselves in new unexplored country.

Tablelands open country on west side of Mount La Perouse.

The sources of the Picton River.

The view to the west was splendid. The Arthur Range, some 40 miles away, with its curious peaks and needle-pointed pinnacles, rising abruptly from the surrounding hills, in the distance, with the Picton valley immediately at our feet, its two branches uniting at, or near, the foot of Mount Alexandra; one branch coming in from the south-west, down a frightful-looking gorge, dark with myrtles and scrub, whilst the other branch wound its sinuous course from the south-east, and proceeding apparently from the south-western foot of Mount La Perouse.

Precipices and perpendicular cliffs into the Picton Valley.

Deciduous beech.

After travelling some miles over the plateau we found our further course blocked by a series of tremendous precipices or perpendicular cliffs, densely scrubbed with "horizontal" (*Anodopetalum biglandulosum*), and here I was fortunate in securing a flowering specimen of *Fagus Gunnii*, the Tasmanian deciduous beech. This is chiefly interesting from the fact that flowering specimens have never been described so far as I am aware; (the specimen has since been sent to Baron von Mueller).

Dead *Arthrotaxis*, or King William pine, killed by frosts, 1837.

Considerable numbers of *dead* King William pine are met with of both species, *A. selaginoides* and *A. cupressoides*; the former showing their larger trunks—bare, bleached skeletons glistening white in the sun, and shining at intervals with a silvery lustre among the dark green myrtles and scrub; a few live trees are met with, together with stunted specimens of the latter species, but the majority are dead, probably killed by the great frosts of 1837.

Barren, useless, rocky scrub-covered ranges.

There appears to be little or no timber of any consequence on the western side of the La Perouse range, nor to the west of the range or table lands connected with Adamson's Peak, except in the valley of the Picton and the gorges at its sources. All the rest of the country appears bare, rocky, cold, and dreary, and an immense extent of barren, useless, scrub-covered country stretches away in various directions for miles.

No trace of minerals.

I could find no trace of minerals, as the geological formation is chiefly sandstone, with a little conglomerate gravel in places, and mudstone at the lower levels, where I saw also a few veins of hard flinty quartz.

Even in the middle of December it was bitterly cold at an altitude of 3500 feet, so that the winter must be most severe, and almost Antarctic in character.

Cliffs and precipices barring progress.

After making several ineffectual attempts to penetrate the fearful scrub and to descend the cliffs before mentioned, we followed them round, and ultimately succeeded in crossing the deep gorge which barred our progress by "heading it" at a point not very far from Innes's track, and quite close to the cliffs overhanging the Lune source; and on surmounting a bare hill, we were rewarded with an uninterrupted view of Mount La Perouse from base to summit, which latter portion of the mount still had snow in patches in the ledges; and there at our feet, right at the base of the mountain, lay two small lakes quite close together, from which a stream ran into a gorge, and thence into the south-east branch of the Picton. Descending the hill and crossing the intervening gorge, we went close to the lakes, but not to the water's edge, as our time was limited. So pushing on we attempted to scale La Perouse, but also finding that impracticable in consequence of the limited time at our disposal, we most reluctantly relinquished the attempt, and contented ourselves with climbing the three lesser mountains adjoining, which form a prominent portion of the La Perouse range, and obtained their altitude (by aneroid)—(see sketch-plan herewith). We then steered a north-west course from the mountain top through dense "horizontal" bauera (*Rubioides*), and tea-tree (*Melaleuca*), and, diving into the dense scrub thickets, we soon lost sight of mountains, and almost of the sky itself, and as evening drew on apace it was with difficulty we could see to read the compass, and after a zigzag course of some five miles, and a terrible struggle of over three hours, we eventually struck Innes's track, and once more regained our camp of the previous day, with our clothes in rags, and thoroughly exhausted. Starting at daybreak next morning, we arrived at Ida Bay early in the afternoon.

Two small lakes discovered at foot of Mount La Perouse.

Altitude of the La Perouse Range 3500ft. (Aneroid).

Dense scrub thickets.

West Coast Overland Expedition from Hobart.

Overland expedition to West Coast from Hobart *viâ* the Ouse, Lake St. Clair, &c.

On the 17th of February, a party, consisting of the late C. P. Sprent, and Messrs. R. M. Johnston, G. S. Perrin, Colonel Legge, H. V. Bailey, C. Piguenit, J. B. Walker, and the late A. L. Giblin, left Hobart for the Ouse. 18th, Bronté was reached; 19th, the Derwent Crossing, about one mile from Lake St. Clair, was our next camping place. A visit to the Lake was much appreciated, and the magnificent mountain scenery duly admired.

Seeds of *Arthrotaxis cupressoides* obtained for the first time at Lake St. Clair.

On the shores of the Lake, near the source of the Derwent, I obtained nearly ripe seeds of *Arthrotaxis cuprèssoides*, the first I had seen, also seeds of *Deselma Archeri* and *Microcachrys tetragona*—dwarf pines. Numbers of the species *A. selaginoides* are to be found on the slopes of Mount Olympus and in the Cuvier Valley.

20th.—Crossed the Navarre Plains: good-looking black soil, but the sandstone rock is too close to the surface, and the earth shallow in consequence—fine sites for pine plantations, if soil could be found deep enough to ensure successful planting.

Navarre Plains and Clarence River.

Picturesque mountain scenery.

After crossing the Clarence and one or two small creeks, and on getting well out into the plain, a fine panoramic view of the wild Western Mountains presented itself. The King William Range lay south west, Mount Arrowsmith due west, Mount Gell, north north-east, in the direction of Lake Dixon, Olympus and Ida, both cloud-capped, north east, with Mount Charles in the background, and other mountains yet unnamed, formed a scene of picturesque grandeur which was eagerly scanned, and many of the beauties of the landscape were transferred to the sketch-books of the various artists of the party.

Lake Dixon.

On reaching the Iron Store (10 miles from Arrowsmith) we paid a visit to Lake Dixon, which we found to be one of two small lakes connected by a small swiftly rushing stream with Lake Undine, situated in the Cuvier Valley, and acting as reservoirs to the River Franklin. Thus far the timber passed through on our journey was chiefly remarkable for its uselessness, except for firewood and fencing purposes.

Geological change of country followed by a change in the character of the timber, Mount Arrowsmith.

At Mount Arrowsmith a notable change in the geological characteristics of the land takes place, and seems to extend along the mountain chain to Lake St. Clair *viâ* Lake Dixon, Mount Gell, and the south end of the Cuvier Valley. Coincident with this geological change, a like result obtains with regard to the timber, as a marked and well-defined belt of myrtle and pine country follows the geological change in the land, as above noted, and we here leave the open forests of stringy-bark (*E. obliqua*), white or weeping gum (*E. coriacea*), the small scrub-like gum (probably *E. pulverulenta*), and manna gum (*E. viminalis*) behind us, and soon enter the dense myrtle groves of the West Coast.

Dwarf Eucalypt, Mount Arrowsmith timber, &c.

February 21.—An early start was made from the Iron Store for Mount Arrowsmith, the Franklin, Surprise, and the Government road party's camp on the Upper Collingwood (26 miles). At Mount Arrowsmith I noticed that the dwarf gum (*E. vernicosa*), and the Tasmanian beech (*Fagus Gunnii*) grow freely on the slopes of the mountain above 2000 feet altitude. On the north-western and northern slopes some magnificent gullies or gorges, covered with dense beech forests (*F. Cunninghami*), together with *Arthrotaxis selaginoides*, or King William pine, which were met with here for the first time on this journey.

Frenchman's Cap.

The members of the party were greatly delighted at the first sight of the Frenchman's Cap, of which a grand view was here obtainable, that celebrated landmark towering up grandly in the distance, its hoary head crowned with snow, and, standing up bodily above the peaks and surrounding vegetation, asserted its right to be called "the Monarch of the West Coast." It was indeed a fine sight, and no doubt hereafter thousands of tourists will never tire of describing its exceeding grandeur and great artistic beauty.

The descent from Mount Arrowsmith is tolerably steep, but a good roadway has been cut into the gravel round the sides of the mount.

The new road and bridge over the Franklin.

After crossing the Surprise we reached the Franklin early in the forenoon, and, passing over the new bridge (a good piece of work), only finished that morning, and gaily decorated with ferns and berries in compliment to Mr. Sprent, we reached the Collingwood, which we crossed early in the afternoon, and, a little later on, the Cardigan; and after a long and weary march of 26 miles we arrived, very footsore, at the road party's camp on the banks of the Upper Collingwood, two miles from the Cardigan.

The timber passed through this day was chiefly myrtle or beech, with a little King William pine here and there. On the banks of the Collingwood I obtained my first specimen, *with seeds*, of *Arthrotaxis selaginoides*, the true King William pine of the West Coast (February 21.)

22nd February.—From this camp preparations were made for an early start, as the real difficulties of the journey had now to be encountered, for the members of the party, with two exceptions, had to carry their provisions and camping gear made up into swags of from 54 lbs. to 35 lbs. weight each. Six of the party here essayed the feat of reaching Mount Lyell through the roadless and all but trackless bush, Colonel Legge and Mr. Piguenit returning in consequence of other pressing duties, which prevented them from going further, and most reluctantly bidding us farewell, to our great regret.

On the evening of the 23rd camp was formed, shortly after crossing the Nelson, and a most miserable night was spent in a dense dank forest of ferns and cutting-grass (*Cladium psittacorum*, Muell.), for as it was too late to make the King, which was our original intention (as our tent and other things had gone on earlier in the day), down came a drenching rain, which forced us hurriedly to pitch camp the first place we could find; and having only a "fly" with us, we had to make the best of it, and passed the night in the rain, which never left off until morning; and, in addition to our troubles from the wet, we were invaded by perfect hordes of leeches and mosquitos. This day we passed through dense fern groves (*Dicksonia antarctica*), beech forests, with a little gum timber (*E. amygdalina*), a great deal of scrub (*Bauera rubioides*), and one or two button-rush (*Gymnoschænus sphærocephalus*) plains, and a few beds of King William pine, but so far not a single Huon pine had been seen, though I am told they are found on the Franklin, not far from the bridge.

Arrival at King River and Mount Lyell.

24th February.—Having dried our saturated clothes, we made an early start and reached the King River at midday, and Mount Lyell at about 5 o'clock, after a very trying journey from the Collingwood along a track not very easy to follow—rough, and broken by hills and gullies, and tangled vegetation of every kind. At the King River we saw the Huon pine fairly abundant, and I am of opinion that the extensive pine forests one *hears* so much about, but which are never *seen*, may be found on the Lower Franklin and Acheron Rivers, and along the banks of the Gordon some forty miles from its mouth. There is certainly none on the Upper Franklin, nor in the Collingwood Valley, except King William pine, and that is not sufficiently abundant to warrant expense in getting it out. Myrtle is the prevailing feature of the timbered lands, and exists in immense quantities.

Huon Pine on Gordon, Franklin, and Acheron Rivers.

As I have previously described Mount Lyell and the country round the King and Queen Rivers, Macquarie Harbour, the Henty, and Pieman Rivers, I need not say any more on that subject here.

Expedition arrived at Waratah.

The members of the expedition arrived at Waratah on the 4th March, thus accomplishing a distance of over 200 miles on foot in 17 days, including a stay of 3 days at Mount Lyell, Macquarie Harbour, and Lynch's; so that, considering the importance of the objects achieved, no time was lost, and the journey must rank as one of the fastest on record.

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