

PAPERS

RELATING TO

STATE FORESTS,

THEIR CONSERVATION, PLANTING, MANAGEMENT, &c.

PRESENTED TO BOTH HOUSES OF THE GENERAL ASSEMBLY, BY COMMAND OF
HIS EXCELLENCY.

WELLINGTON.

—
1874.

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PART I.

NEW ZEALAND.

I.—PARLIAMENTARY DEBATES AND RESOLUTIONS.

THE FORESTS OF THE COLONY.

("Hansard," 7th October, 1868.)

PART I.

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MR. POTTS moved, "That it is desirable Government should take steps to ascertain the present condition of the forests of the Colony, with a view to their better conservation." He had put that motion on the Order Paper in order that some attention might be drawn to the state of the forests of New Zealand at the present time. Although it might more vitally affect the Middle Island, at the same time he thought the forests of the entire Colony should have some attention bestowed upon them. He had waited with patience to see if some steps would be taken to preserve the forests, which were the admiration of every visitor to New Zealand; and he considered that it was quite time that some action should be taken in the matter. By taking that course he did not intend to wound any provincial susceptibilities by imputing any blame to those gentlemen who had the administration of Crown Lands, although his impression was that it would have been well if more attention had been given to the state of the forests and waste lands. He considered the rapidity with which the woods were destroyed would make them disappear in a short time, and work a great change in the prospects of the settlers. The mischievous results from the cutting down of forests in a wholesale manner had called for the attention of the Legislature of Victoria; and in America, where the settlers had been exceedingly wasteful of the wood, it had been suggested to the Government that they should make some reserves in perpetuity. Marsh, an American writer on physical geography as modified by human action, citing the effects of disforestation on the French slopes of the Alps, and other localities, carefully points out the varied influence of the forests, as shelter, on temperature, on humidity, on floods, on the flow of springs; and his arrangement of facts proves the removal of forests to be the primary cause of excessive inundations. He (Mr. Potts) believed they could see an example of this in the stream which flows through the valley of the Hutt. Since the settlers of that part of the Province commenced clearing, an entire change had taken place in the river. He believed a very short time would effect a similar change in the rivers of Westland. Hochstetter, speaking of the local character of that noblest of New Zealand trees, the kauri pine, says:—"Extensive districts, which had formerly been covered with kauri wood, are now totally destitute of such, and the extermination of that noble tree progresses from year to year at such a rate, that its final extinction is as certain as that of the natives of New Zealand." Writing of the soil requisite for the growth of kauri, he says:—"Individuals should not be suffered to ravage those precious woods, and to turn the country into a desert, to the detriment of whole generations to come. For the sake of a few serviceable trunks, sometimes whole forests are burnt down and desolated, and what formerly had been employed in the war of cannibal tribes in a stratagem to burn out the enemy, is done now for the sake of money. The woods are ransacked and ravaged with fire and sword. During my stay in Auckland, I was able to observe from my windows, during an entire fortnight, dense clouds of smoke whirling up, which arose from an enormous destructive conflagration of the woods nearest to the town. When the fire had subsided, a large, beautiful tract of forest lay there in ashes." What will the world-wide readers of Hochstetter think of our barbarous improvidence? The same warning had been pointed out twenty-five years ago. An official of the New Zealand Company had also pointed out the destructive propensities of the settlers in cutting down valuable wood. He says:—"A melancholy scene of waste and destruction presented itself to me when I went up to see this forest. Several square miles of it were burning, having been fired in order to make room for the conveyance of logs down to the creek. Noble trees, which had required ages for their perfection, were thus ruthlessly destroyed in great numbers." The immense variety of trees, comprising most of the New Zealand trees (except the *Dammara* and *Fagus* forests, which species are mostly gregarious), should not be lost sight of, the timber being suitable for a vast variety of purposes,—spars, planks, ships' knees and timbers, ground-sills, piles, sleepers, wedges, blocks, and furniture of exquisite beauty in grain and markings. At the exhibition of 1862 he saw some splendid articles of furniture made of kauri wood sent from Auckland for exhibition, and they were very highly valued indeed. A manufacturer of furniture of high class had stated that there was great difficulty in getting the kauri wood, as well as the high price that had to be paid for it. Besides

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the timber itself, the forests would furnish bark for dyeing and tanning purposes; the lichens covering the trees might in all probability possess dyeing qualities; resinous gums exuded from the *Dammara* and *Panax*, and perhaps many other varieties; vegetable oil had been expressed from the titoki (*Alictryon excelsum*). He believed many other useful products were only awaiting scientific investigation to add to the wealth and resources of the country; but unless some restraint was placed on the destructive elements now so actively employed, he feared the value of our woodland wealth would only be appreciated on the eve of its extinction. There was no doubt that wood was much wasted here, for he had a note from a writer formerly living in Auckland, who stated that he knew of wood used as firewood there, which fetched 1s. a foot for veneer at home. Eight veneers to an inch would give £4 16s. the cube foot. With regard to the condition of the Middle Island, he might mention that he had often seen Banks' Peninsula covered, for weeks together, with thick and lurid smoke; and in Pigeon Bay, a fire of a most destructive character occurring, an action was brought by the proprietor, under a Canterbury Ordinance, to recover damages, and which were recovered to the extent of £3,000; but, although notice might be taken in this manner in the case of private land, he did not think that notice was ever taken of any damage in the case of Crown land. No inquiry was made with reference to the destruction of large forests, and he thought something practical should be done in the matter, as also, perhaps, an inquiry as to the wisdom of the indiscriminate issue of timber-cutting licenses, the men being in the habit of skinning a bush, as they call it, a practice which, by the dry cuttings of underwood being left amongst the green trees, caused, when fire was accidentally set to it, most destructive results. Again, there was no distinction made by classifying bush land, and the finest timber land sold for the same price as the dryest shingle bed that would hardly feed a goat. Besides the destruction of wood by fire, other valuable products were destroyed which might be obtained from the bush, such as vegetable dyes and resinous gums, and the effect of such wholesale destruction would be, he believed, that they would actually exhaust their bush by the time they discovered its full value.

Major HEAPHY, V.C., supported the motion, as for many years past the fact had been patent that in the forests of New Zealand the best timber was not only decreasing in the natural order of demand, but from wanton and unnecessary waste. In the kauri forests in the North the small timber was almost always destroyed in order to get out the larger logs, and so small saplings, which might in a few years be very useful, were entirely lost. The Pohutokawa timber that used to fringe the coast of Auckland was now almost disappearing from being cut down for firewood instead of the legitimate purposes of ship-building or otherwise; and he had only to draw attention nearer still to the wretched appearance presented by the hills from Lowry Bay to the first gorge on the Hutt, caused by the wanton destruction of the bush timber that used to grow upon them; and he might add that he believed that in many instances the fires that took place not only destroyed the timber but also the vegetation and the soil for years, and he had seen many large tracts so rendered unfertile from the imprudent manner in which the country had been burnt. It had occurred to him often that if a portion of the funds accruing from the license fees for bush-cutting were appropriated to the maintenance of rangers to watch these forests, it would be a very useful course; part of their duty being to plant English seed from time to time where the Native timber had been used, and thus provision would be made for the future wants of the community, as well as insuring the forests against future wanton waste. He could conceive nothing more miserable in appearance than a country where the bush-timber had been destroyed, and more than that, where the kauri had been destroyed it was succeeded by a growth of the wild raspberry, utterly preventing all transit, and offering great obstacles to improvement.

Mr. BARFF almost regretted to see the motion placed on the Paper in its present form, and would suggest its alteration so as to make its application local, for although the honorable member seemed to consider the whole of New Zealand as placed in the same circumstances, he might point out that nearly the whole land in the district to which he belonged was so covered by timber, that an acre, costing perhaps £2 to purchase, cost £50 to clear; and in their district at least he thought they should be permitted to take some steps to destroy it without being interfered with by unnecessary legislation. He would therefore suggest to the honorable member to make the motion apply locally, or he should have to move an amendment for the preservation of his own district, and suggest the word "destruction" for "conservation," as the timber on the West Coast for hundreds of square miles was the great obstacle to the settlement of the country.

Mr. REID presumed the Government would only take those steps where the necessity occurred for preservation. He thought the matter one deserving serious attention; and last session it was brought before the Provincial Council of Otago on resolutions drawn up by a Select Committee, but they were thrown out by a majority of one, the result being that the forest lands there were left open for sale, which he believed would be ultimately to the great detriment of the Province. The object of the Committee was, that while leaving the use of the timber to settlers, a stop should yet be put to the wilful waste occurring to the public forests of the country, and he thought it was time that some authoritative body, having the welfare of the settlements at heart, should step in and do so; while, as he thought, the effect of the sale of the forests might be their passing into the hands of capitalists merely as a matter of speculation or as ornament to an estate. In Otago, he might point out, certain districts were surveyed and laid off with bush reserves for all time, and after settlers had purchased their land, in the full belief that the bush

was for their use, the Government stepped in and offered those lands for sale, which he could only characterize as an unfair thing, or at all events it would be so considered in a private business transaction. He should have much pleasure in supporting the resolution.

Mr. STAFFORD thought the House ought to be grateful to the honorable member for Mount Herbert for calling attention to this subject, although, at the same time, he must confess he saw a difficulty in giving effect to it, as all the Government could do at present would be to enter into communication with the Provincial Governments, in whom the administration of the Crown lands virtually rested, and there the question, as was the case in almost every large one attempted to be made general, would be met by a great disparity of circumstances; for in some parts of the Colony, instead of the preservation of the original timber being an object at the present time, that timber was in fact a nuisance, preventing beneficial occupation of the country. In a work on America, written by a celebrated European traveller of great discrimination, he had been struck by an observation to the effect that those parts originally densely timbered were now but sparsely timbered, whereas in those parts where formerly there was none to be found, were now flourishing plantations, with every prospect of supply for the future; and he himself had seen exactly the same process going on in New Zealand; for settlers, where little timber existed, were impressed from the first with the idea of planting trees; whereas, when settlers found themselves in the middle of a forest, the primary idea with them and their children was to destroy the timber. There were difficulties in every way with regard to this subject: the varying land laws, the objects for which forests were to be preserved, whether for purposes of utility—in which case the course to take would be merely to guard against undue waste—or for climatic purposes, in which case, of course, destruction of timber must be prohibited for any purpose. He quite coincided with the honorable member for Mount Herbert as to the great desirability of the country being clothed with a certain amount of arboreal vegetation, merely in a climatic point of view and with reference to the fertility of the soil, for they had evidence all over Europe of the evil effects of the great destruction of the original forests, not only on the French slopes of the Alps, but in the Vosges Mountains, and through Italy, Spain, and Greece; where the soil had not only ceased to be fertile, but had been absolutely washed away. That was more particularly the case in the Apennines and in large parts of Greece. Something of the same kind had taken place in New Zealand to his knowledge already, and it would go on at an increased ratio, because cause and effect reacted on each other in the matter. If this Legislature had the sole control of the Crown lands, a general law might be imposed for reserving a certain portion for forest purposes; but an attempt to act in the matter now would be met by the multiplicity of land laws under varying conditions, so that the question, though not insuperable, yet presented enormous difficulties to any action of a general nature. There was another condition which he feared would always lead to great destruction of valuable timber, that of the timber being set on fire; and he had known of a whole district burning for three months, in spite of the efforts of every one in the district to put it out. As far as he knew, no one was aware how that fire originated, and it might have been from the spark of a match. But the same thing occurred over the country more or less every summer, and even if it were attempted to prove who set the timber on fire, it might be next to impossible to do so; or, even if it were proved, it might be a man of no means, against whom there was no remedy. That would be always a great source of destruction, the more so where the forest was enclosed against cattle, as the rank undergrowth there made a fire more irrepressible. But as far as the Government could further the object, they would be desirous to do so, by calling the attention of the different Provincial Governments to the matter, and inducing them to make such propositions as would tend to the result desired.

Mr. VOGEL said the honorable member for Taieri had taken advantage of the motion to parade before the House a provincial question, being really to this purport: Should the forests be considered in much the same light as the commonage question in certain Provinces. There was no lack of information on the subject in the Province of Otago, and the question was, which was the best means of preserving the forest lands, which had been much considered, and although he believed that, after much consideration, there was great difference of opinion, some thinking the only chance was by allowing the forests to pass into private hands, it was rather with a view of preserving the forests than any other reason that a great deal of forest land had been alienated. He believed the invariable rule in a new country was the lavish use of native forest, just as in a new and productive gold field the miner was lavish of the gold. They tried withholding from sale in Otago, and found an outcry made against it, and it became a question whether the land would not have to be given away on account of the expense caused to the Government in keeping the ground clear of thistles. The forests when alienated were strictly protected, and these bush lands were highly valued; and as far as the resolution of the honorable member for Mount Herbert was concerned, if he understood the honorable member's wish, it was that the country should be protected and the bush should be preserved. He could not see how there was the slightest probability of bringing in a question on which a member had been defeated in his Province, and giving him the opportunity of parading it before the House on any question. The question of forest land was something the same as that of commonage, and they were all interested in the best means of protecting the Native forests, and teaching the people not to be too lavish in their use, and making them understand that a district might become desolate on account of the destruction of Native timber; and he might mention here that it was in contemplation in his Province to devise some means for encouraging an extensive system of planting. He had made those remarks because he would be sorry to have it supposed that in the Province of Otago

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those who had the charge of the Government were not alive to the advantages of preserving the forest. They found that there were a large number of licenses issued every year, and there was therefore great danger of fire, and that in fact the selling of the bush in small parcels, and not in large tracts, to private individuals, had been by far the most successful means of preserving it. It was with that view that the sales had been made in the Province to which he had the honor to belong.

Mr. TRAVERS said he did not understand that his honorable friend proposed to interfere with the disposal of forest land to private individuals, but that his motion was directed to the conservance of the forests which still remained public property. He had been professionally concerned in the action to which his honorable friend alluded, in which Messrs. Holmes and Co., the contractors for the Christchurch railway, recovered £3,000 for the destruction of a forest on their property. There was not the slightest doubt as to the actual value of the timber destroyed, and it was upon very clear evidence as to its value that the decision of the jury was based. The fire ran over about 5,000 or 6,000 acres of their property, and it was clear that the timber alone that was destroyed was worth over £3,000. He might say that the whole of the timber which supplied the thirty miles of railway already constructed in Canterbury was derived from that single forest. But it was not alone that forest which was destroyed; the fire in question raged over Banks' Peninsula for upwards of two months, and timber was destroyed over an area of 20,000 or 30,000 acres, and it was impossible to estimate the extent of damage actually done on that occasion. It was believed, however, that there could not have been less than some £70,000 worth of timber destroyed, for in those forests, as soon as the fire passed through, the timber fell; the most valuable, the totara, was consumed, and the remainder rapidly decayed. The destruction of the forests in the upper portion of the larger valleys had a most pernicious effect on the drainage of the country, and, by precipitating the whole of the rainfall into the rivers with great rapidity, produced the destructive floods that had become so common. In the department of the Ardeche, in France, in consequence of the timber being destroyed at the head of one of the branches of the Rhone, the precipitation of the water into the river had caused an overflow, which completely destroyed a large tract of country, and reduced to a shingle bed what had previously supported 27,000 people. The quantity of water flowing into the Rhone from that single branch was found, by computation, to exceed the water discharged by the Nile at its highest flood. He was quite satisfied that the floods of the Waimakariri and other rivers had been enormously increased by the indiscriminate burning of the timber at the head of those streams—a destruction, too, of the most wanton character. Some of it was due to the fact of the grass on the runs being burnt for the purpose of providing fresh pasture, but a large quantity was destroyed for no useful purpose. In Nelson a large portion of the forest was burnt for the purpose of clearing, without any regard to the distance which it might extend over public property. He apprehended that the intention of his honorable friend was to find out what was the condition of the forests on the public estate, so that measures might be taken to prevent their destruction by owners of private property, and to prevent the issue of licenses. It would be useless to trouble the House with any observations as to the effects that the destruction of the forests had upon the climate. It was well understood that in Canada the cold had been rendered more intense by the destruction of the forests, so that some parts of the country were almost uninhabitable. The question had been much studied in America, and it was found that the time necessary to replace the growth made it important to consider the indiscriminate destruction of the aboriginal forest, and he was sure that here also it would in a short time become a matter for serious consideration how this country was to be supplied with timber and materials for building purposes, if the present system of destruction was allowed to continue much longer. He knew that in many districts which formerly supported a large number of sawyers, it was hardly possible now to obtain timber enough for a single house. In the Province of Canterbury, nearly the whole of the timber consumed was imported from Australia and America, whilst close at hand they had valuable forests, which were being wantonly destroyed by fire. He thought it would be found, on examining the imports, that the amount sent out of the country for timber would greatly astonish those who looked into the question. The people of this Colony had really not had time to examine the values and uses of the various classes of timber, but those who had considered the matter were convinced that we possessed very valuable dyeing materials, tanning materials, and furniture woods in our forests, and it was important that, before it was too late, some steps should be taken to save them from complete destruction.

Mr. C. O'NEILL said that he would support the motion of the honorable member for Mount Herbert, as it was one that deserved the serious consideration of the House. There could not be a doubt that the fires referred to by the honorable member and the honorable member for Christchurch were doing a great deal of damage to the country. The timber was being thinned to a very serious extent, and he thought it was time that it should be looked after. There were great difficulties in the way of the conservation of the forests, such as had been spoken of by the Hon. the Colonial Secretary; but he thought there could be no difficulty in ascertaining the present condition of the forests, as requested by the honorable member. Last year the want of information relative to the forests was felt in Victoria, and a Board was appointed by His Excellency the Governor to report on the best means of securing the permanency of the State forests of that Colony. The Board was appointed on the 27th August, 1867, and, through the courtesy of the Hon. J. F. Sullivan, Minister of Mines, the report of the Board was kindly furnished to him. The report treats of the facilities to the public for obtaining timber in Victoria,

the waste of timber under the present system, and the necessity for permanent provision for a continuous supply of timber for mining purposes. "The quantity of timber used in mining operations on the gold fields is very great, and the difficulty of obtaining it in the most important districts is felt to be increasing to an inconvenient degree. The cost of timber for underground drives is now in many instances a very serious item of expenditure, and if this cost were increased to an appreciable extent, it would be likely to have a most damaging effect upon the mining enterprise of the Colony. It is therefore of the utmost importance that steps should be taken to protect and foster the growth of young trees near the gold fields, and, where necessary, to replant the tracts denuded of trees, in order that a constant supply of timber for pit props and other purposes may be easily obtained." The report then treats of the extensive use of soft woods for building purposes, and the importance of introducing pine timber trees into the State forests. It appears that the imports of timber into Victoria in 1853 and 1854 reached the enormous values of £1,474,168 and £1,451,050 respectively. From 1859 to 1866 they represented a fluctuating annual value, ranging from £271,848 to £377,458. From the 1st January, 1852, to the 30th June, 1867, the Colony has expended in the purchase of foreign timber the enormous sum of £8,392,551. Referring to the influence of forests upon climate, the report says:—"It is well known that the clearing of forests in the Alpine districts of France was attended with disastrous consequences: it greatly increased the violence of floods, and decreased the regular supply of water from springs and surface drainage. The excessive degradation of the mountain slopes, caused by the rapid drainage and violence of the floods, since the clearing of the forests in some of these districts, has silted up river beds, and laid waste large areas of fertile land." Many other instances might be cited referring to lands in Spain, in Palestine, and other parts of Asia, and in Northern Africa, that were once fertile and flourishing, and which have now become arid wastes by the destruction of their forests. On the other hand, the aridity of large tracts of land in the Landes and in Algeria has been subdued by the planting of those tracts with forest trees. The report then recommends the control by Commissioners of permanent reserves, and shows that in the State forest reserves the present conditions under which licenses are issued for obtaining timber should be abolished and new conditions imposed, and shows the nature of the new conditions under which licenses should be issued. The following are the approximate areas occupied by forest trees and scrubs in Victoria:—

	Sq. miles.
Large white gums of various kinds (<i>Eucalyptus amygdalina</i> , &c.) ..	5,000
Red gum (<i>Eucalyptus rostrata</i>)	3,000
Stringy-bark and messmate	30,000
Iron-bark	500
Kinds of Eucalyptus of comparative small dimensions—box, yellow box, colonial apple tree, peppermint, &c.	14,000
Light-wood	1,000
Oak, Murray pine	500
Sassafras, beech, and other umbrageous kinds of trees in sheltered mountain gullies	300
Mallee scrub	200
Total	69,000
Extent of open country	18,000

Messmate, red and white gum, and light-wood prevail principally in argillaceous and loamy soils; stringy-bark, iron-bark, box, peppermint, and oak, in sandy and rocky soils; and the mallee scrub only in the arid plains of the north-western districts of the colony. The report then treats of the kinds of forest trees indigenous to Australia which should be cultivated in the forest reserves; of the indigenous trees which should be specially protected; and shows the value of the acacia exported for tanning purposes, amounting to about £12,000 per annum; of the kinds of non-indigenous forest trees which should be cultivated in the forest reserves; the comparative strength and breaking weight of Australian timber; the system recommended for planting and cultivating young trees, and the preliminary expenditure required. "With a view to the creation, maintenance, and renewal of forests of useful foreign and indigenous trees in the several reserves, it would be necessary that a preliminary expenditure of £2,400 be incurred for the erection of necessary fencing, the building of cottages for overseers and woodmen, the purchase of implements, cart horses, working bullocks, &c. The subsequent annual expenditure for general maintenance, purchase of seed, wages, &c., need not, in our opinion, exceed £1,500." A report touching on the subjects stated in the very able and excellent report referred to, would be most useful and beneficial, and of the highest importance to the conservation of the forests of New Zealand.

Mr. RICHMOND would like to express his very strong opinion that the only hope of preserving the forests was by alienating them. He knew of one case in which a valuable forest was being wasted by those who were most interested in it—he referred to the forests of the Amuri district. There were only a few gentlemen in that district large proprietors, not wanting in business ability, able to look after their own interests, and yet the forest had been shamefully wasted. There was one practice which he remembered noticing—that timber was cut for the purpose of asserting a right to it, and it was left to rot on the ground. He was one of the

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unfortunate gentlemen referred to by the honorable member for the Gold Fields as having been defeated in the Provinces. He had made an attempt to arrest the destruction of these forests by procuring the appointment of a bailiff or ranger to look after them, but he was not successful. He was convinced that the gospel of trade was the only thing that would save the forests, and they must trust to that. He did not think, if the freehold was parted with, when the timber became of high value as compared with that to be procured from other sources, that anything that human skill could do would be wanting for their protection; at the same time, there was an enormous danger in this country to the drier kinds of timber. The Natives were the means of spreading fire over the country, and a man stopping to boil his billy often set fire to the whole country without any mischievous intention. It was clear that they could not make any law to apply generally. The sorrow on the West Coast was, not that there was too much wood, but that it would not burn. We might wish to burn Titokowaru at the West Coast, but it would be absolutely impossible to do so. He supposed that any wanton act by which private property was destroyed was punishable by law, provided the mischievous person was solvent, but he did not know whether the honorable gentleman had informed himself on the matter. The Provinces would be wise to sell all the available forests, however much it might go against the grain, whenever a purchaser offered.

Mr. PORTS, in reply, said that he was glad that the matter would be taken up, although the prospect was not very encouraging. Still, the Hon. the Colonial Secretary had said that he would ascertain, as far as possible, from the Provincial authorities, what was the present state of the forests. He would be very glad if those Governments could see their way to making new plantations to replace those which were being so rapidly cleared away; and he thought, as the honorable member for Parnell suggested, that a portion of the fund arising from the sale of bush land might be properly spent in appointing persons to take care of the forests. In many counties in England there were foresters, and he thought they might have something of the same kind here. Another honorable member suggested the advisability of devoting some of the funds arising from bush lands towards the formation of plantations, and he thought that might be attended with very good effect. With regard to the observation of the honorable member for Westland South, he did not think the motion would interfere with the views of the diggers, as it was simply one of inquiry. In addition to the remarks of the honorable member for Christchurch as to the extent of the importation of timber, he might remark that cargoes had been brought into Canterbury direct from Norway.

Motion agreed to.

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CANTERBURY FOREST TREES BILL.

(*"Hansard,"* 15th September, 1871.)

Mr. HALL moved the second reading of this Bill, and said that the House would recollect that, during last session, the Joint Committee on Local Industries had recommended that the planting of forest trees in parts of the country void of timber should be encouraged by the Government. The question was a very important one, and it had been considered by the House that it should be taken up in the first instance by the different Provincial Councils. This recommendation had been followed in the Province in which he resided, and the proposals of the Canterbury Council were embodied in the present Bill. It provided that every person planting one acre or more of land with timber trees, in accordance with such regulations as might be made by the Governor in Council, and producing a certificate from the proper officer to that effect, should be entitled thereupon to a free grant of two acres of waste land for every acre planted. He did not anticipate any objection to the principle of the Bill, but it was probable that honorable members would differ as to the best mode of giving effect to it. In that case he would be very happy to discuss any alterations which they might suggest, but he trusted they would not press them so far as to endanger altogether the passing of the Bill. It not unfrequently happened that one honorable member wished so much to improve a measure in one way, and another in another, that it at last got stifled by the extreme interest which members took in it. If the Bill was read a second time it would then be referred to the Waste Lands Committee.

Mr. O'NEILL would support the measure, which he doubted not would receive the approval of the House. In Otago he believed that some such measure had already been put in force, and last session the Committee on Colonial Industries had recommended a similar one. The House was aware that the conservation of forest trees had not been looked to as it should have been. In many parts of the country whole tracts of timber had been burnt down, and the most serious inundations had occurred, caused, as he believed, by the clearing away of the timber. In other countries, where timber had been cleared away recklessly, great droughts had set in, ruining the country and scattering the population, as had often happened in France, where they were now planting trees to avoid a repetition of such occurrences. In some countries it was absolutely law, that whoever cut down a tree should plant one, and sometimes even two, in its place. Certainly the American farmer was compelled to plant trees by an Act of Congress. Many instances might be cited in referring to lands in various parts of the world that were once fertile and flourishing, and which have now become arid wastes by the destruction of their forests; and, on the other hand, the aridity of large tracts had been subdued by the planting of forest trees. They had seen the evil effects of denuding the country of trees in the Province of Wellington, where, on one

side of the Rimutaka Hill they had been burnt away for the purpose of constructing roads there; and the result was that there had been such floods as had never been known there before, clearing away culverts, bridges, and everything before them. The same thing had occurred in the Hutt Valley. All this disaster had arisen, in his opinion, from the reckless removal of the timber. Beyond this, it must be remembered that timber would not last for ever, and every year showed that it was necessary to go farther back for the timber required for any works, and thereby increasing considerably the cost of timber. In Canterbury, indeed, it had been found necessary to go nearly as far as Wairarapa for the purpose of obtaining sleepers for the railways there. He entirely approved of the Bill, and only regretted that the honorable member who had introduced it had not made it applicable to the whole Colony.

Mr. PEACOCK would support the Bill, but did not think that the honorable member for Heathcote had given sufficient encouragement to planters. He thought any person should get, for every acre he planted with timber trees, and properly attended to for a given time, a grant of four acres. If honorable members knew how expensive fencing was for those who lived on the plains far distant from timber, he felt certain they would consider that to offer a man only two acres for his trouble in trenching and planting one, would not encourage him to lay out much labour or money on his land. The honorable member should be careful not to defeat the object by offering too little, thus rendering the Act inoperative.

Mr. GISBORNE considered the Bill a most important one for Canterbury and all other Provinces which, like it, now luxuriated in timber and vegetation, but would soon become deficient in these particulars. He would suggest to the honorable member the desirability of referring the question to the Waste Lands Committee, with a view to extending its application to all parts of the Colony.

Sir D. MONRO said he was much indebted to the honorable member for bringing forward the measure. Inhabiting, as he (Mr. Hall) did, a part of the country destitute of timber, he doubtless knew, from painful experience, the evils arising from that state of things. In the Province of Nelson there were large tracts of land destitute of timber, containing good soil, and capable of supporting a large population if there were only timber for their necessary purposes. There was nothing more calculated to add to the wealth of the country than the growth of forest trees, in many parts of it timber being one of the chief necessities of the settlers. He should very much like to see the operation of the Bill extended to all parts of the Colony, and he trusted that his honorable friend would consent to such a modification of it as would enable its benefits to be shared by the other Provinces. He had much pleasure in supporting the Bill, and felt that it was entitled to that consideration from the House which attached to a measure of great practical value.

Mr. REEVES said that, in common with other honorable members, he would support the Bill, as it was a most useful one; at the same time he must deprecate the idea contained in the suggested amendment of the member for Lyttelton, as he considered it was in a wrong direction. That honorable member said that any person planting an acre of land with timber trees should receive a free grant, not of two acres as proposed by the Bill, but of four. Now, he thought it was the duty of the House to be very careful how they consented to the appropriation of the public estate by free grants. The intention of the Bill was, as he looked upon it, to give encouragement to persons who should be disposed to plant their land with timber trees, not to give them full compensation for so doing; and when they considered that this planting of lands would increase not only the value of them, but also of those adjacent, by the time these plantations were grown up the granted land would be worth five times its former price; and it would, he conceived, be a mistake to grant land in such a wholesale fashion to persons who, after all, would be making a very judicious and paying investment. It was true that the investment would give no immediate profit, but it was pretty certain that, for those who could afford to remain out of the interest of their money for some time, there were few more remunerative investments than that of planting forest trees on their land. He hoped the honorable member would not lose sight of the fact that the intention of the Bill was to encourage, not to compensate, the planter. He had been informed by a gentleman in Otago, where it was proposed merely to give the land to the planter which he should have stocked with forest trees, that many applicants were found to accept those terms; and he therefore really thought that, if such was the case, a grant of two acres for every one planted in terms of the Bill would be quite enough for the Province of Canterbury. There was another point he considered it important to mention. He thought the Bill should contain a limitation of the extent of land for the planting of which any one person should be entitled to a free grant. It was not likely, perhaps, that any one would go in for planting a great extent of land with timber trees, but he thought it would be satisfactory to the public mind if the limit were placed at, say, 200 or 250 acres.

Mr. SWANSON said that the Bill in its present shape presented a difficulty, for as he read it, it seemed that the person planting the land was forthwith to give it up to the public. The 2nd clause said, "If any person shall plant any land . . . with forest trees he shall be entitled to receive for every acre of land so planted a free grant of two acres of waste lands of the Crown." Surely, if the Bill was to be such a great public benefit, it must be meant that the planter should have his planted land and the two additional acres as well; but the Bill certainly did not say so. In regard to this planting, he thought the public authorities should be applied to, so that they might have a voice in settling in what parts the plantations might most beneficially be made. He could quite understand that a large belt of trees, planted on a great plain, would be very

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useful and beneficial to the country generally; but he could also understand that a person might plant a block of land, and then, having got his two acres for every one so planted, dig up the trees on the planted land. As far as investment was concerned, he believed that a crop of timber was quite as remunerative as a crop of wheat; indeed, there was no more profitable one than that of blue gum, except that the return for it was slow in coming in; but if a man could afford to lie out of his money for a few years, he would make more by it, perhaps, than by anything else; and it must be remembered that where he was benefiting the public he was also doing good to himself.

Mr. D. McLEAN thought it might very well be left to the Committee. No doubt more timber than they at present had was required, as any one must see who, like himself, had travelled through the country, and had seen the primitive forests rapidly passing away. He fully acknowledged the necessity of the proposed measure, and felt sure the country would be materially benefited by it.

Mr. J. E. BROWN hoped that the suggestion to extend the operation of the Bill throughout the Colony would be adopted, and that the honorable member for Heathcote would see his way clear to adopt it. Nothing was more necessary or important than the planting of timber trees in certain parts of the country. He was aware, from disagreeable experience, that planting was sometimes a risky and expensive business. Two years ago he had planted ten acres of land with gum trees, and after some months every tree was destroyed in one night by frost. It was not the mere planting, but the protection of the trees, which made the cost, which in his own case he had found was about £3 an acre; and the experience of other persons in Canterbury confirmed him in this opinion. He thought the Bill did not provide sufficient encouragement to planters, who should, according to his view, receive four and not two acres, as proposed, for every one planted, as the value of land varied very much throughout the Colony.

Mr. THOMSON said there could be only one opinion as to the desirability of encouraging the planting of forest trees. His objection to the measure was that it did not go far enough. It appeared to refer almost entirely to land already purchased. It seemed to say to those people who already had land, "For every acre you plant, you will receive two acres," but there was no provision made for planting trees in new districts. No doubt a person could purchase, say, fifty acres of land, and after he had planted it he could claim 100 acres. The land he would choose would be land adjoining his former purchase, but, by the time he was in a position to claim it, the land might have been bought by another person. It was very desirable that some arrangement should be made by which any one who intended to plant land with forest trees should not be compelled to pay the price of the land which he proposed to plant. The Provincial Council of Otago had considered the question of encouraging people to plant forest trees. The Land Bill now before the House contained a clause bearing on this point. The clause, however, provided for the planting of trees only in new districts. He considered it equally desirable to encourage people to plant trees in districts that were already settled. Canterbury had confined its attention to old districts and Otago to new districts. He thought the two Provinces might well take leaves out of each other's books. He thought there was an objection in not fixing a maximum as well as a minimum. Why should inducements be held out to a man to plant the whole of his land? They should hold out inducements to plant only a portion, say from one-tenth or one-fifth of the whole area. He had much pleasure in supporting the Bill, but he hoped the honorable member would take steps to extend its provisions to land not already occupied. He had heard that in the Canterbury plains the wind was sometimes so strong, the sheep had to hold on by the tussocks. It was in such places that plantations were required.

Mr. MURRAY said it was proposed to give two acres of ground for every one planted, but the price of land throughout New Zealand varied, and, in order to make the measure applicable to all the Provinces, he would suggest that land orders should be granted so that in Canterbury a man would get two acres and in Otago four acres, and where land was worth only 10s. per acre, he would get eight acres for each one planted. Another advantage to encourage the planting of trees would be for the Government to give good and useful tree seeds. This was already done in Canterbury, and also to some extent in Otago. He believed Californian pines grew well, but blue gums were uncertain, and in order to learn what kinds would be best, it would be well that the Botanical Society should make experiments to see what trees could be cultivated to most advantage. He quite agreed with honorable members who had spoken with regard to the advantage of plantations, and would give some instances of the profits derived from planting. He knew one property in Scotland that brought in a rental of £240 per annum, which, chiefly by planting trees, had been so improved that the rental had increased to £1,400; and on the Duke of Athol's large estate in Perthshire, lands which, before trees were introduced, were worth a rental of only 4d. per acre, had by planting become worth 4s. per acre for grazing purposes alone, in addition to the handsome profit derived from the trees planted. Besides the advantages of shelter to stock, especially beneficial in New Zealand with our high cold wind, a great advantage was gained from the protection given to cereals, for those high winds were very detrimental to the proper and profitable cultivation of corn. He would suggest to the honorable gentleman who introduced the Bill that he should so alter it as to give to the whole of New Zealand the benefit he proposed to confer upon Canterbury.

Mr. REID said he took considerable interest in the subject of the encouragement of plantations. In the Province of Otago the timber reserves had been denuded of timber to a considerable extent, and a great deal of waste had been displayed in making use of the forests there.

He thought it would be well if they had regulations whereby any person cutting down timber was compelled to replant the land. He thought that such a scheme was practicable, and worthy of a trial. He might be permitted to state that they had adopted a scheme of leasing the forest lands in Otago, the rent being fixed at a peppercorn, and tenders invited, the person who undertook to supply timber and firewood at the lowest cost, of course, being accepted. He obtained a lease for twenty-one years under a condition that he should prevent waste and replant the land as fast as it was cleared. That plan would have proved successful, but, unfortunately, owing to the great disinclination of persons to have their privileges curtailed—even where it would ultimately be to their own advantage—and a general desire not to be hampered in any way, the regulations were not carried into effect, and people were allowed to destroy the forests as they thought fit. It would be well if the mover were to direct his attention to the preservation of the existing forests, and he thought some such provision as he had referred to might be inserted in the Bill. It might be provided that the privilege of cutting and disposing of the timber should be given to those who would supply the settlers with it at the lowest cost, and who would be bound to replant the ground as the trees were cut down, and thus preserve the forests of the country. The honorable member who introduced the measure said that it was a matter which many took an interest in, and expressed a hope that they would not, by showing that interest, strangle the Bill. Well, he would shortly bring a small Bill—a very simple measure—before the House, and when he did so he hoped the honorable member would remember what he had said about not strangling this Bill. In that Bill there would also be provision to give grants of land to those who would plant forest trees under certain conditions. These grants would be limited to 320 acres, and it was provided that a person must reside on and plant a certain proportion of the land within a given time. They had tried this experiment in Otago. They made a proposal to give land to any persons on the condition that they planted four-fifths of it in five years, and they had numerous applications; but owing to certain difficulties, and also owing to objections which were raised, to the effect that people who applied for land did so in order to get the best of it, it had not yet been carried into effect. With those objections he had no sympathy, because he considered that any one who took up land that was lying open for selection, and would plant four-fifths and cultivate the remaining fifth within five years, would have a good right to it, and would, by so using it, confer a great benefit on the country.

Mr. MERVYN thought it absolutely necessary that, if the resources of the Colony were to be developed, they must have a plentiful supply of timber. As far as the gold fields of Otago were concerned, he would say that, if they had plenty of timber, new fields would be opened that never would be unless there was a good supply. There were deep leads, 150 to 200 feet deep, that would be worked if timber could be obtained at a cheap rate in order to slab the shafts, and the deep sinking would become a remunerative branch of mining. The Bill hardly encouraged planting in new districts sufficiently, and it would be well to induce people to go on new land for the purpose of making extensive plantations, and some such encouragement ought, he thought, to be provided for in the measure before the House. He trusted the honorable member who introduced the Bill would consent to its being made as perfect as possible, and applicable to the whole Colony.

Mr. HALL, in reply, said he was exceedingly gratified at the reception the measure had met with, and was obliged to honorable members for the suggestions they had offered, as well as the spirit in which they had been made. With regard to that of the Colonial Secretary, he entirely agreed with the honorable gentleman that it would be desirable to make the measure a Colonial one. He did not himself propose a measure applicable to the whole of the Colony, because he did not feel that he possessed sufficient knowledge of other parts of the Colony to warrant him in doing so; but he would be glad to co-operate with any honorable member who might wish to have the provisions of the Bill extended, and also to consider any suggestions for encouraging the growth of forest timber in any other manner than that proposed in the present Bill. The proposals which the Bill now contained had been exceedingly well considered in the Province from which he came, and he thought it would be a very great pity not to give effect to them as soon as possible. He was rather afraid, as he had said in introducing the Bill, that honorable members might try so much, with the very best intentions, to overload it with improvements, that they would strangle it. The suggestions of the honorable member for Taieri illustrated what he meant. That honorable member proposed to introduce provisions for the conservation of forests, and although he (Mr. Hall) quite agreed that they ought to endeavour to preserve their forests, yet, if they introduced that subject into the present Bill, they might run great risk of being unable to agree upon it, and thus lose the Bill altogether. The regulations, which, according to the Bill, would have to be framed by the Executive Government, would specify the terms and conditions that would have to be fulfilled before a man would be entitled to receive any of the benefits granted under it. He would be glad if honorable members who were on the Waste Lands Committee would come to that Committee with their suggestions put into a practical shape, so that the Committee might proceed to amend the Bill without delay. The honorable member for Bruce, in support of the necessity for encouraging planting, had alluded to the fact that in one part of the Canterbury Province the winds were so violent that the sheep had to hold on by the tussocks. He understood that had been said of the part of the Province from which he (Mr. Hall) came, but unfortunately the sheep did not do so; it would be very desirable if they did hold on by the tussocks, for then they would not drive before the wind as they now did, and caused serious loss. He now moved the second reading of the Bill.

Bill read a second time.

PART I.

FOREST TREES PLANTING ENCOURAGEMENT BILL.

("Hansard," 8th November, 1871.)

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The Hon. Mr. ACLAND, in moving the second reading of this Bill, explained that it was proposed first by the Provincial Council of Canterbury, and solely had reference to that Province, its object being to give a premium in the planting of forest trees in different parts of the Province, but in its progress through the other House it was thought desirable to extend its scope, and it now applied to the whole Colony, with the proviso that the Governor might from time to time bring it into force in such part of the Colony as he considered desirable. He thought it would be admitted that it was a desirable thing, in those portions of the Colony where there was no timber or where the timber was being rapidly used up, to give every encouragement that they reasonably could to induce persons to plant trees. It was not a thing that was payable at present, but if some encouragement were given, it might pay at a future time. It was proposed that if any person should plant not less than one acre with forest trees, he should be entitled to receive, for every acre so planted, a free grant of two acres of the waste lands of the Crown. There was a clause to the effect that no person at one time should be able to apply for more than 250 acres. He moved the second reading of the Bill.

The Hon. Mr. McLEAN asked the Hon. the Mover, if he planted on his private estate, he could claim two acres for every acre planted, out of waste lands open for sale in any part of the Province? If that were the case, he would vote for the Bill.

The Hon. Mr. MANTELL said the price of land in any Province of New Zealand scarcely exceeded £2 an acre, and he was sure the cost of *bond fide* planting an acre would amount to nearly £20. He saw no provision in the Bill as to the growth of the trees after they had been planted, and the Bill seemed to put it in the power of any gentleman who had acres of land he did not know what to do with, to scratch them over, sprinkle over some blue gum, or some such seed, and as soon as the things appeared above ground, and the Superintendent happened to be a friend of the person planting, he could obtain a certificate that he had planted a certain area, obtain his additional acres, and then could turn his stock upon the land. He would move that the Bill be read a second time that day six months.

The Hon. Mr. HOLMES said he was sorry that his honorable friend had taken that view of the question. People would not plant trees for the purpose of acquiring two acres of land for every one they planted; but many persons would do so quite independent of any expectation of getting land. However, the granting of a bonus in the shape of land would be an equivalent for a portion of the first outlay in putting the trees in the ground. In many districts timber was very scarce, and especially so in Canterbury and Otago, where they might travel twenty or thirty miles without seeing a tree; and nothing would benefit that country more, or improve the climate, than making extensive plantations. He himself had planted twenty or thirty acres with trees, and had succeeded very well. His honorable friend seemed to have what he would call a "down" upon blue gums; but he thought they were very valuable, because well adapted to the wants of the country. They made good firewood, capital posts and rails, and good serviceable timber. The trees grew very rapidly, as much as six feet per annum; and he had seen one twenty-three years old that was eighty-two feet high and three feet and a half through. If they could produce such a tree as that within a very short lifetime, surely it was worth while, in a country where timber was so very scarce, to hold out some additional inducement for the formation of plantations.

The Hon. Mr. MILLER thought he would vote for the amendment, for, although no one could be more in favour of planting than he was, he knew very well that keeping the trees clean was the difficulty. It was an absurd thing to say that any person who planted an acre with trees should be entitled to a grant of two acres. No condition was made as to the time at which the bonus should be given or the kind of planting required. They knew very well what would be done under the Bill. People would make all sorts of claims, and it would be open to a deal of abuse; while those who were already engaged in planting, did not require the slightest inducement to go on planting.

The Hon. Colonel WHITMORE was sorry to differ with the Hon. Mr. Mantell, and should like to have heard the views of two or three honorable members who were really authorities upon such matters. He could conceive, from his own experience in the matter, that the real question lay in the proper treatment of the tree after it had been planted. He did not think they should refuse to read the Bill a second time, because any deficiencies could be provided for in Committee. Although the Hon. Mr. Mantell might know of trees that were far better for the purpose, he would like to say a word for the blue gum, for he thought they grew quickly and gave good timber. The reward of two acres might just turn the scale when people were undecided, and induce them to plant by giving them some excuse for the expenditure of the money, and by that the whole country would more or less gain. Planting would be a profit to an individual and an advantage to the country, for if they had extensive plantations they would be saved from many of the inconveniences they suffered from. However, no reward should be given until a plantation was two or three years old, so that it might be seen that the trees had received proper attention, for it was only for about two years that they required watching and cleaning. He thought the Bill could be made a useful measure in Committee, and he hoped honorable members would not throw it out.

The Hon. Mr. ACLAND, in reply, asked attention to the fact that in Canterbury, where land was sold at a higher price than in any other Province, namely, £2 per acre, the bonus would be

equal to £4 per acre, and that would not repay a man for fencing in and breaking up land. It would be a matter of very great importance that people should be encouraged to make plantations, some small and some large. The inducement offered might just turn the scale and cause a man to plant. Mr. Hall, the honorable member for Heathcote, was greatly in favour of a measure of that kind, and took a great interest in the matter, and was anxious that it should be passed through the Legislature. He (Mr. Acland) had planted to some extent, not with the blue gum, for he disliked that tree, but elm, ash, and oak, and he thought there were very few people who, if they planted, would not take care of the trees for two years, after which they would take care of themselves.

Amendment negatived, and Bill read a second time.

CONSERVATION OF FORESTS.

(“Hansard,” 1st October, 1873.)

Mr. O'NEILL, in moving the motion standing in his name, would make his remarks upon it as brief as possible. He would remind honorable members that, in the session of 1868, on the motion of Mr. Potts, of Canterbury, a resolution was adopted to this effect: “That it is desirable Government should take steps to ascertain the present condition of the forests of the Colony, with a view to their better conservation.” He believed the Government, of which Mr. Stafford was the head, had adopted means to obtain reports upon the subject from the various Provinces, but only two or three Provinces had sent in any returns, and consequently no action was taken in the matter. Last session he had called the attention of the Government to the subject, and the Native Minister stated that the matter would receive the attention of the Government during the recess, as it was one which deserved very great consideration. He was glad to believe that the Government had given the matter some serious consideration during the recess, but it was found impossible to bring in a measure as complete as they would wish during the present session. A measure for the conservation of the forests of the Colony was one that would require the careful consideration of the House and the Government, so that history might not be able to relate that they received a fertile country, but, by a criminal want of foresight, transmitted to posterity a desert. Hochstetter, in speaking of the kauri pine—the noblest of New Zealand trees—says,—

“Extensive districts, which had formerly been covered with kauri wood, are now totally destitute of such, and the extermination of that noble tree progresses from year to year at such a rate, that its final extinction is as certain as that of the Natives of New Zealand. . . . Individuals should not be allowed to ravage those precious woods, and to turn the country into a desert, to the detriment of whole generations to come. For the sake of a few serviceable trunks, sometimes whole forests are burned down and desolated, and what formerly had been employed in the war of cannibal tribes, in a stratagem to burn out the enemy, is done now for the sake of money. The woods are ransacked and ravaged with fire and sword. During my stay in Auckland, I was able to observe from my windows, during an entire fortnight, dense clouds of smoke whirling up, which arose from an enormous and destructive conflagration of the woods nearest to the town. When the fire had subsided, a large, beautiful tract of forest lay there in ashes.”

In 1867 a Royal Commission was appointed in Victoria, which went into the whole subject very earnestly, and made a report in reference to the forests in Victoria. It showed that there was an area of 69,000 miles of bush and 18,000 miles of open in that Colony. The report also treated of the kinds of forest trees, indigenous to Australia, which should be cultivated in the forest reserves; of the trees which should be specially protected; of the kinds of non-indigenous trees which should be cultivated; the comparative strength and breaking weight of Australian timber; and the system recommended for planting and cultivating young trees, &c. It also showed that the jarrah, the noblest of the *Eucalypti*, might be planted with wonderful success by thousands in Victoria; and if this were so, it might be grown in this country, especially in the North where the kauri grew. The Hon. Mr. Casey, Minister of Lands and Agriculture, recently wrote a Memorandum upon the forests of Victoria, which gave some ideas of the best mode of preserving forests. He would read a few lines of it:—

“It is thought that if a specific part of the forest be leased to a particular person, there will be a material guarantee that the young trees will not be cut down before maturity, and that due care is bestowed in facilitating and encouraging the growth of young seedlings; and if the first be violated, or the second neglected, he can be at once made responsible. This is the system that is insisted on in every country where State forests are maintained. The Government are anxious to obtain two results, if possible:—1. The careful management of the forests and the protection of the growth of the young timber. 2. The planting out every year of an adequate number of young trees to keep the forests stocked. Nature has endowed us with a number of valuable forests. Ordinary care would enable us to cull from them the annual growth of the trees for public use. Would it not be a national crime to neglect attending to them?”

In the report to which he referred some minutes ago, it was shown that, notwithstanding the immense extent of the forests of Victoria, during the five years previous to the report, timber to the value of £8,500,000 had been imported into the colony. In some countries regulations were made for the planting of timber. In Japan, it was said, that for every tree that was cut down another was planted. In Biscay, where one was cut down two must be planted.

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There were also laws in America, passed by Congress, providing that the farmers must attend to the conservation of the forests. The destruction of the forests of New Zealand had been, for a great part, caused by wilful and culpable fires. Those fires must have been seen by every honorable member, and had been most destructive. It was not many years since 20,000 or 30,000 acres of forest land in Canterbury was destroyed by fire, and the loss was calculated at that time at about £70,000. One firm alone, Messrs. Holmes and Co., who owed part of the forest, lost 5,000 or 6,000 acres, and obtained damages to the amount of £3,000. They could not be too stringent in their rules and regulations about the forests. In other parts of the world the effects of destroying timber had been clearly seen. In one of the departments of France, at the head of the Rhone, where the forests had been burnt down, the excessive degradation of the mountain slopes, caused by the rapid drainage and violence of floods since the clearing of the forests, silted up river beds, and laid waste large areas of fertile land; in short, reduced to a shingle bed the land which had previously supported 27,000 people. In modern times, Ali Pacha burnt down the forests of the Peloponnesus, and there came famine and drought. Then the Russians burnt down the fine forest of the Caucasus, for the purpose of routing out the brave defenders of the soil, and the climate of the country changed completely: the land became barren, drought ensued, and whole tribes had, in consequence, been obliged to seek new homes in foreign lands, their own soil having become unfit for human habitation. Other parts of the world showed the same result; parts of Spain, Palestine, Asia, Northern Africa, which were once fertile and flourishing, were now arid wastes by the destruction of the forests; and even in New Zealand the climate, he believed, had been altered considerably by the effect of forest fires. They need not go far from Wellington to learn that the Hutt River had changed its course—that bridges had been broken down and land carried away by the overflow of that river, which had been caused by the great floods arising from the forest having been burnt. They should, moreover, be particularly careful at the present time, when they were constructing large public works—railways, bridges, piers, jetties, and houses of all kinds—of the conservancy of their forests. It was a question which affected all the inhabitants of the country. It affected the poor man more than the rich, for a time would come when timber would get so scarce and valuable, that houses would cost more to erect, and rents would become higher, which the poor man would feel more than the rich. Unless they took prompt action for the preservation of their forests, they might depend upon it that millions would be lost to the Colony. He trusted the Government would see its way to accept the motion. A Commission would be able to supply valuable reports not only upon one district, but upon the whole Colony. Doubtless such a report would take some time to get up; but the importance of the subject demanded that they should spare neither time, nor labour, nor expense in trying, to the best of their ability and knowledge, to devise some means whereby the forests of the Colony might be conserved, and future generations might not have to look at barren wastes where noble forests once flourished.

Motion made, and question proposed, "That, in the opinion of this House, it is expedient that prompt steps be taken for the conservation of the forests throughout the Colony, with which view it is resolved that a respectful address be transmitted to His Excellency the Governor, requesting that he may be pleased to appoint a Royal Commission to inquire into and report upon the state of the forests, and the best means for securing their conservation and permanency."—(*Mr. O'Neill.*)

Mr. McLEAN said this subject appeared to have been well considered by the honorable member, who last year made a similar motion, when the Government promised to bring in a Bill on the subject. A Bill was accordingly prepared during the recess, but owing to the press of work, and the many matters which had been brought before the House, the Government had not seen their way to introduce it this session. There was no doubt at all of the importance of the subject. The rivers in the country were gradually shallowing owing to the disappearance of the timber; the climate, also, had very materially altered. He believed that in some parts of the Province of Auckland there was much less rainfall than there was some years ago, when those parts were covered by forest. He did not know, however, whether the best or wisest course, or the least expensive, would be the appointment of a Commission. He felt that time might be thrown away, and that the subject would not be dealt with in a practical manner, by simply appointing a Commission to inquire into the case. The evidence of practical men in that House all went in the same direction—that something should be done for the conservation of the forests; and all the Government could promise was to look into the matter during the recess, with the view of introducing a Bill next session.

Mr. T. KELLY said it was very desirable that a part of the forests should be conserved, but he did not see what a Royal Commission could do; for even if it made recommendations, they might not be carried out. In some parts of the Colony—in Taranaki, for instance—a great area of the country was covered with forest, the preservation of which they could not desire, because they could only settle people on the land by getting rid of the forest. They found, too, that when a private individual wished to preserve a piece of forest, he had great difficulty in doing so; for, even if he succeeded in preserving it from fire, it died away when the surrounding bush was cut down; and he (Mr. Kelly) did not see how the Government could do on a large scale what individuals could not do on a small scale. The only way, perhaps, was for the Government to make large reserves of forest land in different parts of the country; but although some standing forest might thus be preserved, it would always be liable to be set on fire by accident, and no care on the part of the Government could prevent that. He did not think it was at all desirable that

this motion should be carried, because a Royal Commission would be of no practical use; and even if it made recommendations to the Government, they might not be able to be carried out.

Mr. SWANSON thought the speeches of the honorable member for the Thames and of the Native Minister might have been appropriately delivered when the Timber Floating Bill was under discussion. That was not a measure which tended to preserve the forests. It meant simply that all the trees nearest the banks of the streams, no matter how small they might be, were to be cut down, and the remains left to get dry and set fire to the trees of the district around, thereby destroying hundreds of times as many as had been used. The streams were widened and the water shallowed by the very act of driving timber down them, while not half the timber cut could be floated down. It would be very hard to preserve the forests. He believed the very best of our trees would not grow until after one forest had grown up into old trees. He had never seen young kauri trees grow to anything more than small scrub, except in an old forest, where they grew up and replaced the old trees. It would be very hard to preserve these kauri forests, and, unless great care was taken, there would not be a kauri tree in the Colony in the next generation. It would, however, be wise to take such measures as would enable them to get the full value of the timber while it lasted, and not allow timber to be wasted as it was by being driven down creeks. From some kauri trees 70 or 80 feet of clean plank, without a flaw, could be got, if it were cut in a proper way; but in order to float it down creeks it had to be cut in very short lengths, and 24 feet was considered a good length for such timber. Nevertheless, a Bill had been brought in to perpetuate these wasteful practices, and passed by a House which wished to conserve the forests of the country. As to the Royal Commission, if they employed some intelligent bushmen to inquire into the matter, they might get some valuable information; but if they had a Royal Commission of the usual sort, they would get a very learned report, but very little real information, while the Commission would cost a great deal of money.

Motion negatived.

PART I.
Parliamentary
Debate, 1873.

II.—RECOMMENDATIONS OF COMMITTEES.

COMMITTEE ON COLONIAL INDUSTRIES, 1870.

Dr. HECTOR, in reply to Mr. O'Neill, said,—“The rapid destruction of the native forests I consider to be most wasteful, and as having the effect of rapidly reducing the natural resources of the country. It is not at all necessary that the forest should be completely removed in the way that it usually is, either for the purpose of agricultural settlement or the obtaining of timber for mills, firewood, or fencing. The thinnings of the forest would be ample in most cases to supply all the latter wants. By carelessly opening up tracts of forest, and especially the firing of the dead forests, the young growth of trees which comes up to supply the place of the trees that are removed is wholly arrested, and in a short time the air and sun dry up the surface soil of good quality which characterizes freshly-cleared bush land, and it is washed away by the rains. Large tracts of land in the north of Auckland which naturally possess great capabilities for agriculture, have been rendered absolutely worthless for centuries to come, without a great expenditure, by the above wasteful process. With reference to drug plants, I may say that there are many native shrubs which possess medicinal qualities which have not yet been investigated.

Colonial
Industries
Committee, 1870.
Appendix, H.—1.

The Committee, Hon. Mr. Waterhouse being Chairman, reported,—“That it is desirable, with a view to encouraging the planting of timber in the treeless regions of the Middle Island, that persons planting timber trees upon unsold Crown lands should, upon terms to be fixed by the Government, be secured in the freehold of the country so planted out, either by pre-emptive right of purchase or by free gift. The strong winds prevailing over many parts of New Zealand greatly tend to check the operations of agriculture, while the open and shelterless state of the country causes the soil to become much more readily dried and parched up than would otherwise be the case. If land occupiers could be induced annually to plough up and sow with the Tasmanian black wattle a few acres of land, the shelter so much desired would be obtained at a cost comparatively trifling, a supply of good fuel would speedily be provided, and a valuable article, now much required by our tanners, and at present imported from a distance, would be procured on the spot.

COMMITTEE ON COLONIAL INDUSTRIES, 1873.

This Committee, of which Mr. W. A. Murray was Chairman, recommended “That the Government should invite the various Provincial Governments to consider how best to prevent the wasteful destruction of the forests of the Colony, and to supply statistics and recommendations for the consideration of Parliament;” and should also “continue to procure considerable quantities of the most approved tree seeds, and should sell them at cost price to associations, nurserymen, and individuals; and should also, by way of experiment, procure seeds of the olive, hickory, and cork trees, for the growth of which a large part of the Colony seems well suited.”

Committee, 1873.
Appendix, I.—4.

III.—PROVINCIAL REPORTS.

No. 1.

ANALYSIS OF REPORTS RECEIVED IN 1869.

Dr. HECTOR to the Hon. the COLONIAL SECRETARY.

PART I.

(No. 260.)

SIR,—

Colonial Museum, Wellington, N.Z., 11th June, 1873.

Provincial
Reports.

Analysis of
Reports, 1869.

In reply to your letter of 27th ultimo, requesting me to consider the subject of the conservation of the natural forests of the Colony, with the view of suggesting what action, if any, should be taken by Government towards effecting this object, I have the honor to furnish a tabulated statement of the information that was elicited in reply to circulars issued to the Superintendents of Provinces in 1868.

I think that the information then obtained showed that although it is highly necessary that steps should be taken to preserve the indigenous forests, yet the diversity of circumstances in different parts of the Colony prevents the application of any general measure, and naturally suggest it to be a subject that can be better dealt with by local legislation.

The greater part of the native forest in New Zealand is chiefly valuable to the Colony from its promoting the precipitation of moisture from the winds, restraining the rapid gathering of floods, and protecting the alluvia in the lower parts of the valleys (generally the only valuable agricultural areas) from rapid destruction.

The extent of forest which is valuable from the amount of marketable timber it contains is only a very small proportion of the whole, and according to the evidence, is best conserved by the rights of private ownership.

I have, &c.,

JAMES HECTOR.

The Hon. the Colonial Secretary, Wellington.

ANALYSIS of CORRESPONDENCE relative to CONDITION of the FORESTS of NEW ZEALAND, 1869.
(Parliamentary Paper, D. 22.)

QUESTIONS.	AUCKLAND.	HAWKE BAY.	TARANAKI.	WELLINGTON.	NELSON.
1. What is the area, character, and value of forests in the district?	Of large extent; generally valueless except for firewood and fencing; occasional patches of kauri.	360,000 acres, of which 95,000 acres of totara, matai, and red and white pines, are situated on spurs of Ruahine, banks of Manawatu, &c.; the rest valueless.	All forest, but a belt of four miles along the coast. About 59,000 acres purchased by Government from Natives.	4,500,000 acres, valued from 5s. to £1.	3,000,000 acres; on level land and valleys; totara rimu, rata, and pines.
2. What was the original area of forest?	All originally forest; little destroyed.	370,000 acres 16 years ago. Within the century 600,000 acres destroyed by fire.	Not stated.	All bush.	Destruction almost equalled by planting.
3. How much is still on Crown lands?	Little alienated.	50,000 acres.	11,000 out of purchased blocks.	1,000,000 acres.	Little alienated.
4. State what has been the relative destruction of forest on Crown lands and on freehold.	Very little on Crown land. Clearings for agricultural purposes on freehold.	100 acres freehold. 900 acres Crown land. 9,000 acres Native land.	None on Crown land. Freeholds cleared for agriculture.	Cannot be estimated.	Little on Crown land. A few thousand acres on freehold.
5. What causes have led to the destruction of the forest, particularizing the relative effect of accidental fires, felling by holders of bush licenses, and destruction by cattle?	Kauri gum diggers' fires; none from other causes.	Accidental fires.	Falling and burning; also cattle.	Mostly bush fires. Felled also in small relative degree for agricultural purposes.	A few hundred acres by bush licenses. Not yet injured by cattle, but possibly will be.

ANALYSIS of CORRESPONDENCE relative to CONDITION of the FORESTS of NEW ZEALAND—*continued.*

PART I.
Analysis of
Reports, 1869.

QUESTIONS.	AUCKLAND.	HAWKE BAY.	TARANAKI.	WELLINGTON.	NELSON.
6. State any damage which has occurred to agricultural districts, or other destruction of property, such as mills, &c., that has been imputed to floods, or droughts being rendered more severe through the destruction of the forests.	No instance.	Great damage at Porongahau and Napier. Severe droughts in 1861 and 1867. Four inches rainfall now is equal to seven inches formerly, owing to destruction of scrub in gullies.	No instance.	Great destruction in Hutt Valley, owing to severity of floods, caused by destruction of bush.	No instance, but thinks damage has been done by cutting down on banks of rivers.
(1.) Are bush reserves advisable, or should the forests be allowed to pass into freehold, with a view to their better conservation than at present?	Should be allowed to become freehold. Reserves generally inadvisable, as they harbour thistles.	Reserves should be made in large forests. The smaller ones should be allowed to become freehold.	Reserves should be made within 10 miles of top of Mount Egmont.	No occasion for bush reserves. As much should be sold in freehold as possible.	Tops of mountain ranges and heads of rivers should be reserved.
(2.) Does the system of granting bush licenses lead to an extravagant waste of the forests, and could you propose any system of supervision by which the forests might be thinned without their absolute destruction?	Yes. Inspectors of Works in employ of Highway Boards, Postmasters, &c., could look after this, or supervisors should value kauri trees to bushmen and get percentage on value received.	Bush licenses should be restricted to certain districts. System not yet tried. Supervision impracticable. Sides of roads should be planted.	Never yet granted. Would probably be necessary to protest against towai trees being stripped of bark.	No answer.	No; but would not recommend their being granted.
QUESTIONS.	MARLBOROUGH.	CANTERBURY.	OTAGO.	SOUTHLAND.	WESTLAND.
1. What is the area, character, and value of forests in the district?	700,000 acres black birch and rimu, on mountains and plains, and white and red pine and totara on latter. No estimate of value can be formed.	270,000 acres of totara, manuka, and other useful timbers. Best, £10 to £12 per acre. Government price, £2. Average of freehold property, £5.	1,421,000 acres; principally inferior, with totara, pines, and nuka interspersed. Value, £20 near town.	766,000 acres of mixed bush. Value, from 20s. up to £6 15s.	2,000,000 acres of red, white, and black pine principally. Birch on the mountains.
2. What was the original area of forest?	Little destroyed.	300,000 acres.	1,440,000 in 1847, originally 7,000,000.	816,000 acres, of which half is in Stewart's Island.	Little destroyed.
3. How much is still on Crown lands?	690,000 acres.	223,000 acres.	1,356,000 acres.	766,000 acres.	1,998,000 acres.
4. State what has been the relative destruction of forest on Crown lands and on freehold.	Nothing appreciable.	In equal proportions.	Much greater on Crown land than on freehold.	Inestimable; but very little has been felled on freehold land.	6,000 or 7,000 on Crown lands, and 1,000 on freehold.
5. What causes have led to the destruction of the forest, particularizing the relative effect of accidental fires, felling by holders of bush licenses, and destruction by cattle.	A few thousand acres by holders of pastoral leases, none by bush licenses or cattle.	Fires—principally accidental. None by cattle.	Mostly by fires. Destruction by cattle not apparent. Also by bush licenses.	Very little by fire and cattle, chiefly by bush licenses.	Principally by clearing for gold mining, &c. Destruction by cattle inappreciable. Also clearing for towns and roads.
6. State any damage which has occurred to agricultural districts, or other destruction of property, such as mills, &c., that has been imputed to floods, or droughts being rendered more severe through the destruction of the forests?	No instance.	No instance.	No instance.	No instance.	Low lands of Hokitika and Arahura, owing to destruction of thick scrub, are being rapidly destroyed.

PART I.
Analysis of
Reports, 1869.

ANALYSIS of CORRESPONDENCE relative to CONDITION of the FORESTS of NEW ZEALAND—*continued.*

QUESTIONS.	MARLBOROUGH.	CANTERBURY.	OTAGO.	SOUTHLAND.	WESTLAND.
(1.) Are bush reserves advisable, or should the forests be allowed to pass into freehold, with a view to their better conservation than at present?	Timber should be utilized for export, not merely burned for clearing.	No. Should be allowed to become freehold.	Bush reserves inadvisable, but must be conceded to satisfy feeling of labouring class. Sell remainder as fast as possible.	Should be allowed to become freehold.	No.
(2.) Does the system of granting bush licenses lead to an extravagant waste of the forest; and could you propose any system of supervision by which the forests might be thinned without their absolute destruction?	No. Supervision expensive and unnecessary.	Bush licenses inadvisable: they lead to waste, and prevent the sale of land as freehold. New plantations should be encouraged, rather than preservation of old forests.	Yes. Appoint wardens, and do not grant other than original area to licensee till it is completely cleared.	Yes. Appoint a Ranger, and restrict the effect of each license to a particular area.	None granted. Systematic clearing is wanted.

No. 2.

REPORTS RECEIVED, 1874.

CIRCULAR TO SUPERINTENDENTS OF PROVINCES.

Reports, 1874. SIR,—

Colonial Secretary's Office, Wellington, 15th October, 1873.

I have the honor to inform you that the following report was brought up by the Committee on Colonial Industries, and adopted by the House of Representatives, during the recent Session of Parliament, viz.:—

“That the Government should invite the various Provincial Governments to consider how best to prevent the wasteful destruction of the forests of the Colony, and to supply statistics and recommendations for the consideration of Parliament.”

I should, therefore, feel obliged if your Honor would be good enough to furnish me with suggestions and recommendations with regard to the Province of ———, in order that a report may be compiled for presentation to Parliament next Session.

I have, &c.,
DANIEL POLLEN.

OTAGO.

His Honor J. MACANDREW to the Hon. the COLONIAL SECRETARY.

Province of Otago, N.Z.,

Superintendent's Office, Dunedin, 7th May, 1874.

Reports, 1874: SIR,—
Otago.

I have the honor to acknowledge the receipt of your circular letter of the number and date quoted in the margin, with reference to the supply of statistics and recommendations upon the best method for preventing the wasteful destruction of the forests of the Colony; and in reply to enclose, for the information of the Government, reports upon the subject from the Forest Rangers appointed under the Waste Land Board of this Province.

I also enclose a report from the Sub-Committee of the Waste Land Board on saw-mill licenses, which has been forwarded to me for the purpose.

I have, &c.,
J. MACANDREW,
Superintendent.

The Hon. the Colonial Secretary, Wellington.

Mr. INNES to Mr. THOMSON.

SIR,—

Land Office, Dunedin, 17th February, 1874.

I have the honor to acknowledge receipt of your letter dated 3rd November, 1873, in which you inform me that the Colonial Government have invited recommendations and suggestions how best to prevent the wasteful destruction of the native forests of the country, and wherein, also, you request me to report on the forests in the districts under my charge, and to answer, as nearly as possible, the queries which are there given.

I have carefully examined the large forests on Lake Hawea, the Matukituki River, Lake Wakatip, and the extensive forests on the Te Anau and Manipori Lakes.

The Dingle River forest, Lake Hawea, consists of black, white, and red birch, of fair average quality: It is still in its natural state, and contains an area of 11,000 acres.

The forest on the Hawea has been greatly encroached upon by saw-mills and sawyers, and about 400 acres have recently been destroyed by fire. It consists entirely of black, white, and red birch, and where it has not been destroyed, the quality of the timber is equal to any in the interior. Area, about 4,000 acres.

The Matukituki forest consists of excellent white, black, and red birch. It is still in its natural state, and covers an area of 10,000 acres.

On the Dart River, about 40,000 acres of the same kinds of birch still retains its natural condition.

The Ling forest, on the west shore of Lake Wakatip, contains an area of 6,500 acres. Has been in possession of saw-millers and bush-cutters for about ten years. It consists of black, white, and red birch; also, a few pines and totaras, but these are generally of a stunted and inferior nature.

The Rees, Mount Alfred, and Greenstone forests contain about 15,500 acres, of which that at Mount Alfred is the most accessible. They consist of the usual kinds of birch, and have not been yet encroached upon.

The Bald Hill forest contains about 7,000 acres, and being at an altitude of 2,500 feet, the birch is generally of a light and inferior nature.

The Mavora contains 12,000 acres of birch forest, generally light and stunted, and still in its natural state.

Burwood contains about 2,500 acres of excellent birch forest, accessible, and is now the property of the Otago University.

The Dunton forest contains 120,000 acres of red, white, and black birch, of all qualities, and about 300 acres have recently been destroyed by fire. It is situated near the valley of the Mararoa; but will be of little value to the population until settlement extends farther inland.

The Margin, Eglinton, and the forests west of the Te Anau and Manipori Lakes contain about 176,000 acres of superior birch timber, but these extensive forests are too far inland to be of any value to the population for many years to come.

It will thus be seen that there are in the

Hawera district	..	..	..	..	..	15,000 acres.
Matukituki ..	..	..	..	..	..	10,000 "
Wakatip ..	..	..	..	..	..	62,150 "
Dunton ..	..	..	..	..	..	141,500 "
Te Anau ..	..	..	..	..	..	176,000 "

Making a total of 404,650 acres.

There is a large quantity of superior timber in the Matukituki; a considerable area of heavy timbered land between the Rees and Dart Rivers; and a large quantity of heavy timber at the southern extremity of the Te Anau Lake, and along the right bank of the Waiau.

All those extensive birch forests in the interior are generally situated along the base of high precipitous mountains, in most instances facing the east, which shelter them from the south-west, or prevailing wind. The birch is seldom found growing on flat, open country in the interior. I am therefore of opinion that it will not grow to any degree of perfection in exposed situations, and possibly this accounts for its being found in such abundance in those mountainous regions, where it is generally sheltered from the prevailing wind. It grows to a considerable size up to the high elevation of 2,500 feet above the level of the sea, but what grows above that altitude is of a stunted and scrubby nature. It grows in this diminutive form up to the extraordinary altitude of 3,500 feet above the sea, and preserves this level along the face of the range of mountains.

The red birch is a handsome, well-formed tree, straight in the trunk, and grows to considerable dimensions. It varies in size from 6 inches to 4 feet in diameter, and from 80 to 100 feet in height; it generally grows on dry, loamy soil and in sheltered situations. This timber is extensively used at the Wakatip for house-building; it is also well adapted for engineering purposes. It is of a durable nature, and lasts well in the ground; but unfortunately this wood is subject to rot in the centre of the tree, which renders the proportion of timber suitable for sawing purposes in a forest, very limited. This is very evident from the fact of a saw-mill of 12 horse-power, belonging to Messrs. Robertson and Co., of Long Forest, Lake Wakatip, having used all the sound timber on an area of 1,600 acres in ten years, the frontage to one-third back being only available for sawing purposes. There is a large quantity of heavy timber still growing on the ground, and the trees would seem perfectly sound and healthy to any one inexperienced in the defect to which this timber is so very subject.

The black birch tree is similar in size and appearance to the red, but is not so much used, nor does it last so long in the ground.

The white birch tree is generally stunted and light. Of the three kinds of birch, this is the most inferior, and may be considered to be almost useless; lasts only two or three years in the ground. It is generally used on the gold fields for props or some temporary construction.

Birch is the prevailing timber in the interior. An occasional pine and totara may be found, but these seldom obtain such large growth, nor is the timber of such a superior quality as that which grows at lower elevations, or near the sea coast.

The following are the queries, and the answers given:—

Under the head of acreage destroyed, the area can only be taken as approximate. The

PART I.
Reports, 1874:
Otago.

clearing is so irregular, that to give an accurate statement of the acreage would be most difficult, if not impossible.

No. 1.	No. 2.		No. 3.		No. 4.		No. 5.		No. 6.
Furnish List of Forests in your District, with their Acreages.	State the Acreage that is Private, and the Acreage that is Public.		State the Acreage that has been destroyed in Private and Public Bush.		State the Number of Saw-mills at work, and their Horse Power.		State the Number of Sawyers at work.		Give the Amount of Revenue paid by each Class.
Name of Forest.	Acreage.	Public.	Private.	Public.	Private.	S.M.	H.P.	Sawyers.	Amount.
Dingle	11,000	11,000	Nil.	Nil.	Nil.	Nil.	Nil.	Nil.	£ s. d.
Hawea	4,000	4,000	"	450	"	"	"	1	Nil.
Matukituki	10,000	10,000	"	Nil.	"	"	"	Nil.	2 10 0
Arrow	150	150	"	30	"	"	"	8	Nil.
Rees	3,500	3,500	"	Nil.	"	"	"	Nil.	17 0 0
Dart	40,000	40,000	"	"	"	"	"	"	Nil.
Mount Alfred	2,000	2,000	"	"	"	"	"	"	"
Long Forest	6,500	6,500	"	1,600	"	1	12	1	62 10 0
Greenstone	10,000	10,000	"	Nil.	"	Nil.	Nil.	Nil.	Nil.
Bald Hill	7,000	7,000	"	"	"	"	"	"	"
Mavora	12,000	12,000	"	"	"	"	"	"	"
Burwood	2,500	2,500	"	"	"	"	"	"	"
Dunton	120,000	120,000	"	300	"	"	"	"	"
Margin	3,000	3,000	"	Nil.	"	"	"	"	"
Eglinton	28,000	28,000	"	"	"	"	"	"	"
Forests west of Mani- pori and Te Anau Lakes ...	145,000	145,000	"	"	"	"	"	"	"
Total	404,650	404,650	"	2,380	"	1	12	10	82 0 0

7. State the causes of destruction of forests.—What might be termed wasteful destruction is generally caused by fire, which, in most instances, is the result of carelessness, either by workmen leaving fire in the forest, or residents in the country burning grass. The latter should be restricted to burn only small areas at one time, so that they could control the fire, and extinguish it if necessity required.

8. State if any has been replaced by new growth or artificial planting.—In no instance has any been replaced by artificial planting, but natural growth is springing up rapidly at Long forest, Lake Wakatip. Where the native timber has been removed, about ten years ago, the young birch trees have grown to the height of 10 feet, and some are as high as 15 feet. It is evident from this that the birch will soon replace itself.

9. State the acreage of artificial planting in private and public land.—No artificial planting worthy of notice has been done in the interior of this Province.

10. State any known effect to climate or drainage, by clearing of bush, grasses, or other vegetation.—The limited areas which have been cleared, could have no perceptible effect on climate or drainage.

11. State the number of years' supply yet remaining for the various purposes for which timber is applied, such as fencing, firing, house-building, public works, &c.—Judging from the past rate of consumption, and the quantity of timber suitable for sawing purposes, the supply at Long Forest, Lake Wakatip, will last about six years. At the Hawea, I estimate there is a supply of timber suitable for house-building purposes for ten years. There is an inexhaustible supply of firewood still remaining in each. All the other forests in the interior still retain their primeval state. Small patches of bush and scrub have been partially cleared, but these are scarcely worthy of notice.

12. Give your opinion as to the necessity or otherwise of taking measures to protect bush.—Although the timber resources of the Province are considerable, when compared with the present population, yet seeing that the forests are in course of rapid destruction, and that there is a likelihood of a large increase of population, I am of opinion that it is of the utmost importance to the community to have the existing forests protected from the reckless extravagance which is so prevalent in this Province. If prompt measures be not taken in this direction, all the sound timber will, in the course of a few years, be entirely destroyed, and the consequence will be a sudden rise in the price of that material. The magnificent forests of America and India, which at one time were supposed to be inexhaustible, are disappearing rapidly, and, according to recent accounts, the scarcity of timber is already felt. These and many other reasons could be adduced for protecting forests, and using the timber of which they consist with a strict view to economy.

13. If you think the forests should be protected, state how this could best be done without injury to the current wants of the population.—Under the system of management which is at present in force in this Province, saw-millers, sawyers, and the public generally are admitted into the forests of the country simply by paying a small license fee. While this is the case, no regulations however rigorous, and no staff of officials however numerous and zealous in the

execution of their duty, can control to any practical extent the wasteful destruction of timber. The licensees are allowed to have access to any portion of the forest for which their licenses have been issued, and in many instances fell timber which they never wholly remove. The result is, that all the sound timber is cut down or destroyed in a few years. Young trees as well as matured ones, are cut two and in many instances three feet from the root; the tops, and frequently a large portion of the trunk, are left on the ground to rot, or be consumed by a subsequent fire. Timber that could be profitably used in the construction of a railway bridge, or the most refined piece of architecture, is cut down for fuel or some temporary construction. The whole forest is strewn over with decayed tops and branches of trees, the ignition of which, at a dry season of the year, would envelop the whole in flames, and end in its utter destruction.

It has frequently been suggested that the most advisable way to settle the forest question would be to sell all the timbered lands. The result of adopting such a ruinous course would be, that the whole of the forests in the country would become the property of a few capitalists and speculators, a sudden rise in the price of timber would immediately take place, and the public generally would suffer from such a direct monopoly of the timbered lands of the country. Others would purchase timbered land with a view to clear it for the purpose of raising annual crops.

It is to be regretted that the valuable pine forest in North Harbour and Blueskin district was ever opened for sale or for settlement. Those who settle on land of this description can neither benefit themselves nor the State, seeing that it costs £30 to £40 per acre to render it fit for agricultural purposes. But as a State forest, this valuable bush land could not possibly be more favourably situated, having a harbour and seaport at one end, an important city at the other, and a main trunk road passing through its centre. By railway facilities, the benefits of this forest might be felt at the northern extremity of the Province, where timber is so very scarce. Had it been retained by Government for this purpose, by judicious management it would be most beneficial to the population, and would have quite a different appearance from the ragged and miserable aspect it now presents. In a few years nothing will be seen but decayed timber, and the stumps of fine trees burned on the ground simply to raise a crop of vegetables.

Past experience therefore shows that when bush land is sold, the timber is either wastefully destroyed in clearing the ground for the purpose of raising annual crops, or it is preserved in its natural state, simply with a view to ornament, thus depriving the population in both cases of the use of the timber, which is so essential to settlement in any young country.

The object which ought to be kept in view should be to manage the State forests so that they would be useful and ornamental—profitable to Government and beneficial to the population. To accomplish this—and I speak from experience—it would be most difficult, if not impossible, to frame regulations which would work satisfactorily in all the forests. The situation, the value and quality of the timber of which they consist, are so variable, that rules which would work well in one forest would not be applicable to another. For instance, regulations which would be suitable to a superior pine forest near a harbour, large town, or railway station, could not be applied to another far inland and distant from a population, where carriage would be very expensive, and consequently reduce the value of the forest. Therefore, before they can be properly regulated, the public must be excluded from the timbered lands of the Crown, and a method adopted whereby the person who fells timber will have an interest in using it economically, and the public be supplied through a less extravagant system.

In recommending the adoption of a method of management for the conservation of the native forests of the Province on the principles which I have already mentioned, I would respectfully suggest—1st. That the public be excluded from the Crown forests. 2nd. That the demand for timber be supplied by selling at auction annually, or at any other time that might be deemed expedient or necessary, such quantities of growing timber as the state of the market might require for local or outside consumption.

I need not detail the conditions for regulating the sale of timber. Besides, these would depend in a great measure on local circumstances, such as the value of the timber, the situation of the forest, whether in its natural state or otherwise, &c. It would, however, be necessary in every instance to impose the two following conditions:—1st. That the trees be cut at the surface of the ground. 2nd. That the whole of the timber sold must be removed from the forest within a certain time from date of sale, otherwise such timber to revert to the Government. The former condition should be imposed for carrying on an economical system of management, and the latter for guarding against monopoly.

I have seen a system similar to this, although not the same in detail, carried out most successfully in some of the magnificent pine forests of the north of Scotland, and I feel assured the system I suggest would work admirably here.

To carry on the work successfully, it would be necessary to organize a "Forest Department," having a staff of officials as follows:—1st. A Board of Commissioners, who should have some knowledge of forestry. 2nd. A Chief Commissioner of Woods and Forests, to be chairman. 3rd. Resident District Foresters. The Forester should be competent to value the forests within the district assigned to him; ascertain the qualities of the various kinds of timber, strength, and durability; and if a forest were situated near a large area of agricultural land, likely to be taken up for settlement, whether the timber should be reserved for the benefit of the district; direct what portion of a forest should be offered for sale; and mark the trees on the boundary of the sections. It would not be necessary to go to the expense of a systematic survey.

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I enclose a sketch of the method of clearing I would recommend. The belt coloured red, round the margin of the forest, should be reserved, both for ornament and for sheltering the young growth.

Supposing that the timber on each subdivision was to be sold annually, beginning at No. 1, by the time that clearing operations would have extended to No. 59, the timber on No. 1, if replaced by Scotch pine, blue gum, or natural growth, would be sufficiently matured. The same process of disforestation could then be proceeded with as before, and thus a perpetual supply of timber could be kept up.

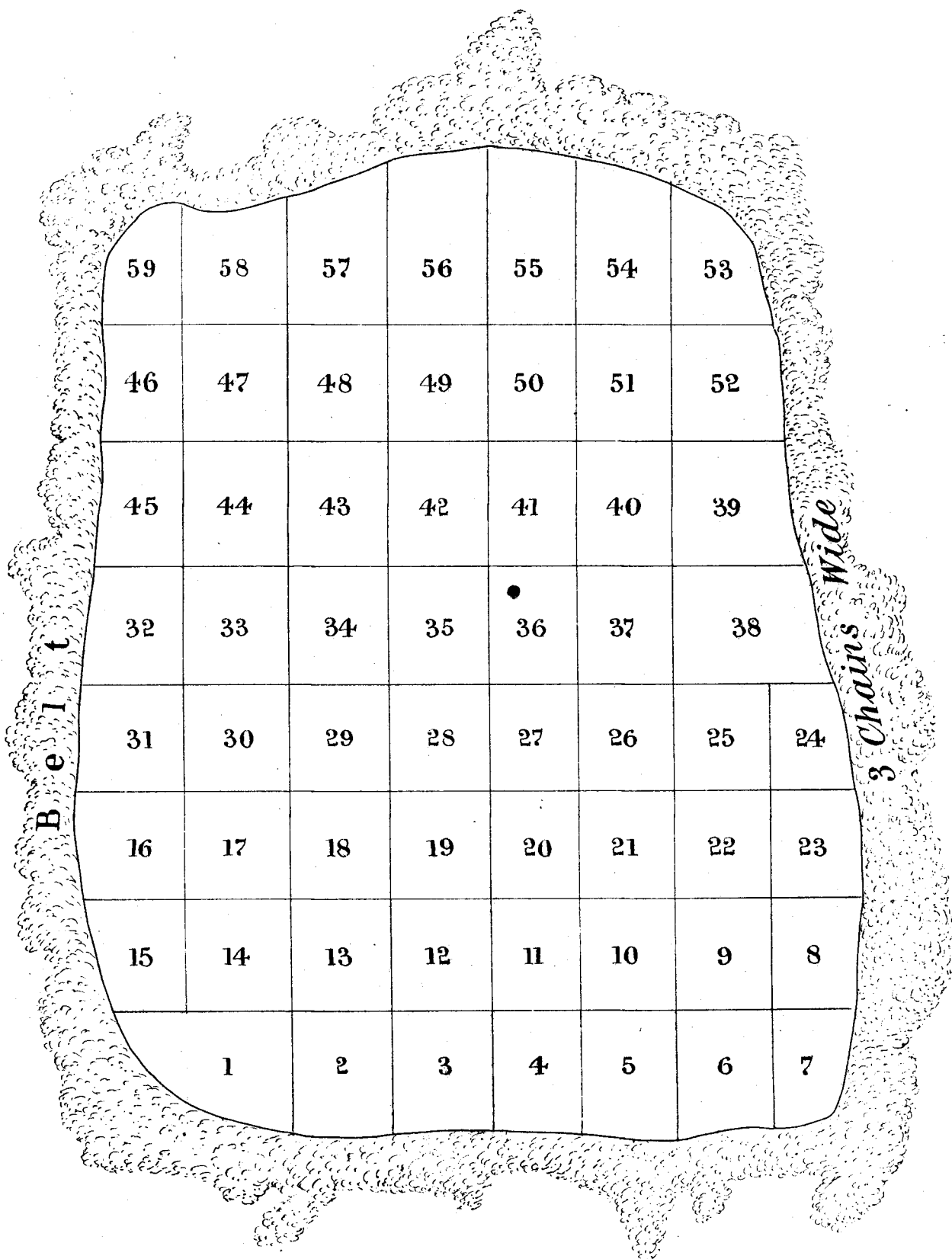
If this system of selling the timber in its natural state were adopted, not one single tree or branch would be wasted or destroyed, the public would be supplied at as reasonable a rate as they are at present, and supervision would be simplified.

I would not recommend for this Province the system of Government taking charge of the felling and manufacture of timber. This method might work in small plantations near large cities, but it would be carried out with unprofitable results here. The cost of supervision would exceed the amount derived from the timber. The manufacture of timber can be carried on with more expedition and more economy by private enterprise. It might be advisable, if a superior pine forest were situated near a large population, that the Forester should dispose of the timber by marking and selling the matured trees only; but in every instance the timber should be sold in its natural state in the forest.

I consider it is a hardship to residents in the country, that when a large settlement has taken place in the vicinity of a forest or bush, mainly on account of the convenience of the timber, that the Government should authorize any person or a company of persons, for a trifling fee, to go in and utterly destroy what would be so beneficial to a rising district for years to come, and yet make no efforts to replenish it. Frequently the land, after being cleared of the most valuable timber, is then sold, and the residents are thus even deprived of timber for fuel. All the bush reserves along the seaboard of this Province have been cleared of the useful timber, and, unfortunately, no effort has been made to replace it even by natural growth. All that is necessary for facilitating the growth of the young trees and bringing them to maturity, is simply to give proper attention to thinning at different stages of growth. For instance, if the young manuka bush at Kilmog, were thinned at the present time, the trees would grow rapidly, and soon become valuable to the district. Instead, therefore, of selling bush reserves which have been partially cleared of the native timber, they could be profitably utilized either in rearing young growth or artificial plantations. The native timber now growing on the land would afford excellent shelter for the young trees.

Taking into consideration the timber resources of the country, and making allowances for a large increase of population, I can see no difficulty, by judicious management, to so arrange that the people can be supplied and yet the forests not impoverished. Many evils which are at present practised would require to be remedied, such as felling timber at the improper season; and unless some attention be given to this, the reputation of the native timber will suffer. It has not come within the range of my duties to examine the forests at Tapanui and those in the late Province of Southland; but if the accounts which I have heard, of the superior quality of the timber of which they consist, have not been exaggerated, they may be made of considerable service to the settlement of the people on the land, the supply of the cities and public works with their requirements, and of great pecuniary benefit to the State.

14. Give your opinion on the best way to encourage artificial planting in private and public lands, and the kinds of trees you would recommend, as you have seen in your district.—I cannot see that anything more liberal could be devised than the inducements held out by the General and Provincial Governments, for planting on private lands. A condition might be imposed on persons obtaining leases of education reserves, or agricultural leases, to plant a certain area annually. State plantations could be raised on public lands, either under the Forest Department I have already mentioned, or by taking advantage of the pastoral resources of the country. This could be done by giving a lease for twenty-one years of small runs, say, from 5,000 to 10,000 acres of pastoral land, more or less, as the nature and features of the country would recommend. Absolve the assessment on the land set apart for that purpose, and make it a condition to plant a certain area annually. The area to be planted yearly would have to be determined by the annual value of the land leased, the kinds of trees, the distance apart, and the nature of the soil intended to be planted. The whole estate to be handed back to Government at the expiration of the lease. It would be necessary, for the purpose of carrying on planting operations successfully, and for raising plants at the cheapest possible rate, to set apart planting districts, and establish a nursery as near the centre of each as possible; say one at Oamaru, one at Dunedin, one at Clutha, one at Naseby, or any other place where it might be deemed advisable to carry on planting operations. If the inducements which I have already mentioned for planting on public land were held out, and nurseries established, I have no doubt but the land would be rapidly taken up for the purpose. Establishing nurseries in different parts of the Province would facilitate planting operations both on private and public lands. The public would be able to obtain plants within the district at a more reasonable rate than from private nurserymen at a distance. There is little doubt, therefore, that artificial planting, even on private lands, would be carried out on a much larger scale than at present. I have seen Scotch pines, oaks, poplars, &c., all growing, and in a healthy state, in different parts of the



Province. The blue gums have been destroyed by frost in the interior, but the red is considered to endure it better. No artificial planting of any extent has been done in the inland districts. A row of trees may be planted round a garden, or a small patch at a homestead, but the land possibly has been trenched, and perhaps even manured. To see trees grow rapidly under such circumstances, would be no surety that they would spring up so quickly on the land in its natural state and by the usual mode of planting.

15. State the portion of your district where timber is most required.—Artificial planting should be encouraged along the valleys of the Waitaki, Upper Clutha, Manuherikia, on the Manototo Plains, and near Queenstown, or any district where an agricultural population is likely to be settled. If plantations could be raised at intervals along that stretch of excellent country extending from Manototo Plains to Ida Valley, the brown, scorched appearance which the country now presents, and which must be the result of prevailing drought, would be materially affected for the better, and a very different appearance would be presented to the intending settler. That long stretch of superior agricultural land from the Elbow, extending along the undulating country east of Tapanui to the Clutha, is also very sparsely supplied with timber. There is no doubt but this large extent of country will yet rise to considerable importance as an agricultural district, and the native forests in the vicinity of Tapanui should be preserved for the future requirements of this valuable portion of the Province. Here in the course of the next ten years a large population will be located, and the want of material specially needed for settlement will be severely felt if some measures be not taken to meet this great necessity.

16. Give area of district in square miles.—5,120,000 acres. To any country the importance of its forests, whether natural or artificial, is well known. Their presence softens the severe frost and cold of winter, and abates the scorching effect of the summer sun. They form a considerable barrier to the effects of rainfalls on declivitous slopes and flooded streams, and in any landscape have a most pleasant appearance. I trust, therefore, that prompt measures will be taken suitable to the urgency of the occasion—measures that will arrest the rapid destruction of the fine forests of the Province, and be beneficial to the best interests of this growing community.

J. T. Thomson, Esq., Chief Commissioner,
Waste Land Board, Dunedin.

I have, &c.,
J. INNES.

Mr. HUGHAN to Mr. THOMSON.

SIR,—

Taieri Beach, 6th January, 1874.

In reference to your letter of the 3rd of November last, concerning the bush reserves in my district, I have the honor to enclose you my report thereon, and I have answered the queries as correctly as possible. A large portion of the Tautuku bush is in part of Catlin's and Glenomaru districts, but I have included the whole in the acreage of the Tautuku bush.

I have, &c.,
THOMAS HUGHAN,
Ranger.

J. T. Thomson, Esq., Chief Commissioner, Dunedin.

LIST of BUSHES in the SOUTHERN DISTRICT, showing the Acreage both Public and Private.

Nos. 1 and 2.

District.	Public.	Private.	Total.
Akatore	840	2,050	2,890
Clarendon	1,650	336	1,986
Canada Bush	100	...	100
Clutha	280	120	400
Glenkenich	2,436	380	2,816
Glenomaru	1,344	250	1,594
Kaitangata	566	255	821
Popotunoa	292	150	442
Rankleburn	5,000	...	5,000
Tautuku	200,000	3,000	203,000
Toetoes	5,420	300	5,720
Tuturau	759	135	894
Waikaia (or Switzers)	6,000	...	6,000
Warapa	1,003	620	1,623
Wyndham	2,500	600	3,100
Inch Clutha	...	700	700
	228,190	8,896	237,086

PART I.

ESTIMATE of the AMOUNT of BUSH DESTROYED in PRIVATE and PUBLIC LANDS.

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No. 3.

District.								Public.	Private.	Total.
Akatore	...	...	...	...	...	...	...	500	600	1,100
Clarendon	...	...	...	...	...	...	...	700	100	800
Canada Bush	...	...	...	...	...	...	...	50	...	50
Clutha	...	...	...	...	...	...	...	100	30	130
Glenkenich	...	...	...	...	...	...	...	500	50	550
Glenomaru	...	...	...	...	...	...	...	400	100	500
Kaitangata	...	...	...	...	...	...	...	300	50	350
Popotunoa	...	...	...	...	...	...	...	100	20	120
Rankleburn	...	...	...	...	...	...	...	100	...	100
Tautuku	...	...	...	...	...	...	...	3,000	800	3,800
Toetoes	...	...	...	...	...	...	...	50	20	70
Tuturau	...	...	...	...	...	...	...	200	40	240
Waikaia (or Switzer's)	...	...	...	...	...	...	...	150	...	150
Warapa	...	...	...	...	...	...	...	500	150	650
Wyndham	...	...	...	...	...	...	...	150	30	180
Inch Clutha	...	...	...	...	...	...	...	...	200	200
								6,800	2,190	8,990

4. There are fourteen saw-mills at work in my district. Their horse power is 3 at 6, 2 at 5, 3 at 8, 4 at 10, 1 at 14, and 1 at 18. The revenue paid by saw-mills is £325.

5. There have been twenty-three sawyers' and splitters' licenses issued, but many of the men are only splitting.

6. The amount of revenue paid by sawyers and splitters is £115; settlers' licenses (£2 10s.), £52 10s.; firewood (£1), £65.

7. The principal cause of the destruction of bush is fire caused by so many saw-mill licenses being granted in small bushes. The best of the timber is picked out (or timber fit only for saw-mill purposes), leaving a great deal of other useful timber. The tops of the trees taken for saw-mills are left to wither, and in the summer very often set on fire by some bushman who wants to clear a tract to some other part of the bush, and the result very often is that the whole of the bush is set on fire and a great deal of useful timber destroyed.

8. There has not been any replaced, except in the Popotunoa reserves.

9. In public lands only about four acres have been planted. In private lands I estimate that not more than from 250 to 300 acres have been planted.

10. I have been informed by many of the oldest settlers in the Mataura district that the climate has become much drier within the last eight years. This is accounted for by the district having become fully stocked, causing the rough country to be burnt; also, a great number of people has settled in the district, causing a great deal of ground to be cleared and cultivated.

11. I estimate that the supply of timber yet remaining will be sufficient to meet the demand for from forty to fifty years. That is without taking into consideration the Tautuku bush, which is unavailable for a large portion of my district.

If the Tautuku bush is considered, I believe that there would be timber sufficient to supply the demand for at least 150 or 200 years.

12. I am of opinion that unless some very stringent regulations are made for the management of the bush reserves, there will, in the course of a few years, be very little to protect.

13. The only way to protect the bush reserves is by a thorough inspection. I would recommend that a person should be appointed in each district who would take an occasional look through the bush reserves in his district, and who, I think, should act under instructions from the District Ranger. To meet this additional expenditure, I would recommend that the license fees be raised. There is another suggestion that I think worthy of the consideration of the Board, and that is, that the Government take over the bush reserves in districts where timber is scarce, and that no licenses should be issued for these bushes, but that men be employed to cut and supply timber to the settlers, and that the charges for timber be only sufficient to pay all expenses. That when the men had a sufficient supply of timber on hand, they could be employed in fencing and clearing a portion of the reserve; and that when such portion is cleared, planting could take place. By this means a few acres could be planted every year, and as the native timber was removed, other trees could be planted, and so the supply of timber kept up.

14. The best way to encourage artificial planting on private land would be by offering a money grant of say £4 per acre, the grant not to be given for less than five acres. It would also be a great encouragement to settlers if they could be supplied with young trees at cost price for planting, as there is great difficulty in growing young trees from the seed in the up-country districts. The only way to encourage planting in public land is by adopting my suggestion contained in reply to the 13th query. Of the trees that I have seen growing in my district, I would recommend the blue gum, the Scotch fir, larch fir, and the oak; of the Californian trees, I would recommend the *Pinus insignis*, *Pinus austriaca*, *Cupressus macrocarpa*, *Cupressus governiana*, and the *Wellingtonia gigantea*.

15. In my district timber is most required in the Waipahu, Waikaka, Otaria, and the Beaumont.

16. Area of my district, 2,400,000 acres.

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I have, &c.,

THOMAS HUGHAN,

Ranger.

J. T. Thomson, Esq., Chief Commissioner, Dunedin.

Mr. VALPY to Mr. THOMSON.

SIR,—

Dunedin, 23rd January, 1874.

In accordance with your instructions, I have the honor to report on the questions to which the General Government has invited answers, as correctly as I have been able to gain information.

I have, &c.,

W. H. VALPY,

Ranger.

The Chief Commissioner of Crown Lands, Dunedin.

LIST of BUSHES in the NORTHERN DISTRICTS of the PROVINCE of OTAGO.

(Acreages of Public and Private Bushes given approximately.)

Nos. 1 and 2.

Districts.					Public.	Private.	Total.
Otepopo.	Otepopo Bush	...	...	...	10	490	500
	Block VIII.	...	...	...	100	900	1,000
	" IX.	...	...	...	175	625	800
	" X.	...	...	...	45	255	300
	" XIII., XIV.	...	...	...	...	...	1,500
	Kuri Bush	...	...	...	390	510	900
Moeraki.	Port Moeraki	...	...	...	{ Township 150 Reserve 160	Native R. 120	430
	Blocks I., XI., XII., XIV.	...	...	...			500
	Block XIII.	...	...	...	...	...	1,500
	Gorge of Waihemo	...	...	...	600	...	600
	Puketapu	...	...	...	100	90	190
Hawksbury.	Mount Royal	...	...	...	286	264	550
	Kennard's	...	...	...	205	245	450
	Goodwood	...	...	...	...	150	150
	Matainaca and Tumai	...	...	...	...	250	250
	Hawksbury	...	...	...	548	652	1,200
	Mount Watkins	...	...	...	300	...	300
Waikouaiti.	Along the Coast	...	...	...	1,050	{ Native R. 500 Freehold 1,600 }	3,150
	Outside the Hundreds, S. Waikouaiti R.	...	...	...	1,600		1,600
North Harbour and Blueskin					1,000	22,000	23,000
Dunedin and East Taieri.	Saddle Hill	...	...	...	150	...	300
	Taieri Plain	...	...	...	...	300	300
	Silver Stream	...	...	...	400	...	400
	Above Lee Stream	...	...	...	350	...	350
West Taieri.	Maungatua Bush, Woodside	...	...	...	300	300	600
	Traquair	...	...	...	180	320	500
	Maungatua Gullies	...	...	...	100	200	300
	Waipori Bush	...	...	...	2,900	200	3,100
	Ranges South of Waipori	...	...	...	50	200	250
East Taieri.	Maitapapa, Maori Village	...	...	...	...	150	150
	Moeraki Bush	...	...	...	...	60	60
	Kuri Bushes, B. V., including Maori Reserve	...	...	...	180	1,020	1,200
	Block I.	...	...	...	56	194	250
	Block II.	...	...	...	340	200	600

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BUSH in the NORTHERN DISTRICTS which has been DESTROYED by FIRE or CLEARING.
(Approximately.)

No. 3.

District.					Public.	Private.	Total.
Otepopo.	Otepopo Bush...	...	...	...	6	100	106
	Block VIII. ...	...	...	...	70	100	170
	" IX. ...	...	...	...	90	120	210
	" X. ...	...	...	...	...	30	30
	" XIII., XIV. ...	...	...	...	200	...	200
	Kuri Bush ...	...	...	...	300	200	500
Moeraki.	Port Moeraki ...	...	...	...	90	...	90
	Blocks I., XI., XII., XIV. ...	...	...	...	150	50	200
	Block XIII. ...	...	...	...	180	...	180
	Gorge of Waihemo ...	...	...	...	200	...	200
	Puketapu ...	...	...	...	60	45	105
Hawksbury.	Mount Royal ...	...	...	...	40	50	90
	Kennard's ...	...	...	...	60	40	100
	Goodwood ...	...	...	...	...	30	30
	Matainaca and Tumai ...	...	...	...	...	...	...
	Hawksbury Bush ...	...	...	...	300	300	600
	Mount Watkins ...	...	...	...	80	...	80
Waikouaiti.	Along the Coast ...	...	...	...	400	300	700
	Outside the Hundreds, S.½ Waikouaiti R. ...	...	...	...	...	...	...
North Harbour and Blueskin ...					...	10,000	10,000
Dunedin and East Taieri.	Saddle Hill ...	...	...	...	50	...	50
	Taieri Plain, Mosgiel ...	...	...	...	...	150	150
	Silver Stream ...	...	...	...	80	...	80
	Above Lee Stream ...	...	...	...	100	...	100
West Taieri.	Maungatua Bush, Woodside ...	...	...	...	150	70	220
	Traquair " ...	...	...	...	50	20	70
	Maungatua Gullies ...	...	...	...	20	20	40
	Waipori Bush... ...	...	...	...	300	60	360
	Ranges South of Waipori ...	...	...	...	...	30	30
	Maitapapa, Maori Village ...	...	...	...	...	80	80
	Moeraki Bush... ...	...	...	...	...	20	20
	Kuri Bushes, B.V., including Maori Reserve ...	...	...	...	60	100	160
	Block I. ...	...	...	...	20	30	50
	Block II. ...	...	...	...	50	20	70
					3,106	11,965	15,071

4. There are three saw-mills; one in Maungatua bush, which yields a rent of £10, and two at Waipori bush, from which £45 and £50 respectively were derived.

5. There have been twenty-seven sawyers' licenses issued. Nearly all the holders of these licenses, with very few exceptions, have been occupied in splitting fencing.

6. The revenue derived from twenty-seven sawyers' licenses is £135; from twenty-two settlers' fencing and firewood licenses, £55; seventy-nine firewood licenses, £79; three saw-mill licenses, 80: total, £349.

7. The reckless use of timber and fire are the chief causes of the destruction of the bushes. I have heard of men who have entered a bush and felled all the pick of the timber before commencing to split or saw. In many cases more trees have been felled than were required, and of course they were left to decay. When the dry top of a fallen tree is found lying across a track desired to be made, a fire-stick is applied, regardless of consequences. In this way large tracks of valuable bush have been destroyed.

8. Very little indeed has been replaced by planting.

9. I do not know of any timber replaced by planting on public lands.

10. There is no difference in the climate caused by the clearing away of bush in my district worthy of notice, as the bushes are very limited, and in patches, and far apart. There is no doubt that the draining of land and burning off of rough herbage has improved the climate in many localities.

11. I do not think that, for building purposes, fencing, and public works—if other supplies were cut off—there would be more than seven or ten years' supply at the outside. For firewood

there may be enough for from forty to fifty years' supply, because there are always young trees growing. Of course this is supposing that the destruction of bush will not continue at the same rate as for the last seven years.

12. Unless very stringent regulations are made and enforced, the bushes in the northern part of the Province will soon not be worth protecting.

13. I would respectfully suggest that District Inspectors, or they might be called Contractors, should be engaged, who should be under the supervision of the Ranger, whose duties should be to cut fencing and firewood for sale, and to clear away the waste wood, and plant young trees. The proceeds from sale of wood should be ample to secure this.

14. Inducement might be offered, with success, in a money grant of from £3 to £5 per acre, for an area of not less than five acres planted with young trees; or a grant of from three to five acres of land for every acre planted with trees in blocks of not less than five or ten acres. A supply of good seed should be kept on hand to encourage planting, or a stock of young trees supplied by tender. From observation and information from settlers and Mr. Matthews, I think the following are some of the most profitable trees to raise:—The Scotch, Pinaster, Austrian, and Martima pines, Norway spruce, many of the Californian coniferæ and British hard-woods. The Australian gum tribes are the quickest of growth, but they will not grow away from the sea-board. The larch fir will not grow but on the south side of the hills and in shaded sites.

15. The bushes in the northern district are all on the sea-board. Twenty miles from the coast, and in many places less than half that distance, there is no native bush with the exception of some about the Lakes, at the sources of the Waitaki, and the head of the Waipori bush. The up-country districts are dependent for firing, some on the charred logs lying on the mountains, and coal pits, others on the peat bogs on the high grounds.

16. The area of the northern district is 2,300,000.

J. T. Thomson, Esq., Chief Commissioner of Crown Lands.

Mr. McARTHUR to Mr. THOMSON.

Utilizing and Conserving the Forests.

THERE has been a considerable proportion of the Colonial forests falling annually for centuries from natural decay, and this process is still going on, which, when combined with the additional area dotted over with the crops and branches of felled trees, prepares the forest for extensive and destructive fires.

In this preparatory process the splitter, not intentionally but necessarily, is more destructive than the saw-miller, for he must have trees that will split, and therefore requires to go over a large extent of ground for comparatively few trees, while to the other it is a matter of indifference whether the tree is even-threaded or not. He (the saw-miller) may therefore, if necessary, be made to utilize all the available trees above a foot in diameter within his lines in a face, and having laid down an expensive plant, including miles of tramway, he will, of course, be more careful about fires.

In most of the Southland forests there is a considerable number of young trees, from a foot in diameter to the mere seedling, therefore every hundred acres gone over by the saw-miller ought, as in Scotland, to be fenced to prevent cattle destroying the saplings. There would also be less risk from fire, as no one would require to go inside the fences, which, if of turf and for long stretches having wet ditches on each side, would tend to check fires from the outside.

In these enclosures the crops of the felled trees would be both food and shelter for the young plants growing up through them; and there should be Scotch fir, larch, oak, elm, &c., planted where the native plants were not thick enough.

It may be a matter for serious consideration by the Government, whether those who are fortunate enough to have good bush on their own properties ought not to be prevented cutting in the reserves; while it would be but reasonable that certain provisions should be made for settlers in the open plains who have none, and who would be quite willing to pay for the privilege.

D. McARTHUR,

Invercargill, 2nd March, 1874.

Inspector of Forests, Southland.

SIR,—

Referring to the circular from the Colonial Office *re* the “wasteful destruction of the forests of the Colony,” I have the honor to submit the above for consideration, and hope some of the suggestions made may be found of service in reference to utilizing the forests of the Colony, while at the same time they may be conserved and be a source of perpetual wealth and comfort to the inhabitants of the country.

That British forest trees will thrive amidst the native woods of New Zealand there can be no doubt. I have planted some oaks and firs on my own land, and have seen larch and Scotch firs here also, and all thriving beautifully.

I have, &c.,

D. McARTHUR,

The Chief Commissioner of Crown Lands,

Inspector of Forests, Southland.

Invercargill, 19th March, 1874.

4—H. 5.

PART I.

REPORT of the SUB-COMMITTEE of the WASTE LAND BOARD on SAW-MILL LICENSES, appointed 29th January, 1874.

Reports, 1874:
Otago.

The area of the forests under the administration of this Board is as follows:—

	Acres.
Upper Clutha and Waitaki Districts	26,240
North-Eastern District	59,840
South-Eastern District	392,960
West Coast and Waiau Districts	1,107,840
Wakatipu, unsurveyed and necessarily merely approximate }	
Total	1,586,880

It may be necessary to explain that the area of forest under the administration of the Southland Waste Land Board extends to about 1,070 square miles, or 684,800 acres, but this report confines itself to the former area only. The great masses of forest will be seen to lie in the southern and western districts, the northern and interior being very sparsely supplied with timber.

Since the Colony was founded, it will be seen by the Rangers' reports that of the Public forests 51,262 acres have passed into private hands, of which area 14,654 acres have been destroyed by fire or otherwise; and of the public forests remaining, 12,787 acres have been destroyed by the same means. These officers appear to be unanimous as to the causes of the destruction of the public forests, which may be summarized as the result of carelessness, the burning of grass on runs, and the unregulated operations of wood license-holders.

The causes of the destruction of the forests on private property are the clearing of the land for cultivation, felling of timber for sawing, fencing, and, in the neighbourhood of Dunedin, principally for firewood. These causes are, in the opinion of the Rangers, bringing about a rapid obliteration of this property of the State.

Sufficient indications are given in the reports of the Rangers that active measures cannot be long delayed, but the extent and direction of these require mature and careful consideration, both in reference to the present and future wants of the public. The conditions of the forests also are so varied, and the wants of the people so diverse, that large exceptions can be taken to almost every principle suggested.

The first question that presents itself is, What timber have we? We have, as shown above, one and a half millions of acres. What does this mean in intelligible figures? That is very difficult to answer, and the estimates will be most varied, but we will attempt one.

The forests vary from heavy timber which is found on the low lands, to small scrub found on the ranges, rising to an altitude of 3,500 feet. Intermediately between these there is every variety. Hitherto the heavy timber, for the most part, has been entered, and it probably covers an area of one-third of the whole, *i.e.*, extends over half a million of acres; the remainder being unfit for the sawyer, and being inaccessible, is of no utility to other trades, such as the firewood cutter, fencers, &c. Possibly, however, the extension of railways may at a future period render much available that is now beyond reach. The question then reduces itself to the quantity and value of the timber on half a million acres, and on these points we also find great differences of opinion. The saw-millers that we have consulted agree that not more than 8,000 superficial feet of marketable stuff can be, on an average, taken out of an acre of what is classed as heavy bush. Yet the estimates of others outside of the trade rise as high as 30,000 feet superficial. We are bound, however, to take the estimates of the most experienced. Half a million of acres, at 8,000 feet per acre, therefore, may be held to contain four billions of superficial feet, which, placed in the market at 10s. per 100 superficial feet, would amount to £20,000,000. This is evidently not the value of the timber as it stands, but after it, in the course of years, has been brought to market. The sum, therefore, represents only the amount of labour which will be required to bring it to market, and the earnings in capital and machinery combined with the above. In other words, the forests, under the administration of the Board, now and in future years, will give employment to capital and labour to the above amount if properly conserved.

But are the estimates of the saw-millers correct? We have no reason to think otherwise as regards their own trade, and the report of Mr. Innes gives confirmatory evidence of this, when he says of the Wakatipu forests, "Unfortunately the wood is subject to rot in the centre of the tree, which renders the proportion of timber suitable for sawing purposes in the forest very limited;" and he instances that a saw-mill of 12-horse power has used up all the available timber in an area of 1,600 acres in ten years; that is, on the saw-millers' estimate, 12,800,000 superficial feet. Now, allowing the mill to have worked 1,200 hours per annum, its out-turn would be not far from this, *viz.*, 10,800,000 superficial feet.

On this information, then, we have a basis to calculate the proportion of forest actually economized by millers, and what is left or goes to waste. With this view, one of our members measured the actual quantity on an acre of average heavy bush, and found the trunks alone to contain 12,748 cubic feet, equal to 152,976 superficial feet, supposing all used up. Thus it will appear that only $\frac{1}{10}$ of the actual bulk of the trunks in an Otago forest is available for saw-millers.

Again, if trunks be considered to measure the same as the stumps and branches, $\frac{1}{10}$ only

is applied to use, unless where the forests are close to a town, when the timber is used for fire-wood. But, as often is the case, the area is set fire to, either wilfully or by accident, when the whole is destroyed. These figures confirm the allegation of wastefulness on the part of the wood-cutters or the public, as reported by the Rangers.

It appears evident that no exact account can be had of the operations of the manual sawyers, splitters, and firewood-cutters, owing to the dispersive and intermittent nature of their operations; but as a comparative time for the lasting of the Otago forests is an interesting question, an approximation may be obtained from the known horse power of saw-mills at work.

Taking the saw-millers' own data, viz., four billions of superficial feet in half a million of accessible acres, they have now eighteen mills, aggregating 157-horse power, at work. Allowing them to work 1,200 hours in the year, that is, 150 days of eight hours, they will use up, at 75 superficial feet per horse power per hour, 14,130,000 superficial feet per annum, or take 282 years to finish the whole. Of course this can only be accepted as a very approximate estimate, as the power may increase or decrease, and the manual sawyers' operations may seriously accelerate the result. Judging, however, that most of the forest is far from what is at present considered payable ground, and that great accession to the population may be expected, the above period is over rather than under the mark.

It appears pretty plain that all forest easily accessible will, at the above estimate, be finished in twenty to thirty years, thus leaving the more remote to the latter portion of the period, but which may then be as cheaply brought to market as the present stuff, by reason of cheaper labour and greater carriage facilities. Measures, therefore, are not immediately pressing, but whatever is done may be done with deliberate consideration, having due regard to the present wants of the public, and a reasonable foresight for future generations.

Since the foundation of the settlement, as stated before, 51,262 acres of forest have been sold to private persons, and 26,441 acres have been destroyed by fires or for cultivation. One of the members of this Committee saw 4,000 acres destroyed by one conflagration; but generally speaking, the separate fires have consumed smaller quantities, and these fires may be expected to increase as settlement goes on.

The administration of the forests has hitherto been of the simplest kind, or rather there has been none, licenses to cut and remove being given for a small fee to all applicants; and in suggesting alterations in what has hitherto been a privilege of all settlers, we would rather be guided in the view not to curtail the usefulness of the native forests to the work of colonists and of settlement, but rather to prevent unnecessary waste.

In the course of our inquiries it has been quite evident that while saw-millers can be put under effective control, manual sawyers and wood-cutters cannot. Further, that there are two classes of bush entirely distinct, having heavy and light timber, and while the manual wood-cutters can employ themselves in either, the saw-millers can only do so in the former. A course of regulation is thus indicated by this fact.

We would therefore suggest that the bushes should be detailed solely for each class of sawyers, and that the licenses of each and both classes should be confined within their respective boundaries. Without this being done as a first step to regulation, no effective supervision can be maintained, and in no case should manual wood-cutters be allowed where saw-mills are established, as the latter can more economically furnish all the wants of settlers than the former.

It is evident that the motion of the Waste Land Board must be confined to their powers given in the Act, and these being limited, the practical recommendations of this Committee cannot embrace the whole question of use and renovation of forests. The sections that apply to timber and forest lands are 91, 164, 165, 166, which give power to the Board to allow occupation for cutting and felling, and for prosecuting unlicensed persons, and the power of reservation by the Board or Superintendent from entry and use by runholders. Further, under the 91st clause, the forms in which licenses should be issued may be determined by the Board; and under the 92nd, the extent of land may be specified.

Thus, in determining the forms of saw-mill licenses, we must be guided by the period to which they ought to extend, and the quantity the sawyers can cut. We have seen that only 8,000 superficial feet of sawn timber can be got out of one acre, and that 1 horse-power cuts or may cut 90,000 superficial feet per annum, that is, about eleven acres. Now, it has been the custom of the Board hitherto to allow thirty acres per horse-power, and to charge £5 per horse-power; that comes to about 10s. an acre for three years, or 3s. 4d. per acre per annum.

Considering all circumstances, we think it would be a better principle to license to saw-millers the cutting of actual assigned portions of the primeval forest—after survey if necessary—for three years, at so much per acre, payable in advance. This would give fixity of position and certainty of revenue, and the areas granted per horse-power could be regulated according to the nature and quality of the bush.

In locating saw-mills, they should pay cost of survey or marking, and all travelling expenses necessitated by their occupation. On the completion of the time of occupancy, or abandonment, then it would be competent for the Board to advise Government as to replanting or settlement in small farms, as might be thought advisable.

To bind down the saw-miller to any operation not connected with his immediate profit or interests we think impracticable, and which would always be evaded.

Annually it would also be advisable that the saw-millers furnish a prismatic compass survey of their tramways.

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What should be the charge per acre must be decided from year to year. As a guide, we find that private bush proprietors now obtain £3 per acre in well-situated localities, and we know of one acre where £40 has been paid.

For licensed sawyers and wood-cutters, we believe it would be of advantage to apply the same principle of giving fixity of area and position, but only to extend for one year. Thus, after it has been ascertained what acreage one man can clear and prepare for market, of the description of stuff he wishes to appropriate or sell, the portion of bush should be measured off by him, and defined by certain marks—on the principle of the gold field licenses—to which he should be confined, the fees being paid in advance.

We find, on inquiry, that a wood-cutter can cut and prepare 128 cubic feet of stacked timber, or 86 cubic feet in the solid, per diem. Now, as an acre of heavy bush has been shown to contain about 24,000 cubic feet in the solid per acre, this would give him 278 working days in the year; hence, he should not have more than an acre assigned, or say 200 feet square. This area might be assumed to be the standard for one man, and portions or multiples of it might be granted as required by the settlers. If divided, the frontage should be halved or quartered.

By this means it is anticipated that the licensed and unlicensed areas would soon be known to the public officers, and the unappropriated be thus more easily protected.

We may mention that limited areas of forest have been taken up under lease to replant, but we cannot report satisfactorily on the working of the same by the results that have up to this time been apparent.

Several applications have also been made to plant under the terms of the 169th clause of "The Otago Waste Land Act, 1872," but the Board has not yet been able to grant any, nor do we think that much or anything will eventuate from the limited powers given by the Legislature to the Board by the above clause.

While, from the evidence we have collected, we do not see any stringent necessity for planting operations with the view of replacing the natural forests, yet we are clearly of opinion that the work must be some time hence initiated. When this has to be done, it is clear that the work must be executed by the Board, with greater powers attached to it than it at present possesses; while we believe that much extension of useful trees will arise on private lands, owing to the bonus per acre now paid; yet this will not be the case on public lands unless under the conduct and supervision of competent foresters; and, as intimated before, we are of opinion that no obstruction should be put in the way of sawyers and wood-cutters; yet, when they are done, the areas under license to them should at once be either marked off for small settlers, or replanted at the public expense; and though this expense may be a large sum per acre, yet the advantage of the full-grown artificial plantations would be that every single tree could be turned into prepared stuff, not one-nineteenth only, as is the case with the natural growth.

J. THOMSON, Chairman.

JOHN REID,

HENRY CLERK, } Commissioners.

Dunedin, February, 1874.

Mr. PEARSON to the Hon. the SECRETARY for CROWN LANDS.

SIR,—

Crown Lands Office, Invercargill, 18th May, 1874.

I have the honor to enclose copy of my report to His Honor the Superintendent, on the subject of preventing "the wasteful destruction of the forests of the Colony," together with two reports from the Inspector of Forests, Southland, as per margin. I may mention that I think it would be advisable to charge a higher fee or royalty for cutting the more valuable descriptions of timber (native), such as totara and black pine, than is presently charged under the Southland timber regulations, which is uniform.

I have, &c.,

WALTER H. PEARSON,

Commissioner of Crown Lands.

The Hon. the Secretary for Crown Lands,
Wellington.

REPORT on the Motion adopted by the House of Representatives during the recent Session of Parliament, viz., "That the Government should invite the various Provincial Governments to consider how best to prevent the wasteful destruction of the forests of the Colony, and to supply statistics and recommendations for the consideration of Parliament."

The first question is, what may be considered "wasteful destruction of the forests of the Colony."

The timber regulations presently in force in Southland proper, provide for four descriptions of license to cut timber on Crown land:—

1. Settler's license, at 40s. per annum, to cut for the improvement of land in his occupation.
2. Hand sawyer's and wood-cutter's license, at £5 per annum.
3. Special license to cut logs of length, for wharves, bridges, &c., at 5s. each log or tree.
4. License of area to steam saw-mills, estimated at ten acres for each declared horse power, with a reserve for four years' cutting, inclusive of the first year's, at a fee of 3d. for every 100 superficial feet of timber cut during the term of the license.

Of the three last, the license to steam saw-mills will, I am inclined to think, prove least destructive to the timber, for the following reasons:—

Hand Sawyers.—The hand sawyer, or splitter, having no occasion to erect an expensive plant, having no vested interest in any particular locality, and desiring only to satisfy his temporary requirements at as little trouble or delay to himself as possible, cuts down trees indiscriminately. If, when felled, he finds them difficult to split, he fells others, until suited; the rejected timber lying to rot or furnish fuel for the first fire started in its vicinity.

Steam Saw-mills.—The steam saw-miller, on the other hand, starts with an expensive plant, and as every foot of tramway he lays down into his “claim” costs money, besides the expense consequent on extra haulage, he clears the timber fairly as he proceeds. To him, a bush fire means the destruction of his tramway, and probably of his machinery; at least, the loss of that timber to utilize which he has invested capital. If, therefore, it is of importance to the public interest to prevent the destruction of the timber by fire, it is of much greater importance to the individual saw-miller, and he consequently will use every endeavour to compass his own safety, and experience here has proved this to be the rule.

Timber Supply.—So far as the district of Southland proper is concerned, I have no fear that the supply of native timber will be exhausted before it can be replenished by artificial cultivation. From the appended report of the Inspector of Forests, it appears there are eight hundred thousand (800,000) acres of available timber, which at a moderate computation will require four hundred years to exhaust. The twenty (20) saw-mills presently licensed—a number I see no reason should not be doubled in two years—will employ at least three hundred (300) men, whose combined wages will amount to about thirty-six thousand pounds (£36,000) per annum, while the proceeds from the sale of the timber would realize some fifty thousand pounds (£50,000) a year for distribution in the community, a matter of no inconsiderable importance.

Present Policy.—As regards the present, I would respectfully recommend that a liberal policy should be pursued, to encourage and foster to the uttermost the fullest development of an industry which is rapidly assuming importance. To put stringent and unnecessary restrictions on its growth will simply result in enabling the Australian and Tasmanian timber merchants to undersell New Zealand in its own market, and thus drain from the Colony capital which could be more profitably invested in the employment of labour. The margin is not wide, and the imposition of harassing prohibitions, or too high a rental on steam saw-millers, will easily overstep it. This accomplished, the native forests will undoubtedly be undisturbed from remunerative employment, but their destruction from the operation of natural decay will continue speedily and effectively. I would allow the timber to be cleared off, and the reserves planted with men. The various timber reserves in Southland are so placed by nature, that once cleared they would form admirable centres for a labouring population. Cleared, they should be surveyed into ten or twenty acre sections and sold, not to speculators, but on a system of deferred payments, or special settlement, to labouring men, who, from these centres would supply the demands of employers, and when not employed could find useful occupation in cultivating their holdings. This want of centres from which to draft labour at certain seasons is felt already, and will become more pressing as cultivation progresses. In my reports to the Provincial Government of dates 16th April, 1872, and 1st May, 1873, I recommend special settlements in Seaward Bush and the Long Wood. Such settlement could profitably be entertained in every bush reserve in the district so soon as it is denuded of useful timber.

Future Policy.—As regards the future, I would recommend that tracts of land, from two to ten thousand acres, be reserved in the most sparsely timbered localities, for planting forest trees. There is no reason why, in sixty to one hundred years, forests superior to those indigenous to the country should not be obtained. From experience I know that many of the pines, such as *Pinus pinea*, *pinaster*, *strobus*, *insignis*, *macrocarpa* (*Coulterii*), *Wellingtonia gigantea*, &c., together with the family *Cupressus*, grow rapidly and luxuriantly. In planting these new forests, advantage could be taken of the discoveries of science to supply the requirements of specific industries. To wit, it has been found in Europe that wood pulp can be manufactured into paper, and that poplar, particularly the Black Italian, was best fitted for the purpose, and consequently a large demand has arisen for it. Doubtless scientific inquiry will enable these new plantations to satisfy the demands of industries beyond those of mere building, and prove a fruitful source of wealth to the community. As to the question of shelter. If the outside belts are planted thickly with the hardiest varieties, there need be no fear on this score. The climate of this district has, since 1857 (my own range of experience), undergone a remarkably advantageous change, and from what I can gather from the oldest settlers—the whalers—it was much more boisterous previously. If therefore the native forests could attain their present dimensions under climatic circumstances more unfavourable than at present, there can be little doubt but that artificial cultivation will prove successful. I am perfectly certain that a *Pinus pinaster* will thrive in too exposed a situation for a young red pine plant, of the same age, to have a chance of living in.

Management.—The planting and management of these new forests should, I would suggest, be entrusted to a Central Board of Commissioners and Local Boards throughout the Colony, according to requirement; the Central Board, to be appointed by His Excellency the Governor, to consist of men whose qualification should be rather scientific cultivation combined with a practical knowledge of the art of forestry, than merely social position or political influence. It would be the business of this Board to determine, by personal knowledge and investigation, the

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description of forest trees suited, by habit of growth and nature of fibre, to the climate of each district in the Colony, as also their adaptation to any special industry which might be profitably conducted in a particular locality.

Local Forest Boards.—The Local Forest Boards, to be appointed by the Central Board, should be composed solely of men practically acquainted with arboriculture in all its branches. If such are not to be found in the Colony, they can be obtained—sufficient inducement offering—from Scotland, where instruction in forestry is largely imparted to working gardeners.

The Indian Government, feeling the want of competent foresters, though preferring those from Germany and France, was forced, much against its inclination, to obtain these Scotch arboriculturists for the management of its forests, and I think the example might be followed with advantage in this Colony, where the climate, at any rate in the Middle Island, assimilates in a large measure with that of the home country. Under any circumstances, if the future management of the public forests is to prove a success, all considerations of political power or social standing should be ignored, and the members of Forest Boards be appointed on the sole consideration of a practical acquaintance with the subject.

I have, &c.,

WALTER H. PEARSON,

His Honor the Superintendent, Dunedin.

Commissioner of Crown Lands.

SOUTHLAND FORESTS.

SIR,—

Invercargill, 28th April, 1874.

I have the honor to report that the quantity of timber cut this year, under the new regulations, has been, for the ten mills now working, as follows, viz. :—

		£	s.	d.
January.	472,239 feet, at a lordship or rental of 3d. per 100 feet..	59	0	5½
February.	538,469 feet „ „ „ ..	67	5	3
March.	529,852 feet „ „ „ ..	66	4	6

1,540,558 feet, at a lordship or rental of 3d. per 100 feet, £192 10 2½

When the twenty saw-mills now in Southland are in full operation, they will employ, on an average, fifteen hands each, or a total of at least 300 men, whose combined wages will amount to about £36,000 per annum, the quantity of timber cut being over 12,000,000 feet, and largely exported, realizing for distribution over the district the large sum of about £50,000 per annum.

It is gratifying to be able to state that the forest is being fairly dealt with and properly utilized. The new timber regulations appear to work well. While they are liberal and workable, they are, at the same time, such as to enable the Inspector to enforce the proper utilization and prevent any wasteful destruction of the forests.

It is also gratifying to have to report that there have been no bush fires during the past summer, which has been very much due to the great care exercised by the mill-owners, who have expensive plants, in the shape of machinery and tramways, to maintain.

There are upwards of 800,000 acres of forest in Southland, and nearly all available, which, at the rate of 100 acres per annum to each of twenty saw-mills, would last for 400 years. There is, therefore, no reason to apprehend a scarcity of timber, provided the forests are not wantonly destroyed (as there is ample time for a succession of full-grown timber), both by preserving the young native plants and by planting British and other forest trees.

I have, &c.,

The Chief Commissioner of Crown Lands,
Southland.

DUNCAN McARTHUR,
Inspector of Forests.

WESTLAND.

His Honor J. BONAR to the Hon. the COLONIAL SECRETARY.

Westland.

SIR,—

Superintendent's Office, Hokitika, 12th May, 1874.

Referring to your letter No. 27, 15th October, 1873, respecting the preservation of forests, I have the honor to state that, as the whole of this Province is densely timbered, no necessity has as yet arisen for taking any steps to preserve our timber; and as I regard the timber trade here as one of the most important and permanent industries of the Province, I should be sorry to see restrictions placed on its development.

The only suggestion I have to make would relate to improving the character of our timber by regulating, after a careful inquiry and experimental tests, the seasons during which trees should be permitted to be cut down, and so secure only a properly seasoned article being sent into the market. A little attention to this would, I feel satisfied, tend greatly to increase the value of our timber, and thereby improve our Provincial estate.

Having this object in view, I have requested the different saw-mill proprietors to cut a log of each description of timber at the commencement of the different seasons, so that a proper comparison may be made.

I have, &c.,

The Hon. the Colonial Secretary, Wellington.

JAS. BONAR,

Superintendent.

NELSON.

His Honor O. CURTIS to the Hon. the COLONIAL SECRETARY.

SIR,—

Superintendent's Office, Nelson, 11th May, 1874.

In answer to your circular letter of the 15th October last, in which you ask me to furnish you with suggestions as to the best means of preventing the wasteful destruction of the forests of the Province of Nelson, for the consideration of Parliament, I have the honor to state that, for the following reasons, I am of opinion that it would not be practicable to take steps for the preservation of timber upon the waste lands of this Province, without injuriously affecting the progress of the settlement of the country. At least three-fourths of the lands remaining in the hands of the Crown, which amount to between four and five millions of acres, are covered with timber, by far the greater part of which is of little present value, owing to want of means of communication. I trust that the assistance of Parliament will be given to remove this difficulty, and to make a considerable portion of our timbered lands accessible to a line of railway. But it must be a considerable time before that desirable result can be effected, and I think it would be inexpedient to check the progress of settlement, necessarily but slow, while the interior of the country remains comparatively inaccessible, by putting restrictions upon the occupation of the land in order to preserve from destruction a small quantity of timber, for use at a somewhat distant and at present wholly uncertain period.

I have, &c.,

OSWALD CURTIS,
Superintendent.

The Hon. the Colonial Secretary, Wellington.

MARLBOROUGH.

His Honor A. P. SEYMOUR to the Hon. the COLONIAL SECRETARY.

SIR,—

Superintendent's Office, Blenheim, 12th May, 1873.

In answer to your circular letter No. 27, dated 15th October, 1873, referring to the conservation of forests, I have only to suggest that all possible means be used to prevent the destruction of forests by bush fires, and that persons cutting down the timber for the purpose of clearing their lands should be compelled to take such steps as would prevent their fires from spreading beyond the limits of their own lands.

I have, &c.,

A. P. SEYMOUR,
Superintendent.

The Hon. the Colonial Secretary, Wellington.

WELLINGTON.

His Honor W. FITZHERBERT to the Hon. the COLONIAL SECRETARY.

SIR,—

Superintendent's Office, Wellington, 20th May, 1874.

I have the honor to acknowledge the receipt of your letter of the 8th instant, requesting to be furnished, as soon as convenient, with the information asked for in your letter No. 27, of the 15th October, upon the subject of the conservation of forests.

In reply, I have the honor to inform you that the Government do not consider it necessary that any legislative action should be taken with regard to the conservation of forests within the Province of Wellington.

The opinion of the Government upon this subject is that the object the General Government have in view as to the conservation of forests will be most readily attained by opening up the country and settling immigrants upon it on a system which will increase the value of the timber, and afford the readiest means for bringing it into the market.

I have, &c.,

WILLIAM FITZHERBERT,
Superintendent.

The Hon. the Colonial Secretary, Wellington.

TARANAKI.

His Honor F. A. CARRINGTON to the Hon. the COLONIAL SECRETARY.

SIR,—

Superintendent's Office, New Plymouth, 27th May, 1874.

I have the honor to acknowledge the receipt of your circular, number and date quoted in the margin, calling my attention to a report of the Committee on Colonial Industries, adopted by the House of Representatives, requesting the Government to invite the various Provincial Governments to consider how best to prevent the wasteful destruction of the forests of the Colony, &c.; and you ask me to furnish you with suggestions and recommendations with regard to the Province of Taranaki, &c.

In reply, I have to state that the larger portion of Taranaki is forest land. It is therefore the intention of the Government to take such action in this matter as will cause certain portions of this great forest territory to be cleared in the most judicious manner, by opening out, in the first instance, the level and fertile lands and most promising districts for colonization and settle-

PART I.

Reports, 1874;
Nelson.

Marlborough.

Wellington.

Taranaki.

PART I.
—
Reports, 1874:
Taranaki.

ment. Beyond this, it is the opinion of the Government that nothing more need be done in this matter for a few years, save that it is determined not to remove any bush or trees on or towards the tops of hills or ranges; neither should any trees or scrub, or indeed vegetation of any kind, be disturbed within a distance of some four and a half to five miles of the summit of Mount Egmont.

I have, &c.,

FREDK. A. CARRINGTON,
Superintendent.

The Hon. the Colonial Secretary, Wellington.

See Analysis,
pages 14 and 15.

P.S.—On the 8th instant I telegraphed to you that the Deputy Superintendent had reported on the conservation of Taranaki forest on 23rd February, 1869.

III.—PROPOSED FOREST SETTLEMENTS.

The Hon. J. VOGEL to His Honor the SUPERINTENDENT, Wellington.

Proposed Forest
Settlements. SIR,—

Immigration Office, Wellington, 2nd February, 1874.

In accordance with my verbal promise to your Honor, I now send you copy of a memorandum concerning a special settlement proposed to be established in Westland. The memorandum gives the bare outline of the plan discussed between the Superintendent of Westland and myself.

As I understand your Honor seriously contemplates the establishment of special settlements, I will add a few words in addition to the memorandum, as in its present state it is, as I have said, a mere outline.

I think it very desirable that in parts of the country thinly settled, or in which the settlement is practically not to any extent commenced, encouragement should be given to settlement in a concentrated form by the establishment of special settlements.

Supposing immigrants to mainly constitute these settlements, I am of opinion that the Immigration Department is justified in rendering assistance. The vote taken for immigration is for "location" as well as for "introduction;" besides that there are various provisions in the Public Works and Immigration Acts which evidence the approval of Parliament to what has always been regarded by me as a part of the immigration and public works policy—the promotion of settlement.

That special settlements, with the exception of the Scandinavian and Colonel Feilding's, have not been more actively promoted, is to be attributed to the very great demand in the settled districts for the immigrants who have already arrived. The time will shortly come when employment may not be so immediately and so generally available to newly-arrived immigrants, and it will be important to have special settlements in course of formation ready at once to receive them. Families of immigrants will, for many reasons, be most suitable for special settlements, and these will precisely be the immigrants who will first feel any slackness in the labour market.

Without, therefore, laying down any rule against specially recruiting in the United Kingdom for immigrants for the purpose of the settlements, I am inclined to think that very desirable settlers may, with advantage to all concerned, be obtained by allowing immigrants who arrive in all parts of the Colony, to volunteer for such settlements should they wish to do so after perusing the regulations and conditions on which they are founded. A great advantage gained by this course will be that it will avoid the risk of the settlements in their earlier stages being overcrowded.

I am of opinion that the first success of a new settlement will much depend upon its preparedness to meet the purpose for which it is designed. By sending a few settlers to prepare in anticipation for others, and to make these additions pave the way to further additions, is to adopt a plan most likely to satisfy the settlers in the early days of their adventure.

The success of special settlements will very much depend on there being some means of employment open to the settlers during the first two years. If such employment be available, there is no reason why the settlers should not pay, at convenient periods, a fair value for the land they are to acquire.

In recognition of these principles, I shall not be averse to considering plans for special settlements in which it will be necessary to advance some money for the employment of the settlers on useful works, to be recouped out of receipts from the settlement to be secured to the Department. The formation of roads obviously suggests itself as the description of work on which the settlers might be employed, and the sale of the land as the source of recoupment of the advances; but I do not expressly name these, because I am in hopes that some effort will be made to establish forest settlements in which the settlers would have employment offered to them to utilize the timber, the returns from which would serve as a means of repayment for advances, in addition, if necessary, to receipts from the land when cleared.

The plan discussed with the Superintendent of Westland, of which the memo. herewith forwarded is an outline, contemplated a combination of an ordinary special settlement with a forest settlement. I adopt the phrase as a convenient one.

I ask your Honor's consideration for a settlement of this mixed character, or for one in

which the chief object will be that of putting to a profitable use the timber. Amongst the lands available for special settlements in this Province are tracts of splendid forest. Your Honor is aware that to the ordinary occupier of small means, settlement on such land means the destruction as rapidly as possible of the timber which covers it. In fact, small occupiers cannot derive from the timber the great value it possesses.

PART I.
—
Proposed Forest
Settlements.

From an economic point of view, the destruction and the reckless use of the forests of the country do not probably entail so much loss as the improper treatment of the timber. Without dwelling on the question of the suitable time to cut down timber or the best means of seasoning it, I presume it will not be questioned that the intrinsic value of unseasoned wood, such as is now commonly used, is infinitely less than that timber which has been subjected to a proper mode of treatment. At present only green timber can be generally procured, and so there is a market for it; but were provision made for timber in a more fitting condition, it would command the favour of the market, and establish for New Zealand wood the reputation which it is believed to deserve, but of which the mode in which it is dealt with has to some extent deprived it.

The object of a forest settlement would be of a twofold character—first, to prevent the forests from wanton destruction; second, to prevent the trees from being cut down improperly or being prematurely sawn up. If I am correctly informed, in the State forests of several European countries the Government solely cut down the trees and sell the logs to the saw-mill owners.

I throw out for your Honor's consideration the question of whether a forest settlement might not be established on some such basis as the following:—We will suppose the locality selected is one towards which a railway is approaching, to connect it with a port of shipment or the centre of a large population.

(a.) During the proper season, trees appointed by a competent overseer to be cut down.

(b.) At other times a road or tramway through the forest to be constructed, and the logs stacked or placed so as to make them convenient for subsequent use, and in the meantime to run as little danger as possible from fire. When a sufficient number of logs are in a condition to be cut, and the road usable, logs to be sold either for transport in their then condition, or, which would be much preferable, for treatment in saw-mills established on sites in the forest, cleared for the purpose, and offered with the condition of purchasing at a stated price the logs belonging to the Government, and with a rigorous prohibition against cutting down by the occupiers themselves.

(c.) Land not to be sold or disposed of until cleared of timber, but it might be agreed with the settlers, who would in the meantime have received good employment, that a portion of their earnings should be expended in the purchase of cleared land.

(d.) Co-operative saw-mills and other factories for working timber might under this plan be arranged.

I am of opinion that a settlement on the basis I have sketched out would be successful from many points of view, but I am ready to receive proposals for ordinary special settlements, or for settlements of a mixed character, such as that under discussion with the Superintendent of Westland.

In an earlier part of this communication I have advisedly used the phrase "supposing immigrants to mainly constitute these settlements," because I foresee that it may be necessary that they should not entirely constitute them. Of course, the Department considers the subject from the immigration point of view, and in that light it appears to me that a small admixture of old colonists might be so valuable to newly-arrived immigrants that I would be justified, when it was considered desirable there should be such admixture, to recognize it as a condition favourable to, and in the interests of, the immigrants composing the settlement.

Your Honor, even if you do not agree with the views I have stated, will excuse my addressing you at such length on the subject, and as I desire to bring the matter under general consideration, I propose to publish this communication if your Honor does not object.

I have, &c.,

His Honor the Superintendent, Wellington.

JULIUS VOGEL.

MEMORANDUM as to PROPOSED SETTLEMENT in WESTLAND.

SPECIAL settlement of 100,000 acres, of which about 50,000 acres will be set apart for 250 families, say 1,000 adults; the balance to be made a forest reserve, to be retained by the Government.

Each adult to purchase fifty acres, at per acre per annum, for seven years.

The Government to offer employment to male adults for two years, three days a week, or alternate weeks, at per day, either in making roads or cutting down trees on the Government reserve; but the Government not to be bound to employ more than 200 adults at any one time, and no adult to be so employed for more than one year.

The Government, after the cutting down of suitable trees on a portion of the reserve, to offer sites to persons on which to erect saw-mills, on condition of their purchasing the logs supplied by the Government at an agreed price.

The General Government to advance for roads, &c., not exceeding £ , to be refunded out of the proceeds of the sale of land and the receipts from the forest reserves.

The cost of sending the immigrants to the settlement to be defrayed by the Immigration Department.

The Provincial Government to guarantee refund in seven years, unless the land be taken under the Immigration and Public Works Act.

Mr. ANDERSON to the Hon. J. VOGEL.

SIR,—

Greytown, 5th February, 1874.

I have read your published letter on special settlements to his Honor the Superintendent of Wellington. I presume that in publishing the letter you desired to elicit an expression of opinion, and that one who has seen much of the destruction of colonial forests, and some of its effects, during upwards of twenty years (thirteen of them on various gold fields in Victoria, and in shifting from one gold field to another, and that lately as a more settled colonist, who was for some years engaged in the timber trade, in working a saw-mill), may be presumed to have had an opportunity of gaining such bush experience as may enable him without presumption to form an opinion of the practicability of some of the details you have suggested in your published letter.

I think that the conservation of our forests, and the proper treatment of useful timber, should receive the greatest attention the State can bestow on it; and I do not doubt that your own attention may have been first directed to the subject by reflecting on the present barren state of some countries that are now dry sandy deserts, but which in former ages were fertile lands drained by many streams.

Some poor, stony, gravelly kinds of soils grow excellent forest trees; but as soon as the soil is cleared of its bush it soon loses its vegetable humus by exposure to the sun, and in a few years becomes quite dry and barren, and its streams shrink yearly.

It seems natural to think that the wisest course for our statesmen to adopt would be to make such poor, stony, forest lands into enclosed forest reserves. The enclosing of the forest reserves would be necessary to prevent cattle destroying the young growing plants.

The rich soils along the river flats, and other spots of naturally fertile land, might be selected as the homes of settlers, and the drainage from the forest reserves would fertilize the settlements, and prevent them suffering from such droughts as the Cape colonists are often subject to. Regarding the best class of men to be sent as pioneers in a forest settlement, I wish to direct your attention to the fact that men from a coal-consuming country like the United Kingdom have had no experience in cutting timber, such as is gained by men in countries where firewood is used for fuel; and therefore the success of such settlements would be much fostered by having a number of experienced bushmen to show, by their example, what can be done in working the bush.

The suggestions in your letter (*a*, *b*, *c*, and *d*) are such as practical experience would have induced you to materially alter, if economy of labour is any consideration; and consequently it would come naturally to be modified when worked. If the best methods of making reserves is once adopted, the practical details will correct themselves in time.

I would suggest that if saw-mill owners adopted efficient means to extract the sap from sawn timber, it might, on that condition, be cut at any season.

I have thought for some years of trying how timber would be seasoned by placing it, as soon as sawn, in a close building, where it would be for some weeks under a constant shower bath, to extract the sap (by the exchange of water for sap), and then, having sufficiently done so, I would close up the building and introduce a steam jet to be applied until all the *albumen* in the timber was thoroughly coagulated, which would be a preventative against worms. At the same time, if desirable, the timber might easily be impregnated either with salt or some mineral oil or other substance that would thoroughly preserve it, supposing the steaming to be sufficient.

I think, instead of the Government employing men to cut down trees and saw them into logs for removal, the better way would be for a Government Forester to mark trees to be felled and the exact spot of ground they would have to be fallen on, so as to avoid damaging other valuable trees in falling, and to prevent the tops of the fallen trees blocking up the passage or road to other trees; the standing trees to be sold subject to strict conditions as to the manner of falling and transporting them. I adopted this plan in my own bush some years ago, and I found great advantage from prohibiting the falling of any tree that I had not marked to show the exact place upon which it was to be thrown; and I trained all my bushmen to use the cross-cut saw and wedges to fall any tree where they were required for this purpose. The consequence was a great economy of labour, as well as of useful timber that would otherwise have been either damaged or blocked up by the tops.

In falling timber for a saw-mill, it will be found necessary to cut up the trees into logs and move them out of the way of standing trees to be fallen across the place they occupied; and I feel sure that your suggestion under the heading (*b*) would be found very difficult, if not impracticable.

The suggestion under (*c*) might be modified so as to let on lease lands on fertile bottoms that had no very valuable timber on it, upon condition of clearing the lands without destroying the useful timber.

Any condition may be enforced on a tenant; but if land is sold under conditions of improvement, it will be optional, in a legal point of view, for the purchaser to do it or let it alone; therefore, if conditions of settlement are to be enforced, it will be much easier done by letting the lands with a purchasing clause, if the conditions be carried out. (Pardon me if I am forgetting I am writing to a statesman.)

PART I.
Proposed Forest
Settlements.

The greatest source of destroying the forests of this Colony are bush fires. Bush fires that will scorch an Australian forest to the topmost branches will not kill a tree that was sound before the fire. Not so in the New Zealand forests. Fortunately, bush fires do not penetrate into the green standing bush in this Colony, or there would not be a forest existing in the country. Totara timber is especially liable to be destroyed by bush fires, in consequence of the inflammability of the bark of those trees; and nothing tends so much to the spreading of those destructive bush fires as falling isolated trees or small patches in different parts of the forest, in the way that splitters and some saw-mill owners do, picking out the best of the timber first. The consequence is, that the dried tops of the fallen timber are often the cause of killing the whole forest; whereas, if the forest was worked systematically, and all the valuable timber taken off as far as it was touched, then when an accidental bush fire came it would burn up the tops of the dry fallen timbers, but it would only penetrate a few chains into the standing green bush, unless in very rare cases.

The only way, I think, to save our New Zealand forest from fires, is to enclose the reserves and prohibit trees being fallen, except by systematically commencing on the side of the forest to which the tops of the trees have the greatest lean, which experience shows to be generally to the north-east; so that as trees were fallen and removed, those that stood more to the south-west would then be fallen on the cleared ground.

These details, however trifling they may seem, are important in the practical working out of the principles you desire to introduce, and which will have to be carried out by officials who will work by rule only, and who no doubt have learned or will learn from experience that the safest course for a civil servant to adopt is to accept as little responsibility and give as little trouble as possible to the powers above them. Hence the reason I think timber cut up by Government would be more expensive than it would be to import it from America or Tasmania.

Trees that would stand bush fires without being killed are much needed as plantations to replace those destroyed yearly by bush fires.

Experience has shown that the chance of any co-operative undertaking succeeding is very small if it has to compete against hired labour properly directed. Few working men will carry on a saw-mill with success under a co-operative system. I have tried it, and understand the difficulties that will have to be surmounted before a number of workmen can be induced to work a complicated business requiring both capital and judgment in the direction of the labour to work economically, and where a single mind only can do it to advantage.

I find that I have run this matter to a greater length than I had intended, and as your time is valuable, I fear I have made it too long for your own consideration.

The Hon. J. Vogel, Wellington.

I have, &c.,
W. ANDERSON.

IV.—EXTENT AND RATE OF DESTRUCTION OF FOREST LANDS : PROFITS OF PLANTING.

COMPARATIVE STATEMENT showing the PERCENTAGE of the FOREST LAND in New Zealand, 1830, 1868, and 1873.

Rate of
Destruction of
Forests.

PROVINCE.	Total Area in Acres.	Estimate of Forest Land.		
		In 1830.*	In 1868.*	In 1873.*
Auckland	16,650,000	4,000,000	1,650,000	1,200,000
Taranaki	2,290,000	2,000,000	1,800,000	1,600,000
Wellington	7,000,000	5,000,000	4,000,000	3,000,000
Hawke's Bay	3,050,000	970,000	360,000	250,000
Nelson	6,928,000	3,000,000	2,500,000	2,000,000
Marlborough	2,720,000	800,000	700,000	500,000
Canterbury	8,693,000	300,000	270,000	180,000
Westland	3,025,000	2,000,000	1,900,000	1,500,000
Otago	16,038,400	2,300,000	2,116,000	1,900,000
Totals	66,394,400	20,370,000	15,296,000	12,130,000

* These approximate estimates of forest land in the various Provinces are furnished by Dr. Hector.

PART I.

COMPARATIVE STATEMENT showing the PERCENTAGE of the FOREST LAND—*continued*.Rate of
Destruction of
Forests.

	Percentage of Forest Land in		
	1830.	1868.	1873.
Auckland	24·024	9·909	7·209
Taranaki	87·336	83·013	65·562
Wellington	71·428	57·142	42·857
Hawke's Bay	31·803	11·803	8·193
Nelson	43·302	36·085	28·863
Marlborough	29·411	25·735	18·382
Canterbury	3·4509	3·106	2·07006
Westland	66·115	62·809	49·421
Otago	14·34	12·569	11·841
Whole Colony ...	30·68	23·038	18·27

SHOWING RATE of DESTRUCTION.

	1868.	1873.
Auckland	58·75*	27·27
Taranaki	10·	11·1
Wellington	20·	25·
Hawke's Bay	60·82	30·5
Nelson	16·6	20·
Marlborough	12·5	28·57
Canterbury	10·	33·3
Westland	5·	21·05
Otago	12·34	10·71
Whole Colony, say ...	25·	20·

* Thus, of the forest standing in 1830 (in Auckland), there had been destroyed 58·75 per cent. up to 1868; and between that date and 1873, there had been destroyed 27·27 per cent. of the remainder.

Profit on
100 Acres of
Tree Land.

ROUGH MEMORANDUM, by Mr. T. CALCUTT, of Cost of Planting and subsequent Management of 100 Acres of suitable Land in Trees.

OUTLAY.

1st Year.—Land free of cost.	£	s.	d.
Ploughing, subsoiling and trenching	200	0	0
Seed	10	0	0
Planting same, 5 feet apart	50	0	0
Labour, weeding, cleaning, and replacing plants	100	0	0
Fencing	100	0	0
Contingencies	40	0	0
	£500	0	0
2nd Year.—Labour, as above	100	0	0
Interest on outlay (£500 at 5 per cent.) ..	25	0	0
	125	0	0
3rd Year.—Labour	£100	0	0
Interest on £625	31	5	0
	131	5	0
4th Year.—Labour	£100	0	0
Interest on £756 5s.	37	16	0
	137	16	0
5th Year.—Labour	£100	0	0
Interest on £894 1s.	44	14	0
	144	14	0
Carried forward	£1,038	15	0

PART I.
 Profit on
 100 Acres of
 Tree Land.

	£	s.	d.
Brought forward	1,038	15	0

INCOME.

100 acres, having trees 5 feet apart, computes to 174,200.

At the end of five years thin out to 10 feet apart: this would take away 130,700, which, at an average of 3d. each, a sum I think could certainly be realized, would amount to

1,533	15	0
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Balance of income over outlay	£495	0	0
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The remaining 43,500 at ten years would, I have little doubt, be averaged at least at 2s. 6d. each	£	s.	d.
	5,412	10	0

And at twenty years old, 10s. each	21,650	0	0
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And at thirty years old, 20s.	43,300	0	0
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After the first five years I do not think any cost for labour or management would be necessary; or if so, a very small sum indeed, as the trees would by that time be of sufficient height and strength to do for themselves.

This calculation is based upon the presumption that the Australian gum—undoubtedly the easiest to rear, the quickest growing, as it is also one of the most valuable of timber trees—would be grown.

Forests of English oak, ash, elm, sycamore, larch, Scotch and spruce firs, and numerous other varieties, could also be grown, but the returns would not be nearly so quick—say ten, twenty, thirty-five, and fifty years, in the place of five, ten, twenty, and thirty; but I think, if the experience of England be any guide here, the values would be in proportion.

I have little or no hesitation in believing that £10,000 expended properly in planting trees, would, within thirty years, result in their having a market value of half a million sterling.

