FINAL REPORT

OF THE

ROYAL COMMISSION OF INQUIRY

ON

TIMBER AND FORESTRY

1909-1910

APPOINTED ON THE 9th DAY OF JULY, 1909, UNDER CHAPTER 99, OF THE REVISED STATUTES OF BRITISH COLUMBIA, 1897, INTITULED "AN ACT RESPECTING INQUIRIES CONCERNING PUBLIC MATTERS."

THE GOVERNMENT OF
THE PROVINCE OF BRITISH COLUMBIA

PRINTED BY AUTHORITY OF
THE LEGISLATIVE ASSEMBLY OF BRITISH COLUMBIA.

VICTORIA, B. C.
Printed by RICHARD WOLFENDEN, I. S. O., V. D., Printer to the King's Most Excellent Majesty.
1910.

DEPARTMENT OF LANDS
VICTORIA
HON. W. R. ROSS CHIEF COMMISSIONER

MAP OF THE PROVINCE OF
BRITISH COLUMBIA

1911

Scale 35 Miles = 1 Inch

THE COLONIST, LITHO.

GREEN DENOTES TIMBER LIMITS

ROYAL COMMISSION OF INQUIRY

—ON—

TIMBER AND FORESTRY

To His Honour THOMAS WILSON PATERSON,
Lieutenant-Governor of the Province of British Columbia.

MAY IT PLEASE YOUR HONOUR:

We, your Commissioners, appointed on the ninth day of July, 1909, for the purpose of making inquiry into and concerning the timber resources of the Province, the preservation of forests, the prevention of forest fires, the utilization of timber areas, afforestation, the diversification of tree-growing, and generally all matters connected with the timber resources of the Province, have the honour to submit the following Final Report.

FRED. J. FULTON, Chairman.
A. S. GOODEVE, Commissioner.
A. C. FLUMERFELT, Commissioner.

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JAMES DUNSMUIR,
Lieutenant-Governor.

CANADA.

PROVINCE OF BRITISH COLUMBIA.

EDWARD THE SEVENTH, by the Grace of God, of the United Kingdom of Great Britain and Ireland, and of the British Dominions beyond the Seas, KING, Defender of the Faith, Emperor of India.

In the Matter of the "Public Inquiries Act."

COMMISSION.

To the Honourable FREDERICK JOHN FULTON, K.C.,
Chief Commissioner of Lands;

ARTHUR SAMUEL GOODEVE,
of the City of Rossland, M.P., and

ALFRED CORNELIUS FLUMERFELT,
of the City of Victoria, J.P.

FRED. J. FULTON (Acting Attorney-General).

WHEREAS in and by Chapter 99 of the Revised Statutes of British Columbia, 1897, intituled "An Act respecting Inquiries Concerning Public Matters," it is enacted that whenever the Lieutenant-Governor in Council deems it expedient to cause inquiry to be made into and concerning any matter connected with the good government of this Province, or the conduct of any part of the public business thereof, and such inquiry is not regulated by any special law, the Lieutenant-Governor in Council may by Commission intituled in the matter of this Act, and issued under the Great Seal of the Province appoint Commissioners or a sole Commissioner to inquire into such matter, and

WHEREAS it is deemed expedient to cause inquiry to be made into and concerning the timber resources of the Province, the preservation of forests, the prevention of forest fires, the utilization of timber areas, afforestation, and the diversification of tree-growing, and generally all matters connected with the timber resources of the Province, and

WHEREAS it is expedient that for the purposes aforesaid a Commission be issued to competent persons who shall have jointly and severally vested in them all the duties, rights and powers by the said Act conferred upon and vested in Commissioners appointed thereunder.

NOW KNOW YE that under and by virtue of the powers contained in and conferred by the said recited Act, and of all and every powers and power vested in us in that behalf, and by and with the advice of Our Executive Council for the Province of British Columbia. We, reposing trust and confidence in your loyalty, integrity and ability, do hereby nominate, constitute and appoint you the said FREDERICK JOHN FULTON, you the said ARTHUR SAMUEL GOODEVE, and you the said ALFRED CORNELIUS FLUMERFELT *jointly*, and each of you severally, to be our Commissioners for the purpose of holding inquiry into and obtaining the desired data respecting the matters aforesaid.

And We empower and direct you the said Commissioners to report in writing the facts found by you to Our Lieutenant-Governor of Our said Province of British Columbia, immediately, or as soon as conveniently may be after you have concluded such inquiry together with the evidence taken before you, and the opinions which you

may have formed in relation of the matters aforesaid, as the result of such inquiry and that you do and perform all these matters and things in and about the conduct of the said inquiry as by law in that behalf you are authorized to do.

IN TESTIMONY WHEREOF WE have caused these Our Letters to be made Patent and the Great Seal of Our said Province to be hereunto affixed;

WITNESS, His Honour JAMES DUNSMUIR, Lieutenant-Governor of Our said Province of British Columbia, in Our City of Victoria, in Our said Province, this ninth day of July, in the year of Our Lord, one thousand nine hundred and nine, and in the ninth year of Our Reign.

By Command,

HENRY ESSON YOUNG,
Provincial Secretary.

PRELIMINARY REMARKS

Upon appointment your Commissioners entered into correspondence with various authorities in order to inform themselves concerning the forest policy and practice of the older Provinces of Canada, and of the States of the Union. They collected in this manner many official Reports and a mass of general literature dealing with matters of forestry upon the continent of America.

Meanwhile they caused to be published a notification to all persons interested, that sittings would be held at various lumbering centres in the Province for the purpose of taking evidence upon the subjects of their inquiry. In August and September, 1909, these sittings were duly held. A list of the witnesses examined will be found below.

On the 26th, 27th and 28th days of August your Commissioners attended the National Congress on Conservation of Natural Resources in Seattle; at which they met Mr. Gifford Pinchot, the Chief Forester of the United States, and held discussion upon forest matters.

On the 25th, 26th and 27th of November your Commissioners consulted with the Dominion officials at Ottawa and drafted their Interim Report which in due course was submitted to the Lieutenant-Governor in Council and laid before the Legislature at the Session of 1910; and on the 29th and 30th of November Mr. Fulton and Mr. Goodeve interviewed at Toronto Dr. Fernow and Mr. Aubrey White, the Deputy Minister of Lands, Forests and Mines for Ontario. Mr. Fulton then proceeded to Washington, D.C., where, on 1st and 2nd of December, he saw Mr. Pinchot and several officials of the Forest Service of the United States.

The Commission held supplementary sittings for the taking of evidence at Victoria on 30th and 31st of May, 1910; and on 15th and 16th of August.

From the 15th to 30th August, inclusive, your Commissioners were engaged in making a first draft of their Report. After allowing a period for reconsideration the construction of the Final Report was begun the 24th day of October and was completed and signed on the 15th day of November, 1910.

LIST OF DATES AND WITNESSES

FORESTRY COMMISSION

Victoria—August 16th, 17th and 18th, 1909:
W. A. Anstie, A. T. Frampton, Professor Craig, Michael Carlin, L. H. Solly, Wm. Blakemore, M. J. Scanlon, E. E. Billinghurst, Jos. Ducrest, R. H. Campbell, J. A. Sayward, Ernest McGaffey.

Nanaimo—August 19th, 1909:
Wm. Regan, John W. Coburn, Thos. A. Smith.

Vancouver—August 23rd, 24th and 25th, 1909:
Fred. L. Ward, R. J. Skinner, Thos. Wilson, D. C. Cameron, Wm. Murray, Alfred McMillan, Thos. F. Patterson, J. S. Emerson, John O'Brien, W. T. Cox, W. Innes Paterson, Edward H. Heaps, Wm. Tytler.

Kamloops—September 7th, 1909: .
J. H. Latremouille, J. A. Magee, A. J. Lammers, A. J. McDonald, R. Trinder.

Vernon—September 8th and 9th, 1909:
A. McL. Hawkes, Mayor M. V. Allen, Reeve Daykin, Coun. Brett, Ald. Swift, Price Ellison, M.P.P., C. J. Becker, S. C. Smith, Hamilton Lang.

Revelstoke—September 10th and 11th, 1909:
O. L. Boynton, W. C. Brewer, S. H. Bowman, C. F. Lindmark, C. R. Skene, J. M. Kellie.

Nelson—September 13th, 1909:
A. G. Lang, F. S. Stephens, A. N. Wolverton, J. M. Lay, G. O. Buchannan, A. A. Carney, W. S. Drewery, R. J. Long, H. Anderson.

Cranbrook—September 14th and 15th, 1909:
A. Leitch, J. F. Armstrong, A. E. Watts, Mayor Fink, Otis Staples, Peter Lund, C. M. Edwardes, E. C. Chudleigh, A. T. Short, E. Mallandaine, W. Pearce.

Fernie—September 16th, 1909:
G. F. Stephenson, A. F. Krapfel, D. V. Mott, D. McDougall, D. H. Telford, R. H. McCoy, J. W. Murphy, A. DeWolf, Dr. W. S. Bell, A. McDougall, F. K. DuBois, J. W. Lawry.

Grand Forks—September 18th, 1909:
J. Genelle, A. Robinson, F. W. McLaine, C. Mix.

New Westminster—September 27th, 1909:
James Leamy, E. H. Bucklin, E. J. Fader, A. L. Lewis, Thos. Turnbull, W. Dodd, H. A. Stoney.

Vancouver—September 28th, 29th and 30th, 1909:
Dr. J. Clark, A. D. McRae, John Oliver, M.P.P., P. D. Roe, A. Hamilton, Neil McKinnon, W. H. Higgins, F. H. Parks, Andrew Haslam, W. C. Gladwin.

Victoria (supplementary sitting)—May 30th and 31st, 1910:
R. H. Chapman, John O'Brien, N. J. McArthur, J. H. Demsey, H. H. McDougall, Theo. Magnusson, E. P. Bremner, John Moravec, W. J. Whiting, W. J. Sutton.

Victoria—August 15th and 16th, 1910:
E. J. Palmer, J. J. Shallcross, Theo. Elford, Delbert Hankin, Erich Ulin, Stanley McB. Smith, W. A. Anstie.

FOREST LEGISLATION

Crown Grants. In the early days of the Province timber lands seem to have had little or no value in the public estimation. They could be acquired by purchase and Crown Grant from the Crown in the ordinary way and at the same rates as any other land. Crown Grants carried all timber without any reservation of royalty, and valuable tracts of timber were acquired for what would now be considered nominal prices.

In 1888 the attention of the Government of the Province appears to have been aroused to the importance of the timber question and several amendments were made to the legislation on the subject. In that year it was first provided that a royalty, fixed at fifty cents per thousand feet, should be reserved on all timber cut upon lands thereafter granted. There was still no restriction, however, placed upon the right to acquire timber lands by purchase from the Crown by the ordinary methods of purchasing lands, the only difference made being the reservation of the 50c. royalty, and it was not until 1896 that timber lands were defined. In that year a provision was inserted by which lands carrying 8,000 feet to the acre west of the Cascade Range and 5,000 feet to the acre east of the Cascades were defined as timber lands and reserved from sale.

Leases. The issuance of leases of timber goes back at least as far as 1870. By Land Ordinance of that year leases were authorized of any extent of unpre-empted Crown lands to any person, persons or corporations duly authorized in that behalf for the purpose of cutting spars, timber or lumber and actually engaged in those pursuits, subject to such rents, terms and provisions as should seem expedient to the Lieutenant-Governor in Council. The provision for leasing timber was re-enacted in the consolidation of 1875 and again in the consolidation of 1884 and seems to have remained practically unchanged until 1888, when the terms were specified by Chapter 16, passed on the 28th of April, 1888. By section (8) leases of unpre-empted Crown lands could be granted for a term not to exceed thirty years; the annual rental was fixed at ten cents per acre and a royalty was reserved of fifty cents per thousand feet on the scale of measurement of the logs cut on the leased premises: the lease to contain provisions binding the lessee to erect in such part of the Province as might be approved by the Chief Commissioner of Lands and Works, a lumber mill capable of cutting not less than 1,000 feet per day of twelve hours for each and every four hundred acres included in such lease. A ground rent of five cents per acre was imposed on every timber lease granted since 31st December, 1879, and prior to the passage of the Act. Every lessee was required to keep books of account of logs and to make monthly returns.

In 1891 a deposit equivalent to ten cents per acre was required and other conditions could be imposed by the Executive. Timber land that had been surveyed by the Government itself could be put up to tender. In this year also, the Executive was empowered to issue leases for the purpose of stripping hemlock bark, under any conditions that it should see fit to impose.

In 1892 it was provided that leases should be put up to competition and a certified cheque for an amount equivalent to ten cents per acre was required as a guarantee that a saw mill would be erected. The term was reduced from thirty to twenty-one years.

In 1895 further changes were made in the law regarding the issuing of leases. It was enacted that thereafter leases could only be obtained of surveyed and unpre-empted Crown timber lands which had been previously offered to public competition.

The rental was increased to fifteen cents per acre subject to reduction to ten cents on acquisition of a saw mill appurtenant to the leasehold.

In 1899 it was provided that rental should be fifteen cents per acre and that if the royalty and rental paid on timber cut from a lease should amount together to less than fifty cents per acre then an additional rental per acre should be paid, making the total revenue (including the rental of fifteen cents per acre and the royalty) equivalent to fifty cents per acre. It was laid down emphatically as an essential condition of the lease that a saw mill with a capacity of 1,000 feet per day of twelve hours for every hundred acres of the lease should be erected and operated at least six months in every year.

In 1901 provision was made for renewal of leases. It was provided that leases of **unsurveyed** unpre-empted Crown lands could be renewed for consecutive and successive periods of twenty-one years on such terms, conditions, royalties and ground rents as might be in force by statute at the time of expiration of the same provided they were surrendered within one year before the expiration of lease. Existing leases of Crown timber which had been granted previous to the passage of this section and then in force might be renewed for consecutive and successive periods of twenty-one years if such leases were surrendered within one year from the date of enactment of the section. Renewal for the unexpired portion of the term mentioned in leases to be surrendered was to be on the same terms, conditions, rents and royalties as were specified in the leases to be surrendered and the remainder of the term of twenty-one years was to be subject to such terms, conditions, royalties and ground rents as might be in force at the time existing leases would have expired. Pulp leases were provided for in this year.

In 1903-4 the provisions for the granting of pulp leases were repealed. In the case of timber leases there was imposed, henceforth, a rental of 25 cents. Should the lessee keep in operation a mill of a certain prescribed capacity the rental would be reduced to 15 cents. In this latter case, apparently as a check upon the fraudulent enjoyment of this reduction, failure to maintain operation would render the lease liable to cancellation.

In 1905 the provision for granting timber leases was abolished. Since then no statutory terms for the granting of timber leases have been in existence, though a question might be raised as to whether section 47, sub-section (1), clause (b), which provides for the granting of leases for any purpose whatsoever (except the cutting of hay) would not permit of timber being leased thereunder.

The rights and privileges of persons who in good faith had complied with the provisions of the Land Act in respect to leasing timber were preserved, but it is nowhere stated that the **"rights and privileges,"** of the lessees referred to include the renewal of old leases, at dates subsequent to the Act of 1905, **at their original rental and royalty.** This practice seems to have been forced on the Department because no terms of renewal had been provided, and a financial loss had been caused to the Government; for 5 or 10 cents an acre has long since ceased to represent the rental value of these leaseholds.

Licenses. The right to cut timber under license was first provided for by the Act of 1888. Chapter 16 of the Statutes of that year authorized the granting of special licenses to cut timber on Crown lands and patented lands (meaning lands Crown granted between 7th April, 1887, and 28th April, 1888), at the rates by such Act imposed and subject to such conditions, regulations and restrictions as might from time to time be established by Lieutenant-Governor in Council. The area was limited to 1,000 acres and the period to one year. The license was not transferable and not more than one special license could be held by one person at the same time. The fee was fixed at $50.00. The license might be renewed at the discretion of the Chief Commissioner of Lands and Works. The same royalty of fifty cents per thousand was fixed that was paid on leases.

In 1894 the first provision was made for the staking of lands for licenses.

In 1901 the area was reduced to six hundred and forty acres and the license fee increased to $100.00.

In December, 1903, the license fees were increased to $140.00 west and $115.00 east of the Cascades and a license could be taken out for any period not exceeding five years, upon payment of rental for the number of years desired as a lump sum in advance.

In 1905 a radical change was made in the special license system. In that year it was enacted that all special timber licenses which might thereafter be issued would be transferable and renewable each year for twenty-one successive years. It was also provided that all special licenses which were then in force, or might have been applied for, should be transferable and renewable each year for sixteen successive years and the fee for each renewal of any such license should be the same amount as was then payable for such license. The royalty on timber cut upon these sixteen-year licenses was to be that payable upon other licenses, plus ten cents a thousand feet. These provisions remained practically unchanged until 1910, when following an interim report made by your Commissioners these special licenses were allowed to be renewed as long as there is merchantable timber on the land, subject, however, to payment of such renewal or license fee and such tax or royalty and under such terms and conditions, regulations and restrictions as are fixed or imposed by any statute or Order-in-Council in force at the time renewal is made or at any time thereafter.

On the 24th day of December, 1907, an Order-in-Council was passed by the Government reserving all unalienated timber in the Province, thus keeping in the possession of the Government all timber lands not already taken up by Crown Grant, lease or license.

Handloggers' Licenses. This form of license was first authorized in the year 1888. By the Act passed in that year a license could be issued to an individual to log anywhere on Crown lands in the Province for an annual fee of $10.00.

In 1906 the use of steam power, or machinery operated by steam power, by handloggers, was prohibited.

In 1908 an amendment was passed allowing these licenses to be issued only in certain parts of the Province and the fee was increased to $25.00.

In 1909 the license was made issuable in any part of the Province upon Crown lands, but only within such area as might be specified or designated in the license and after inspection by the forest ranger or one of the assistant timber inspectors or such other person as might be authorized by the Chief Commissioner for that purpose, and the license was restricted to persons on the voters' list and to Indians.

FORESTS OF BRITISH COLUMBIA

Until recently, upon the continent of America, men gave little thought to the extent of the forests and were contented with the vague idea that, like the water that ran to waste in every stream, the timber supply was inexhaustible. The first crude attempt to obtain statistics on the subject dates no further back than the United States census of 1870. (1)

As settlement proceeded, however, and the boundaries of the forest areas in the United States became roughly known, it became evident to the few students of the subject that the stand of timber on the continent was not as abundant as had been supposed. The uneasy feeling caused by this discovery led to the formation of Forestry Associations. These in their turn stirred phlegmatic legislatures to appoint commissions of enquiry, whose reports prompted the establishment of permanent State Boards of Forestry, supported by minute grants of public money. Results of value were produced by the movement when the Federal Government was led to develop a forest policy that caused the reservation of 168 million acres of national forests and brought into being a vigorous forest service. Systematic study of the timber resources of the country thence-forward became both necessary and possible, and the information already obtained enables us to-day to draw a fairly definite picture of United States forest conditions.

In Canada, unfortunately, conjecture has not yet become tinged with the same hues of certainty. Forest statistics have been, in the immediate past, the wildest guesswork, and even recent revision by the small forest services that have struggled into existence is based upon very little information. It is plain that we do not, as yet, possess the means of making a sound estimate of the resources of the country, as may be seen from the conflicting statements that are published. For years, for example, the forests of Canada were supposed to cover 800 million acres. (2) This positive assertion has been reduced to the hesitating statement that there may be 500 or 600 million acres (3) and Dr. Fernow puts the "truly merchantable" area at 300 million acres. (4)

For years, again, a legend passed from writer to writer that the Province of British Columbia had 182 million acres of forest. This was replaced in 1908 by Dr. Fernow's conjecture that the true figure was somewhere between 30 and 50 million, as far as "merchantable forest" was concerned; and in 1910 the official acreage of alienated timber lands—blended with conjectures made to the Forest Commission concerning the reserved areas—suggest a further alteration to the figures that will be found below.

Confusion in these matters is partly due to the difficulty of deciding where to draw the line between forest that has, or is about to have, commercial value, and forest that has not; for tree growth of one kind or another covers the greater part of the country, and the standard of timber that can be profitably cut is being lowered every year. Both the public and the press become bewildered between estimates of more woodland area and those of merchantable forest.

It is evident, however, that the lack of reliable statistics has a serious bearing on forestry problems. Inflated estimates of the present supply of timber cause people to be careless of the waste of it; distorted theories of annual destruction, by fire and

(1) Fernow; History of Forestry, page 408.
(2) "1,657 million acres, more than all the other timber countries combined," is still the newspaper estimate. See London Daily Mail, 6th June, 1910.
(3) Dominion Report, 1909. (Assist the imagination by taking this as double the area of the Province of B.C.)
(4) History of Forestry, page 353.

by lumbering, enable alarmists to harm the common-sense campaign for conservation by their exaggerations; uncertainty is created in business conditions; and in general, from every point of view, the task of the governments that are labouring to construct sound forest policies is made extremely difficult.

B. C. Forest in Private Ownership. In British Columbia, up to the year 1896, merchantable forest could be bought from the Government at the ordinary rate for first-class land, and in this manner certain areas passed into private ownership. Various other timber lands were included among the 8,000,000 acres of the Province granted to railway companies in aid of construction. To-day we find that there are in private hands some 870,000 acres, and in the possession of the E. &. N. Railway Company some 375,000 acres, while the Canadian Pacific Railway Company controls a very large area, the acreage of which we have been unable to ascertain. (1)

Belonging to the Crown. The abandonment of the practice of Crown Granting timber land and the adoption of a leasing system marked an important step forward in the Provincial policy. That the change originated in the desire of the Legislature to encourage the establishment of saw mills is made very evident by the Act of 1888 that made the building of a mill an essential condition of every lease. Though the avoidance of this requirement was made possible by subsequent legislation, the same object was kept steadily in view by granting great reductions of rental to lessees who became operators. Apart from this, attempts were made to hasten the local development of both the pulp and tanning industries by concessions of large leasehold areas at nominal rates. In the present year we therefore find that there are 1,005,676 acres held under timber, pulp and hemlock leases at rentals varying from two to twenty-five cents. (2)

Besides the leasehold system that was primarily designed to provide saw mill owners with definite sources of supply, at cheap rates, there existed a method of dealing with the needs of the small operating loggers by the granting of licenses to cut timber at chosen places. For a long time such licenses were annual. Not until 1903 did it become possible to secure them for a five-year period. Soon after this, an agitation among licensees for further extensions brought about the revolution in the whole forest policy of the Government that took place in 1905.

By that year it was becoming obvious that the old leasehold system had served its turn in helping to establish the lumber industry firmly in the Province. The future of that industry would evidently be dictated by market requirements and business laws, and the provision of cheap Crown stumpage as a bonus upon operation had ceased to be necessary.

Moreover, the old method was an extremely wasteful means of disposing of Crown forests. A single lease of say 4,000 acres might comprise in itself ten or more separate areas scattered throughout a large forest district, some of them perhaps no larger than 150 acres. The system thus lent itself to the culling of the choicest patches of a forest whose intervening areas—large fractions of irregular outline—were left unproductive in the hands of the Crown.

Apart from the timber lands granted to mill-owners, the Crown had obtained a small revenue from standing timber by leasing areas at higher rentals, to non-operators. This was evidently an unsatisfactory means of anticipating the future. Little was known concerning the timber supply of the continent and probable developments in the lumbering industries. Because great changes might be at hand that would cause stumpage prices to rise beyond all normal expectation, it was felt that to part with timber at the low existing prices and upon the fixed conditions of 21-year leases was a poor way of drawing immediate profit from the immense idle area of Crown forests.

(1) See Timber Lands in Private Ownership, page 22.
(2) For full particulars see Leasehold Timber Lands, page 23.

The legislative problem was solved in a most ingenious manner by the abolition not only of the leasing method but also of the limited, non-transferable licenses, and by the adoption of an entirely new principle in forest policy. That principle was the reservation of a share in the increment of value of standing timber **as it should accrue.** It is true that other Provinces in Canada had attempted something of the kind by leaving uncertain the amount of **royalty** that they would levy in future years upon the timber sold by them under their auction-license systems. But tardy recovery of some of the public's share in the risen value of the licensed timber bears no comparison, as a policy, with the effective and subtle control that the British Columbia Government retained in 1905 over future alienations of Crown timber. This power was secured by the issue of transferable licenses, options to cut timber during a 21-year period on specified square miles of forest, and the essence of the idea lay in the fact that it was left entirely to the Government to fix, from year to year, what annual payments should be made for the renewal of these options.

Although the new licenses were thus subject to any alteration in either rental or royalty that the Government might at any time impose, they were taken up with great confidence both by operators and investors. In fact the opportunity to acquire standing timber in British Columbia caused recognition of its value to burst with suddenness upon the lumber interests of the continent. From less than fifteen hundred (1) the number of licenses sprang rapidly within three years to over fifteen thousand.

Though the effect upon the public revenue was most gratifying (2) the insatiable nature of the continental demand for standing timber aroused a certain uneasiness, and the Government, at the end of 1907, decided to impose a reserve upon all remaining Crown timber. The fifteen thousand licenses continued, however, to exist, and to-day we estimate that 9,000,000 acres of merchantable forest are covered by them. (3)

Railway Belt Timber Land. Under the terms of Union, the Province ceded twenty miles on either side of the roadbed of the Canadian Pacific Railway to the Dominion Government, an area that may be roughly estimated at 11,000,000 acres. The extent of the timber land included in this territory has not yet been estimated. Some 1,280,000 acres of it were under timber license or permit at March, 1910. (4)

The Reserve. Witnesses before the Forestry Commission expressed the most varied and conflicting opinions concerning the proportion of the timber of the Province that still remains in reserve in the hands of the Government. Maps show large districts such as the northern portion of Vancouver Island that are completely covered by the leases and licenses already issued. Again, they leave blank unalienated areas that may or may not contain merchantable forest. From neither of these sources of information is it possible to gauge with any certainty the area, stand, or value of the ungranted timber lands. To complete any estimate of our forest resources we are obliged, therefore, to adopt arbitrary figures for the reserve, and this we do by acting on the more or less popular belief that about one-quarter of the timber under Provincial control remains unalienated. This gives us 3,750,000 acres of reserve timber lands; a pure conjecture.

The Stand in B. C. Forests. Although in many cases we know with some approach to certainty the **areas** of the forest lands held under various tenures in British Columbia, we are obliged, in the absence of statistics based upon cruise and survey, to depend very largely upon guesswork in estimating the amount of merchantable standing timber.

Upon Vancouver Island large tracts of forest are known to average as much as 50,000 feet per acre, and a trustworthy estimate places the average stand of Crown

(1) The exact number is unknown; it was probably about 1,100.
(2) License revenue, calendar year 1904, $ 179,814.
" " " 1907, 1,339,351.
(3) For full figures, see Licensed Timber Lands, p. 27.
(4) For further information, see the Railway Belt of British Columbia, p. 29.

Grant timber at 35,000 feet. Using these figures and allowing for recent transfers of acreage (1) from the E. & N. Railway to private buyers, we obtain a total stand of 11 billion feet.

In dealing with the Crown Grant acreage upon the mainland we are confronted, however, with the fact that as certain of the holdings are timber lands in name only (2), the difficulty of guessing the average stand is greatly increased. We may assume 5,000 feet per acre; we may assume 10,000 feet. In either case the error will not bulk large in the total estimate of standing timber for the Province, since the whole stand referred to would, on these assumptions, be only between 2¾ billion and 6 billion feet. (3)

The Operators' Associations state that experience shows that not much more than 12,000 feet, board measure, of merchantable timber is actually cut and removed on an average from each acre of licensed territory; whereas they consider that 20,000 feet would be a fair average for ordinary timber leaseholds. (4) Upon licensed territory this would indicate a stand of 108 billion feet; upon leaseholds over 12 billion; upon pulp and tanbark leases mill timber amounting to over 4½ billion feet.

Merchantable Timber of B.C. Upon the above assumptions the estimate for the total stand of merchantable timber in the Province would work out as follows:

TENURE.	Acreage.	Average Stand per acre, ft. B. M.	Total Stand.
Vancouver Island Crown Grant Timber.....	318,000 (5)	35,000	11,130,000,000
Mainland Crown Grant Timber.....	552,000	say 10,000	5,520,000,000
E. & N. Ry. Co.	375,000	14,300	5,380,000,000
C. P. R., unpublished.			
Timber Leaseholds	619,000	20,000	12,380,000,000
Special License Timber	9,000,000	12,000	108,000,000,000
Mill Timber on Pulp, etc., Leaseholds.....	387,000	at least 12,000	4,640,000,000
Total	11,251,000	ac. with a stand of	147,050,000,000
Reserved Timber Land, conjectured to be ¼ total forest area, under Provincial jurisdiction, say, roughly	3,750,000	say same as on licenses.	45,000,000,000
Total	15,001,000		192,050,000,000

Under the control of the Dominion Government in the railway belt, the merchantable stand of timber is supposed to be between 40 and 50 billion, nearly half of which would appear to have been alienated. (6)

Summary. As far as our limited knowledge extends at present we may therefore conjecture that a forest area of 15 million acres within the jurisdiction of the Provincial Government is capable of yielding, under the present methods of logging, nearly 200 billion feet of merchantable timber, and that restrictions placed upon the present liberty to destroy and waste may increase this amount appreciably. The grand total of some 240 billion feet for all British Columbia, half the probable stand of Canada, may thus be increased by wise legislation. (7)

(1) The area given for Crown Grant timber on Vancouver Island on p. 22, has since increased to about 318,000 acres.

(2) See Timber Lands in Private Ownership, p. 22.

(3) The higher figure gives the same total for the Crown Grant timber of the Province as the average of 20,000 feet per acre estimated by the Operators' Associations.

(4) It will be noticed how unreliable is any comparison of stands. In one country the estimate may be of the merchantable timber standing in the forest; in another it may refer to such portion of that timber as the lumbermen expect to remove—two very different things.

(5) At September, 1910 (approx.).

(6) Area under license and permit 1,280,000 acres, which the Operators' Associations average at 15,000 feet per acre. The estimate of the Railway Belt stand is that of the Dominion Forester, who ascribes an average stand of 10,000 feet per acre to the inland timber lands and 20,000 feet to those in the Coast district.

(7) Dr. Fernow's estimate made in 1908 was 300 billion feet.

WESTERN FORESTS AND THE TIMBER SUPPLY

The Supply. A rough, preliminary picture of the three great groups of forest areas that have the chief interest for us may be obtained from the following statements:

Forest Areas. In the United States 500 million acres—apart from scrubby woodland. (U. S. Forest Service figures).

In Canada, 500 to 600 million acres, much of it lightly timbered. (Dominion Report).

In Siberia 500 million acres; by no means so densely wooded as the forests of North America. (British Consular Reports).

Less than two-fifths of the area given for the United States bears mature forest; most of the remainder is under growing timber, and 80 million acres have lost their value "and show no promise of a second crop." Little is known about the Canadian and Siberian lands. Dr. Fernow's opinion is that 300 million acres would cover the merchantable forest of the former.

The Stands. The stands of timber have, however, a more direct importance. The United States (1) is credited with 2,500 billion feet, Canada(2) is credited with 500 to 600 billion feet, half of it in the Province of British Columbia.

The proportion of this standing timber that will ultimately become sawn lumber, after waste due to lumbering, fire and other causes has been deducted, is a matter of further conjecture.

Western Stands. Confining our attention to the West, we find:

U. S. Pacific forest	1,100 billion feet
U. S. Rocky Mt. forest	300 " "
British Columbia	240 (3) to 300(4) " "

To this we should add the stand of the spruce forest east of the Canadian Rockies.

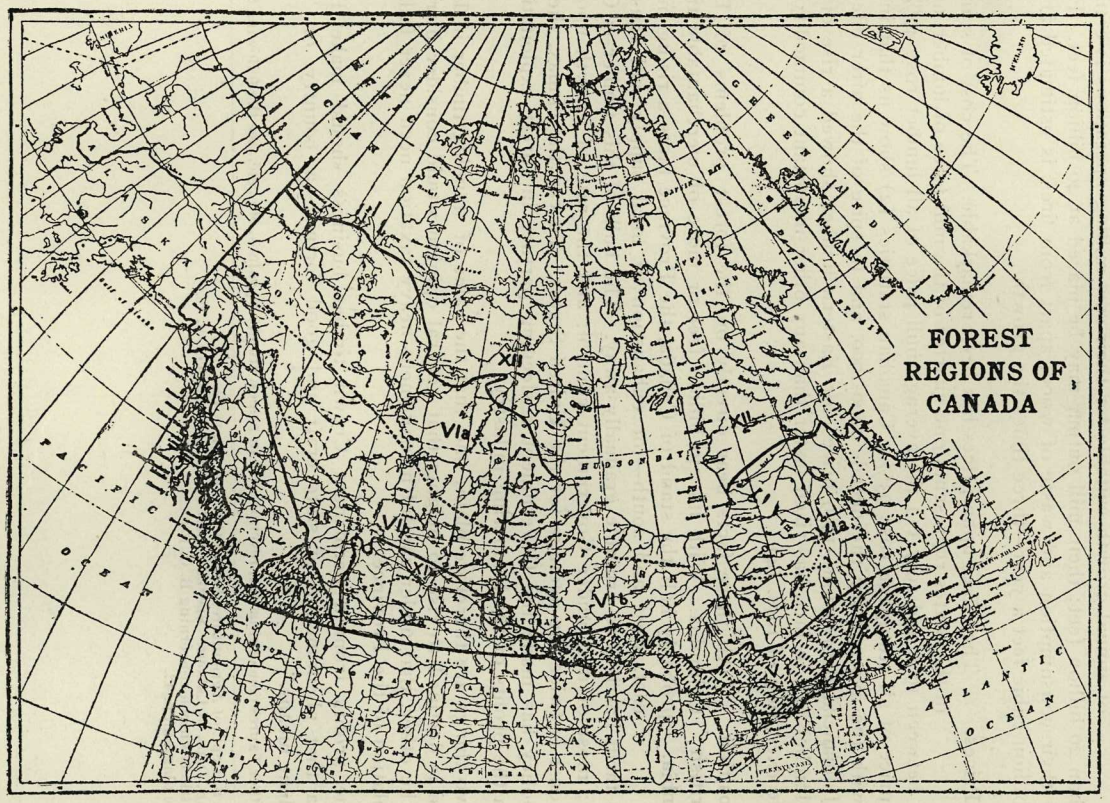
The Demand. In Europe, Great Britain, Germany, France and many of the smaller countries need to import large quantities of wood. Russia, Sweden, Austria and others have been supplying this demand. We have now the official statement that Sweden has been overcutting, while Russia is already reducing her exports. The situation is far from re-assuring.

Europe draws also upon North America, and yet the eastern half of this continent is ceasing to possess surplus material for export. We have no clear statistical picture of present conditions in the east of Canada, though we know that serious overcutting has continued there for many years and that the signs of exhaustion are plain. On the other hand, the most depressing information has been gleaned concerning forest depletion in the United States, where the present stand is estimated to be less than half the original quantity.

United States Forest Depletion. Of the Northern U. S. forest only 30% is left.
Of the Central U. S. forest only 21% is left.

The cut from many of the States has been decreasing with startling rapidity. Michigan, for example, after sawing 96 billion feet of lumber in 27 years, reached its smallest output for four decades in 1907. Such swift exhaustion of supply has shifted the centre of production to the South, where settlement and operation combined have waged war on standing timber with the present result that of the Southern U. S. forest only 50% is left.

(1) 1909, U. S. Forest Circular, 166.
(2) 1909, Dominion Report.
(3) Probable minimum estimate.
(4) Dr. Fernow's estimate.



(From the Forestry Quarterly.)

Atlantic.

I. Acadian.
II. Upper St. Lawrence.
III. Middle St. Lawrence.
IV. Lower St. Lawrence.
V. Southern Laurentian.
VI. Subarctic
(a) Northern.
(b) Southern.

Pacific.

VII. Southern Rocky Mountains.
VIII. Northern Rocky Mountains.
IX. Southern Coast.
X. Northern Coast.
XI. (a) Plains and prairies.
(b) Woodlands and prairies.
XII. Tundra.

Pacific Forests Still Remain. To-day nearly half the virgin stumpage of the United States is in the Pacific forest. As overcutting produces its inevitable effects upon the South, the inroads upon this last great stand of timber will become more serious not only on account of the increasing needs of the centre of the continent and of the Pacific trade, but also because the opening of Panama is about to let loose upon the West the demands of the wood-hungry countries on both sides of the Atlantic. Even as it is, the annual cut of the State of Washington is far in excess of that of any other state in the Union.

Reproduction Insufficient. There is no hope at present that reproduction may offset the inroads of fire and lumbering upon the forests of the States. The portion of annual growth suitable for their saw milling operations is estimated at less than 20 billion feet; their mill output may be placed at 40 billion feet. For all purposes their consumption and waste of wood, apart from fires, is estimated at more than 20 billion cubic feet a year—three times the growth.

Rising Prices. The effect upon prices has been remarkable. The cost of stumpage in the States represents one-quarter of the mill price of lumber, and we find that between 1900 and 1907 (1) the average mill price of all lumber rose 49%; the average price of all stumpage rose 93%. Canadian statistics (2) show us that in comparison with the average for the decade 1890-1900, and in spite of the after effects of the great financial depression—1909 prices for Eastern lumber showed a rise of 55%. Eastern lumber (3), in fact, has risen faster than any other important commodity, with the single exception of furs. (4)

The Position of British Columbia. All these facts bear directly on the forest problems of British Columbia. With its 240 billion feet or more of merchantable timber, probably half the stand of Canada, the Province faces a rising market, east, west and south—for exhaustion of local supply will cause the southern tariff barriers to crumble gradually away. The bulk of this timber is Crown property; most of it is under Government control; and the rate of growth upon the Pacific coast is twice the average for the United States. To cap the climax, the Provincial policy has made the Government a sleeping partner in forest exploitation—a sharer in the profits of the lumbering industry.

Two things are therefore plain; one, that the value of standing timber in British Columbia is destined to rise to heights that general opinion would consider incredible to-day; the other, that under careful management heavy taxation need never fall upon the population of the Province.

The profits from a permanent Crown timber business should make British Columbia that phenomenon of state craft and good fortune—a country of "semi-independent means."

For further figures concerning cut, revenue, rise in prices, stumpage values, etc., etc., see the following Section.

(1) U. S. Dept. of Agriculture, Forest Circular 166, p. 19.
(2) Can. Dept. of Labour. Special report on wholesale prices, p. 16.
(3) Little is known concerning B. C. prices.
(4) See diagram, p. 42.

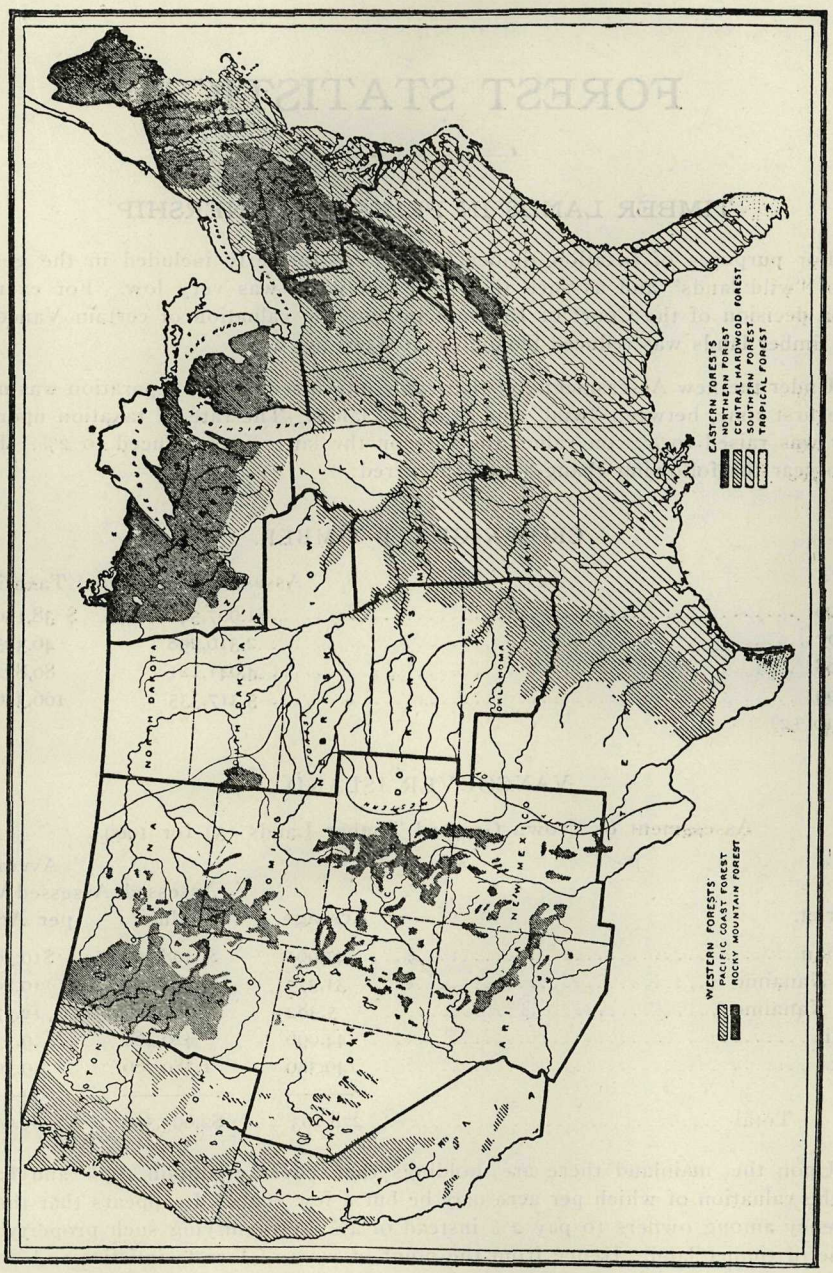


FIG. 1.—Forest regions of the United States.

(From a publication of the U. S. Forest Service.)

FOREST STATISTICS

TIMBER LANDS IN PRIVATE OWNERSHIP

For purposes of taxation timber lands were formerly included in the general class of "wild lands" and as such their assessed value was very low. For example, under a decision of the Court of Revision in 1901 the valuation of certain Vancouver Island timber lands was reduced from $6.00 to $4.00 per acre.

Under the new Assessment Act that came into force in 1906 separation was made, for the first time, between "wild" and "timber" lands. The rate of taxation upon the former was raised to 4% on value; the rate on the latter was reduced to 2%. From year to year the following changes have occurred:

CROWN GRANT TIMBER.

	Assessed Value.(1)	Taxation
1906	$1,907,546	$ 38,150
1907	2,316,298	46,325
1908	4,041,121	80,822
1909	5,317,335	106,346
1910 (2)		

VANCOUVER ISLAND.

Assessment of Crown Granted Timber Lands (3) for 1909.

District.	Acreage.	Assessed Value.	Average Assessed Value per Acre.
Cowichan	47,961	$ 498,266	$10.39
South Nanaimo	31,375	319,907	10.19
North Nanaimo	5,382	67,629	12.57
Alberni	44,096	420,462	9.53
Comox	149,349	1,389,286	9.30
Total	278,163	$2,695,550	$9.69

Upon the mainland there are holdings that cover mountain tops and barren areas the valuation of which per acre may be but a few cents. It appears that there is a tendency among owners to pay 2% instead of 4% by dignifying such property with the title of timber land. Hence from the point of view of forest statistics and finance the average valuations in some districts are meaningless. Moreover, the average valuation for the entire Province is made too low.

(1) At the beginning of each year.
(2) Figures for 1910 not obtainable, but from information secured at the Department, the assessment is very materially increased.
(3) As at 31st December, 1908.

MAINLAND.

Assessment of Crown Grant Timber (1) for 1909.

District.	Acreage.	Assessed Value.	Average Assessed Value per Acre.
Revelstoke	49,124	$ 652,193	$13.27
Kettle River	3,120	13,200	4.23
Kamloops	2,420	12,100	5.00
Golden	67,680	293,945	4.34
Vernon	5,129	16,580	3.23
Vancouver	7,368	80,158	10.88
Rossland	17,595	98,160	5.58
Slocan	47,365	190,600	4.03
Nelson	172,222	828,232	4.80
Fort Steele	179,714	436,617	2.43
Total	551,737	$2,621,785	$4.75
Total for the Province	829,900	$5,317,335	$6.41

Apart from the territory ceded to the Dominion in the railway belt, the following land grants have been made by the Province in aid of railway construction:

Name of Company.	No. of Acres Granted.
Columbia & Kootenay Ry.	188,593
Nelson & Fort Sheppard Ry.	550,720
Kaslo & Slocan Ry.	252,168
Columbia & Western	1,348,145
B. C. Southern	3,755,733
Esquimalt & Nanaimo Ry.	2,000,000 approx.
Total	8,095,359

Railway Timber Lands. Included in these areas were certain timber lands many of which have now been sold by the companies concerned. As, upon sale, all such lands become subject to assessment and taxation by the Province, a considerable part of the original area of railway timber land is included in the acreage given above for Crown Grant timber. Concerning such as remain in possession of the companies, our information is very incomplete. From returns furnished by some of the companies we find:

Name of Company.	Remaining Timber Land, Acres.	Total Stand, Feet.	Stand per Acre, Feet.
Esquimalt & Nanaimo	375,131	5,381,587,000	14,300
Kaslo & Slocan	None.		
Nelson & Ft. Sheppard	Very small area.		

Concerning the three other grants the officials of the C. P. R. are not in a position to furnish information.

LEASEHOLD TIMBER LANDS.

Area at 31st December, 1910:

	Acreage.	Rental.	Rental per Acre.
Timber leases	619,025	$78,218.45	12 3-5c. on an average
Pulp leases	354,399	7,087.98	2c.
Tanbark leases	32,252	1,206.90	2c. or 5c.

(1) Valuation as at December, 1908.

Cost of Leasehold Stumpage.

For a short discussion of this see Crown Stumpage values, p. 37.

Summary:

354,399	acres of pulp lease at	2c.	
32,252	" tanbark lease at	2c.	(ultimately 5c.)
70,493	" timber "	5c.	
296,822	" " "	10c.	
179,210	" " "	15c.	
72,600	" " "	25c.	

Compulsory Saw Mills.

Held under obligation to operate saw mills	478,049 acres
Leasehold not under obligation to operate saw mills	140,976 "

Tenure.

With right of renewal for an indefinite period	386,458 acres
Unrenewable	232,567 "

As will be seen from the full list of leases given in the Appendix, the actual date of issue of a lease does not always indicate the law under which all its conditions were imposed. For example, application for a 15c. lease—dated January, 1904—might have been made previous to the Act of December, 1903, and the rental—instead of being the reduced rental provided for in that Act—would really be the minimum fixed by the Act of 1899.

To obtain a return exact in every detail a prolonged search of Departmental records would be necessary. For our present inquiry there is no need for this, since any small percentage of overlapping that may possibly occur does not affect the soundness of the conclusions drawn from the figures given here.

Renewed Leases. Amendment to the Land Act in 1901 made possible the renewal of every lease then existing in a succession of 21 year periods. The renewed leases mentioned below must therefore be understood as leases whose present term will expire in 1922 or 1923; though at the moment at which they would have expired in their original unrenewed condition their terms and conditions become subject to such change as the provisions of the Land Act in existence at that moment may impose.

CLASSIFICATION.

First Period—Previous to 28th April, 1888.

Acres	Rental paid	Original tenure	Present conditions	Remarks
67,733	5c	30 or 21 years	Renewable indefinitely	Must operate.

Second Period—28th April, 1888, to 21st February, 1895.

270,383	10c	Between 30 and 15 years	Renewable indefinitely	Must operate.
20,785	10c	30 or 21 years	Unrenewable	Must operate.
48,153	15c	Originally 10c (1)	Renewable indefinitely	Need not operate.
4,898	15c	Originally 10c (1)	Unrenewable	Need not operate.

Third Period—21st February, 1895, to 27th February, 1899.

189	10c	21 years	Renewable indefinitely	Must operate.
2,880	10c	15 or 21 years	Unrenewable	Must operate.
12,994	15c	21 years	Unrenewable	Need not operate.

Fourth Period—27th February, 1899, to 12th December, 1903.

70,023	15c	R't'l plus royalty must equal 50c.	Unrenewable	Must operate or pay 50c. rental.

(1) Certain lessees of this period took advantage of subsequent legislation, placing themselves under the Act of 1895 and escaping the obligation to operate.

Fifth Period—12th December, 1903, to 8th April, 1905.

Acres	Rental paid	Original tenure	Present conditions	Remarks
42,818	15c	21 years	Unrenewable	Must operate.
72,600	25c	21 years	Unrenewable	Need not operate.

MISCELLANEOUS LEASES.

2,760	5c	Of which 3,238 acres are under obligation to operate, and 2,331 acres are not under obligation to operate.
2,585	10c	
224	15c	

PULP LEASES.

Year.	Acreage.	Company.
1903	60,960	Oriental P. & P. Co.
1904	46,628	Quatsino P. & P. Co.
1905	23,220	Oriental P. & P. Co.
1906	9,041	Quatsino P. & P. Co.
	134,551	Canadian Industrial Co.
1907	79,999	Bella Coola Dev. Co.

Total area ..... 354,399 acres at 2c. per acre.
Total rental $7,087.98

Condition—Operation of a pulp mill.

HEMLOCK LEASES.

Year.	Acreage.	Company.
1905	18,730	Fraser River Tannery.
1906	13,522	" " "

Total Area, 32,252 acres.

Annual Rental—2 cents per acre during the first 5 years; 5 cents per acre thereafter. This increased rate thus applies to 18,730 acres in 1910.

Condition—Operation of a tannery.

Timber cut from Leaseholds. Returns made to the Chief Timber Inspector show that the cut from leaseholds has been:

1900	61,140,883 feet	1905	49,218,180 feet
1901	55,746,060 "	1906	34,886,500 "
1902	56,368,662 "	1907	52,890,033 "
1903	45,338,680 "	1908	16,586,780 "
1904	41,758,411 "	1909	87,610,544 "

Unfortunately it would appear these figures have no claim to accuracy.

Areas Under Lease.

	Total.	Obliged to Operate.	Not Obliged to Operate.
End of 1908	626,883	485,907	140,976
End of 1909	622,501	481,525	"
End of 1910	619,025	478,049	"

Cut per Acre. In 1909 the above figures would indicate a cut of 140 feet. If we were to credit the whole cut to the area held under leases that make milling compulsory, this would be increased to 180 feet.

Absence of Authorized Rates. Upon the expiry of their original term the following 56,450 acres of leases (1) have been continued from year to year at their former rentals and under their former conditions, the Land Act having made no provisions for imposing such rentals and conditions since the year 1905:

At the former rate of 5c. (2)

5	payments	have	been	made	on	1,380	acres
4	"	"	"	"	"	16,792	"
3	"	"	"	"	"	12,220	"
2	"	"	"	"	"	14,394	" (A)

At the former rate of 10c.

2	payments	have	been	made	on	4,800	acres
1	"	"	"	"	"	6,864	" (B)

By the enforced continuance of these former rates, rental payments up to the end of 1910 have been accepted as follows:

At 5c.	$6,975.80
At 10c.	1,646.40

Interim levy as now made, at 31st December, 1910:

On 44,786 acres of (A) at 5c.	$2,239.30
On 11,664 acres of (B) at 10c.	1,166.40

Total Expiry of Leases.

1908	4,586	acres
1909	4,382	"
1910	3,476	"
1911	5,925	"
1912	....	
1913	2,637	"
	Total, 1911 to 1920, 26,076 acres.	
1914	2,465	"
1915	655	"
1916-20	14,394	"

Expiry of Present Terms of Perpetual Leases.

In 1911	on 12,268	acres
1912	1,488	"
1913	27,204	"
1914	22,639	"
1915	1,949	"
1916-20	89,427	"
Total	154,975	acres

Summary. At 31st December, 1910, 56,450 acres are awaiting fresh terms; (3) within ten years 154,975 acres will require fresh terms; within 10 years 26,076 acres will revert to the Crown.

These three classes comprise about two-fifths of the present acreage.

(1) Apart from the 5,569 acres of miscellaneous and special cases (see full list of leases in Appendix).
(2) The figures given are as at 31st December, 1910.
(3) Apart from a few special cases.

LICENSED TIMBER LANDS

Number in 1910.

West of the Cascades ..... 8,600 licenses
East of the Cascades ..... 6,400 "

Total (1) .....15,000 licenses

Cost of Licensed Stumpage.

For a short discussion of this see Crown Stumpage values, p. 37.

Present Rental.

Per nominal mile:

$140 west of the Cascades;
$115 east of the Cascades;
$129.33 average for the Province.

Per nominal acre:

Nearly 22c. west of the Cascades;
Nearly 18c. east of the Cascades;
Nearly 20 1-5 average for the Province.

Total Rental, Calendar Year 1909: $1,983,015. (2)

Total Nominal Area: 9,600,000 acres. (3)

Total Estimated Area: Assuming that the average shortage on survey will continue to be as at present, the true licensed area would be about 9,000,000 acres.

Single Holdings: The largest number of licenses known to be in the possession of a single holder is 375; there are a number of holdings in the neighbourhood of 100 and 200 licenses.

The Results of Survey. Under the law of 1905, survey must precede any cutting of timber upon either 16-year or 21-year licenses. A Departmental return made 24th August, 1909, shows that at that date 842, or less than 6% of the licenses, had been surveyed. The total acreage had amounted to 497,327 acres, giving an average of 591 acres, or a shortage of nearly 8%.

Within the twelve months, August, 1909, to August, 1910, surveys of 624 licenses with an average acreage of 596.6 have been placed on file with the Department. The shortage on these has thus been nearly 7%.

On the 18th of August, 1910, we therefore find:
less than 10% of the special licenses have been surveyed:
average acreage on survey, 593 acres
average shortage of area, 7.3%.

Surveyed Licenses.

District.	Approx. Number.	Number Surveyed.	Total Acreage.	Average Acreage.
New Westminster	1,540	239	141,608.4	592.5
Coast	3,060	341	196,550.8	576.4
Skeena	200	...	.....	....
Queen Charlotte	800	53	31,588.2	596

(1) These numbers are all approximate; the exact number is supposed to be in the neighbourhood of 15,160.
(2) Including penalties.
(3) Approximate; there are a few old 1,000 acre licenses that pay pro rata on their acreage.

District.	Approx. Number.	Number Surveyed.	Total Acreage.	Average Acreage.
Cassiar	390	8	3,867.6	483.4
Cariboo	1,800	41	25,362	618.6
Lillooet	450	41	25,460	621
Yale, inc. Osoyoos and Similkameen	670	26	14,442.6	555.5
East Kootenay	1,120			
West Kootenay	1,660	389	232,911.8	598.7
Renfrew	400	17	10,521	618.8
Barclay	310	9	5,141.3	571.2
Nootka	350	...	.....	....
Clayoquot	760	151	89,997.4	596
Sayward	360	37	21,061	569.2
Rupert	1,130	114	71,073.4	623.4
Total	15,000	1,466	869,585.5	593.2

1,000 Acre Licenses. In addition to the above, the following old 1,000 acre licenses, issued previous to the law of 1901, have been placed under survey within the last twelve months:

District.	Acreage.
East Kootenay	981.5
" "	889
" "	960
" "	641
Coast	660
New Westminster	641
Clayoquot	641

Increase in Licensed Area. The present number of licenses may be placed with some certainty between 15,000 and 15,160, and with equal assurance it may be stated that the number has never exceeded 15,400 at any time. Owing to the fact that upon each annual renewal each license was designated—until recently—by a fresh number, it has become impossible to trace in detail from year to year the increase in the actual area under license.

Attempts to calculate area from the amount of rental paid are baffled by the circumstance that two payments upon the same square mile might occur within the same twelve months. Ignorance of this fact caused the popular misconception that 17,700 square miles were at one time taken up.

Taking the Chief Timber Inspector's reports as being roughly correct for years previous to 1905, we obtain:

Year.	No. of Licenses.	Nominal Area.
1900	143	143,000 acres
1902	526	336,640 "
1904	1,451	928,640 "
1907	over 15,000	over 9,600,000 "

License Transfers.

The fee for transfer was $2.00 until April, 1910, when it became $5.00. From the total receipts we find:

Year. (1)	Number of Transfers.
1907	2,426
1908	5,512
1909	4,011
6 mos. of (2) 1910	1,690

Thus the activity of the market for licenses is shown by the fact that within three years, either on account, or in spite, of the severe financial depression prevailing, nearly 12,000 licenses passed from hand to hand.

Handloggers' Licenses. In past years one official permit often covered the operations of several men, and in consequence both the number of handloggers and the work they did were greater than might be imagined upon a perusal of the figures below.

Year.	No. of Handloggers' Licenses.
1900	158
1901	163
1902	190
1903	259
1904	183
1905	420
1906	408
1907	573
1908	30
1909	65

THE RAILWAY BELT OF BRITISH COLUMBIA (3)

Forest Revenue.

Fiscal Year.	Total Dominion.	From Railway Belt.	Percentage of Total.
1909	$269,837	$ 55,736	over 20%
1910	378,010	126,351	" 33%

Forest Expenditure on Railway Belt.

Fiscal Year.		
1909	$33,260	or 60% of the revenue
1910	43,756	nearly 35% of the revenue

These figures include salaries and expenses of Crown timber agents, office assistants' salaries and expense of fire ranging.

Alienated Area.

At March 31st, 1909 ..... 1,336,960 acres under license
" " " 1910 ..... 1,264,665 " " "

In addition to these areas, about 15,000 acres were under "permit."

Lumber Cut of Railway Belt:

	Feet B. M.	
1909	53,923,157	or 33% of the total cut from Dominion forests
1910	87,702,075	or 41% " " " " " " "

(1) The figures for 1905 and 1906 are not available.
(2) Omitting April and including July on account of change of fees.
(3) Figures supplied by courtesy of the Department of the Interior.

These figures include the cut from the Reserves, which in 1908 was over 8,000,000 feet.

Average Mill Price of Lumber (1)	1909.	1910.
In Railway Belt	$14.20	$14.15
Calgary	14.91	14.81
Edmonton, Alta.	13.70	16.00
Prince Albert, Sask.	17.54	18.47
Winnipeg, Man.	14.55	14.63

THE FOREST REVENUE OF BRITISH COLUMBIA

As the sums derived from the taxation of Crown Grant timber are included—in the Public Accounts—in the general item for "Wild, Coal and Timber Lands," we have no means of ascertaining the actual amount received in each year from this source. From the tax rolls, however, we know the total sums that should in theory have been paid upon Crown Grant timber. The actual payments are doubtless somewhat less than these amounts, on account of unpaid arrears; and moreover, upon prompt payment a discount of 10% is allowed. If we deduct 10% from the whole sums due for each year, we probably arrive at a close approximation to the true receipts.

By Fiscal years—

Year.	Timber Leases.	Royalty.		Licenses.	Scaling Fees.	Crown Grant Taxation.
1900	$ 38,812		$ 97,517			
1901	28,981		86,613			
1902	45,861		115,210			
1903	84,111		214,106			
1904	116,382		289,366			
1905	76,228		410,288			
1906	100,449		509,043			$34,335
1907	95,219		1,155,346		$13,069	41,693
1908	74,043	$232,696		$2,025,869	19,320	72,740
(9 mos.) 1909	59,085	233,963		1,614,291	13,010	
1910 (2)	85,875	304,614		1,940,251	21,698	95,712

By Calendar Years—

Year.	Licenses.	Leases.	Crown Grant Taxation.	Royalty.	Cordwood.	Scaling Fees.	Transfers.	Handloggers.
1900	$ 7,150	$ 37,231		$ 89,362	$ 7,117			$1,530 (approx.)
1901	12,708	45,608		81,047	14,342			1,630 "
1902	57,918	39,213		91,648	7,987			1,900 "
1903	135,552	124,635		137,702	5,347			2,590 "
1904	177,984	92,761		178,730	4,061			1,830 "
1905	271,935	100,007		196,187	2,138			4,200 "
1906	513,497	87,954	$34,355	213,860	2,205	$ 4,018	$ 778	3,230
1907	1,339,351	77,661	41,693	206,751	1,717	18,729	4,848	5,730
1908	2,290,473(3)	88,869	72,740	304,235	1,041	17,553	10,211	658
1909	1,983,015	77,473	95,712	264,544	494	19,115	7,982	1,625

(1) Section 17, Clause j, Dominion Government Regulations, provides that officials shall have access to the books of the shipping companies.
(2) From the records of the Department of Lands.
(3) Two payments on one license occurring to some extent within the 365 days of this year.

TOTAL FOREST REVENUE.

By Calendar Years. Forest Revenue		By Calendar Years. Forest Revenue.		By Fiscal Years. Total Prov'l Revenue	By Fiscal Years. From Forest Sources.
1900	$ 142,390	1901	$ 115,594	$1,605,920	7.2%
1901	155,335	1902	161,071	1,807,925	8.9%
1902	198,666	1903	298,217	2,044,630	14.6%
1903	405,826	1904	405,748	2,638,260	15.4%
1904	455,366	1905	486,516	2,920,461	16.7%
1905	574,467	1906	643,827	3,044,442	21.1%
1906	859,877	1907	1,305,327	4,444,593	29.4%
1907	1,696,480	1908	2,424,668	5,979,054	40.6%
1908	2,785,807	1909 (9 mos.)	1,920,349	4,664,500	41.2%
1909	2,449,960	1910	2,448,150	8,000,000 approx.	30.6%

FOREST REVENUES OF CANADA.

	1908	1909
British Columbia (1)	$2,786,000	$2,450,000
Ontario	1,224,000 (2)	886,000 (3)
Quebec (4)	978,000	906,000
Dominion Forests, inc. Railway Belt (5)	270,000	378,000
New Brunswick (6)	343,000	395,000
Total	$5,601,000	$5,015,000

In the revenue of the Dominion forests there is included $55,736 from the Railway Belt for the fiscal year 1909, and $126,351 for 1910.

FOREST EXPENDITURE IN BRITISH COLUMBIA.

	1906-7 Year to June 30.	1907-8 Year to June 30.	1908-9 9 mos. to March.	1909-10 12 mos. to March.
Timber Inspectors' salaries	$ 4,860	$ 5,100	$ 4,095	$ 6,519.18
Temporary assistance		2,050	1,401	1,990.17
Temporary expenses	1,762.25	1,714.80	1,833.04	2,841.30
Log Scalers' salaries	14,715.83	15,642.76	12,020.57	19,597.50
Log Scalers' expenses	1,584.49	2,667.12	3,401.35 (7)	13,173.66
Services guarding booms, rivers, etc., miscellaneous	4,018.28	1,256.45	328.12	961.10
Fighting forest fires	7,631.25	16,416.50	35,707.62	45,988.77
Purchase "Volga"		4,900.00		
Total	$34,572.10	$49,747.63	$58,786.70	$91,071.68

LUMBER CUT OF BRITISH COLUMBIA.

Little is known concerning the extent of logging operations in the Province. The records of official scaling on the Coast show that:

(1) Calendar years.
(2) Being the collection proper for that year (calendar). Including arrears allowed to accumulate on account of the financial depression, the total receipts were $1,786,000.
(3) Period of 10 months only; the fiscal year being changed from calendar year to year ending October 31st.
(4) Year ending June 30th.
(5) Years ending March 31st, 1909 and 1910.
(6) Year ending October 31st.
(7) Log scalers' expenses for 1909—to include expenses of upkeep and provisions for launches.

In 1907 ..... 407,065,223 feet B.M. were scaled.
" 1908 ..... 397,312,425 " " " "
" 1909 ..... 481,260,174 " " " "

and in the opinion of the Chief Timber Inspector, the total cut of the Province, including the Railway Belt, has probably been about double these figures in each year.

The Secretary of the B. C. Lumber Logging and Forestry Association considers that during the past four years the cut has varied between 650 million feet and 850 million feet, the latter figure being approximately correct for 1909.

The results of operations that chiefly concern the Government are roughly shown by the royalty returns. Deducting the tax on Crown Grant timber, manufactured or exported, and taking each 50c. of royalty to represent roughly 1,000 feet of timber cut we find that such royalty was paid upon the following amounts:

APPROXIMATE CUT ON WHICH 50c. ROYALTY WAS RECEIVED.

	Feet B.M.
1900	178,724,000
1901	162,094,000
1902	183,296,000
1903	275,404,000
1904	338,818,000
1905	380,758,000
1906	426,714,000
1907	408,760,000
1908	607,518,000
1909	520,486,000

The amount of royalty-paying timber actually cut in each twelve months is not, however, shown with accuracy by these figures, on account of the intervals of time between cutting and payments. In 1909, for example, official scalings were made of 607,612,943 feet.

Lumber Production of Canada, 1908. The first serious attempt to collect annual statistics concerning the forests of Canada has recently been made by the Department of the Interior. For the year 1908 returns made by 143 lumbermen in British Columbia showed a cut of 647,977,000 feet.

The figures thus obtained are far from complete. For all Canada the following cut of lumber was reported to the Department:

	Bd. Ft.
Ontario	1,294,794,000
Quebec	690,135,000
British Columbia	647,977,000
New Brunswick	308,400,000
Nova Scotia	216,875,000
Saskatchewan	91,166,000
Manitoba	56,447,000
Alberta	42,382,000
Total	3,348,176,000

Mill Capacity of British Columbia.

At the end of 1909 a return from the Chief Timber Inspector shows that there were:

215 lumber mills with an approximate daily capacity of 4,500,000 feet;
59 shingle mills with an approximate daily capacity of 3,385,000 shingles.

EXPORT.

In past years no figures are obtainable concerning the total export of logs from Crown Grant timber lands.

The annual reports show that the timber tax on export was levied upon the following small amounts:

Timber Tax on Export.

Calendar Year.	Amount of Timber.	Tax Levied.
1904	7,815,747 feet paying	$ 8,755
1905	5,118,050 " "	5,381
1906	Nil	
1907	1,881,400 " "	1,881
1908	Nil	
1909	3,785,750 " "	3,785
Total	18,600,000 feet	$19,802

Export in 1910.

During the present year records have been kept. In a period of eight months there were exported:

45,417,478 feet paying 50c. per M. royalty
14,843,917 feet paying $1.00 per M. royalty

Total 60,261,395 feet

In September 36 camps were at work on exportable timber, and most of the timber cut by them was exported.

TAX ON TIMBER MANUFACTURED.

at 1c. per M.

1904	56,600,000 feet paid	$ 566.00
1905	42,700,000 " "	427.00
1906	50,300,000 " "	503.00
1907	49,000,000 " "	490.00
1908	47,600,000 " "	476.00
1909	51,600,000 " "	516.00
Total	297,800,000 feet	$2,978.00

FIRE PATROL

In Idaho. (1) The formation of voluntary associations of lumbermen for protective purposes dates from 1906. Through the efforts of these bodies there was enacted in 1907 the Fallon Fire Law, (2) under which patrolmen nominated by owners of timber lands were given power, as constables, to enforce the forest regulations.

Over a three-year period the work of the four associations may be summarized as follows:

Average membership area under patrol	1,170,000 acres
Average annual cost	$30,000
Average cost per acre	2½c. per annum

(1) Information supplied by the associations.
(2) See Appendix.

Taking the Pend d'Oreille Association, we find that in 1909:

Membership area	403,446 acres
Wardens on patrol	30
Average membership area patrolled by each warden	under 14,000 "

Both the State of Idaho and the railway companies contribute to the funds of these associations.

In Washington. In the season of 1910 some 22 wardens were employed by the State authorities, whose expenditure for previous years had been $9,454 in 1907 and $13,617 in 1908. National forests within the State are patrolled by the U. S. Forest Service. In the year 1908 the Washington Forest Fire Association was formed by owners of timber lands for mutual protection.

	Owned by Members.	Levy per Acre.	Total Levy.
1908	2,525,000 acres	1 cent	$25,252
1909	2,662,830 "	1½ "	39,932
1910	2,760,000 "	2½ "	69,000 (approx.)

The organization in 1910 included one chief warden, eight inspectors, eighty-four patrols. The secretary estimates that altogether each patrol has to cover 70,000 acres, and that for really efficient protection from fire one man should not be given more than 16,000 acres.

In Ontario. The fire ranging system in this Province was organized in 1885, but until the year 1901 contributions from licensees were voluntary. In that year power was taken to compel all licensees to pay half the cost of fire patrol upon their holdings, and the number of wardens was increased to 253. More and more men were placed upon patrol in each successive year, their numbers reaching 692 in 1908 and no less than 822 last year. In 1909 as many as 187 wardens were placed upon the railway lines, two men to every ten-mile beat, and the cost of this was refunded by the companies concerned.* In the spring of 1910 the Government decided that the full cost of fire patrol on licensed territory must thenceforward be borne by the licensees themselves.

EXPENDITURE.

	Government.	Railways.	Licensees.	Total.
1908, for 692 wardens	$109,824	$53,236	$46,621	$209,682
1909, for 822 wardens	132,106	66,712	43,805	242,624

Taking the collections proper for 1908 (the fiscal year 1909 being only 10 months long), we find that Ontario spent about 9% of the public forest revenue upon forest ranging and fire patrol.

Acreage per Warden. 450 men patrolled an area of 18,524 square miles under timber licenses.

Average per Warden, less than 27,000 acres.

In British Columbia. Expenditure of the public money for the protection of the forests of the Province dates from the fiscal year 1906-7. The gradual realization of the need for this is shown by the following figures:

(*) The transcontinental line alone refusing to refund the full amount. It paid one-third of the assessment. The actual expenditure of the Government was, therefore, somewhat larger than the amount shown.

Fiscal Year.	Wardens on Patrol.	Expenditure on Fighting Fires.	Percentage of Forest Revenue.
1906-7		$ 7,631	3-5 of 1%
1907-8		16,416	7-10 of 1%
1908-9	27	35,707 (9 months)	under 2%
1909-10	37	45,988	under 2%

For the season 1910 the reports of the Chief Fire Wardens show:

Month.	Expenditure.	Wardens on Patrol.
April	$ 1,407.12	..
May	11,554.00	53
June	12,722.00	57
July	65,150.00	70
August	65,619.61	70
September	29,349.27	70
Total	$185,802.00	

Acreage per Warden. Taking merely the alienated area, 11,251,000 acres of Crown Grant, leasehold and licensed timber lands, we find that the average area of merchantable forest to one Provincial Fire Warden was over 160,000 acres.

Expenditure, per Acre, 1910. The expenditure per alienated acre, in the summer season of 1910, up to the end of September was nearly 1 7-10 cents.

These figures would be reduced were we to include the protection of the reserve timber among the duties of the fire wardens.

In the B. C. Railway Belt.

Fiscal Year to March.	Wardens on Patrol.	Government Expenditure on Fire Protection.
1908	..	Under 1c. per acre east of Yale; 2¾c. per acre west of Yale
1909	35	About ½c. per acre
1910	36	

THE COST OF OFFICIAL CRUISING IN WESTERN FORESTS

The former system of assessment having been condemned by the Board of Tax Commissioners of Washington as the "crudest kind of guesswork," many of the counties of that State undertook complete cruises of the timber lands in private ownership within their boundaries. In addition we have the financial results of various cruisings by the U. S. Forest Service in the States adjacent to British Columbia.

Owing to the fact that a fresh body of men had to be selected, organized and equipped to perform the work connected with each county cruise, in Washington both office and field expenses were probably much greater than they would have been under the routine methods of a permanent organization. Apart from such incidental waste (1) it is of course obvious that the nature of the country and the method of cruising employed determine the cost per acre.

Example 1.

ASSESSMENT CRUISE IN THE STATE OF WASHINGTON.

547,037 acres of Lewis County cruised for $57,762, or 10½c. per acre
367,827 acres of Pacific County cruised for $35,000, or 9½c. per acre

(1) In one county, for example, $6,000 was thrown away on account of a single piece of work that had been entrusted to incompetent men and that had to be re-done.

These are described as two of the most heavily timbered counties. The cost includes all office expenses, mapping, etc.

The northern forest district of Mason County averaged 40,000 feet per acre, the scattered timber in the southern part averaging 15,000 feet; the former district being rough and broken country, the latter rolling and fairly level. $47,709 was spent on cruising, but the average cost per acre has not been obtainable by us.

Snohomish County has cruised 320,680 acres, averaging 30,000 feet per acre.

42,840 acres cruised in 1909 cost **7 6-10 cents per acre.**

According to statements of the county assessors the cruise of King County cost about **17 cents per acre;** that of Skamania County (timber averaging 24,000 feet per acre) about **16 cents per acre.**

Timber lands belonging to the Capitol Building grant have recently been examined by the State authorities with the result that the cruise of 79,725 acres cost $23,443, or **29 4-10 cents** per acre; figures that include the cost of all printing, maps, drafting, transportation, etc., as well as the salary of the superintendent of cruising at $350 per month.

Example 2. In the Kaniksu National Forest, located in northern Idaho and north-east Washington, the cruising of 22,000 acres in the summer of 1910 cost **5 cents per acre,** which the District Forester considers a fair average figure for a fairly detailed cruise, in the course of which each forty acres was crossed once. This includes the cost of printing, topographical maps and office work. The country is fairly level; the stand of timber is very dense, running from 50,000 to 100,000 feet per acre; thick hemlock undergrowth makes cruising slow, and the work is done some twenty miles from the railway and a few miles from the wagon road.

Example 3. The mapping and valuation of the holdings of the Northern Pacific Railway Company and adjacent lands in the National Forests in the northern Rocky Mountain region of Montana and the collection of much varied information, was performed by the U. S. Forest Service at a cost varying from 2¼ to 3 cents per acre, over a total of 3,000,000 acres. Timber estimates were made by calipering the trees on sample strips one chain wide, run every mile or half mile according to the density of the timber.

In open timber in the southwest, ocular estimates by "forties" cost between 3 and 4 cents per acre. The latter figure was the average cost of a general timber survey in the Riding Mountain district of Manitoba.

As for methods still more cursory we find that Ontario explored its southern forest area of sixty million acres in 1899 at a cost of $40,000 (1); while Nova Scotia has recently completed a reconnaissance of forest conditions, organized by Dr. Fernow, that may cost about $5,500 for 21,000 square miles.

THE RISE IN VALUE OF WESTERN STUMPAGE

A clear impression of the trend of events in the United States can be obtained from the reports dealing with stumpage values secured by the Forest Service. As Messrs. Kellogg and Zeigler point out, the slowness of the rise until recently can be explained by the general failure to realize the approaching shortage of supply and by the fact that the lumber industry has been continuously on the brink of over-production. Every little business depression has caused the lumber market to break, not because standing timber was an unsafe investment, but because many lumbermen were so involved, financially, that they were obliged to cut and sell, even at a sacrifice, to meet fixed charges. This chronic trade condition has helped to keep down the price of stumpage.

(1) Dominion Forest Report, 1909, p. 5.

"Although the value of white pine stumpage is seen to have increased 121% in seven years, the cut of it decreased 46%. In fact, of the eastern species—with cuts of one billion feet or more, white pine, oak and yellow poplar, cottonwood and elm all show decreases in cut and even the long-despised eastern hemlock has passed its zenith. The northern lumberman has turned his attention to maple, birch, basswood and chestnut and the southern lumberman to tupelo and red gum. Yet the increase in all these together is less than half the decrease in white pine." (1)

Moreover, though Southern yellow pine has so far more than held its place in the total output, the centre of production has moved to the most western region of the Southern forest. The result of all this is that both the cut and the stumpage value of Western timbers are increasing rapidly, and the Rocky Mountain and Pacific forests, that together contain more than half the virgin stumpage, are destined to control the lumber markets of the country. In the case of Douglas fir, the stand of which in the United States is estimated at 525 billion feet, we find:

	Million Feet Cut.	Average Mill Price.	Average Stumpage Value.
1900	1,736	$ 8.67	$0.77
1907	4,748	14.12	1.44
Increase	173%	63%	87%

The financial depression produced an arbitrary setback in production shown by a reduction in the cut of Douglas fir to 3,675 million feet in 1908.

As for cedar in the United States, statistics show:

	Average Stumpage Value.	Average Mill Price.
1900	$1.32	$10.91
1907	4.63	19.14
Increase	251%	75%

The general rise has produced its inevitable effect upon values in the National Forests of Washington and Oregon, that include a stand estimated at 180 billion feet. The Federal Government sells timber in these forests by the thousand feet and not by the acre; the contracts impose stringent regulations upon purchasers, and all sales call for immediate operations covering a few years at most. At the present time the standard prices for green timber in the States mentioned are:

Douglas fir	$2.50
Western red cedar	3.00
Western hemlock	1.75
Sitka spruce	2.50
Noble fir	2.50
White fir	1.50
Western yellow pine	2.50
Western white pine	3.00

It must be understood that these are only standard prices. In other words, very accessible timber is sold at higher rates and the more inaccessible timber is sold at lower rates. (2)

CROWN STUMPAGE VALUES IN BRITISH COLUMBIA.

In the course of the evidence given before the Commission numerous comments were made upon the prices charged by the Government for stumpage under the lease and license systems. Comparisons were drawn between the cost of holding timber in

(1) Kellogg and Zeigler, of the United States Forest Service.
(2) Figures supplied by the U. S. Forest Service.

British Columbia under Provincial and Dominion lease, license, or Crown Grant tenure, and the cost in other Provinces and States. The following reference to the subject is therefore made:

There are two distinct ways of buying timber; it may be purchased outright from private owners, or it may be obtained from the Crown and paid for in instalments that take the forms of rental and royalty. The problem is to discover what immediate investments are equivalent to these strings of future payments of rental and royalty, and for this the ordinary principle of discount may be used.

If we assume that private business is done at 7%, we find:

Present investment equivalent to License Rental: (1)

	10 Years' Rental	15 Years	21 Years
Per mile	$1,052.00	$1,364.00	$1,623.00
Per acre	1.64	2.13	2.54
Per 1,000 feet, at 12,000 feet per acre	.14	.18	.21
" " " " 15,000 " " "	.11	.14	.17
" " " " 25,000 " " "	.07	.09	.10

To vary the calculation, suppose that the Government needed to anticipate future receipts of forest revenue by means of a public loan issue, and suppose that the money were thus obtained at a net cost of 4%. Using this rate of interest the present value of the special license rentals **to the Government** would then be:

	10 Years' Rental.	15 Years' Rental.
Per mile	$1,181.00	$1,619.00
Per acre	1.84	2.53
Per 1,000 feet, at 12,000 feet per acre	.15	.21
" " " " 20,000 " " "	.09	.12

Combined Rental and Royalty.

The present value to the Government of future rental and royalty combined would be:

	Timber Cut At End 10 Years	At End 15 Years (2)
At 12,000 feet per acre	49 cents	49 cents
At 20,000 feet per acre	43 cents	40 cents

Price of Licensed Timber. Rental is levied per acre, royalty per 1,000 feet, and therefore we must know how many thousand feet there are to the acre before we can say at what price the licensed Crown timber is actually sold, under the present rates of rental and royalty. In petitions of the Operators' Associations calculations of stand have been made upon a conjecture of over 12,000 feet as the average per acre established by actual operation. Upon such averages as this, figures therefore show that the **cash investment** equivalent to the future payments of rental and royalty on licensed timber is, at the most, about fifty cents. The charges upon leasehold timber may be capitalized in the same manner, allowing for rentals at 5, 10, 15 or 25 cents as the case may be.

Unfortunately this **method of comparing investments** in purchased, leased or licensed timber leaves out of account a factor of considerable importance. With purchased timber the whole investment is subject to the risk of loss by fire; whereas under the other tenures only past rental payments are thus exposed, destruction of leased or

(1) West of the Cascades.
(2) Postponement of the cut lessening the "present value" in spite of rental.

licensed timber merely ending the holder's option to cut it. Properly speaking, the fifty-cent maximum investment calculated above should be reduced on this account when comparing licensed with other stumpage.

On the other hand, the amount payable to the Government—something less than fifty cents a thousand—does not measure the total investment that the purchaser of licensed stumpage must make to-day. The original cost of discovery and staking, the subsequent cost of selling, added to the profit of the vending license, increase the necessary investment by some variable amount that lies probably between fifty cents and one dollar.

Though part of the price of Crown stumpage—that represented by royalty—has remained unaltered for more than 22 years, recognition of the rise in the value of standing timber during that period has been made by the Legislature. From time to time increased **rentals** have been imposed. In 1895, for instance, alienation of stumpage for holding purposes was made in return for an annual rent of 15 cents; in 1899 this was changed to fifty cents; after 1903 to twenty-five cents, and since 1905 to twenty-two cents or eighteen cents, according to locality. (1)

ONTARIO STUMPAGE.

The present range of stumpage values in Ontario may be gauged by the results of a sale of seven berths containing pine and spruce timber damaged by fire in the Mississauga Forest Reserve on September 15th, 1909. It was a condition of the sale that the timber should be removed within six (6) years. The amounts tendered by the successful purchasers as bonus per thousand feet, to be paid in addition to the royalty of $2.00 when timber should be cut, were as follows:

	District.	Area Square Miles.	Rates.
1.	Algoma	18	White Pine $5.20, Red Pine $3.00.
2.	"	21	White Pine $11.27, Red Pine $8.55, Jack Pine $8.55, Spruce $8.55.
3.	"	18	White Pine $11.37, Red Pine $8.55, Jack Pine $8.55, Spruce $8.55.
4.	"	18	White Pine $10.55, Red Pine $8.55, Jack Pine $8.55, Spruce $8.55.
5.	"	18	White Pine $5.10, Red Pine $3.10, Jack Pine $1.00, Spruce $1.00.
6.	"	18	White Pine $10.55, Red Pine $8.55, Jack Pine $8.55, Spruce $8.55.
7.	"	18	White Pine $5.10, Red Pine $2.10, Jack Pine $1.00, Spruce $1.00.

EUROPEAN STUMPAGE.

Some of the more thickly populated countries of Europe after passing through that primitive stage of forest exploitation in which commercial profit is frankly based upon the wholesale waste of wood, have been forced to the extremity of applying scientific methods to the cutting of timber. Germany, for example, has solved the problem of forest preservation, and her increasing output has already been accompanied by increasing profits through a long series of years.

Within three-quarters of a century results such as these have been attained: (2)

(1) Approximate figures for east and west of Yale.
(2) Fernow; "Financial Results of Forest Management," quoted in Forest Circular 140.

Sustained Yield of Seven Million Acres of Prussian Forests.

	Average Yield.	Average Revenue.
1850		.28 per acre
1865	24 cubic feet	.72 " "
1890	52 " "	1.58 " "
1904	65 " "	2.50 " "

Prussian forest management has trebled the rate of production in 75 years; the improvement in quality is shown by the proportion of saw lumber which has risen from 19 to 54%; and the financial results produce a revenue of over 17 million dollars.

In the Crown forests of Baden the cut has in the last 30 years been increased from 61 to 93 cubic feet per acre (an increase of 53 per cent.) The gross returns have doubled, and are now $8.99 per acre. Since the expenses have not increased proportionally the net revenue has risen more than 100%; namely, from $2.45 in 1878 to $5.23 in 1907. Though re-afforestation is, for the most part natural, nearly 23 cents an acre is spent upon planting. (1)

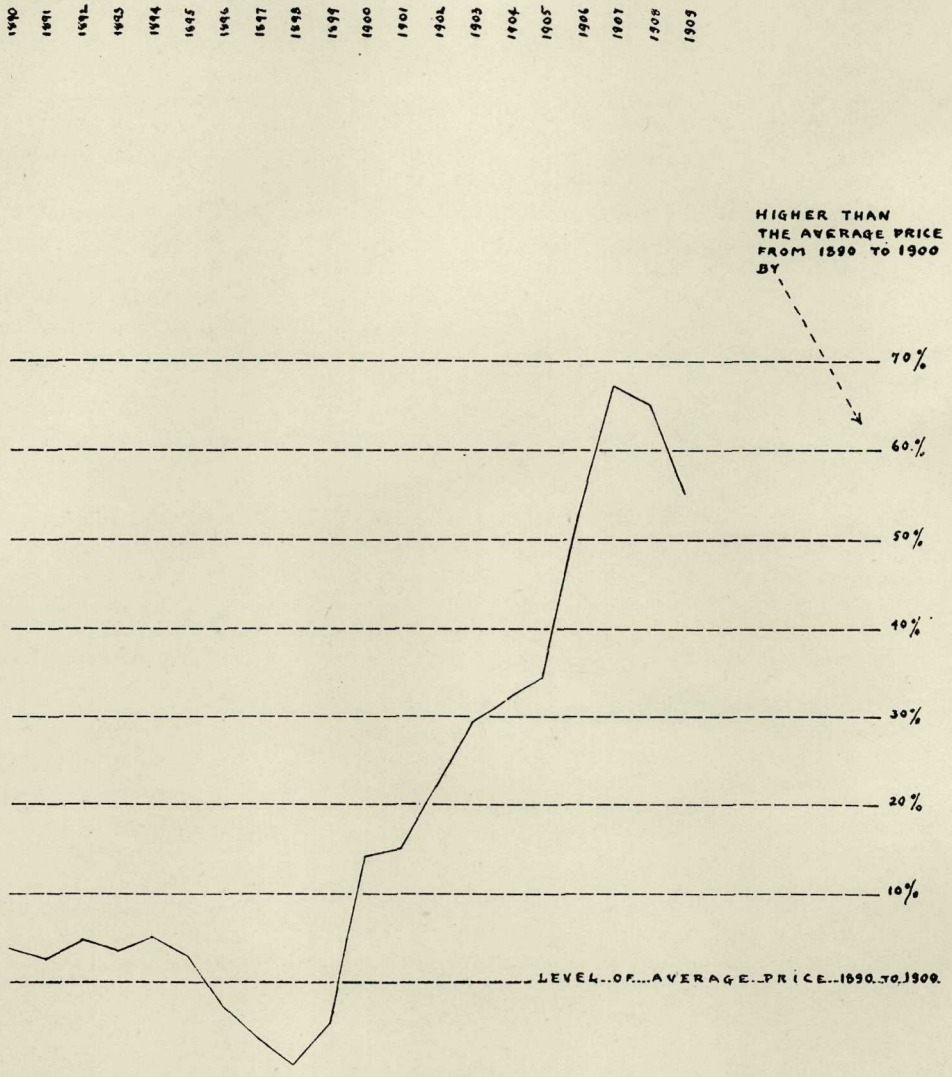
The average net revenue per acre from over 15 million acres of good, bad and indifferent forest in Germany was found to be $2.40 a year. Wurtemberg and Saxony make $6.00 and $5.30 respectively, per average acre—about as much, each single year, as the total capitalized sale value exacted by the British Columbian Government to-day for its licensed timber. (2)

Large populations and markets readily accessible have enabled various European countries to prove that the profit **from** forests may depend upon the expenditure **on** forests.

(1) Forest Statistics of the Grand Duchy of Baden for 1907. (Forestry Quarterly, September, 1910.)
(2) At present rates of rental and royalty, assuming an average 42 year life for licenses; an average stand of 12,000 ft. per acre; money at 4%.

THE RISE IN PRICE OF CANADIAN LUMBER.

THE RISE IN PRICE OF CANADIAN LUMBER.



A GREATER PERCENTAGE OF INCREASE THAN FOR ANY GROUP OF COMMODITIES EXCEPT FURS

Commodities included :— Pine, Ottawa, good sidings, shipping culls, and box boards : Pine, Ottawa, average cut all grades; Pine, Georgian Bay, No 1 cuts; Pine Laths, Hemlock, N.B. Spruce, N.B. Shingles; Birch; Maple (soft) and Red Oak.

(From the Special Report on Wholesale Prices in Canada 1910.)

SYNOPSIS OF RECOMMENDATIONS

SYNOPSIS.

In the following section of this Report your Commissioners recommend:

Page 45. (1) that a complete cruise of all CROWN GRANT TIMBER LANDS should be made by the Government; that in future the Department of Forests should co-operate with the assessors; and that an annual return should be made of the valuation of all such timber lands:

Page 47. (2) that as far as possible TIMBER LEASEHOLDS should be placed, upon renewal, upon a parity with licensed timber lands; and that they should be subject to the same forest regulations:

Page 50. (3) that the rates of rental and of royalty upon SPECIAL LICENSE should at no time be fixed in advance for more than one calendar year:

Page 53. (4) that the Land Act be amended so as to empower the Government to grant the right of cutting saw mill timber to PULP lessees; and that a new form of license be provided for this purpose in the manner described by your Commissioners:

Page 54. (5) that the same form of license as that provided for pulp lessees be issued to holders of TANBARK LEASES who may desire to cut mill timber upon their leaseholds.

Page 55. (6) that the present Reserve upon UNALIENATED TIMBER LAND be continued indefinitely; and that when special circumstances necessitate the opening of any portion of this Reserve for immediate operations, licenses to cut timber thereon should be put up to public competition, upon a stumpage basis:

Page 55. (7) that licenses to cut timber upon FRACTIONAL AREAS adjoining, or surrounding, leased or licensed timber lands, should be put up to public competition and that a "fractional area" be defined with great care in the wording of the "Land Act":

Page 56. (8) that the record of every cruise and survey made by the Government in timbered areas should be accompanied by a report concerning the suitability of the land for AGRICULTURE; that the power to compel licensees to cut and remove timber from good land be retained; and that at the time of renewal the same provision be inserted in every timber lease:

Page 56. (9) that the issue of HANDLOGGERS' LICENSES be discontinued:

Page 57. (10) that no DIVIDED INTEREST in a special timber license be recognized:

Page 57. (11) that for the convenience of holders one day be fixed in each month for the RENEWAL of all licenses expiring in that month:

Page 59. (12) that royalty be collected upon ALL MERCHANTABLE TIMBER NOT REMOVED from Crown lands in the course of logging operations:

Page 60. (13) that operators be required to dispose of DEBRIS:

Page 60. (14) that the PROTECTION OF FORESTS FROM FIRE be undertaken by the Government through the agency of a permanent forest organization upon the lines of the Northwest Mounted Police; and that it be compulsory for all able-bodied citizens to assist in this work when called upon:

Page 61. (15) that the COST OF FIRE PROTECTION be shared between Government and stumpage holders in the manner proposed by your Commissioners:

Page 61. (16) that the Provincial Government should co-operate with the Dominion Railway Commission; that a vigilant patrol of all RAILWAY LINES and inspection of locomotives should be established; and that all railway construction should be supervised by Provincial forestry officials:

Page 63. (17) that special licensees should be instructed to proceed with the SURVEY of their holdings; and that all such surveys should be completed not later than the 31st day of December, 1915:

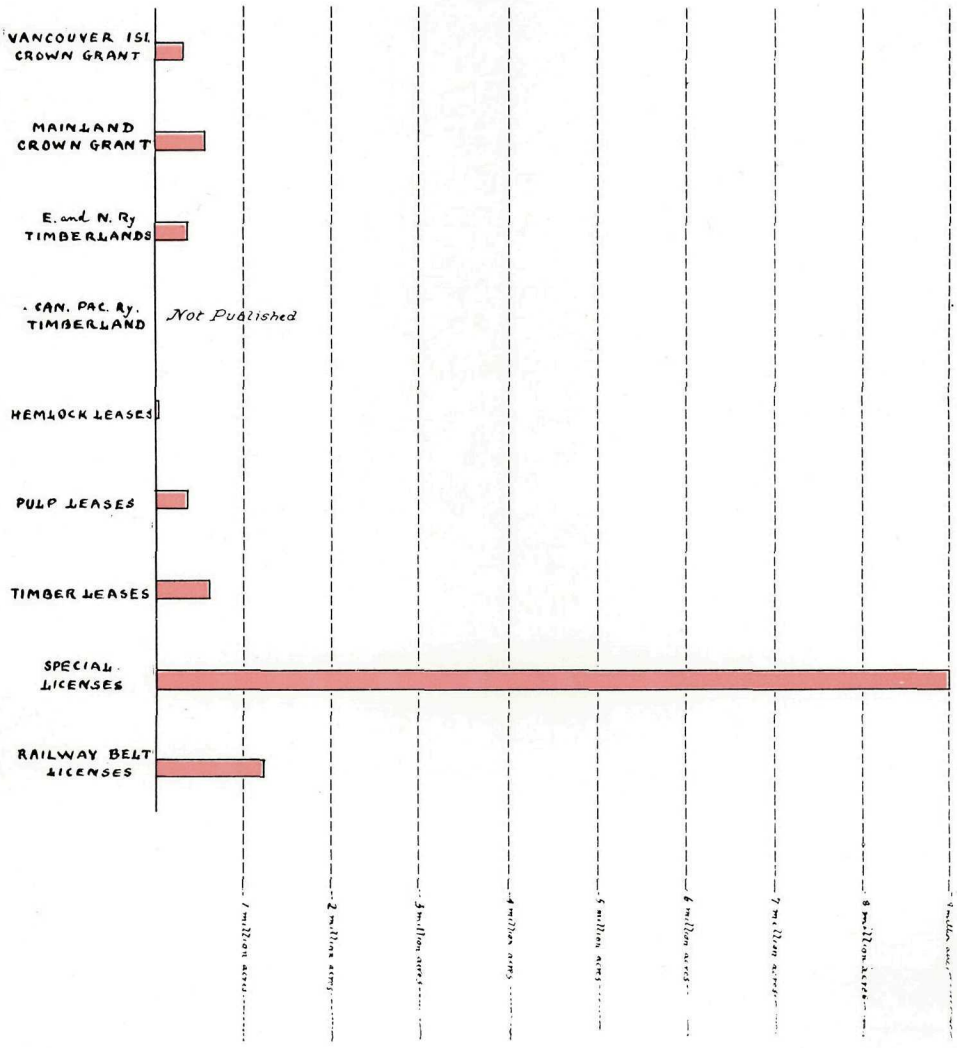
Page 63. (18) that all operators should be required to make periodical RETURNS concerning their operations, to the forestry officials in their district; and that the collection of information should be undertaken upon much wider lines than hitherto:

Page 66. (19) that the Government should at once proceed with the establishment of a DEPARTMENT OF FORESTS:

Page 72. (20) that royalties upon Crown timber should be paid into a FOREST SINKING FUND in the manner described by your Commissioners:

Page 73. (21) that by suitable changes in the Customs TARIFF the utilization of low-grade timber should be encouraged.

COMPARATIVE AREAS OF ALIENATED TIMBER LANDS



The preceding sections of this Report deal in detail with statistical and historical facts that have direct bearing upon the problems of forest policy to which the attention of your Commissioners has been devoted. We shall refer to these facts from time to time, in the course of the recommendations that we now proceed to make.

RECOMMENDATIONS CONCERNING TENURE

Under the jurisdiction of the Provincial Government timber lands are held under three main tenures:

1. Crown Grant, including ..... 829,900 acres (1)
2. Leaseholds, including ..... 1,005,676 " (2)
3. Special Licenses, about ..... 9,000,000 " (3)

In addition there are in the Province certain timber lands that remain in the possession of the railway companies. (4) Under the Dominion Government there are the timber lands of the Railway Belt. (5)

CROWN GRANT TIMBER LANDS.

1909	Average valuation	$6.41 per acre (6)
	Average taxation	.13 (approx.)
	Total assessed value	$5,317,335
	Total taxation	106,346

Under the Assessment Act of 1903, the intention of the Legislature was to impose taxation upon Crown Grant timber lands at the rate of 2% on their value. As no provision was made for the collection, by cruise and expert inspection, of information concerning either the quality or stand of the timber or its accessibility, the assessors have consequently been obliged to make more or less conventional estimates in each district, based upon such indirect knowledge as they might happen to possess of occasional stumpage sales.

It is obvious that under this system there can be little hope of assessing timber lands at their true, full value. The experience of the State of Washington is a case in point. Partial cruising by various counties increased the valuation there by no less than 113% in a single year; and the investigations of the Board of Tax Commissioners caused them to state that although the average assessed value of timber lands had been lifted to $12.91 per acre in 1908, they considered that this represented but 38%, or two-fifths of the true amount. (7) We note that in a similar manner the average valuation of timber lands in British Columbia represents but a fraction of their market price.

To remedy conditions that are plainly undesirable, your Commissioners strongly recommend that complete and accurate information concerning Crown Grant timber lands should be obtained by the Government, as speedily as possible, by cruise. As the matter is one that will come, to some extent, under the purview of the proposed Department of Forests, it will be necessary to establish active co-operation between this organization and the assessors, so that, thenceforward, the latter may be assisted by the services of the Department's cruisers and the work of valuation be put upon a thorough, intelligent basis.

Although there are strong reasons why timber lands should cease to be placed upon the tax rolls at figures that do not represent their value, we consider that the

(1) At the beginning of 1909; probably about 870,000 acres in October, 1910.
(2) At 31st December, 1910; this includes pulp and hemlock leases, p. 25.
(3) Probable; after allowing for the average shortage shown by survey. See p. 27.
(4) See p. 23.
(5) See p. 29.
(6) See remark concerning smallness of this average, p. 22.
(7) Biennial Report, p. 27.

rate of taxation levied upon them should be subjected to careful investigation by the proposed Department, and that the holding cost to owners who have invested capital in the purchase of these lands, and who are thus exposed to the full risk of monetary loss by fire, should be given due weight in all adjustments of forest finance.

We recommend that an annual return should be made showing the acreage and the assessed value of each and every holding of Crown Grant timber land.

LEASEHOLD TIMBER LANDS.

Leaseholds with right of perpetual renewal	386,458	acres
Leaseholds without right of perpetual renewal	232,567	"
Total area under timber lease	619,025	"
Leaseholds held under obligation to operate saw mills	478,049	"
Leaseholds held without obligation to operate saw mills	140,976	"

In the section of this Report that deals with forest legislation it will be seen that prior to the introduction of the licensing system in 1888 timber could only be obtained, legally, by Crown Grant or by lease. The former method was abolished in 1896; the latter continued until 1905 when the provision of the Land Act that authorized the granting of timber leases was repealed. Timber leaseholds thus include land, the leases of which were granted prior to 1905.

In 1901, however, the Legislature gave the right of renewal in successive periods of 21 years to the holders of all leases then in existence, and the majority of holders took advantage of this privilege.

It is in connection with this question of renewal that difficulties have now arisen, for though the Act of 1901 sets forth that at the expiry of the original period of any renewable lease the timber shall continue to be held by the lessee "subject to such terms, conditions, royalties and ground rents as may be in force by Statute" at the time of expiry, yet no provision for these has been "in force by Statute" since 1905. Leases covering 56,450 acres are already awaiting the imposition of fresh rental, royalty and conditions; the terms of others are about to expire; and the situation calls for immediate legislation. The framing of equitable conditions of renewal is, however, no easy task.

In the opinion of your Commissioners it is important that holders of timber land should receive, as far as possible, equal treatment at the hands of the Government; and that every legitimate effort should be made to equalize the dues levied under the different tenures, and to impose the same forest regulations. In the case of Crown Grant lands, in all probability, little can be done to modify existing inequalities. The periodical expiry of lease conditions, however, makes feasible an attempt to place lessees and licensees upon a footing of equality without infringing any rights that have been duly granted to lessees.

In this connection passing reference might be made to the claim sometimes advanced that the holder of a lease who has paid an annual rental for a period of twenty or thirty years is entitled to consideration upon that account at the time when the terms of his lease need renewal; that in fact these past payments constitute an investment in the timber that demands respect. It seems particularly clear to your Commissioners that the answer to this argument is that during each year of the lease the lessee has received full value for the rental paid by him; that this annual rental must be viewed in the same light as the annual fee paid by the special licensee, namely, as conferring a mere right or option to cut timber during that one year; and that the fact that the lessee may have paid rentals for 30 years does not put him in any better position or confer on him any higher rights than those he had after payment of the first year's rental. Therefore when an expired lease is brought to the Government for renewal the lessee's investment in that lease by way of rental is nil.

Upon the other side it is equally clear that the Government has no right whatever to make the terms of renewal more severe because a lessee may have been carrying his timber for many years at a much cheaper rate than his competitors in the lumbering industry. For lease renewal purposes the past does not exist.

Your Commissioners consider that two principles must be respected in fixing rental, royalty, terms and conditions for time-expired leases:

(1) There must be recognition of the fact that timber taken from leaseholds will come into competition with timber cut from licensed lands. Therefore, at no time should there be placed upon lessees any burden or impost greater than that borne by licensees;

(2) As far as the rights possessed by lessees under their contracts with the Government permit, equality must be established between the two classes of stumpage holders.

In the practical application of these principles we are confronted, however, by a question: Does the privilege of renewal carry with it the right to demand that the rental, royalty, logging regulations, and other conditions of a lease should be fixed at the time of renewal and should remain **unalterable for a long period of years** until the next time of renewal should occur? If not the difficulty of equalizing imposts disappears; but if so the two principles we have laid down come into conflict. Rental and royalty for licensees will in all probability increase within a ten or twelve-year period from now; logging regulations will undoubtedly become more rigorous. Therefore to fix for a lessee in 1911 (for example), **for a long period ahead,** rental, royalty, and logging regulations identical with those to which licensees in 1911 may happen to be subject is to give that lessee an indisputable advantage in his future competition with licensees. On the other hand to attempt a forecast of the future and to impose now, upon such lessee, conditions that represent the probable average conditions of special licenses during the next ten or twelve years is to place an immediate handicap upon that lessee in his present competition with licensees.

Recommendation. Your Commissioners do not feel called upon to pronounce upon the legal rights of shareholders with respect to renewal, but we recommend that, if it would not be any abrogation of rights presently existing, provision should be made for equalizing annually the payments of rentals and royalties as between leaseholders and licensees.

Recommendation. We unhesitatingly recommend that timber leases should be made subject to all the regulations from time to time in force concerning logging methods, the disposal of debris, protection from fire and other matters of forestry, and we beg to emphasize the importance of securing uniformity in this respect in order that a general forest policy may be successfully carried on.

Renewals. Your Commissioners recommend that as three-fifths of the lessees have the right of renewal in 21-year periods and as the privilege of indefinite renewal was also given to holders of special licenses at the last session of the Legislature, the remaining lessees should be given the same right under the same conditions as the lessees aforesaid.

Obligation to Operate a Saw Mill. While we are of the opinion that under existing leases holders who are under obligation to conduct saw mills and who are enjoying a reduction of rental upon that account, should either be compelled to carry out their obligation or to pay the full amounts of rental, yet we

consider that it would be undesirable to re-impose this obligation in any **renewal** of expired leases, since the principle involved is contrary to a true policy of conservation. It would then be possible to subject the lessees who had been relieved from any obligation to operate to the same treatment and to pay the same dues as other holders of Crown stumpage.

Rental in Advance. Diligent investigation of the books of the Department discloses the fact that very great laxity has been allowed in the payment of rental upon timber leases. Payment of rental in advance is an express condition of every lease, and your Commissioners recommend that no deviation from this principle be allowed; that the preservation of the rights conveyed by lease be contingent upon fulfillment of this condition; and that the penalties imposed upon licensees for non-payment of fees in advance should apply, in every way, to leaseholders.

An Amendment of the Land Act. Your Commissioners further recommend that sub-section (b) of sub-section (1) of section 47 of the Land Act be amended by striking out the words "as aforesaid" and by inserting in lieu thereof "or timber."

LICENSED TIMBER LAND.

Number of licenses	15,160
Number surveyed (1)	1,466
Average acreage on survey	593 acres
Percentage of shortage	7.3%
Probable total acreage	9,000,000 acres

The history of the license system has already been described in the sections of our report that deal with forest statistics (2) and legislation. (3)

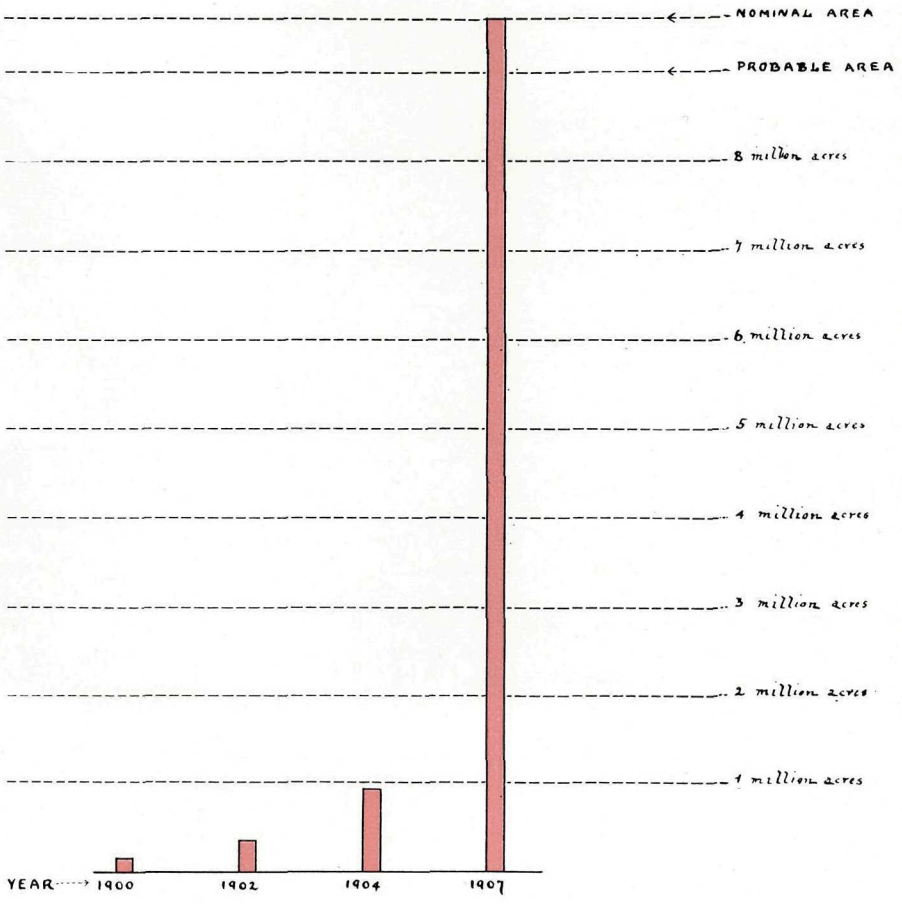
It will be remembered that the number of holdings that was probably less than 1,100 in the earlier part of 1905 began suddenly and rapidly to increase upon the passage of the Act of that year that made the licenses transferable. The growth of population in the West, the consequent awakening in the lumber trade and stimulus to speculation, were reasons on the surface that seemed to account for this eager staking of Provincial timber; but looking deeper, as the time went on, it began to appear evident that some more powerful cause was behind the movement.

In fact, realization of the limited extent of merchantable forest on the continent of North America had begun to dawn upon the more far-sighted among lumbermen. In certain regions of the United States the exhaustion of supply was already seen to be inevitable and near, while elsewhere throughout that country the remaining stands of timber had either passed into private ownership or had been included in the Federal reserves. The value of stumpage in consequence was rising high in nearly every portion of the continent. (4)

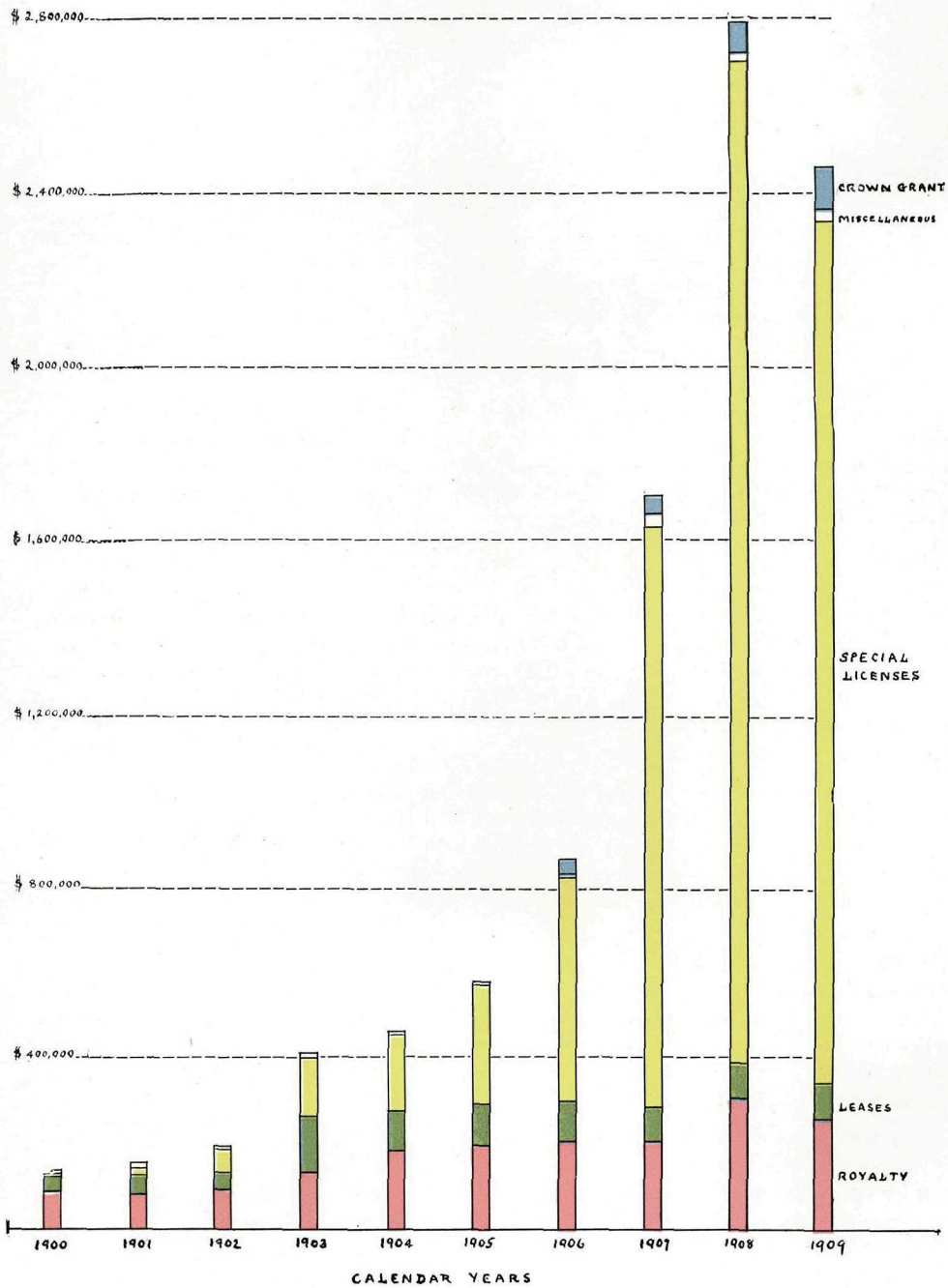
Hence the sudden opportunity of acquiring standing timber upon attractive terms and at small initial outlay afforded by the Provincial Act of 1905 brought to a head, as it were, the vague need for timber felt across the continent. As a result the staking of forests in British Columbia ceased to be a mere matter of local expediency, aroused vivid interest outside the Province, and soon assumed the proportions of a boom. Within less than three years there were more than 15,000 licenses in existence, covering by far the greater part of the Province's accessible timber land.

(1) At 18th August, 1910.
(2) See p. 22.
(3) See p. 11.
(4) See p. 37 for some instructive figures.

THE INCREASE IN AREA UNDER SPECIAL TIMBER LICENSE



THE FOREST REVENUE OF BRITISH COLUMBIA



In December, 1907, the Government of the Province, after careful analysis of the situation thus created, came to the conclusion that a sufficient quantity of timber had been transferred to private individuals and corporations to supply the full market demands of the lumbering industry for many years to come, and that until it should become more possible to forecast the future it would be wise policy to put a stop to further alienation. The decision of the Executive was made public in the following Gazette notice:

RESERVE.

Notice is hereby given that from and after the date hereof all lands in the Province of British Columbia not lawfully held by pre-emption, purchase, lease or Crown Grant, are reserved from alienation under the Land Act by way of timber license.

ROBERT A. RENWICK,
Deputy Commissioner of Lands and Works.

Victoria, December 24th, 1907.

About this time the ultimate effects of the great financial depression of America were felt in British Columbia, the lumbering industry, in particular, suffering from the general inertness of the markets. In view of the future, however, standing timber did not cease to seem desirable, and we find that within three years no less than 12,000 transfers of timber licenses occurred.

It now appeared that the merchantable value of these licenses was diminished by the fact that they gave holders possession of timber land for only 21 years at most. The Operators' Associations, basing their opinion on actual experience, estimated that no less than 140 billion feet of timber should be cut from the 17,700 licenses then supposed to exist, (1) while they placed the annual output of the Province at less than one billion feet. Even allowing for all reasonable increase in cut it was therefore evident that the marketing of that immense body of timber could not profitably be attempted within the 21-year lifetime of the special licenses.

For these and other reasons, a vigorous agitation arose among holders for an extension of the tenure, and upon our appointment as Commissioners to investigate all problems of forest administration in the Province, the matter was one of the first of those referred to us. As the Government at the previous session had announced its intention of dealing with the subject by way of legislation early in 1910, we submitted an interim report concerning it, at the request of the Honourable the Premier. The full text of this is given in the Appendix.

The conclusion arrived at by your Commissioners was that extension of the tenure of special licenses, under proper safeguards, would not work to the disadvantage of the Province. A strong argument in favour of the change, and one that had considerable weight with us, was that it would tend to the conservation of the Crown forests.

At the time of presenting the interim report we expressed an opinion that the Government should not in any way attempt to fix for all time, or even for a number of years, either the amount of license fee or of royalty payable. We had in mind the fact that great changes are at hand in western commerce and development, and that at the present time there are special difficulties in making any just forecast of the conditions that are about to obtain in the lumbering industry. One thing alone stands out from the near future with grim certainty—the value of stumpage in the West will soon be much higher than it is to-day; and therefore it seemed to us essential that the Government should preserve full freedom of action.

(1) See remark, p. 28.

In this, our final report, we desire to confirm, with no reservation, our interim opinion. Your Commissioners recommend, definitely and emphatically, that the license rentals, fees and royalty shall not be fixed for any period beyond one calendar year at any time; that the present right of the Government to regulate and adjust rentals, fees, royalties, or other charges on timber property shall in no way be restricted or limited; and that all conditions appertaining to the control of timber lands by the Province of British Columbia shall remain forever distinctly subject to such enactment of the Legislature or Order-in-Council as circumstances, at any time, may demand.

PULP LEASES.

In the year 1901 the Government of the Province decided to encourage the establishment of pulp and paper industries in British Columbia by granting leases of pulp wood lands upon very liberal terms. By an amendment to the Land Act (1) in the session of that year, the Chief Commissioner was empowered to enter into agreements with companies incorporated for the purpose of manufacturing pulp and paper.

Under each agreement, districts of the Province could be reserved from pre-emption, sale, or other disposition for a period of two years, in order to enable the company concerned to select and survey, in each reserved area, the lands suitable for its purpose. When such selection and survey had been made, leases were to be granted for a period of not more than 21 years. The annual rental to be paid under such leases was placed at two cents per acre, and a royalty not greater than twenty-five cents per cord was to be payable upon all pulp wood cut. Each company was to enter into a contract to erect, equip and maintain in the Province a mill with a daily output capacity of not less than one ton of pulp or half a ton of paper for each and every square mile included in the lease. Other terms and conditions were provided that need not be detailed here. (2)

A number of companies were at once formed to take advantage of the provisions of the Act. By the end of 1902 several separate agreements had been made by the Government and large districts of the Province had been placed under temporary reserve to enable the selection and survey of pulp wood lands to be undertaken.

In 1903 the Government appears to have reached the conclusion that sufficient land had been reserved for pulp purposes. (3) The legislation of two years before was repealed (4) and the granting of pulp concessions brought to an end. Four of the companies in possession of agreements proceeded, gradually, to locate their acreage, and from 1903 to 1907 leases of many scattered areas covering altogether 354,399 acres or 554 square miles, were issued to them.

All the companies appear to have experienced great difficulty in financing their undertakings. They proved unable to comply with the literal requirements and conditions of the leases and inspection of the files shows that they made repeated applications to the Government for extensions of time within which to fulfill their contracts. These requests were invariably granted, the Government being evidently very loath to do anything that might prevent or retard the establishment of a new industry in the Province. The result is that all the leases granted still exist, although we understand that only one of the four companies has actually constructed and equipped a pulp mill.

Both the Act of 1901 and the terms of leases issued under its provisions show conclusively that pulp wood concessions were granted by the Government with the sole idea of encouraging the pulp industry. At the outset the companies themselves disclosed no intention of utilizing their leaseholds for any purpose other than the manufacture of pulp. Yet examination of the files throws into forcible relief the fact

(1) Statutes 1901, Chap. 30, Sec. 6, amending Sec. 41 of Land Act.
(2) See copy of a lease in Appendix.
(3) Existing companies having contracted to produce over 80,000 tons of pulp a year.
(4) Statutes 1903, Chap. 30, Sec. 2.

that, sooner or later, each and every company became seized with the desirability of carrying on a lumber and saw mill business, either as an adjunct to its obligatory pulp mill operations, or as one of the main objects of its enterprise. Our attention has been called to prospectuses issued by some of the companies, which lay great stress on this as being the more profitable business.

Now if the amount of saw milling timber on these leases were very small compared with that suitable for pulp, the question would not be of much importance. But the printed statements (and obvious expectations) of the companies themselves afford proof that this is not the case. Moreover, witnesses have stated that the proportion of saw milling timber is very great and we even find, upon the files, assertions that this timber is 85% of the total stand of certain of these areas. If this, or anything like it, is correct the matter is exceedingly important and requires very careful consideration and investigation.

There is certain lack of uniformity in the wording of the leases. Some of them, with extreme explicitness, demise the lands therein described "for the purpose **only** of cutting and taking therefrom timber for conversion into pulp." (1) Others, issued at the same time, read simply "for the purpose of cutting and taking." In every case the express intention of the Government in making the grant is made plain and evident. (See Appendix: Phraseology of Pulp Leases.)

However, in the Act of 1901 there existed a proviso (2) that

> "All timber cut on Crown timber limits (3) under such lease and not used for the manufacture of wood pulp or paper will be subject to the provision of the Land Act governing timber licenses or leases in respect to royalties and returns,"

and placing their own interpretation upon this, the various companies proceeded to claim the right to cut and manufacture saw mill timber from their concessions.

To some extent the Government recognized the existence of this implied right. A letter written to one of the concessionaires in February, 1903, by the same Chief Commissioner to whom, we understand, the legislation of 1901 was due, says:

> "I was careful to inform you that by acquiring special timber licenses your company would get the right to log which is not conveyed, or attempted to be conveyed, by pulp lease."

Moreover, certain of the latter leases contain the condition that

> "the lessee shall not be entitled to cut, carry away or use, for any other purpose than for the manufacture of pulp, any of the timber on the lease unless a special license has first been taken out in that behalf, paying therefor the fees provided from time to time by the Land Act."

The situation then seems to be that these pulp lessees cannot cut and manufacture lumber without taking out and paying for special timber licenses. We understand that the Government has recently made an explicit agreement with one company at least, that these licenses shall be granted. We take it that all the lessees will obtain the same treatment in this respect, and that therefore all will be given the opportunity to take out special licenses on the area included in their leases. Assuming this to be the case, the fair and proper method of granting these must be discovered, and the Land Act must be amended to provide the Government with the necessary power to grant licenses to pulp lessees.

Your Commissioners gather from the correspondence on file that the pulp lessees have conceived the idea that they should be allowed to take out licenses in any year

(1) "The very fact that your Company objects, shows that the word 'only' must be retained." Letter of Chief Commissioner, February, 1903.
(2) Statutes 1901, Chap. 30, Sec. 6, amending Sec. 41 of the Land Act.
(3) "Timber limit" is defined by Statute as "land specified and comprised in any timber license."

upon such portions of their leaseholds as they may propose to log that year. The granting of any such unusual privilege as this would plainly give those lessees an extraordinary and most unfair advantage over their competitors in the lumbering business, whose holding charges on mill timber until the time when operation shall take place, are approximately eleven times those of the pulp lessees. A simple calculation makes evident the serious financial results of the bonus upon lumbering operations thus sought by the pulp companies.

Suppose, for example, that the mill timber on these 554 square miles of pulp leaseholds were to be logged off within the 21-year lifetime of the present leases. . . . Then the pulp concessionaires, by taking out licenses in each year to cover immediate logging operations only, might find it possible to remove all the mill timber on their lands at the following expenses:

21 years' pulp lease rental on 554 square miles at $12.80 per mile per annum	$148,915
1 license to cover the logging of mill timber on each square mile of pulp lease, a total of 554 licenses at $140.00	77,560
	$226,475

The steady logging within 21 years of the same area of timber land in the hands of special licensees of the Province would involve holding charges to the latter at an average life of 11 years per license, of no less than $853,160; a difference in favour of the pulp lessee of no less than $626,685—a sum that would be greatly increased should a larger average holding period be found necessary.

Allowance, again, might be made for the fact that on account of the way in which the various parcels of each lease are scattered in each district, and on account of the irregularity of their boundaries, it would be impossible for the holders to make an exact division of their leaseholds into 640 acres of the shapes that may be held under special license; and that, therefore, they would be put to the expense of paying full license fees upon a number of fractional areas. We might go so far as to imagine that the pulp lessees would be able, on an average, to stake no more than 320 acres in the legal form, under each of the licenses they were obliged to use. Upon even this generous assumption the pulp lessees would be paying $549,125 less than their competitors.

Had we compared the holding charges for a 42-year tenure the difference would have been more crushing. Upon similar assumptions (1) the special licensees would be at a disadvantage of over $1,170,000 in actual payments. We take no account in this of the effect of interest, nor of the fact that any future increase in license rental would accentuate the inequality.

Besides creating inequality between holders of mill timber the existing method is most unprofitable to the Government. Instead of receiving an annual rental of $140 for each square mile of the mill timber comprised in the pulp leaseholds the Government receives but $12.80 from the present holder as payment for his option on the timber; a further illustration of the need for legislation.

Your Commissioners do not wish to be understood as opposed in any way to pulp concessions. We agree thoroughly with the idea that the Province would derive great benefit from the establishment of the pulp and paper industries and we would endorse the granting of liberal terms for their encouragement. But we take the position that the liberality should be strictly confined to the pulp side of each enterprise.

Operations on pulp wood in any virgin forest must inevitably place in jeopardy of fire the saw mill timber standing there, and there is no doubt that the cutting of the one must be accompanied by the logging of the other to avoid loss. Hence there

(1) Taking average tenure at 21 years for the licenses.

exists the greatest need for care lest well-meant efforts to encourage a new industry should transform themselves, in practice, into the mere granting of an unintentional bonus to lumbering and saw milling concerns. The danger of this has caused your Commissioners to form the most decided opinion that the pulp lessees should not be allowed logging privileges unless they pay holding charges that bear fair comparison with those imposed upon the holders of special timber licenses.

It is a matter of some difficulty to reach a conclusion as to the proper basis upon which licenses should be granted to pulp lessees. Moreover as the "Land Act" now stands it is doubtful whether the power of issuing licenses upon pulp leaseholds exists. Under section 54 special licenses can only be granted on "Crown lands" which are defined to mean **"ungranted Crown lands."** Is not a pulp lease a grant, limited it is true, but still a **grant** of Crown lands? If this were not so it is certain that the timber, other than pulp wood, on these leases would have been open to other applicants for special timber licenses, and would have been taken up by them before the imposition of the Reserve in December, 1907.

In any case there are reasons why the ordinary special license method with its rental cannot in fairness be applied to pulp leaseholds. For instance, the manner of staking prescribed by the "Land Act" would make it impossible to hold irregularly shaped areas such as these under special licenses unless the fees for full square miles were paid upon innumerable fractions, nor would allowance be made for the fact that the pulp lessee is already paying two cents per acre rental.

After full consideration of the difficulties involved in each possible solution your Commissioners have come to a firm conclusion that a sound and equitable method of granting licenses on pulp leaseholds would be the one recommended in the following paragraphs to the careful consideration of the Government.

To begin with, a careful and thorough cruise of the leaseholds should be made by the Government in order that the separate qualities of pulp wood and of saw milling timber upon each area may be ascertained and compared. Apart from any other reason this cruise should be made for the information and general guidance of the Government in matters of pulp wood legislation.

For the particular purpose of granting lumbering rights to the holders of pulp concessions examination of each leasehold should be accompanied by a cruise of neighbouring licenses, so that the average stand of saw milling timber held under license in that locality may become known. Each concessionaire should then obtain the right to cut mill timber under a new form of license covering every portion of his acreage in the district, whose rental per acre should bear the same proportion to a sum of two cents lower (1) than the rental per acre payable that year by special licensees that the average stand of saw mill timber on the lease bears to the average stand of saw mill timber under license in that district.

For the sake of clearness we give an illustration of the method. Suppose the stand of mill timber on a pulp leasehold was found to average 10,000 feet per acre, while the stand on licenses in that locality was shown by cruise to average 15,000 feet. Suppose further that the license rental in the year considered was 22 cents per acre. Deduct two cents from this sum to balance the pulp lease rental, and twenty cents remains.

Then the pulp lessee would pay for the right to lumber a rental per acre bearing the same proportion to twenty cents that his stand of 10,000 feet bears to the local stand of 15,000 feet. In other words he would pay two-thirds of twenty cents as rental; that is, his license fee would be 13 1-3 cents per acre, apart from his pulp lease rental.

(1) 2 cents being the rental already paid by the pulp lessee.

Your Commissioners recommend that all pulp lessees should be required to make application for license to cut mill timber upon their leaseholds within six (6) months from the passage of the legislation that will empower the Government to grant such licenses. The making of application within the time specified should be an essential condition.

Upon receipt of an application for a license the Government should proceed forthwith to ascertain by cruising, in the manner described above, the rental payable therefor. As soon as this information has been obtained the fees from the date of application should be paid at once and the license should issue.

Any pulp lessee who fails to make application or payment in the manner prescribed above should forfeit all right to cut mill timber on his leasehold, and thereupon this timber should lapse into the Reserve.

Your Commissioners also strongly recommend that in enacting such legislation the Government should make it perfectly clear that this particular form of license can only be issued to holders of pulp leases, and the tenure of the same is dependent upon the pulp lease itself, and that such special form of license shall cease and determine with the termination or cancellation of the pulp lease with respect to which it is issued.

As the stand of saw mill timber on a pulp concession becomes reduced by logging a corresponding reduction should take place in the rental of the license covering the leasehold area; in order to place the lessee approximately upon an equality with licensees who have the power of reducing their holdings, mile by mile, as logging is completed. Your Commissioners suggest that this reduction should be adjusted annually.

HEMLOCK LEASES.

Your Commissioners recommend that the holders of hemlock, or tanbark, leases should be required to take out licenses to cut mill timber upon their leaseholds; and that the procedure, in granting these licenses, should be identical with that laid down for pulp lessees.

APPLICATION FOR LEASE RENEWALS.

The renewal of timber, pulp or hemlock leases before maturity should not be allowed. Application for renewal should be made at least three (3) months before the date of expiration.

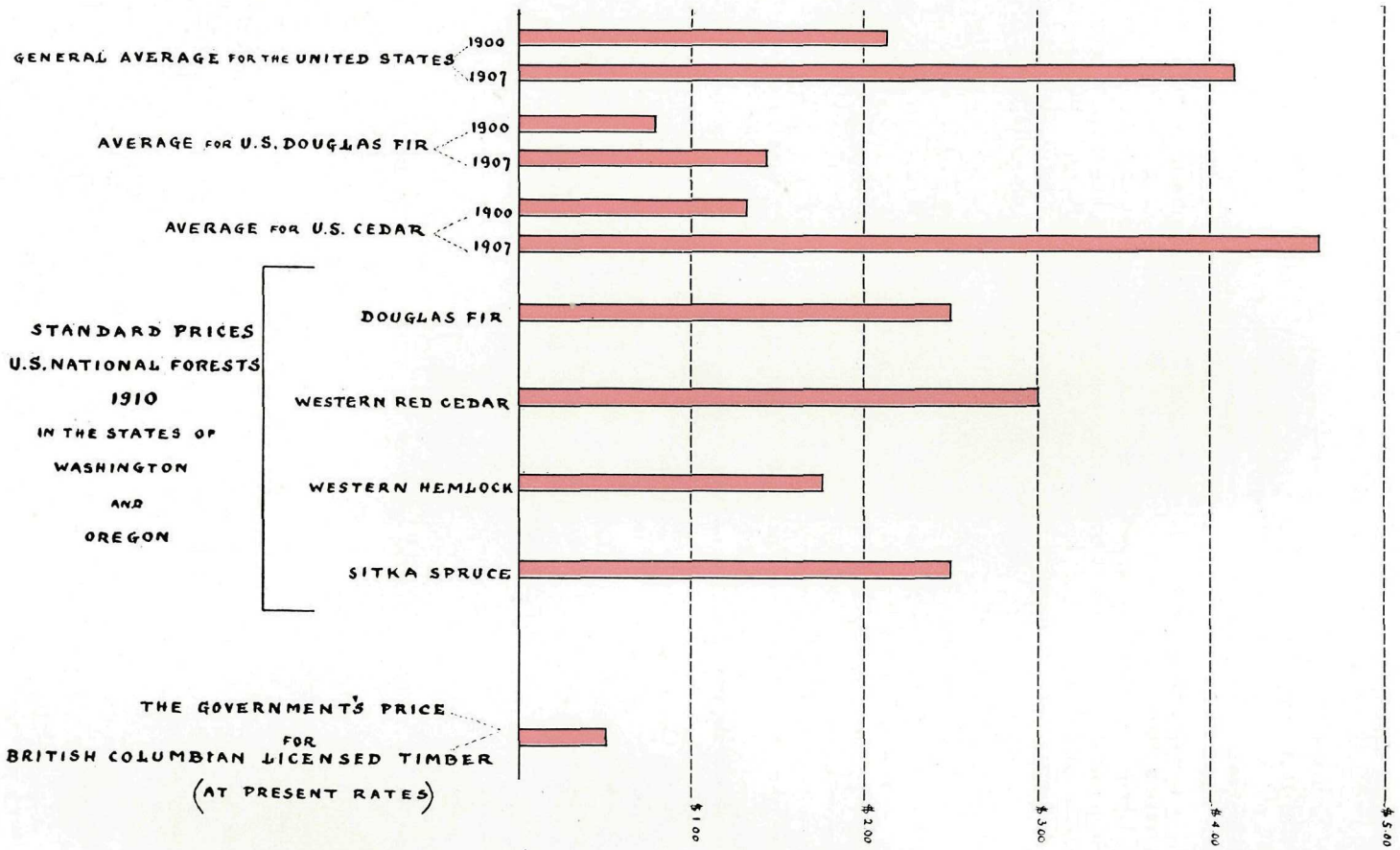
UNALIENATED TIMBER LANDS.

As we have remarked elsewhere the most conflicting opinions exist concerning the extent of the timber areas that remain unalienated. We may suppose that one-quarter of the forest under Provincial control remains in the present reserve; we may go further and place the figure at one-third. The unalienated timber land would thus be estimated at 3,750,000 acres or at 5,625,000 acres. Were we to average the stand at some arbitrary figure such as 12,000 feet per acre we should obtain 45 or 67 billion—either figure being of course a pure conjecture. It is conceivable that the truth may lie between the two.

Though vague guesses such as these are devoid of serious value they give expression to a feeling that exists in the Province that the amount of merchantable timber remaining in the hands of the Provincial Government is not unimportant, though it may be less accessible than that transferred to private control. The formation of a consistent and comprehensive policy for the management of this unalienated timber therefore demands careful thought.

Your Commissioners venture to congratulate the Government upon their action in imposing the Reserve by Order-in-Council of December, 1907. We urge, most

THE PRICE OF STANDING TIMBER PER 1,000 FEET



strongly, that such reservation be continued indefinitely and that no further alienation of timber lands take place, except under very special circumstances.

More or less authoritative statements were submitted to the Commission to the effect that a very high percentage of alienated timber lands were held by non-operators. Should such a circumstance, or should any combine among operators lead to monopoly conditions in the Province, and should the financial control possessed by the Government over license rental and royalty fail in any way to subdue commercial symptoms of this character, it might therefore, in that future time, be found expedient to throw areas of Reserve timber into the market. A great increase of lumbering operations in the Province followed by a need for increased supplies of standing timber might justify the disposal of other areas. Again it might be proved that the opening of small portions of the Reserve was needed, in some districts, to supply lumber for local requirements; or it might become necessary to save fire-damaged timber from waste by immediate logging operations. Valid reasons might thus come into existence, from time to time, for the alienation of timber standing in the present Reserve.

In view of this your Commissioners recommend that all future sales of timber from the Reserve should be conducted in the following manner:

Each berth, after exploration by the forest officers, should have its boundaries fixed by actual survey. The timber should be cruised and an upset price fixed per thousand feet for each important species. The license to cut timber on the berth should then be sold by public auction, the bids being the amounts per thousand feet that applicants would pay in addition to the royalty as and when the timber is cut. A cash deposit of at least ten per cent. (10%) of the total bonus he had offered should be made at once by the purchaser, as a guarantee that operations will be conducted in accordance with the regulations. The annual renewal of the license should be subject to the same rental per acre, and to the same conditions and penalties, as those imposed, by the provisions of the "Land Act" then in force, upon the special licensees of the Province.

In all such sales it should be made a condition of the license that the timber should be removed within five years.

In order to avoid loss to the Province, reserved timber damaged by fire should be sold by auction, in the manner described above, for removal within a three-year period. Areas to be sold should be divided into natural logging berths and also into square mile units. Alternative tenders should be required from each applicant.

FRACTIONAL AREAS AT PRESENT RESERVED.

Your Commissioners recommend that all fractional areas of timber land adjoining existing leaseholds or timber limits should be disposed of when the areas of such fractions shall have been determined by survey, and when the forest officials shall have cruised and reported upon the timber thereon. The licenses to cut timber upon these fractional areas should be put up to public competition at an upset price per acre or per thousand feet determined, in each case, by the Chief Commissioner. The annual license fee payable on any fraction should bear the same proportion to the full license that the fractional area bears to 640 acres.

For all such purposes the words "Fractional Area" should receive the most careful definition in the Land Act; in order to prevent disguised enroachment upon the legitimate areas of the Reserve.

AGRICULTURAL LAND.

Your Commissioners endeavoured to obtain evidence concerning the extent of land at present held under timber lease or license that would, when cleared, be suitable for agricultural purposes. The opinions of witnesses were found to vary very greatly

upon this point, and such agricultural land was estimated in different districts at any amount between nothing at all and 50% of the timbered area.

There can be no doubt, however, that within the boundaries of the leasehold and licensed lands there are tracts that would be eminently suitable for agricultural purposes. Your Commissioners recommend strongly that full reports concerning the nature of the land accompany every survey and cruise made by the Government in both alienated and unalienated areas; that the power to compel licensees to cut and remove the timber from any portions of their holdings contained in the amendment of the "Land Act" made last session, should be retained; and that timber leaseholds whose terms and conditions come before the Department of Forests for renewal should be subjected to a similar provision. The power thus vested in the Chief Commissioner would, of course, only be exercised after investigation had proved conclusively that the need for opening any area for agricultural purposes was stronger than the reasons for reserving it for the growing of timber.

HANDLOGGERS' LICENSES.

We have had considerable difficulty in coming to a definite conclusion with regard to this form of license. As we have already mentioned in the history of legislation the issue of handloggers' licenses was first authorized in 1888. Under these licenses, at the outset, no restriction was placed upon the method of logging and holders were given the general right to cut ungranted timber of the Crown in any locality whatsoever. The privilege, however, was personal to each licensee, and could not be transferred.

These terms and conditions remained unchanged until the year 1906, when a provision was inserted in the "Land Act" to forbid the use of steam machinery by handloggers. Two years later a further amendment restricted the cutting of timber under these permits to certain districts of the Province. In 1909 this restriction was removed, but the cutting of timber under each permit was limited to a certain definite area specified in the document; only persons on the voters' list and Indians could become licensees; and the fee was raised from $10 to $25.

In 1907	the	number	of	these	licenses issued was..... 572
" 1908	"	"	"	"	 30
" 1909	"	"	"	"	 65

The only restriction upon logging methods imposed by the present form of handlogger's license is thus the prohibition of the use of steam power. Cutting is subject to no control; debris can be left in any condition that suits the operator; and it is obvious that it would be a matter of extreme difficulty and expense to enforce any regulations that might be framed. In the past this particular form of license has given rise to great abuses, since logs have been taken from lands held under lease and special license as well as from ungranted Crown lands.

Therefore, it seems to us contrary to the principles of true forest conservation to permit the cutting of timber under conditions that cannot be controlled. The unrestricted culling of trees and the careless creation of conditions favourable to forest fires must depreciate the value of Crown stumpage in the neighbourhood of such operations.

In the past handlogging doubtless gave the means of livelihood to many men who otherwise would have found it difficult to obtain employment. But the present conditions of the lumbering industry make it very evident that handlogging licenses could be abolished without serious inconvenience to the small number of men who now possess them.

Your Commissioners have therefore reached the conclusion that it would be advisable to discontinue the issuance of this form of license. Should this step, however,

be deemed inexpedient, we would urge strongly that the operations of handloggers should be placed under strict supervision by the Department of Forests, and that every attempt should be made to compel the proper disposition of debris and to enforce logging regulations.

THE TRANSFER OF LICENSES.

Section 61 of the "Land Act" provides that every assignment of a special timber license shall be **filed** in the Department of Lands; but the section does not indicate the legal significance of this filing. We doubt whether any transfer other than that of the whole license was contemplated by the Legislature in making this enactment.

Officials of the Department of Lands inform us, however, that transfers of undivided interests have been filed frequently; and that various holders of undivided interests have even claimed to be entitled to the renewal of their interest on payment of the proportionate part of the license fee. Money thus tendered has invariably been refused by the Department.

We recommend that the section be amended so as to provide that the filing of a transfer should be full notice to all parties interested. It should also be made clear that, while transfers of interests may be recognized, the license fee itself is indivisible and that therefore no license, or any part thereof, can be renewed without payment of the whole license fee.

ANNUAL RENEWAL OF LICENSES.

The fact that each license has its own date of renewal, and that a penalty is imposed for any delay in rental payment, caused license-holding witnesses who appeared before us to complain of the difficulty of remembering the many dates upon which payment of rental fees should be made by them. To meet this complaint, however, your Commissioners do not think that it would be advisable to mature all licenses at the same day of the year. The holder of a large number of licenses, for example, might find it inconvenient to provide at one time the whole amount for the renewal of all his licenses. Again, from the point of view of the Government, as a matter of Departmental routine, it would be impracticable to receive rental payments and issue some 15,000 renewals at one fixed date; while, furthermore, it is advisable that this revenue should reach the Treasury in monthly rather than annual amounts.

It occurs, however, to your Commissioners that a reasonable method of meeting the complaint of licensees would be to fix a date, say the fifteenth of each month, for the renewal of every license that expires within that month; and we would recommend that this be done. In carrying out this recommendation the Department could be instructed to adjust the fee payable, either by rebate or by addition; so that due account should be taken of the days lost or gained upon each license.

RECOMMENDATIONS CONCERNING REGULATIONS

THE REGULATION OF CUTTING.

As one of the most important of all matters submitted to their consideration the manner in which cutting operations are conducted in British Columbia was made the subject of inquiry by your Commissioners, whose attention had been called to the fact that in other forest countries and regions legislation has been found necessary to prevent unnecessary destruction of standing timber.

At the outset your Commissioners were met by the argument that logging operations in this Province were in the hands of practical business men engaged in supplying a certain market demand for lumber; that the inference was that the forest was receiving the best treatment that was commercially possible; that it was absurd to suppose that any timber that could be profitably removed would be left to burn or rot upon cut-over lands; and that any arbitrary regulation of cutting by the Government would be improper interference with the natural trade conditions of the lumbering industry.

Light was thrown upon this local view of local conditions by the experience of countries in which forest exploitation has reached a more advanced stage than it has, at present, in this Province. Everywhere, in the early developments of lumbering, cheap stumpage is seen to have been accompanied by butchery of wood; for human nature is careless of anything of low commercial value, especially when the supply seems inexhaustible and waste costs nothing to the waster. Where stumpage has risen high in value this state of things has come to an end automatically. Elsewhere a simple legislative remedy has been applied. Operators have been asked to pay for the merchantable timber operated on; not merely for such portion of it as their workmen might choose to cull.

As an example of modern cutting regulations we give in the Appendix a sample of the contracts under which logging is done, now-a-days, upon the U. S. National Forests in Washington and other Western States. Under conditions of great stringency the price per thousand feet of timber has nevertheless risen higher, in many cases, than the price obtained by the Federal Government **per acre** but a few years ago. The commercial results of regulation are thus proving as gratifying in the West as they have done in every important forest region of Eastern Canada where the waste of timber in tops, high stumps, left logs, neglected trees, skidways and other construction, is penalized.

Your Commissioners after most careful examination of the theory that unrestricted liberty to allow workmen to cull, destroy, and place in jeopardy of fire, the Crown timber of the Province is a fundamental element of profit in British Columbian lumbering, have come to the unanimous conclusion that it is unsound. We are of the opinion that the time is now opportune for the enactment of regulations that will prevent the misuse of the public estate by operators, provide for the future of the lumbering industry, secure to the Provincial Treasury revenue that now goes needlessly to waste, and give protection from fire not only to the standing forest that forms the present crop but also to the growing timber on cut-over lands upon which our commercial existence as a forest Province will one day depend. Permission to use the public forests must carry with it the obligation to cut clean.

Your Commissioners are convinced that the unnecessary waste of wood and loss of public revenue now caused by careless operation can be discouraged by levying royalty upon the waste; and that an efficient means of enforcing regulations will be provided by the establishment of a Department of Forests on the lines suggested in another section of this Report.

Your Commissioners recommend that:

1. All live trees containing merchantable timber and having a diameter of not less than 14 inches at a point 4½ feet from the ground shall be cut;

2. Every tree cut shall be utilized to a diameter of 10 inches at the top and lower when possible; and log lengths shall be so varied as to make this possible;

3. Stumps shall be so cut as to permit of the least possible waste. A standard height for each district shall be fixed by the Department of Forests;

4. All dead timber sound enough for any merchantable grade, or for dimension timber, shall be cut.

5. All cutting shall be done with a saw when possible;

6. All live trees containing merchantable timber; all merchantable timber left uncut; all merchantable timber cut and not removed from the land; together with timber wasted in tops, stumps, lodged trees, and partially sound logs shall be scaled and paid for at the royalty price per thousand feet then in force.

Other regulations will, no doubt, suggest themselves from time to time to the Department of Forests, but your Commissioners are of the opinion that the foregoing are very important and should be established without delay, for the control of all logging operations upon leasehold and licensed timber land, and upon Crown Granted lands the timber on which is subject to royalty.

THE PROTECTION OF FORESTS FROM FIRE.

As settlement progresses in each thickly timbered country public opinion goes through the same inevitable changes. At first forest fires are looked upon as a natural accompaniment to the routine of progress and development; indeed they may even seem desirable means of opening up new territory. Then, as the lumbering industry obtains the control of small areas of timber land, these fires appear as a vague menace to private interests; a menace, however, that arouses little anxiety since, when timber is destroyed, there is no difficulty in obtaining elsewhere in the immense unused forest the grant of fresh sources of supply. After this comes the time when men realize how limited is the amount of merchantable timber and how valuable it must soon become. The holding of timber lands becomes a profitable form of investment and in consequence most of the accessible forest passes into private control. At this stage fires cause direct injury to private interests by actual destruction of timber held; they damage a source of public revenue; and their prevalence deters investment and acts as a drag upon the rise in stumpage values. The attention they thus arouse soon causes the remarkable discovery that it is often possible to minimise the damage they can do by spending money upon fighting them. The lumbermen and government co-operate, money is actually obtained, and the protection of the merchantable forest is begun. The final stage is reached when both Government and people realise that the protection of **merchantable** timber is but a part of the work that must be done; that the young growth on cut-over lands needs equal care, since upon it depend the future of the lumbering industry and much of the future commerce of the whole community; and that money and effort must be invested in the **prevention** of forest fires as well as in the **fighting** of those that have been allowed to spread.

Your Commission note with pleasure that in this Province the Government is strongly impressed with the need for forest protection. It began some four years ago

by making an appropriation in the estimates for the purpose, and by placing men upon patrol in different forest districts. This appropriation it has continued and increased each year. (1) We note that the recommendation contained in our Interim Report that a further substantial increase should be made, was adopted by the Government; and that in consequence the amount voted for 1910 was almost double that for 1909.

Though a good beginning has thus been made, your Commissioners are strongly of the opinion that much remains to be done in this Province. The magnitude both of the public forest revenue and of the private lumbering interests justify a large expenditure in the insurance of the present forest crop. Moreover, to quote Dr. Fernow, "the conditions in British Columbia are most favourable for natural re-afforestation," and the consensus of opinion is that **provided fire be kept out** the growing timber on cut-over lands will make the yield of lumber permanent. Protection from fire is thus the supreme need of our forests; and to secure it the most thorough-going methods are demanded.

Disposal of Debris. Your Commissioners consider that more effort should be devoted to the **prevention** of conditions that cause unnecessary risk of standing timber of the Crown, and that lead almost inevitably to the destruction of young growth on cut-over lands. We are pleased to notice that the disposal of debris has already been undertaken, as a matter of business, by various logging companies in the Province; and we are of the opinion that the practice should be extended. That workmen, when removing logs from the forests, should be free to leave debris in any manner that may suit their own convenience without the least regard for the safety either of the cut-over area or of the adjoining forests, is a condition of affairs that calls for some restriction.

We recommend that the example set by other forest administrations on this continent should be followed in this Province, and that this regulation should be enacted:

In all logging operations upon timber lands in the Province of British Columbia the persons responsible shall dispose of the tops, branches and other debris, in such a way as to prevent, as far as possible, the danger of fire; such disposal being made to the satisfaction of the officers of the Department of Forests.

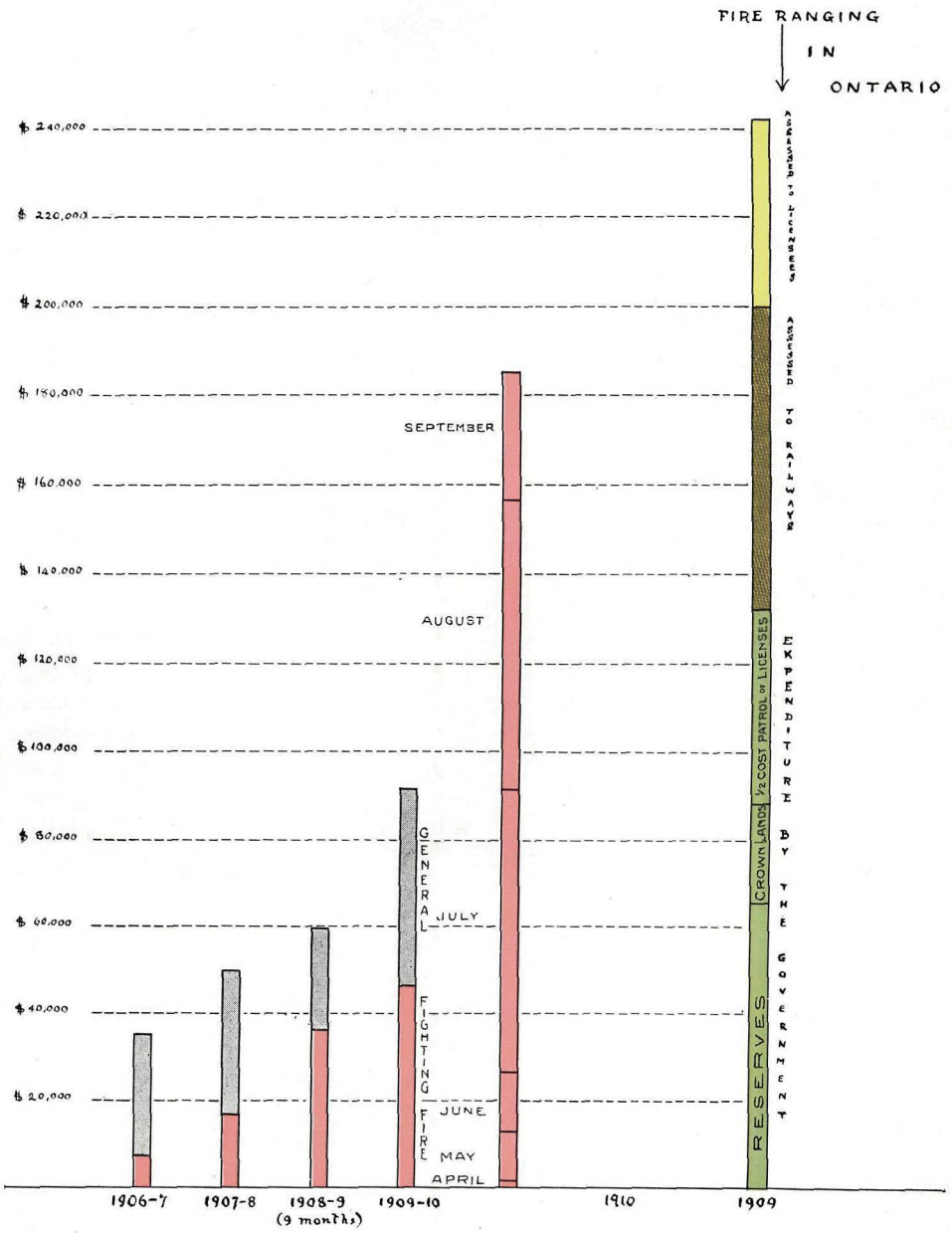
No reason exists why operations upon Crown Grant and railway property should not be subject to this regulation, as there can be no uncontrollable right to conduct logging to the common jeopardy of surrounding forests of the Crown inherent in the private ownership of timber lands.

Fire Patrol System. Your Commissioners recommend that the general protection of our forests from fire should be undertaken by the Government. That the work may be performed in a thorough and systematic manner its execution should be entrusted to a permanent forest organization such as that proposed by us in the section of our Report dealing with the establishment of a Department of Forests. We suggest that the Province be divided into Forest Districts; that in each district a superintendent should control a body of permanent rangers; and that these rangers should act as foremen in charge of patrolling fire wardens enlisted for the dangerous months of the year.

Our attention has been directed by several witnesses and especially by the Chief Fire Warden of the Province, to the difficulty that often occurs in obtaining the necessary number of men to fight a forest fire, and to the fact that in many cases men have refused to work unless they were given wages at an exorbitant rate. To obviate this we would recommend that, following the example of Germany, and of various States of the Union, the permanent forest officers should be given power and authority to

(1) See figures given on page 35.

FOREST EXPENDITURE IN BRITISH COLUMBIA



compel men to assist in fighting fires whenever necessary; that a penalty should be inflicted upon those who refuse their aid; and that the rate of wages paid should be the current rate for labour in the district concerned.

Sharing the Cost. Under the various tenures in this Province the holders of timber lands and the Government share as partners, to some extent, the profits of forest exploitation. The cost of protecting the forests from fire should therefore be shared as well.

We recommend that in addition to local expenditure each district should be charged with its due proportion of office and departmental expense connected with this work; and the total cost thus ascertained should be divided between the interests concerned in the following manner: During the next few years, and in particular until the survey of licensed timber lands has been completed, the Government should pay half the total cost in each district and the holders of timber lands, each assessed in proportion to his acreage, should contribute the other half. But as soon as the extent of the unalienated timber lands in any district has been ascertained to the satisfaction of the Department of Forests, the Government should bear the full expense of protecting this portion of the Reserve; such amount being taken to be the same fraction of the total district expense that the unalienated acreage is of the total district acreage of timber land. The remaining expense should be shared equally, between Government and timber holders, as in the previous case.

In the State of Idaho, where more thorough attention than elsewhere in the West seems to have been given to organized protection against fire, a system similar to the one we have outlined is already in force, and the average cost per acre to the timber holder is found to be small in comparison with the advantage he derives. Ontario after a long successful experience with a kindred system has now obliged her holders of timber land to pay the whole expense of their protection.

The Control of Railways. It is a truism that railways are the most frequent cause of fire in any timber areas through which they pass. The great majority of witnesses examined by us were somewhat emphatic upon this point.

Though there seems to be considerable doubt as to the power of the Provincial Government to enforce regulations against any railway company that is under Dominion jurisdiction, your Commissioners urge, nevertheless, that every effort should be made to minimise the dangerous conditions that exist at present. Stringent regulations should provide during the dry months for a thorough patrolling of the railway track after the passing of every train through a timbered district; the provisions of the Railway Act concerning the clearing of the right of way should be embodied in regulations that should be enforced; wherever practicable oil should be substituted for other locomotive fuel in timber sections during each summer, while elsewhere the use of the most modern and efficient spark arresters, and their frequent renewal, should be insisted on. Fire Wardens should be empowered to inspect any locomotive at any stopping place should they have reason to suspect any failure to comply with this last regulation. The aid of the Railway Commission should be invoked should the enforcement of these essential provisions for the safety of forests prove, in the case of any Company, to be beyond the jurisdiction of the Provincial Government.

Your Commissioners are pleased to report that in an interview with the Railway Commission they obtained an unqualified promise that Provincial Fire Wardens, whose duties should include the examination of locomotives, the patrolling of the right-of-way of any railway, or the supervision of new construction in timbered districts, and whose names should be submitted to the Railway Commission, would immediately be given power to act as officials of this Commission in all matters concerning the prevention and the control of fires.

We, therefore, urge that as soon as the formation of the Department of Forests is undertaken the Government should take the matter up with the Railway Commission so that even for the season of 1911 Provincial Fire Wardens may be clothed with full authority.

Railway construction, on a large scale, is about to take place in the Province. Unless an efficient patrol system is put in force by the Government, railway construction will spell forest destruction. For example, there is said to be heavy timber the whole way from Tete Jaune Cache to Fort George, covering a very large area. In evidence given before the Commission a witness who has cruised in that belt of timber says "unless there are regulations as to the construction of the Grand Trunk Pacific that country is going to be burnt up. It is virgin forest and very inflammable. There should be special legislation." It is a matter of common knowledge that the blackened record of railroad construction in the past justifies to the full forebodings such as these.

Your Commissioners urge emphatically that the Provincial Government, in any contracts it makes with the railway companies, should take care to insert the most stringent conditions to provide for thorough patrolling during the time of construction of all timber lands adjacent to the right-of-way, and to compel the proper disposal and destruction of all debris caused by their operations or lying near the roadbed, to the satisfaction of the Forest Officer in charge.

Any railway company that obtains permission to cut timber upon vacant Crown lands for use upon its line should be subject to the general Provincial regulations concerning the cutting of timber and the disposal of debris. Such permission should only be granted on the express condition that the Company give formal notification to the Department of Forests before commencing logging operations, so that due supervision may be exercised by the Provincial officials. Heavy penalties should be attached to the breaking or the non-observance of any of these regulations.

Public Opinion. In conclusion your Commissioners wish to emphasize the necessity of educating public opinion in British Columbia in order that our forests may be the better protected from stupidity and carelessness. In the words of a member of the Washington State Commission: (1)

"The interest of the community in every foot of standing timber is five-fold greater than that of the individual man. The railroad will set fire to its right-of-way promiscuously and destroy millions of feet of standing timber and millions of dollars of future traffic without an effort towards prevention. The logger will operate his donkey equally as recklessly as long as he thinks his own property is safe. The farmer will set a slashing fire that will destroy hundreds or thousands of acres of adjacent timber, the development of which would bring railroads to his doors, build towns and cities in his vicinity, increase his markets and enhance the value of his lands. The camper will likewise leave, carelessly, a fire to destroy at its pleasure, property whose loss will be felt by an entire State. We can do more good for fire protection by educating any cross-road congregation, than the most august body of lumbermen that ever met in session."

SURVEYS OF LICENSED TIMBER LAND.

In granting the privilege of annual renewal over a long period of years, the amendment to the Land Act made in 1905 imposed the express condition that no holder of a transferable license "shall be allowed to cut or carry away any timber from any such timber limit until the said licensee has, at his own expense, had the land surveyed by a duly qualified Provincial Land Surveyor." (2)

(1) Frank H. Lamb.
(2) Sub-section 5 of section 57.

It appears that in past years frequent violation of this condition has occurred. We also note that not 10% of the special licenses have been surveyed. (1)

Power is given to the Chief Commissioner, by the sub-section of the Act to which we have referred, to compel the survey of any licensed timber land at any time. It was pointed out by several witnesses that the exercise of this power would lead to the detection of overlapping in the staked areas and doubtless cause the abandonment of various licenses and a consequent loss of public revenue. On the other hand a general survey of timber limits would enable the Government to discover the boundaries of the many fractional areas that lie between the alienated lands. By the sale of the licenses to cut timber upon these fractions in the manner proposed by us elsewhere in this Report, (2) a very considerable area of forest that is now unproductive would become a new source of revenue.

Putting such considerations aside, your Commissioners consider that the interests of the Province make it absolutely necessary to ascertain the boundaries of the licensed timber lands so that disputes as to title may be brought to an end, the maps of the Department may be made accurate, and the Government may obtain definite information concerning the areas alienated and be enabled to deal intelligently with the Reserve timber.

We therefore recommend that the Chief Commissioner should at once notify each and every licensee that he must proceed forthwith with the survey of his timber limits. The time allowed for the completion of such work should be at the discretion of the Chief Commissioner and should depend upon the location and accessibility of the limits concerned. In no case should it be later than the 31st day of December, 1915.

As a matter of office routine we would suggest that, in addition to any other notice that may be sent to licensees by the Department, there should be attached to each license renewal a special slip printed in red, calling upon the holder to survey the limit.

THE FURNISHING OF RETURNS.

From the very beginning it has been a nominal condition of every timber lease that the holder should keep correct books of account and should make monthly returns to the Chief Commissioner concerning all cuttings of logs. The Land Act places each licensee under a similar obligation, while the timber tax provides a method of securing returns from operators on private timber lands.

Up to the year 1910, however, the collection of information in the Province does not seem to have received attention. Such statistics as have been published appear to have been based more or less upon conjecture. The investigations of your Commissioners have been hampered by the lack of reliable data.

The forests have of late years assumed a position of very great importance to the Treasury, over 40% of the entire public revenue being derived from them in the fiscal year, 1909, and over 30% in 1910. (3) Moreover, from what has been already said (4) the present forest revenue may be expected to show a very great increase as the general rise in stumpage produces its inevitable effect upon the value of standing timber in British Columbia.

Your Commissioners are of opinion that, on account of the many complicated problems connected with the administration of this important source of Provincial prosperity, the systematic collection of a great variety of information is necessary. We recommend in particular that the existing regulations requiring holders of timber lands to furnish detailed information should be made more explicit, and should be enforced.

(1) At August 18th, 1910. See page 27.
(2) See Fractional Areas, page 55.
(3) 30% for the period 1910-1911.
(4) See discussion, p. 20.

Through sworn statements obtained at regular intervals the Province should obtain knowledge of the exact site of all cutting operations, the quantity and destination of timber cut, and other matters pertinent to its forest industries.

The exact form that these returns should take would be from time to time the subject of regulations by the Department of Forests, whose officials would be able to check information thus obtained by personal inspection of the ground.

ADMINISTRATION

RE-AFFORESTATION.

Your Commissioners have come to the broad conclusion that upon two conditions natural re-afforestation will take place in British Columbia. Firstly, both the young growth and the old must be protected from fire; secondly, there must be exercised a firm control over the methods under which the present crop is being removed. In short, effective re-afforestation depends largely upon effective discouragement of waste.

By protection from fire we do not mean the mere temporary employment, here and there, of men to fight conflagrations that have been allowed to spread. We have in mind the active **prevention** of fire by the systematic work of a well-knit organization such as that described in the next section of our Report. This work would include, as a matter of urgency, the task of evolving for each locality in the Province a sound method of dealing with the reckless style of lumbering that leaves, in every cut-over area, a fire-trap of debris. That the young timber, upon which our whole future as a lumber-producing country depends, should be left at the pleasure of any thoughtless workmen to grow up amid the tangled wreckage of lumbering, under the imminent menace of fire so heavy that it may serve to destroy not only reproduction but even the soil that makes the growth of valuable species possible, is so absurd, commercially, that an attempt at regulation is imperative. Forest insurance by compulsory handling of debris may cause some moderate expense to operators; the liberty to turn the woods into one vast fire-trap causes infinitely more, in the long run, to all parties concerned, by increasing the cost of patrol in such dangerous localities, by causing damage to mature timber and to general property, and by destruction of young growth. The cheapening of logging methods is not the whole business duty of the individual operator. The permanent benefit of the lumbering industry must be considered.

We are convinced that experiment and investigation will prove, in the case of our forests as in the case of city buildings, that wise regulation can do much to diminish the risk of destructive fires. We consider also that the cost of handling the debris of logging will be found much less than many operators fear, and that within a few years the beneficial results of a firm policy will cause prejudice to die away, and enlist the hearty co-operation of every stumpage holder in the Province.

Your Commissioners must leave to the future Department of Forests the task of discovering what can be done by regulation to prevent inferior species from replacing our more valuable trees. But we have had no difficulty in deciding that certain restrictions on the liberty of the operator to waste public timber must be imposed forthwith, and in foreseeing that the investigations of the Forest Service will suggest methods of making these more thorough. Careful utilization of mature accessible forest will help re-afforestation by delaying the day when the demand for lumber will fall upon the growing crop.

In recommending that the Government should restrain the present wastage due to forest fire and careless lumbering, your Commissioners have in view the bridging over of a certain period of years. In the not distant future there will come the time when the rise in stumpage values will cause forest preservation in expert hands to take care of itself. This was an obvious business reason for granting perpetuity to licenses.

The permanence of the merchantable forest is, however, not the only question to be considered in the problem of re-afforestation. Much future development in the Province will be directly due either to irrigation or to the ultilization of water power. These in their turn will depend upon the maintenance of forest cover upon the mountain slopes,—the cover that holds up the snow and holds back the floods, sustaining a spongy soil for the storage of the water supply and the regulation of the flow of rivers. Your Commissioners are glad to observe that the dedication of permanent Forest Reserves at headwaters is already receiving attention from the Government. The protection from fire of these Reserves and also of all forest growth at high altitudes should be a serious duty of the Department of Forests, not only for the sake of the water supply but also for the prevention of soil erosion and of catastrophes, by land and snow slides, such as those that marked the spring of 1910.

Though under certain conditions that have been discussed by your Commissioners, natural re-afforestation will apparently take place upon the great majority of our timber areas, still, the evidence submitted to us shows that on account of soil damage and the lack of seed trees caused by repeated fires, a certain extent of forest land in this Province may be described as 'probably not re-stocking.' Whether the percentage of coast and mountain forest in this condition be more or less than the 3% and 12% given, respectively, for the Pacific and Mountain States to the south of the Province we have no means of knowing. But there is sufficient reason to suppose that though no recommendations upon the subjects of seeding and planting could profitably be made by us at present the re-afforestation of barren areas may need study, expenditure and work by the Department of Forests.

No data are available concerning the rate of tree growth in the Province. That such growth is unusually rapid most witnesses before the Commission were agreed. An interesting tabulation by the U. S. Forest Service brings out the fact that the rate of growth in the Pacific forests is estimated to be exactly twice the average for the United States. (1)

The Care of Young Growth. Your Commissioners consider that logged-off lands should revert to the Government. To persuade holders to retain them by reducing rental to a nominal figure does not appear to us to be a business-like proposal. It would be simpler and more practicable for the Department of Forests to take proper care of the young growth on these lands, than to enforce regulations against the negligence on the part of private owners. We can see plainly that the time must come to British Columbia, as it has come already to so many of the European nations, when the growing of timber will be a feasible commercial operation. The inevitable length of the investment makes it one peculiarly suitable for a Government.

A DEPARTMENT OF FORESTS.

We, your Commissioners, recommend the enactment of a Forestry Bill, to provide for the creation of a Department of Forests. The title of the Chief Commissioner of Lands should be changed to Chief Commissioner of Lands and Forests, and the new department placed under his control.

British Columbia occupies a position of great advantage among the forest countries of the world, for she can undertake the care of her timber resources before—instead of after—fire and waste have squandered the bulk of them. It is within the power of her Government to preserve the present forest crop from fire, to see that proper use is made of it by lumbermen, and to safeguard the growing forests that will provide the future crop. Nature provides the most unusual rapidity of growth.

(1) For some suggestive quotations concerning re-afforestation in the United States and the reproduction of Douglas Fir, see Appendix.

Since the care of our forests will be rewarded by great results, and since in any case this work is absolutely essential to the prosperity of the Province, we see plainly that it must be undertaken with the utmost thoroughness. The natural advantages of our country must remain unimpaired, the public revenue and the lumbering industry must both be protected; in other words, a sound policy of conservation must be established.

In doing this a difficulty arises from the changes that are inevitable in political life—changes in the Governments and legislatures in which supreme control of these matters is vested. One administration may have a wise and intelligent appreciation of the benefits of conservation; the next may be careless of such considerations. Yet so great is the time required to produce, or even to foresee, results in forest administration, that sustained effort over long periods of time is essential, and a policy that vacillates, not because fresh knowledge of forests has been obtained but simply because changes have taken place in politics, can have no value.

Future stability, under the circumstances, can best be obtained by launching at the present time a comprehensive and very definite plan of action. Large appropriations must be made and a well-manned, specialized Forest Service brought into being in the Province, thoroughly equipped. This service—the Department of Forests already mentioned above—would not only be executive. One of its chief functions would be investigation, the results of which would build up an exact knowledge of our forests that, inevitably, would mould and give real stability to future developments of policy.

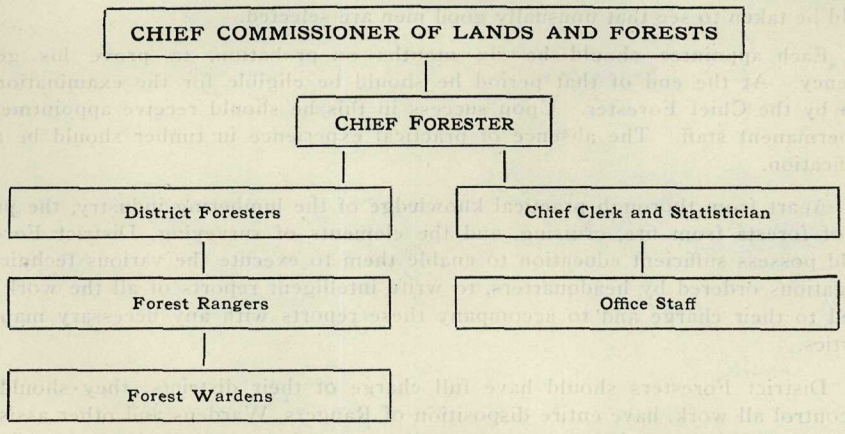
In short, we recommend that for the conservation of the natural resources of the Province, a Department of Forests be established on the following lines:

A Chief Forester.

A Field Staff, consisting of:
- (a) District Foresters or Superintendents (10)
- (b) Forest Rangers or Foremen (permanent)
- (c) Forest Wardens (temporary)

An Office Staff, consisting of:
- (a) Chief Clerk and Statistician.
- (b) Necessary Assistants.

DIAGRAM:



The Chief Forester. It is essential that the Chief Forester should be a first-class, scientific man, thoroughly well qualified, who has had both technical and practical training and experience. So much will depend upon the wide knowledge and sound judgment of this official that the Province should spare no pains in searching the continent for a man of exceptional ability.

It should be the duty of the Chief Forester to advise with, and act under, the Chief Commissioner of Lands and Forests in all matters affecting the forest interests of the Province. Under that Minister he should direct the Forest Department in the management of all Crown timber lands; in the control and development of methods of protecting forests from fire and other damage; in the regulation of the cutting of timber and the prevention of waste; in the care for, and maintenance of, forest cover and the prevention of soil erosion; in the preservation of the young growth that is the future timber supply; in the replenishing of depleted forest regions; in the maintenance of timber areas permanently dedicated for park or other purposes, and in all other work of the Department.

Under the Minister, the Chief Forester should have jurisdiction over the entire Province. He should issue instructions to the District Foresters, inspect their work and report upon it. He should cause to be carried out such cruising, survey, general inspection and valuation of timber lands as the Department may be authorized to make.

As a technical man he should cause to be collected information concerning the timber of the Province, re-afforestation, change of species, the utilization of waste products, cutting regulations and other matters of forestry. He should assist operators by his advice and promote the spread of forestry and the adoption of sound working plans. In this connection it is essential that he should be versed in all modern developments of forest science.

Both as the man responsible for the efficiency of the service and as an expert, it should be his duty to establish, or to collaborate with the Faculty of the Provincial University in establishing, standard examinations that probationary District Foresters should be obliged to pass before obtaining permanent appointment.

It should be a particular duty of the Chief Forester to instruct his officials to collect in a systematic manner all possible information concerning the nature, quality and value of timber lands, especially of those placed under license.

District Foresters. District Foresters should have all the qualifications of Forest Rangers, as outlined below, plus superior technical business and administrative ability. The success of the forest policy would depend so largely upon the type of men in charge of districts that the most painstaking care should be taken to see that unusually good men are selected.

Each appointee should be six months on probation, to prove his general efficiency. At the end of that period he should be eligible for the examination laid down by the Chief Forester. Upon success in this he should receive appointment on the permanent staff. The absence of practical experience in timber should be a disqualification.

Apart from thorough practical knowledge of the lumbering industry, the protection of forests from fire, cruising, and the elements of surveying, District Foresters should possess sufficient education to enable them to execute the various technical investigations ordered by headquarters, to write intelligent reports of all the work committed to their charge and to accompany these reports with any necessary maps and statistics.

District Foresters should have full charge of their districts; they should plan and control all work, have entire disposition of Rangers, Wardens and other assistants, have oversight over equipment and expenditure and be responsible for the efficiency of the local service. They should cause to be executed all instructions from the Chief Forester.

They should organize the men under them for fire patrol; the enforcement of cutting regulations; the collection of forest revenue; the prevention of trespass and

the arrest of offenders against forest laws; the cruising of timber; the issuing of permits; the cutting and maintenance of forest trails; the establishment of look-out stations, telephones and means of communication; and for other forest purposes. In addition to their administrative work these officers should keep themselves in touch with local forest conditions by personal inspection, should report thereon, and should recommend changes for the better in both business and technical management.

District Foresters should be, ex-officio, Justices of the Peace, as in Germany. As such they should deal with infringements of the forest laws. It should be their personal duty to make formal investigations into the origin of every serious forest fire.

District Foresters should detail special men to attend to the inspection of spark arresters and other means of diminishing the danger of fire from locomotives.

Inspection of Pre-Emptions. Our attention has been called to the fact that in many cases timber lands have been pre-empted ostensibly for the purpose of settlement, but really for logging purposes, and that after the timber is taken off, the pre-emption is abandoned. In order to prevent this, and to prevent also the acquisition by purchase of any timber lands, it should be the duty of the District Foresters to have examined by the Rangers, all lands in their district for which applications to pre-empt or purchase have been made, and to cause a report to be made thereon before such applications are dealt with by the Department.

We would suggest, also, that the Rangers could be utilized for the purpose of inspecting and reporting on improvements made on pre-emptions before certificates of improvements are granted for the same.

Forest Rangers or Foremen. These men should be thorough woodsmen; they should be expert cruisers; they should be men with extensive practical experience of all local methods of logging and milling; they should be proficient in scaling.

Physically, they should be sound, sober and able-bodied, capable of enduring hardships and of working under trying conditions in the open. As foremen they should possess the ability of directing and controlling their assistants. They should be able to make, in writing, reports of any work they may be called upon to do, to construct ground sketches with compass readings, and to furnish simple calculations to the statisfaction of the District Forester.

Rangers should be constables with power to arrest offenders against the forest laws. They should also possess power to press men when necessary to fight forest fires.

Rangers should direct the movements of the Wardens and other men placed upon fire patrol or engaged in fighting fire; they should inspect logging operations; they should enforce cutting and other regulations; inspect all engines and locomotives used among timber; attend to the up-keep of all equipment used by the service in their locality; cruise, scale, direct the cutting of trails and devote their time to the carrying out of the orders of the District Forester.

Full record of the qualifications and service of every Ranger should be on file at the central office of the Department, and this branch of the Forest Service should be on lines suggested by the excellent organization of the Northwest Mounted Police.

Rangers should serve for a probationary period of six months before receiving permanent appointment.

Forest Wardens. Wardens should be active, able-bodied men, thoroughly familiar with life in the woods, with experience as practical loggers gained through work in the camps. They should be well acquainted with the districts in which they apply for appointment and with the local means of transport.

Wardens should be under the orders of their foremen, the Rangers, for the purpose of giving assistance to the latter in the execution of the duties mentioned in the preceding section. They should be employed each year for such periods as the District Foresters (subject to approval of the Chief Forester) may direct. When so employed they should be required to give their whole time and attention to their forest work.

Chief Clerk and Statistician.

The systematic collection, by the field staff, of information concerning timber lands, the logging and saw milling industries, the forest revenue, lumbering operations, stumpage values, market conditions and other matters would provide the Chief Forester with sound material upon which to base his advice to the Minister. At the central office a new branch would have to be created to deal with the receipt and classification of this very diversified information, with the regular reports of district officers, and with the routine work connected with the new forest organization. In addition to these duties the central office should take over the section of the present Department of Lands that deals exclusively with Crown timber lands.

Management and finance of forest property belonging to the Province have both become intricate problems. The complexities of tenure and systems of dues, the importance of the revenue, the conflicting interests involved, all combine to make the task of the Government extremely difficult, especially in view of the fact that great changes and development in the lumbering industry are imminent, as a result of the increase in settlement on the continent and the exhaustion of supply in many regions.

Hence, we lay stress upon the necessity of providing for the study and the concentration of all information received. It should be the duty of the Chief Clerk, or of a special official appointed to do this work, to provide for the Department concise statements and calculations on all matters bearing upon the problems of forest policy and administration.

It should be a further duty of the same official to keep himself informed concerning conditions in other timber-producing countries, their forest finance and any progress they may make in conservation; to collect facts concerning foreign markets; and to supply the Department with statistics.

Effective forest protection depends, to a very serious degree, upon the sympathy and co-operation of the public. To arouse proper sentiment publicity is essential. We therefore consider that it should be a particular duty of the central office to provide material, suitable for insertion in local newspapers and for the use of the public schools, drawing attention to the great value of the forests to the Province, to the foolish destruction of timber through waste and fire, and to the need of public spirit and carefulness. Apart from this, the Department should try to assist the lumbering industry by the dissemination of useful summaries of the information it may collect. In the United States this function of publicity has been thought so valuable that no less a sum than $55,665 was expended in 1908 by the Forest Service "for the diffusion of information."

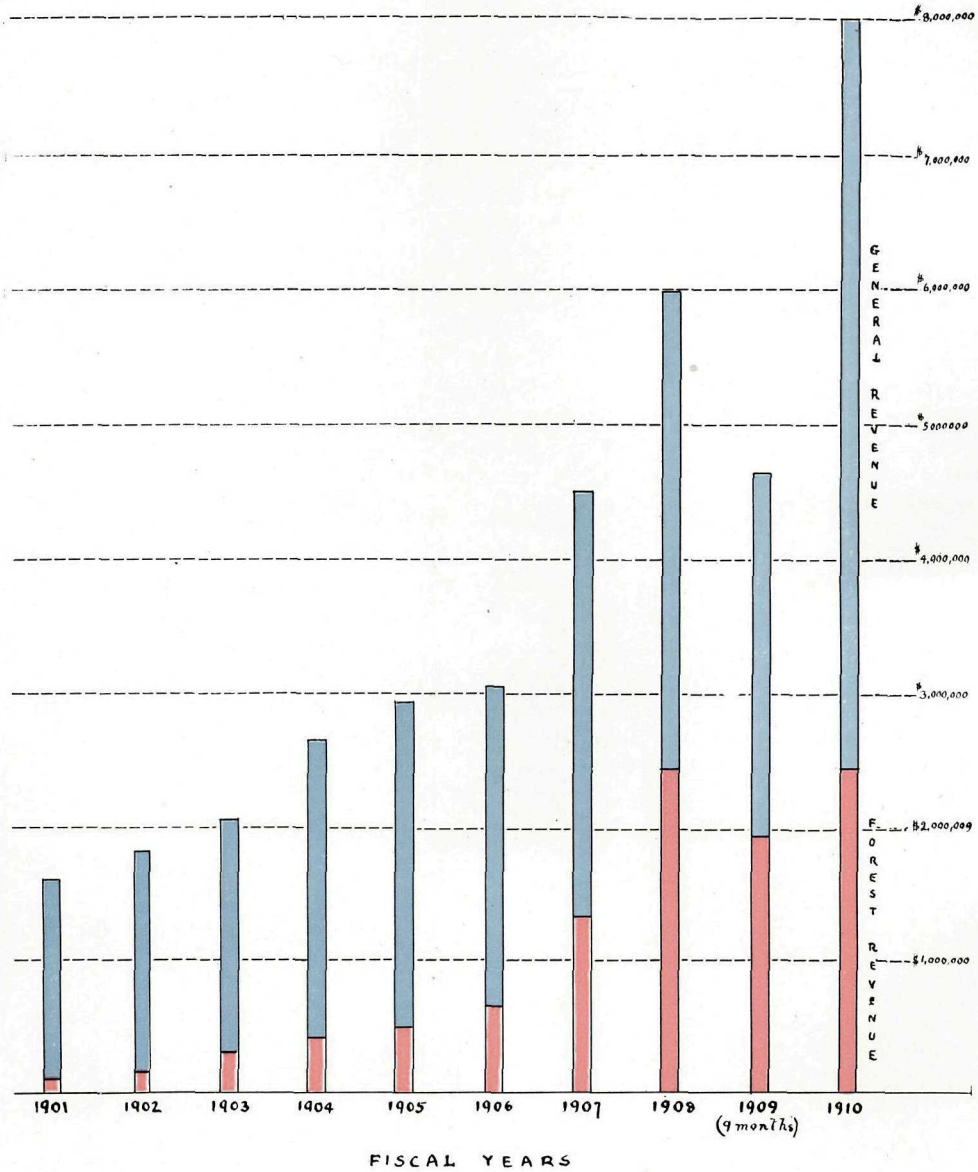
Note Concerning Permanent Officials.

Permanent officials should give their entire time and service to the Department. Owing to the nature of their work, it would seem desirable that none of them should be, or should become, interested in any standing timber, logging or milling operation, or any other private forest business.

Forestry and the Provincial University.

Your Commissioners are gratified to know that the establishment of a Provincial University will soon be accomplished. We foresee that a thoroughly equipped Faculty of Forestry should be one of the most essential features of this University.

PROPORTION OF THE PROVINCIAL REVENUE DRAWN FROM FORESTS



The Forestry Service in this Province will become ultimately a very large organization. There will be employed in it a considerable number of skilled men—technical experts. Though the first set of these men may be brought in largely from other regions of the Continent, this undesirable procedure cannot be continued. An efficient forest school will enable the Province to give both scientific and practical training in modern forestry to its own sons.

Your Commissioners recommend that success in the forestry examinations of the University, when these shall be established, should be a necessary preliminary to employment in the upper branches of the Department of Forests.

Apart from its higher work the Faculty, as in the University of Montana, should provide plain courses of instruction, say of three months each, in elementary forest subjects, in methods of simple calculation, and in the rudiments of simple surveying, telephone work, and other matters directly useful to men emloyed in forest work. These courses should be attended by the ordinary rangers in rotation. General ideas of forest policy could thus be implanted among the rank and file; esprit de corps developed; and on the practical side, methods of work could be standardized over the Province as a result of the instruction given at this Head Quarter School. The success of German forestry has been largely due to the thorough training given by the German Forest Schools, not only to the higher officials, but also to the ordinary guards; and we also note that the efficiency of the British Indian Service is ascribed, in great part, to the course of training given to its Rangers.

Experimental Park. In the recent Report of the University Site Commission it is suggested that "at least 700 acres be set apart for experimental purposes in agriculture and forestry" and that this should be "exclusive of a Forest Reserve for forestry operations upon a large scale." We give our hearty support to these suggestions; and we would recommend that definite steps be taken by the Government to set apart an Experimental Park.

It should be the duty of the Department of Forests to attend to the management of this Park and to conduct therein demonstrations of improved methods of forest management. The utilization of waste should be made the subject of careful experiment, and methods that are found commercially feasible should be displayed as an object lesson to private operators.

Both the interests of the lumbering industry and of the Government could receive considerable benefit from investigations carried on in such a Park.

Your Commissioners wish to draw attention to the suggestion, submitted to them by Mr. Chapman of the Geological Survey,* that the Government of the Province should co-operate with the Dominion Government and with the United States authorities in Montana and dedicate a large Park and Game Reserve.

FOREST FINANCE.

Your Commissioners have given much careful thought to the financial aspect of the forestry problem. We have unanimously reached the conclusion that a very definite policy must be adopted to preserve the integrity of the most valuable asset in the hands of the Government—the Crown timber lands—by placing forest finance upon a sound commercial footing. Only thus can a lumber supply and an increasing forest revenue be maintained for the use of coming generations. Moreover, the appropriations made available at once by decisive action can be justified by the narrower view of business expediency. Large sums of money spent upon our forests will yield a direct profit in the form of increased revenue, by causing the evasion of duties to cease and by diminishing fire risk and damage.

(*) See Evidence.

It is a well established principle of success in modern business that the capital of any undertaking should be adequate and should be maintained at whatever standard the expansion of operations necessitates; and your Commissioners feel that it will be wise to adopt the best business principles in dealing with the natural resources that represent so large a percentage of the capital or assets of the Province.

Your Commissioners regard the income from royalty on timber as differing essentially from any other form of revenue in the Province. Such receipts should be regarded as capital—not as current revenue. We have no hesitation in recommending that the amount so received, large as it may appear, should be expended by the Government for the protection, conservation and restoration of our timber resources. With our present knowledge regarding re-afforestation, to treat these receipts as other than capital would be utterly unsound in principle and might produce disastrous results in the ultimate impairment of the public estate.

Though it is obvious that continuous withdrawals of capital might be as fatal to the forest assets of the Province as to those of any ordinary corporation, yet your Commissioners are faced by two questions. Firstly: "Is it necessary to restore to these British Columbian forests the capital that royalty represents?" Secondly: "Is it possible to do so?" To illustrate, many of the witnesses who appeared before us expressed a conviction that natural re-afforestation will take place in this Province. If that be true, replacement of capital could be placed as low as the minimum expenditure necessary for effectual forest protection (though even in that case it would still be feasible and desirable to spend money to improve the productivity of the forests and to increase their yield of revenue); and there might be left in the hands of the Government an excess of royalty that could not be put to any profitable use in forestry.

The simple answer to both questions is that no special circumstances that would justify departure from ordinary business principles have yet been proved to exist. General natural re-afforestation, though probable, is not an established fact in this Province and our uncertainty concerning it will not be removed until a thorough investigation of the subject has been made by the forest service. Until definite information has been obtained, your Commissioners consider it essential that no surplus of royalty-capital that should accrue under the financial system described below should pass into general revenue.

A Forest Sinking Fund. We recommend that the royalty of the present year be set apart in its entirety for forest purposes and placed in a sinking fund, and that the royalties of succeeding years be passed to the same account, as long as they do not exceed the present figure.

As time goes on, however, both cut and rate of royalty may be expected to increase. Upon such **increment** levy for the same fund should be made as follows:

Schedule.

Upon any increase of annual royalty over the present sum of $264,544
40% of such increase

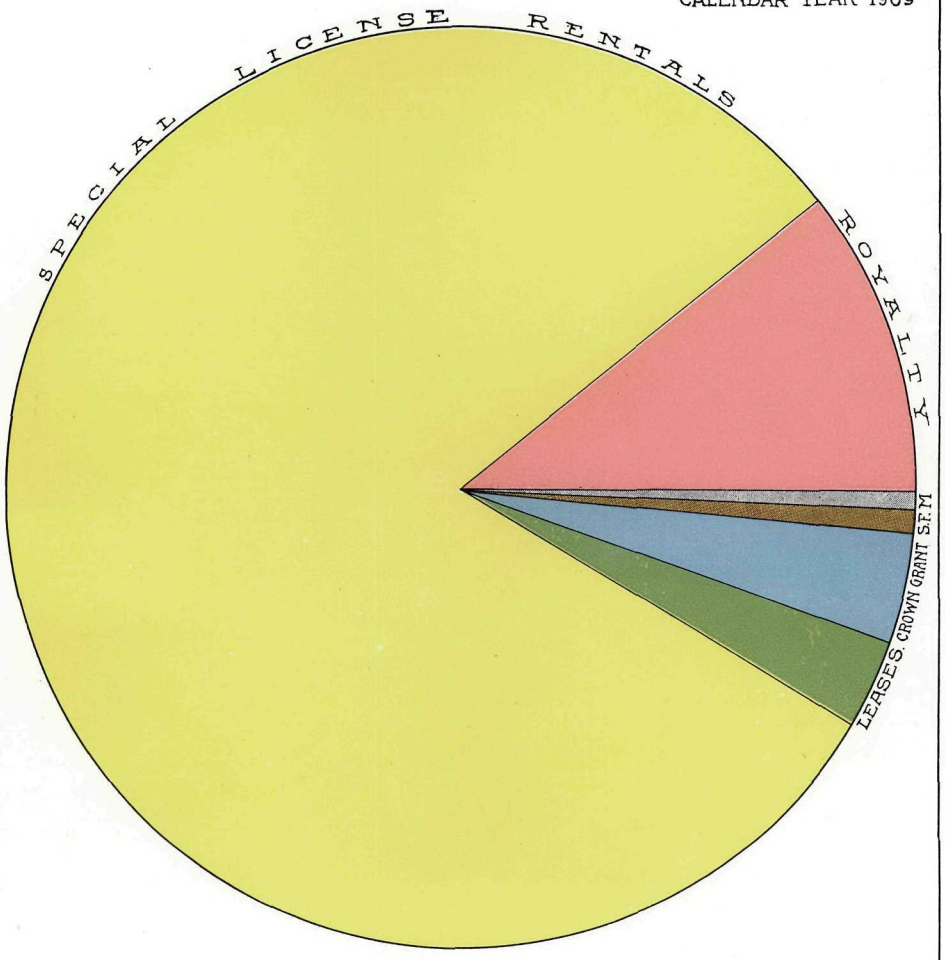
Upon any increase of annual royalty over $500,000
an additional 20% of such part as exceeds $ 500,000

Upon any increase of annual royalty over $750,000
a further 10% of such part as exceeds $ 750,000

Upon any increase of annual royalty over $1,000,000
a further 5% of such part as exceeds $1,000,000

COMPOSITION OF THE FOREST REVENUE

CALENDAR YEAR 1909



THE FOREST EXPENDITURE

FISCAL YEAR 1910

Example. Imagine that the royalty in 1917 were $1,200,000; the contribution to the sinking-fund for that year would be:

The whole of the first	$264,544	or	$264,544.00
40% of the next	235,456	"	94,182.40
20% of the next	250,000	"	50,000.00
10% of the next	250,000	"	25,000.00
5% of the next	200,000	"	10,000.00
Total			$443,726.40

Your Commissioners consider that a period of at least five years will be very fully occupied, firstly, by the organization of the Forest Service; secondly, by a great variety of investigations carried out by the new Department; thirdly, by the evolution of a constructive policy based on the data obtained. Not until the end of this formative period will it be possible to ascertain the true need for expenditure upon the work of the Department.

Therefore, it should be established as a rigid principle that no transferance of money from the Forest Sinking Fund should take place for that period of time. Should the facts then disclose that the proportion of royalty-capital retained for forest purposes was too large, legislation should be enacted to transfer the idle surplus from the sinking fund to the account of Public Works and to lower the schedule of percentages. In the contrary case, appropriations should be increased. It should, however, be made a condition that a full report from the Department of Forests—giving the reasons for the proposed alteration—be laid before the Legislature; and such publicity should be an essential preliminary.

It may be pointed out that in the Province of Ontario, the Government's annual expenditure for forest protection is something like 9% of the forest revenue, and apart from this, railways and license holders contribute large amounts. Again, the last Report of the Forest Service of the United States shows an expenditure of $3,439,000 for the year 1908.

There is a mass of evidence to show that stumpage appreciates in value at far more than ordinary interest rates. This increase in value will be hastened still further by the protection of the forests. It is reasonable to assume, therefore, that from both the alienated and the present Reserve timber lands a vastly increased revenue will flow into the Provincial Treasury.

TARIFF CHANGES AND THE PREVENTION OF FOREST WASTE.

Your Commissioners have had their attention drawn to the fact that the duty on imported shingles was increased by the United States Government upon representations made by the lumbermen of Washington, with the hearty endorsement of various forestry associations and of prominent members of the Forest Service. It was held by those familiar with conditions in the West that an increased levy on foreign shingles would enable the people of Washington and other States to utilize much timber that was being wasted in left tops, high stumps and low grade logs; a view of the matter that has proven correct.

Your Commissioners recommend that the Government of British Columbia should take such steps as may be within its power to secure similar legislation.

Export. Several witnesses, in giving evidence before the Commission, urged strongly that the export of second and third-class cedar logs should be allowed.

Your Commissioners thoroughly endorse the general principle adopted by the Government of prohibiting the export of logs, and are not prepared to recommend any variations or departure from this policy at the present time. We would suggest, however, that a careful investigation of the subject by the Department of Forests, when established, is most advisable; and that when full information shall have been obtained there should be a reconsideration of the whole question. Special cases of hardship such as the one brought to the notice of your Commissioners by Mr. McCoy* could then be examined.

In presenting our Report at the close of this most important Inquiry we desire to acknowledge the courtesy extended to us by the Dominion Government officials both in British Columbia and at Ottawa; the officials of the Department of Lands, Forests and Mines for Ontario; the Departmental officials at Washington, D. C.; the District United States officials; the Fire Protective Associations of Idaho and Washington; the officials of the Land Department of the Canadian Pacific Railway; and particularly do we desire to place on record our appreciation of the valuable assistance rendered by the various Departmental officers of the Province of British Columbia who placed at our disposal every possible available data, and to thank the members and officials of the various lumbering associations who most willingly attended the sessions. We are also indebted to a number of others who are deeply interested in forestry problems.

The Commission feels that it is to be congratulated on having secured the services of Mr. M. Allerdale Grainger, who has discharged the particularly arduous duties of the position of Secretary with consistent and conspicuous ability.

We have given most careful and painstaking thought to the whole Inquiry, and we venture the opinion that, if the recommendations contained in this Report are given effect to, Forestry in the Province of British Columbia will be placed on a thoroughly sound and businesslike footing.

We have the honour to be,
Your Honour's most obedient servants,

FREDERICK J. FULTON,
Chairman.

A. S. GOODEVE,
Commissioner.

A. C. FLUMERFELT,
Commissioner.

M. ALLERDALE GRAINGER,
Secretary.

Victoria, B. C., 15th November, 1910.

(*) See Evidence, page 949.

APPENDIX.

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INTERIM REPORT

ROYAL COMMISSION OF INQUIRY ON TIMBER AND FORESTRY.

To His Honour THOMAS WILSON PATERSON,
Lieutenant-Governor of the Province of British Columbia.

MAY IT PLEASE YOUR HONOUR:

We, your Commissioners, appointed on the ninth day of July, 1909, for the purpose of making inquiry into all matters connected with the timber resources of the Province of British Columbia and to report the facts found by us and the means that should be adopted to conserve the present supply of timber, to guard against fire and to utilise vacant lands suitable for afforestation, have the honour to submit the following Interim Report:

The Commission commenced its work on the 16th day of August, 1909, holding its first session at Victoria, and from that time until the 30th day of September, sittings were held in different parts of the Province, some ninety witnesses being heard, besides receiving memorials and hearing deputations from various parties and municipalities interested. In addition, the Commission attended the National Congress on Conservation of Natural Resources, held at Seattle on the 26th, 27th and 28th August.

The questions to be investigated by the Commission are many and of the utmost importance; so important, in fact, that while the Commission has already obtained a vast amount of evidence, covering considerably over one thousand typewritten pages, it feels that it should continue its investigations still further and exhaust all possible sources of information before venturing to submit a final Report.

At the outset, however, the attention of the Commission was called to the fact that at the last session of the Legislature the Government announced that it had come to the determination that the tenure of the special timber licences would, at the next session of the Legislature, receive the attention of the administration in the way of some provision that would make for the perpetuity of the licence until the timber is removed, but on such terms and conditions as the Government then may deem prudent in the best interests of the Province and people of British Columbia, and, in consequence, the Honourable the Premier has requested us, if possible, to make an Interim Report dealing with this question of tenure.

In compliance with this request, we have given careful consideration to this question, and in order to implement the decision of the Government we beg to submit the following:

A majority of the witnesses who appeared before us strongly advocated that the licences be made renewable in perpetuity, or at least for so long as there should be merchantable timber on the lands covered by such licences. A great many of the witnesses also strongly urged that the rentals or annual licence fees charged for such renewals should be fixed unalterably at not more than the present rates, though, with a few exceptions, they thought that the Government should retain control of the royalties to be charged.

A careful consideration of the facts adduced in the evidence submitted, and of the opinions of some of the best known authorities on timber and forestry matters, have led us to the unanimous conclusion that the proposed extension of tenure of these licences, under proper safeguards, will not work to the disadvantage of the Province.

While, as intimated above, we are not yet prepared to formulate in detail what these safeguards should be, yet, having due regard to the best interests of the Province, and giving due consideration to the difficult and fluctuating conditions surrounding the timber industry and the necessity of protecting and encouraging the already large investments involved in the same, so as to aid and assist, in every legitimate way, the development, conservation and perpetuation of this great Provincial asset, we suggest that the existing rates, terms and conditions for the present, and pending our final Report, be left undisturbed, and in particular we emphatically urge that the Government do not in any way restrict or limit its right and power to amend or adjust from time to time the rentals or licence fees and the royalties to be charged, as well as the conditions, regulations and restrictions under which timber may be cut.

We, therefore, recommend that the proposed amendment be so framed as to provide that the special timber licences, other than those provided for in sub-section (2) of section 57 of the Land Act, shall be renewable from year to year, so long as there is on the land included in such licence merchantable timber in sufficient quantity to make it commercially valuable (proof of which might be required by the Chief Commissioner), but that such renewal shall be subject to the payment of such rental or licence fee, and such tax or royalty, and to such terms, conditions, regulations and restrictions as may be fixed or imposed by any Statute or Order-in-Council in force at the time renewal is made; that power should be provided or reserved for the Chief Commissioner or Government where, after inspection, it is found the land is fit for tillage and settlement, and required for that purpose, that he or they may require the licensee to remove the timber from such land within a fixed reasonable time, at the end of which period the land shall be opened for settlement upon such terms as the Government shall see fit.

Also, that if any holder of a licence, provided for in sub-section (2) of said section 57, desires to take advantage of the privilege of renewal provided for in this amendment, he shall, within six months after the passing of such amendment, surrender the licence held by him and the privileges now appertaining thereto.

Your Commissioners are carefully investigating the constitution of Forestry Departments in other Governments and countries, with the object of recommending the establishing of such a Department in British Columbia, and, pending the securing of the fullest data, we are of the opinion that the Government will be well advised to provide in the next Estimates an increased amount (at least double that of 1909), for the purpose of supplementing the system of forest fire protection already inaugurated, which, so far as the limited amounts appropriated in previous years would permit, has been shown by the evidence to be most effective in reducing the number and extent of fires.

We might add, in conclusion, that in our opinion, a carefully thought out policy as to the best method of dealing with the present unalienated timber lands of the Province should be decided upon before the same are dealt with. As it is our intention to consider this question carefully and submit a recommendation in our final report, we would respectfully suggest that the present Reserve be in the meantime continued.

All of which is respectfully submitted.

We have the honour to be,

Your Honour's obedient servants,

FREDERICK J. FULTON, Chairman.

A. C. FLUMERFELT, Commissioner.

A. S. GOODEVE, Commissioner.

DOMINION FORESTS.

At March, 1909, 5,304,960 acres or nearly 8,300 square miles of the forests under Dominion control were in private hands in British Columbia, Alberta, Saskatchewan and Manitoba; and about 215,000,000 feet were cut therefrom in the fiscal year 1910. Figures concerning the B. C. Railway Belt will be found in the statistical section of this Report.

Dominion Licenses.

1. Licenses to cut timber on Dominion Lands shall be disposed of by public auction at the office of the Dominion Timber Agent for the districts in which the berths are situated.

2. Before any parcel of timber is offered for sale it shall be surveyed by a duly qualified Dominion Land Surveyor into berths of an area not exceeding twenty-five square miles, and each of such berths shall then be thoroughly cruised by a duly qualified timber cruiser in the employ of the Dominion Government, who shall make as exact an estimate as possible of the quantity of timber on the berth, ascertain its general condition, its accessibility, and any other matters that may be necessary to determine the value of the timber and to enable the Minister of the Interior to fix an upset price, and shall furnish a report thereon under oath to the Minister. The Minister shall then fix an upset price at which the berth shall be disposed of and no berth shall be sold at less than the price so fixed.

3. No license shall be disposed of until notice of the sale has been given for a period of not less than sixty days in a newspaper published in the district in which the berth is located and also in a newspaper having a general circulation in the Province.

4. The purchaser must also pay the cost or the estimated cost of the survey of the berth before a license is issued.

5. All timber licenses shall expire on the thirtieth day of April next after the date from which they are granted.

Conditions of License.

6. This license is subject to the following conditions and restrictions in addition to such of the conditions and restrictions as are in that behalf contained in the Dominion Lands Act and the amendments thereto, and in the Regulations respecting timber passed by order of His Excellency the Governor-General in Council.

(a) That the licensee shall not have the right thereunder to cut timber of a less diameter than ten inches at the stump except such as may be actually necessary for the construction of roads and other works to facilitate the taking out of merchantable timber, and shall not have the right to cut any trees that may be designated by the proper officer of the Department of the Interior as required to provide a supply of seed for the reproduction of the forest.

7. The licensee shall be entitled to a renewal of his license from year to year while there is on the berth timber of the kind and dimensions described in the license in sufficient quantity to be commercially valuable if the terms and conditions of the license and the provisions of the Dominion Lands Act and of the regulations affecting the same have been fulfilled: Provided that such renewal shall be subject to the payment of such rental and dues and to such terms and conditions as are fixed by the regulations in force at the time renewal is made.

8. Whenever any portion of the berth hereby licensed has not upon it timber of the kind and dimension described in the license in sufficient quantity to make it com-

mercially valuable, the Minister of the Interior may, after an inspection has been made, declare such portion fit for settlement and withdraw it from the berth and from the operation of the license covering it.

Agricultural land. 9. If the Minister of the Interior ascertains, after an inspection has been made, that any land within the berth hereby licensed is fit for settlement and is required for that purpose, he may require the licensee to carry on the cutting of timber provided for by Clause 32 of these regulations on the said land and on the expiration of the time within which the timber which the licensee is entitled to cut should be removed therefrom, may withdraw such land from the berth and from the operations of the license covering it, and upon such withdrawal the ground rent shall be reduced in proportion to the area withdrawn.

Waste and debris. 10. That the licensee shall take from every tree he cuts down all the timber fit for use and manufacture the same into sawn lumber or some such saleable product, and shall dispose of the tops and branches and other debris of lumbering operations in such a way as to prevent as far as possible the danger of fire in accordance with the directions of the proper officers of the Department of the Interior.

11. That the licensee shall prevent all unnecessary destruction of growing timber on the part of his men and exercise strict and constant supervision to prevent the origin or spread of fires.

Returns. 12. That the licensee shall furnish to the Dominion Timber Agent having jurisdiction in the matter at such periods as may be required by the Minister of the Interior or by regulations under the Dominion Lands Act, returns sworn to by him or his agent or employee, cognizant of the facts, showing the quantities manufactured, sold or disposed of, of all sawn lumber, timber or any other product of timber from the berth with the exception of slabs and saw-dust, in whatever form the same may be sold or otherwise disposed of by him during such period, and the price or value thereof.

Cost of fire protection. 13. That the licensee shall pay, in addition to the said ground rent, dues in the manner prescribed in Section 20 of the Timber Regulations, and also one-half of the cost incurred by the Crown in guarding the timber from fire, the Government paying the other half. A statement will be furnished the licensee showing his share of the cost incurred and payment thereof shall be made to the Crown within thirty days thereafter.

Returns. 14. That the licensee shall keep a "lumber sales book" in which shall be entered all sales of the products of the berth, both cash and credit sales, also a book accounting for the number of feet of sawn lumber manufactured each day at the mill, with the day and date; all books and memoranda kept at the logging camps shall be carefully preserved and these and other books kept by the licensee in connection with his lumbering business he shall submit for the inspection of the Dominion Timber Agent or other officer of the Crown whenever required for the purpose of verifying his returns aforesaid.

15. This license shall be subject to forfeiture on the order of the Minister for violation of any of the conditions to which it is subject or for any fraudulent return.

16. This license cannot be assigned or transferred without the consent of the Minister of the Interior.

Compulsory Sawmill. 17. The licensee shall have in operation within one year from a date when he is notified by the proper officer of the Department of the Interior that the Minister of the Interior regards such a step necessary or expedient in the public interest, and keep in operation, for a least six months of

each year of his holding, a sawmill in connection with the berth herein described, capable of cutting in twenty-four hours a thousand feet board measure for every two and one-half square miles of the area licensed.

18. The licensee shall pay an annual ground rent of five dollars per square mile except for lands situated to the west of Yale in the Province of British Columbia, in which case the yearly rent shall be five cents per acre.

19. The licensee shall pay the following dues on timber cut on his berth:

Sawn lumber, fifty cents per thousand feet board measure. Railway ties, eight feet long, one and one-half cents each. Railway ties, nine feet long, one and three-quarter cents each. Shingle bolts, twenty-five cents per cord, and five per cent on the sale of all other products of the berth.

Manufacture.

20. All timber taken from berths acquired under the provisions of these regulations shall be manufactured within the Dominion of Canada and all timber taken from a berth in Manitoba, Saskatchewan, Alberta or the Northwest Territories must be manufactured at the sawmill of the licensee to be operated in connection with the berth as prescribed by Section 32 of these regulations unless permission otherwise is given by the Minister of the Interior as provided by the said section.

21. Provided, however, that notwithstanding anything in these regulations, a licensee may in lieu of erecting a mill, be permitted to have the timber cut from the berth or berths held by him manufactured at a mill which is not his own property, provided that he cuts from the said berth or berths at the rate of one hundred thousand feet annually for each square mile held by him under license.

Forest Revenue. (1)

Fiscal year,	1909	$269,837
	1910	378,010
Total revenue received from timber lands within the Railway Belt from 1st October, 1885 to 31st March, 1909		$1,349,551.23
Total bonus received from timber berths within the Railway Belt from 1st October, 1885 to 31st March, 1909		628,765.83
Total area covered by this amount		2,604.58 square miles
Total revenue received from timber lands within the Railway Belt from 1st July, 1899 to 31st March, 1909		982,240.12
Total bonus received from timber berths within the Railway belt from 1st July, 1899 to 31st March, 1909		565,684.56
Total area covered by this amount		1,368.58 square miles

In the period 1899 to 1909, over 57% of the forest revenue of the Railway Belt was due to **bonus.**

DOMINION SALES OF TIMBER.

In British Columbia, during the fiscal year 1909-1910, 2.2 miles sold for $24,000, or an average of	$10,954	per	mile
In 1907 the average was	4,091	"	"
In 1906 " " "	444	"	"
In 1905 " " "	214	"	"
In Manitoba, Alberta and Saskatchewan, during the fiscal year 1909-1910, 30.79 miles sold for $15,010, or an average of	$487	per	mile
In 1907 the average was	251	"	"
In 1906 " " "	197	"	"
In 1905 " " "	91	"	"

(1) See also the Railway Belt of British Columbia Report, p. 39

ONTARIO.

The Sale of Crown timber. The method of issuing timber licenses adopted in 1869 remains in force to-day with but little modification. A berth is first surveyed, cruised, valued, and given an upset price; then the license to cut the timber on it is sold by public auction. The Government thus receives payment in three forms—rental, royalty and bonus.

In the old days there was but one rate of dues and but one class of license. Of recent years, however, different conditions have been attached at each sale. In 1903, for example, the royalty was raised from $1.00 or $1.25 to $2 per thousand feet, board measure, the rental was raised to $5 per square mile, and the time within which the timber must be cut was fixed at 15 years. That year more than 800 square miles were sold at an average bonus of $4,461 despite the increase in dues. (1)

Of late, Ontario has adopted the principle of selling by the thousand feet instead of by the mile. Under the old system faulty estimates of the values of berths sometimes caused loss to the Government while on the other side the purchaser was obliged to risk the loss of the bonus he had paid in case of fire.

The Government now assumes the fire risk. Licensees must give substantial guarantees, about 10% of the value of their timber, that operations will be conducted in accordance with the regulations. The balance of the bonus on each thousand feet is paid as the timber is cut. By means of the great rise that has taken place in stumpage values the prices obtained under this system are very large. In bonus and royalty as much as $10 or $12 per thousand feet has been obtained at recent sales.

Fire patrol on licensed lands. The Government insists that in the summer months there should be fire rangers upon all licensed timber lands, no less than 450 men were thus employed in 1909. Up to the present year the Government not only controlled this force but also bore half the expense of it. In view of "the increased value of stumpage and the small proportion that comes to the Crown" the Government informed the licensees in the spring of 1910 that they themselves must in future bear the whole expense of protecting their limits. As protective methods are still controlled and made compulsory by the Government it is considered that the effectiveness of the system is not changed in any way.

The policy and practice of the Ontario Government is given in the following quotation: (2)

Timber reserves and their protection. "When we find considerable blocks of timber on lands that are not open for settlement, we create by authority of Order in Council what is called a Forest Reserve, and withdraw the area from sale or settlement absolutely; and place a body of rangers under a chief ranger to protect the timber from fire or trespass. If minerals are discovered in the Reserve, and prospectors desire to go in, they must obtain permission here, and also a permit which they have to show to the rangers when they are prospecting in the Reserve. If they discover anything of value, and it is in such a locality that the forest will not be endangered we may allow work; but if there is any quantity of timber near where the discovery is made, while we will allow them to hold the discovery, we will not allow any work

(1) Report of the Commissioner of Crown Lands, 1903. Other information by courtesy of the Deputy Minister of Lands and Forests.
(2) From a letter of the Deputy Minister of Lands, Forests and Mines.

until the timber has been cut away. We have several large reserves that have been set apart under this system, and we have been successful in protecting the timber in them.

Protection of Young Growth. "As to re-afforestation, where an area is unfitted for settlement, or where the timber is being cut off a limit and it is not good agricultural land, we withdraw the territory from sale and let it stand, so that the timber may grow up again; protecting it from fire by an adequate staff of rangers."

Logging Regulations. The wasting of good timber by licensees is discouraged by the levying of dues upon logs that have not been removed. As the trees are cut with the saw very close to the ground there is no waste in high stumps. Tops are taken out to a diameter of about five inches, and the levy upon merchantable logs left in the woods is the same as that paid upon those utilized. Trees less than ten inches in diameter must not be cut.

Fire Patrol on Railways. An Act of the Ontario Legislature authorizes the placing of fire rangers along the railway lines and the charging of the expense of this to the companies concerned. No railway has raised any difficulty except the Transcontinental which so far has only paid one-third of the amount assessed against it. Concerning the patrolling of railway lines the report of the Minister of Lands, Forests and Mines for 1909 says:

"On the lines of railway where rangers are employed the territory is divided up into ten-mile beats and placed in charge of two rangers. They camp on the centre of the ten mile beat and every day one goes five miles in one direction and back at night; the other does the same in the other direction. They post up proclamations, interview the foremen of the work and tell them what is required to be done and request them to caution their men to be careful in the use of fire, etc. Passing along the work every day they can soon judge whether proper precautions are observed, and call the foreman's attention to any neglect, and if necessary put the law in motion to punish the offender. Rangers have been put on the T. & N. O. in this way, on the Canadian Pacific and the Canadian Northern where necessary, and on the Port Arthur Junction Railway, and these railway companies have aided the rangers in every way possible, and paid for them at the end of the season. Until quite recently the great pulp wood forest lying on the height of land and extending on both sides has been quite free from danger, there being no dangerous element there. Now the region has been pierced by the Transcontinental Railway from one end to the other, thousands of men being employed, a large proportion of whom are foreigners without any knowledge of our laws or efforts to preserve the forest from destruction, and caring nothing whether it is burnt up so long as they can use fire to suit their object. They have no interest in or care for public property. This makes the whole line of construction a menace to the forests on each side of it. Not only so but tote roads are built which are veritable lines of danger to the forests on each side. The Province is not responsible for this danger, as the railroad builds under Dominion legislation, and we cannot enforce our legislation with respect to efficient protection. It was hoped, as the danger was caused by the construction under the Dominion Government, that in common with other railways they would bear a share of the expense of fire protection, but so far no contribution has been made. (1)

On Licensed Lands. "The fire ranging on licensed territory as heretofore has been conducted by men selected by the Timber Licensees. The work has been efficiently performed and continues to give satisfaction to the limit holders. The number of Rangers on Forest Reserves was 185 and the cost was $65,992.22. The number on railways was 187 and the cost was $66,712.49. The num-

(1) Apparently the Transcontinental has since agreed to pay one-third of the expense of patrolling its line.

ber on licensed lands was 450, costing $87,610.71. The railways refund the expense, except the Transcontinental which contributes nothing. (1) The licensees pay half the expense of fire ranging on their limits." (2)

Recent Alteration of Fire Patrol System

"Notice is hereby given that by authority of Order in Council dated the 15th day of April, A.D. 1910 it is provided that for the future fire rangers employed on licensed territory shall be paid in full by the licensee on whose limits they are employed, the Department ceasing to bear any portion of the cost of fire rangers' services or expenses.

"Licensees will continue to send here the names of those they desire to have appointed as fire rangers, and the Department will instruct them and clothe them with authority. At the close of the season their diaries will be sent here and a report of any fires that occurred, their origin, if possible, and all other information.

"All licensees will be required to place rangers on their limits. If they fail the Department will place them on duty and charge the expense against the limit. The Department will continue to select and appoint supervising rangers, and the licensees will each pay their proportion of the cost of this supervision.

"If fire rangers are not nominated by the licensees prior to the 1st of May in each year, the Department will select rangers and put them on and charge the licensees with all expenses.

"F. COCHRANE, Minister.

"Department of Lands, Forests and Mines,
"Toronto, April 18th, 1910."

The Forest Revenue of Ontario.

Year	Rental.	Royalty.	Bonus.	Total.
1900	$61,704	$ 576,321	$ 636,484	$1,276,376
1901	63,000	843,148	571,383	1,479,847
1902	61,039	1,038,273	227,667	1,331,352
1903	63,057	901,744	1,340,696	2,307,356
1904	64,997	919,471	1,664,258	2,650,782
1905	61,194	1,480,910	520,070	2,064,663
1906	66,118	1,295,378	535,970	1,900,914
1907	65,084	998,863	152,223	1,219,051
1908	65,150	1,618,242	100,879	1,786,338
(10 mos.) 1909	68,528	529,422	285,571	885,892

Note. Owing to the financial stringency payments due in one year were made in the next. Thus nearly $500,000 was carried over into 1908, the collections proper for that year being only $1,224,243.

Again, the true revenue for 1909 is larger than the sum shown.

Thus in a ten year period Ontario's forest revenue has been contributed in this manner:

3.7% from rental.
60.3% " royalty.
35.7% " bonus.

(1) Apparently the Transcontinental has since agreed to pay one-third of the expense of patrolling its line.
(2) For the future the licensees are to pay ALL the expense.

QUEBEC.

Regulations for Lumbering on Crown Lands.

"It is forbidden, under penalty of $3 per stump to cut pine trees less than 12 inches in diameter; spruce trees measuring less than 11 inches in diameter, and other trees measuring less than 9 inches in diameter at the stump, measured 3 feet above the ground. It is permitted, however, to cut swamp spruce to a diameter of 7 inches, at the stump, also measured 3 feet above the ground. The stumpage dues shall be levied on:

"1. All stumps measuring more than one foot in height, above the beginning of the roots.

"2. All timber above 6 inches in diameter, left in the tops.

"3. All merchantable timber used for skids and not hauled.

"4. All lodged trees.

"5. All merchantable timber used for building bridges or making 'corduroy' roads.

"6. All logs left in the woods."

Present and past conditions in the forests of Quebec are reviewed in some detail in the Report for the fiscal year 1909, from which we give the following quotations:

Forest Depletion.

"The lumbermen came here to cut white pine and a little red pine. The other timber was despised. The methods of cutting at that time were very rudimentary; all the cutting and squaring was done with the axe. The method of choosing the timber was very bad; only the best trees were selected, and again only logs of the very best quality were selected; the slightest defect caused a log to be rejected. How much timber was thus wasted? No one can tell, but even now we come across such culled logs from which excellent timber can still be obtained. Owing to the diameter of the pieces a sudden thaw would often stop the teaming and the logs were left behind to rot.

"Fires were also very frequent, for the most elementary precautions were neglected; timber was so plentiful that it may be said to have had no value.

"But white pine became scarce; it was necessary to go further and further, to places more difficult of access, and to use spruce which was becoming to be better known and appreciated, and the lumbermen began cutting it. The same system of selection was continued but not for a long while, fortunately. Seeing that the timber was disappearing both by lumbering and by fire, experienced men recommended that a diameter limit be fixed and also that more timber be taken from the logs. Thus a diameter of 12 inches at the smaller end was adopted. This, however, still left much refuse, about 60% of the cut, but it was a great improvement. About 1890, the minimum diameter was reduced to 10 inches, which was a marked improvement. This limit has been continued to our day by saw-mill owners, and logs as small as eight inches have been taken from the tops only in the past few years.

"With the rapid development of the pulp industry, lumbering about 1900 became a more extensive operation for some limit holders and sometimes more disastrous than before. Thus, the pulp wood makers had all the timber taken as small as 4 inches in the tops, but many also heedless of the future, cut down trees below the lawful diameter, so much so that the Government had to adopt rigid measures and

order, that in future, swamp spruce should not be cut smaller than 7 inches at the stump.

"At present, in 1909, the virgin forest no longer exists except at the sources of rivers. Everywhere else lumbering, clearing and fire have modified the original type of the forest. This territory which contained over 1,600 square miles of forest in 1820, the date of the first settlements in Kildare, Brandon and Rawdon, now barely contains 800 miles, and at least 25% of this area has been burned over. On the 800 square miles given over to settlement we find a sparse population of 15,000 souls who find it difficult to make a living. One-fifth of this portion is still wooded, but the timber is of poor quality, of second or third growth one-third is burned, completely ruined, while the remainder is cultivated as stated.

"This is pre-eminently a forest region at the gates of Montreal, that is to say, close to an excellent market, which is for the most part ruined by fire and useless deforestation. It is high time to adopt energetic measures to put an end to so pitiful a state of affairs.

Waste Controlled. "Until recent years these improvised carpenters were not very particular as to the choice of the timber they used for their buildings and roads. They took the best pine or spruce, so that the camps, which sometimes were used only for one season, were made of valuable wood which was thus lost. Since 1908, the Government charges stumpage on all merchantable timber used for making camps, etc. This has had a good effect and less valuable trees, such as fir, poplar, etc., are now used.

"Formerly the axe alone was used for felling the trees and cutting them into logs, whereby over a lineal foot of timber was lost at each section. Now the only reproach we have is about the height of the stumps, because many still refuse to cut as low as required by the circular, 16,761.08, namely, not more than 12 inches from the ground. But through the penalties imposed by us and by the limit holders, we are overcoming their obstinacy.

"We are trying to impress upon the choppers the necessity of not breaking too many small trees while cutting down the larger ones, and when, owing to the inclination or slope of the ground they are obliged to make the tree fall on or among small trees, to choose the least valuable ones. We are getting to agree very well with them on this point because they are eager to show their skill. We also compel the jobbers to leave no lodged trees under penalty of charging the stumpage, as if the trees had been taken away. Such cases are rare for our lumbermen are skillful and their pride is at stake.

High Stumps. "In the case of hollow trees or trees rotten at the stump—this happens more frequently with tamarack and pine, but not so often with spruce, the rot being generally caused by fungi, such as Trametes pini, etc.,—our choppers were in the habit of cutting the tree above the regulation height (12 inches from the ground). They call this 'butting' a tree. We insisted in each case that the tree be cut at 12 inches from the ground, claiming rightly, that it is impossible for them to know how high the rot extends while the tree is standing. It is easy, when the tree is fallen, to sound it with the axe, and ascertain the point where the rot ceases to be a serious defect in the log. By this means the butt will lie on the ground and decay much more quickly than if left standing on the stump like a candle ready to catch fire at the slightest opportunity. Many large fires have arisen through such candles.

Disposal of Debris. "This last consideration brings us to the question of waste. What is to be done with the tops and branches? When one is near a market they can be profitably made into faggots and charcoal, but these are useless in our forests. Thus the refuse of the cutting is left on the ground, where

it dries up slowly, litters the soil, impedes circulation, hinders reproduction, and above all, is a constant source of danger from fire. If a match is thrown on it it blazes up. When a small fire running merely on the surface of the ground reaches a lot of refuse it becomes a gigantic fire which seizes the surrounding trees and becomes one of those great conflagrations with which we are only too familiar. The problem of causing such refuse to disappear is one of the most serious in our forest economy. If we wish to protect properly what remains of our forests, steps must necessarily be taken to do away with the branches and twigs as soon as possible. Lopping the tops has been recommended, because it is alleged that by this means the branches will lie on the ground, the weight of snow will crush them, and, as they will sooner be permeated with the dampness of the soil, they will rot away in a short time. This short time is still too long, and in my opinion this operation is a mere palliative of no value. It seems to me that we have suffered enough from forest fires not to hesitate before an expenditure of 20 cents per thousand feet to get the refuse burned, not wherever lumbering operations have been carried on, but at least in the vicinity of villages, streams and roads, that is to say, where real danger of fire exists. The best plan would be to burn them everywhere so as to clean thoroughly the soil of the forest, to remove all chances of fire spreading and to make access easy to the people who have to fight it. Several lumbering companies are studying the question and we should join with them in making some attempts in that direction during the course of next winter to ascertain the exact cost of such an undertaking.

Change of Species. "I have not spoken of the selection of the trees to be removed during the lumbering operations: the regulations merely define the minimum diameters at which trees can be cut on territories under license. Unfortunately the sylvical conditions vary so much that these diameter limits are not sufficient to preserve the forest's primitive character, especially when lumbering takes only timber from one kind of trees. Thus we have seen our fine pine groves disappear; they have been replaced by spruce forests and from every part of the Province now come complaints that "fir is overwhelming us." This is fatal and unless lumbering is based on earnest study of the special conditions and needs of each locality, this change will spread more and more and the day is not far off when our valuable conifers will disappear wherever lumbering is carried on and will be replaced by hard woods and balsam fir.

The Marking of Trees. "Pending such reforms several license holders have begun to have their trees marked by special gangs. This system was practiced last winter on the limits of the St. Gabriel Lumber Company and gave so much satisfaction, both as regards that company and the jobbers, that it will be continued this year and in all the other forest held by the Union Bag & Paper Company the trees will be marked previous to cutting.

Saving Tops. "As may be seen this year, even logs measuring 5 inches in diameter were taken from the tops. Out of the above total 10 years ago, all logs under 10 inches would have been left aside and thus 101,892 logs, or 64% of the number cut this year would have been wasted. It is admitted by all, foremen and limit holders, that the saving this year in this direction was about 20% of the timber cut. As over 35,000,000 feet, board measure, were cut in our division we have had a saving effected of 7,000,000 feet representing an increase in stumpage dues of at least $4,550.

Railway Construction. "The danger of fire is very great in the construction of railways through the forests, as the timber cut in clearing the right of way is burnt right on the spot, at all seasons. Formerly few or no precautions were taken to prevent the flames spreading from these slashings, which extended

right up to the green forest on each side, with the deplorable result, that all too often a conflagration was started. This source of danger has fortunately been largely reduced, as, where the construction is on Government lands, the contractors are obliged to pile the brush in the middle of the right of way, to put men on to watch the burning, and are not allowed to set fire to their brush without the consent of the Government Ranger."

The Forest Revenue of Quebec.

Year.	Rental.	Royalty.	Bonus.	Total.
1900	$170,508.71	$585,505.89	$339,748.06	$1,112,529.52
1901	178,250.71	633,230.12	403,197.72	1,234,072.05
1902	163,983.00	664,552.44	201,483.39	1,055,037.48
1903	187,206.25	667,631.96	352,004.58	1,241,814.49
1904	176,226.41	715,134.02	252,554.01	1,167,477.53
1905	208,712.00	750,340.85	389,576.12	1,380,186.55
1906	206,809.20	776,901.37	253,545.00	1,266,114.04
1907	214,452.00	773,130.29		1,018,385.40
1908	215,053.00	721,784.45	16,080.00	978,077.58
1909	206,940.00	650,458.33		906,360.64

U. S. NATIONAL FORESTS.

From the 1907 Report. "In timber sales on the National Forests it is invariably required that the brush from the felled trees be disposed of so as to reduce both the danger from fire and the damage to the forests should fire occur. Experiments conducted during the past year show that the best way to dispose of brush is not everywhere the same. Where the fire danger is great it has proved most effective to pile all brush away from living trees and burn it during the wet season. Where the fire danger is slight, the brush is lopped and left scattered on the ground where it soon decays and adds to the organic constituents of the soil. In every timber sale, therefore, local conditions are carefully studied to determine how best to dispose of the brush and debris after logging. Full use of the merchantable portion of every tree cut is insisted upon. As a result, lumbermen in the West have come to realize that the cutting of low stumps and the using of all trees as far into the tops as they are merchantable is of actual financial benefit to them, and the close utilization of all timber felled is spreading from the National Forest to private holdings."

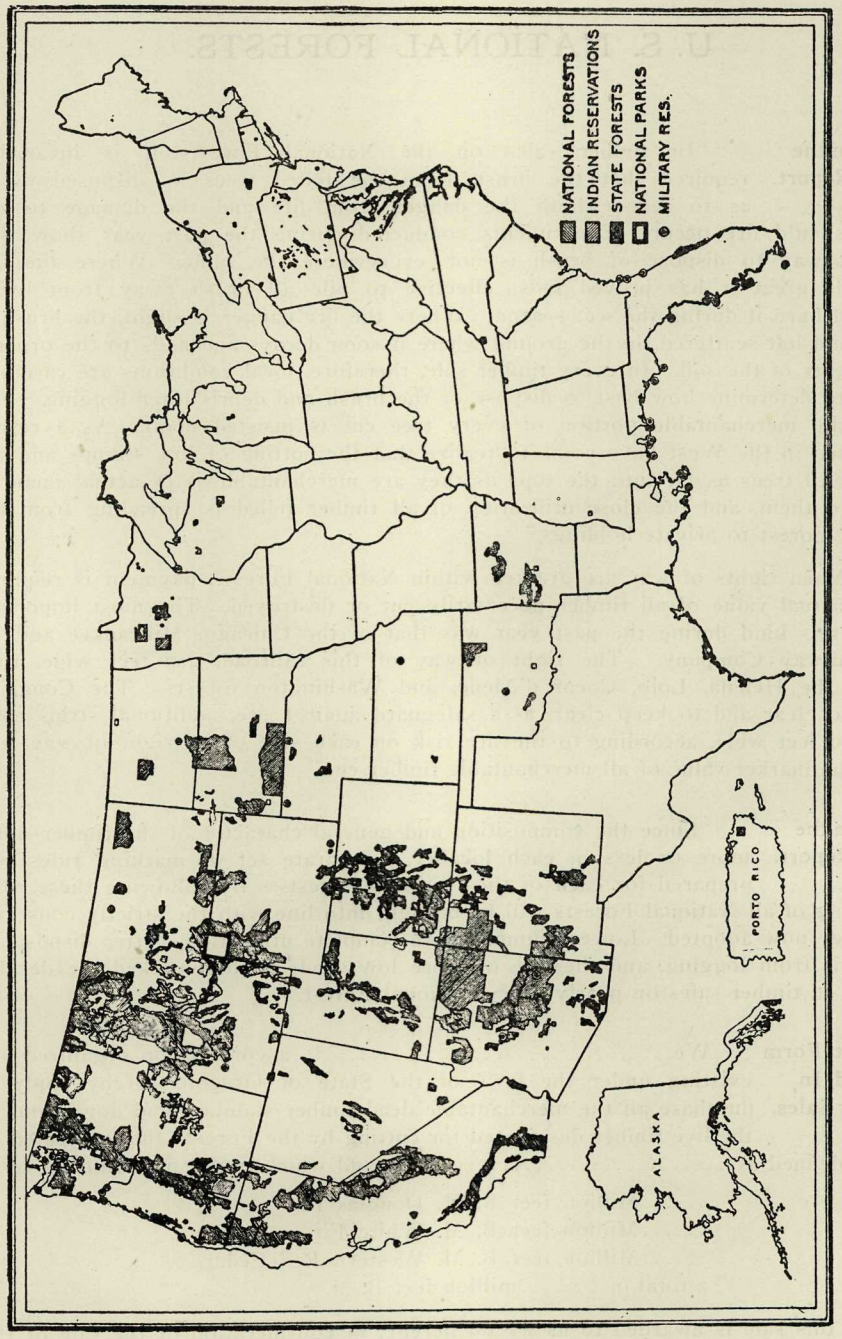
"When rights of way are granted within National Forests, payment is required for the actual value of all timber necessarily cut or destroyed. The most important case of this kind during the past year was that of the Chicago, Milwaukee and St. Paul Railway Company. The right of way of this railroad, 200 feet wide, runs through the Helena, Lolo, Coeur d'Alene, and Washington forests. The Company agreed to clear and to keep clear, as a safeguard against fire, additional strips from 50 to 150 feet wide, according to the fire risk on each side of its right of way, and to pay the market value of all merchantable timber cut."

From the 1908 Report. "Since the composition and general character of the timber differ more or less in each locality, a separate set of marking rules was prepared for each of the National Forests. By following these rules the cutting of all National Forests will be brought into line with the strictly conservative policy now adopted. Lower stumps, more complete utilization, better disposal of the debris from logging, and the sale of more low grade timber marked the decided progress in timber sales on nearly every National Forest."

Contract Form Used In Timber Sales. We.....a corporation organized and existing under the laws of the State of Oregon, hereby apply to purchase all the merchantable dead timber standing and down, and all the live timber designated for cutting by the Forest Officer, located on an area defined as.....and which timber is estimated to be

.....Million feet B. M. Douglas Fir.
.....Million feet B. M. White Fir.
.....Million feet B. M. Western Red Cedar.
a total of.....million feet B. M.

If this sale is awarded to us we do hereby, in consideration of the sale of this timber to us, promise to pay to the.....Bank, to be placed to the credit of the United States, the sum of.....dollars ($....) more or less as may be determined by the actual sale, for the timber at the rate of..... dollars ($....) per thousand feet, of.....dollars for live and.....



THE UNITED STATES.

FIG. 2.—Public forest lands. Forests in the unreserved public domain and unreserved state forest lands are not shown. (From a publication of the U. S. Forest Service.)

dollars for dead Douglas Fir;.....dollars for Douglas Fir saw logs now on the ground;.....dollars for Western Red Cedar, etc.....dollars for White Fir, etc.....at least.....dollars to accompany bid, and the balance in payments of not less than $2,000 in advance of cutting.

And we further promise and agree to cut and remove said timber in strict accordance with the following and all other regulations governing timber sales, prescribed by the Department of Agriculture.

1. No timber will be cut or removed until it has been paid for.

2. No timber will be removed until it has been scaled, measured or counted by a forest officer.

3. No timber will be cut except from the area specified by the forest officer. No live timber will be cut except that marked or otherwise designated by the forest officer.

4. All merchantable timber used in buildings, skidways, bridges, construction of roads, or other improvements will be paid for at the contract price.

5. All cutting will be done with a saw when possible. No unnecessary damage will be done to young growth or to trees left standing, and no trees shall be left lodged in the process of felling. Unmarked trees that are badly damaged during the process of logging will be cut if required by the forest officers and when such damage is due to carelessness, the trees so injured will be paid for at twice the price fixed by this agreement.

6. The approximate minimum diameter limit at a point 4½ feet from the ground to which living trees are to be cut is 13 inches for white fir, but trees of other species will be cut as marked.

7. Stumps will not be cut higher than 18 inches—lower if possible—and will be so cut as to cause the least possible waste.

8. All trees cut will be utilized to a diameter of 9 inches in the tops—lower when possible—and the log lengths so varied as to make this possible.

9. Tops will be lopped and all brush piled compactly at a safe distance from living trees, or otherwise disposed of, as directed by the forest officers.

10. Unless extension of time is granted, all timber will be cut and removed on or before and none later than.....and at least .....feet will be paid for, cut and removed on or before..... and at least.....feet of the remainder of the estimated amount during each year of the remaining period.

11. Timber will be scaled by Scribner rule, Decimal C. or counted or measured as prescribed in "The Use Book" or specifically provided in the agreement, and, if required by the forest officer, will be piled or skidded for scaling as directed by the forest officer.

12. All marked trees and all dead timber sound enough for timber of any merchantable grade or timbers or cordwood shall be cut. Unmarked living trees which are cut, marked trees or merchantable dead timber left uncut, timber wasted in tops, stumps, and partially sound logs, trees left lodged in the process of felling, and any timber merchantable, according to the terms of this contract, which is cut and not removed from any portion of the cutting area after logging on that portion of the cutting area is completed, or is left within the National Forest after the expiration of this agreement, shall be scaled and paid for at double the agreed contract price.

13. During the time that this agreement remains in force we and all our employees, sub-contractors, and employees of sub-contractors will, without any charge or expense whatever to the Forest Service, do all in our power, both independently and upon the request of the forest officers, to prevent and suppress forest fires.

14. So far as is reasonable all branches of the logging shall keep pace with one another, and in no instance shall the brush disposal be allowed to fall behind the cutting, except when the depth of the snow or other adequate reason makes proper disposal impossible, when the disposal of the brush may, with the written consent of the Forester or of the Forest Supervisor, be postponed until the conditions are more favourable.

15. Logs shall be decked or piled for scaling at places agreed upon with the forest officer, with ends even on one side of the skidway or piled in a workmanlike manner, and the length of the logs shall be marked on the small or scaling end of each log by the purchaser. Logs of different species or value shall be piled in separate piles.

16. Camps, roads, bridges, chutes, etc., required for temporary use shall be located as agreed upon with the forest officer in charge and constructed with care for the interests of the National Forests.

17. All dead trees and snags whether merchantable or not, which in the judgment of the forest officer, are a fire menace, shall be felled.

18. We agree, when called upon by the forest officer in charge, to furnish a sufficient number of men, to be determined by the supervisor, to burn the brush and debris resulting from the cutting, under the supervision of the forest officer.

The decision of the forester shall be final in the interpretation of the regulations and provisions governing the sale, cutting and removing of the timber covered by this contract. Work may be suspended by the forest officer in charge, if the regulations contained in this agreement are disregarded, and the violation of any one of the said regulations, if persisted in, shall be sufficient cause for the forester to revoke this agreement and to cancel all permits for other privileges.

And as a further guarantee of the faithful performance of the conditions of this agreement, we agree to deliver a satisfactory bond in the sum of.....dollars ($....) which bond together with all monies paid or promised under this agreement upon failure on our part to fulfill, all and singular, the conditions and requirements set forth, or made a part hereof, shall become the property of the United States as liquidated damages and not as penalty.

Signed in duplicate this.....day of.....19....

Witnesses:

Approved under the above conditions,

.....19

.....

Signature of the approving officer.

TEXT OF THE FALLON FIRE LAW

(1907, as amended by Act of March, 1909. Political Code of Idaho.)

Section 1605 as amended. Each fire warden may arrest, without a warrant, any person found violating any provision of this Act, and take him before a magistrate and there make complaint and, when a warden shall have information that such violation has been committed, he shall make similar complaint. Wardens shall go to the place of danger to control or prevent fires and, in emergencies, may employ or compel assistance, and the compensation for such service compelled shall not exceed $2.50 per day, exclusive of subsistence and reasonable traveling expenses.

Section 3 of the Act of 1909. Any person, firm or corporation engaged in the cutting and removing of timber, logs, ties, telegraph poles, wood or other forest products from lands within the State of Idaho, shall pile and burn, or otherwise dispose of the brush, limbs, tops and other waste material incident to such cutting, which are four inches or under in diameter, and the times and methods of so doing shall be prescribed by the warden of the fire district in which the said cutting shall be done. Any person, firm or corporation violating the provisions of this Act or refusing to conform to any rules made by the fire warden of any district in the State of Idaho, relative to the time, place and manner of burning or disposing of the brush, limbs, tops and other waste material incident to the cutting of timber, logs, ties and telegraph poles, wood or other products, shall be guilty of a misdemeanor and upon conviction thereof be subject to a fine of not less than $100.00 nor more than $500.00 or be imprisoned in the county jail of the county in which the offense occurred, for not less than thirty days, and not to exceed two months, or, to be subjected to both such fine and imprisonment.

Section 1606. It shall be the duty of each fire warden in each fire district to issue written or printed permits during permit season, to any and all persons named in an application to set out fires. Said application shall state the general description of the land upon which it is desired to set out fires, and the extent of the burning or slashing desired to be burned. Said permit season shall be from June first to October first of each year. Said permit shall fix the time for setting out fires on any three consecutive days therein named, and not less than ten days from the date of such permit, and such fires shall be set at no time when the wind is blowing to such an extent as to cause danger of same getting beyond the control of the person setting out the said fire, or without sufficient help present to control the same, and the said fire shall be watched by the person setting the fire until the same is out.

Section 1606, continued. Upon granting said permit, the fire warden shall be present at said proposed burning, or notify at the earliest possible moment some qualified and acting deputy fire warden in the vicinity of said proposed burning to be present thereat, and upon good cause may revoke or postpone said permit upon notice to said applicant.

Section 1607 as amended. From June first to October first each year it shall be unlawful for any person, firm or corporation, to use any spark emitting locomotive, logging engine, portable engine, traction engine or stationary engine located in a timber district without the use of a good and efficient spark arrester. Any person, firm or corporation who shall fail to provide and use such a spark arrester upon any such engine, shall be guilty of a misdemeanor, and upon conviction thereof shall pay

a fine of not less than twenty-five dollars ($25.00) nor more than one hundred dollars ($100.00) for each day such engine or locomotive is used.

Section 1608. Every warden or deputy warden, and every person lawfully commanded to assist in enforcing any of the provisions of this Act, who shall unjustifiably refuse or neglect to perform his duty; every person who shall kindle a fire on or near to forest or prairie land and leave it unextinguished, or be a party thereto; every person who shall use other than incombustible wads for firearms, or carry a naked torch, firebrand or exposed light in or near to forest land; and every person who shall deface, destroy or remove any abstract or notice posted under this Act, shall be guilty of a misdemeanor and upon conviction thereof shall be punished by a fine of not less than ten dollars nor more than one hundred dollars.

Section 1610 as amended. Every person, firm or corporation operating a railroad shall keep the ground for fifty feet on each side of the centre of the track, or such portion thereof as may be owned or controlled by such person, firm or corporation clear of combustible materials, except ties and other materials necessary for the maintenance and operation of the road from June 1st to October 1st of each year. No person, firm or corporation shall permit any of its or his employees to leave a deposit of fire, live coals or ashes in the immediate vicinity of wood lands or lands liable to be overrun by fire, and every engineer, conductor, trainman or section man discovering fire adjacent to the track shall report the same promptly at the first telegraph or telephone station reached by him. At the beginning of the close season every such person, firm or corporation, shall give its or his employees particular instructions for the prevention and extinguishing of fires, and shall cause warning placards to be conspicuously posted at every station within this State, and when a fire occurs near the line of its or his road, shall concentrate such help, and adopt such measures as shall be available for its extinguishment. Any person, firm or corporation, violating any provision of this section, shall be guilty of a misdemeanor, and shall be subjected to a penalty of not more than one hundred dollars for each offence, and any railroad employee violating the same shall be guilty of a misdemeanor and shall be punished by a fine of not less than five dollars nor more than fifty dollars.

Section 8 of Act of 1909. The State Board of Land Commissioners of the State of Idaho shall in all things co-operate with the owners of land, timber or other property in this State in carrying out the provisions and purposes of this Act and the State of Idaho shall bear and pay its proper pro rata share of the cost and expense of protecting the lands and timber in the State against destruction by fire incurred under the provisions of this Act according to the area and extent of its land and timber holdings throughout the several fire districts of the State, and the State of Idaho shall be considered an owner of land or other property within the meaning of that term as used in this Act, for the purposes of this Act. Such monies as the State shall thus become liable for shall be paid as part of the general expenses of the State Board of Land Commissioners and out of the appropriations which shall be made by the Legislature for that purpose; and in all appropriations hereafter made for the general expenses of said Board account shall be taken of, and provisions made for this item of expense.

Section 9 of Act of 1909. All fines collected for the violation of this Act, or any provisions thereof, shall be disposed of and paid as follows, to wit: Half to the general fund of the county where the conviction is had and half to the person or persons furnishing the information leading to the arrest and conviction of the person, firm or corporation convicted.

RE-AFFORESTATION.*

Re-Afforestation in the United States. There is as yet a general absence of data concerning our own Provincial forests but suggestive material relating to the subject of re-afforestation on this continent is contained in the following quotation from an expert discussion by Messrs. Kellogg and Zeigler, concerning the forest resources of the United States.

"In the very old mature forests growth is offset by decay, and our millions of acres of this type of forest may for all practical purposes be regarded as non-producing capital. Were all our forests of this class the production per acre would be zero. Were all mature trees removed and the land all densely stocked with thrifty growth, the yield would approximate from 30 to 110 cubic feet per acre per year according to the species and locality. The actual forest represents all degrees of production between these two extremes. There are large bodies of over-mature timber that are not increasing. There are small areas of pure second growth producing the maximum amount. There are culled-over areas containing mature defective trees or undesirable species mixed with second growth, areas denuded by axe and fire with no appreciable growth, and, the largest class of all, cut-over and burned-over lands with some growing trees, but usually not nearly as dense as the virgin forest.

"To arrive at any approximation, then, of the total wood production of the country some rough classification of the entire forest area is necessary.

Percentage Condition of Forests in Each Region.

	Probably Mature Timber and Woods.	Probably Growing Forest and Wood Land.	Probably not Re-stocking.
Lake States	4%	58%	38%
Northeastern States	4%	78%	18%
Central States	9%	76%	15%
Southern States			
(Pine land 60%)	33%	40%	27%
(Hardwood land 40%)	43%	50%	7%
Rocky Mountain States	70%	18%	12%
Pacific Coast States	80%	17%	3%

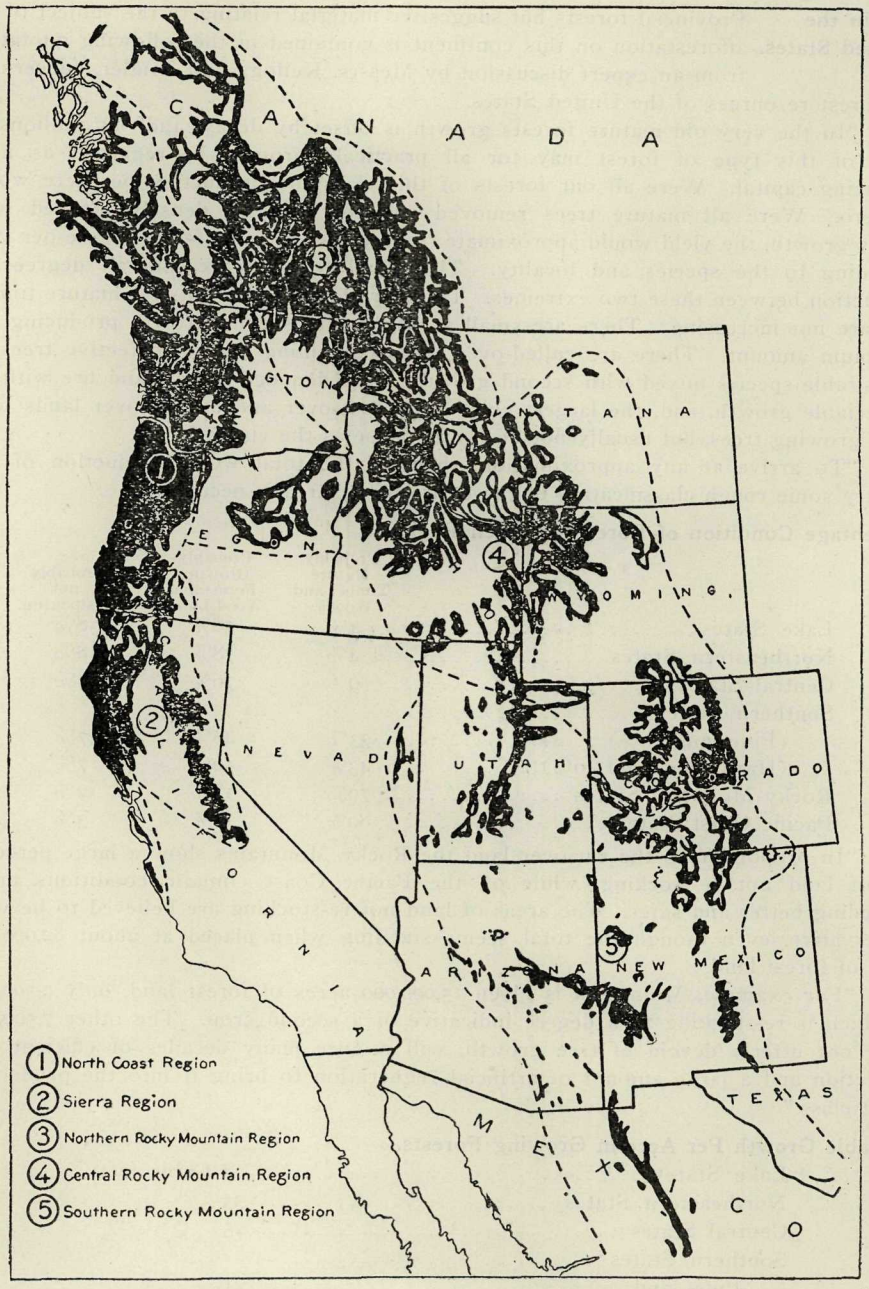
"In proportion to the cut-over land the Rocky Mountains show a large percentage of land not re-stocking, while on the Pacific Coast climatic conditions make re-seeding better and safer. The areas of land not re-stocking are believed to be very conservative, even though the total seems startling when placed at about 82,000,000 acres of forest land.

"For example, Minnesota is given 15,000,000 acres of forest land, only 7,500,000 of which is re-stocking to a degree indicative of a second crop. The other 7,500,000 while not utterly devoid of tree growth, will require many decades of efficient fire protection and a large amount of artificial regneration to bring it into the producing forest class."

Probable Growth Per Acre in Growing Forests.

Lake States	38	Cubic feet
Northeastern States	33	" "
Central States	25	" "
Southern States		
Pine land	21	" "
Hardwood land	29	" "
Rocky Mountain States	9	" "
Pacific Coast States	56	" "
Average for the U. S.	28	" "

* From the Forest Quarterly.



(From a publication of the U. S. Forest Service.)

DISTRIBUTION OF THE DOUGLAS FIR.

DOUGLAS FIR IN COAST DISTRICTS.*

The Management Of Douglas Fir. No hard and fast rules can be formulated for the management of Douglas fir in any of its silvical regions. A few broad rules can, however, be outlined for each of these extended regions, which, though lacking in detail, will suit the general conditions prevailing over the whole region, and can, by modification, be used as a basis for more detailed silviculture on limited areas.

The universal aim of silviculture is to get the most and the best timber per unit area in the shortest possible time. On the humid mountain slopes of Washington and Oregon no tree is better fitted to achieve this ideal than Douglas fir. Its rapid growth, the density of its stands, and the high quality of its lumber gives it preference in suitable situations over all other species. Besides this it reproduces itself abundantly, and a second crop is relatively easy to secure. In the southern parts of its range, however, other trees often excel it in value, and in such cases the object of management must be to reduce the proportion of fir and encourage a predominance of the more valuable species.

The successful silvicultural management of a virgin forest should result in a complete and even restocking of cut-over areas with young growth of the best species which the situation is capable of producing. In practice this result is sought by rules planned to secure a suitable seed bed for the desired species and an abundant supply of the right kind of seed. Since Douglas fir needs mineral soil to germinate and requires plenty of light afterwards, the first object is achieved for this tree by clean cutting or by thinning heavily enough to admit an abundance of light, and by burning away the humus layer which covers the mineral soil. To insure a sufficient seed supply enough trees must be left on each acre of ground to scatter seed evenly over all parts of it. The manner of thinning, disposal of brush, and the number and distribution of seed trees are details which vary with the different silvical regions in the range of Douglas fir and with local conditions in each.

North Coast Regions. In the forests of Western Washington and Oregon where Douglas fir is by far the most abundant tree and often forms vast, nearly pure, even-aged stands, its management is comparatively simple. The chief problem connected with this forest is to prevent more tolerant species, especially Western hemlock, from growing up under Douglas fir and gradually securing permanent possession of the ground. The best solution to this problem will usually be to cut clean and burn over the surface. Douglas fir reproduction will thus find abundant light and a mineral soil, and by its prolific seed production and the density and rapid growth of the young stand may reasonably be expected to exclude from the stand even the more tolerant reproduction of hemlock, arborvitae, or spruce. Since at maturity such even-aged stands of Douglas fir are apt to run quite uniformly above the minimum merchantable diameter limit, clean cutting is justified from a commercial standpoint. The mineral soil exposed by ground burning also affords an excellent seed bed for noble fir and western white pine, desirable associates of Douglas fir, and in some localities this encouragement may be advantageous.*

Clean cutting to the lowest merchantable diameter limit should, then, be the general plan for the greater part of this type of forest, except on steep slopes with shallow soil. On steep slopes and ridges the forest should usually be held intact,

*The Douglas Fir, U. S. Forest Circular 150.

since the trees are apt to be shorter and knotty and, therefore, of inferior commercial value, but they are of the greatest value as sources of seed for re-stocking the adjoining cuttings. Great care must be exercised to leave only firmly rooted specimens for seed trees after dense stands are logged, since isolated trees in such situations are particularly subject to windfall. In some situations they should be left in groups, to afford each other mutual protection during the period necessary for establishing reproduction. Trees growing in the more open parts of the stand are usually shorter, knottier, and more wind-firm than those in the denser portions, and are therefore more desirable for seed trees than for logs.

Where the forest is not pure Douglas fir, but contains a considerable proportion of hemlock, cedar, spruce, or balsam, the cuttings should aim, in localities suitable for Douglas fir, to remove all merchantable timber of each species except enough Douglas fir seed trees to insure an abundant reproduction. The surface should then be burned over to remove the forest litter and humus, and to expose the mineral soil. In this type of forest, heavy cuttings are necessary for the successful reproduction of Douglas fir on account of the great density of the stands and the heavy accumulations of forest litter which are characteristic of them. Except in very heavy thinnings, amounting practically to clean cutting, surface burning can not be practiced without great danger to the remaining trees, but when the mature stand is removed the surface may, with due precautions, be safely burned over. The reproduction of more tolerant species which existed under the shade of the high forest will thus be removed from competition, and at the same time a suitable seed bed will be prepared for the desired Douglas fir reproduction. A few years ago the poor demand for hemlock, cedar, and other less valuable associates of Douglas fir would have precluded such a method of treatment, but with the increase in demand for these species, which is already beginning to be felt, there is no doubt that it may be applied with commercial as well as silvicultural success.

In the humid portions of this region, especially in the "fog belt" along the coast, surface burning is impracticable during the wet season, when the heavy rains which fall almost every day keep the brush soaked with water and practically fireproof. On the other hand, burning should never be done in the dry season after the slash has had time to dry out thoroughly. During this season the dead branches become tinder-like and inflammable, and even the greatest care may be insufficient to prevent surface fires from spreading to the adjacent stand and becoming destructive Crown fires. A time should be chosen for the burning when the brush is dry enough to burn well, but not so dry as to cause a hot fire which can be controlled only with difficulty.

The burning should be conducted by a force of men sufficiently large to prevent all danger from the fire spreading to the adjacent uncut areas. It should be done by blocks or compartments, varying in size with the character of the topography and the dryness of the slash, and laid out so far as possible with ridges and streams for boundaries. Where no natural boundaries exist the burning areas will often have to be separated by fire lanes, 50 to 75 feet wide, from which the brush has been cleared and piled back on the area to be burned. In the dense undergrowth to be found in the "fog belt," where lanes of this width could ordinarily be constructed only at a prohibitive cost, skid roads can often be utilized for fire lanes. By starting the fires along the skid roads and allowing them to burn inward toward the centre of a burning area, the slash fires can, with due precautions, be effectually controlled.

Each area should be burned separately, and fire on the second should not be started until that on the first is thoroughly extinguished. The tops should be lopped and scattered evenly over the surface, but not within 20 feet of remaining trees. A trench should be dug around each tree left for seed, deep enough to prevent fire from creeping through the humus and killing the tree. This trench should be at least 15 feet from the tree.

PULP CONCESSIONS.

LEGISLATION, ORDERS IN COUNCIL AND CORRESPONDENCE.

1. **Land Act Amendment Act, 1901.** (See below.)

2. **Repealing Act of 1903.**

3. The Government defines its position in writing to the Bella Coola Company.

(1) "You have the right to all timber of whatsoever kind situated on the timber areas after you have made your selection and obtained your lease so that outsiders may not cut timber which is unsuitable for pulp purposes.

(2) "You will have the right to manufacture lumber from timber which is not suitable for pulp, but to do this you must take out special licenses as per Land Act."

4. **Ultimatum of April 1908. First Ultimatum:**

Construction of mill must be commenced by 1st November, 1908; completed by 1st November, 1909.

"The Government have concluded there must be finality in the matter."

5. **Second Ultimatum of the Government. September, 1909:**

All holders of pulp leases will be granted extensions of time under the following conditions:

(1) On or before November 1, 1909, each lessee shall enter into an agreement with the Chief Commissioner of Lands to spend not less than $500,000 in development . . . including the construction of a pulp mill of daily capacity of not less than 100 tons of pulp (or 50 of paper) per day.

(2) Said mills to be in operation before November 30, 1911.

(3) Agreement to be accompanied by $50,000 deposit which will be forfeited if agreement be broken.

(4) No lumber to be manufactured or sold until mill is in operation.

(5) No logging until licenses have been taken out to cover area logged.

LAND ACT AMENDMENT ACT, 1901.

May 11th. Chapter 30.

Section 6. (1) Sub-sections (1) and (5) of the section which was substituted by section 6 of the "Land Act Amendment Act, 1899" for Section 41 of the said Chapter 113, are hereby repealed, and the following is substituted therefor:

Leases. 41. (1) Leases (containing such covenants and conditions as may be thought advisable) of Crown lands may be granted by the Chief Commissioner of Lands and Works for the following purposes:

A. For the purpose of cutting hay thereon, for a term of not exceeding ten years.

B. For any purpose whatsoever, except cutting hay as aforesaid, for a term not exceeding twenty-one years.

Pulp Leases. (5) The Chief Commissioner of Lands and Works may enter into an agreement with any incorporated company empowered to manufacture pulp and paper, to grant leases of Crown timber limits, for a term not exceeding twenty-one years, for the purpose of cutting timber for the manufacture of wood pulp or paper, subject to such conditions, regulations and restrictions, not provided for in any agreement or lease, as may from time to time be established by the Lieutenant-Governor in Council; such Crown lands to be selected in a manner to be determined by such agreement before the execution of such lease or leases from the areas referred to in such agreement. The said agreement may provide that any areas therein defined shall be reserved from pre-emption, sale or other disposition for a period not exceeding two years to enable such company to select therefrom such portion of the lands as shall be commensurate with the output capacity of a pulp or paper mill to be erected:

Provided, however, that every such lease shall reserve to the Crown a rental of not more than two cents per acre per annum and a royalty of not more than twenty-five cents per cord of one hundred and twenty-eight cubic feet for spruce and other woods suitable for the manufacture of pulp, or subject to an equivalent royalty based on the tonnage output (either of these royalties to be collected in such manner and at such periods as the Chief Commissioner of Lands and Works shall determine): Provided that the holder of any such leased lands shall erect within the Province of British Columbia, and equip a pulp or paper mill having a capacity for an output of not less than one ton of pulp, or half a ton of paper, for each and every square mile of timber limits included in the leasehold, and that such mill shall be kept in actual operation for at least six months in every year, unless the Chief Commissioner of Lands and Works shall, for good and sufficient reason release the lessees from operating the said mill for the whole or any part of the said period of six months in each and every year: Provided also that the construction of such mill shall be completed within a period to be determined by the Chief Commissioner of Lands and Works, as provided for in the agreement.

A. The Lieutenant-Governor in Council may also grant a renewal of such lease for pulp purposes for consecutive periods not exceeding twenty-one years, and for such portion of the area covered by the existing lease at the period of renewal as may be determined by the Chief Commissioner of Lands and Works; Provided that in any renewal of a lease all rents and royalties shall be subject to such conditions and regulations as may then be in force, or determined by the Lieutenant-Governor in Council.

B. All timber cut on Crown Grant timber limits under such lease, and not used for the manufacture of wood pulp or paper, will be subject to the provisions of the "Land Act" governing timber leases or licenses in respect to royalties and returns.

C. Lessees of timber leases or holders of timber licenses under section 53 of Chapter 113 who sell timber to pulp mills for the manufacture of pulp, shall where such pulp mills pay a royalty based on the tonnage of pulp or paper manufactured, be exempt from the royalty upon the timber so sold to such pulp mills.

D. All timber cut from lands leased in accordance with this section must be manufactured within the confines of the Province of British Columbia; otherwise the timber so cut may be seized and forfeited to the Crown and the lease cancelled.

E. The lessee of a timber limit granted for pulp purposes shall have the right to select out of such limit, or from Crown lands adjacent thereto, and purchase at such price per acre as may be determined by the Lieutenant-Governor in Council a parcel of land, not to exceed forty acres in extent, as a site for the erection of a pulp mill and its appurtenances.

F. The Lieutenant-Governor in Council may grant (under certain conditions and restrictions) exemption from taxation to the owners of a pulp mill and its appurtenances for a period of not exceeding five years from the completion of the mill.

G. Any such lease shall be liable to summary cancellation in case any person is employed in connection with operations under such lease who, when asked to do so by a duly authorized officer, shall fail to read in a language of Europe this section.

PULP LEASES.

Variations in Phraseology. Certain leases show slight variations from the lease quoted above in extenso. That such variation was devoid of meaning as far as the intention of the Executive was concerned is shown by the fact that the various forms were used indiscriminately on the same day in the Department of Lands:

Thus we find the following wording in a lease—9th January, 1907:

"For the purpose of cutting, etc., etc."

"Provided that the said lessee shall not be entitled to cut, carry away or use for any other purpose than for the manufacture of pulp any of the timber on any of the premises hereby demised, unless he shall first take out a special timber license in that behalf, paying therefor the fees provided from time to time by the Land Act."

"Subject to the Land Act and amendments thereof in force on the 5th day of November, 1902."

Upon the very same day other leases were issued, reading:

"For the purpose only of cutting, etc."

"Provided that the said lessee, etc., etc.," as above.

"Subject to the Land Act and amendments in force on the 13th day of June, 1901."

COPY OF A WOOD PULP LEASE.

.....
Lieutenant-Governor.

.....
Chief Commissioner of Lands and Works.

.....
Deputy Commissioner of Lands and Works.

THIS INDENTURE, made the.....day of..... A. D..... BETWEEN HIS MAJESTY THE KING (who with His heirs and successors is hereinbefore called "the said Lessor") of the one part, and..... ..... hereinafter called "the said Lessee" of the other part:

WITNESSETH that in consideration of the payments and stipulations to be made and observed by and on the part of the said Lessee, the said Lessor, so far as the Crown has power to grant the same but not further or otherwise, doth hereby demise save as hereinafter expressed, unto the said Lessee ..... statute acres, be the same more or less, all which premises are on the tracing hereunto annexed more particularly though approximately designated and thereon coloured red, to have and to hold the premises hereby demised unto and to the use of the said Lessee for the term of twenty-one years from the date hereof for the purpose only of cutting and taking therefrom timber, wood and trees for conversion into pulp to be used in the manufacture of paper, and of erecting on any portion of said land all mills,

engines, buildings, and machinery necessary for carrying on the wood pulp and paper business, rendering therefor yearly to His Majesty, His heirs and successors, in every year during the said term, the annual rent of ....., the first of such payments to be made on the execution of these presents and the succeeding annual payments on the ..... day of ..... in each year respectively during the said term at the Land Office, Victoria, without any deduction or abatement whatever; and also rendering to His Majesty, His heirs and successors, a royalty of fifteen cents per cord of one hundred and twenty-eight cubic feet for spruce or other woods cut on said lands suitable for the manufacture of pulp for a period of ten years from the date of this lease, and a royalty of twenty-five cents for each cord of one hundred and twenty-eight cubic feet of pulp wood cut on said lands during the term of the unexpired portion of this lease or an equivalent royalty based on the tonnage output (either of these royalties to be collected in such manner and at such periods as the Chief Commissioner of Lands and Works shall determine) and the said party of the second part hereby for ..... successors and assigns covenant with the said Lessor in manner following, that is to say:

That the said Lessee will pay the royalty and the rent hereinbefore reserved at the times and in the manner hereinbefore appointed, and will not assign any part of the premises, rights, powers or privileges hereby granted without the permission, in writing, of the said Chief Commissioner of Lands and Works first had and obtained and will at all times pay all rates, taxes and assessments whatsoever (if any) which may be made, assessed or levied for or in respect of any of the premises: And shall erect, equip and maintain a pulp or paper mill having a capacity for a daily output of ..... of paper for each and every square mile of timber limits included in this lease, such mill to be kept in actual operation for at least six months in every year, unless the Chief Commissioner of Lands and Works shall for good and sufficient reason, release the lessee from operating said mill for the whole or any part of the said period of six months in each and every year; and shall keep correct books of account of all logs brought to ..... mill, stating from whom such logs were acquired, where cut, the date received, and such other particulars as the Lieutenant-Governor in Council may require, and shall also keep in such form as the Department of Lands and Works may direct, an accurate account of all pulp wood used and pulp manufactured, and shall at all times suffer and allow the agent of the Department to inspect their books and also their premises and shall, if required, render a full account, showing the number of cords from time to time delivered at the mill and the quantity of pulp and paper produced; and shall also make reasonable use within reasonable periods of the whole of the premises hereby granted and apply the same to the purposes hereinbefore mentioned and perform this covenant to the satisfaction of the Chief Commissioner of Lands and Works for the time being.

PROVIDED, and it is hereby agreed, that if any rent, royalties or moneys falling due hereunder shall be in default unpaid for the space of one calendar month after the same shall have respectively become due, then, and upon every such default, whether any previous one shall have been condoned or not, it shall be lawful for the said Lessor by the Chief Commissioner of Lands and Works, his agent, or servant, into and upon the said premises to enter and therefrom to distrain, seize, take and sell any goods and chattels there found, and out of the proceeds of such sale or sales to repay himself and themselves such rents or moneys so due, and all costs and expenses attendant on such distress and sale and so nevertheless, that no exercise of this power shall be construed to prejudice or affect any other powers, remedies or forfeitures accruing to the said Lessor for the time being under these presents:

PROVIDED, always, and these presents are upon this express condition, that if the said Lessee shall fail to fulfill, keep and observe all and singular the payments, covenants and stipulations hereinbefore contained, and on ..... part to be paid, observe and performed or any of them, or any part thereof respectively, it shall

be lawful for His Majesty, His heirs, successors and assigns, by the Chief Commissioner of Lands and Works, his agent or servant, upon three calendar months' notice to that effect from the Chief Commissioner of Lands and Works or under the hand of any person duly authorized by him in that behalf and delivered at ..... the house or office of the said Lessee or published in four consecutive numbers of the British Columbia Gazette, absolutely to forfeit all the rights and privileges of entering said lands and cutting thereon timber, wood and trees for conversion into pulp, or so much thereof as shall be specified in that behalf in any such notice, and thereupon these presents and all the rights and privileges therein contained shall, as far as in accordance with such notice, cease, determine and be of non-effect, and any rule or law of equity to the contrary, notwithstanding, without any action or re-entry on the part of the said Lessor, or inquisition, or office found or other proceeding whatever.

PROVIDED further, that the interest, rights and privileges of the Lessee in the said hereditaments, tenements and premises shall be construed as subject always to all the provisions of the "Land Act" and amendments thereof.

There are hereby specially reserved from the above mentioned demise but not so as to be construed to extend in any way the scope of the said demise:

1. All Indian grounds, plots, gardens, Crown and other reserves.
2. So much of the said land as the Chief Commissioner of Lands and Works aforesaid from time to time may deem necessary for any roads, streets, bridges, aqueducts, military, naval, municipal or public purposes.
3. All existing public and private rights, also the right of proprietors of mines to cut timber for mining purposes.
4. Full control by the said Lessor over the water frontage of said premises.
5. The right of His Majesty, His successors and assigns freely to enter, cut and take away any timber or trees, gravel, stone or other material required for the construction of any bridge, road or public work as the Chief Commissioner of Lands and Works may from time to time think fit.
6. The right of His said Majesty, His heirs, successors and assigns to all mines and minerals of every kind whatsoever, within, upon or under the said lands, and power for him and them respectively, freely to enter upon said lands, to work said mines and to carry away and dispose of such minerals.

PROVIDED that the said Lessor by the Chief Commissioner of Lands and Works, his servant or agent, shall be at liberty at any time during these presents, to enter upon the premises hereinbefore described and survey the same and sell and grant all or any part of the said premises in such manner as the said Lessor shall think fit, subject nevertheless, to the rights and privileges conferred upon the said Lessee by these presents for the term hereby demised, and reserving to the said Lessor the right to collect the rents and royalty hereby reserved and the benefit of all the covenants herein contained.

IN WITNESS WHEREOF the parties hereto have hereunto set their hands and seals the day and year first above written.

WITNESS His Honour ..... the Lieutenant-Governor of British Columbia, acting on behalf of His Majesty, and the great seal of the Province of British Columbia hereunto affixed.

Signed, sealed and delivered by the within-named .....
in the presence of .....

By Command.

.....
Provincial Secretary.

LEGISLATION CONCERNING THE INDEFINITE RENEWAL OF TIMBER LEASES.

1901. May 11th. Chapter 30.

Section 7. Section 42 of said Chapter 113, as enacted by Section 7 of Chapter 38 of the Statutes of 1899, is hereby amended by adding the following Sub-Section:

(3) All leases of unsurveyed and unpre-empted Crown timber lands, which have been granted for a period of twenty-one years, may be renewed for consecutive and successive periods of twenty-one years, subject to such terms, conditions, royalties and ground rents, as may be in force by Statute at the time of the expiration of such respective leases:

Provided, that such renewal is applied for within one year previous to the expiration of the then existing lease, and provided that all arrears of royalties, ground rents, and other charges are first fully paid:

All existing leases of Crown timber limits which have been granted previous to the passage of this section of the "Land Act" and now in force, may be renewed for consecutive and successive periods of twenty-one years, provided, that such existing leases shall be surrendered within one year from the date of the enactment of this Section:

And it is further enacted that such leases may be renewed for the unexpired portion of the term mentioned in the leases to be surrendered, on the same terms, conditions, rents and royalties as so specified in the said leases to be surrendered, the remainder of the term of twenty-one years for which the said leases shall be renewed on surrender shall be subject to such terms, conditions, royalties and ground rents as may be in force by Statute at the time the existing leases surrendered under the conditions of this Section would expire. All timber cut from Provincial lands must be manufactured within the confines of the Province of British Columbia, otherwise the timber so cut may be seized and forfeited to the Crown and the lease cancelled.

COPY OF THE RENEWAL OF A TIMBER LEASE.

(Sec. 7, "Land Act Amendment Act, 1901.")

.....

Lieutenant-Governor.

.....

Deputy Commissioner.

.....

Chief Commissioner of Lands and Works.

THIS INDENTURE made the day of , A.D. 19 , BETWEEN His Majesty the King (who, with His heirs and successors, hereinafter called "the said lessor") of the one part, AND

and who, together with executors, administrators, and assigns,

hereinafter called "the said lessee ," of the other part. WITNESSSETH that in consideration of the payments and stipulations to be made and observed by and on the part of the said lessee , the said lessor, so far as the Crown hath power to grant the same, but not further or otherwise, doth hereby lease, save as hereinafter expressed, unto the said lessee , ALL that land in the District of

statute acres, be the same more or less, all which premises are on the tracing hereunto annexed more particularly though approximately designated, and thereon coloured red; with full power to enter upon and therefrom and from any part of the said premises at pleasure to cut down any trees whatever, and the same to carry away and freely to manufacture into, sell, and dispose of as spars, timber, or lumber, or otherwise for own sole use and behoof, WITH full power to erect all mills, engines, buildings, and machinery necessary in opinion for carrying on any part of the spar, timber, and lumber business, but for no other purpose whatsoever; AND generally such rights and privileges which may be necessary and advisable for more conveniently carrying on the said spar, timber and lumber business; EXCEPT and always reserved thereout all Indian grounds, plots, gardens, Crown and other Reserves; EXCEPT also thereout so much of the said land as the Chief Commissioner of Lands and Works aforesaid, from time to time may deem necessary for any roads, streets, bridges, aqueducts, Military, Naval, Municipal or public purposes; EXCEPT and also reserved thereout all existing private and public rights, also the right of proprietors of mines to cut timber for mining purposes; EXCEPT and also reserved thereout to the said lessor full control over the water frontage of the said premises; EXCEPT and also reserved thereout to His Majesty, His heirs, successors, and assigns, the right freely to enter, cut, and take away any timber or trees, gravel, sand, stone or other material required for the construction of any bridge, road, or public work, as the Chief Commissioner of Lands and Works may from time to time think fit; EXCEPT and also reserved thereout to His said Majesty, His heirs, successors and assigns, all mines and minerals within, upon, or under the said limits, and power, for Him and them respectively, freely to work, carry away and dispose of the same; PROVIDED that the said lessor, by the Chief Commissioner of Lands and Works, his servant or agent, shall be at liberty at any time during these presents to enter upon the premises hereinbefore described, and survey the same and sell and grant all or any part of the said premises, in such manner as the said lessor shall think fit, subject nevertheless, to the rights and privileges conferred upon the said lessee by these presents for the term hereby demised; and reserving to the said lessor the right to collect the rents and royalty hereby reserved, and the benfit of all the covenants herein contained; TO HOLD the said premises hereby leased unto and to the use of the said lessee, for the term of twenty-one years from the date hereof, for the purposes aforesaid, RENDERING therefor yearly to His Majesty, His heirs and successors, in every year during the said term an annual rent in the following manner: FROM the date of these presents until the the annual rent of dollars, the first of such payments to be made on the date of these presents, and the succeeding annual payments on the anniversary of that date in each year. For the remainder of said term of twenty-one years an annual rent, at such rate per acre yearly, payable on the anniversary of the date of these presents, as may be prescribed by the terms of any statute of the Province of British Columbia, in such case made and provided, in force on the day of , all such payments to be made at the Land Office, Victoria, without any deduction or abatement whatever, AND ALSO rendering to His Majesty, His heirs and successors, a royalty of fifty cents per thousand feet, board measure, upon and in respect of all timber suitable for spars, piles, saw logs or railroad ties, cut on the premises hereby demised, during the said term from the day of , to the day of , A.D. , and thereafter such royalty as may at that date be prescribed by the terms of any statute of the Province of British

Columbia, in such case made and provided, in force on the day of : Provided, nevertheless, that the said lessee shall be entitled to a renewal of said lease for a further term of twenty-one years, on such terms, conditions, royalties and ground rents as may be in force by any statute of the Province of British Columbia at the time of the expiration hereof, and so likewise from time to time and as often as may be necessary for consecutive and succeeding periods of twenty-one years: Provided that the said lessee shall make application to the Chief Commissioner of Lands and Works for such renewals within one year previous to the expiration of the then existing lease, and provided that all arrears of royalties, ground rents and other charges are first fully paid; AND the said part of the second part hereby, for executors, administrators and assigns, covenant with the said lessor in manner following, that is to say: THAT the said lessee will pay the royalty and the rent hereinbefore reserved, at the times and in the manner hereinbefore appointed, and will not assign any part of the premises, rights, powers or privileges hereby granted, without the permission in writing of the said Chief Commissioner of Lands and Works first had and obtained; AND will at all times pay all rates, taxes and assessments whatsoever (if any) which may be made, assessed, or levied for or in respect of any of the premises; AND shall erect, and during the said term maintain and keep in regular and continuous working and repair (save when prevented by inevitable accidents)
lumber mill capable of cutting not less than
thousand feet of lumber per day of twelve hours, in such part of the Province of British Columbia as the Chief Commissioner of Lands and Works may approve of in writing; AND shall keep correct books of account of all logs brought to
Mill, stating from whom such logs were acquired, where cut, the date received, and the scale measurement thereof, and shall make monthly returns to the Chief Commissioner of Lands and Works showing the measurement of such logs, and such other particulars as the Lieutenant-Governor in Council may require; AND shall also make reasonable use within reasonable periods of the whole of the premises hereby granted, and apply the same to the purposes hereinbefore mentioned, and perform this covenant to the satisfaction of the said Chief Commissioner of Lands and Works for the time being.

PROVIDED that this lease shall, on and after the day of , be subject to such taxes and conditions as may be in force by statute at said last-mentioned date.

PROVIDED, and it is hereby agreed, that if any rent, royalties, or moneys falling due hereunder shall be in default or unpaid for the space of one calendar month after the same shall have respectively become due, then, and upon every such default, whether any previous one shall have been previously condoned or not, it shall be lawful for the said lessor, by the Chief Commissioner of Lands and Works, his agent or servant, into and upon the said premises to enter, and therefrom to distrain, seize, take, and sell any goods and chattels there found, and out of the proceeds of all such sale or sales to repay himself and themselves such rents or moneys so due, AND all costs and expenses attendant on such distress and sale, and so nevertheless that no exercise of this power shall be construed to prejudice or affect any other powers, remedies or forfeiture accruing to the said lessor for the time being under these presents. PROVIDED, always and these presents are upon this express condition, that if the said lessee shall fail to fulfil, keep and observe all and singular the payments, covenants and stipulations hereinbefore contained, and on part to be paid, observed and performed, or any of them, or any part thereof, respectively, it shall be lawful for His Majesty, His heirs, successors or assigns, by the said Chief Commissioner of Lands and Works, his agent or servant, upon three calendar months' notice to that effect from the Chief Commissioner of Lands and Works, or under the hand of any person duly authorized by him in that behalf, and delivered at
the house or office of the said lessee , or published in four

consecutive numbers of the British Columbia Gazette, absolutely to forfeit all the rights and privileges of entering, cutting spars, timber or lumber, or otherwise, hereby conveyed, or so much thereof as shall be specified in that behalf in any such notice, and thereupon these presents and all the rights and privileges therein contained shall, so far as in accordance with such notice, cease, determine, and be of none effect, any rule of law or equity to the contrary notwithstanding, without any actual re-entry on the part of the said lessor, or inquisition, or office found, or other proceeding whatever: PROVIDED further, that the interest, rights, and privileges of the lessee in the said hereditaments, tenements, and premises, shall be construed as subject always to all the provisions of the "Land Act," and amendments thereof.

PROVIDED, further, that all timber cut from the said land must be manufactured within the confines of the Province of British Columbia, otherwise the timber so cut may be seized and forfeited to the Crown and the lease cancelled.

IN WITNESS WHEREOF the parties hereto have hereunto set their hands and seals, the day and year first above written.

WITNESS, His Honour
the Lieutenant-Governor of British Columbia, acting on behalf of His Majesty, and the great seal of the Province of British Columbia, hereunto affixed.

Signed, sealed, and delivered by the within-named in the presence of

Signed, sealed, and delivered by the within-named in the presence of

Signed, sealed, and delivered by the within-named in the presence of

By Command.

.....
Provincial Secretary.

EXISTING LEASES OF TIMBER LANDS

31st DECEMBER, 1910

NOTE { P.—Perpetually renewable in 21-year periods
U.—Unrenewable

HOLDER	Acreage	Rental Per Acre	Year of Issue	Original Term of Years	Original Date of Expiry	
B. C. M. T. & T. Co.	826	.10	1892	21	25 Jan. 1913	U.
"	851	.10	1892	30	14 March 1922	U.
"	1996	.05	1886	21	15 March 1907	P.
"	883	.05	1887	21	10 June 1908	P.
"	1360	.05	1888	21	8 Feb. 1909	P.
"	1635	.10	1889	21	7 Oct. 1910	P.
"	6971	.05	1886	21	6 Feb. 1907	P.
"	2813	.05	1887	21	10 June 1908	P.
"	6024	.05	1887	21	10 Nov. 1908	P.
"	18210	.10	1889	30	2 May 1919	P.
"	1690	.10	1889	21	27 Nov. 1910	P.
"	27600	.10	1890	30	22 Aug. 1920	P.
"	3041	.10	1892	30	14 March 1922	P.
"	7825	.05	1886	21	6 Feb. 1907	P.
"	800	.05	1888	21	16 March 1909	P.
"	960	.10	1891	21	5 Feb. 1912	P.
"	1657	.10	1889	21	7 Oct. 1910	P.
"	840	.10	1892	21	27 July 1913	P.
"	6608	.15	1894	30	20 Sept. 1924	P.
B. C. Land & Inv. Agency	2500	.05	1887	21	18 June 1908	P.
"	3749	.05	1888	21	3 Feb. 1909	P.
"	1882	.10	1889	21	16 Jan. 1910	P.
J. A. Sayward	500	.10	1890	10		Spl.
"	160	.10	1891	10		Spl.
"	1380	.05	1885	21	18 June 1906	P.
"	528	.10	1891	21	1 April 1912	P.
"	3453	.10	1892	21	25 Jan. 1913	P.
Harrison R. M. T. & T. Co.	587	.10	1892	21	25 Jan. 1913	U.
A. Haslam	410	.10	1890	21	22 Aug. 1911	P.
H. Whittaker	582	.10	1890	21	24 March 1911	U.
Victoria L. & Mfg. Co.	653	.05	1888	21	16 March 1909	Spl.
"	785	.10	1890	21	18 March 1911	Spl.
"	684	.10	1892	30	25 Jan. 1922	U.
Brunette S. M. Co	11845	.10	1892	21	25 Jan. 1913	P.
"	620	.10	1890	21	23 June 1911	U.
"	210	.10	1891	30	1 April 1921	P.
"	2908	.15	1904	21	23 Aug. 1925	U.
Nor. Pac. Lumber Co.	10150	.10	1889	30	13 May 1919	P.
"	4800	.10	1890	19	3 Feb. 1909	P.
"	474	.05	1888	21	16 March 1909	P.
"	2560	.05	1888	21	16 March 1909	P.
"	963	.05	1888	21	16 March 1909	P.
"	23600	.05	1888	30	3 Feb. 1918	P.
"	8740	.10	1889	30	10 Aug. 1919	P.

HOLDER	Acreage	Rental Per Acre	Year of Issue	Original Term of Years	Original Date of Expiry	
Nor. Pac. Lumber Co.....	9169	.10	1891	30	1 April 1921	P.
"	3696	.10	1891	30	1 April 1921	P.
"	5445	.10	1892	30	25 Jan. 1922	P.
Paterson Timber Co.....	393	.10	1891	30	5 Feb. 1921	U.
Wm. Caldwell	4243	.15	1890	21	18 March 1911	U.
"	655	.15	1894	21	22 March 1915	U.
R. H. Wood	1089	.15	1905	21	20 June 1926	U.
G. O. Buchannan.....	1215	.10	1891	30	5 Feb. 1921	U.
"	915	.10	1892	30	25 Jan. 1922	U.
Davies, Sayward M. & L. Co..	6017	.10	1892	21	10 March 1913	P.
"	3862	.10	1893	21	1 April 1914	P.
Frank Seaman.....	1400	.10	1896	21	4 March 1917	U.
Toronto & B. C. L. Co.....	4251	.10	1893	30	1 Aug. 1923	P.
"	5296	.10	1892	30	28 March 1922	P.
"	13797	.10	1893	30	1 May 1923	P.
Samuel Luffman.....	5210	.15	1904	21	10 May 1925	U.
"	2696	.15	1904	21	23 Aug. 1925	U.
C. F. Caldwell	1280	.15	1904	21	10 May 1925	U.
Pac. Coast L. Co	8945	.10	1893	30	1 April 1923	U.
"	3838	.10	1893	21	1 April 1914	P.
"	862	.10	1893	21	3 July 1914	P.
"	1637	.10	1893	21	3 July 1914	P.
"	3504	.10	1893	21	3 July 1914	P.
"	2833	.10	1893	21	3 July 1914	P.
Sutton L. & T. Co.....	2465	.10	1893	21	1 April 1914	U.
"	14728	.25	1904	21	7 March 1925	U.
"	11434	.25	1904	21	16 June 1925	U.
"	18614	.25	1905	21	15 March 1926	U.
"	11143	.25	1905	21	1 Nov. 1926	U.
"	1702	.25	1905	21	1 Nov. 1926	U.
"	9443	.25	1905	21	1 Nov. 1926	U.
M. M. Boyd	1260	.10	1893	21	16 Oct. 1914	P.
"	9480	.10	1892	30	25 Jan. 1922	P.
Land, Log & L. Co..... ...	30622	.10	1892	30	28 March 1922	P.
"	1360	.10	1893	28	5 Feb. 1921	P.
"	11690	.10	1893	18	18 March 1911	P.
A. & W. Hill	976	.10	1893	21	1 April 1914	P.
A. H. Campbell.	5353	.15	1893	30	1 May 1923	P.
C. P. R.	2680	.15	1897	21	2 March 1918	U.
A. L. Clarke	403	.10	1892	30	25 May 1922	P.
"	240	.10	1892	30	25 May 1922	P.
"	225	.10	1892	30	25 May 1922	P.
"	360	.10	1892	30	25 May 1922	P.
"	148	.10	1892	30	25 May 1922	P.
"	965	.10	1892	30	25 May 1922	P.
"	861	.10	1892	30	25 May 1922	P.
A. L. Clarke	425	.10	1892	30	25 May 1922	P.
"	320	.10	1892	30	25 May 1922	P.
"	1928	.10	1892	30	25 May 1922	P.
"	363	.10	1892	30	25 May 1922	P.
"	1200	.10	1892	30	25 May 1922	P.
"	1000	.10	1892	30	25 May 1922	P.
"	1265	.10	1892	30	25 May 1922	P.
"	621	.10	1892	21	25 May 1913	P.
"	748	.10	1892	30	25 May 1922	P.

HOLDER	Acreage	Rental Per Acre	Year of Issue	Original Term of Years	Original Date of Expiry	
McKinnon & Robertson	10314	.15	1897	21	1 March 1918	U.
J. Rennie	1028	.25	1905	21	13 July 1926	U.
"	368	.25	1906	21	6 March 1927	U.
Wm. Godfrey	480	.10	1896	15	22 Aug. 1911	U.
"	200	.10	1896	24	22 Aug. 1920	P.
"	168	.10	1896	15	22 Aug. 1911	P.
"	738	.10	1896	24	22 Aug. 1920	P.
"	280	.10	1897	24	5 Feb. 1921	P.
"	1277	.10	1897	24	1 April 1921	P.
"	920	.10	1897	24	1 April 1921	P.
"	1036	.10	1897	24	1 April 1921	P.
"	249	.10	1897	24	1 April 1921	P.
"	520	.10	1897	24	1 April 1921	P.
"	2391	.10	1897	24	1 April 1921	P.
"	2880	.10	1897	24	1 April 1921	P.
"	358	.10	1897	24	1 April 1921	P.
"	465	.10	1897	24	1 April 1921	P.
"	554	.10	1897	24	1 April 1921	P.
"	743	.10	1897	24	1 April 1921	P.
"	630	.10	1897	24	1 April 1921	P.
"	178	.10	1897	24	1 April 1921	P.
"	1140	.10	1902	10	1 April 1912	
Hall Mines, Ltd.	1000	.10	1898	15	14 March 1913	U.
C. S. Battle	189	.10	1897	21	5 Feb. 1918	P.
Yorkshire G. & S. Corp'n	788	.10	1892	30	25 May 1922	P.
" "	280	.10	1892	30	25 May 1922	P.
" "	153	.10	1892	30	25 May 1922	P.
" "	360	.10	1892	30	25 May 1922	P.
" "	280	.10	1892	30	25 May 1922	P.
" "	675	.10	1892	30	25 May 1922	P.
" "	198	.10	1892	30	25 May 1922	P.
" "	554	.10	1892	30	25 May 1922	P.
" "	161	.10	1892	30	25 May 1922	P.
" "	313	.10	1892	30	25 May 1922	P.
" "	1966	.10	1892	30	25 May 1922	P.
" "	600	.10	1892	30	25 May 1922	P.
" "	360	.10	1892	30	25 May 1922	P.
" "	1822	.10	1892	30	25 May 1922	P.
Red Cedar Lumber Co.	538	.10	1892	30	25 May 1922	P.
H. L. Jenkins	301	.10	1892	30	25 May 1922	U.
A. J. Keith	308	.10	1892	30	25 May 1922	P.
"	660	.10	1892	30	25 May 1922	P.
"	620	.10	1892	30	25 May 1922	P.
"	600	.10	1892	30	25 May 1922	P.
Royal Bank of Canada	300	.10	1892	21	25 May 1913	P.
G. G. King	8758	.15	1903	21	30 July 1924	U.
Quinn & Whitney	35360	.15	1893	30	1 Aug. 1923	P.
Geo. Gillespie	2107	†	1902	21	22 Feb. 1923	P.
Kate Scott	327	.15	1903	21	17 March 1924	U.
Moyie L. Co.	7040	.15	1903	21	20 May 1924	U.
Jno. Hanbury	2865	.15	1903	21	20 Sept. 1924	U.
Alex. Barnett	832	.15	1894	21	20 Sept. 1915	P.
Thos. H. Shevlin	7830	.10	1891	30	1 April 1921	P.
McLean & Webster	4930	.15	1903	21	16 April 1924	U.
" "	21956	.15	1904	21	24 Jan. 1925	U.

†Approximately 5c.

HOLDER	Acreage	Rental Per Acre	Year of Issue	Original Term of Years	Original Date of Expiry		
Elk L. & Mfg. Co.	9380	.15	1903	21	15 May	1924	U.
P. Lund	25868	.15	1903	21	1 Aug.	1924	U.
J. Breckenridge	10855	.15	1903	21	29 Oct.	1924	U.
F. R. Greer	3535	.15	1904	21	8 April	1925	U.
Small & Bucklin	4144	.15	1905	21	21 Feb.	1926	U.
J. S. Deschamps	2220	.25	1905	21	12 Dec.	1926	U.
W. Allan	1920	.25	1905	21	12 Dec.	1926	U.
Nanaimo L. Co.	3045	.10	1892	21	25 Jan.	1913	P.
"	512	.10	1893	21	1 April	1914	P.
"	835	.05	1888	21	16 March	1909	P.
"	3000	.05	1888	21	16 March	1909	P.
Merrill & Ring Co.	1083	.10	1892	21	25 Jan.	1913	P.
"	2065	.10	1893	21	1 April	1914	P.
"	1117	.10	1894	21	16 March	1915	P.
Toronto & B. C. L. Co.	1920	.10	1893	30	1 Aug.	1923	U.
R. D. Merrill	1290	.10	1893	21	1 April	1914	P.
Nor. Pac. L. Co.	481	.10	1891	30	5 Feb.	1921	U.
Hastings S. Mfg. Co.	224	.15	1887	21	10 Nov.	1908	Spl.

TOTAL ACREAGE 619,025
TOTAL RENTAL $78,218.45

PULP LEASES

HOLDER	Acreage	Rental Per Acre	Year of Issue	Original Term of Years
Bella Coola Dev. Co.	20327	.02	9 Jan., 1907	21
"	59672	.02	"	21
Can. Indust. Co.	2698	.02	30 Nov., 1906(1)	21
"	9426	.02	"	21
"	4473	.02	"	21
"	8023	.02	"	21
"	5879	.02	"	21
"	2652	.02	"	21
"	2923	.02	"	21
"	2715	.02	"	21
"	561	.02	"	21
"	1255	.02	"	21
"	1950	.02	"	21
"	538	.02	"	21
"	1762	.02	"	21
"	10246	.02	"	21
"	1657	.02	"	21
"	1864	.02	"	21
"	3200	.02	"	21
"	10167	.02	"	21
"	3043	.02	"	21
"	2244	.02	"	21
"	35707	.02	"	21
"	13200	.02	"	21
"	2928	.02	"	21
"	5440	.02	"	21

(1) Date first payment.

HOLDER	Acreage	Rental Per Acre	Year of Issue	Original Term of Years
Quatsino P. & P. Co	46628	.02	12 Dec., 1904	21
"	9041	.02	22 Jan., 1906	21
Oriental P. & P. Co	28355	.02	12 Nov., 1903	21
"	24157	.02	12 Nov., 1903	21
"	8448	.02	12 Nov., 1903	21
"	23220	.02	6 Feb., 1905	21
Total Acreage	354399			

HEMLOCK LEASES

HOLDER	Acreage	Rental Per Acre	Year of Issue	Original Term of Years
Fraser R. Tannery	2732	.02	7 Nov., 1905	30
"	885	.02	"	30
"	688	.02	"	30
"	660	.02	"	30
"	1560	.02	"	30
"	498	.02	"	30
"	4321	.02	"	30
"	562	.02	"	30
"	6085	.02	"	30
"	739	.02	"	30
"	2823	.02	20 Jan., 1906	30
"	775	.02	"	30
"	760	.02	"	30
"	4160	.02	"	30
"	1078	.02	"	30
"	1313	.02	"	30
"	1263	.02	"	30
"	488	.02	"	30
"	293	.02	"	30
"	569	.02	"	30
Total Acreage	32252			

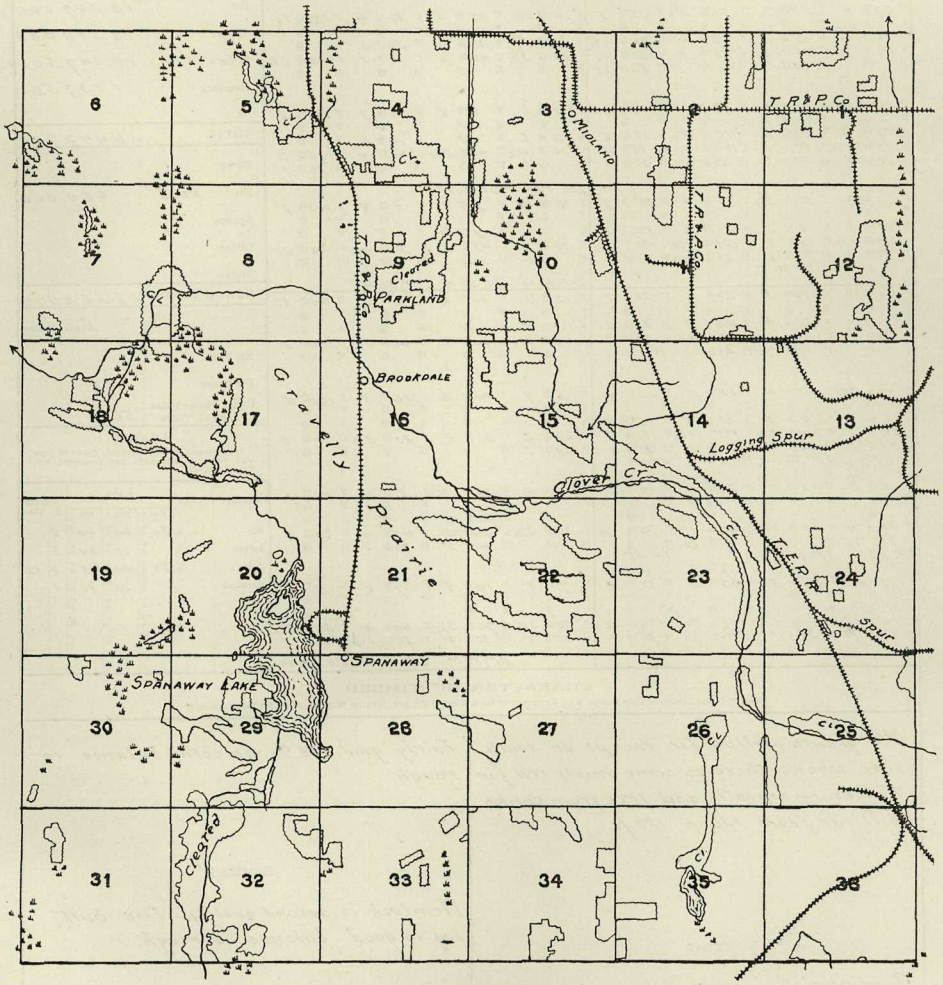
SAMPLE SCHEDULES OF COUNTY CRUISES IN THE STATE OF WASHINGTON.

No. 1.

PIERCE COUNTY, WASHINGTON

H. V. RAILSBACK, County Assessor.

TOWNSHIP 19 NORTH. RANGE 3 EAST, WILLAMETTE MERIDIAN.



Note - Logged Off Land colored thus.....

No Timber of Value on Area colored thus.....

No. 2.

PIERCE COUNTY WASHINGTON

H. V. RAILSBACK, County Assessor

SECTION 17 TOWNSHIP 16 N. RANGE 5 E W. M.

TIMBER ESTIMATE BY TEN ACRE TRACTS

PIONEER B'DY. & PTG. CO., TACOMA—10204

F 50 @ 4	F 40 @ 3	F 75 @ 5	F 100 @ 4	F 40 @ 6	F 75 @ 9	F 50 @ 8	F 60 @ 8
F @	F @	F @	F @	F @	F @	F @	F @
S 30 @ 2	S 20 @ 5	S 10 @ 5	S 10 @ 5	S 10 @ 4	S 12 @ 8	S 3 @ 8	S 10 @ 4
C 150 @ 1½	C 100 @ 1½	C 75 @ 2	C 75 @ 1½	C 60 @ 3½	C 60 @ 3	C 40 @ 3	C 80 @ 3
H @	H 50 @ ½	H 50 @ ½	H 25 @ 1	H @	H 20 @ 1½	H 10 @ 3½	H @
CP 75							
F 50 @ 4	F 20 @ 3	F 75 @ 5	F 75 @ 5	F 2 @ 10	F 25 @ 5	F 30 @ 4	F 120 @ 10
F @	F @	F @	F @	F @	F @	F @	F @
S 25 @ 4	S 15 @ 3	S 6 @ 4	S 30 @ 4½	S 7/8 @ 8/8	S 36 @ 6	S 50 @ 5	S @
C 50 @ ½	C 100 @ 1	C 75 @ 1	C 90 @ 1	C 40 @ 3½	C 40 @ 6	C 60 @ 1	C 40 @ 2¼
H @	H 20 @ 1	H @	H @	H @	H @	H @	H @
F 75 @ 3	F 50 @ 3	F 60 @ 5	F 40 @ 6	F 2 @ 8	F 4 @ 8	F 7 @ 7	F 100 @ 8
F @	F @	F @	F @	F @	F @	F @	F @
S 10 @ 5	S 20 @ 4	S 10 @ 5	S 12 @ 5	S 2 @ 6	S @	S 12 @ 4	S @
C 75 @ 1½	C 50 @ 2	C 100 @ 1	C 75 @ 3	C 70 @ 6½	C 40 @ 5½	C 40 @ 4	C 90 @ 2
H 20 @ 1	H 50 @ ½	H 25 @ 1	H 50 @ 1	H @	H @	H @	H 20 @ 1
				DF 80 M	DF 30 M		
F 50 @ 3	F 50 @ 3½	F 75 @ 4	F 35 @ 7	F 15 @ 10	F 5 @ 9	F 8 @ 8	F 140 @ 7
F @	F @	F @	F @	F @	F @	F @	F @
S 12 @ 4	S 12 @ 5	S 25 @ 6	S 25 @ 3	S @	S 3 @ 9	S 7 @ 6	S @
C 100 @ 1½	C 75 @ 2	C 125 @ 1½	C 100 @ 2½	C 70 @ 5	C 45 @ 5	C 50 @ 4½	C 40 @ 2
H 25 @ 1	H 30 @ 1	H 25 @ 1½	H @	H @	H @	H @	H @
	TP 50			DF 80 M	DF 50 M	DF 50 M	
F 20 @ 3	F 70 @ 3	F 20 @ 6	F 20 @ 5	F 12 @ 7	F 10 @ 6	F 6 @ 7	F 40 @ 5
F @	F @	F @	F @	F @	F @	F @	F @
S @	S 10 @ 4	S 25 @ 3	S 30 @ 2	S 3 @ 5	S @	S @	S @
C 125 @ 1	C 75 @ 1½	C 100 @ 1½	C 85 @ 2	C 90 @ 2½	C 90 @ 3	C 40 @ 3½	C 150 @ 2
H @	H 50 @ ½	H 25 @ 1	H @	H @	H @	H @	H @
F 40 @ 3½	F 50 @ 4	F 45 @ 5	F 20 @ 4	F 6 @ 8	F 10 @ 6	F 22 @ 5	F 100 @ 6
F @	F @	F @	F @	F @	F @	F @	F @
S 8 @ 3	S 10 @ 5	S 10 @ 5	S 15 @ 5	S @	S @	S @	S @
C 80 @ 2	C 100 @ 2½	C 125 @ 1½	C 100 @ 2	C 60 @ 2	C 30 @ 2	C 20 @ 2½	C 80 @ 2
H 50 @ ½	H 50 @ ½	H @	H 25 @ 1	H 20 @ 1	H @	H @	H @
	TP 50	TP 50	TP 60				
F 15 @ 2	F 15 @ 2	F 20 @ 3	F 10 @ 2	F 40 @ 8	F 30 @ 7	F 8 @ 10	F 10 @ 7
F @	F @	F @	F @	F @	F @	F @	F @
S @	S @	S @	S @	S @	S 20 @ 6	S @	S @
C 75 @ ½	C 65 @ 1½	C 60 @ 1	C 75 @ 1½	C 30 @ 2½	C 60 @ 3	C 45 @ 4	C 80 @ 2
H 30 @ ½	H @	H 50 @ ½	H @	H @	H 40 @ 1	H 70 @ 1	H @
TP 60	TP 35		TP 45				
F 100 @ 1½	F 40 @ 2	F 35 @ 3	F 35 @ 4	F 7 @ 8	F 10 @ 8	F 7 @ 8	F 5 @ 8
F @	F @	F @	F @	F @	F @	F @	F @
S 7 @ 3	S @	S @	S @	S @	S @	S @	S @
C 100 @ 1½	C 120 @ 1½	C 75 @ ½	C 100 @ ½	C 70 @ 2½	C 70 @ 3½	C 40 @ 4	C 30 @ 3½
H 50 @ ½	H 35 @ 1	H 40 @ ½	H 75 @ 1	H 50 @ 1	H 30 @ 1	H 80 @ 1½	H 80 @ 1
					DF 50 M	DF 50 M	DF 30 M

TOTAL ESTIMATE MERCHANTABLE TIMBER

STANDING	FEET B. M.
Fir	13 147 000
Spruce	2 510 000
Cedar	10 147 500
Hemlock	1 137 500
TOTAL	26 942 000
Down Fir Dead	420 000
Spruce	
Cedar	
TOTAL	
GRAND TOTAL	27 362 000

	No.	Av. Length	Av. Diameter
Fir Piles			
Fir Spars			
Cedar Phone Poles			
Cedar Tel. Poles	565		

GRADES

Percentages of Clear lumber, grade of logs and value of stumpage per thousand feet board measure.

VARIETY	CLEAR	LOGS No. 1	LOGS No. 2	LOGS No. 3	VALUE $	Cts.
Fir	%	20 %	40 %	40 %	2	
Spruce	%	%	20 %	80 %	2	
Cedar	%	25 %	40 %	35 %	2	50
Hemlock	%	%	20 %	80 %	1	
	%	%	%	%		
	%	%	%	%		
	%	%	%	%		

CHARACTER OF TIMBER

Give Full and Complete Information with Reference to Each Kind of Timber, Making Mention of All Its Peculiarities, etc.

FIR

Old growth yellow fir except on south side where there is some small red fir Timber is smooth and free from conks Will run from 130 to 180 ft

SPRUCE

Fairly good. 20% smooth balance is rough

HEMLOCK

Hemlock is second quality The butt log is good balance is rough.

CEDAR

Good quality. some is large smooth and sound and will cut out good clear logs

PILING, SPARS, ETC.

No. 3.

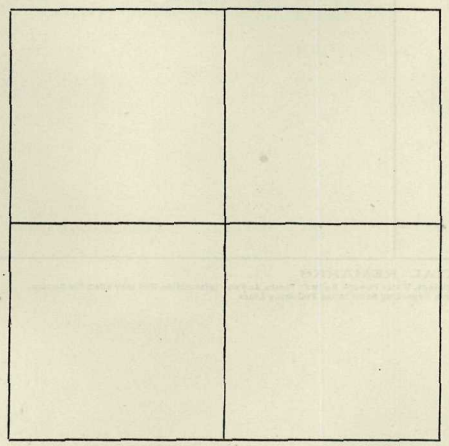
PIERCE COUNTY, WASHINGTON

H. V. RAILSBACK, County Assessor

SECTION 25 TOWNSHIP 19 N. RANGE 3 E. W. M.

TRACT	GENERAL DESCRIPTION SURFACE	SOIL	CLEARING	IMPT'S	CLASSIFICATION	LAND VALUE PER ACRE
NE¼ NE¼						$
NW¼ NE¼						
SW¼ NE¼						
SE¼ NE¼						
NE¼ NW¼						
NW¼ NW¼						
SW¼ NW¼						
SE¼ NW¼						
NE¼ SW¼						
NW¼ SW¼						
SW¼ SW¼						
SE¼ SW¼						
NE¼ SE¼						
NW¼ SE¼						
SW¼ SE¼						
SE¼ SE¼						

TIMBER ESTIMATE
(By Forty Acre Tracts)



IMPROVEMENTS	VALUE
Dia 1. House 18×24 (175) Outbldgs (205)	$ 380
" 3. House 19×36 (100) Barn (80)	180
" 7. House 16×24 (250) Outbldgs (130)	380
" 8. House 20×26 (100) Outbldgs (165)	265
General description	
Dia 6 Level clay gravel 18 Oc (150) Cleared 5 Oc (30) slashed Bal (25) heavy	
Dia 4 Nearly level (20) sand and gravel Heavy.	
Dia 2. Level. 20c Black Loam 1/2 Oc (150) cleared Bal sand & gravel (25) Clearing heavy.	
Dia 1 Nearly level except 100 ft. bench NW-SE 45 Oc. Black loam 85 Oc clay (30) and gravel Bal. gravel (25) 35 Oc (150) cleared. 10 Oc Black (50) loam unimp.	
Dia 9 Level Blk (50) loam Heavy.	
" 3 Level except 40 ft bench NW-SE. Clay and gravel. 6 Oc (125) cleared Bal (30) heavy	
Dia 7 Level except 50 ft bench NE-SW. Clay and gravel 11 Oc (125) cleared Bal (30) heavy	

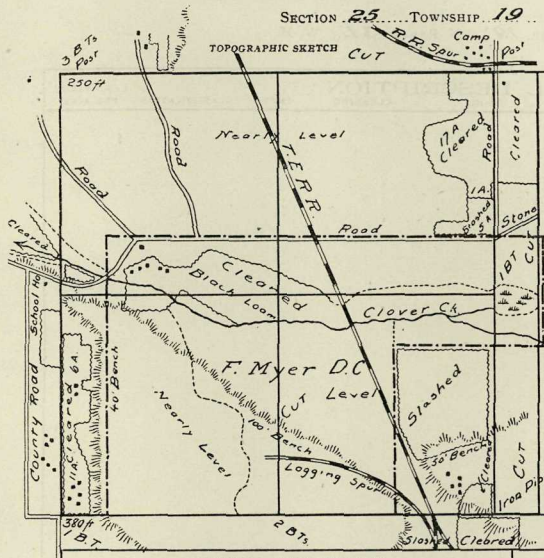
No. 4.

PIERCE COUNTY, WASHINGTON

H. V. RAILSBACK, County Assessor

SECTION 25 ..... TOWNSHIP 19 ... N. RANGE 3E .. W. M.

TOPOGRAPHIC SKETCH



Examination Made Mar 9. 10. 11. 1909

By F. E Springer — Cruiser

Asst. Cruiser

Geo Christy — Compassman

Approved by — Chief Cruiser

Checked — 19

By — Cruiser

Asst. Cruiser

Compassman

Approved by — Chief Cruiser

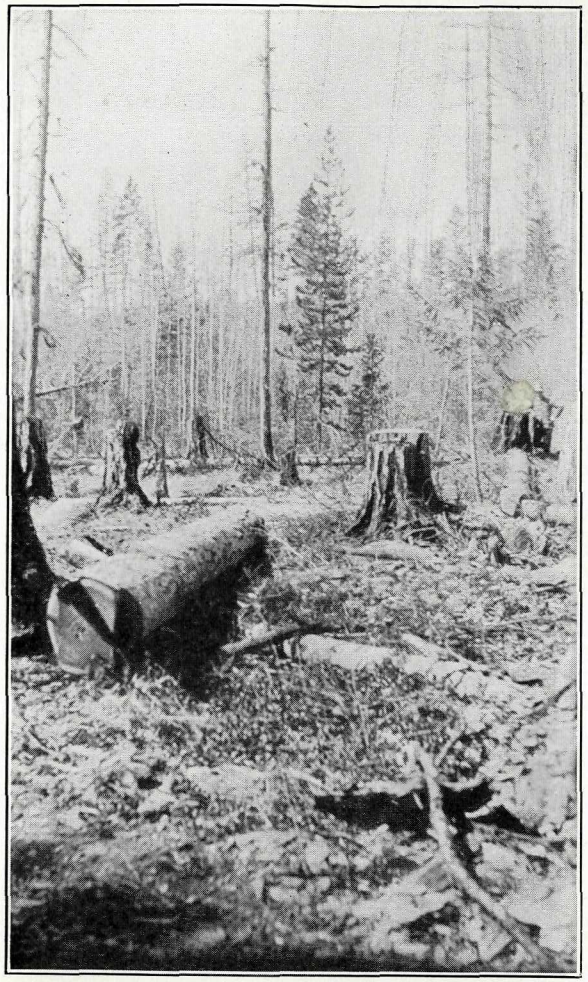
LOGGING CONDITIONS

Are good Surface is nearly level Timber can be handled with horses or donkey engines to the east to T.E.R.R.

GENERAL REMARKS

SPECIAL REMARKS

Indicate on Topographical Plat Location of Minerals, Coal Outcroppings, Water Powers, Railway Passes, and any information that may affect the Section, Giving Full Information Regarding Same in the Following Lines



LOGS WASTED IN THE HEWING OF TIES. (Photos supplied by A. E. Watts)