

PART VII.

FORESTRY

FORESTRY

REPORT OF THE SUPERINTENDENT OF FORESTRY.

DEPARTMENT OF THE INTERIOR, FORESTRY BRANCH,

OTTAWA, July 16, 1908.

W. W. CORY, Esq.,

Deputy Minister of the Interior,
Ottawa.

SIR,—I have the honour to submit the following report of the work under my charge for the year 1907-8.

With this also are submitted the reports from the officials in charge of the different divisions of the work of this branch.

STAFF.

Mr. A. H. D. Ross, who was in charge of the timber survey on the Riding Mountain forest reserve during the summer of 1907, resigned in the fall to accept a position as lecturer in forestry at the University of Toronto. Mr. Ross carried out the work of this survey in a thoroughly satisfactory manner and rendered valuable service to the department. Mr. Ross will assist the forestry branch during the present year in collecting and compiling statistical information in regard to the forests and wood production of the Dominion.

Mr. A. Knechtel, formerly forester to the Forest, Fish and Game Commission of the state of New York, has been appointed inspector of forest reserves. Mr. Knechtel received his technical education as a forester at Cornell University, and previously had considerable practical experience in lumbering operations. The reforestation work done by the Commissioner in the state of New York, which is the most extensive work in that direction yet done in America, was carried out under his management, and he has also visited Europe and studied the systems of forestry carried out in the different countries of that continent.

Mr. H. R. MacMillan, a graduate of Yale School of Forestry, and Mr. J. R. Dickson, a graduate of the School of Forestry at Ann Arbor in connection with the University of Michigan, have also been appointed to the staff. They have both assisted in the work of this branch during the summer months, and have proved capable and reliable.

Mr. Archibald Mitchell, of Edmonton, has also been appointed permanent assistant in the tree planting division with headquarters at Indian Head. Mr. Mitchell received a training in forestry in Scotland and has been living in the province of Alberta for some years and is thoroughly acquainted with western conditions. He was formerly employed temporarily as a tree planting inspector under this branch.

Mr. E. F. Drake was transferred from the Mounted Police Department and placed in charge of irrigation records.

TIMBER.

During the past year 85 timber berths, comprising an area of 460.53 square miles, were sold, for which the sum of \$246,931.55 was received as bonus.

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SPRUCE WOODS FOREST RESERVE.

The tract comprised in this reserve, which is located about ten miles east of Brandon, is light, sandy soil, with the exception of a low-lying portion, which is covered by a tamarack swamp. The high land bears a scattered growth of spruce, and the natural reproduction is only slowly restocking the area. In consequence of this and because the reserve is easy of access by the Canadian Pacific Railway, more planting has been done on this reserve than on any other, the stock for this purpose being brought from the nursery station at Indian Head.

The method of planting followed was to run a furrow with a plough and plant the seedlings in the furrow in such a way as to shelter them as much as possible from the sun. The plantation was of an experimental nature, and now covers about twenty-five acres.

MOOSE MOUNTAIN FOREST RESERVE.

Near the eastern boundary of the province of Saskatchewan and south of the main line of the Canadian Pacific railway is located the Moose Mountain forest reserve. It is an elevated tract of hills and lakes and beautiful scenery. No one passing through the country on the railway would guess the existence of such a beautiful wooded tract, but any one who has visited it cannot but be impressed by its peculiar value as a forest reserve in a prairie district such as that in which it is located.

The shores of Fish lake, the most important sheet of water in the reserve, are frequented as a summer resort by the people of the district. The lands used for camping grounds are private property, having been disposed of some years ago. Larger numbers are, however, resorting to this lake every year, and it will be necessary in a short time to make some provision by lease or otherwise for their occupation of the land in that vicinity.

The timber on this reserve is poplar, birch and ash. Most of it has been cut over and a large part of it has suffered from fire so that there is little of a mature stand. There is, however, a vigorous young forest growth springing up all over the reserve and it furnishes a supply of wood for people throughout the district for many miles round. During recent years the protection from fire has been thorough and no loss has been occasioned in this reserve from that cause. As the natural reproduction is good and the protection from fire sufficient, no artificial means have been taken in this reserve to provide for reforestation.

I was unable to visit the Beaver Hills forest reserve, which is north of the Canadian Pacific railway and is of the same general character as the Moose Mountain reserve.

PINES FOREST RESERVE.

The Pines Forest reserve is situated south of the Saskatchewan river and west of Prince Albert and comprises a tract of 145 square miles of light, sandy land covered with a growth of jackpine. A swampy area runs diagonally across this reserve, in which tamarack and spruce are the most important trees. This tract has furnished a large number of ties for railway construction and is the chief source of fuel and timber supply for a large section. It is peculiarly suited for a forest reserve as the soil is of such a poor character that it cannot be successfully cultivated. As the question of the timber supply is of pressing importance, not only to the farming community but to the towns and villages, and there is some conflict as to what demands the reserve can supply, it is proposed to have a timber survey of this reserve made without delay so as to determine this question.

PRINCE ALBERT FOREST RESERVE.

A small reserve of the same general character as the Pines reserve, namely, light, sandy land covered with jackpine, was set apart some years ago by order of the

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Minister of the Interior, to the north of the Saskatchewan river across from Prince Albert, but this reserve was not included in those established by the Dominion Forest Reserves Act. I examined this tract in company with the Crown Timber agent and the forest ranger, and after eliminating all lands that could be in any way classed as agricultural it was decided to recommend that a permanent reserve be established comprising the following lands:—Sections 16, 17, 18, 19, 20 and 21, township 49, range 26, west of the 2nd meridian; sections 5, 6, 7, 8, 9, 10, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23 and 24, township 49, range 27, west of the 2nd meridian; sections 34, 35 and 36, township 48, range 28, west of the 2nd meridian.

This reserve, if properly protected, will provide a fuel and timber supply for Prince Albert and the vicinity. The jackpine reproduces quickly and naturally and but little artificial assistance would be necessary to keep this tract in good forest condition. If it is bared of its forest covering it will become nothing but a waste of land, valueless for any purpose and a menace to the good land surrounding it.

COOKING LAKE FOREST RESERVE.

This reserve occupies a ridge lying to the east of Edmonton about forty miles. The location is well suited for a forest reserve as the land generally is of poor character and it occupies a tract of high land which forms the watershed of the district. The northern part is comprised in Elk Park and is a hilly country broken by valleys and lakes. In the central part the land is not so broken and the soil is of better quality, but in the southern part it assumes the same general character as in the north. Unfortunately the greater part of this reserve has suffered seriously from fire, and if it were not that the soil is generally poor and that it controls a watershed it would be hardly advisable to continue it as a reserve as it will take many years of careful protection and management to get it into good forested condition again. The fact that the Transcontinental railway passes through the southern portion of it has made a present demand for land even of poor quality.

There are several lakes at the southern end of the reserve which will form an important source of water supply. This is already recognized, as is shown by the fact that an application has been made on behalf of the city of Edmonton for water from these lakes to provide the city supply.

I did not have an opportunity of inspecting the Cypress Hills and Kootenay Lake reserves or the reserves in the province of British Columbia, but hope to make such an inspection during next year.

SQUATTERS.

Steps have been taken during the past year to induce the persons who have squatted on the forest reserves unlawfully to remove therefrom. Every reasonable facility has been offered them for this purpose, and good progress has so far been made.

FIRE RANGING.

During the past year 47 fire rangers were employed patrolling the forested districts, and fortunately their efforts resulted in preventing any serious damage to timber. The season was a favourable one, as it was generally wet, but destructive fires were prevented in several instances only by the strenuous efforts of the rangers.

The railway belt in the province of British Columbia was patrolled by 21 rangers, and but few fires assumed proportions sufficient to make necessary the calling out of additional assistance. A fire on the Stave river resulted from the clearing operations of the Stave Lake Power Company, crossed the river and would probably have destroyed valuable timber if it had not been promptly dealt with by the fire ranger, who called out the men employed by the power company and a lumber company in the vicinity. Another fire in the coast district required a fight of some weeks before it was finally subdued, but it was so kept in check that no timber belonging to the

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Dominion was destroyed. The patrol in the railway belt has, since it was established, been thoroughly effective, and has prevented the destruction of much valuable timber.

Seven rangers patrolled the eastern slope of the Rocky mountains from the international boundary north to the Saskatchewan river. Few fires occurred, as the season was wet. The clearing of land was the chief cause given for the fires which took place.

In the Edmonton district there were five rangers employed and seven in the Prince Albert district.

These comprise the fairly accessible districts and the fire ranging patrol was not extended beyond them until last year. During last year a patrol was established along the line of construction of the Canadian Northern railway from Erwood to The Pas, being the first section of the line proposed to be constructed to Hudson bay. Two rangers were also appointed to protect the district along the Athabaska river from Athabaska Landing to the lake of that name, and one ranger patrolled the Lesser Slave Lake district. This service was looked after by Mr. H. A. Conroy, inspector for the Department of Indian Affairs, and has been carried out effectively, as is attested by reports received from residents of the district. The patrol will be extended into the Peace River district during the coming season.

Owing to the construction of the Grand Trunk Pacific railway westward from Edmonton there was special danger to be apprehended in that district. I have therefore corresponded with that company urging the necessity for the greatest possible precautions during the work of construction and have received word that strict instructions have been given to the contractors to use every effort and every precaution to prevent the spread of fire, and the engineers of the company are devoting their best efforts to seeing that these instructions are carried out. The forest ranger also made an inspection of the manner in which the clearing of the right of way is being carried out, and reports that it is being cleared in a great many places to a width of 200 feet, and that all the debris is being burned upon the land, none of it going outside the right of way. He considers that the requirements of the department in this respect are being met.

The danger is probably greater, however, from the number of people preceding and following railway construction and from the clearing of land for settlement. During last year no fires occurred and early in the present year the forest ranger in charge of the district was given instructions to provide an adequate patrol along the line at the earliest moment in the spring when danger was to be apprehended. These instructions are being carried out thoroughly and the reports so far received show that the patrol is effective. Newspaper reports of extensive fires west of Edmonton are not confirmed by the official reports received. All fires which occurred were extinguished without doing much damage to the forest.

NORTHERN DISTRICTS.

It is impossible to represent too strongly the necessity for adequate protective measures for the northern forested district, stretching from Hudson bay to the Rocky mountains, and covering a belt of timber of greater or less density of fully four hundred miles in width, north of the North Saskatchewan river.

The needs of the rapidly populating prairie country to the south and the necessities of the settlement which is even now extending into the forested zone will imperatively require the timber of this northern district. It has already suffered heavily from fire and the danger is increasing with the advance of settlement, the increase of travel and the extension of the railway systems. Unless some comprehensive scheme of protection is organized and carried out in advance of the opening up of the country this last great forest area of the west will be found, when it becomes accessible and its reserves and shelter are required to meet the public demand, to have suffered the fate of so many other forested districts throughout the Dominion, and to present but a

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blackened and almost barren waste instead of the forest which once clothed it and made the whole district rich and habitable.

TREE PLANTING.

While in the west I inspected the nursery at Indian Head, from which trees are being distributed to the farmers throughout the prairie provinces. The buildings at the nursery are comfortable and suitable and are kept in good order. The grounds have been much improved by the establishment of tree belts and hedges and the whole tract included in the station is being carefully managed and prepared so as to bring about the maximum of sustained production of trees, which will probably be about 3,000,000 trees per annum. The nursery station is itself an example of how a prairie farm can be improved and beautified, and its condition reflects a great deal of credit on Mr. Norman M. Ross, under whose management it has been developed.

That the results of the work accomplished by this division of the Forestry Branch are useful and helpful is sufficiently demonstrated by a visit to some of the farms on which trees distributed from the government nursery have been planted. The contrast between bare buildings on the unsheltered prairie and the comfortable, homelike farmsteads which result from the planting of shelter-belts of trees, can be appreciated only by those who have seen some of the beautiful homes surrounded by groves of trees, hedges and gardens, which are to be found scattered throughout the prairie provinces. There can be no question as to the value of the work of tree distribution carried on by the department. Over eleven million trees have so far been distributed by the department throughout the prairie provinces. The average distribution is now about two million trees per annum.

Last year was not a favourable one in the early part of the season and as a result the stock at the nursery did not make such a successful growth as usual, consequently the number available for distribution was not as large as was expected. The influence of seasons will have to be taken account of in connection with the growth of nursery stock the same as with any other crop, and fluctuations in the quantities of trees available for distribution from season to season may be expected from this cause.

Sample plots of various species of trees are being set out at the nursery station in order to demonstrate the possibilities of different varieties. In these plots will be grown, not only those trees which are now known to be successful, but other species will be tested so that reliable information may be obtained as to the hardiness and productiveness of as large a variety of trees as possible. A number of the coniferous trees will be tested in these plantations. Sample plots of tamarack or Canadian larch have given good results so far as experimented with. The growth is rapid and vigorous and this promises to be one of the most useful trees for planting.

In order to provide for the proper handling of seed from coniferous trees and its extraction from the cones it will be necessary to provide a small drying house. The cones must be dried carefully and the seed threshed out, and in order to take full advantage of the intermittent seed years that occur in connection with coniferous trees it will be necessary to have facilities for handling the crop. Such an equipment is necessary if any increase is to be made in the growth of native coniferous trees in the nursery.

Some better provision for a supply of water to the nursery station is required as the present supply is of poor quality and is threatened by the wearing down of a dam which formed a reservoir on the farm. As the supply pipe for the town of Indian Head passes within a short distance of the nursery station, arrangements could be made for a supply from that source.

Six tree-planting inspectors were employed last year to cover a list of 3,206 names, 1,414 of whom were new applicants. The reports of the inspectors show that the plantations are generally successful. The percentage of failures is small and can

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generally be attributed to some circumstances which prevented proper care being taken of the trees by the receiptant at the time when this was specially necessary. Unfavourable weather has also interfered with plantations in some localities and this was the case during last summer.

IRRIGATION.

The irrigation records at head office have been carefully indexed and the information contained in them is now much more readily available and the handling of the business has been much facilitated in consequence. The list of sales of land for irrigation purposes has been carefully revised and corrected and a careful check is now kept of the connection between applications to purchase and applications for water rights.

A table is appended showing the schemes dealt with under the Irrigation Act up to the present time. The total number of schemes recorded at the present time is 537, of which 331 are for irrigation purposes. Of the irrigation schemes 231 are for the irrigation of 320 acres or less, 71 are for 320 acres to 1,000 acres, and the remainder, including those of the Alberta Railway and Irrigation Company, the Canadian Pacific Railway Company and the Southern Alberta Land Company, are for larger areas. The total area to be irrigated outside of the large schemes mentioned and a few others in which a survey has not yet been made is 176,458 acres.

Lands have been sold for reclamation by irrigation in 139 cases. Of these there have been 120 sales covering one section or less and nineteen sales exceeding that area, making a total of 62,332 acres. This does not include the area of 470,000 acres to be sold to the Alberta Railway and Irrigation Company, or the area of 380,573 acres to be sold to the Southern Alberta Land Company.

During the past year 125 applications were received, the works in connection with 90 schemes were authorized and 46 water licenses were issued.

IRRIGATION CONVENTION.

On July 17 and 18, I attended the irrigation convention held at Calgary. This was the first irrigation convention held in Canada, but it brought together a large representative attendance from the provinces of Alberta, Saskatchewan and British Columbia. A number of interesting and instructive papers were read and questions vital to irrigation interests in the west were discussed. The conclusions of the convention were crystallized in a series of resolutions, some of which are hereafter particularly referred to. The report of this convention has, by permission of the minister, been published as an appendix to a special report prepared by the Commissioner of Irrigation.

The following resolution, which relates to matters coming under the administration of this department, was passed:—

‘Whereas, the permanency of all irrigation development is dependent upon an accurate knowledge of the location and quantity of water supply available; and

‘Whereas, the matter of the topographical surveys to determine the location and quantity of such water supply and the proper methods of conserving it must be undertaken by the governments administering the law relating to the use of such water;

‘Therefore be it resolved, that this convention, while recognizing work already done, urges strongly upon the Dominion government and the government of British Columbia, the importance of making the necessary appropriations and providing the necessary staff to undertake in an intelligent and systematic manner the gauging of all streams of water supply and the location and survey of all sites suitable for reservoirs for the storage of water.’

At the inauguration of the irrigation service in connection with this department it was proposed to provide for a hydrographic survey to comprise the whole irrigation

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district. Gauging stations were established on a number of larger streams, and measurements were taken in other places, but floods washed out most or all of the gauge posts and the measurements were not carried on continuously or with any relation to one another. As a result, the information available as to the flow of the streams is not complete and does not give reliable data from which general conclusions can be drawn.

More attention has been given to this question in the last two years, but the report of a visit made by a member of the staff of the irrigation office to some of the hydrographic stations in the western states during the past year showed that a decided improvement was required in the organization and equipment of the hydrographic survey in the irrigation district in the west if complete and reliable data are to be obtained.

The determination of the water supply is of the greatest importance, not only to irrigation interests, but for the municipal supply of the rapidly developing towns of the west, for the operation of railways and for the convenience of the growing population. As the administration of the water resources of this great district is under the control of the Dominion the responsibility for dealing with this subject rests upon the federal authorities, and the importance of the interests involved would justify the increased expenditure that may be necessary to place the hydrographic survey on an efficient basis.

The difficulties of the present situation are well illustrated by the report of Mr. R. J. Burley, who was inspecting in the Maple Creek district during the last year. Irrigation works in that district are developing and many inspections are required, and the report states that special work of this nature delayed the inspection for some three weeks just at a time when a close check should have been kept on the flow of water in the various streams. The flow of the streams in the irrigation district varies rapidly, and the hydrographer should be able to give his attention to the measurements at the proper time if sufficient and reliable data are to be obtained. An arrangement of hydrographic districts in the irrigation tract with a staff which will be able to give its attention specially to the hydrographic work will be necessary to put this service on a proper basis.

The survey of reservoir sites, also referred to in the resolution quoted, is deserving of consideration. As the normal flow of the streams becomes appropriated for various purposes it will be necessary to provide means for conserving the flood waters, which now to a large extent are wasted, so that they may be utilized for maintaining a steady flow. The rivers flowing from the eastern slope of the Rocky Mountains are subject to great fluctuations owing to sudden thaws in the mountains, often with destructive results, and an investigation such as that suggested would throw considerable light on the possibilities of controlling such floods. A special investigation of reservoir sites would therefore be of great usefulness.

Another resolution passed by the convention was as follows:—

‘Whereas, the duty of water, or the amount required for the irrigation of a defined area, has a most important bearing on irrigation development; and

‘Whereas, the information upon this important question available in any of the provinces of Saskatchewan, Alberta or British Columbia, is vague and incomplete;

‘Therefore be it resolved, that the attention of the governments interested should be directed to this important matter, and they should be urged to take the necessary action to provide for carrying on a thorough system of investigation to determine the duty of water in the different provinces, so that such duty may then be fixed by law.’

The duty of water is a question that is vital to irrigation and is one that is affected by so many conditions of soil, climate, varieties of crop, &c., that it is necessary to have a thorough scientific investigation to arrive at any assured conclusions. At present the irrigation regulations fix the duty of water at 150 acres per cubic foot per second, that duty having been fixed on the recommendation of Mr. G. G. Anderson, an eminent authority. Objection has at times been taken to this duty, and it is the

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subject of one of the clauses of a resolution submitted to the department by the Farmers' Association of Southern Alberta. No doubt the experimental farm conducted by the Department of Agriculture near Lethbridge will take steps to gather data on this question. Under an arrangement with the Canadian Pacific Railway the Commissioner of Irrigation is carrying on observations on the irrigation tract of the company to determine this question.

The irrigation convention also placed itself on record as favouring a forest reserve on the eastern slope of the Rocky Mountains on account of its effect on the flow of the streams issuing from the mountains which are the chief source of supply for irrigation purposes. I would recommend that during the present season a preliminary examination be made to determine the tract which should be included in this reserve, if such a policy is decided on, and to ascertain what special provisions should be made to accomplish the purpose of preservation of the timber and the water sources while at the same time permitting the development of the natural resources included in the district.

IRRIGATION ACT.

The Irrigation Act of the Dominion is generally admitted to be a very complete piece of legislation, but in the carrying out of its provisions questions are continually arising that make necessary a re-examination of the principles on which it is based and occasional amendment of its provisions. A petition received in the department from the Alberta Farmers' Association raises several important questions that may be given some mention.

The association asked that the right to the use of water should be made negotiable and transferable, arguing that a water right, once purchased, was personal property and should be freely transferable the same as any other property. The principle of the Irrigation Act is that a right to the use of water for irrigation purposes is granted in connection with a particular piece of land and is thereafter appurtenant to the land, and that the water cannot be transferred to or used upon any other piece of land. At the first glance it may seem a hardship that a man who has the right to the use of water in connection with a piece of land should not be permitted to use it on any other land or transfer it to some one else if he considers it advisable to do so, but a consideration of the principle on which the law is based and of the experience of other countries leads to the conclusion that the principle is a sound one, and any departure therefrom should be carefully safeguarded.

The principle of the law is that the water is public property and that any rights to the use of it do not convey any property in it but are granted for beneficial use in connection with a specific location. If any larger right were permitted to exist, a right to water might be held speculatively and not used beneficially. One person or company might get control of the water and have a monopoly which would place the owners of lands dependent on the stream at their mercy. The evidence of experience is against the unrestricted transfer of water rights and the proper policy seems to be to adhere in the main to the principle already established by the Act of making the right to the use of water appurtenant to the land.

The Farmers' Association asked that irrigation companies should be required to maintain and operate all laterals under their respective systems. This request related particularly to the Alberta Railway and Irrigation Company. The arrangement that this company should maintain and operate the main laterals, and not the subsidiary laterals supplying the respective parcels of land, was a matter of agreement between the company and the representatives of the persons who proposed to settle on the tract supplied from its canal, and when the form of agreement was submitted to the department for approval it was the embodiment of an arrangement which had been arrived at as mutually satisfactory to the parties interested, and on that ground it was approved. The department having already given its approval of the agreement and the works having been carried on and contracts entered into in

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accordance therewith, the department would hardly now have authority to alter the terms of the agreement.

The practice usually followed is that the companies should build only the main laterals, but the Canadian Pacific Railway Company has made a departure from this practice by undertaking to construct ditches to carry the water to each quarter section.

Several amendments to the Irrigation Act were submitted to parliament and became law. The principal provisions are as follows:

Representations had been made by the union of municipalities that authority might be given under the Irrigation Act for the crossing of municipalities, including roads and public places, in such a way as to override the rights of municipalities. The Act was therefore amended to provide that such crossing should not be made without the consent of the municipality, but that an appeal might be made by either party to the Dominion Board of Railway Commissioners if mutually satisfactory terms could not be reached.

The Farmers' Association of Southern Alberta asked that irrigation companies should be required to construct and maintain bridges across their works at all travelled roads. An amendment was made to the Irrigation Act providing that where the Board of Railway Commissioners authorized the construction of a road across the works of an irrigation company at any road allowance established by the Dominion lands system of survey the bridges and approaches should be constructed and maintained by the company.

The Canadian Pacific Railway Company submitted for approval a form of agreement for the grant of water rights which they proposed to use in connection with their irrigation project. This agreement was, after alteration in some important respects, approved. As, however, it was found that apparently authority for approval or disapproval of the whole agreement did not rest with the minister an amendment was made to the Irrigation Act to provide that such forms should be wholly subject to the approval of the minister.

In order to facilitate dealing with drainage projects within the area covered by the scope of the Irrigation Act the Act was also amended to provide that, on application by the provincial authorities and a report from the Commissioner of Irrigation that the proposal would not interfere with any irrigation works or the future development of irrigation, any drainage scheme might be carried out under the provincial statute.

PARKS.

Toward the end of the fiscal year the Dominion parks were transferred to the charge of this branch of the department. They include the Rocky Mountains Park of Canada, Yoho Park, Glacier Park, Jasper Park, Elk Park and Buffalo Park.

The administration of these parks was organized by placing in general charge Mr. Howard Douglas, Superintendent of the Rocky Mountains Park, with the title of Commissioner of Dominion Parks. Mr. Geo. E. Hunter, assistant to Mr. Douglas, was promoted to the position of Superintendent of the Rocky Mountains Park. Mr. O. D. Hoar is continued as Superintendent of Yoho Park and Mr. W. C. Simmons in charge of Elk Park.

The fencing of Elk Park was completed and the herd of buffalo imported from Montana to the number of four hundred were placed therein and from reports received are doing well.

To provide for the whole herd properly a new reserve was set apart known as the Buffalo Park covering lands in townships 42, 43 and 44, ranges 6, 7, 8 and 9, west of the 4th meridian.

This tract is open rolling country with bluffs of poplar and is specially well suited as a run for the buffalo. As it is proposed to bring in the remainder of the herd of buffalo during the present year tenders were invited for the construction of a fence surrounding this park. The fence is to be of wire, similar to that constructed around Elk Park. The fence will be nine feet high to the top of the wire and the

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wooden posts are to be fifteen feet long and to be firmly set not less than three and one-half feet in the ground. It is expected that this will make a strong and substantial fence well suited for the purpose for which it is erected.

Tenders for this fence were opened at Edmonton on April 10, 1908, by Mr. Douglas in the presence of Mr. John Stocks, Deputy Commissioner of Public Works for the province of Alberta, and of the agent of Dominion lands at Edmonton. Seventeen tenders for all or part of the work were received, the lowest being for \$58,998.10 from the Ideal Fence Company, Limited, and John Brockenridge, and the contract was therefore awarded to them. The contract requires the completion of the fence by August 1, and it is proposed to bring in the remainder of the buffalo in September.

Respectfully submitted,

R. H. CAMPBELL.

Superintendent of Forestry.

SCHEMES dealt with under the Irrigation Act, 1894 to 1908.

	Irrigation.	Domestic.	Industrial.	Other.	Total.
Schemes recorded.....	331	36	128	42	537
Water licenses granted.....	141	19	80	12	252
Works authorized.....	152	14	38	18	222
Applications.....	38	3	10	12	63
Cancelled or withdrawn.....					184
Total schemes recorded.....					721

Domestic.—Household and sanitary purposes, the watering of stock and the working of agricultural machinery by steam.

Industrial.—The working of railways and factories by steam.

Other.—Chiefly municipal water supply systems.

TIMBER REGULATIONS.

ESTABLISHED BY AN ORDER OF HIS EXCELLENCY THE GOVERNOR GENERAL IN COUNCIL,
DATED THE 19TH DAY OF DECEMBER, 1907.

DISPOSAL OF LICENSES.

1. Licenses to cut timber on Dominion lands in the provinces of Manitoba, Saskatchewan and Alberta, the Northwest Territories, within twenty miles on either side of the main line of the Canadian Pacific railway in the province of British Columbia and in the tract of three and one-half million acres to be located by the government of the Dominion in the Peace River district in the province of British Columbia, lying east of the Rocky Mountains and adjoining the province of Alberta, shall be disposed of by public auction at the office of the Dominion timber agent for the district 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

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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. There shall be kept in the Department of the Interior at Ottawa a list of persons to whom notice of all sales of timber shall be sent. Any person making application in writing shall be entitled to have his name placed on the said list and no name shall be removed therefrom until after the expiration of sixty days from the date of a notice to be given in writing to the person so named and sent by mail to his last known address.

5. The notice of sale shall give the distinguishing number, the description and area of the berth, the upset price, the place and the day and hour at which such sale is to be held.

6. Purchases to the amount of one thousand dollars or under shall be paid in cash at the time of sale. Purchases over one thousand dollars and not exceeding five thousand dollars, shall be paid one-half in cash at the time of sale and a note or notes shall be given for the remaining half of the purchase price payable in three months with interest at the rate of five per centum per annum. Purchases over five thousand dollars and not exceeding ten thousand dollars shall be paid one-third in cash at the time of sale and notes shall be given for the remaining two-thirds of the purchase price payable in three and six months with interest at the rate of five per centum per annum. Purchases exceeding ten thousand dollars shall be paid one-fourth in cash at the time of sale and notes shall be given for the remaining three-fourths of the purchase price, payable in three, six and nine months with interest at the rate of five per centum per annum. Notes given as herein provided shall be made payable at a bank in the city or town in which the sale is held, or at a bank in the city of Ottawa. Cash payments must be made at the time of sale in legal tender or by an accepted cheque on a chartered bank, or by a draft issued by a chartered bank payable to the order of the Deputy Minister of the Interior. If default is made in any payment required by this section the sale shall be forfeited and void.

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

7. Persons to whom berths are awarded at a sale shall sign a contract agreeing to carry out and complete the purchase on the terms and conditions of sale, according to the following form :—

District of _____, Berth No. _____ I _____ of _____, having bid for the berth above named the sum of \$ _____ dollars, and said bid having been accepted, do hereby promise and agree to carry out and complete the same forthwith in accordance with the terms and conditions of sale as set forth in the notice of sale dated at _____ the _____ day of _____ and in the regulations for the disposal of timber under license established by His Excellency the Governor General in Council.

Witness,

LICENSES.

8. No license for any timber berth shall be issued until the full amount of the purchase price, the cost or estimated cost of survey, and the ground rent for the first year have been paid.

(b) The licensee shall be entitled to a refund of any amount overpaid on account of the survey of the berth and if the amount paid on this account at the date of sale

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is not equal to the cost of survey as finally determined he shall pay such additional sum as may be necessary to make up the full cost of survey.

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

10. The license shall vest in the licensee, subject to the conditions mentioned in the license, all right of property whatsoever in all trees, timber, lumber and other products of timber which he is entitled by the license to cut and which have been cut within the berth during the continuance thereof whether such trees, timber, lumber or other products be cut by authority of the licensee or by any other person with or without his consent; and shall vest in the licensee, as against any person other than the Crown in the right of the Dominion, subject to the conditions mentioned in the license, all right of property whatsoever in all trees, timber, lumber and other products of lumber cut within the berth during the continuance thereof by any other person without his consent; and shall entitle the licensee to seize in replevin, reversion or otherwise, as his property, timber of any kind cut upon the berth, where the same is found in possession of any unauthorized person, and also to bring any action or suit at law or in equity against any person unlawfully in possession of any such timber, or of any lands within the berth, and to prosecute any person to conviction and punishment for any offence in connection with such timber or land, and all proceedings pending at the expiration of the license may be continued and completed as if the same had not expired.

11. A license shall be renewable 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.

12. Whenever any portion of a timber berth has not upon it timber of the kind and dimensions described in the license in sufficient quantity to make it commercially 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 operations of the license covering it:

Provided that no withdrawal shall be made unless the licensee has had sixty days' notice thereof, and that the Minister of the Interior is satisfied that the same can be made without unduly interfering with the operations of the licensee on the berth, and that, upon such withdrawal, the ground rent shall be reduced in proportion to the area withdrawn.

13. If the Minister of the Interior ascertains, after an inspection has been made, that any land within a timber berth 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.

14. If the survey of any timber berth heretofore granted or which may be granted hereafter is not completed at the expiration of the period fixed in the advertisement of the sale of such berth or, in the absence of such provision in the advertisement, by the thirty-first day of December, 1907, such failure to complete the survey shall be deemed an infraction of these regulations and shall render the license liable to forfeiture as provided therein.

(b) Provided, however, that the Minister of the Interior may, instead of declaring a berth forfeited for failure to complete the survey thereof, require the licensee to pay to the Crown the sum of ten dollars for each day after a date to be fixed by the said minister by notice mailed to the licensee at his last known address during which

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the survey shall remain uncompleted and such sum shall be payable whenever demand is made therefor by the proper officer of the Department of the Interior.

15. If, in consequence of any incorrectness in survey or other error or cause whatever, a timber berth is found to comprise lands included in another berth awarded at a prior date, or any lands sold, granted, leased or lawfully set apart for any other purpose under these regulations or the Dominion Lands Act, the latter berth shall be void in so far as it interferes with any previous sale, grant or setting apart.

16. Any right to a timber berth cannot be assigned or transferred without the consent of the Minister of the Interior. The fee for the registration of an assignment of a timber berth or of any interest therein shall be at the rate of one dollar for each square mile covered by the berth, but in no case shall such fee be less than two dollars.

17. The following is the form of license to be issued for timber berths :

Know all men by these presents, that by virtue of the authority vested in me by the Dominion Lands Act, and by an order of His Excellency the Governor General in Council of the day of , I, the Minister of the Interior of Canada, do hereby in consideration of the sum of , ground rent, now paid to me for the use of His Majesty King Edward the Seventh, and in consideration of the dues hereinafter mentioned give unto , hereinafter called the licensee, his executors and administrators, full right, power, and license, subject to the conditions hereafter mentioned and contained, and such other 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 the Governor General in Council, to cut timber on the following tract of land (hereinafter called the 'berth' or 'berths,') that is to say :

and to take and keep exclusive possession of the said lands, except as hereinafter mentioned for and during the period of one year from the first day of May, , to the thirtieth day of April, , and no longer.

This license shall vest in the licensee subject to the conditions mentioned in the license all right of property whatsoever in all trees, timber, lumber and other products of timber which he is entitled by the license to cut, and which have been cut within the berth during the continuance thereof, whether such trees, timber, lumber or other products be cut by authority of the licensee or by any other person with or without his consent ; and shall vest in the licensee as against any person other than the Crown in the right of the Dominion, subject to the conditions mentioned in the license, all right of property whatsoever in all trees, timber, lumber and other products of lumber cut within the berth during the continuance thereof by any other person without his consent ; and shall entitle the licensee to seize in replevin, revendication or otherwise, as his property, all timber of any kind cut upon the berth where the same is found in the possession of any unauthorized person, and also to bring any action or suit at law or in equity against any person unlawfully in possession of any such timber or of any lands within the berth and to prosecute any person to conviction and punishment for any offence in connection with such timber or land, and all proceedings pending at the expiration of the license may be continued and completed as if the same had not expired.

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.

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(b) 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.

(c) Whenever any portion of the berth hereby licensed has not upon it timber of the kind and dimensions described in the license in sufficient quantity to make it commercially 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 operations of the license covering it :

Provided that no withdrawal shall be made unless the licensee has had sixty days' notice thereof ; and that the Minister of the Interior is satisfied that the same can be made without unduly interfering with the operations of the licensee on the berth, and that, upon such withdrawal the ground rent shall be reduced in proportion to the area withdrawn.

(d) 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 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.

(e) 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.

(f) 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.

(g) 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.

(h) In lieu of or in addition to the returns provided for by the preceding clause the Minister of the Interior may require that every licensee shall furnish during each year to the Dominion Timber Agent having jurisdiction in the matter at such periods as may be required by the Minister of the Interior, through himself, his scaler or foreman, or through all of them, a statement in writing in detail, under oath, setting forth the number of pieces of timber, saw-logs and other material cut, caused to be cut or taken under his license during such period, and the correct contents in board measure of the same, as shown by Scribner's log rule, if the timber has been cut in Manitoba, Saskatchewan, Alberta, or the Northwest Territories, and by the British Columbia log scale when cut within the railway belt of British Columbia.

(i) That the licensee shall pay, in addition to the said ground rent, dues in the manner prescribed in section 21 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

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cost incurred and payment thereof shall be made to the Crown within thirty days thereafter.

(j) 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.

(k) This license shall be subject to the right of the Crown to deal in accordance with the provisions of the said Act, and the regulations made under it by the Governor in Council with any and all stone, coal and other minerals found within the limits of the berth licensed; and the Crown shall have the right in dealing as above provided, with any stone, coal or other minerals in lands licensed as timber limits to authorize the persons to whom such stone, coal or other minerals are granted to take possession of and occupy such extent of the land so licensed as is necessary to work such stone, coal or other minerals, and to open necessary roads through any such timber berth, paying the licensee of the berth the value of any and all timber of a diameter of ten inches at the stump and upwards, necessarily cut in making such roads or in working the quarries or mines, such value in case of dispute to be fixed by the Minister of the Interior; and the provisions of this clause shall operate retrospectively, that is to say: they shall apply to all licenses of timber berths heretofore granted under any Act respecting Dominion lands, as if they had been contained in such Act when it was passed.

(l) 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 returns:

Provided that in case the minister shall decide to exercise the power of forfeiture conferred by this section the licensee shall have the right within thirty days of formal notification to him in writing by the minister of his intention to declare such forfeiture, and which notification shall be deemed to be sufficient if addressed to the place last known to the minister as the address of the licensee, to appeal against such notification of forfeiture to the judge of any competent court of the district having jurisdiction in matters of contract. The licensee shall within thirty days of the notification to him by the minister notify the minister in writing of appeal taken and pending the report within reasonable delay from the judge on the question of appeal, no declaration of forfeiture shall be made by the minister. The judge to whom appeal is taken shall report to the minister his finding in the case and on receipt of such report the minister may proceed under this section in accordance with his finding and in case the finding be in favour of the minister the judge shall, when transmitting his report, issue a summons directed to the appellant calling upon him forthwith to vacate or abandon or to cease using the berth and if, upon the return of the summons it appears that he has not vacated or abandoned or ceased using the said berth, the judge shall make an order or warrant for his summary removal from the berth and the said order or warrant shall be executed by the sheriff, bailiff, constable or other person to whom it is delivered:

Provided that such report by the judge shall be appealable by either side in like manner as any other decision of the said court;

And provided further that if the violation of the regulations refers merely to payment of money due under the license, the minister may waive the power of forfeiture on payment of double the amount found by the judge to be due, and costs, and may enforce payment in the manner provided for by the Dominion Lands Act and the timber regulations and take such action in regard to all other matters of forfeiture as may arise and be provided for by this section and the Dominion Lands Act.

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22. All ground rents, royalties, or other dues on timber cut within the boundaries of any timber berths, which are not paid at the time when they become due, shall bear interest at the rate of five per centum per annum until paid, and shall be a lien on any timber cut within such limits or on other Dominion lands by the licensee or his agents; and in case of such non-payment whether in consequence thereof the license of the berth has or has not been cancelled the Dominion Timber Agent or other person authorized thereto may, with the sanction of the Minister of the Interior, seize so much of the timber cut on such berth or other Dominion lands by the licensee or his agents as will, in his opinion, be sufficient to secure the payment of such rent or royalty and all interest and expenses of seizure and sale, and may detain the same as security for the payment thereof; and if payment is not made within three months after such seizure, he may, with the sanction of the Minister of the Interior, sell such timber by public auction; and after deducting the sum due to the Crown, the interest thereon and expenses aforesaid, he shall pay over the balance if any, to the licensee, if the timber was in his possession at the time of seizure, or if it was not, to the person who had possession thereof at the time :

Provided that if no bid equal to the amount due the Crown is made at such public auction such timber may be disposed of at private sale.

23. All timber cut under license shall be liable for the payment of the Crown dues thereon, whenever and wherever the said timber or any part of it is found, whether it is or is not converted into deals, boards or any other manufacture of wood ; and all officers or agents employed in the collection of such dues may follow all such timber and may seize and detain it wherever it is found until the dues thereon are paid or secured, as provided in the next preceding section.

24. If the payment of the dues on any timber has been evaded by any licensee or other person, by the removal of such timber or products out of Canada, or otherwise, the amount of dues so evaded and any expense incurred by the Crown in enforcing payment of the said dues under the Dominion Lands Act may be added to the dues remaining to be collected on any other timber cut on any timber berth by the licensee or by his authority, and may be levied and collected or secured on such timber, together with such last-mentioned dues, in the manner hereinbefore provided; or the amount due to the Crown, of which payment has been evaded, may be recovered by action or suit in the name of the Minister of the Interior or his agent, in any court of competent jurisdiction.

25. The Minister of the Interior may take or authorize the taking of bonds or promissory notes for any money due to the Crown, as aforesaid, or, in his discretion, for double the amount of any dues, penalties and costs incurred or to be incurred, and may, if it is under seizure, then release any timber upon which the same would be leviable, but the taking of such bonds or notes shall not affect the right of the Crown to enforce payment of such money, and the debt shall be a lien on any timber cut on the same or on any other berth by the licensee or by his authority, if the sums for which such bonds or notes are given are not paid when due.

RETURNS OF MANUFACTURE.

26. The licensee shall in each year furnish to the Dominion Timber Agent having jurisdiction in the matter at such periods as may be required by the Minister of the Interior 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 or saw-dust, in whatever from the same may be sold or otherwise disposed of by him during such period and the price or value thereof.

27. In lieu of or in addition to the returns provided for by the preceding section of these regulations, the Minister of the Interior may require that every licensee shall furnish during each year to the Dominion Timber Agent having jurisdiction in the matter at such periods as may be required by the Minister of the Interior, through himself, his scaler, or foreman, or through all of them, a statement in writing in

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detail, under oath, setting forth the number of pieces of timber, saw-logs and other material cut, caused to be cut or taken under his license during such period, and the correct contents in board measure of the same, as shown by Scribner's log rule, if the timber has been cut in Manitoba, Saskatchewan, Alberta, or the Northwest Territories, and by the British Columbia log scale when cut within the railway belt of British Columbia.

28. It is required that all licensees, through themselves, their scalers and foremen, shall furnish proofs on oath on the first day of May of each year, or at such other time as the Minister of the Interior may direct, as to the exact locality, by a ground sketch, where all timber, saw-logs or other lumber cut by themselves and others, to their knowledge, upon the timber berth held or occupied by him or them, respectively, have been cut.

29. All timber before being put into any stream or lake to be floated to the mill must be marked with a stamp furnished by the licensee and approved by the Dominion Timber Agent, a copy of said stamp to be placed on record in the Dominion Timber Office.

30. On the arrival of any raft, or parcel of timber or saw-logs, cut or taken from Dominion lands, at the place where the same is to be manufactured or sold, and before the same becomes mixed with the timber or saw-logs, the owners or persons in charge thereof shall report the same to the Dominion Timber Agent having jurisdiction in the matter, making, if required, declaration upon oath as to where the said timber was cut, the number of pieces and the description of each kind of wood contained in such raft or parcel of timber and contents thereof in board measure, and should the Dominion Timber Agent not be satisfied with the correctness of such report, he shall cause a strict count and scale to be made of the timber on such raft; and on being satisfied of the correctness of such report or count, the Dominion Timber Agent may grant a clearance in due form for such raft, when the same may be at the disposal of the owner or person in charge of the same. Should the number of pieces given in the report of the owner or person in charge be found by the specification of measurement to contain a greater number of pieces or contain a greater number of feet in board measure than is given by the owner or agent's report, the surplus number of pieces or overplus if not satisfactorily explained, shall be held as having been cut on Dominion lands without authority and subject to payment of dues accordingly. This clause only to have force in case of a licensee making payment of dues on the quantity of lumber contained in the timber or saw-log by log scale.

MANUFACTURE.

31. 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 saw-mill 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.

32. The licensee shall have in operation within one year from the 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 at least six months of each year of his holding, a saw-mill in connection with his berth, capable of cutting in twenty-four hours one thousand feet board measure for every two and a half square miles of the area licensed, or shall establish such other manufactory of wood goods as the Minister of the Interior accepts as equivalent thereto.

(b) 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.

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CUTTING TIMBER WITHOUT AUTHORITY.

33. If any person without authority or in contravention of the timber regulations, cuts, or employs or induces any other person to cut or assist in cutting any timber of any kind on Dominion lands, or removes or carries away, or employs or induces or assists any other person to remove or carry away any timber of any kind so cut, he shall not acquire any right to such timber, or any claim for remuneration for cutting the same, preparing the same for market or conveying the same towards market; and when the timber has been removed out of the reach of the timber officers, or it is otherwise found impossible to seize it, he shall incur a penalty not exceeding three dollars for each tree which, or any part of which, he is proved to have cut or carried away, or assisted to cut or carry away; and such sum shall be recoverable with costs, at the suit and in the name of the Crown, in any court having jurisdiction in civil matters to the amount of the penalty; and in all cases the burden of proof of authority to cut and take the timber shall lie on the person charged; and the averment of the person seizing or prosecuting, that he is duly employed under the authority of the Dominion Lands Act, shall be sufficient proof thereof, unless the defendant proves the contrary.

34. Whenever any timber agent or officer receives satisfactory information, supported by affidavit or solemn declaration made before a justice of the peace or before any other competent officer or person, that any timber has been cut on Dominion lands without authority or in contravention of the timber regulations, or if any timber officer or agent, from other sources of information or his own knowledge, is aware that any timber has been cut without authority on any such lands, he may seize or cause to be seized, the timber so reported or known to be cut, wherever it is found, and place the same under proper custody, until the matter is decided by competent authority.

35. If the timber reported or known to have been cut without authority or in contravention of the timber regulations has been made up with other timber into a crib, dram or raft, or in any other manner has, at any mill or elsewhere, been so mixed up with other timber as to render it impossible or very difficult to distinguish the timber so cut without authority from the other timber, the whole shall be held to have been cut without authority, and shall be liable to seizure and forfeiture accordingly, unless the holder separates to the satisfaction of the timber agent, the timber cut without authority from the other.

36. Whenever any timber agent or other officer or agent is in doubt as to whether any timber has or has not been cut without authority or in contravention of the timber regulations, or is or is not liable to dues on the whole or any part thereof, he may inquire of the person or persons in possession or in charge of such timber, as to when and where the same was cut; and if no satisfactory explanation, on oath or otherwise, as he requires, is given to him, he may seize and detain such timber until proof is made to the satisfaction of the Minister of the Interior, or of such timber agent or officer, that such timber was not cut without authority, and is not liable, either in whole or in part, to dues of any kind; and if such proof is not made within thirty days after such seizure, such timber may be dealt with as timber cut without authority, or on which the dues have not been paid, according to the circumstances of the case; and the dues thereon may be recovered as hereinbefore provided.

37. If any timber, or any product thereof, is seized under the provisions of the Dominion Lands Act by any timber agent or officer, he may allow such timber or product thereof to be removed and disposed of, on receiving sufficient security, by bond or otherwise to his satisfaction, for the full value thereof, or in his discretion for payment of double the amount of all dues and the penalties and costs incurred or imposed thereon, as the case may be.

38. All timber seized under the Dominion Lands Act shall be deemed to be forfeited, unless the owner thereof or the person from whom it was seized, within one month from the day of the seizure, gives notice to the seizing officer or to the timber

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agent or officer under whose authority the seizure was made, that he intends to contest the seizure; and if, within fifteen days thereafter the claimant has not instituted proceedings before a court of competent jurisdiction to contest the seizure, or if the decision of the court is against him or if the claimant fails duly to prosecute such proceedings in the opinion of the judge before whom such case is tried, who may for that cause dismiss the suit on the expiration of three months from the date on which it was instituted, the timber may be confiscated and may, after thirty days' notice posted up at the place where the same is confiscated, be sold by public auction, by order of the Minister of the Interior.

2. The Minister of the Interior may, if he sees cause for so doing, instead of confiscating timber cut on Dominion lands without authority or in contravention of the timber regulations, impose a penalty which, in addition to all costs incurred, shall be levied on such timber; and in default of payment of the whole on demand, he may, after a notice of fifteen days, sell such timber by public auction, and may, in his discretion, retain the whole proceeds of such sale, or the amount of the penalty and costs only.

3. In the event of there being no bid equal to the amount due the Crown for timber put up at public auction under this section the minister may dispose of the same by private sale.

39. Whenever any timber is seized for non-payment of dues, or for any cause of forfeiture, or any prosecution is instituted for any penalty or forfeiture under the Dominion Lands Act, and any question arises as to whether the said timber was cut on other than Dominion lands, the burden of proving payment, or of proving on what land the said timber was cut, shall lie on the owner or claimant of such timber.

40. Any officer or person seizing timber in the discharge of his duty under the Dominion Lands Act may, in the name of the Crown, call in any assistance necessary for securing and protecting the timber so seized.

APPENDIX No. 1.

REPORT OF NORMAN M. ROSS, DISTRICT SUPERINTENDENT OF FORESTRY.

FOREST NURSERY STATION,

INDIAN HEAD, SASKATCHEWAN, April 1, 1908.

R. H. CAMPBELL, Esq.,
Superintendent of Forestry,
Ottawa, Ont.

SIR,—I have the honour to submit herewith my eighth annual report of the work carried on under your instructions since April 3, 1907.

The growing season of 1907 was a most exceptional one in many ways and though favourable to tree-growth in the cases of older plantations, was not at all a satisfactory one for those set out in the spring or for the raising of general nursery crops. The winter of 1906-7 was an extremely severe one, the cold weather continuing until very late in the spring. We were unable to commence our distribution until May 16, nearly three weeks later than the average season. Distribution was completed on May 31, but even at this late date the young shoots had not started to sprout. The season all through was unusually cold and in some sections very dry, consequently growth in the new plantations was much less on the average than in past seasons. The seed sown in the preceding fall (1906) was very late in germinating and, although all the stock attained a fair size, it was not so large nor so well matured as in other years.

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The reports sent in by the tree-planting inspectors continue, as usual, very favourable. They all report increasing interest in the work throughout the country generally and give most satisfactory account as to the progress of the older plantations. Some of the earlier plantings set out in 1901 and 1902 I have had an opportunity of seeing myself and find that these trees have now attained a height of from fifteen to eighteen feet, forming a splendid shelter to each other and to the buildings and garden plots which they surround. In very few cases have the plantations been neglected or are altogether unsuccessful. When, however, it is considered that several thousand separate plantations have been established all over the prairies one cannot be reasonably surprised at a small percentage of failures. It is not always easy for a settler just starting a new home on the prairie, to find time to give all the attention he might wish to the cultivation of trees. Occasionally sickness, unfavourable weather, loss of horses or any of numerous other troubles can easily upset all previous plans making it impossible for him to care for his plantation. As before stated the actual number of unsuccessful plantations is very small indeed. After this spring's distribution the total number of seedlings sent out since 1901 will be over 11,000,000. In addition to this a considerable quantity of seed has been distributed from time to time, thus enabling many farmers to grow their own seedlings. This spring (1908), we have sent out 310 lots of maple and ash seed of from three-quarters of a pound to three pounds each.

The tree-planting inspectors employed last season were as follows :—In Manitoba, Messrs. A. P. Stevens and F. W. H. Jacombe; in Saskatchewan and Alberta, Messrs. Angus MacIntosh, Walter Guiton, John Caldwell and John Kennedy. The greatest increase in the number of fresh applications is in Saskatchewan and Alberta where the construction of railroads is opening up much new territory for homesteaders, most of whom seem anxious to avail themselves of government assistance in setting out plantations around their new homes.

Three thousand two hundred and six names were on the inspector's lists to be visited during the summer. These were all visited with the exception of some 67 who were either absent from their places or lived too far away to be easily reached. These have been communicated with and the necessary information asked for. Of the above total, 1,414 were fresh applicants; 365 of these had not sufficiently prepared their land and will therefore not receive any trees this spring. This spring (1908) trees will be sent to 1,424 applicants, 375 being men who have already set out plantations under our system of co-operation and wish to further extend them. According to provinces the applicants are distributed as follows :—Manitoba, 464; Saskatchewan, 659; Alberta, 301.

SCOTCH PINE PLANTING ON SPRUCE WOODS RESERVE.

Since 1904 planting of an experimental nature has been done each spring on the Spruce Woods Reserve near Sewell in Manitoba. The only variety used up to date is the Scotch pine, for the reason that we have not yet been able to work up a stock of white spruce or native pine seedlings. The main object of the present experiments is to see whether two year-old seedlings can be successfully set out in a rough and cheap manner. If the Scotch pine succeeds under these conditions there should be no difficulty in transplanting the seedlings of the more hardy native varieties. Though under favourable conditions it is known that Scotch pine will produce far more timber and of better quality than can ever be expected of the jackpines, still we do not know how far conditions in the west are suitable for it.

The largest trees we know of are not more than twenty-five years old and although these appear thrifty and in good condition, it would not do to take too much for granted. Samuel B. Green of the Minnesota Agricultural College, claims that, in the Western States, the Scotch pine deteriorates after the age of about twenty years and is not a valuable variety for prairie planting. Under the circumstances then it

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seems advisable that in undertaking any extensive planting on this reserve a considerable proportion of the trees set out should be of native varieties of known hardiness.

We can, at the nursery here, produce two-year old pine seedlings at a very small cost per thousand as compared with transplanted stock. Labour in the west is very high and it has so far been impossible to procure day men who are at all familiar with such work as transplanting conifers. In consequence they work slowly and, owing to carelessness in planting, a comparatively large percentage of the young seedlings succumb. The hand labour required in the cultivation of the transplant beds, the cost of transplanting and the extra length of time the stock has to remain in the nursery, make an enormous difference between the cost of seedlings and transplanted stock. In fact this difference is so great that it is questionable whether, if transplanted stock had to be used, planting on a large scale, such as should be done on this reserve, would be a profitable undertaking.

Last spring we sent down from Indian Head to the reserve 29,000 two-year pines which were set out in the same manner as those planted in the preceding years, namely, in shallow furrows running east and west. The furrows are spaced about four feet apart and the seedlings planted at the rate of about 2,700 per acre. Since starting this work we have planted out here some 70,000 Scotch pines. The results are very encouraging. The planting of 1905 is commencing to show up above the grass and from now on should make good annual growth. The percentage of plants which have died is comparatively small; from careful counts it is estimated at not over 18 per cent. This spring's planting was somewhat less successful than that of former seasons owing to the very late date at which it could be undertaken, namely, June 7, over twenty days later than last season. The first small planting of 1904 was, unfortunately, burnt up last spring by a prairie fire. A guard had been ploughed around the plantation but the wind was very high and the fire jumped it. Until some suitable system of fire-guards is established it would of course be unwise to do any extensive planting. It is hoped that either this or next season the matter will be attended to in a practical manner.

EXHIBITS.

An exhibit was, as usual, set up this summer at Brandon, during the annual fair. The character of this exhibit did not differ in any material respect from that made in previous years, a description of which has been made in my former reports.

NURSERY WORK.

We had last summer on our nursery station 37 acres under nursery crops. Eleven acres of this is in one year old ash which will not be large enough for distribution till the spring of 1909. The remaining area was made up of eleven acres of two-year ash, nine acres of Manitoba maple, three acres native elm two years, and three acres of conifer seedlings and transplants.

Owing to the backward spring and the unusually cold season, the growth of the seedlings was not quite up to the usual standard. The maple was from seed picked in North Dakota, as last year no seed of this variety could be picked in Saskatchewan or Manitoba. I am sorry to report that these maple seedlings did not mature up as well as they should have done as the fall was wet and growth kept up till the heavy frosts came.

We have heeled in, ready for distribution this spring, the following numbers and varieties:—

Maple, 1 year old.	457,000
Ash, 2 years old.	655,450
Elm, 2 years old.	198,000
Cottonwood (imported).	400,000
Total.	1,710,450

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In the past season we had to depend altogether upon the unprotected plots of the nursery station for raising our stock. The land is new and not yet in the best condition for growing seedlings. In the course of a couple of years or so we hope to have very satisfactory shelter, but till the hedges grow up and the land is worked a little more we cannot hope to raise as many seedlings per acre as we did on the highly cultivated and well sheltered grounds which we had been allowed to use on the experimental farm up till last fall.

This season an additional twenty-five acres was prepared for sowing during the fall and following spring. The soil is in fairly good condition but the land is, of course, absolutely bare of shelter. Caragana seed was sown in rows at intervals over this new ground in order to start hedges which will in later years form good wind-breaks. About sixteen acres of green ash and five acres of Manitoba maple were sown in the fall; the greater part of our maple will be put in this spring.

COLLECTION OF SEED.

Elm.—I regret very much that we have no one-year elm seedlings, due to the fact that those who had arranged to collect seed for us last June failed to do so. This seed is gathered in the Qu'Appelle Valley some miles north of Indian Head. The trees last summer bore a good crop, and it appeared as if there would be no difficulty in getting plenty of the seed collected. Owing to the backward season, work on the nursery was so pressing that it was not possible to take our own men out to gather the seed as we did the year before. The man who agreed to get the seed picked for us has always proved reliable in past seasons in supplying maple and ash seed. He claimed, however, that the half-breeds who do the work for him found that picking elm seed was too tedious a job. Unfortunately we were not notified of this till it was too late to make other arrangements.

Green Ash.—The green ash seed crop last season was an extremely heavy one and we had no difficulty in getting a large supply. In fact the collectors gathered a considerable quantity more than we could accept. We had delivered 200 bushels or more of the rough seed.

Manitoba Maple.—The crop was fairly good but owing to the fact that the ash was more plentiful and more easily picked it was difficult to get the collectors, who are half-breeds and Indians, to gather maple. We were only able to secure about 82 bushels of rough seed. This is ample for our own sowing but will not allow of as much for distribution as we should wish.

White Birch.—A few pounds of this seed was collected by Mr. Arch. Mitchell at Edmonton, and sown in the beds last fall. We have had good success in propagating this variety which is very hardy. However, the seedlings require almost the same treatment as the conifers, it being necessary to sow in shaded beds and transplant to nursery rows at one or two years old. The expense in raising this variety in comparison with the other hardy broad leaf kinds is very much greater.

Jackpine (Pinus Divaricata).—A few bushels of cones were picked by the survey party in the Riding Mountains and shipped to the nursery last fall. The seed was extracted during the winter, producing about two pounds of clean seed.

Murryan Pine.—Cones of this variety were gathered in Cypress Hills, and four and a half pounds of clean seed were extracted at the nursery.

White Spruce.—Cones were collected by the survey party in the Riding Mountains. After drying nine pounds of clean seed were extracted.

Native Tamarack.—Cones collected by the survey party in the Riding Mountains, some seed was extracted in the fall and sown immediately, the remainder cleaned up later. Altogether about seven pounds were obtained. This is the first year that we have been able to get any of this seed and as it is evidently a most uncertain crop it is to be hoped that good results may be obtained from this lot.

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As the work of propagating conifers at the nursery will undoubtedly be considerably extended it would seem necessary to have a suitable room or small building for drying out the cones. No difficulty is experienced in opening the white spruce cones. This is very easily accomplished under glass with a few hours' sunshine. The cones of the jackpines, however, require a very high temperature which must be sustained for several hours. A large quantity of cones can be treated to advantage only in a specially constructed room where the temperature can be properly regulated. The cones of tamarack open fairly readily though they seem to require considerably more heat than the spruce. We could not get the seed properly extracted without using artificial heat.

CONIFERS.

In the spring of 1907 a considerable number of tamarack seedlings were pulled from the swamp southeast of Sewell in Manitoba. In all about 17,000 were shipped for transplanting in the nursery here. These were lined out into rows and have done very well, 77.5 per cent having taken good root. When the greatly altered conditions from swamp land to ordinary upland prairie soil are considered this percentage is very favourable. When growing in the wet swamp moss the seedlings have an extremely poor root system, making it necessary to grow them in nursery rows for at least one season before planting in permanent plantation. These tamaracks are to be used for demonstration or test plantations to be set out on the nursery here. This variety has proved to be so promising and is of such economic value that it is thought advisable to test it as thoroughly as possible.

About 40,000 two-year seedlings of Scotch pine, murrayana pine, Norway spruce and white spruce were transplanted last spring. They did well during the summer but have been very much exposed during the winter owing to lack of snow. At the present date, however, they appear to be in good condition. Conditions on the nursery are not just yet very favourable for raising young conifers owing to the want of suitably sheltered plots for the transplanting beds. When exposed as they are now, the young plants cannot be expected to make the same growth as they would in a well protected nursery. This difficulty will, however, be overcome in a few years when, it is hoped, a good stock of the hardy conifers may be worked up. We have now in nursery rows about 27,000 conifers four and five years old, which will be moved to permanent plantations this spring; the total number of plants in the transplanting beds being 161,275. There is also a considerable stock of one and two-year seedlings in the shaded beds. Most of the two-year-olds will be transplanted this spring.

A considerable length of fresh seed beds will be sown this spring, the principal varieties being Scotch pine, *pinus murrayana*, *pinus divaricata*, native white spruce, Siberian larch and native larch or tamarack. Small quantities of other varieties such as *picea excelsa septentrionalis* (a hardy variety of Norway spruce), *picea ajonesis*, and others which may prove hardy but which have not yet been tested, will also be sown in an experimental way.

PERMANENT PLANTATIONS.

Last season no additions were made to the permanent plantations as we had no land suitably prepared which could be spared for this purpose.

Both the broad leaf and coniferous plantations are in splendid condition and during the season made very good growth. From measurements made in November the average new growth made by the different varieties is as follows:—

	Feet.	Inches.
Maple, planted in 1906, new growth.	2	6
Ash, planted in 1906, new growth.	1	2
Elm, planted in 1906, new growth.	2	2
White birch, planted in 1906, new growth.	2	3

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	Feet.	Inches.
Cottonwood, planted in 1906, new growth	4	8
Russian poplar, planted in 1906, new growth	2	8
Scotch pine, planted in 1906, new growth	11.1
White spruce, planted in 1904, new growth	1	7
Tamarack, planted in 1904, new growth	2	5½

During the summer a considerable area of new land was prepared, by very deeply backsetting the virgin prairie, for further permanent plantations. It is proposed to set out the following this spring :

- 1 acre Acute leaf willow, planted 3 x 3.
- 1 acre Golden leaf willow, planted 3 x 3.
- 1 acre White leaf willow, planted 3 x 3.
- 3 acres Dakota cottonwood, planted 4 x 4.
- 2 acres American elm, planted 4 x 4.
- 1 acre Pinus murryana, planted 4 x 4.
- 2 acre Pinus murryana and ash, planted 4 x 4 in equal mixture.
- 2 acres Scotch pine and ash, planted 4 x 4.
- 2 acres Native tamarack, planted 4 x 4.
- 3 acres Native tamarack and ash, planted 4 x 4 in equal mixture.
- 2 acres Native tamarack and maple, planted 4 x 4 in equal mixture.
- 2 acres European larch and ash, planted 4 x 4 in equal mixture.

In all twenty-two acres, requiring 63,480 seedlings, transplants and cuttings.

It is also proposed to commence this spring a number of small exhibition plots of conifers principally, where all the hardy varieties can be planted side by side in a central part of the nursery. The plots will be 44 feet square and each one will contain 100 trees set four feet apart each way. The object of these plots is for the information of visitors, who will see, growing side by side, different hardy kinds as nearly under plantation conditions as possible, in such a manner that the merits of one can be readily compared with those of another. The reason that this is being done chiefly with the conifers is that very little is known by the general public regarding varieties suitable for prairie planting and it is thought that everything possible should be done to encourage their planting. In time it is hoped to have a collection of from twenty to thirty varieties which may be suitable for our western climate and conditions.

ORNAMENTAL GROUNDS AND SHRUBBERY.

All the hardy shrubs have done well during the past season. Many of the lilacs set out as small plants in 1905 bloomed for the first time. Spirea van Houtii, Spirea Arguta and Spirea Billardii, all came through the winter unprotected and bloomed profusely. The Japanese rose (rosa rugosa rubra) is especially worthy of planting in the west; it has a very long season of bloom and the large, bright red hips which follow the flowers remain on the bushes well on into the winter.

Around the new boarding house land has been got in shape for a small amount of additional ornamental planting and the making of a small grass lawn.

* PLOUGHING AND FARM WORK.

Fifty acres of prairie were cleaned of scrub, broken and backset; twenty-five acres of this was ploughed a third time as deeply as possible and well cut up with the disc-harrows in order to put it into shape for permanent plantations. Twenty-five acres of oat stubble land was summer-fallowed and put into condition for nursery. Eighteen acres of nursery plots were also ploughed after the seedlings were dug, and cultivated for resowing.

About a thousand bushels of oats and fifteen tons of rye grass hay were raised to supply feed for the horses.

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BUILDINGS.

The small packing shed which we had erected on the Experimental Farm, was cut in two and moved up to the nursery and an addition 40 x 24 feet built in. We now have two good packing sheds which should give us ample accommodation during the distribution season, also providing considerable room for drying and storing seed.

Your obedient servant,

NORMAN M. ROSS.

APPENDIX No. 2.

REPORT OF MR. F. W. H. JACOMBE, TECHNICAL ASSISTANT.

OTTAWA, April 2, 1908.

R. H. CAMPBELL, Esq.,
Superintendent of Forestry,
Ottawa.

SIR,—I beg to present the following report of work done during the year ending March 31, 1908.

At the conclusion of the work of making out the distribution lists for 1907 I commenced work on a card index of the applicants for trees from the inauguration of the scheme, and was occupied at this work for some weeks. For some time after this again, I was occupied in the work of making some necessary preparations for the forest survey party for the following summer.

On Thursday, June 13, I started for Winnipeg in company with Mr. Rognas, who was to work as assistant with Mr. Ross' party. On Monday morning, June 17, I joined Mr. Ross' party at Dauphin, and for the next two weeks assisted Mr. Ross in organizing the work of the survey. On July 1, I left Dauphin for Winnipeg, and on July 3 met Mr. A. P. Stevenson at Morden and arranged with him as to our respective districts for tree planting inspection work during the summer. This division allotted to me the northern part of the province, including the following railway lines: (1) Canadian Pacific Railway main line, Winnipeg to Kirkella; (2) Rapid City and Miniota branch; (3) Varcoe and Lenore branches; (4) Minnedosa and Yorkton sections, Portage la Prairie to Millwood; (5) Souris section, Elm Creek to Souris, and (6) Arcola section, Souris to Sinclair. To these were subsequently added the Yorkton and Sheho sections as far as Sheho, Sask.

Along the main line I found the trees had suffered somewhat from the exceedingly dry weather of the spring. This had affected especially the cottonwoods; in some plantations twenty-five per cent or over of those planted in the spring of 1907 had died, owing, as far as I could find, to the very dry weather at the time of planting and subsequently. This was the case more especially along the main line between Portage la Prairie and Brandon. At the latter place conditions had been more favourable, and the trees were in good condition. On the railway lines further north conditions were very different, as there had been a plentiful supply of rain all season, and the trees had made a good growth. In one case, on the farm of Mr. E. A. Schwalm, near Russell, maple showed a growth up to four feet during the season, and ash up to three feet two inches; these trees had been planted the previous year.

Later in the season, when visiting the plantations along the Souris and Arcola and Moose Mountain sections, I found that the dry season had shown its effect, in the growth for that season being somewhat less than usual. In some cases trees had been badly damaged by hail; this was noticed only in the neighbourhood of Pipestone and Sinclair.

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On the Yorkton branch in Saskatchewan there seemed to have been good growth during the season and great care had been taken of the trees.

Unusual numbers of caterpillars of the tussock moth were found toward the end of August and the beginning of September, especially around Rosser and Virden. During the last winter the trees suffered to some extent from the attacks of rabbits; in the northern part of the province it is the bush rabbit which is reported to be the worst depredator, and this variety prefer the cottonwood trees; in the southern part of the province, the jack-rabbits are the common ones and they prefer the ash trees. Along the Souris section also I found a number of cases of damage by mice during the previous winter. The vagabond gall (caused by the plant-louse, *Pemphigus vagabondus*), was fairly common again during the past summer, and in one plantation near Pipestone I found a couple of trees that had died, apparently through the repeated attacks of this insect.

On the whole, I think that, on account of the short season, the growth of the trees was somewhat less than usual. Owing to the rush and crowding of the work on the farms, due to the late spring and consequent rush of work, the care given the trees, in common with other crops, was not quite up to the usual standard; there were many exceptions to this, however, and in general the branch has little to complain of in regard to the care of the trees.

Since my return to Ottawa in November, 1907, I have been occupied in the office work connected with the distribution of trees this spring, work in connection with the library of the branch, the preparations of press bulletins, &c.

I have the honour to be, sir,

Your obedient servant,

F. W. H. JACOMBE.

APPENDIX No. 3.

REPORT OF MR. A. P. STEVENSON, TREE-PLANTING INSPECTOR.

NELSON, MANITOBA, April 1, 1908.

R. H. CAMPBELL, Esq.,
Superintendent of Forestry,
Ottawa.

SIR,—I have the honour to submit the following brief report on the work done by me under your instructions as tree-planting inspector in connection with the work carried on in this province by the Forestry Branch of the Department of the Interior.

On June 14 I commenced the work of inspection, and shortly after met Mr. F. W. H. Jacombe by appointment at Morden, when the list of applicants for trees in Manitoba was gone over and examined with the view of dividing up the work of inspection in Manitoba equally between us, Mr. Jacombe taking the northwestern part of the province, while the district covered by myself was the Red River valley west to the boundary of the province and along the main line of the Canadian Northern Railway from Winnipeg to Togo.

The past winter had been one of the longest and stormiest in our experience in the west, the snowfall being excessive. Some damage was done in a few of the young plantations by the settling of the deep snow drifts in spring, but where snowbreaks were planted no injury was noticed in the plantations.

This year's experience affords a good object lesson of the necessity of planting a snowbreak when planting out a windbreak, and it is satisfactory to notice that the farmers are devoting more time and attention to this subject. A snowbreak consists

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of a single row of trees planted rather close together at a distance of forty or fifty yards from the plantation proper on the north and west sides; this clear space of forty yards between the single row and plantation affording a place for the snow banks to lodge.

The jack-rabbits were more troublesome than usual last winter, doing considerable damage, especially to the elm and ash. Cottonwood also suffered to some extent. On account of the deep snow they were able to get into the top branches of good sized trees and cut them up very badly. The shot-gun is the only sure remedy; close netting is of little use in a winter of deep snow, besides being rather expensive. Where there are only a few trees, such as fruit trees, an application of fish oil with a little sulphur and carbolic acid stirred in it, we have found to be an effective remedy.

The past summer was one of excessive drouth in southern Manitoba. In some localities practically no rain fell throughout the summer. On this account the young trees planted out this season have not averaged so well as in former years. My estimate is 75 per cent of trees growing that have been planted out this year, and it is only to the thorough preparation of the soil, which the Forestry Branch insists on before trees are planted or any one receives trees, I attribute this good showing during this dry year.

The small cottonwoods suffered most from the dry weather and the ash the least of any. After the first year the ash is a very popular tree with planters on account of its sturdy qualities and when mixed with other varieties it is a fairly quick grower.

The early groves planted out under the Forestry Branch co-operative scheme made very satisfactory growth. On account of the close planting the moisture from the melted snow evaporated very slowly so that the trees did not suffer on account of the drouth. It was also interesting to note that gardens, where partially surrounded with a shelter-belt gave a good crop of vegetables and small fruits, while those without any protection did not yield half a crop. The snow slowly melting in the plantation supplied sufficient moisture in the subsoil to ensure a crop.

The planting out of a wood lot on the farm for the purpose of growing fire wood and fence posts is becoming a very live practical question with the prairie farmers, and a number of wood plantations will be started this coming spring, more especially with men who have finished planting for a shelter-belt.

The Vagabond Gall had given considerable trouble among the cottonwood trees, and has been the cause of considerable anxiety to those having fine plantations of this variety. This trouble has been noticed in other years but only to a limited extent, and little harm has resulted. But this year the vitality of the trees appears to have been weakened and it is feared the trees so affected have suffered considerable injury. I am not aware of an effective remedy for this trouble. I have advised picking off the galls which is all right as far as it goes and with a few trees, but where there are hundreds it is impossible to do this. The dry season may have been the cause of the great increase in the number of galls affecting the trees this past season.

We notice the Russian willow where planted is giving very good satisfaction and is in very general demand on account of its quick growing qualities, adapting itself to almost any soil and location, holding its leaves quite green when every other deciduous tree in the grove is brown and bare.

The general condition of the trees in plantations set out under Forestry Branch supervision is very satisfactory, no injury from winter killing was noticed and the cultivation and care given the newly planted out trees were very satisfactory.

There is an ever-increasing number of the earlier planted groves in which cultivation has entirely ceased, the trees effectually shading the ground, choking out weeds and grass and thereby establishing forestry conditions, and proving to the planter the wisdom of the rule laid down by the Forestry Branch, that trees should be planted at the rate of 2,720 trees to an acre, or four feet by four feet apart each way.

The questions of the proper distance apart to plant trees in order to secure best results, of pruning and the proper time to do it, are matters on which a considerable number of new planters have rather peculiar views. The idea prevails that to plant

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trees four by four feet apart is too close, that ten by ten feet is required in order to give sufficient room for cultivation with a team and plough between the rows of trees.

For an illustration of the desirability and benefit of close planting, the planter's attention is directed to groves set out four to six years ago under government supervision, and also to natural bluffs that may be growing in the neighbourhood. It can be seen that the tallest and best trees are in the centre of the grove, where the roots of the trees are entirely shaded from the sun and drying winds.

The inspector has also to point out the unnecessary labour and absurdity of pruning up to a single stem the young trees planted out for the purpose of a shelter-belt. If left without pruning the trees will more quickly and effectually shade the ground, and thereby shorten the labour of cultivation, and forestry conditions will more quickly be brought about. As the trees increase in height the lower limbs will die and can then be cut out and used on the farm as summer wood.

The Forestry Branch co-operative tree-planting scheme is one of the most popular with the people in the west, and as the years go by and the beautiful groves show up more and more prominently dotted over the prairie landscape, they become silent witnesses of the government's wisdom and forethought for the comfort and welfare of the dwellers on the plains of the west.

A. P. STEVENSON,
Tree-Planting Inspector.

APPENDIX No. 4.

REPORT OF ANGUS MacKINTOSH, TREE-PLANTING INSPECTOR.

HEADLANDS, SASKATCHEWAN, April 1, 1908.

R. H. CAMPBELL, Esq.,
Superintendent of Forestry,
Ottawa.

SIR,—I have the honour to submit to you a brief report on the tree-planting inspection work with which you entrusted me in 1907.

The territory allotted to me was that intersected by the Kirkella Railway from Elkhorn to Strassburg and up the east side of Last Mountain Lake; the Prince Albert branch from Lumsden to Rosthern, and the Canadian Northern from Quill Lake to Vermilion.

The applicants for trees are not all to be found in strips of country along those railways, but are widely scattered, many of them from forty to seventy miles, some even further, from any railway. In those outlying places there are a number of bachelor homesteaders amongst our applicants who put in only half their time on the homesteads, having from necessity to go out and earn money elsewhere; and the inspector sometimes finds nothing but vacant shacks and a few acres of prairie sod turned over at the end of a long journey. It is not, however, always so, for there are now many thriving small plantations in some of those remote places, and there is no lack of desire to have trees shown.

The plantations made in past years in settlements less remote are steadily increasing, are on the whole doing well, and many of them are now attractive features of the landscape. Most of them are as well kept as can be expected, for many of the owners have not yet got over the preliminary work of making for themselves comfortable homes. There are of course a few exceptions where the trees have not had the attention necessary to insure success, especially where farms have been sold, and the purchaser lacks the enthusiasm of the former tree-planting owner.

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On account of the extraordinary lateness of the spring of 1907 planting operations were everywhere much delayed, and in many cases had to stand over until all the grain was sown. Yet on the whole the trees have done wonderfully well. I estimate the failures among them at ten per cent.

Although the previous winter was a severe one, I am glad to say that the plantations all over the territory that I inspected look well. There is very little damage or cutting back noticeable and the greater number of the trees injured in that way in past years have recovered and are now making a much hardier growth. The few cases of cutting back that I did see I attribute to the richness of the soil, coupled with heavy manuring. I have often to warn applicants for trees, and recipients of them, about the evil of putting too much manure on the land, and in that way causing the young trees to grow too fast and soft.

I am sorry that on account of the large number (over 700) of names on my list, and the kind of country over which they were scattered, I was unable to visit all the applicants. Those, however, on whom I did not call have been written to.

Your obedient servant,

ANGUS MacKINTOSH.

APPENDIX No. 5.

REPORT OF JOHN CALDWELL, TREE-PLANTING INSPECTOR.

VIRDEN, MANITOBA, April 1, 1908.

R. H. CAMPBELL, Esq.,
Superintendent of Forestry,
Ottawa.

SIR,—I herewith beg to submit to you my report for the season of 1907.

My territory was the Canadian Pacific Railway main line from the Manitoba boundary to Regina and back to Manitoba along the Arcola line and all the intervening territory. The work took five months, beginning June 15.

I found the plantations generally doing well with the interest and demand increasing. I booked no one this season for more than 1,500 trees as we were likely to be a little short of stock to supply a heavy demand from all quarters. I think it better not to give too many trees at a time and 1,500 is probably a very good average.

I marked off quite a lot of names this season, as when a man has been called upon three times he should be pretty capable of planting and caring for trees and we will have more time to devote to newer men.

Although last spring was very late the season was cool with an abundance of moisture and the trees did well, as did also the willow cuttings.

The percentage growing of all trees planted to date is about 85 per cent.

The maple, ash, cottonwood and willows are all doing well. The elm is the least satisfactory, being more sprawly and very subject to being cut off by rabbits. I noticed some Carolina poplars on the street in Regina which had done well for three years and think that this may become a useful tree.

I am still in favour of sending out more of our hardy fast-growing willows.

The district from Manor east to the Manitoba boundary was struck by a very bad hail storm early in the season and a good many plantations were very badly damaged. I advised that the young trees should be cut back pretty close to the ground and no doubt most of them will come again.

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I had the pleasure of visiting the Forestry Nursery at Indian Head a couple of times during the season and was pleased to see everything in such splendid condition. On account of the late spring the young stock will be a little smaller than usual, but that is better than having the trees too large.

The farmer is a very busy man in the spring of the year and fair-sized seedlings are the best for him to plant. I have always found that most beginners in tree-planting think they have quite a large contract on hand when they have a couple of thousand trees to plant when it should not take one man and one boy more than eighteen hours to do the work.

When I started out last spring I took a dibble and a few seedlings with me and I lost few opportunities of giving a practical lesson in how to trim a seedling and how to plant it, and I may say that an object lesson of that kind is very much appreciated. Showing a man once in a practical way is worth more than telling him a dozen times over. As long as it is my duty and privilege to travel among the farmers in this work I will take my dibble, also a few seedlings and cuttings. I feel that I can make myself more useful in that way and may be the means of saving a great deal of hard labour.

Before closing my report I would like to add that we have south of Virden some thousands of acres of sandy land poorly adapted for agricultural purposes but well adapted for growing such trees as spruce, tamarack, cottonwood and willow. Fuel is becoming scarce and higher each year, and I believe it would be a paying proposition for the government to plant some of this land. I think it would be well to give this matter some consideration.

Your obedient servant,

JOHN CALDWELL.

APPENDIX No. 6.**REPORT OF WALTER B. GUITON, TREE-PLANTING INSPECTOR.**

INDIAN HEAD, SASKATCHEWAN, November 30, 1908.

R. H. CAMPBELL, Esq.,
Superintendent of Forestry,
Ottawa.

SIR,—I have the honour to submit to you my report of the season's work in tree inspection as carried on through the co-operation of the Department of the Interior.

The territory given me this year was along the main line of the Canadian Pacific Railway from Pense to Moosejaw, thence south to North Portal; also along the Estevan line into the border of Western Manitoba. From here I received instructions to proceed along the main line to Lethbridge and south to Macleod, also doing Southern Alberta in what is known as the Mormon country where some of our finest plantations are to be seen on all sides of the roads. It is very gratifying to see the care which the people have taken to protect the trees from being broken by cattle. From Cardston I proceeded back along the line to Lethbridge, working my way to Medicine Hat; from there along the Crow's Nest railway into Calgary. This part of the line was one of the most difficult on my whole list, as the Canadian Pacific Railway have the land for some thirty-five miles back from the main line, and it is necessary to travel the whole stretch of country until one gets into the settlement along the Rosebud creek, in which we have quite a number of plantations growing.

The spring being very late this year, I was not able to commence till July 1 so as to give the young trees, which were set out this year, a chance of showing how they were doing. The trees were in all cases received in excellent condition owing to the

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way in which they were incased in sacking and wet moss, so as to keep from drying out until they arrived at their destination. The applicant having received word beforehand as to when the trees would arrive, there was no leaving of them at the station until they were dried but they were planted at once before the buds opened up, the ground having been prepared the summer before, which does away with the necessity of spring ploughing.

Great care should be taken to see that the trees are set out the required number of feet apart in the plan which is sent to each applicant. Also the trees should be firmly planted in the ground so that, should one try to pull them up by the thumb and first finger he would be unable to do so without breaking the tops of the trees. With the majority of planters the green ash is very much in favour and is giving increased satisfaction every year, when planted in alternate rows with the Manitoba maple, Russian willow and Dakota cottonwood. The elm, although a slower grower, make a desirable addition to a plantation. These do well when set out in rows four feet by four feet and have a remarkable tendency to stop the working of the insects, which at present are not numerous, although a slight damage was done to some of the leaves on the willow by the tent caterpillar this season. Some complaints have been made as to the damage done to the ash trees by the jack-rabbit which eats off the tops of the green ash during the winter. The rabbits seldom bother the maple, although this tree is very often killed back in the winter by too late a cultivation in the fall and trying to force them ahead. This is a mistake as they should not be cultivated later in the fall than the middle of August, but one can go through them with a hoe and take the big weeds out of them without doing any damage.

Do you want the trees pruned, is the question asked very often. As these trees are given for windbreaks and not ornamental purposes, they should be allowed to grow as close to the ground as possible, and when the trees are too big so that cultivation is no longer required, they will then hold the moisture in the ground and shade it so much that there are very few weeds which will grow to any great extent. The number of applicants who have not got the ground in shape or properly prepared for another year, is getting less every year, showing that the people are finding that it is one of the things which have to be done at the proper season of the year. While it is possible to get a sandy loam into a proper state for trees in the first year, yet on heavy clay soil this cannot always be done. The applicant who heeds the inspector's advice, and has the ground as it should be, is farther ahead in one year than if he were allowed to plant trees on badly worked ground, in two years or even more, showing that the ground well worked up absorbs the moisture more readily and is in fact easier to keep weeds down on.

I have not given any Manitoba maple west of Swift Current as they do not seem to do so well as the ash, cottonwood, elm and willow, the maple coming out so early in the spring on account of the hot winds that they are checked or killed back again by frosts, so much so that if it were not for its rapid growth it would be killed entirely.

While at Maple Creek I saw some crab-apple trees which were grown within the shelter of one of our shelter-belts loaded down with fruit, and the smaller fruits were doing exceedingly well. I was able to give some good advice to the farmers about these fruit trees, as I have had good experience in fruit and ornamental trees with the well-known firm of Stone & Wellington for five years. This knowledge has been very useful to me during the season's work. I had a good many foreigners on my list this year who show a great fondness for trees, having raised them successfully in the Dakotas of the United States where trees were one of the principal features on the farm to stop the winds and keep the snow from accumulating around the buildings.

In closing my report, I beg to say that the plantations visited are, on the whole, in a very satisfactory state and that the efforts of the department are meeting with a success which is encouraging, as the work at present is only in its infancy. Some

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inducement should be made to try and encourage the farmers who visit the Experimental Farm at Indian Head, to drive out to the Forestry station as it will give them an object lesson in what can be done in a few years. As far as observations go for the season closing 1907, I would say that 95 per cent of the trees set out since 1902 are alive and 85 per cent of them doing well.

Your obedient servant,

WALTER B. GUITON,
Tree Inspector.

APPENDIX No. 7.

REPORT OF JAMES LEAMY, CROWN TIMBER AGENT.

NEW WESTMINSTER, B.C., March 20, 1908.

R. H. CAMPBELL, Esq.,
Superintendent of Forestry,
Ottawa, Ont.

SIR,—I beg to submit the following report in connection with fire-guarding timber within the railway belt in the province of British Columbia, during the season of 1907.

During the season we had no large fires that caused us very much trouble, the season being rather a favourable one and not excessively dry. On the upper Columbia river, that is between Surprise rapids on the north and the boundary of the railway belt on the south, we had very little difficulty in coping with any small fires that occurred, although a number of small fires did occur which were promptly attended to by the fire rangers in charge of that district and no damage was caused by them. No fires happened along the Kicking Horse river, between Golden and Field, and very little trouble was given the rangers in this district by fires. The only fire of any consequence was at Surprise rapids, just near the north boundary of the railway belt, which fire was caused by a number of students from some American college who were on a camping tour during the summer and who located themselves just outside of the railway belt, lighting bonfires and neglecting to extinguish same when leaving, consequently quite a serious fire occurred on account of their negligence, which extended slightly into Timber Berth No. 85 but was carefully watched and attended to by Mr. Cameron Fisher, the fire ranger of that district, and did no damage of any consequence to Dominion timber. In the early part of the season I was compelled to divide the upper Columbia district into two parts: Mr. Frank Ashdown looked after the Kicking Horse district and the upper Columbia south to the Spillimacheen river, which is at the boundary of the railway belt, while Mr. Cameron Fisher attended the district from Golden to the northern boundary of the railway belt at Surprise rapids up the Beaver creek to the summit of the Selkirk mountains, that is Roger's Pass.

A number of small fires occurred along the line of the railway from Beavermouth, but did not spread to any extent being carefully looked after by Mr. Fisher. From Roger's Pass west to Revelstoke and Sicamous along the line of the railway, a number of small fires occurred, but the greatest difficulty in that district was down the Columbia river from Revelstoke to Arrowhead in which part a number of fires took place and were attended to by Mr. Alexander McRae and his assistants, also the Canadian Pacific Railway employees, therefore were not permitted to spread and do any damage, and I am pleased to report that no timber of any value was destroyed. In the Eagle's Pass there were numerous small fires, but they did not do any damage.

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From Sicamous down to the boundary of the railway belt at Armstrong, part of which district was looked after by Mr. Alex. Reid and Mr. J. D. McGuire, fires were comparatively few and did not cause much trouble, no timber having been destroyed. In the valley of the Salmon river also, in Mr. J. D. McGuire's district, a number of fires occurred which were caused by farmers clearing up their lands, and some trouble was occasioned by having to attend to them, but no government timber was lost, although endangered by fires on the settlers' lands and had to be attended to almost constantly.

Along the Shuswap river from Enderby to Marble lake a number of small fires occurred, but were promptly attended to by Mr. Alex. Reid, whom I appointed in the latter part of the season to look after that district, therefore they did not do any damage at all, no merchantable timber having been destroyed.

The Notch Hill and the Shuswap Lake districts were looked after by Mr. W. R. Peacock, and only one fire occurred of any consequence, that was on the north shore of the Shuswap lake in the Meadow Creek district; this fire was caused by settlers who were squatted in that district, but did very little damage, having been promptly attended to by Mr. W. R. Peacock and also the employees of the Lamb-Watson Lumber Company who promptly turned out their men to assist in looking after that fire.

From Little Shuswap lake west to Kamloops the only fires which occurred were caused by the sparks from the engines of the Canadian Pacific Railway setting fire to the dry grass and burning up their own fences along the railway, but did not extend any distance away from the track; no timber being burned in that district.

In the vicinity of Ashcroft, which is looked after by Mr. Angus McGillivray, extending from Savona west to Lytton, a few small fires occurred which may be chargeable against the Canadian Pacific Railway and people engaged in the clearing of lands, but no damage was sustained by these fires. Still further west a few small fires occurred along the line of the railway between Yale and Agassiz, but were attended to by the fire ranger in charge of that district, Mr. F. W. Hughes, and did not do any damage. These fires might be attributed to the Canadian Pacific Railway section men clearing up the refuse along the right of way, such as bush, old ties, &c. However, no damage was sustained by these fires. From Agassiz west to Slave river, also attended to by Fire Ranger Hughes, no fires occurred. A fire occurred on Stave river which was caused by the clearing of the island on which the Stave Lake Power Company were erecting their plant and building the dam across the river. This fire got away across the Stave river and set fire in some old logging works in cancelled timber berth No. 138. The fire assumed considerable proportions, but was attended to by Mr. Murdock Martyn, with the assistance of the Stave Lake Power Company's employees and those of Messrs. E. H. Heaps & Company, who succeeded in subduing the fire before any damage of any consequence occurred, and I think the ranger in question deserves great credit for the prompt manner in which he attended to this fire.

From Stave river west, Mr. Murdock Martyn's district, a few small fires occurred, which were caused by the clearing of the right of way by the Canadian Pacific Railway employees and caused no damage whatever, except that they had to be watched and attended to. About the western boundary of the railway belt, also in charge of Mr. Martyn, I was obliged to employ a ranger to attend to the north arm of Burrard inlet, owing to the large number of campers along the North Arm and Burrard inlet, and owing to his vigilance no fires occurred as he was constantly on the alert.

The south side of the Fraser river touching the international boundary line was looked after by Mr. M. G. Fadden, Mr. John Bell, Mr. Neil Johnson and Mr. Geo. E. Gairns. In Mr. Fadden's district, which extends from Hope to Lower Sumas taking in Cultus Lake district, no fires occurred.

In Mr. John Bell's district, which extends from Lower Sumas to Langley, comprising Matsqui and Langley municipalities, a few fires occurred in American territory, but were carefully looked after by Mr. Bell, assisted by Mr. John Dennison,

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whom I had to employ for a short time during the dry season. These fires did not cross into Dominion timber.

The Surrey and Delta districts were looked after by Mr. Neil Johnson, assisted by Mr. Geo. E. Gairns. A number of fires occurred, only one of which gave us very much trouble. This fire occurred on some settler's land adjoining limits 'R' and 87, being private property which was being logged. It was supposed to have been caused by sparks from the logging engine. However, it assumed large proportions and spread over private lands, but Mr. Johnson, assisted by Mr. Gairns and the employees of the McNair Shingle Company, promptly established a fire line along the Johnson road, having barrels of water, also men felling dead timber, and preventing the fire from extending into the timber limits. After a fight of some weeks' duration, I am pleased to be able to report that no timber in which the government had any interest, was burned.

In concluding this report I beg to commend the different fire rangers for the able and efficient manner in which they discharged their duties, and I consider that by their constant vigilance they protected a large quantity of valuable timber which otherwise might have been destroyed, and I beg to also thank you for your very valuable assistance and advice in connection with all matters pertaining to the conservation of timber within the railway belt.

Your obedient servant,

JAMES LEAMY,
Crown Timber Agent.

APPENDIX No. 8.**REPORT OF W. J. MARGACH, CHIEF FOREST RANGER.**

CALGARY, ALBERTA, April 21, 1908.

The Superintendent of Forestry,
Ottawa, Ont.

SIR,—I beg to report that during the summer of 1907 on the eastern slope of the mountains south of the Saskatchewan river, seven fire rangers were employed during the early summer and late autumn. The season was wet during the summer, and men were taken out of the woods at that time.

There was no fire that did any damage to standing timber during the season. Some of the rangers reported several small fires to have got away from settlers clearing land, which were extinguished without doing damage. Two of these settlers were prosecuted and fined. It is a very difficult matter to get evidence showing breaches of the Act.

In respect of fire from locomotives setting fire to the prairie, in my opinion a mechanic should be appointed as a ranger who is capable of getting on to a locomotive and finding if the appliances are on the engine and if they are being kept in condition to prevent the throwing of sparks.

I lately returned from a trip to the Macleod river, a hundred and twenty miles west of Edmonton, and made an inspection of the manner in which the Grand Trunk Pacific Railway were clearing their right of way. The work is being done by sub-contractors by Foley, Welch & Stewart, who are the contractors from the company. The right of way is being cleared in a great many places to a width of 200 feet, and I found them burning all the material upon the land, none of it going outside of the right of way. The engineers have got this under their supervision, and I believe that the requirements of the department are in this respect being met.

Your obedient servant,

W. J. MARGACH,
Chief Forest Ranger.

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APPENDIX No. 9.

REPORT OF W. A. DAVIS, CHIEF FOREST RANGER.

GRAND VIEW, MANITOBA, December 24, 1907.

R. H. CAMPBELL, Esq.,
Superintendent of Forestry,
Ottawa.

SIR,—I have the honour to make my report as Chief Forest Ranger for the Riding Mountain, Turtle Mountain and Porcupine Forest Reserves in Manitoba.

I commenced my duties on May 1, 1907. My first step was to lay off my territory into districts. For example, there are three permanent rangers for the Riding Mountain reserve, to each of whom has been allotted his own special tract to patrol, the average face of which is about 45 miles. The men appointed are well acquainted with their own individual locality, living inside of their own patrol precincts, and are used to the bush and conversant with all the different trails through the mountain.

The first duty I strongly impressed on them was to see that no fires got into the bush inside of their respective locations. The next was, that each was to see to it that there should be a clearly defined line or road allowance cut all along the outside limit of the reserve. As it now stands even the settler who lives in close proximity does not know when he is over the line, and this causes us a great deal of trouble in dealing with trespassers, as of course they invariably take advantage of this and when questioned as to where the wood or posts have been taken from, profess ignorance as to the exact section, but always say they believe it was outside of the reserve. It will take a considerable time to have these lines all cut out, and where they run through a great depth of bush it would be hardly fair to expect the ranger of that district to do all the work, for if he were compelled to do so it would take up his entire time, and I would suggest that a small appropriation should be made at the present session for this purpose.

I have also asked each ranger to furnish me before my next report with a map of his territory, showing the different kinds of trees, and the land they cover and where burnt over, defining the area of same, and giving approximately the quantity of dry wood that could be obtained, and how far from the nearest station in a direct line. This map is to be made out for an average depth into the reserves of eight miles. This is an idea of my own, as in my opinion some steps should be taken as soon as possible to remove as much as possible of all dry and dead timber, as it is a great source of menace to the growing timber. In the event of fire once getting started in such a place it is sure to cause a great deal of damage.

The rangers are also instructed that all persons who bring out either timber or wood from these reserves must have a permit therefor, and if not, the ranger is authorized to seize the same and collect dues from such delinquents. There are a great number of such as it seems to be a recognized idea that to steal from the reserves is no crime. We are trying to show such people that the laws governing these reserves are made solely for the people and we are meeting with a fair measure of success. Very few seemed to know before that this timber and wood were reserved for the use of actual settlers, and that for a nominal office fee only.

While on this subject of dues I would say I believe it would be to the interest of the department and would facilitate the duties of each ranger, if the ranger were notified of the name of each individual taking out a permit in his district and the particulars of the permit. I found in several instances, where the ranger came across wood cut in large quantities and saw the person who took out same, that he claimed

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to have a permit and before the ranger could get back word from the Dauphin office, even though information was sent in all cases by first mail, such wood had been removed although permit for the same had never been granted.

I would also suggest that a Dominion land surveyor be sent out as early as possible to run the lines of the Porcupine reserves which have never yet been run, and if this is not done at once it will surely become a source of trouble. As you know, that is specially a timber country and there are timber berths around all the lines and there is danger of the holders cutting over the boundaries.

There was not a very large cut of lumber on account of the extreme depth of snow in the mountains, in fact there were hardly any portable saw-mill outfits at work. But even with the large reduction in the year's cut of lumber there will be more lumber carried over by the large mill owners of Manitoba than was ever known before. But this I consider, although a great hardship for the lumberman, will be a blessing for the farmers and users of such lumber. Before this the demand for lumber had been so great the lumberman could not supply it. But from now on a good supply of dry lumber can be obtained.

Taking up the wood supply, of which there was a great deal said last winter, there was plenty on hand, but it could not be put on the market as the railways could not cope with the situation. We had an abnormally large snowfall. I am most happy to say that for this winter, namely, 1907-8, we are so far blessed with the very opposite. Better weather and for a longer continuous period has never been known. In consequence there will be a larger output of wood, and a greater number of portable saw-mill outfits at work than has been known for a number of years.

I would respectfully draw your attention to the fact that I have had to appoint two temporary rangers for a short term only in each case, one to look after the Lake Manitoba West reserves and the other to look after the Canadian Northern railway extension from The Pas northward on what is called the Hudson Bay Railway, as I deemed it only wise that, on account of the large number of camps used along this line, it should be patrolled to guard against fire.

I was more than pleased that you came out personally and looked over the ground and I am trying my best to follow your instructions as your experience in such work has given you a keener insight into what is required, and at the same time you will be better able to appreciate the different obstacles we as rangers have to contend with.

I am pleased to say that there has been no damage done by fire to the forests in this district whatever. There were quite a few started, but in all cases our rangers, thanks to the new system, have been on the ground and in no instance has the fire got away. The work done by the rangers has reduced the danger in this respect.

Before closing my report I would respectfully draw your attention to the fact that I have not been able to give the whole of my time to this work, much as I would have liked to do so, on account of the other onerous duties which fell to my lot, and which I have already covered in my previous report to you, and this work being imperative had to be done. But I fully expect to give my full time in the future to the Forestry Branch, and hope ere another year rolls round to be able to show you that something tangible has been accomplished.

Your obedient servant,

WM. A. DAVIS,

Chief Forest Ranger.

APPENDIX No. 10.

REPORT OF C. A. WALKINSHAW, FOREST RANGER.

BOISSEVAIN, MANITOBA, March 28, 1908.

R. H. CAMPBELL, Esq.,
Superintendent of Forestry,
Ottawa, Ont.

SIR,—I beg herewith to submit my annual report in regard to the conditions in the Turtle Mountain Timber reserve.

In the first place I would like to say that the general conditions have been extremely favourable during the year just past owing to the fact that there has been an almost complete freedom from fire—only one small fire having got into the reserve and burning about four acres in sections 34 and 36, township 1, range 21, west of the 1st meridian, but doing very little damage because it was principally all grass.

A fire which threatened to do much harm was stopped by the able efforts of my assistants in confining it to sections 3, 2 and 10, township 2, range 21, west of the 1st meridian.

I am pleased to be able to report that seven of the squatters on the reserve, namely, Mrs. Foster and family, Frank Chisholm, John R. Kelly, Benjamin Pagels, William Hunter and family, Joseph Tomlinson and family, and John Rever and family, left last fall and have taken up land near Benito, Saskatchewan, and that the remaining squatters, namely, William H. Cox and family, William Madden and family, and Philip Mulholland, have agreed to vacate the places occupied by them on the reserve and to accept the assistance offered to them to take up locations also near Benito. It is expected that they will leave in about three weeks.

The half-breeds who had located at the western end of the reserve left almost immediately after our visit to them and have not been seen or heard of since.

The past winter has been an exceptionally favourable one for the people who have come for wood, owing to the fact that there was an almost entire absence of snow, and they were able to gather a great deal of the fallen timber that had lain on the ground for some years and in previous seasons could not be gathered on account of snow. The picking up of this wood is a great benefit to the reserve.

There have been at least 250 permits issued for twelve cords each, making a total of 3,000 cords of this fallen wood that has now been taken away. All over the reserve the growth of the young trees referred to in my last report has been continued and has been very rapid.

According to instructions received by me I have destroyed all the habitations of the squatters who have left, and this will be continued in the case of those about to leave as before referred to.

The fish in the lakes on the reserve is an attraction to the American people just across the lines and we have been able to turn back several parties who came this winter with the intention of fishing through the ice. The winter season is the only time when there is much trouble experienced with them.

Your obedient servant,

C. A. WALKINSHAW.
Forest Ranger.

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APPENDIX No. 11.**REPORT OF JOHN STEWART, D.L.S., C.E., COMMISSIONER AND CHIEF
ENGINEER OF IRRIGATION.**

CALGARY, ALBERTA, March 31, 1908.

Hon. FRANK OLIVER,
Minister of the Interior,
Ottawa.

CANADIAN IRRIGATION SURVEYS.

In the spring of 1907, I sent two engineering parties into the field, one in charge of Mr. R. J. Burley, in Saskatchewan, and the other in charge of Mr. P. M. Sauder, in Alberta. Both these men had instructions to make inspections of all ditches authorized, gauge all streams and make surveys of lands to be purchased under the terms of the Irrigation Act, also to inspect all reservoir sites set apart by order in council for irrigation purposes, and to inspect all licensed schemes in each of their territories.

The territory covered by Mr. Burley extends from township 16 south to the international boundary, and from range 8, west of the 4th meridian eastward to range 10, west of the 3rd meridian. Under the above instructions, Mr. Burley made 138 inspections of schemes authorized, 65 surveys of lands to be purchased under the terms of the Act, 23 inspections of licensed schemes, 4 inspections of reservoir sites, and made 19 gaugings of the principal streams in his territory, and sent in to this office 190 reports. Mr. Burley was only able to gauge the largest streams, as the meter he had was too large for small creeks.

The second party was in charge of Mr. P. M. Sauder, in Southern Alberta. The territory covered by Mr. Sauder extends from Bow river, south to the international boundary, and east to range 8, west of the 4th meridian. During the season, Mr. Sauder made 65 inspections of ditches authorized, 10 surveys of lands to be purchased under the terms of the Act, and gauged 131 streams and set 5 gauge rods. He also inspected 23 licensed schemes and 15 reservoir sites and made survey and estimate of the Fisher and Barnes ditch and sent in 140 reports to this office. He also erected two cable stations for gauging streams. Mr. Sauder also made a trip to Montana to get particulars of how work was carried on in the United States, and he also made a survey of the Red Deer river to find out if water could be got on to the lands lying east of the Canadian Pacific Railway block.

In September last, I inspected the following schemes at Saskatchewan Landing: Jones and Webster, at Miry creek, and J. L. Smart and F. Goodwin, at Saskatchewan Landing. I also made a survey of 1,000 acres of land in the Stony Indian reserve, sold to the Calgary Power and Transmission Company, of Calgary.

With reference to the inside work of this office, since April 4 last, there has been the following number of communications received and sent out, viz.:—

Letters received to date.	3,662
Letters sent out	4,846
Agreements for water received and recorded	1,380
Applications for water received and recorded.	168
Gauge rod readings received	72
Right-of-way plans examined and recorded.	110
Plans with applications for water examined and recorded. .	336

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Transfer of water agreements and notices of cancellation of water agreements.	236
Notices of application for water rights prepared for publication.	168
Number of forms of application for right-of-way over Crown and other lands.	95
Applications to construct works across road allowances. . .	125
Number of final licenses recorded, in triplicate.	44
Making 176 entries in records.	
Number of certificates under section 20 of the Act.	98
Number of certificates under section 33 of the Act.	40
Number of reports received from R. J. Burley.	190
Number of reports received from P. M. Sauder.	140

In a great many of the letters received there were enclosures which had to be recorded in the books of this office, and do not figure in the number of letters received.

It will be noticed from the above figures, that the work of this office has doubled within the past year.

For the coming season it is intended to carry out practically the same programme of work in the field as last year, with the exception that in Southern Alberta there will be cable stations established on all main streams to enable the gauging of these streams to be performed by two men in the years to follow, thus cutting down the expense on such work, and in Saskatchewan there will be gauge rods placed on all the main streams and all streams will be gauged.

Your obedient servant,

JOHN STEWART.

APPENDIX No. 12.

REPORT OF P. M. SAUDER.

CALGARY, ALBERTA, March 31, 1908.

JOHN STEWART, Esq.,
Commissioner of Irrigation,
Calgary, Alta.

SIR,—I beg to submit the following report of work performed by me during the season of 1907.

HYDROGRAPHIC WORK.

Having completed the organization and equipment of my party, field operations were commenced on the first of May. Moving in a southerly direction, measurements of the discharge were made on all the more important streams between Calgary and Macleod. From Macleod we travelled westward to a point near the junction of the South Fork and Oldman rivers and gauged the tributaries of the latter. Proceeding southward from Pincher creek to the Waterton lakes and thence eastward to the head works of the Alberta Railway and Irrigation canal, discharge measurements were made on the Waterton, Belly and St. Mary rivers and tributaries.

Having completed this circuit early in August we decided to return to Calgary by a similar route and make a second discharge measurement of all the streams already gauged. A number of smaller streams tributary to the South Fork river, Crownest river and the North Fork of the Oldman river which had not formerly been included were gauged on the return trip.

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Besides determining the actual discharge at the date of measurement, sufficient data as to the general slope of the bed of the stream and its character were obtained to enable us to calculate the probable discharge at high water and flood stages of the streams by use of Kutter's formula for the flow of water in open streams.

The gauge heights which had been formerly established were examined and put in good repair, and five new ones erected.

In August I worked for a week with Mr. Follansbee, of the United States Hydrographic Survey, and obtained much valuable information as to the system under which the work is carried on in that country.

On October 25 having finished the season's work, the outfit was stored and the men paid off.

INSPECTIONS.

This work consisted of the inspection of all applications for water-rights, the inspection, survey and examination of proposed locations in connection with applications to purchase lands under the irrigation system, the inspection of reservoir sites set apart by Order in Council, and the inspection of licensed irrigation works.

A very careful examination and survey of Mr. John Lineham's schemes for the diversion of water from Macabee creek and Mr. W. H. Quail's scheme for the diversion of water from Muddypound creek were made and I found it necessary to relocate some portions of these schemes.

A very careful examination and survey of the Fisher and Barnes irrigation scheme were made to determine the cost of construction and to form a basis for settlement of the various matters in dispute between them, which occupied considerable time.

In accordance with your instructions I proceeded to Red Deer river in November to determine the feasibility or otherwise of diverting water from that river, to irrigate the land lying south of it and east of the Canadian Pacific railway tract, and found that owing to the high banks and small fall in the river it was not a practicable scheme. From information since received it appears that it may be possible to irrigate this tract by diverting water from the Bow river at a point near the east boundary of the Blackfoot reserve.

Your obedient servant,

P. M. SAUDER.

APPENDIX No. 13.

REPORT OF RALPH J. BURLEY.

CALGARY, ALBERTA, March 31, 1908.

JOHN STEWART, Esq.,
Commissioner of Irrigation,
Calgary, Alta.

SIR,—I beg to submit the following report of the work performed by me during the season of 1907.

My party was organized in Calgary and the outfit loaded and shipped to Medicine Hat on May 6. From there we drove to Medicine Lodge near the detachment and after completing the work of inspections and surveys there and in the vicinity of Medicine Hat moved to Maple Creek on May 25.

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From there we moved in a southeasterly direction inspecting all schemes on the north side of the Cypress hills, and then moving across to the south side and working westward completed the circuit of the hills and arrived at Maple Creek on November 25.

The work consisted of inspections of all licensed and authorized schemes, inspections of reservoir sites set aside by Order in Council, inspection and survey of proposed schemes involving the purchase of land under the irrigation system and gauging of the more important streams flowing out of the Cypress hills.

From the attached lists it will be seen that the work in the Maple Creek district is increasing rapidly and as several schemes needed two and sometimes three inspections during the season it was impossible for me to devote as much attention as should have been given to the hydrographic work. In addition I located the Fearon, Moorhead and Hastie ditch, a rather extensive scheme which involved the placing of some twenty-six miles of location stakes, transit traverse of the ditches and reservoirs and the running of check levels over all the located ditches. This work delayed me some three weeks just at a time when a close check should have been kept on the flow of water in the various streams, and as a result I could only make some nineteen gaugings of the larger streams. A smaller meter should be supplied for gauging the spring creeks, small coulees, &c.

Weather conditions prevented further field work being advantageously carried on, and on November 25 I struck camp, and stored the outfit at Maple Creek, shipped the horses to Calgary and paid off my party in accordance with your instructions.

Your obedient servant,

RALPH J. BURLEY.



LUMBERMAN'S DAM, DUCK MOUNTAIN RESERVE.



SHADED CONIFER BEDS, INDIAN HEAD NURSERY.



TWO-YEAR-OLD SCOTCH PINE SEEDLINGS, INDIAN HEAD NURSERY, SASKATCHEWAN.



SOWING TREE SEED AT INDIAN HEAD, SASKATCHEWAN.



SQUATTER'S HUT, TURTLE MOUNTAIN RESERVE.



PLANTING ON THE RESERVES.



THREE-YEAR OLD NORWAY SPRUCE SEEDLINGS (*Picea excelsa septentrionalis*) AT INDIAN HEAD, SASKATCHEWAN.



FOREST SURVEY PARTY, RIDING MOUNTAIN RESERVE.



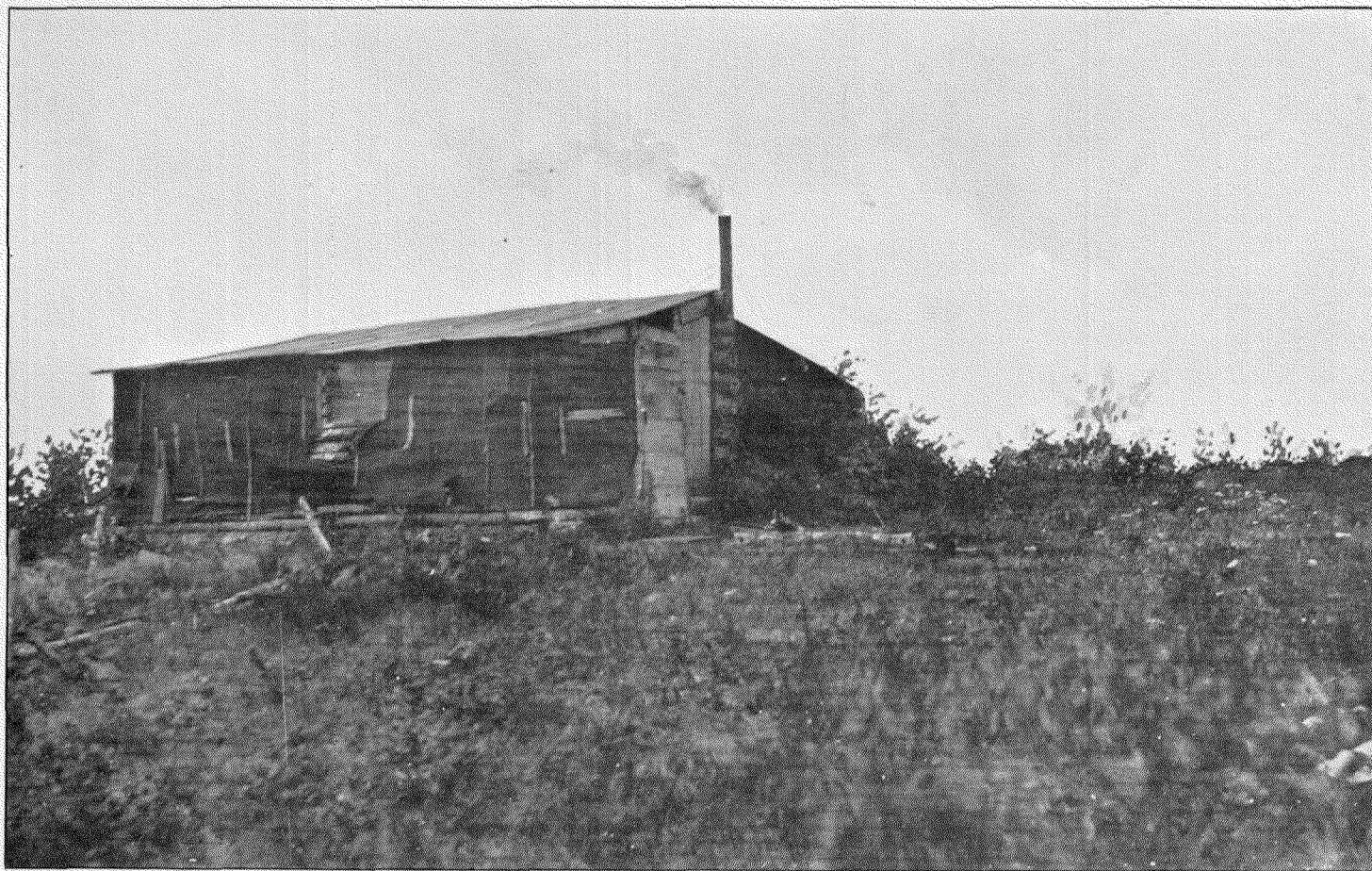
RAVINE IN THE RIDING MOUNTAIN RESERVE.



CAMP OF SURVEY PARTY, RIDING MOUNTAIN RESERVE.



FRUITING BRANCHES OF WHITE SPRUCE AND LARCH.



SQUATTER'S 'IMPROVEMENTS,' TURTLE MOUNTAIN RESERVE.