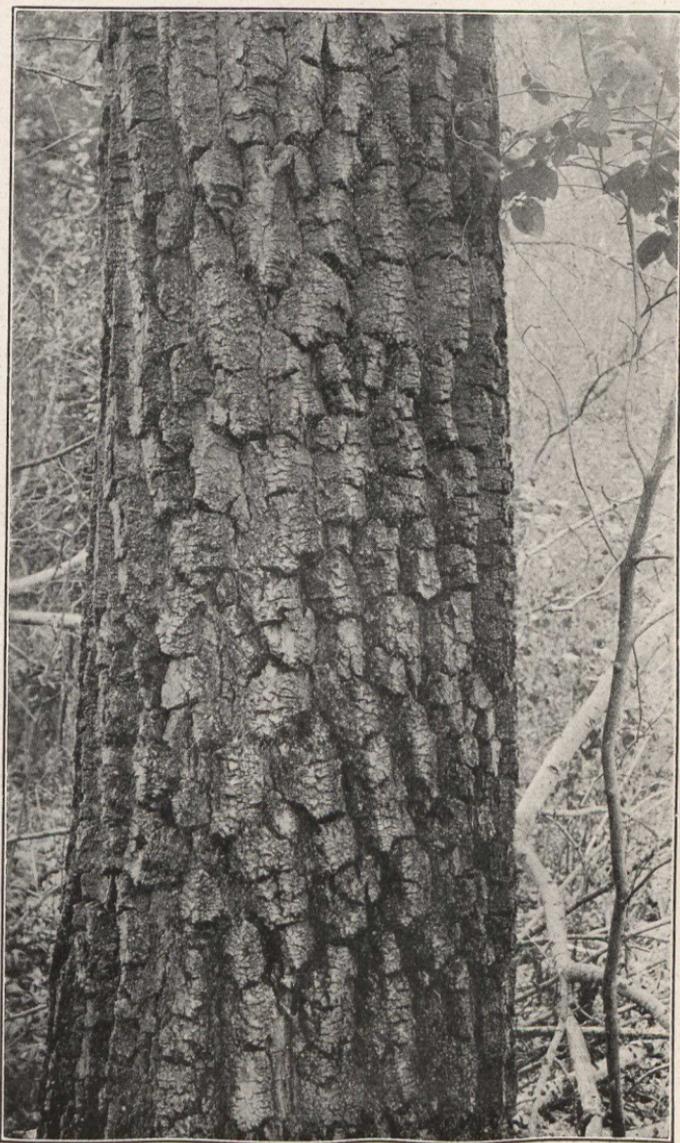




A. Aspen Poplar.

A "Bark Study," showing



B. Balm of Gilead.

most common Eastern Poplars.

# Canadian Forestry Journal.

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No. 3

## THE FOREST FIRE.

*Stephen Chalmers in New York Times.*

Last night there was a glimmer on the height,  
A mighty glow-worm in the mountain's hair.  
It cast a sheen—a ghostly, tree-barred light,  
Which quickened to a red and restless flare.  
A sullen awe hung heavy on the night—  
Save for a wavelike rushing from afar,  
A misty clouding of the evening star—  
And from his haunt of silence crept the bear.  
At dawn to-day a shower fell from heaven,  
The mighty glow-worm writhed and hissed and  
fumed.  
The sun grew red with smoke, and Hell, new-riven,  
Breathed of disasters buried and exhumed.  
The cattle stood, amassed in fear, undriven,  
The birds sat silent 'mong the forest spires,  
All silent fell the mighty forest lyres,  
And phantoms in the birches whispered, "Doomed!"  
To-night the pall has lifted, and the dark  
Fades, wildly routed, to the western skies,  
And all the east's ablaze, as never lark  
Beheld in any dawn. The groans and cries  
Of forest giants, battling, stripped and stark,  
Against the writhing, red-eyed fiends of flame,  
Torture the night with horror, pain and shame,  
As on the yellow-hairy Demon flies!  
To-night the face of man is blanched with dread,  
To-night the soul of man is black despair,  
He waits, he hopes, then slowly turns his head,  
And mingles with the beasts that from their lair  
Have leaped in terror and to safety sped,  
As in millennium, in mad afright,  
Forgetting kind, they rush on through the night,  
While Hell's own banners wave upon the air!

## A FOREST POLICY FOR CANADA

DR. B. E. FERNOW.

(Given before the Lumbermen's Association of Western Nova Scotia).

The general arguments for conservative forest management are:—

- (1) That a shortage of natural supplies is in sight.
- (2) That wasteful lumbering not only destroys useful material, but wastes the soil.
- (3) That climate and waterflow are unbalanced by forest destruction.

Nobody in his senses would proclaim that a timber famine is in sight, in Canada, if only the needs of the present population are to be considered, for Canada has at present the largest per capita allowance of forest area in the world, namely, at least forty acres, or more than five times as much acreage as the next best supplied countries, Sweden or the United States.

But Canada cannot shut herself off from the rest of the world, and in this modern world questions of supply and demand cannot be considered for one part without reference to all other parts. Hence the questions both of supplies and of consumption by other countries must enter into such an enquiry.

There is, however, no need of including any but the industrial nations of Europe and North America, for the rest of the world is not using wood, does not require wood to any appreciable amount, although it contains the bulk of the population, nor does it contain, to any large extent, the character of timber which is acceptable for our uses.

The five hundred million people of the northern hemisphere consume probably more than fifteen times the wood materials which the one thousand million people of the rest of the world require, and the forest areas of most useful character are also located in the northern hemisphere.

### EUROPEAN EXPORTERS OF TIMBER.

Conditions in Europe can be briefly summarized as follows: There are only four or five countries in Europe still laboring under the belief that they have a surplus of timber supplies which they can afford to export to less fortunate nations. These are Russia, with Finland, Sweden, Norway, Austria-Hungary with its dependencies, and little Roumania, which has lately furnished small amounts. The four great exporters claim still over five acres forest area per capita; but lately they have come to realize that, while the woodland area is still there

the contents have dwindled, and the constantly increasing draft on their natural resources is not made up by any new growth as fast as the virgin timber is removed. Sweden especially has lately attempted to reduce its export by private trust, and the Government has since 1903 begun to enforce more conservative cutting, partly by setting a diameter limit.

While in 1880 the total net export of wood materials from these countries was valued at \$97,000,000, in 1900 it had grown to \$183,000,000. This increase of four per cent. per annum (an average of over three per cent. compounded for the twenty years) is, of course, partly due to increase in prices, which, as I have shown elsewhere, can be figured at about one and a half per cent. compound per annum, leaving, as the rate of increase in exports, one and a half per cent.

In other words, as the wood export of these countries was in 1900 actually over fifteen million tons, the increase in material was at the rate of 250,000 tons annually on the average, but in fact the increase has been at an accelerated pace in later years.

Russia, with a vast forest area of over six hundred million acres in Europe and seven hundred million acres in Siberia, would apparently have illimitable resources, but her population is over one hundred and twelve million and her forests have been mostly maltreated so long that there are less supplies than the area would indicate. Moreover, much of the forest area, especially the Siberian one, is not of high character. She furnishes now, besides her own consumption, six million tons to the export trade valued at around fifty million dollars, as compared with half those amounts in 1880.

Sweden, with a forest area of only fifty million acres, and a population the same as Canada, has been most lavish in sending her materials abroad, especially to England, furnishing at least one quarter of her needs. Her exports in 1900 were five million tons, worth fifty-four million dollars, as against twenty-eight million dollars in 1880. It is estimated that she is over-cutting by a very considerable amount, especially as the growth is slow, not more than one inch in diameter in twelve to fifteen years.

Austria-Hungary has exploited her territory in late years to the utmost, for while in 1880 the net export was only one and a half million tons, and \$17,000,000, in 1900 this had grown to four million tons and over \$50,000,000.

#### IMPORTING COUNTRIES.

The importing countries required in 1900, in addition to their own cut of around twenty-five million tons, nearly eighteen million tons, leaving a deficiency of nearly three million tons to be made up by Canada and the United States and other extra-European sources. And their rate of consumption, it is safe

to assume, has increased at the rate indicated by the later years prior to 1900, namely, by around three hundred thousand tons per year, so that now at least twenty million tons are called for from outside by these wood consumers. It is, of course, to be understood that this imported material represents mainly lumber and other sizeable material, which translated into feet B. M. may be figured as round fifteen billion feet. The principal wood consumers are Great Britain, Germany and France.

Great Britain imports practically her entire wood consumption, her imports having increased from nearly six million tons around 1880 to over ten million tons in 1900, and are now probably over twelve million tons worth not less than \$130,000,000. Unfortunately the situation of Great Britain as regards values are entirely unreliable, the values being declarations of the importers, I understand, hence by no means market values.

Germany, with her eighty-seven million inhabitants, comes next. In spite of her careful forestry, which enables her to cut fifteen million tons annually without diminishing her stock, which until 1863, made her appear still among the exporters, she imported in 1880 over one million tons, and in 1900 her imports had grown to 4,600,000 tons, one-third of her consumption, valued at \$77,000,000.

France, producing herself over four million tons, is a small third consumer, and here we have the somewhat curious anomaly of decreasing imports, for her importations fell from nearly forty million dollars and three million tons in 1880 to 1,230,000 tons or fifteen million dollars in 1900, which argues, in part, decadence in her industries, and improvement of her own forest production in part.

Belgium is a close fourth consumer to France, with over one million tons net import in 1900, the rest of Europe needing hardly two million tons. Altogether, we find, then, that a present average requirement of, say, twenty million tons, or in the neighborhood of one thousand million cubic feet, must be made up to these people from somewhere, in addition to their home production of twenty-five million tons, if they are to maintain their present industrial position, as far as wood is concerned.

Assuming, as these figures indicate, a consumption of thirteen cubic feet of timber per capita as a basis on which we could figure the needs of a modern civilized people, the consumption of timber by the three hundred and eighty million people of Europe may be set down as at least five billion cubic feet to be supplied from a forest area of eight hundred million acres. This would not be at all an impossibility if the whole area were economically managed, but, since hardly one-half of the area is under management, and especially that of the exporting countries is lacking in such management, the time will soon

arrive when the home area is cut out and Europe will, to an increasing extent, have to rely on America for its needs.

CONDITIONS IN AMERICA.

But here conditions are not much more promising. While European forest conditions are tolerably well known, we can, for the States as well as Canada, only guess or roughly estimate. Conditions on this Continent altogether are very different from those of Europe, and the most important difference is, that while European populations are stable, even their natural growth being diminished by emigration, the population of the United States and lately also of Canada are rapidly growing by the influx of new comers, so that consumption of wood materials increases in much greater ratio than by the mere increase of civilization. Moreover, here originally small populations fell heir to apparently inexhaustible forest supplies, which has created an extravagance in their use unknown elsewhere, and a wastefulness in their exploitation, such as has nowhere been ever equalled. The consumption of sizeable material in the United States is at least seven to eight times what we have figured for Europe, namely, one hundred cubic feet, and Canada, including her export, cuts at least the same amount per capita of such material.

Both the United States and Canada still live in the belief that they can export surplus. While Canada's export of wood products has not grown extraordinarily, having increased from around twenty million dollars in 1880 to only twenty-eight million in 1900, and in 1905 to thirty million dollars, the United States have of late rapidly grown in this respect, namely, from seven millions in 1880 to twenty-two million in 1900, and thirty-three million in 1906.

But, to be sure home consumption in the United States overshadows their export figures and makes them appear small, indeed. The total cut for 1906 of sizeable material in the United States was forty billion feet B.M., valued at \$650,000,000, besides laths and shingles to the value of thirty-seven million dollars, and the value of the whole cut, outside of fuel wood, amounted to the stupendous sum of eight hundred million dollars, representing not less than eight billion cubic feet or one hundred cubic feet per capita, as against thirteen cubic feet consumption by the European people.

For the statement of conditions in Canada we have only the figures of the census of 1900, when the value of the whole cut of sizeable material was reported as only thirty-six million dollars, which may represent around seven hundred million cubic feet—a small cut per acre—while her net exports for that year were twenty-eight million dollars, showing that home consumption is small.

While we know tolerably well what the consumption is in these two countries, we are reduced to guesses based on few actual data, as to supplies. The forest areas of the United States has been variously estimated between five hundred and seven hundred million acres, the former figure being my own, and referring to country favorable to growing timber, the latter figure including areas of woodlands which by Nature are incapable of producing lumber. This would make a per capita area of from six to eight acres only. This, under proper management, could eventually be made to produce at a reduced, but yet sufficient, rate supplies for double the population.

What the contents of virgin timber and what the growth conditions on this area are, is still less accessible information. Some years ago I ventured a calculation upon the basis of the area and the experience in different regions of average cuts. This guess, which made the available timber standing then around 2,000 billion feet B.M., is still the highest estimate. And in accepting this my successor in Washington, Mr. Pinchot, foresees a complete depletion in twenty years. But, I believe, that a very large increase of supplies will appear, due not so much to new growth as to reduction of the standard to which the logging is done, for these estimates, especially for the Western Coast, are based upon standards which exclude large areas of serviceable material, serviceable when prices have reached the true value, and smaller sizes are cut.

Nevertheless, the outlook is certainly alarming, even if we doubled the estimates of available supplies. Yet, as we have seen, the consumption can be easily reduced, and very advantageously, to one-sixth of the present.

#### CANADA'S POSITION.

Canada is the only country that could eke out deficiencies in the supplies of the United States, for, while there are vast areas of wood in Brazil and other South American countries, these are not of the kind to substitute for our softwoods.

And now, what is Canada's position?

There are three statements to be found in all geographies, namely, that Canada is a vast forest country, that its timber wealth is inexhaustible, and that the timber industry is one of her mainstays. Really, only the last statement is true, and that it may remain true, the interest of every lumberman should be engaged.

As regards Canada's forest resources, I regret to find profound ignorance and misconception prevails. I have myself little personal knowledge, but I can guess as well as the next man, and I can give a basis for my guess.

The highest estimate of the forest area of Canada is equal to the area given for Europe, namely, eight hundred million acres,

but, if we had not merely in view the wooded condition of country, but the question of timber supply for use in the arts, we will have to segregate those areas which by the nature of climate or soil are incapable of producing raw materials for industrial purposes. We will then find that the bulk of this vast area is woodland containing an open stand of poorly developed, branchy trees, only here and there with groves of better developed timber, but not in any sense logging propositions except for strictly local use, and that two hundred and thirty million acres are an ample allowance for the commercial forest area.

If we attempt to delimit this area of, under our present standards, commercially valuable forest, we will find that there are two distinct and widely separate areas, namely, the forest of British Columbia and that of the Eastern Provinces south of the Height of Land. Douglas Fir and the Giant Cedar are the prominent timber species in British Columbia. The botanical limits of distribution of these species are tolerably well known, and if we include the area within which they occur as timber area we find 178,000 square miles, 8,000 of which are located above the 5,000 foot level and hence outside the timber area. Allowing only thirty per cent. of waste in this area, we can assume that eighty million acres represents the commercial forest of that Province. For the Eastern forest area we may set the northern limit as the Height of Land, beyond which the character of the forest growth changes decidedly. Or we might take the line of botanical limit of White Pine, or else Norway Pine, which in part somewhat exceed, in other parts recede, from the Height of Land. This would include between two hundred and two hundred and forty million acres. Reducing this by the settled farm area of thirty million acres and allowing the usual thirty per cent. for waste, there remain, in round numbers, one hundred and fifty million acres, which once held the magnificent pine that has been mostly cut and exported, and holds the remnant of the virgin supplies. How much, who can tell? I believe, if we allow for the whole acreage of the East an average of two thousand feet per acre we shall have a maximum figure, namely, three hundred billion feet—not enough to supply the requirements of the United States for eight years.

The balance of the wooded area beyond the Height of Land, let us repeat, still contains valuable wood material, but it is not to be considered in a discussion of the supply of timber for the world market.

Are these data convincing, that for Canada as well as the rest of the world the time has arrived to consider seriously the propriety of better management of their timber resources?

## CANADA'S FOREST AREA.

There are some who think substitutes may be found for wood. Perhaps so, but it would indeed be a hardship to have to use substitutes for a material which is used in such enormous quantities, especially as there is no need for it, if now a vigorous policy of restoration and proper management is begun. For the forest area of Europe and North America, comprising, say one thousand five hundred million acres, can readily produce annually the six to seven million cubic feet, which would make the five hundred million people comfortable, and indeed double that quantity, under fair forestry management.

I may now only briefly point out that the bulk of the eastern forest area of Canada is located on the old Archaean rocks, which do not as a rule make good farm soils. The farm country of the Eastern Provinces, as is well known, lies on the glacial and lake deposits along the Lakes and the St. Lawrence River, with the valleys and lower slopes of the smaller rivers added.

For Ontario I have satisfied myself that two-thirds of the Province is destined to remain for ever timber country, if not waste. Applying the same proportions to the other Provinces, which probably have really less farm soils, the permanent woodland area, unfit for farm use, south of the Height of Land, may be set down as one hundred and fifty million acres. The question, what the fate of two-thirds of your territory in the Eastern Provinces is to be, would appear important enough to inquire, whether a change of present policies may not be advantageous, even if there were no concern as regards wood supplies calling for it. It is true that this area is only fit for timber growing, and should therefore be systematically devoted to it. This area, located mainly on Archaean rock formation, is overlaid mostly by thin soils, which are liable to rapid erosion and washing of the soil, wherever the vegetation or soil cover is destroyed, creating waste lands.

Under present methods, with wasteful lumbering and no one concerned in the future conditions, allowing fires to run and destroy any attempt of nature to recuperate, the waste land area is continuously increasing, and by and by you will find out the consequence not only in a timber famine but in disturbed water flow, for as is well known now, even to Americans, water powers and forest cover are in close relationship. The mountainous condition of British Columbia, even more than the thin rocky soils of the East, rules out most of the territory from farm use, and predicts even greater liability to destruction as a result of mismanagement of the soil cover. In short, all the arguments for the adoption of conservative measures such as other nations have practised for some time, or begun, can be shown to exist, and find illustrations in Canada.

KNOWLEDGE NECESSARY.

And what may such measures be?

It is clear that the first step should be to eradicate the inexcusable ignorance regarding this national property. Is it not common sense for the manager of any property, before he determines what is to be done with it, to become acquainted with the character, value and contents, and can a government, responsible to the future generations as well as to the present, do less?

A FOREST SURVEY THE FIRST NEED.

The first step then is in a forest survey. Millions of dollars have been wasted in surveying and subdividing land, absolutely uselessly, into squares, as if all the land were fit for settlement. Natural boundaries of rivers, lakes and mountains would in most places have sufficed to locate this information on maps. Such a reconnaissance survey should be mainly descriptive, segregating farm soils and the different forest types, with statements of their contents and condition, whether virgin, burnt or in good reproducing condition, swamps, etc. Such a survey for Nova Scotia, for instance, could probably be accomplished within one season, for an amount not to exceed \$10,000 to \$12,000.

It requires men who can see wholesale, can recognize types, of country and forest, can generalize and use judgment as well as eyes.

And when the lands surely fit for farm and orchard are definitely known, it is proper to have them withdrawn from forest use as fast as your increasing population can take care of them, and at the same time prevent rigorously the settlement or so-called settlement of the unfit areas.

BETTER FIRE PROTECTION ESSENTIAL.

There is no need pointing out, that the efforts in subduing the fire fiend, which lately have been everywhere more strenuous, must be still further increased if permanent forestry systems are to be applied. This protective service will become only really efficient when not a horde of casual temporary appointees, but a set of permanent forest rangers, fully occupied through the whole year, brings an interest into the woods which does not exist as yet.

Another way in which safety from forest fires can and will have to be increased, is to come from changing the attitude of people, timberlimit holders and governments towards their forest property. Hitherto it has always remained doubtful what is to remain in forest, what may be given over to settlement. When it is once understood that certain areas are destined to remain forest and to be permanently devoted to timber growing, this change of attitude will come about. Again the interest of

the timber limit holders in their limits must be made such that a longer future may be in their minds.

#### THE PROPER WAY TO SELL TIMBER.

The present system of licenses, limited or uncertain in their tenure and with a large bonus paid before any timber is cut, concentrates their interest on the present available log supply, the necessity of rapid and rough exploitation being forced on them.

What interest can there be in protecting the young growth, which is the promise of the future, but has no value for the present logger? The interest of the future belongs to the Government, and finally the Government must step in, take hold of the property of the people for management, instead of exploitation, and sell to the logger from year to year—with assurance of continued supplies—under proper forestry regulations.

Where, as in your Province, private ownership is developed to such a large extent, self-interest will gradually make owners more careful of their property, and when they realize that it pays, both farmers and lumber companies will see the advantage of applying forestry principles.

#### TRAINED FORESTERS NEEDED.

To do these things, to make the forestry surveys, and organize a service in each province, that will take care of the forestry interests for permanency, of course, a special department manned by men who understand and know what forestry is, will be required. Indeed, the first necessity preceding all attempts at a real forest service is to secure the education of the men, who can give the technical advice needed in such departments. And this first step, without which every other would only be a floundering, has been taken by the Ontario Government in making the establishment of a Faculty of Forestry in the University of Toronto possible.

The rapid development of the forestry idea in the States, let me assure you, is largely due to the existence of a class of educated foresters (graduated from the schools, which began their work not ten years ago), several hundred now, who have been able to talk business in detail instead of generalities; who, without attempting to revolutionize the work of the logger, are gradually improving it into the work of the forester.

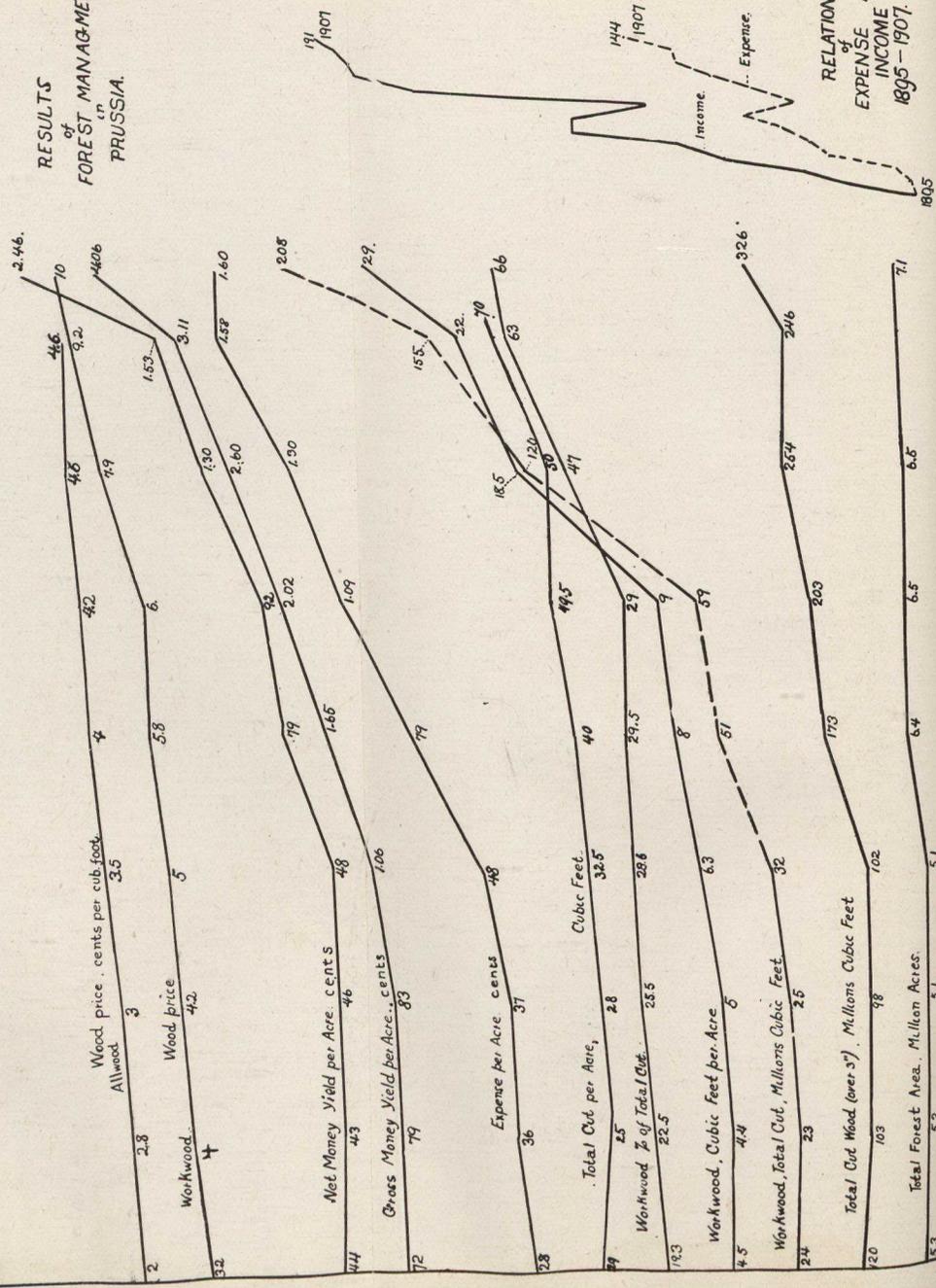
#### THE FOREST GROWTH SLOW.

Forestry is always a work of slow and patient building, especially in mismanaged woods. This fact, which makes it pre-eminently the business of the State, should be better understood by our people.

In this connection, I wish to call your attention to a matter which is so generally misunderstood even by lumbermen, and which forms an important argument for the proposition that the

# RESULTS of FOREST MANAGEMENT in PRUSSIA.

## RELATION of EXPENSE AND INCOME 1895 - 1907.



Income

Expense

1895

1907

144

191

155

22

70

66

326

246

203

173

102

64

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State must take hold of the forestry question, because the State alone has an interest in the distant future which forest production involves. It is the matter of rate of growth of trees.

Lumbermen have long talked of cutting "second growth" and the impression has gone abroad that when the lumberman returns after 15 to 20 years to the area lumbered over, he finds a "new growth," a new forest reproduced from the old. Of course you know better, and are well aware that the trees you find on your return were there when you made your first cut, and have only laid on 2 or three inches more than they possessed when you left them.

#### THE GROWTH OF SPRUCE.

At the last convention of the Canadian Forestry Association, a gentleman who should know better asserted that the spruce grows to a diameter of 18 inches in 30 years. The chart which exhibits the average diameter attained from decade to decade by the more rapid white pine, as ascertained from several thousand measurements, shows that this tree does not attain that diameter before the 100th year, and the red line representing the diameter growth of spruce on cutover lands, *i.e.*, under more favorable conditions than in the dense forest, will convince you that the spruce even under the best conditions requires 20 years more to make that size. This would make an average rate of 1 inch in 7 years, while in Quebec Mr. Joly found the average of 100 trees to be 1 in 8 years, and 1 in 9 years will be found the much more general average. That is to say, it takes in most situations 100 years to grow a 12 inch spruce tree from seed, and not less than 60 years for a 12 inch white pine. This long time element in forest production it is that necessarily deters private enterprise from engaging in it. Forestry is profitable in the long run, but only in the long run.

#### FOREST MANAGEMENT PAYS.

How profitable it can be made on a large scale is exhibited in a chart which shows the progressive results of forest management for 75 years in Prussia. This management did not start in good earnest even under Frederic the Great's reign, the modern forest administration being only inaugurated after 1812. Burned and slashed areas abounded, the best timber, wherever accessible, had been removed, and it was necessary to rebuild the house. After 20 years of management the net revenue from the five million acres had grown to 44 cents per acre, and for a long time the improvement was slow, but after 1880 we see that not only the cut could be increased, but that it furnished a much larger and increasing percentage of log timber or workwood: and the net revenue grew at an increasing rate, until in 1904 it had grown to \$2.46 per acre. The showing would have been even better if it had not been that the increase in area has come by

purchase of waste lands requiring outlay without producing anything.

#### CUT HAS TREBLED.

Of course the increased income is due to some extent to increase in wood prices, for during that period of 75 years prices have trebled. But when it is stated that the total cut of wood per acre has also almost trebled, and of saw timber per acre has in that period changed from 4.5 cubic feet per acre to 29 cubic feet, and that while in 1830 less than 20 per cent. of the total cut was saw timber, in 1904 64 per cent. was of that description, it is clear that the forester's care and art had at least doubled the income per acre irrespective of prices. Indeed, the result of his endeavor is very much better than these figures show, and it is important to realize the fact, for presently the income will rise at an unprecedented rate, not only because of the rapid rise of value of wood, but the patient work of the foresters is only just beginning to tell.

It has taken 100 years to bring these forest areas into proper condition, and full producing capacity, to repair the damage of previous centuries, to build the roads and improve transportation. The expenses are not any more rising at the rate at which they did and certainly not at the rate at which the cut may be increased without touching the investment. The last 25 years show this fact plainly. Since 1880 expenses have risen less than 47 per cent., while gross income has risen 100 per cent., and this disproportion must grow still wider as the result of the earlier abstemiousness shows itself in the increased cut.

The value of this impressive lesson lies in showing that first of all a proper attitude on the part of the people and the Governments to the future of the country, and then persistency of purpose is necessary to secure the results of forestry.

#### CHANGE OF TITLE.

The August number of "Forestry and Irrigation" was the last to be issued under that name; with the September number the title has been changed to "Conservation," with the sub-title "Woods and Waters, Soils and Ores." The change in name is to mark a corresponding change in the sphere of the publication, the magazine now advocating not only forestry and irrigation (the conservation and judicious use of the nation's resources in forest and water), but a like judicious treatment of the national resources in mine and soil.

"Forestry and Irrigation" originated in an amalgamation, in January, 1902, of "The Forester" and "National Irrigation," and its present broadening of its sphere is the second step in the process of widening out.

"The Canadian Forestry Journal" wishes its contemporary all success in its widened circle of interest.

## IRRIGATION CONVENTION AT VERNON, B.C.

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The Western Canada Irrigation Association, at its second annual meeting, held at Vernon, B.C., on August 10th and 11th, took strong ground in advocacy of a policy of forest protection and reservation by both federal and provincial governments.

### THE FORESTRY RESOLUTION.

On the morning of the 11th the following resolution was put before the convention:

“Whereas the preservation of the forests at the watersheds of all the streams in the province, the waters whereof are available for irrigation or industrial purposes, is of vital importance for the prevention of floods in spring and drought in summer; and

Whereas at the first meeting of the association held at Calgary last year, a resolution somewhat similar to this was passed praying the Dominion and provincial governments to take steps to protect the existing forests and watersheds; and

Whereas the matter has not yet received that attention that in the opinion of this committee its importance demands;

### THEREFORE BE IT RESOLVED

That the Dominion and provincial governments be again urged to take active and immediate steps to protect existing forests on the watersheds of all streams available or that in the future are likely to become available for domestic, agricultural or industrial purposes, and to replant denuded areas at the head of streams so that the source of supply of water for all such purposes may be maintained forever.”

“That better means should be adopted for the prevention of forest fires on the watersheds. It is further suggested that the penalty in the bush fire act should be increased and that one-half of any such penalty should go to any person furnishing evidence resulting in conviction.”

Mr. Pooley, of Kelowna, moved the adoption of the resolution, seconded by Mr. Wolfenden, of Armstrong.

In supporting his motion Mr. Pooley pointed to the great necessity which existed of preserving the forests at the watersheds. He said that while the proposition to increase the fine might appear drastic, he believed it was justified in view of the importance of the object to be attained. He also thought it was eminently proper to have a portion of the fine made payable to the informant. It was a serious thing to have to drop one's business—more especially in the case of farmers—at this time of the year to fight a forest fire in protection of houses and crops;

it might mean heavy loss, and he thought any man justified who informed against parties carelessly violating the provisions of the "Bush Fires Act."

MR. R. H. CAMPBELL.

At this point it was suggested that as Mr. Campbell, Superintendent of Forestry for the Dominion of Canada, was present, a few remarks apropos of the work being done in forest preservation by the Dominion Government would not be out of place.

Mr. Campbell, in his opening remarks, said he had heard much of the climate and fruitfulness of the Okanagan Valley, and his present trip was as much to study conditions here and see for himself what these amounted to as to take part in the deliberations of the convention.

He was deeply interested in the question of irrigation because it came under his control in the Department of the Interior. It was also kindred to forestry; in fact, the one was essential to the other.

The forests as a rule were located upon lands not suitable for agricultural purposes. Of course, there were exceptions to this rule, but usually where heavy forest growth existed the land was not suitable for farming, but it was nevertheless valuable to the farmer and to his land. One reason was that he believed that it has a certain affect on the precipitation of moisture, in the shape both of snow and rain. It had been argued by many that this was not the case, but experience had proved that forests had a considerable influence on precipitation. There must be a cooling process in the forests which had a direct influence on the atmosphere.

There was no doubt whatever but that the forests had an influence on the flow of water. They protected the ground from the sun, reducing evaporation, and causing the melting of the winter snows to be a gradual process. The water sank into the soil and was retarded in its drainage to the channels of creeks and rivers by the leaf mould and root system, and the danger from sudden freshets was reduced to a minimum. A forest fire destroyed the leaf mould and damaged in a day what it had taken centuries to build up. and which it would take centuries to renew.

Much of the land in British Columbia was of great elevation and useless for any other purpose than that of growing forests for the purpose of protecting the sources of streams useful not only for irrigation purposes but also for that of power and domestic uses.

#### FIRE PROTECTION.

In regard to that part of the resolution urging on both Federal and British Columbia Governments better protection for the forests from fire, the Dominion Government, he said, believed

the question of prevention of forest fires to be a vital one, but it must not be forgotten that the extent of the country was enormous and the population very scattered, and a proper supervision was consequently a very difficult matter to meet. But the best method, and the one adopted, was the patrol system. A very large number of rangers had been employed and since the system had been in operation there had been no serious fire in the railway belt.

The benefit of the system was to be noticed in the improved condition of the mountain sides which were being re-clothed with trees where fire had ravaged them during construction days. He did not claim that the patrol system was an absolute preventive, but it had the general effect of reaching fires at early stages and snuffing them out before they had a chance to spread. No system could be entirely effective unless it had the support of the people and their co-operation.

One of the most valuable features of the patrol system was its educative influence. The rangers were continually drawing the attention of the settler to the provisions of the "Bush Fires Act." They also showed the best way of fighting a fire at its inception.

#### OTHER FEATURES OF DOMINION FOREST WORK.

The cutting of timber was another matter which was engaging the attention of the Government. There was no reason why this should not be done intelligently and with the end in view of having a permanent source of supply on which to draw. The Department was developing a staff of carefully instructed forestry experts who were destined by the Government to take up this phase of forest preservation.

The Dominion Government was also erecting forest reserves at the sources of streams which would ultimately be used for irrigation purposes. The scheme was to study the forest growth, as to age, process of growth, etc., and to have reliable data upon which to base advice as to the best methods to pursue in cutting the surplus supply.

He was also engaged in examining these reserves with a view to locating the best sites for storage reservoirs. In the provinces to the east of the mountains observations were being made by experts regarding the effect the forests had on the flow of water. The knowledge thus gained would have a direct bearing on the question of irrigation because it would place fairly accurate figures as to flow and volume of water at different periods of the years in the hands of officials administering the water system of the country. It was also hoped, by establishing reservoir systems at the sources of streams, to control the torrential flow of water at the time of the melting of the winter snows and during the spring rains.

During the last five years 2,000,000 seedling forest trees had been distributed each year to people dwelling upon prairie farms in Manitoba, Alberta and Saskatchewan. This scheme was meeting with great success and reports demonstrated that over 85 per cent. of the trees planted were thriving.

#### PROVINCIAL RESERVES.

Mr. Robinson, of Summerland, said he understood the Dominion Government had taken steps to establish forest reserves and create patrol systems and such being the case he believed the Provincial Government should keep pace with the Federal Government in this respect. They should take the matter up at once and secure all information possible for the purpose of preserving the forest growth on watersheds and if found necessary take up the matter of establishing reservoirs.

Hon. Mr. Fulton said that until about two years ago little had been done, but since that time very material progress had been made and he could now assure Mr. Robinson that there were 30 paid fire wardens on the Government roll and 60 or 70 un-salaried assistant fire wardens, chiefly connected with the lumber companies. These men give information regarding fires to the paid fire wardens, who are authorized to secure all the help needed for the fighting of fires.

Since this system has been in force only one serious fire, namely, the recent one at Fernie, had occurred. One important duty of fire wardens was the education of the people in the prevention and extinguishing of fires by means of posters and personal advice. They were also called upon to search out offenders and bring them to punishment.

A good many other matters in this connection were under the consideration of the Government and would be incorporated in the statutes during next session. Mr. Fulton also informed Mr. Robinson that the whole province was under a reserve. As to the Government undertaking the construction of reservoirs that was a matter that would require careful consideration before the Government could make known its policy.

Mr. Duncan Ross, M.P., moved, in amendment, that the last paragraph be struck from the resolution. The amendment carried, and the main portion being submitted to the convention, was adopted unanimously.

The adoption of the second paragraph was then moved by Mr. Pooley, seconded by Mr. Chas. Wilson, K.C., Mr. Pooley reiterating arguments he had previously advanced.

Mr. McLellan, of Kelowna, was of the opinion that the resolution should be modified to meet the case of settlers who through no lack of precaution were yet unfortunate in losing control of fires set during the clearing of lands. As far as the man who could deliberately set out a fire was concerned, he was a

danger to the community, and the penalty meted out to such an one could be none too severe.

Mr. Wilson said he believed that a grave objection was taken to the word "informant" consequently it was not used. However, he was of the opinion that in the case of the wanton setting out of fires no stigma could be attached to the name of the party bringing such a man to justice.

The motion was then put and carried.

#### OPENING OF THE CONVENTION.

The Convention opened on the afternoon of Monday, August 10th, in the Opera House, Vernon, when Hon. F. J. Fulton, President of the Association and Chief Commissioner of Lands and Works for the Province of British Columbia, delivered his presidential address. In this he referred particularly to the proposed irrigation legislation for the province, a draft of which had been published and widely distributed, and appealed for the support of all, irrespective of politics, in the formation and enactment of legislation which should be in the best interest of the province.

Mayor Timmins, of Vernon, then spoke briefly, welcoming the delegates to the city. Mr. J. S. Dennis, of Calgary, First Vice-President of the Association, responded.

Mr. R. B. Bennett, of Calgary, was elected Chairman of Sessions.

#### MR. J. S. DENNIS'S ADDRESS.

The Monday evening session was taken up by an address from Mr. S. J. Dennis, of Calgary, President of the C.P.R. Irrigation System, on the law relating to the use of water for irrigation. He asserted that the Northwest Irrigation Law was the best irrigation law at present in existence. In the fifteen years it had been in force there had been no litigation over irrigation rights. British Columbia, if all available water were used, could irrigate twenty-five to thirty per cent. of her irrigable lands. They must be careful in their legislation, so that the result would not be, as was the case in some of the United States, that more money was spent on litigation than on irrigation.

The "miner's inch," as a unit of measurement, must be replaced by some other recognized unit, such as the acre-foot, or the cubic foot per second.

The Provincial Government must go beyond laying down the basic principle of Crown ownership of water, and make clear-cut enactments in regard to the use of water. He commended Hon. Mr. Fulton's course in drafting his law and having this published and distributed.

He believed practically every stream in British Columbia was over recorded, some of them ten times. He advocated the cancellation of all unused claims and the appointment of a

commission to survey and record every stream. He detailed also the steps which he thought should be taken by each applicant for water-rights in order to perfect his entry.

Mr. Dennis next dealt briefly with the uncertain and irregular flow of British Columbia streams and dealt on the extreme importance of the preservation of timber on the water sheds to assist in the regularity of the flow of water. He thought also that a good deal of attention would have to be paid to this branch of the subject in the new act, and special laws made relating to the construction of dams and the ownership of stored water, also the rights connected with the transferring of such water to the place where it was needed. By thus encouraging people to conserve the flood water, full use would be made of what water was available.

#### PROVINCIAL IRRIGATION LEGISLATION.

A second resolution introduced at Tuesday morning's session, after noting the recommendation of the preceding convention for a new provincial law and the preliminary steps already taken, drew attention to the need for the enactment in the province of "a simple and comprehensive law under which the sources of water supply for irrigation may be used to their fullest extent in extending irrigation development and to that end the Government should in the proposed legislation enact provisions which will clear all streams of existing records that are not being used, provide for the careful and systematic gauging of all sources of supply, for the storage of flood water on a basis which will protect those constructing expensive works necessary to conserve this water and provide the needed staff of competent Government officials to administer the law after it is enacted."

This resolution was moved by Mr. J. S. Dennis, and seconded by Mr. E. M. Carruthers, of Kelowna.

Mr. Chas. Wilson, K.C., ex-attorney-General of British Columbia, was the first speaker on the resolution, and, while recognizing the worth of Mr. Dennis's experience and judgment, differed with him on some points. He did not approve of too great a measure of government control, but thought private enterprise, under certain definite restrictions, should be given play. He could not see that the Northwest Irrigation Act was greatly superior to the Provincial Act, the title to the water being as good in the one case as in the other.

Mr. Dennis rejoined that the Provincial Act often gave a title to water that did not exist, and was faulty in this very regard. There was no such difficulty with the Northwest Irrigation Act.

#### AFTERNOON SESSION.

In the afternoon, Mr. Bennett, on leaving the Chair, spoke briefly, emphasizing the need of a standard system of measure-

ment and of the gauging of all streams. A definite stand must also be taken as to the use of water and its apportionment. He was not in favor of Government ownership in irrigation.

On Mr. Bennett's retirement, Mr. Wilson, K.C., was elected Chairman.

Hon. F. J. Fulton then spoke at length on the resolution. He gave much attention to the question of water records, to which other speakers had referred. In British Columbia a title to water might be brought into court ; in the prairie provinces the holder of a record was guaranteed in his title. No person should be allowed to hold records for more water than he could use. The duty of water would have to be defined, but not too rigidly. He scarcely thought the Government would take up irrigation as a government scheme. The question was a very large one, the northern part of the province needing irrigation as well as the southern.

Mr. Price Ellison, M.P.P., for the Kootenays, strongly urged the taking up of irrigation as a Government measure. The Government could carry on the works more cheaply than private individuals or companies, and the water-takers would be saved the company's profit. Government should go lightly in dealing with the vested rights in the water of the valley.

M. R. B. Kerr, of Kelowna, said the people of Kelowna and vicinity were in favor of Government management, and seconded by Mr. H. H. Matthews, of Nicola, proposed a resolution calling on the Government to take up the work.

Mr. Robinson, of Summerland, spoke in favor of the resolution. He had never had any trouble under the Provincial Act.

Mr. V. D. Currie, of Kamloops, favored a simpler law, and thought Government ownership would only complicate matters.

The resolution was finally referred to the Committee on Resolutions.

#### TUESDAY EVENING.

The Committee on Resolutions submitted the following resolutions:—

Moved by V. D. Currie, seconded by Mr. A. McLennan (Kelowna),

“That the Provincial Government be asked to pass legislation enabling municipalities to own and operate irrigation systems.” Carried.

Moved by Mr. A. S. Carson (Okanagan Landing), seconded by Mr. T. G. Speer (Kelowna),

“That this Convention endorses the principle of Government irrigation.”

After some discussion this motion was declared lost by a vote of twenty in favor to twenty-six against.

Moved by Mr. F. E. R. Wollaston (Kelowna), seconded by Mr. W. C. Ricardo (Coldstream),

“That the Dominion and Provincial Governments be asked to undertake surveys in British Columbia (as has already been done in the Northwest), to ascertain the extent and condition of the watersheds, the amount of water available, and the extent of irrigable lands.” Carried.

Moved by Mr. V. D. Currie (Kamloops), seconded by Mr. E. M. Carruthers (Kelowna),

“That this Convention strongly recommends the Provincial Government to provide adequate protection to the owners of stored water in conveying the same to their ditch heads.” Carried.

#### PROFESSOR CARPENTER.

Professor Carpenter, of Colorado, gave a very interesting address. He compared conditions in Colorado and British Columbia—conditions in some respects quite similar. He favored a record based on a sliding scale—more in July and less in May. The rights of each man on a stream must be adjusted—the sooner the better.

In regard to the area of watershed which would be required to supply an acre of irrigable land, Mr. Carpenter thought that a fair estimate would be from 4 to 6 acres of watershed to each acre of land to be watered.

Mr. Blyth, who has had much experience in irrigation in India, gave an account of conditions there. He outlined the system of Government ownership there, described some of the works, and outlined their methods of distribution of the water.

In India it was calculated that the value of the crops saved in one famine year by means of irrigation exceeds the capital cost of the canals.

The water rate was assessed on the acreage irrigated, not by the amount of water consumed; that system had been found to work well and economically as regards expenditure of water under the intermittent system universally adopted.

Papers by Mr. V. D. Currie and Mr. A. E. Ashcroft, of Vernon, were taken as read and ordered to be printed in the proceedings.

#### ELECTION OF OFFICERS, ETC.

The following are the names of the officers elected:—

Honorary President—His Honor Lieutenant-Governor Bulyea, of Alberta.

President—Mr. J. S. Dennis, Calgary.

First Vice-President—Hon. F. J. Fulton, Chief Commissioner of Lands and Works, Victoria, B.C.

Second Vice-President—P. S. Naismith, Lethbridge.

Secretary-Treasurer—Mr. Fairfield, Lethbridge.

Executive Board—Messrs. C. W. Rowley, Calgary; R. T. Hall, Medicine Hat; R. R. Bruce, Windermere; Wm. Pearce, Calgary; W. C. Ricardo, Coldstream; R. B. Bennett, Calgary; T. W. Stirling, Kelowna.

Lethbridge was unanimously chosen as the next place of meeting.

Wednesday and the succeeding days of the Convention were spent by the delegates in visits to points of interest in the valley.

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### SUMMER LECTURE ON FORESTRY.

Forestry was brought vividly before the students at the summer session of the University of Toronto, when the final evening lecture of the course was given over to this subject. Addresses were given by Prof. Fernow and Mr. E. J. Zavitz, Forester to the Department of Agriculture.

Dean Fernow spoke of forestry along general lines, referring to the forest area of Canada, the consequences that follow denudation of timber and other topics.

Mr. Zavitz spoke especially of the work in reforestation carried on in Ontario itself. He referred especially to the work recently initiated in reclaiming some of the waste lands of the province; of these lands, he said, there were 30,000 acres in Lambton County, 10,000 in Norfolk and 70,000 in Simcoe. Some of this land had once been cultivated, but the attempt to farm it had been given up. Much of this was very sandy land, where the soil would drift almost like snow. The average cost of planting was \$5 to \$10 per acre, though in very heavy soil the cost was sometimes as much as \$15 per acre.

The lecture was well illustrated with stereopticon views.

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The "Cleveland" National Forest is the name by which the San Jacinto National Forest, in Southern California, will hereafter be known, out of respect to the memory of the late President Cleveland, who established it.

The boundaries of practically all of the National Forests in Washington and California have been changed by an executive order of President Roosevelt. This is but one step in the plan of redistricting the National Forests in all the western states, the object of the work being to equalize the areas of administrative units and to arrange their boundaries in such a way as to bring about the most practical and efficient administration of the forests.

## FOREST FIRES AND FOREST PROTECTION.

BY ELLWOOD WILSON, B.A., B.S., C.E., FOREST ENGINEER  
LAURENTIDE PAPER CO.

The greatest risk attached to timber holdings both from an investment standpoint and that of the production of raw material is undoubtedly from fire. This is especially true of coniferous areas which burn more rapidly and are more completely destroyed than hard wood lands. While it is true that the timber in a forest is seldom destroyed by fire, it being possible in many cases to cut the timber and utilize it within two years, still after every fire there is a delay in growth from seed and of young trees, owing to the destruction of humus and seed beds, and also most of the trees under ten to fifteen years of age are killed, so that after the burnt timber is cut, nothing is left and the area is very likely to burn over the following year.

Within the last twenty years destructive fires have swept up the river valleys, St. Maurice, Mattawin, Vermilion, Manouan, Du Post in the Province of Quebec, and through the newly mapped lakes to the north, which burnt off everything and regeneration has only just commenced again.

Every practical man will, I think, agree with me that some system of fire protection is absolutely essential. The wealth of Canada is so largely in her forests, which cover a vast territory absolutely unfitted for agriculture, that their destruction would mean tremendous loss, not only now but for the next century. This is particularly true of the Province of Quebec which, were her forests properly conserved and managed, could supply her industries and those of the northeastern section of the United States with their raw material practically forever.

There are at present only two practical systems of fire protection, both of which require that the fire be discovered and extinguished before it has become a conflagration. Allow it to get well started before a wind, practically no power on earth can stop it, since it will leap across broad rivers, cross high ranges of hills and large swamp areas.

The system mostly used is the ranger or patrol system, in which as much territory as possible is patrolled by guards, who go at once to any place where smoke is seen and endeavor to extinguish the fire. A watch is kept on all persons entering the territory and they are not only warned to be careful of their fires, but the rangers follow them around as much as possible to see that they *are* careful. In the West this service can best be performed by men on horseback whose routes are laid out along the ridges where as broad a view as possible is obtained.

In the Province of Quebec the rangers must use canoes which confines their routes to water courses from which they make excursions to high ground. As practically all travel is by water they are thus enabled to watch people going through their districts. Travel, however, is slow and it is difficult to get help rapidly in case of necessity.

In Maine high towers are erected, connected with each other and with the nearest source of aid by telephone, each tower has a watchman who has an accurate map of the country properly oriented, a powerful glass and a range finder. He is thus enabled easily to locate a fire and direct the fighters where to go. This system, while costly to install, is economical to maintain and operate and has proved successful.

It can be stated that almost all fires are started by man; lightning is responsible for so small a percentage as to be almost a negligible quantity. Fires set by settlers to clear their lands, those set by river drivers and smudge and cooking fires are the most common. Campers, trappers, hunters and fishermen are much more careful. All fires are the result of carelessness; a match thrown down after lighting a pipe, hot ashes dropped, failure to thoroughly extinguish a camp or smudge fire are frequent causes.

Settlers are the worst of all offenders, as they invariably start their fires in the dryest times of the year because, of course, the trees and stumps burn longer and more thoroughly. In the Province of Quebec they have an absolute contempt of the law, and as their votes are of value the Government is very loath to prosecute. Any person, however, setting a fire can be punished under the criminal code for wilful negligence and a fine of \$50.00 or three months in jail is the penalty.

Generally speaking there are two kinds of fires, ground fires and top fires, the former burning along the ground, destroying in whole or part the humus, young growth and bushes, and scorching the mature timber, some of which may die. The top fires only occur when there is much wind, and sweep through the forests with irresistible fury, completely destroying everything.

Fire travels most rapidly up narrow valleys running the same way as the wind, and up ridges, due to the suction caused by the rapid rise of the hot air and the fresh supply of air caused by this draft.

As is well known, fires die down at night-fall, and then and in the early morning hours are easiest to extinguish. They should be fought at the tops of ridges, either by cutting out a fire line, (that is, cutting out all trees and brush for a space in the path of the fire), by trenching and throwing up the fresh earth before the fire, or by raking away all leaves and inflammable material so as to make a space of bare ground. In dry weather when the

humus or duff catches, the fire often runs long distances under ground, and should this occur the only remedy is to make a trench deep enough to get through this layer.

Fires are extremely difficult to control on cut-over lands where tops and branches lie on the ground, and, drying out, offer inflammable material which, once ignited, burns with great fury and rapidity. Two methods of dealing with this question are proposed; to pile the tops and branches into heaps and burn them under safe weather conditions, and the other, to lop off the branches from the tops so that the debris will lie close to the ground and keep damp and rot rapidly. The former of these two methods is entirely out of the question in Eastern Canada, owing to the expense and the fact that the tops and branches cannot be piled until the snow is gone and by that time the choppers have left the woods.

The second plan seems more practicable as only the branches on the sides of the tree top need to be cut off, and as the snow melts the crown of the tree will settle down with its branches lying flat and close to the ground. No cost data for this sort of work have, to the best of my knowledge, been gathered.

That the fire risk can be practically eliminated is shown by the record of the past year in the St. Maurice Valley where in spite of the exceptionally dry weather no fires of any size have occurred and the loss has been practically nil; this, too, in spite of the construction of the Transcontinental Railway. One large concern with limits approximating 1,900 square miles has had only fourteen fires during the season, all but one of which were extinguished without damage, and that one swept through land which had been cut over, but with very little damage.

The Laurentide Paper Company, Limited, during the past season has used the following system of protection with excellent results. Its territory has been divided into districts through each of which a waterway existed practically dividing them in half. Two young men, from either a forestry or engineering course, with canoe, tent, sleeping bags and cooking outfit have patrolled each of these districts making complete round and return. When smoke was discovered or a fire found it was extinguished at once if possible. If not, aid was summoned. An inspector made the round of all the districts continuously and saw that the rangers did their duty. The results have been excellent, due to the intelligence and faithfulness of the men employed. All fires were stopped before becoming serious or doing much damage, and the Company regards highly, and will continue, this form of insurance.

However, the danger for this section, i.e., the St. Maurice Valley, is yet to come. As soon as steel is laid on the Transcontinental and the trains commence to run fires will be started by the engines, as they were along the line of the Q. & L. St.

John from Quebec to Roberval. This railroad has rendered a beautiful section a blackened wilderness, all the timber on both sides of the right of way, varying in width from five to twenty miles, has been destroyed and each year small fires kill the young growth just starting up. The law requires that spark arresters be used, but the engine drivers object to them on the ground that they obstruct the draft and prevent the proper running of the locomotives. All during the dry weather this fall the lands along the Canadian Pacific Railway have been on fire and there seems no question both from the experience in Canada and the awful lesson of the Adirondacks that something should be done to prevent the destruction of so much of the country's wealth and scenic beauty by the railroads. There is no question but that a practical spark arrester can be devised and it will be, just as soon as the railroads learn that the laws will be enforced.

Now that we know how narrow a margin of timber we have for the future, we should start a campaign of education in regard to this question of fire protection, showing the people how much depends on our care of the forests and awaking them to a sense of our danger. Once this is done, and public sentiment aroused, the Government will be compelled to enforce the law, just as now they are timid about it owing to the influence of the railroads and the settler's vote.

Then, too, limit holders should be compelled to have competent fire rangers, and to extinguish fires on their own limits. This season one prominent limit holder let a fire rage on his territory, forcing his neighbor to fight it in order to protect himself.

If we can keep out the fires we shall help very materially in the conservation of water supply and in the regulation of stream flow, for burnt land allows the water to run off into the streams much more rapidly than land which has merely been cut over and streams with burnt over watershed are liable to greater alternations of level than others.

Education of all the people who work in the woods, who own woodlands and who live in the neighborhood of forests is the best and only lasting sort of fire protection. This and a rigid enforcement of the excellent fire laws would soon render forest fires a thing of the past.

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Buckwheat Straw is a possibility as a substitute for wood in paper-making. A Japanese scientist who has been experimenting with it claims to have discovered an economical method of making paper from this straw. The paper is said to be smoother, less blurred and with more lustre than that from wood pulp.

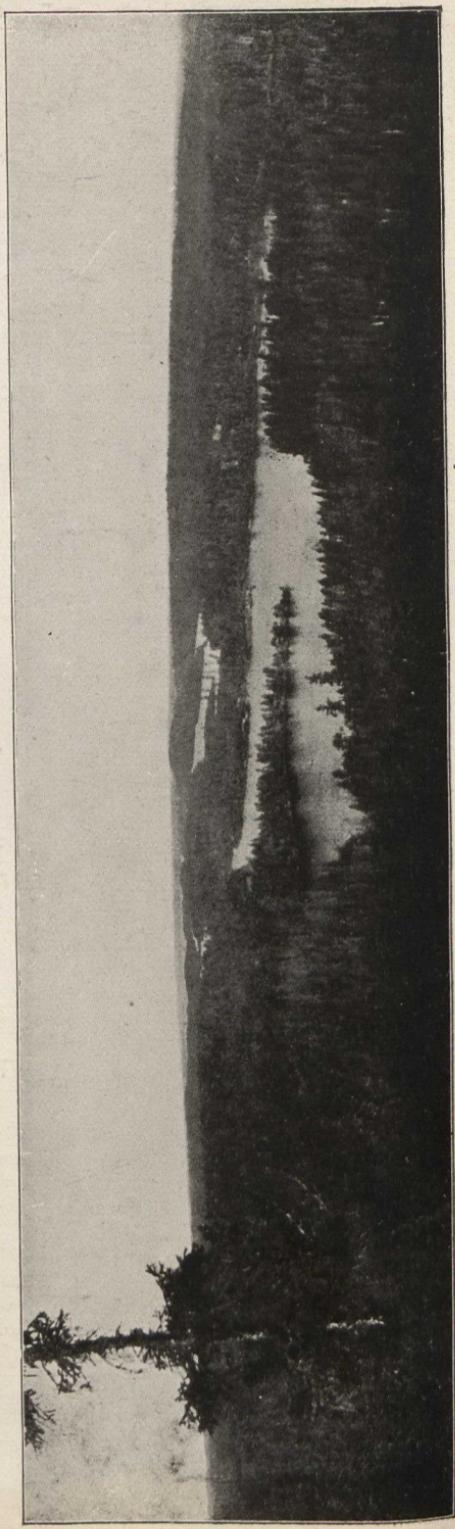
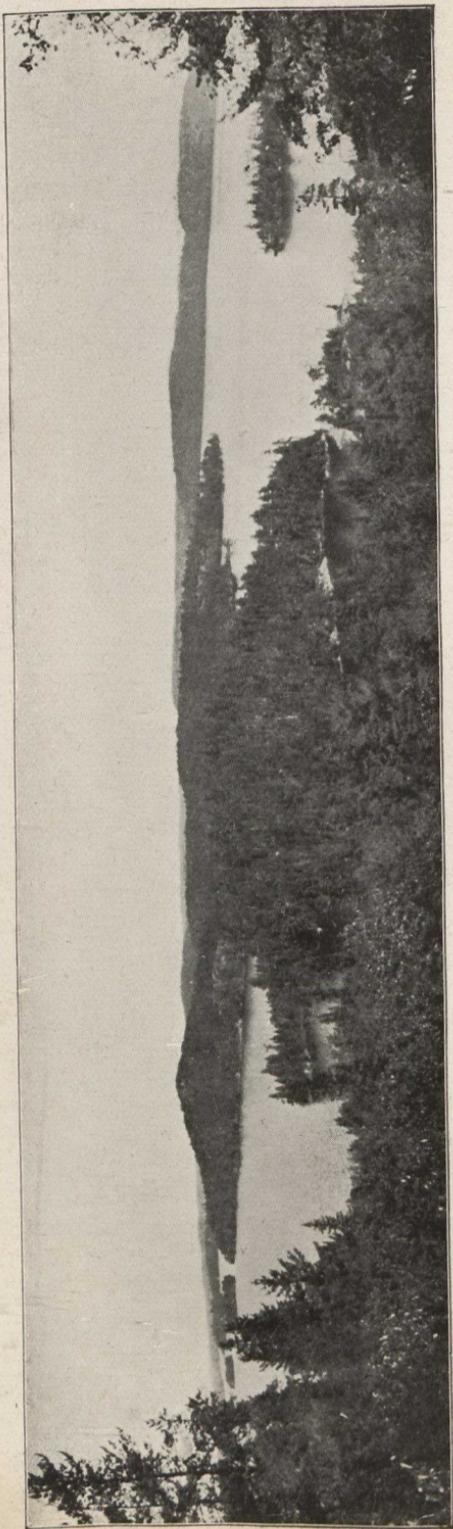
## A VISIT TO THE TEMAGAMI RESERVE.

An opportunity of seeing some of the forest conditions and management in the Lake Temagami Reserve, in Northern Ontario, was recently afforded two prominent citizens of the Capital, in the persons of Major Chapleau, Clerk of the Senate, and Mr. Fred. Cook, a former Mayor of Ottawa, who were able to give a striking description of some conditions on the reserve and also made valuable suggestions as to the handling of the tourists and prospectors who visit the reserve, the latter class, at present, being very numerous, especially in the Miller Lake district.

The party started in from Latchford by the Montreal River by canoe, accompanied by two guides. From here they portaged for about two miles into Lake Anima Nipissing. After spending three days on this lake, they portaged through a chain of lakes into Red Squirrel Lake, "a beautiful sheet of water," as one of the party described it, "studded with islands and one of the prettiest lakes I ever saw, where, too, the fishing is excellent." It was here that the first smoke was encountered, and it was evident to the travellers that the fires were to the south of them. Up to this time the winds had been northerly or westerly, but as soon as the wind changed and began to blow from the south, the smoke was in evidence.

From Red Squirrel Lake the tourists passed over a very rough course (though it was supposed to be open water); on account of the extreme drought the water was very low, and the party had the greatest difficulty in finding their way into Sandy Inlet, the northerly arm of Lake Temagami. Then the travellers began to realize the vast extent of the fires to the south of them, for the smoke was so dense that they had practically to grope their way down the lake to Bear Island, where the headquarters of the forest rangers of the reserve are located, and where the Hudson Bay Company has a post. Here, in conformity with the regulations provided, the party registered their names and addresses, stating their object in visiting the park, whether business or pleasure, the proposed duration of their stay, the particular part of the park which they intended to visit and other particulars.

"The headquarters of the rangers in the reserve at Bear Island are centrally located," commented one of the visitors. "From this point it is an easy matter to branch out into any of the arms of the lake. When it is considered, however, that, on a close estimate, Lake Temagami has a coast line of 3,000 miles, it will be realized what a tremendous task the rangers have in



Typical Views of the Temagami Forest Reserve.

Photo by A. M. Campbell.

covering such a vast area. Except for the regular line of steamers which plies from Temagami Station to Devil's Island, about six miles above Temagami, the different arms of the lake can only be reached by canoe, and as a measure of protection it would seem to be essential that the rangers at Temagami should be furnished with a quick-running gasoline launch to enable them to reach points on the lake at which steamboats do not touch.

"Two rangers are located at Temagami Station in a miserable shack which is a disgrace to the province. A decent building should be erected, and the staff strengthened at this point, so that intending visitors to the park may be intercepted. It is possible to branch off from Temagami Station without going near Bear Island at all, and if the rangers at this place do their work thoroughly, then it will be quite possible to keep close tab upon all visitors into the park."

"The regulations imposed by the Ontario Government," he went on, "if properly carried out, will guarantee these magnificent forest areas for all time to come as one of the greatest of the natural assets of the people. The pine is superb, but unless the Government carries out the regulations, sooner or later it will be fire swept."

Both Major Chapleau and his companion are of the opinion that any amount of money expended for additional men to guard the park would be justified.

While the party was at Bear Island a number of rangers came in, after spending three strenuous days fighting the fire along the southeast arm of Lake Temagami. They were almost exhausted; the fire had been got under control, but quite a little timber had been destroyed. As to the origin of the fire, the opinion of the chief fire ranger was that the fire had originated through the crass stupidity or criminal negligence of either prospectors or tourists. "If an example could be made of three or four of these individuals," was the indignant opinion of one of the party, "not merely by fine, but by imprisonment as well, it would have a salutary effect on some of these men."

A very striking feature of the trip to the travellers was the extreme care used by their guides in extinguishing fire when moving camp. After the fire had been put out, the members of the party would bring pail after pail of water to pour on the embers, so that there was not a vestige of fire left. Sometimes even the charred sticks were broken up and thrown into the lake, so as to make absolutely sure that there was no risk of the fire being communicated to surrounding trees or humus.

The danger to which the forests were exposed through the army of prospectors now scattered throughout all that country was another point which especially impressed itself on both the

travellers. "The whole country is overrun with the prospectors," one of them expressed it. Many of them, he thought knew scarcely anything about minerals or geology, or, for that matter, about anything else. At many different points the party came across evidences of their work, much of it in vain. The danger from men of this class, through carelessness or ignorance, causing fire to start is extreme, and it is impossible to keep too careful a watch on them and their operations.

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## FOREST FIRES IN THE FAR WESTERN PROVINCE.

BY PROF. JOHN MACOUN.

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The past summer, which I spent in connection with my work with the Geological Survey on Vancouver Island, has again impressed upon me, and most vividly, too, the seriousness of the fires on Vancouver Island, and in British Columbia generally, the enormous amount of timber destroyed in these fires and the utter indifference which the people seem to manifest regarding them.

On my journey home I passed through the Kootenay country, and there had a lesson on how entirely needless almost all, indeed quite all, of this destruction is. After leaving Kootenay Landing I took out my note book with the intention of making notes of all the fires that had occurred on that line of railway all the way to Fernie. I noticed that there were quite a number of small fires along the railway over which we were passing, but none of any great magnitude. Happening to remark to a gentleman sitting near me on the tremendous amount of damage being done along the railways by the fire, he ventured to express a difference of opinion. It came out that he was chief timber ranger of the Canadian Pacific Railway along the line, having absolute control of all the men along the road in case of fire. He was given the authority to call out every man on the road from any work they might be engaged in, in case he considered that the fire was serious enough to warrant such a step, in order to put it out. He told me that he and the men under him had actually put out more than a hundred fires along these lines of railway during the summer.

After lunch I went, on his invitation, to the rear of the train, and as we passed along he showed me a great number of places where fires had started and explained how they had put them out. In no case, he said, had a fire got away from them. This was a tract of country that would evidently burn very easily. The forest was composed mostly of Western larch, with some Bull pine (*Pinus ponderosa*). There was no underbrush, but the

forest was open, and long, dry grass was there in plenty, just the thing on which the fire would seize readily and where the wind would have a free sweep. If a fire once started there would be nothing to hinder its having a free course. Yet not one fire had escaped from them.

This is a very different state of affairs from that which prevailed around Fernie, where the forest was a very dense one, in which scarcely any wind was possible. The burning here, as my companion remarked, was not sudden, but the fires had been burning for almost a month prior to the burning of the town.

"Were there no efforts made to put that fire out?" I asked. "Oh, yes," said he, "in a certain sense. I may as well explain to you why these fires are not put out. It is in the interests of the Canadian Pacific Railway, you see, to put the fires out, but it is not always in the interests of the limit-holders, who would sometimes prefer a little burning in order to clear away the brush and enable them to get their logs out more easily. In fact we had one such instance here this summer. A fire took place, and I asked the owner of the limit if he would assist me in putting it out. He told me that he would prefer that it should burn, as it would be so much easier to get the logs out. Nothing was done, and the fire burned considerably more than was desired."

At Cranbrook my companion left me, and the conclusion I had arrived at then was that, if the authorities would awake to the necessity of putting out incipient fires, little damage would be done in any part of the country.

On my arrival at Fernie I left the cars and asked a gentleman to show me where the fire started. We walked back from the station some distance, and he pointed out to me where the fire had been burning in the morning before it crossed the river to the city. In answer to my question as to how it took place, he said, "Well, the fire was burning a month before, but people said it would pass them by, as many other fires have done in previous years." In this case it didn't, and Fernie, as I saw it last, was a terrible looking place, new houses and tents, surrounded on all sides by burnt forest.

I felt that it was the supineness of the people themselves that was the primary cause of the destruction I saw there. According to the statements of the people themselves the fire was burning for a month and made little progress, until the conditions were suitable. The fire approached the river, when the wind could get fairly at it, and where there were some slashings. The blaze seized on the debris of the slashings, was easily blown across the river by the wind and the whole city, as a result, went up in smoke.

It was on Vancouver Island, however, where I spent almost all the summer, that I had far better opportunities of seeing the forest fires and observing the indifference with which they were

generally regarded by the people. The fires on Vancouver Island this year were rather worse than usual, although for the past twenty-one years fires on the island in summer have been as certain as the return of the summer itself. This year, however, I thought that, as the Canadian Pacific Railway had obtained control of the Victoria and Nanaimo Railway and the lands belonging to it, fires would be less frequent than in past years. To my horror I found that, instead of fewer fires and less destruction, there was far more destruction and far more timber destroyed this year than for many years past.

The cause of the frequent burning is not hard to trace, because, wherever a fire starts, the least observant can trace it up to its beginning and the blame can be put on the proper person, if the authorities so desire. Early in the season, when the fires were commencing, I said to a native of Vancouver Island (not one of the aborigines), "Why don't you make some attempt to put out the fires when they start?" "Oh," said he, carelessly, "we never think of putting out a fire here as long as it is in the woods. It's only when it approaches a clearing that any attempt is made to extinguish it." I had nothing further to say; I had my answer.

As a concrete instance of this, I may say that, during the first week in June, I was at Goldstream and found that there was one settler there who was burning logs. The day was very hot, and I said, "Are you not afraid of the fire getting away from you?" "What if it does?" he said, "it won't do any harm; it will only burn up a few more logs in the woods."

About the 19th of June we were startled in Victoria by seeing a very large column of smoke rising over the hills to the west, and later we discovered that a very serious fire had occurred, owing to the extension of this fire which I had noticed almost three weeks before. The newspapers were in error, however, in stating that the hotel at Goldstream was burnt at this time. I passed through there on the 22nd of June, and the fire was still burning, but at that time it had gone up the side of the mountain along Langford Lake, and it burned more or less all summer. At Ladysmith the fire came so close, before any attempt was made to stop it, that it actually endangered some of the houses. Then attempts were made to stop its course, and it was controlled.

One Saturday afternoon in August six different columns of smoke were seen rising around Nanaimo, and at night six distinct fires could be seen, either in the woods or by their reflections in the air. Some of these fires were burning timber belonging to the Canadian Pacific Railway that, when I passed through it in July, along the flanks of Mount Benson, made up what I thought to be the finest forests I had ever looked at. Both pine and Douglas fir were standing thick. The trees were not very large, running from eighteen inches to three feet in

diameter, but they towered up from 150 to 200 feet, perfectly clean, and beautiful trees. Yet in the latter part of August the fire was raging amongst these, and no attempt was made, as far as I could learn, to control it in any way, except when it approached the old shacks near Nanaimo. These beautiful forests would produce millions of ties; and indeed I thought, when I looked at them, that the Canadian Pacific Railway, when buying the land, had this in view. In that land they would have got a supply of ties for all time to come, for, if the forests were cared for, they would be inexhaustible.

The same thing took place around Duncan when I was coming down during the last week in August from Alberni to Victoria. I found that near Shawnagin Lake they were then fighting fire along the railway to save a sawmill, while on the far side of the lake from the railway fire was burning on the slope of the mountain in a line at least five miles long. And the fire on both sides of the lake had been in progress from early in June until then, late in August.

I heard also of burnings along the line of the Canadian Pacific Railway towards Alberni and made enquiries why no attempts were being made to extinguish the fires. No one could tell me. Later on I saw that Mr. Marpole, of the Canadian Pacific Railway, who is an old friend of mine, and who had been in England all summer, had returned and come over to the island and set them to work at that late date to try and do something toward controlling the fires. How he succeeded I am unable to say, as I left the island on the 1st of September.

Everywhere I have been it is the same story. The attitude of the people on Vancouver Island is very simple. As long as the fire is confined to the woods they have no interest in the extinction of it; but let it come close to their farms, and they are careful to look after their fences. Further than that, I never heard of any attempt being made to extinguish them on the Island. I cannot speak of the mainland with any degree of certainty, but I can say this, that, while at Trail, in speaking to the superintendent of the smelter there, he pointed out to me a beautiful mountain rising just behind it and told me that, when he came there, all the mountain was covered with beautiful green timber, that the fire had burned for weeks in it and no one made any attempt to control it in any way whatever until it approached an old shack at the rear of the town, and then, he said, all the men in the vicinity were called out to save the old shack. The shack was saved, but all the beautiful timber on the mountain-side was destroyed.

The British Columbia Government to-day controls the finest timber in the world, untouched by man, but being constantly visited by fire, and the day will surely come when these mighty forests will be destroyed—not by man, but the fires that

are constantly taking place year by year. These forests are an invaluable asset both to the present and to future generations. A few thousand dollars judiciously spent by appointing proper men to act as fire rangers in every district of the country would certainly curtail the burnings and eventually save the forests. Unless this is done, and done soon, there will be no forests to save.

At the head of the fire protective services the Governments must each have a man who is full of enthusiasm for this work and appreciates the dangers of the fires and the men under him must be awake like himself. And it is an essential point that punishment be inflicted on those who set fires or allow fires to get away from them. Moreover, the fine, if such be the punishment inflicted, must be greater than the benefit that accrues from the setting of the fire. I myself got a man fined \$200 several years ago for allowing a fire to run in the Crow's Nest valley; but he cleared the whole Crow's Nest Pass, and thereby saved his employer probably \$5000. What effect is there in a punishment like that?

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While in British Columbia this summer, Prof. John Macoun secured some magnificent logs of a number of the trees native to this province. These have been brought to Ottawa and will be placed in the new Victoria Museum, when that is opened.

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The Department of the Interior has issued a booklet entitled "Glimpses of Northeastern Canada," written by Mr. Wm. Tees Curran and Dr. Horace P. Adams. It is a narrative of a trip to Ungava and around the peninsula into the Atlantic, terminating at St. Johns, Newfoundland. The story is interesting and it is beautifully illustrated and provided with a good map.

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An "International Society of Professional Foresters" is now being formed. Esperanto is proposed to be used as the medium of communication.

## FORESTRY ON DOMINION LANDS.

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The season of 1908 has been marked by the extension of the operations of the Forestry Branch in its several lines of work, an extension which finds its chief limitation in the scarcity of trained men qualified for carrying on forestry work. A number of additions have been made to the staff, however. The appointment of Mr. A. Knechtel, B.S., F.E., as Inspector of Forest Reserves has been followed up by the appointment to the permanent reserve staff of Messrs. H. R. McMillan, B.S.A., M.F., who this spring graduated from the Yale Forest School, and J. R. Dickson, B.S.A., M.S.F., a 1908 graduate of the forestry department of the University of Michigan. Both these gentlemen are Canadians and graduates of the Ontario Agricultural College, and each has spent a couple of seasons on Dominion forest service surveys in subordinate capacities. In the work of planting on the prairies the staff has also been increased, Mr. Angus Mitchell having been appointed permanent assistant to Mr. Norman Ross; Mr. Mitchell will reside in Indian Head. Part of his work will consist in the giving of lectures before Farmer's Institutes during the winter months.

An important branch of the work which has throughout the season (in fact since April last) occupied a large part of the time of the Inspector of Forest Reserves has been that of clearing the Riding Mountain and Turtle Mountain reserves of squatters. These have been fairly dealt with by the Government, being allowed full compensations for their buildings and "improvements" generally, and being provided with homesteads in other parts of the province—in those cases, at least, where their occupation of the land dated back to a time prior to the setting aside of the reserves in 1906. The result of the summer's work has been that practically all the squatters (most of whom were "Galicians") have been removed from the Riding Mountain and Turtle Mountain reserves.

The survey of the Riding Mountain reserve has been continued by a strong party, under charge of Mr. Dickson, who had charge of the survey party during the last month of their work in the summer of 1907. Satisfactory progress has been made, considering the difficulties encountered, and next year should see this survey finished, so as to allow of a comprehensive plan of management for the whole reserve being drawn up. The actual forest survey work concluded about the middle of September, when the great majority of the members returned east. A small party are remaining for about a month in order to survey the trails on the rest of the reserve—a part of the work which

can be done to much better advantage during the autumn, when the foliage is off the trees; in this way the work next summer can be greatly expedited.

A survey was also made during the summer of "The Pines" reserve, near Prince Albert, Sask. The field work of this survey was comparatively easy work, owing to the open nature of the forest, and has been all completed. Mr. McMillan had charge of the work during the first part of the season, and Mr. Matthews during the remainder of the season.

Several of the reserves bid fair to become very popular as summer resorts. The Moose Mountain reserve, indeed, has already become so, and this has made it necessary to prepare a comprehensive scheme of regulations under which occupancy of certain parts of the reserve may be granted to these summer visitors. The proposal at present is that a strip of a certain distance (say fifty feet) back from the shores of all the lakes may be granted to campers and summer residents, occupation of other areas to be granted at pleasure under certain fixed conditions.

Another scheme that has been occupying the attention of the Superintendent of Forestry is the setting aside of certain portions of the Rocky Mountains as a fish and game reserve. The reserve would probably extend, in an east and west direction, from the foot-hills of the Rockies to the crest of that range; the limits northward have not been determined. Directly south of the boundary a corresponding strip of country has been set aside by the United States authorities as a game and fish preserve, and similar action by the Canadian authorities would make a large part of the eastern slope of the Rockies a game reserve. The examination of the Waterton forest reserve, which would form part of the larger reserve, and of the country adjacent to it is being made by Mr. McMillan.

Mr. R. H. Campbell, Superintendent of Forestry, spent the months of July and August in the west, giving special attention to the British Columbia reserves. These reserves promise to become especially useful for irrigation purposes, and a reconnaissance was made of them with the object of discovering reservoir sites. A number of sites suitable for this purpose, where also the reservoirs could be constructed at comparatively small expense, were inspected.

The work of fire protection on the reserves and on other Government-owned tracts of timber has been continued and extended, with results that, considering the dryness of the season, have been satisfactory. Only two or three serious fires have been reported, and these have all been extinguished. The service on the Peace River has been extended, and along the Churchill River a patrol has also been established.

The work of tree distribution to the farmers of the prairie provinces has been continued. About one million seven hundred thousand trees were sent out this spring from the Indian Head nursery. There was a shortage in the supply of maples owing to the failure in the crop of maple seed in the autumn of 1906. The total number of names on the list to be visited by the inspectors this summer is 3,924, as compared with 3,750 in 1906 and 3,206 in 1907. As for several years previously, six inspectors have been employed during the summer, all of whom are still at work, the season for inspection usually lasting into November. The inspectors this year are Messrs. A. P. Stevenson, John Caldwell, Angus Mackintosh, Walter Guiton, J. N. B. McDonald and Jas. Kay. A striking feature of the applications received this year is the number of these received from the Province of Saskatchewan. From this province alone there are more than twice as many as from the Provinces of Alberta and Manitoba together. The figures are as follows: from Saskatchewan, 812; from Alberta, 193; from Manitoba, 165; the applicants from Saskatchewan are thus almost 70 per cent. of the total, those from Alberta 16½ per cent., and those from Manitoba 14 per cent.

An important change is being made this year in connection with this work. Hereafter all applications for trees, as well as other correspondence in regard to the tree-distribution scheme, will be dealt with directly from Indian Head. An office has been established in that town, which will hereafter be headquarters for the whole of the tree-distribution work.

While no work in planting has been attempted on the reserves this year, some work in seeding has been done on the Turtle Mountain and Sprucewoods reserves. On the Sprucewoods reserve damage has been done to the plots by gophers. On the Turtle Mountain reserve a small experiment has been carried on with some nine species of conifers; of these four were pines, namely the white, Norway, jack and bull pines; four were spruces, viz., the white, red, Colorado blue and Engelmann spruces; the ninth was the common balsam. "Every species germinated," Inspector Knechtel reports. "In the long grass they have done better than where there was no grass, probably because in the latter location some of the seeds were taken by birds, mice or squirrels". The jack pine, white spruce and Colorado spruce will, it is thought, prove hardy.

The supply of seed, it is hoped, will be considerably greater this year. Instructions have been given the forest rangers to collect the cones of the different coniferous trees as they go their rounds. These will then be shipped to Indian Head and cared for in a seed house erected for this special purpose.

The marking out "on the ground" of the boundaries of the reserves is also a work to which attention is being given this

year. On reserves whose boundaries have been formerly surveyed this means simply finding the old corner posts and blazing or otherwise marking the line from one to another. On the Porcupine Reserves, however, no survey has taken place, and this summer the boundary lines are being run by parties from the Topographical Survey. The line between the two Porcupine Reserves, it will be remembered, is the boundary line between the two provinces of Manitoba and Saskatchewan.

During the summer Mr. A. H. D. Ross, M.A., M.F., lecturer in forestry at the University of Toronto, has been engaged in collecting statistics of the Canadian lumbering industry, output of pulp wood, etc., at Ottawa, for the Forestry Branch. The work has resulted in the collection of much interesting information, which will shortly be published.

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#### SOME PRESS OPINIONS.

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The following are a few opinions, culled at random from Canadian newspapers, as to the need of more fire protection:—

(TORONTO, ONT., *World*).

The lesson of the Fernie catastrophe will not be lost if it results in the whole problem of fire protection being taken up vigorously by the Dominion and Provincial Governments, and that "not as an isolated question, but as part of a proper and thorough forest policy." Money so expended in removing all preventable causes of fire, in reducing the risk of extension to a minimum and in providing the means for their early extinction is well spent. . . . Better protection against fire should be provided by the authorities charged with the care of our forests and the melancholy loss of life and property in British Columbia ought to stimulate renewed and full consideration of the problem and expedite the promulgation of really effective regulations.

(MONTREAL, QUE., *Witness*).

One of the greater lessons of the Fernie calamity is the demand it makes upon the country as a whole to face the question of forestry on a large scale. Hitherto we have only thought of the nation's duty in that matter in a partial and tentative way. We have made certain reserves and certain regulations. The time has come to declare all the forests a reserve and to undertake their complete governance and culture. We do not mean that this programme must be forthwith completely filled out, that we should look to governments for a perfect state of forestry in this decade, or immediately hold governments responsible for the destructive deeds of fires emanating from any forest. But evidently we should set this up before us as an ideal, and base all our action and plans of action upon it.

(KOOTENAY, B.C., *Liberal*).

It is a matter of common knowledge along the Crow, and of frequent comment, that tree tops and branches were never cleared up when the logs were removed; and that these, drying in the intense heat of summer, were quickly converted into a mass of resinous tinder, which only required the merest spark to start a big blaze. Such a carelessness is distinctly criminal, especially when it places a whole town and many human lives in danger of destruction by fire. And prompt steps should be taken to make its repetition impossible.

But the mill companies were not the only culpable parties in this case. The Government, as the constitutional guardian of private property, was in duty bound to take every precaution to prevent such a conflagration as that which wiped out Fernie.

(VANCOUVER, B.C., *News-Advertiser*).

It is very quick work to cut down and to burn up timber, but it takes a very long time for trees to grow again; therefore, why recklessly destroy the large conifers and alders on the False Creek Indian Reserve? Public companies in Vancouver actually believe that they are conferring a favor upon individuals when they enter our gardens and cut down our trees, and the glow of satisfaction and pride which overspreads the face of the average man when he has slashed and clipped a row of fine spreading maples or elms into a set of hideous pudding-shaped monstrosities is the epitome of pious joy. Verily it is a strange creed.

(TORONTO *News*).

The daily reports of fires in the rapidly decreasing forest area on this continent show how pitifully inadequate are the measures so far undertaken for the protection of this great crop. Those who believe in public ownership should remember that here is a great utility owned by the State. Let them see to it that they give those in charge such support that this asset shall be as profitable to the State as if in the hands of private individuals.

(VICTORIA, B.C., *Colonist*).

Serious forest fires are reported from several points on Vancouver Island. We wonder if people really appreciate what these fires mean. How many people realize that a great forest fire on Vancouver Island might prove a more paralyzing disaster than the destruction of any two cities in the province? But this might very well be true. The cities can be rebuilt, and there is always insurance; but the forests cannot be restored, insurance is impossible, and the burnt-over land is rendered almost useless for agricultural purposes. Then it may at any time happen that, as in the case of Fernie and neighborhood, a forest fire may destroy some of the smaller towns, ruin farms and kill many

people. These results are likely to follow from carelessness on the part of those who ought to know better.

(FORT WILLIAM, ONT., *Herald*).

Great and widespread calamities like that at Fernie are not easily foreseen or averted, but a general policy of protection to forests throughout Canada will tend to minimize the financial loss entailed by a single holocaust of this description.

(WOODSTOCK, ONT., *Sentinel-Review*).

The amount of monetary loss sustained in this way by the Dominion is incalculable and every effort should be made to limit these losses for the future. The fire ranging areas should be extended, the numbers of the fire rangers increased, and warning given to everyone who goes to the woods of the great necessity even in their own interests, of the strictest care where fire is concerned. The provinces are responsible for this work and if we are to avoid a repetition of the Fernie disaster it must be by giving prompt and increasing attention to safeguards by means of which our magnificent forests can be kept free from the fire evil.

(TORONTO *Telegram*).

Is fire ranging in British Columbia a joke? Forest fires swept the mountain sides near Fernie for nearly a month before they reached the town and wrought its destruction. Summer after summer the Kootenay pine forests are devastated by wasteful fires which seem to burn unchecked.

The devastating fires along the route of the Canadian Pacific Railway are almost no more. Till a few years ago the annual loss from these burnings was heavy. The Dominion Government in the last five years established patrols and very little timber has been destroyed. Nature's work of hundreds of years in creating the forests is in some unguarded sections wiped out in a day.

(MONTREAL *Chronicle*).

Public indifference in Canada on this question is to be attributed partly to the fact that we have always been accustomed to regard our forests as so vast as to be practically inexhaustible. Official indifference must be attributed to the fact that the necessity for scientific forestry is so obvious that there is no chance of making a political issue out of it. You cannot meet a member of Parliament who will question the necessity for action, and not more than half a dozen who care a button about it. Speak to the average M.P. about it and he will shake his head pathetically, look for a moment as solemn as an owl and proceed to change the subject to "real live political issues." Because there is no room for difference of opinion and because the present generation of voters have a hazy notion that the trees will out-

live them, there is simply no active interest in the question among the politicians to whom unfortunately we have to look for action.

(ST. JOHN, N.B., *Sun*).

In British Columbia it is reported that the provincial system of fire protection is inadequate. It is more or less inadequate in every part of the Dominion. The last year has demonstrated to those in authority the futility of longer neglecting any phase of this important branch of legislation.

There exists in British Columbia—just as there is in New Brunswick—a Fire Protective Association (*sic*) which is constantly urging upon the Government the need of establishing a better means of protecting the timber limits from the ravages of the bush fires. Had the principles so strongly advocated by these associations been adopted and enforced under Government supervision in the different provinces, much valuable timber would have been saved. Quebec and British Columbia would have been richer; whole towns would not have been wiped out and scores of human lives would not have been sacrificed.

(HOSMER, B.C., *Times*—before the fire.)

It is absurd of the Government to expect one man, no matter how good an officer he may be, to spread himself over the Fernie electoral district, to fight fires at half a dozen different places, and then get blamed for not running the offenders of the Bush Fire Act to earth and causing their conviction and punishment.

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Canadian paper (made in Ottawa) forms a large part of that sold at the auctions of the Publishers' Association in New York.

## SPRING FIELD-WORK OF FORESTERS-IN-TRAINING AT THE UNIVERSITY OF TORONTO.

In accordance with the provisions of the curriculum, the work of the spring term of the senior forestry class at the University of Toronto was followed by a month of practical work in the woods. Part of this work was taken at Rondeau Park, on Lake Erie, and the remainder in Nipissing District, in the Algonquin Park.

The party was composed of Mr. A. H. D. Ross, M.A., M.F., Lecturer in Forestry, and Messrs. J. H. White, F. M. Mitchell and T. W. Dwight. Dr. Fernow, Dean of the Faculty of Forestry, also spent some time with the party, and Mr. E. J. Zavitz, Instructor in Dendrology, spent a couple of days with the party at Rondeau Park.

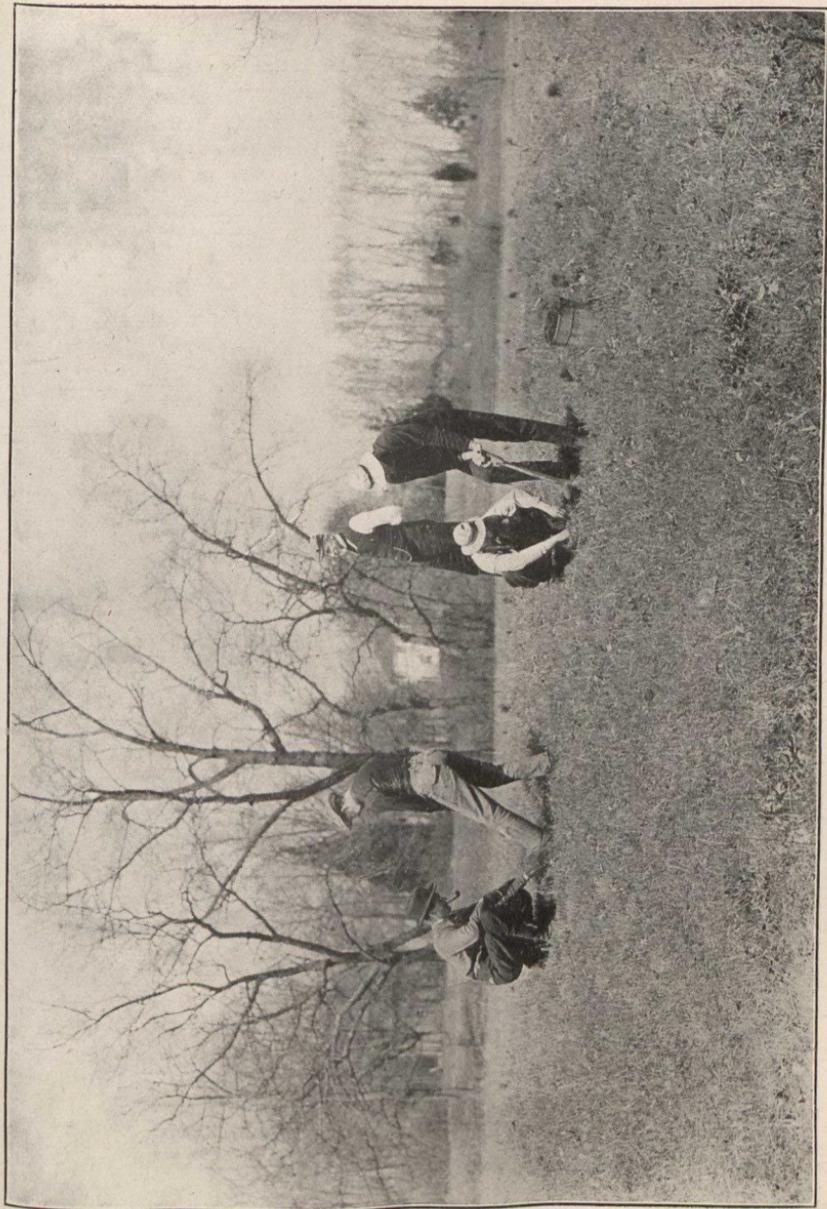
Leaving Toronto on April 28th, the party arrived that night at Ridgétown, and the following morning a drive of about fourteen miles brought them to the Park, where they took up their lodging in a house placed at their disposal by the Ontario Government, and spent there the following six days and a half. During part of that time the weather was unfortunately rainy.

The park is in general pear-shaped, is made up of a number of parallel sand-ridges of no great height, and is remarkable for the number of species of trees found within its boundaries. It is hence of particular value for the study of forestry botany and other branches of forestry work. The area of the park amounts to some 2,000 acres.

The work given the party was that usually taken up in forestry field work. It included the running of trail surveys and making forest descriptions. Estimating the forest for the number of logs, yield per acre and careful examination of the standing timber for outward defects and signs of rot were given a prominent place. Work in planting was also given, the species used being white and jack pine and white spruce. Running "strip" surveys, estimation of the timber by means of "sample acres" and other work in forest mensuration also received a large share of attention. The class planted up some four acres of land.

Mr. Isaac Gardner, superintendent of the park, gave the party valued assistance in many respects.

On returning to Toronto a stay of a couple of days was made after which the party set out for Algonquin Park on Monday evening, May 8th. Algonquin Park headquarters were reached on Tuesday, and, after laying in certain supplies, the party next day went by train to Canoe Lake, accompanied by Mr. G. W. Bartlett, Superintendent of the park. There they



Senior Forestry Class, University of Toronto, planting White Pine at Rondeau Park, Kent Co., Ont.

met Forest Ranger Robert Balfour and his French-Canadian running mate, "Pete."

The objective point of the party was the shelter-house at the eastern end of Burnt Lake; and neither in going or returning was their journey an easy one. Setting off in their three canoes, the party made twenty-eight miles on the Wednesday against a strong head wind. White Trout Lake was found too rough to cross, so that night the party made out as well as they could with their blankets, and found it pretty cool. Next morning the party started at daylight, crossed the lake and made the shelter-house where they had intended to stop the night before. Here they stayed a day, on account of rough weather, finishing their journey on the following day.

The ensuing ten days were spent in work in the woods. This included the measuring of the height of trees by means of hypsometers of all the standard types and also ocular estimation of these heights, the writing of forest descriptions, silvicultural studies, estimating timber by various methods, observation of "driving," and similar points of interest. During the last three or four days Dr. Fernow was with the party and gave valuable instruction.

The region proved valuable for study on account of the number of types of forest found, comprising as it did burnt-over and lumbered-over regions and virgin forest.

Valuable practice in "cruising" and estimating was given, one of the methods adopted being the laying off of a forty-acre square, which was cruised by plots of two and a half acres.

A silvicultural study of hardwoods ("a typical Ontario hardwood proposition—beech, maple, ironwood, etc.," in the words of one of the party) formed a valuable part of the work.

A problem which tested the students' knowledge of silviculture was the writing of a "forest description" under the direction of Dr. Fernow. Quite a little practice was also obtained in estimating timber. One of the guides, Robert Balfour, was a timber estimator of many years' experience. He made an estimate of one tract, which was also estimated a few days afterwards by Dr. Fernow, when the two estimates were found to be very near to each other.

Observation of lumbering methods also formed a valuable part of the work. This included a day spent watching the operations on the "drive" from Burnt Lake to Perley Lake, and another period spent in investigating the work of an "alligator" boat.

On May 26th the party broke camp and that night reached the shelter at the north end of White Trout Lake, getting out to Canoe Lake Station on the following day.

The gentlemen composing the party have the honor of participating in the first field instruction in forestry ever given in Canada.

All in all, the students were very fortunate in having their practice work in two regions so unlike in character. In succeeding sessions the work will be materially extended.

Messrs. White, Mitchell and Dwight spent the summer vacation in forest work on the limits of the Turner Lumber Company.

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### THE GOVERNORS' CONFERENCE AND ITS DEVELOPMENTS.

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Primarily a "Conference of Governors," the assembly at the White House, Washington, D.C., in May last, was an assembly not only of chief executives but also of men recognized throughout that country, and to a greater or less extent throughout the world, as leaders in public, commercial and scientific circles. Much was expected of it, and much bids fair to be realized as the fruit of its deliberations and the subsequent actions taken by it.

President Roosevelt called the Conference to order at 11 o'clock on May 13th, and the session opened with a Scripture reading and prayer by Rev. Edward Everett Hale. Then the President welcomed the delegates and outlined the purpose for which the gathering had been called; briefly sketched the history of great expansion of commercial and industrial life during the past century, and drew attention to the need for less wasteful use and more careful conserving of the natural resources of the United States, closing by quoting recent decisions of the Supreme Court of Maine and the Court of Errors and Appeals of New Jersey (the latter sustained by the United States Supreme Court) in favor of the right of the state to enforce care in the use of natural resources, even where these are in the hands of private individuals.

At the afternoon session Mr. Andrew Carnegie gave an address which treated of the republic's supply of ores, chiefly iron and coal, the estimated supply of each and its probable duration. If the rate of use continued to increase in the future as it had done during the past fifteen or twenty years, the supply of iron now in sight would be exhausted by the end of this century, and the coal supply in two hundred years.

Dr. I. C. White, State Geologist of West Virginia, then gave a paper on "The Waste of our Fuel Resources," dealing with the wasteful use of the country's vast stores of natural gas and coal.

Mr. John Mitchell, the labor leader, led in the discussion of the subject; Governor Johnson, of Minnesota, Dr. Van Hise, President of the National Association of Universities, John Hays Hammond, the renowned mining engineer, Hon. Elihu Root, Secretary of State, Geo. B. Cortelyou, Secretary of the Treasury, and Hon. H. M. O. Dawson, Governor of West Virginia, also spoke on the subject of the session.

Mr. James J. Hill gave a paper at the morning session of May 14th, on "The Natural Wealth of the Land and its Conservation." After referring to the waste of timber and ores, he dealt particularly with the abuse of the soil, more especially by single cropping and by the neglect of fertilization and urged, as the remedy for these two evils, rotation of crops and the use of fertilizers.

Dr. Thos. C. Chamberlain, President of the American Association for the Advancement of Science, then read a paper on "Soil Wastage," dealing with the formation of soils and the maintenance of the soil by control of the rainfall.

Hon. Jas. Wilson, United States Secretary of Agriculture, spoke briefly on conditions of agriculture in different parts of the United States; Mr. Jas. S. Whipple, New York State Forest, Fish and Game Commissioner, and Hon. John F. Fort, Governor of New Jersey, discussed forestry work in their respective states, and Dr. Arthur D. Hadley, President of Yale University, discussed forestry education. Hon. Robert B. Glenn, Governor of North Carolina, made an eloquent address in favor of the Appalachian Mountain Reserve, and Hon. Jas. O. Davidson, Governor of Wisconsin, spoke of forest denudation and preservation in that state.

At the afternoon session the first address was given by Dr. Pardee, a former governor of California, who referred particularly to the maintenance of inland waterways and the work of the Reclamation Service. A paper by Mr. H. A. Jastro, of Bakersfield, Cal., was then read which treated of conditions in grazing and stock raising in New Mexico, Arizona and California; the methods of the Forest Service and the Reclamation Service were highly commended.

Governor Joseph W. Folk, of Missouri, then addressed the Conference. His was the first suggestion of the inauguration of the movement to form a permanent organization of governors. He referred to the interconnection between the inhabitants of the different states, declared his intention of appointing a State Forestry Commission and announced Missouri's readiness to do her part in the maintenance of the waterways.

Governor Osborne, of Michigan, spoke briefly, and was followed by Governor Cutler, of Utah, who spoke of the work of the Forest and Reclamation Services in his state. Governors Gooding, of Idaho, and Norris, of Montana, spoke of the reclamation work in their states, the latter also announcing his intention of appointing a State Forest Commission.

Dr. James, President of the University of Illinois, spoke in optimistic vein of the country's use of its resources, and Hon. Jas. R. Garfield, Secretary of the Interior, discussed questions of irrigation and forestry.

Prof. Burnett, of the Nebraska State Experiment Station, Mr. W. G. Harvey, of Philadelphia, representing the American Forestry Association, Governor Burke, of North Dakota, and Mr. W. G. Jones, of Texas, also took part in the discussion.

At the opening of the session of May 15th, Governor Blanchard read the report of the Committee on Resolutions, embodying the views and recommendations of the Conference.

Hon. Wm. Jennings Bryan then addressed the Conference, eloquently summarizing the addresses given throughout the Convention. "It is hardly consistent," ran one of his sentences "to discourage the importation of timber, while we worry about the devastation of our forests."

Governor B. B. Comer, of Alabama. President Roosevelt, Governors A. E. Mead, of Washington, J. Frank Hanly, of Indiana, Augustus E. Willson, of Kentucky, Edward W. Hoch, of Kansas, and Sheldon, of Nebraska, Lieut.-Governor Davidson, of Texas, and Mr. Wm. Loudon, of Iowa, were also speakers at this session.

At 1.30 p.m. the Conference adjourned.

#### PRACTICAL RESULTS OF THE CONFERENCE.

On the second day of the Conference, acting on Governor Folk's suggestion, about twenty of the Governors met for the purpose of making a permanent organization. A further meeting during this autumn was decided on, and two of their number chosen as the nucleus of an executive committee, with power to choose five other governors to act with them.

Early in June President Roosevelt appointed "The Commission on the Conservation of Natural Resources." It is divided into four sections, viz., those of (1) Waters, (2) Forests, (3) Lands, and (4) Minerals. Each section consists of twelve members. The following are chairmen of the respective sections: Section 1, Hon. Theodore E. Burton, Ohio; Section 2, Senator Reed Smoot, Utah; Section 3, Senator Knute Nelson, Minnesota; Section 4, Hon. John Dalzell, of Pennsylvania. The secretary of Section 1 is Mr. W. J. McGee, Bureau of Soils; of

Section 2, Mr. Overton W. Price, Forest Service; of Section 3, Mr. Geo. W. Woodruff, Department of the Interior; of Section 4, Mr. Jos. A. Holmes, Geological Survey. These eight, together with Mr. Gifford Pinchot, Chairman, form the executive committee of the commission. The duty of the commission is declared to be to enquire into and advise the President as to the condition of the nation's natural resources and to co-operate with other bodies created for a similar purpose by the states.

The executive met on June 19th, 1908, in Chicago, when much preliminary work was done and arrangements made for the collection and compilation of information regarding the various national natural resources and their use.

The compilation of the information gathered will be placed in the hands of Mr. Henry Gannett. Many of the states have appointed conservation commissions to co-operate with the national commission. Several organizations represented at the conference, such as the American Academy of Political and Social Science and the National Lumber Manufacturers' Association have also offered assistance to the Commission.

The Commission will hold its first meeting in Washington on December 1st, when the Executive Committee will present the data collected. A week later on December 8th, the Commission will meet with the Governors.

## FOREST FIRES IN 1908.

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Not for years has the need for more extensive and more efficient fire protection been brought home to Canadians in all parts of the Dominion than it has during the last two months, viz., August and September. A season of very dry weather all over the northern half of the continent has put the woods throughout that area in excellent shape for burning, and from one ocean to the other, wherever forests exist, have come reports of immense damage to property, and, in some cases, of serious loss of life as well. The fire at Fernie, B.C., has been by far the most serious, but other provinces have suffered, and from south of the International boundary, too, have come reports of tremendous loss from forest fires.

The reports have been more or less fragmentary and incomplete, but a brief compilation of the fires of the season must be of interest to all who have the welfare of the forest at heart.

### FIRES IN MAY.

In May a fire occurred on the lumber property of the Rhodes, Curry Company, at Sheet Harbour, N.S. A camp and some standing timber were destroyed. A man who set the fire was put under arrest.

A despatch from Fredericton, N.B., stated that considerable damage had been done on the Dungarvon and Miramichi Rivers and Bear Brook. The village of Welsford was threatened and the residents had to turn out and fight off the fire.

A despatch from St. John, N.B., reported a large area had been devastated in the neighborhood of Spruce and Ludgate Lakes. Only small stuff was burnt, the area having been previously burnt over. The fire was supposed to have started from a camp-fire.

In Ontario severe fires were reported from the vicinity of Silver Centre, township of South Lorraine. Many prospectors lost property through the fire, and one ranger, Chas. Henessy, lost his life; appearances indicated that he had been pinned down and compelled to watch the approach of the flames that were to bring him death.

Around Stump Lake, seventy miles from Prince Albert, Sask., a severe fire occurred, which was extinguished by the help of a force taken out from Prince Albert by the Dominion forest ranger, W. R. McLeod. The Prince Albert Lumber Company lost a number of buildings, one contractor lost \$6,000 in sleighs and supplies and a settler lost \$2,000 in buildings, etc.

South of the International boundary a severe fire was reported from the Long Pine National Forest, just west of the southwest boundary of Montana. Over ten thousand acres of

timber were reported to be entirely destroyed, the area covered being ten miles long by from one to two miles wide. The cause was thought to be campers.

#### FIRES IN JUNE.

In Quebec a very severe fire occurred in the Lake St. John district, between Lakes Cimon and Quaquamaxis. All the houses in the village of Lake Cimon were destroyed. The fire was thought to have been caused by a fire which some fishermen had failed to extinguish. Near De Quen a severe fire was also reported to be raging.

At Haileybury, Ont., ten houses, the buildings of half a dozen mines and several houses in South Sarrani were destroyed by fire originating in the bush. Fourteen families were rendered homeless. Waugh Brothers' sawmill was burned, the loss being about \$7,000.

West of Fernie, B.C., a large fire was burning, which threatened the city.

In the Yukon Territory bad fires occurred near Minto and along Lake Lebarge. Near Minto fifteen miles of telegraph poles were destroyed and five miles more of telegraph poles near Lake Lebarge were burned. Hundreds of square miles of timber were reported to have been burned over. The fire was supposed to have originated from travellers going down the river in small boats.

In Michigan very large fires occurred along the line of the Detroit and Mackinac Railway. Three villages were burned—Kentucky, Legands and Pondo—and hundreds of people made homeless. The total loss was estimated at \$200,000, one lumber company alone losing 1,200,000 feet of logs.

#### FIRES IN JULY.

In Quebec, along the Drummond section of the I.C.R., three villages (Carmel, Davelnyville and Lavergne) were burned. Traffic on this section of the I.C.R. was stopped for thirty-six hours, and the railway was quite a heavy loser through the destruction of stations, rolling stock, etc. The fire originated in bush fires set by farmers near Carmel to clear land, which got beyond control. Limits belonging to Mr. E. W. Tobin, M.P., were severely damaged.

Serious fires were also reported from St. Elie d'Orford, Mt. St. Bruno and Little Lake Magog.

In Ontario large areas of spruce and pine areas along Lake Nipissing and the Montreal River were burned. One hundred and fifty million feet of lumber were said to be destroyed. The cause was thought to be mining prospectors. J. R. Booth, Shepard & Morse and Gillies Bros. were heavy losers.

At Port Arthur danger was apprehended from fires, but fortunately no damage was done.

The limits of the Toronto Lumber Company, two miles north of Garden Hill, Durham County, were burned, and a large proportion of the million feet of lumber on them destroyed. The fire started from an engine in a sawmill.

In New Brunswick local fires were reported from Sussex, and at St. George a serious fire occurred. A very large area of timberland was burned over and sparks and cinders fell thick in the town. From Musquash to South Bay (in St. John County), and in the Upham district, fires were also burning.

On Dominion Day a fire started near Canaan, N.S., and burned for several days, causing considerable damage.

In Yukon Territory, the town of Whitehorse was reported to be threatened and many townspeople turned out to fight the flames. Another fire was raging on the hillside above the War Eagle Mine and still another west of the Arctic Chief Mine. There were several fires between Whitehorse and Carcross. On the shore of Lake Lebarge fires were very bad and also at various points along the river between Whitehorse and Dawson. There had been no rain since September, 1907.

A Bellingham, Wash., despatch reported that eight hundred acres of timberland had been burned over and 2,000,000 feet of timber destroyed. Near Santa Rosa, Cal., the fire was burning for a width of twenty miles. The damage was estimated at \$1,000,000.

#### THE FERNIE FIRE.

On Monday, August 3rd, the whole country was stunned to read of the wiping out by fire of the City of Fernie, B.C., on the previous Saturday (August 1st), with tremendous loss of property and a loss of life that was estimated at not less than seventy and up to one hundred and seventy. This estimate of the loss of life was fortunately greatly overdrawn, the loss of life being later reduced to twenty-five.

The fire had its origin in a bush fire that had been burning for a month previously on the limits of the Cedar Valley Lumber Company to the west of the city. It had not seemed of very serious proportions, but a very high wind arose in the morning and revived the fire. It swept down on the city with almost no warning and the people had to flee for their lives, with no thought of saving property. Trains were hurriedly made up and everyone was taken aboard. The trains ran through to Hosmer, but the situation in the latter place became so threatening that another move had to be made. An attempt was made to go ahead, but that was found impossible, so return was made to places already burned over and the following morning the trains returned to Fernie. Some of the Fernie people took refuge in the Coal Company's office, which was one of the few buildings that the flames did not destroy.

The whole city was practically wiped out, the only buildings left being the office of the Crow's Nest Pass Coal Company, one store, the warehouse of the Trites-Wood Company, and a row of six little shacks on the bank of the Elk River. The terminals of both the C.P.R. and the G.N.R. were destroyed. Six thousand people were rendered homeless.

The total loss by the fire is estimated at \$5,000,000, of which some \$1,500,000 to \$2,000,000 is covered by insurance.

The heaviest losers were the Canadian Pacific and Great Northern Railways, whose losses were placed at \$500,000 each, the Crow's Nest Pass Coal Company and the Trites-Wood Company, each of which lost \$150,000, the Elk River Lumber Company, which lost \$185,000, the Crow's Nest Trading Company, \$100,000, the Fort Steele Bridge Company, \$75,000, and the Fernie Lumber Company and the McDougall Lumber Company, each of which lost \$50,000.

A pleasing feature was the readiness and promptness with which relief was sent to the burned city. The near-by city of Cranbrook did its part nobly in dispensing relief and affording shelter to the thousands of homeless people. Among the largest contributions to the relief funds were the following: Provincial Government of Alberta, Cities of Toronto, Ont., Vancouver, B.C., and Winnipeg, Man., \$5,000 each; James J. Hill, \$5,000; Provincial Government of Saskatchewan, \$2,000; Ottawa, Ont., \$2,500; Calgary, Alta., \$3,000; Lethbridge, Alta., \$1,000; Quebec, Que., \$1,000; Brandon, Man., \$600; American National Red Cross Society, \$1,000; Regina, Sask., Port Arthur, Ont., and Hamilton, Ont., \$500 each; Nelson, B.C., \$500; the T. Eaton Company, \$500; Calgary Herald, \$500; Medicine Hat, Alta., \$500 in food; I. O. O. F. of Manitoba, \$500; Portage la Prairie, Man., \$300; Kingston, Ont., \$200. Cranbrook, Calgary and Medicine Hat also sent carloads of provisions and Nelson a steamer load. Spokane, Wash., Rossland and Grand Forks also made generous contributions.

The total amount received in subscriptions for relief ran over \$90,000; of this \$10,000 was given by the Canadian Pacific Railway.

On August 5th the coal mines were re-opened and the miners were thus given employment. The sale of liquor was prohibited during the days following the fire, and there was an entire absence of disorder.

At Hosmer there was some damage by fire. The Great Northern station was burned on August 2nd. Many of the mine buildings were also burned, but the flames were fought off the town. One life was lost. A powder magazine near the town belonging to the Hosmer Mines, Limited, also caught fire and was blown up. New coke ovens which had been recently erected served as a refuge for the people from the intense heat.

Sparwood was also somewhat damaged, but Michel was saved from any serious loss.

The fire raged for forty miles along the Elk River valley, destroying the forest through all this extent.

#### OTHER FIRES IN AUGUST.

In New Brunswick a serious fire was reported on the Alexander Gibson Railway and Manufacturing Company's land, along the right of way of the National Transcontinental Railway. The fire was located near Jewett's Brook Portage, about twelve miles on the N.T.R. above the Intercolonial intersection. The fire burned down the right of way for about half a mile, and then broke out in the woods alongside, where a number of acres on which lumbering operations had been carried on last year were burned over. A force of about a hundred and fifty men was summoned from the camps along the line to fight the fire, which was finally extinguished by a heavy rainstorm. The fire came within about a hundred yards of the Miramichi Company's land, and that firm had prepared to send in from Boiestown a force of a hundred men. The contractor's men had burned the right of way a few days before, and it was thought that the fire arose from a strong wind having fanned smouldering ashes from this fire.

Fires were also reported along the New Brunswick-Maine boundary, near Calais, Maine.

In Nova Scotia, Riversdale, in Lunenburg County was in danger of being destroyed by fires, in which from one to three million feet of timber were burnt.

In Quebec fires were reported in Portneuf and Berthier Counties, along the line of the Lake St. John Railway.

From Manitoba large fires were reported from Deer Island, Lake Winnipeg, where extensive timber limits are located, and another between Rabbit Point and Berens River.

Near Tugaske, in Saskatchewan, a fire in the sand hills consumed all the available dry wood, as well as much young growth. The origin of the fire was not definitely known, but was put down to the carelessness of the freighters carrying supplies to the construction camps along the line of the Moose Jaw extension of the C.P.R.

In Alberta forest fires were reported to be raging in the neighborhood of Banff.

Particularly destructive were the fires raging in British Columbia, especially on Vancouver Island. During the first few days of the month a forest fire was reported to be raging near Cowichan Lake, Vancouver Island, started, supposedly, by a camp-fire which some campers had failed to extinguish thoroughly. A young man camping at Cowichan Lake was fined \$15 and costs for not extinguishing his camp-fire.

At Glenora, also, a fire had been burning, and in the vicinity of Mount Sicker much damage had been done, miles of forest having been destroyed, and a number of buildings in the place itself having been consumed. From Mount Sicker to Ladysmith there was reported to be an almost continuous line of fire.

Between Langford Lake and Goldstream a serious fire broke out. Some two weeks previously a spark from the engine of a gravel train on the E. & N. Railway had started a fire, but thirty Chinese were sent out to extinguish it and it was thought they had succeeded. The fire continued to smoulder, however, and broke out again when a strong wind arose. The fire was fought by a force of twelve men sent out by the provincial government. The Goldstream Hotel and several houses were threatened, but the fire was put out before damage was done. From many other places in the southern half of the island fires were reported, and by the middle of the month it was estimated that \$2,000,000 worth of damage had been done to timber. In the Robinson district the fire had a frontage of five miles. At Bear Lake the C. P. R. buildings, with supplies for survey parties were destroyed, also a number of dwellings at Cowichan and the Cowichan Lumber Company's buildings. A little later twenty square miles in the Noksilah district were reported ablaze.

Nanaimo, Ladysmith and Duncan had narrow escapes. Sparks from locomotives were blamed for starting the fires in a number of cases.

Later in the month the loss from fire on Vancouver Island was estimated at \$5,000,000.

Near Kimberley, on the mainland, a fire got beyond control and did considerable damage. Fires approached to a distance of about a mile from Moyie. Another fire was reported from Ryan.

Near Vancouver, in the Point Grey municipality, a fire burned over an area about a mile long by half a mile in depth. The provincial fire warden had a force of twenty men fighting the flames. The C. P. R. and the B. C. Electric Railway also had men fighting the fires which were said to have been started by a gang of Chinese clearing land.

Fire in the Capilano Valley threatened the water supply of the city of Vancouver.

Large bush fires were reported along the Skeena, caused, supposedly, by contractors for the Grand Trunk Pacific clearing the right of way.

The losses throughout the province through forest fires up to the month of September were estimated at \$25,000,000.

Serious fires were also burning on Bowen Island and in the Squamish Valley. Thousands of dollars' worth of standing timber were destroyed.

At Bellingham, Wash., 400 acres of partially cleared ground near the city was threatened by forest fires.

An Aberdeen, Wash., despatch reported a loss, caused by forest fires, of timber to the amount of \$250,000. A careless traveller threw a lighted match into some underbrush about twelve miles from Hoquain, and the fire was the result. A thousand men were fighting the fire, which had, at the time the despatch was sent, already consumed fifteen million feet of cut lumber and was unchecked, with fourteen thousand acres of green timber in its path, to say nothing of logging camps of a couple of lumber companies.

Fires of very large extent were reported from the Coeur d'Alene country, seventy miles east of Spokane. These fires got over the mountains into eastern Idaho and western Montana, and did a great deal of damage, in spite of all efforts to check them.

A fire of some magnitude was also reported from the Helena National Forest, in Montana.

#### FIRES IN SEPTEMBER.

In the Province of Quebec the fires during September were very numerous, and many places were threatened. The fires seem, however, to have been very largely in the more settled districts, and farmers and settlers were the chief sufferers, the timbered areas escaping, for the most part. Mr. W. C. J. Hall, Superintendent of the Forest Protection service of the province, finds that the Crown lands of the province have not suffered from the fires.

In the first half of the month the most serious case reported was that of St. Honore de Shenley, where thirty buildings were destroyed by a fire which caught from a bush fire. The village of Weedon was also threatened. Serious fires were also reported from St. Michel de Napierville, St. Edouard and Sherrington. Around St. Elie d'Orford fires were very bad and much damage was done. Windsor Mills and Camille were threatened and, around the latter place \$50,000 worth of pulpwood, owned mostly by farmers, was destroyed. In the township of Wotton hundreds of acres of timberlands were burned over. The town of D'Israeli was in danger and several houses were destroyed, as well as a large quantity of pulpwood; the town was again threatened toward the end of the month. The village of Kirkwood, near Richmond, was also endangered. In the city of Sherbrooke fire got within the city limits and hundreds turned out to fight the flames. Many of the fires around Sherbrooke were reported to have arisen from farmers clearing land. Burned leaves and cinders fell in the streets of the city. Many fires were reported along the line of the Quebec Central Railway. In the Lake Megantic district fires were reported on both sides the

Chaudiere River and along the boundary, between Megantic and Lowelltown, Maine. From the west of Lake Massawippi, Noyan and Knowlton (where some of Hon. Sidney Fisher's property was in danger) fires were reported, and at Bolton Pass the only spruce limits left in that neighborhood were on fire. The village of Wickham was reported surrounded; at Disraeli the Curé got the people out to fight the fire on Sunday. From the counties of Terrebonne, Argenteuil, Beauharnois and Richmond fires were also reported. About the 17th of the month St. Georges, in Beauce County, was reported surrounded; many farm buildings and much pulpwood were destroyed, and apprehension was felt for neighboring mills and limits. At Moose Bay a new Roman Catholic church was considerably damaged, and Sherbrooke and Magog reported fires in their neighborhoods. Eardley was also threatened. From Black Lake to Weedon, about this time, it was reported that there was an almost continuous fire along the lines of the Quebec Central Railway. Coleraine, Lambton, Stratford and Garthby were injured and in Price township ten houses and thousands of tons of cordwood were burned. Fires were also reported from St. Julien, Fortunat, Wolfeston, Fulford, West Bolton and Cowansville. On the 23rd St. John's and Mansonville were reported to be threatened and a couple of days after reports came that Ball Mountain, south-east of Glen Sutton, was on fire. One of the most serious fires of the month occurred on the 29th of the month, when the fires reached Megantic and Agnes. Seventeen houses in Agnes were destroyed, and several trainloads of women and children were taken from the place by the Canadian Pacific Railway. The damage to the town was estimated at \$40,000, and much damage was done to timber limits, one owner being reported to have lost \$40,000 and another \$50,000. The estimate of the total losses in the district was in the neighborhood of \$200,000. Thirty men from New Hampshire assisted in fighting the fire. Bushfires were reported all along the Canadian Pacific Railway from Scotstown to Megantic. Shortly afterwards thousands of dollars damage was reported to have been done around St. Nazaire d' Acton.

A serious feature of the fires was the hindrance caused to navigation. A collision between two steamers, the "Corinthian" and the "Malin Head," with resulting damage to both, is blamed largely to the haze due to the smoke of the forest fires. A couple of times during the month navigation on the River St. Lawrence was entirely stopped. The steamer Virginian was detained at Montreal from the 25th to the 28th, and other ocean-going vessels were also detained some days, owing to the thick smoke on the river.

In the Province of Ontario, as in Quebec, the fire seems to have been largely on cut-over, burnt-over and partially cleared

lands and the farmers and settlers were the chief losers. During the first week of the month a serious fire occurred in the village of Earlton, 26 miles north of Haileybury, which was almost completely wiped out, with a loss of \$10,000; a restaurant, store and several houses were burned. In Denbigh township, in the extreme north end of Addington County, fires did much damage to buildings and crops. Near Schreiber a bridge, 600 feet long, on the Canadian Pacific Railway, was burned, having apparently caught from a bush fire, and traffic was considerably interfered with. Bush fires were also reported from Westfort. During the following week the south side of Mt. McKay, near Port Arthur, was burned over, and the Indians on the reserve near this town had much work to keep away the fire from their farms and buildings. A tie camp was destroyed, with a loss of \$5,000, and the Pigeon River Lumber Company had one camp and part of another destroyed, with a loss of \$10,000. Hymers, a village on the Canadian Northern Railway near Port Arthur, was also menaced. A summer hotel near Lakefield, Ont., was destroyed by a fire that came from the bush near it. Fire was also reported in the Sibley reserve, on Lake Superior. In the neighborhood of Rosseau, Parry Sound district, the worst fire known since the settlement of the district was reported as raging, and several families were burned out. In Caradoc township, near London, Ont., a swamp of 1,000 acres was burning. Fires raged also near the city of Brockville. During the following week Powassan, in Nipissing district, was surrounded by the flames, and the town of Callander was threatened. Later in the month fire spread from the forest to a North Bay sawmill which, with three hundred thousand feet of lumber, was destroyed. Further west the entire forest from Nepigon to Mackenzie (near Port Arthur) was reported to be in flames, and some distance west of Fort William, in the Mattawa River valley, much destruction was threatened by fires. Around Folger Station, in Lanark County, serious fires were burning. All through the Nipissing, Muskoka and Parry Sound districts, from the Severn to Sudbury, fires were reported to be doing much damage to standing timber. Havelock, in Peterborough County, reported fires raging in every direction; a clear space was reported to be burnt from Chandos through Methuen to Round Lake. Near Mattawa and to the north and west of Pembroke fires were also burning in the woods. On the 17th fires were reported near Cornwall and in the Algonquin Park, and on the following day the fire reached to within half a mile of Huntsville. In the latter part of the month Allumette Island, in the Ottawa, was threatened, and a bad fire was reported from Kashabowie. Port Arthur, Fort William and Westfort (a suburb of the latter) were several times said to be threatened by the fire, but there was no loss. The hindrance to navigation

was very marked at several points. Many vessels were tied up in Kingston harbour on the 18th through the smoke and fog, and captains of ships coming down from Lake Superior reported that at times the decks of the ships were almost covered with ashes. On the same date nearly all the Ottawa River and Rideau Canal steamers were tied up for the same cause, as were steamers further up the river. Much hindrance was caused ships passing through the canal at Sault Ste. Marie and down the St. Mary's River from the same cause. Another effect of the fire was to cut short the work of the artillery corps in camp at Petewawa, on the upper Ottawa; at times the targets at the longer ranges could not be seen at all for hours on account of the smoke, and practice was out of the question. At the militia camp at Rockliffe near Ottawa, musketry practice was interfered with for the same reason.

In the Province of Saskatchewan, at Mistatim, on the Canadian Northern Railway, a serious fire occurred on a timber limit belonging to Mackenzie & Mann, but, after four days of fighting it, the wind changed and rain came on, so that the fire ceased to cause any anxiety.

In New Brunswick in the last week of September two serious fires were reported from near Fredericton. The one at Yoho Lake, some eight miles from the city, burned over country largely taken up by settlers; the other was on Shin Creek, in Sunbury County, and was burning over timberland. Large crews of men were fighting the flames.

British Columbia escaped very lightly, heavy rains having fallen throughout the province in the beginning of the month.

In Yukon Territory fires were again reported at Lake Lebarge.

Along the shores of the Mackenzie River, from the Two Islands to Fort Providence, a distance of a hundred and twenty-five miles, fires were said to be raging in an almost continuous line. The Northwest Mounted Police inspector attributed them to the carelessness of natives. The loss in timber would be very great, he thought.

The worst tales of disaster during the month, however, come from Minnesota. In this state, on the sixth of the month, the town of Chisholm, a place of about 6,000 inhabitants, was wiped out in two hours. There was no loss of life, but it was calculated that the loss in property was about \$2,000,000. The citizens escaped by Great Northern Railway train, made up of fifteen box cars, to Virginia, a city some distance away. A new high school, which stood alone on a hill on the outskirts of the city, was the only building that escaped the flames. Thousands of acres in St. Louis, Carleton and Itaska Counties were laid bare. The mining towns of Shenandoah, with 2,000 inhabitants, Hartley, with 1,000 people and Pillsbury, with a population of 1,000, were also destroyed, and the city of Hibbing

was threatened. Buhl, a town of 1,500 inhabitants, twelve miles east of Chisholm, was surrounded by the fires, but a shift of the wind saved the town. Nashwauk, a town fifty miles northwest of Duluth, was menaced by the flames and some buildings on its outskirts were burned. The train from Nashwauk ran through a burning district fifteen miles long. Several small settlements in Douglas County were burned, and the whole northern part of the country was fire-swept. The town of Hibbing, where many of the refugees from Chisholm were taken, was itself at one time in considerable danger. It was surrounded by burning forests, over a thousand of its inhabitants were fighting the fires all night and assistance was asked for from Duluth. Fortunately the wind shifted and the town was saved. Previous to this the smoke had so darkened the air in the town that the electric lights had to be lighted in the middle of the day. Bovey had almost as hard a fight as Hibbing and Wrenshall came within a little of being destroyed. On the 7th the village of Snowball, with a population of about a hundred, was destroyed, with no loss of life, but with many thousands of dollars' worth of property gone. A day or two afterwards the city of Virginia, with a population of 8,000, Eveleth and Aurora were threatened by the fires, Marble (a place of 600 people) had a hard fight to keep the fire away, the Duluth, Mesaba and Northern Railway giving valuable aid. Grand Marais was several times reported to be in hopeless plight, but came through all right. Beaver Falls, a small town on the northern shore of the lake, and Colville, near Grand Marais, were, however, destroyed. One redeeming feature of the disasters, however, was that no lives were lost—directly through the fires, at least. At one time fears were entertained for the safety of seven men, who, however, turned up all right. Some deaths, mostly of women and children, were reported from exposure and hardship. On the 17th of the month a heavy rain fell and the fires were quenched.

Gen. C. C. Andrews, forestry commissioner of the state, is reported in a newspaper interview to have said that he had satisfied himself, after investigation, that the fires at Chisholm had their origin in the negligence of certain residents of Chisholm, who had been fishing at a lake about eight miles from the place. On two previous occasions their camp had been burned by their own negligence.

In Michigan many bad fires were reported, especially in the northern peninsula. Standish was threatened and Au Gres and Rosé City were damaged by the fires. The business part of Peshtigo was burned with a loss of \$200,000, and hundreds were rendered homeless. Isle Royale, in Lake Superior, was swept by the fires. Other places, especially in the copper country, were in danger. Prof. Roth is reported to have estimated the losses in the state at \$10,000,000. Between 3,000 and 4,000 acres of

the Michigan Forest Reserve were burned, and over 1,000,000 acres of timberland throughout the state. The loss of young growth and the expense of re-planting burned acres would each, he thought, amount to \$5,000,000. The loss to the burned towns, the houses and merchantable timber burned and other loss would probably amount to \$30,000,000 more.

In the state of Wisconsin \$100,000 loss was caused at Washburn through a forest fire which got into the town. On the 20th of the month the towns of Gagen and Woodboro, each of about 1,000 people, were destroyed, and in the district 4,000 people were reported to be homeless. Many other towns were said to be threatened; among these were Foxboro, Fifield, Rhineland, Phillips, Mosinee and Hermannville.

In South Dakota a bad fire was reported near Deadwood in the early part of the month.

In the state of Maine vast losses were sustained during the month. State Forestry Commissioner Ring estimated the actual loss at \$123,000, with the damage to young growth probably \$150,000 more. Estimates running much above this were also made. In the Moose River valley and in Washington County very heavy losses were caused. In the former district 15,000 acres of timberland were said to have been burned, and one estimate of the loss put it as high as \$450,000. One of the worst fires was that near Lisbon, in the western part of the state, supposed to have been caused by a locomotive spark. Several hundred men were fighting the flames. A party of eighty men from New Brunswick were among those who rendered assistance. At East Machias the entire male population had to turn out to fight the fire off the place. Near Portland the fires were very bad, and at one time a force of two hundred men were fighting the flames. All over the state the smoke was very dense, so much so that the lookout stations were rendered useless.

From New York state the worst fires since the season of 1903 are reported in the Adirondacks. An Associated Press despatch of September 22nd stated that five thousand men were fighting the fires with little success; 50,000 acres of valuable timberland were on fire. The village of Long Lake West was wiped out, with a loss of many thousand dollars. Nehasane Park, Dr. Webb's reserve, was threatened. Many men from outside were sent in to help fight the fires. Heavy rains finally quenched the flames.

In California thirteen square miles of timber were reported as being burned near Pasadena, the San Gabriel reserve having been touched, and minor fires from other points in the state.

## THE FORESTRY SCHOOLS.

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The Faculty of Forestry at the University of Toronto enters upon its second year auspiciously, the registration of new students having increased even beyond what was anticipated. At the beginning of the term twenty-one students had registered and the number is expected to still further increase to at least twenty-five. A new building has been provided for the combined use of the Faculty of Forestry and the Department of Botany. This building is situated at the corner of Grosvenor Street and Queen's Park. New laboratories and greenhouses are provided, and the whole arrangement will be very advantageous. The staff of the faculty has been increased and now numbers four instructors. These are Dr. B. E. Fernow, dean of the faculty, Mr. A. H. D. Ross, M.A., M.F., and Dr. C. D. Howe, M.S., Ph.D., lecturers, and Mr. J. H. White, M.A., class assistant. Dr. Fernow will take charge of the work in Forest Management, Silviculture, Forest Geography and the History of Forestry; Mr. Ross will have in charge the courses in Forest Mensuration, Forest Protection, Forest Utilization and Forest Valuation and Finance; to Dr. Howe have been assigned the courses in Forest Botany, Vegetable Physiology and Ecology, Timber Physics and Wood Technology; Mr. White will act as class assistant to Mr. Ross and Dr. Howe in field excursions, will have charge of the preparation of material for the laboratory and will supervise work in the draughting room. Dr. C. D. Howe, the new member of the faculty, who also takes some of the work in the botanical courses of the Arts faculty, graduated from the University of Vermont in 1898, obtained his degree of Master of Science from his Alma Mater in 1901, and in 1904 was granted the degree of Ph.D. by the University of Chicago. From January, 1905, to July of the present year he was connected with the Biltmore estate and Forest School, as assistant forester of the former and associate director of the school. During the last two years he had charge of most of the field work of the institution and proved himself a most popular and efficient instructor.

The University of New Brunswick opened its Department on September 28th. Prof. R. B. Miller, M.A., M.F., is Professor of Forestry. Prof. Miller was a member of the 1908 graduating class of the Yale Forest School. After graduating from Wabash College in 1896, Prof. Miller had several years' experience in teaching natural science at Rochester Normal University (Crawfordsville, Ind.), Dakota University (Mitchell, S.D.), and Huron College (Huron, S.D.)



Senior Forestry Class, University of Toronto, and instructors,  
Rondeau Park, May, 1908.

There are altogether nine students in the department this year. The course is an under-graduate one of four years, leading to the degree of Bachelor of Science in Forestry. The first two years of the course are occupied with general courses identical with those given in the regular Engineering courses, and comprise work in English, mathematics, French or German, botany, physics, drawing and surveying. The technical forestry subjects are introduced in the third and fourth years; courses are outlined in dendrology, diseases of trees, preservation of timber, forest technology, silviculture, forest mensuration, lumbering, forest management, elementary law and provincial forestry laws and regulations. The general subjects of these years include chemistry, economics, foundations, road construction, theory of earth pressure, drawing, surveying, meteorology, materials, structures, hydraulics and geology and mineralogy. A prominent New Brunswick lumberman has already offered to give the students an opportunity for practical work in his camps in the Miramichi woods. Of the students four are taking the work of the third year, two that of the second, and four that of the first year.

Besides strengthening its regular course, the Yale Forest School is introducing a number of advanced courses, intended particularly for those students who come to the School after already having had courses in other schools or departments of forestry. These advanced courses will be optional and will be given in the following subjects: Timber Preservation (Prof. Toumey), Mechanical Properties of Wood (Mr. Tiemann), Exotic Economic Woods (Prof. Toumey), Advanced Silviculture (Mr. Hawley), Advanced Lumbering (Mr. Bryant), Minor Forest Industries (Mr. Bryant), Advanced Forest Management (Assistant Prof. Chapman), Practice of Forestry in the West, Forestry Abroad (Prof. H. S. Graves), Practical Construction Work, Experiment and Research (Prof. H. S. Graves), and Forest Economics (Prof. H. S. Graves). The school has secured the use of the lands of the New Haven Water Company on which to conduct field work; these comprise about 9,000 acres, about half of which is already forested. Hereafter students in the Sheffield Scientific School will be required to take a second summer term at Milford, Pa., in order to complete their work in Silvics and Silviculture, before completing their course. The lands belonging to the School at Milford, Pa., have been increased by the purchase by the Director of an additional tract of 75 acres. It is interesting to note that a Canadian, Mr. H. R. McMillan, now in the employ of the Forestry Branch, was the representative of the graduating class on the program of the graduating exercises of the class of 1908, held in February last.

The Biltmore Forest School continues to hold its unique position as the only "master school" in forestry in North

America. Located, as it is, on the Biltmore Estate (the estate of Mr. George W. Vanderbilt) near Asheville, N.C., it enjoys unexcelled opportunities for instruction in the practical side of forestry, the forests being made up not only of the Appalachian hardwoods—principally chestnut, tulip and oaks—in varying mixtures, but some of the conifers, such as balsam and spruce, as well. The director of the school has charge of 130,000 acres of forest, and the students do practical work in these forests. The work at Biltmore lasts from November to April, while during the summer the quarters are moved to the Pisgah forest. In addition to Dr. C. A. Schenk, the principal of the school, two regular assistants and a numerous corps of occasional lecturers are employed in the work of instruction. The course consists of twelve consecutive months, the only vacation being two weeks at Christmas; six additional months of practical work are also required before the diploma is granted. Beginning in 1909 degrees will be given to graduates only when they have qualified in a six months' course as logging foremen and the like or have proved their efficiency as timber cruisers or lumber inspectors. In commemoration of the tenth anniversary of the founding of the Biltmore Forest School and the twentieth anniversary of the inauguration of forestry on the Biltmore estate, there will be held from Thursday, November 26th to Sunday, November 29th, a series of "forestry festivals." On the week days these will take the form of all-day excursions (with lunch in the woods) over the Biltmore estate, including the Pisgah forest. On these excursions there will be inspected the forest plantations and planting in progress on the estate, natural second growth obtained by successive cuttings, thinnings and improvement cuttings, regeneration by seeding, logging operations in the mountain forests and operations in the various departments of the Biltmore Farm. The Director will accompany the party and give explanations of the different operations, the purposes in view and the means adopted. Expense accounts and revenue sheets of the forest will also be shown. The social aspects of the gathering will not be neglected, the functions of this nature comprising a dinner on Thursday evening (Thanksgiving Day) at Battery Park Hotel, a 'possum hunt, barbecue and general rejoicing on Friday evening on the Biltmore estate and a fishing and shooting contest on Saturday afternoon.

## DOMINION TIMBER REGULATIONS.

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The new Act relating to the public lands enacted during the recent Session of the Parliament of Canada contains provisions for the administration of the timber that are deserving of review; but before looking at them particularly it will be interesting to sketch shortly the development of the timber regulations of the Dominion.

The Dominion Lands Act first passed to provide for sales of timber lands was evidently framed looking to a careful and somewhat elaborate administration. It was evidently intended that there should be a general examination of the country to determine what lands should be included in timber berths, for it was provided that the Governor in Council may, from time to time, declare districts of territory to be timber districts and no lease of a timber berth shall be granted except in territories so set apart. Further the Minister of the Interior was empowered to set apart any tract of land in a timber district, to divide it into berths of not more than fifty square miles and to dispose of such berths by sale under regulations made by the Governor-in-Council.

Leases might be sold by public auction, or might be granted, in each case, to any person who was the sole applicant therefor at a bonus to be fixed by the Order-in-Council granting the lease, or, in case there was more than one applicant, might be sold by tender.

Leases were to be for one year and there was to be no right of renewal unless so provided for in the grant. The annual ground rent was to be \$5.00 per square mile, and the lessee was to pay five per cent. royalty on the timber cut.

The lease was to prescribe a time within which the lessee must erect and operate a sawmill in connection with the leasehold.

It will be seen that the first intention of this enactment was that the Government should inspect and define the timber areas, and dispose of them so as to get the largest possible return from their sale. The country was vast and the demand was small, and it was found that the Government would not be justified in making the expenditure necessary to carry out such an elaborate programme; and so in actual practice the Department fell back upon the second method of disposing of the timber, namely, on the request of the applicant and a description furnished by him, without making an inspection or survey or acquiring any knowledge of the timber disposed of.

As a rule berths were granted without competition and without payment of a bonus being required; but on the 25th

May, 1884, an Order-in-Council was passed providing that in the districts north of the North Saskatchewan River, along the eastern slope of the Rocky Mountains and in the eastern part of the railway belt in the Province of British Columbia licenses should be granted only by public competition. This rule was finally extended to all Dominion lands by an Order of the 17th February, 1885, and has remained in the regulations ever since.

This system was probably well suited to the conditions that prevailed in the earlier years of the administration of the timber on Dominion territory, as by that method timber could be readily obtained and quickly made available for the needs of the country. Moreover, the Government was not in a position to make the necessary explorations and surveys that would have been required to obtain a thorough knowledge of the timber.

Difficulties, however, were found in this method of handling the timber. The descriptions furnished by the applicants were often indefinite or were attached to some local feature of which the Department had no knowledge or only such information as was given by the inaccurate maps which had been compiled from a variety of sources, which might or might not be reliable and were often mistaken. As a result disputes occurred between the Department and the person granted the berth and sometimes between grantees themselves.

The system was also defective in that the Department had no information as to the character of the timber being disposed of. There might be no timber at all on the tract, and as a matter of course that was the condition of affairs in some cases,—another cause of dissatisfaction and dispute. Again it might be a valuable tract and if competition was not keen it might be sold for a sum which would not represent in the slightest degree its value to the public.

Changes in the Dominion timber regulations, which are embodied in the new Lands Act, have therefore been made recently with the object of securing exact information in regard to the timber and defining the location before a sale is made. The main features are as follows:—

A timber berth will be not greater than twenty-five square miles in area. Berths will be sold at public auction after survey and after the timber has been cruised and estimated by a Government cruiser. On the report of the cruiser an upset price is to be fixed by the Minister of the Interior below which the berth will not be sold. The license is for one year but is renewable while timber of the kind and dimension described therein remains on the land in sufficient quantity to make it commercially valuable. Power is retained by the Minister of the Interior to require the erection of a mill and the operation of the berth, and the licensee may be required to do the cutting

on any portion of the berth which the Minister decides should be cleared for settlement purposes.

For the protection of the timber it is required that there shall be no unnecessary waste in the cutting, and that the destruction of young growing trees shall be avoided as far as possible. It is provided also that the licensee shall leave such trees as may be decided by the forestry officers to be necessary for a seed supply. Strict and constant supervision must be exercised to prevent the origin and spread of fire. Methods of disposing of the debris of lumbering operations may also be enforced.

The general license regulations apply to timber lands outside of the Forest Reserves and Forest Parks, but are not applicable to timber in the Reserves and Parks, these being subject to special regulations framed with reference to them which either do not permit of the sale of green timber at all or only under more direct supervision of the forest officials.

In addition to the sale of timber under license by public competition it may be obtained under permit by settlers for their own use, for cordwood, mining purposes, construction of public works and a few similar objects.

There is also a provision for granting berths of not more than one square mile to small mills without competition, in order to give a ready and cheap supply of lumber to settlers in districts where it cannot otherwise be easily and cheaply obtained. For this a fixed fee of \$100 per mile is to be paid in addition to dues on timber cut. This provision will be useful in the newer districts.

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#### WESTERN BOARDS OF TRADE FAVOR FOREST RESERVES.

The Associated Boards of Trade of Western Canada, at their Fifth Annual Meeting, held in Medicine Hat, Alta., took strong ground in favor of a strong forestry policy for the West, urging on the Government action to promote further forest reservation, a more efficient and extensive fire protective system and reforestation where necessary and practicable.

A resolution originating with the Edmonton Board of Trade and introduced by Mr. A. C. Fraser, of that place, read as follows:

Whereas, to a large extent the Provinces of Manitoba, Saskatchewan and Southern Alberta are comprised of prairies largely devoid of building timber of which an increasing amount is necessarily year by year required; and

Whereas along the eastern slope of the Rocky Mountains and in parts, more particularly of Northern Alberta, there is a very large area of land that would be more valuable for the cultivation of timber than for any other purpose, especially having in view the very great area of arable land situated in the said provinces; and

Whereas much of this territory is interspersed with rivers and creeks which would form a natural protection against fire; and

Whereas the expense of providing fire rangers who would adequately protect the said areas from fire would be comparatively small and would be absolutely trifling in comparison to the value of the timber that would be secured by such protection; and

Whereas the climatic benefits of those matters incidental to the conservation of the water supply and the prevention of destruction by floods to be obtained by the preservation of the forests is of great value to the rest of the provinces; and

Whereas we recognize and approve of the action of the Federal Government in already setting apart tracts of land on the eastern slopes of the Rockies for forest reserves, we still think that there are timbered tracts of land adjacent to the Saskatchewan, Athabasca, McLeod, Pembina, Mackenzie and other northern rivers which are most suitable for forest reserves and for reforestation purposes;

Therefore, in the opinion of this convention, it is highly essential that some concerted action should be taken for the preservation and reforestation of tracts of land suitable or expedient to be used; and it is therefore recommended:

(1) That timbered tracts of land should be set apart and the settlers prohibited from encroaching on them while being used for timber areas.

(2) That during the spring and fall at least an active and adequate corps of fire rangers should be provided whose duty it should be to patrol incessantly the timber areas to prevent forest fires.

(3) That in addition to the natural reforestation of such areas active steps should be taken to promote the extension of timber therein.

The resolution was seconded by Mr T. J. S. Skinner, of Calgary, and carried.

## THE MAINE SUPREME COURT DECISION.

A legal decision that has aroused a great deal of interest throughout the United States was that given by the Supreme Court of the State of Maine not long ago in regard to the right of the State to control the cutting of timber on private lands. The opinion was given in response to a request from the senate of the state, the questions submitted being as follows:

In order to promote the common welfare of the people of Maine by preventing or diminishing injurious droughts and freshets, and by protecting, preserving and maintaining the natural water supply of the springs, streams, ponds and lakes and of the lands, and by preventing or diminishing injurious erosion of the land and the filling up of the rivers, ponds, and lakes, and as an efficient means necessary to this end, has the legislature power under the constitution.

1. By public general law to regulate or restrict the cutting or destruction of small trees growing on wild or uncultivated land by the owner thereof without compensation therefor to such owner;
2. To prohibit, restrict or regulate the wanton, wasteful or unnecessary cutting or destruction of small trees growing on any wild or uncultivated land by the owner thereof, without compensation therefor to such owner, in case such small trees are of equal or greater actual value standing and remaining for their future growth than for immediate cutting, and such trees are not intended or sought to be cut for the purpose of clearing and improving such land for use or occupation in agriculture, mining, quarrying, manufacturing or business or for pleasure purposes or for a building site; or
3. In such manner to regulate or restrict the cutting or destruction of trees growing on wild or uncultivated lands by the owners thereof as to preserve or enhance the value of such lands and trees thereon and protect and promote the interests of such owners and the common welfare of the people;
4. Is such regulation of the control, management or use of private property a taking thereof for public uses for which compensation must be made?

The court gives two reasons why the right of the state to limit the use by the individual of his property is particularly applicable to property in land, viz.: First, such property is not the result of productive labor, but is derived solely from the state itself, the original owner; second, the amount of land being incapable of increase, if the owners of large tracts can waste them

at will without state restriction, the state and its people may be helplessly impoverished and one great purpose of government defeated.

Regarding the question submitted, in the light of the doctrine above stated (being that of Maine and Massachusetts at least) we do not think the proposed legislation would operate to "take" private property within the inhibition of the constitution. While it might restrict the owner of wild and uncultivated lands in his use of them, might delay his taking some of the product, might delay his anticipated profits, and even thereby might cause him some loss of profit, it would nevertheless leave him his lands, their product and increase, untouched, and without diminution of title, estate or quantity. He would still have large measure of control and large opportunity to realize values. He might suffer delay, but not deprivation. While the use might be restricted, it would not be appropriated or "taken."

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#### NEXT ANNUAL MEETING AT TORONTO.

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The Board of Directors of the Canadian Forestry Association held a meeting at the Superintendent of Forestry's office in Ottawa on June 30th last. The first business taken up was that of fixing the place for the next annual meeting of the Association in March, 1909. Invitations were considered from the Board of Trade of Toronto, Ont., the Board of Trade of Halifax, N.S., and also from Fredericton, N.B., Premier Hazen having offered the use of the Legislative Buildings for the purpose. After some discussion it was decided to have the meeting at Toronto, as being the most central of these places.

An invitation was also read from Regina Board of Trade to hold a summer session at that place. It was considered, however, that the time was too short to make the necessary preparations for a meeting during the current summer, though the meeting might be arranged for at some subsequent time.

The matter of the formation of branch associations in the different provinces also received attention, in reference to a letter from Mr. R. H. H. Alexander, of Vancouver, B.C., suggesting the formation of a branch association in British Columbia, and the Secretary was instructed to correspond with Mr. Alexander and others with a view to working out the details of a feasible scheme.

A report was also presented with regard to the press bulletins which since the beginning of the year have been sent out to the newspapers of the Dominion. The total number of papers to which bulletins had been sent was 285. Bulletin No. 5, the last one of which complete returns were then obtainable, had been published in 57 English and 10 French papers, about 25 per cent. of those to which it had been sent. The cost of the complete series of bulletins had, up to the time of the report, been a little over eighty dollars.

It was decided to accept a proposal made by Mr. A. C. Campbell and appoint his son, Mr. Roy L. Campbell, as special agent for the Association in order to secure new members for the Association.

Mr. J. M. Macoun tendered his resignation of the position of Editor of the CANADIAN FORESTRY JOURNAL. This was, on motion, accepted, and the Secretary instructed to convey to Mr. Macoun the thanks of the Association for the efficient manner in which he had discharged his duties and its regret that it was necessary for him to sever his connection with the Association in his editorial capacity. Mr. F. W. H. Jacombe, of the Forestry Branch, was appointed to the position of editor.

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## WESTERN NOVA SCOTIA LUMBERMEN.

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The Lumbermen's Association of Western Nova Scotia held its annual meeting at Liverpool, N.S., on June 30th and July 1st, last. A business meeting of the Association was held on the afternoon of the 30th June, and a public meeting was held in the evening at the Opera House. At the evening meeting addresses were given by Lieut.-Governor Fraser, Judge Longley, Mayor Mulhall, of Liverpool, Dr. B. E. Fernow, of the University of Toronto, J. E. A. Dubuc, Chairman of the Canadian Wood Pulp Association, Dr. G. E. Dewitt, President of the Nova Scotia Forestry Association, Leslie R. Fairn, Secretary of the Nova Scotia Forestry Association, and F. C. Whitman, President of the Western Nova Scotia Lumbermen's Association.

In his presidential address Mr. Whitman estimated the timberland of Nova Scotia at 9,069 square miles; of this area

1,864,000 acres, scarcely one-third of the whole, were in the hands of the lumbermen; about 1,500,000 acres belonged to the crown and the remaining 2,500,000 acres were in the hands of private owners, mostly small proprietors. He paid a high compliment to the fire ranging force of the province. He emphasized the importance of growing timber as a crop, urged the importance of improving the harbors, called attention to the importance of using much of the lumber at present going to waste, and made a strong plea for a forest survey of the province.

Mayor Mulhall welcomed the guests, and Lieut.-Governor Fraser made a fitting reply. Judge Longley, a former attorney-general of the province, enlarged on the importance of fire protection and referred to measures already taken for this end. Mr. Dubuc spoke on the "Pulp Industry," and Mr. Fairn's address treated of "Game, Fish and Forest." Dr. Fernow's address is given in full in this number of the JOURNAL.

Dr. Dewitt's address had for its subject measures necessary for better conserving the forest. He spoke of restricting the exportation of pulpwood and prevention of forest fires, concluding with the following recommendations to the Government:

That the Government make a careful survey of the land now in the possession of the Crown, giving careful data of its resources, whether the source of water power or fit for timber or agriculture, or neither;

That restrictions be made in the cutting of timber and in the cutting and transportation of pulpwood;

That when the Government grants land to individuals or companies it shall not be a grant in perpetuity;

That the Government make it imperative upon municipalities to appoint or pay fire-wards in every County, not leaving the appointment to the discretion of the municipalities.

That a system of economics of forestry be taught in our public schools, that the younger and coming generation may be taught that it is the right and duty of the people and the Government to safeguard the country's future by enacting such laws as shall conserve her natural resources.

On Dominion Day the members of the Association and their guests enjoyed themselves at a picnic, which included an inspection of the mills along the Mersey River.

## REVIEWS.

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### *Report of the Minister of Lands and Forests of the Province of Quebec for 1906-1907.*

The report is a good sized volume of about 350 pages. It shows a revenue for the Woods and Forests Branch during the year of \$1,018,385.40; of this sum stumpage dues furnished \$773,130.29, and ground rents, \$214,452.00. The revenue from these two sources combined is the largest yet realized from them. The succeeding year's cut of timber, however, would likely be only 75 per cent. of that of 1906-07.

The work of classifying unoccupied public land into agricultural and non-agricultural had been continued.

No timber limits were put up to auction during the year. The total area of land so disposed of since 1897 is 23,186 square miles, of which 11,490 square miles were in the eastern portion of the province; during that period (1897-1907) thirty-one new industrial establishments had been started along the St. Lawrence, which required a capital expenditure of \$14,252,800, and gave employment to 8,585 persons.

The organization of the Forest Reserves had been completed. These reserves, along with the Gaspé and Laurentides Parks, cover an area of 107,821,653 acres; and the hinterland of the province (93,000,000 acres more) is still untouched. The names of the reserves are as follows:—Saguenay, Labrador, Lake St. John, St. Maurice, Maskinongé, Ottawa, Chaudière, Rivière Ouelle, Temiscouata and Rimouski.

The fire protective service had been extended, and owing to this fact and to a very rainy season, the damage to forests by fire was insignificant.

Special mention is made of the work of Messrs. G. C. Piché and Avila Bédard, forest engineers, who were added to the staff of the Department during the year.

The total area under license during the year was 68,142 square miles.

Figures for the cut of timber on Crown Lands are also given. Of square timber 8,520 pieces, measuring 280,278 cubic feet, were cut; for saw logs and boom timber there were cut the following: of "white pine and other varieties," 1,702,381 pieces, 195,947,218 feet, B.M.; of red pine, 445,824 pieces, 32,184,030 feet, B.M.; of spruce, hemlock, balsam, cypress,

cedar, white birch and poplar, 9,564,719 pieces, 362,726,079 feet, B.M. Of white pine saw-logs, eleven inches and under were cut, 2,008,371 pieces, 87,719,387 feet, B.M. 4,370 poles were cut, with an aggregate of 123,590 lineal feet. The cut of pulpwood amounted to 236,401 cords, of which 108,966 cords were exported from Canada. Railway ties were cut to the number of 722,928. 9,343 cords of spoolwood were also cut.

A feature of the report interesting from the forestry standpoint is a number of reports, appended to the main report, from the two foresters, Messrs. G. C. Piché and Avila Bédard, who entered the employ of the Department last year. These include reports on several tracts with regard to their suitability for settlement, a report by Mr. Piché on a tract burned over during the summer of 1907 and the best disposition of the timber on it. In certain cases samples of soil from the townships examined were submitted to the Chemist, Mr. Frank T. Shutt, M.A., at the Central Experimental Farm; his judgment went to confirm the recommendation of the forester against opening the country for settlement. Mr. Bédard reports on the annual growth of spruce forests and Mr. Piché on the preservation of shingles. Mr. Piché's report as to the establishment of a forest nursery has since been acted on, and the nursery established at Berthierville. A list of trees and shrubs, native to or naturalized in the province, compiled by Mr. Piché, is also included in the report.

Mr. W. C. J. Hall, Chief of the Forest Protection Branch, reports a total of 457 rangers for the year as compared with 371 in 1906. Nine rangers were employed along the line of the Transcontinental Railway. He recommends the wearing of a uniform by rangers in certain districts where there are many foreigners (often ignorant of French and English and unable to read the fire notices), so as to give them added prestige with these ignorant men.

## FORESTRY PERIODICALS.

### CONSERVATION (FORESTRY AND IRRIGATION).

In the July number of *Forestry and Irrigation*, A. B. Plowman tells of over-clearing and its consequences in western Ohio, and also discusses trees suitable for reforestation. In "Water Conservation in Arizona," W. R. Mershon tells of the benefits of water conservation to lumbermen requiring water for steam power. Quincy R. Craft, in "Forest Tree Nurseries" notes the increase in the number of forest tree nurseries and discusses screens, root-pruning, transplanting, "damping-off" and the use of "flats" and its advantages. The results of Perley Spalding's experiment in regard to the prevention of the damping-off fungus by sprinkling the beds with various substances are noted; sulphur (especially in the "washed" form), a mixture of one part copper sulphate to ten parts lime, and, best of all, a weak solution of sulphuric acid (1 to 500) are recommended. Lists are given of United States Government nurseries, of state nurseries and of trees most commonly grown by nurserymen in the United States.

In the August number H. Riesenbergh, in "A Plea for the Nationalization of our Natural Resources," advocates the creation of a new portfolio in the United States federal cabinet to take charge of all work connected with the development of the country's natural resources and gives suggestions for its administration. "Railroad Forestry Work" is an outline of the forestry work carried on by the Pennsylvania Railway system. The redistricting and renaming of the National Forests is described at some length in "National Forests Redistricted." "Forestry at the Biennial," by Mrs. Lydia Adams-Williams notes the part played by forestry in the program of the ninth biennial convention of the General Federation of Women's Clubs.

In the September number (the first under the title of "Conservation"), Dr. W. J. McGee's article "The Cult of Conservation" reviews the progress of the United States in material wealth and the growing realization of the need for economy. John L. Strobeck writes on "The Forest Policy of Pennsylvania." He discusses the policy of the state in regard to public lands which it now owns and also in regard to the purchase of new lands, and shows the advantages of these lands to the mountaineers, the small land owners, the sportsmen, the campers, the lumbermen, the wood-lot owners and others. Other topics mentioned are the state forest academy at Mont Alto, the three state nurseries, rangers' nurseries and the fire protection work

of the state. One ranger to 5,000 acres is the ideal they are aiming at in their ranger system, he states.

In the July and September numbers are given instalments of Supervisor Chas. Howard Shinn's "Work in a National Forest," an account of some aspects of forest work written in a racy, taking way from the standpoint of one on the inside.

In the July number, "The New Commission" deals with the new conservation commission, whose official title is "The Commission on the Conservation of Natural Resources," whose organization and first work is taken up in the August number in "The New Commission at Work." Several papers read before the Governors' Conference at Washington in May last are published; these are R. A. Long's "Forest Conservation" (July), and (in the August number) J. Horace MacFarland's "The Value of Natural Scenery," and H. St. Clair Putnam's "Conservation of Power Resources."

#### THE INDIAN FORESTER.

The opening article of the June *Indian Forester* deals with "Marking Trees for Felling," and deals with the qualifications necessary for the work and the necessity for practice in it to every practical forester; suggestions are given (chiefly in the way of increased pay to those officers engaged in the work) for making it more popular. "Alternations in Forest Crops," by B. O. Coventry, deals with the fact that, under Himalayan conditions, successive crops of the same species are not found, e.g., *Pinus longifolia* being succeeded by *Quercus incana*, deodar by black pine, etc., and ascribes this state of affairs to soil conditions. "Fire Protection in Burma," by H. C. Walker, is a strong argument against protection in teak forests, on the ground that in protected teak forests no natural production is secured; the author favors thinning out of injurious species in preference to fire protection, in order to secure natural regeneration. H. Jackson, in "Railway Fires," reviews the legislation affecting that subject which came into force in England in the beginning of this year, also previous legislation and judicial decisions. W. H. Lovegrove writes of the establishment of communal village forests.

The July number opens with a short article on "The Enquiry concerning the Physical Effects of Forests," ordered by the Government of India; special attention is given to the fact noticed by balloonists, viz., that the temperature of the air over a forest is lower than that elsewhere, and this lower temperature is spread to surrounding regions of the air; this is claimed to increase the rainfall. Systematic research on the whole topic is advocated. "The Rubber Plant of Southern Europe" (*Atractylis gummifera*) is fully described in an article by Prof. Mattei, of the Palermo, Italy, Botanical Gardens, and M. van

den Kerckhove, of Brussels, a rubber expert. Articles of special interest to Indian foresters are "The Forests of the Terai and Bhabar Government Estates," by F. F. R. Channer, "Sandalwood at Sealevel," and "The Tikri Forests of the Gonda Division" by native foresters.

"The Emancipation of the Divisional Officer," the first article of the August number states that "it has become obvious for some time past that, if steady progress is to be maintained in the development and management of forests in India, a vast increase must be made in the forest staff." As the best means of promoting the better management the editor advocates the giving of more administrative powers to the divisional officers, leaving the executive work to a staff of imperial and provincial officers who would be in special divisional charges and directly responsible to him. "Katha Manufacture in the Gonda Division" treats of the collection and manufacture of this product. "Sterling Pensions for the Imperial Forest Service" deals with amendment to the pension regulations for the forest service.

A series of articles on "British Forestry," reprinted from *The Times*, is interesting. The second of the series is published in the June number, and deals with objections to forestry in the British Isles. The author ascribes the damage from windstorms from which British woodlands often suffer to faulty design in planting, mismanagement during growth (the forest being too open) and entire lack of management. Difficulty of selling timber is usually, he thinks, due to woodland owners having no regular business connection. The article shows the increasing profits from forest management in Germany, refers to the mismanagement of the "New Forest," and protests against the unfairness of the forest assessment. In the August number the author deals with the proper treatment of British woodlands. After reviewing the former objects of management in England, namely, (1) the growth of crooked oak for shipbuilding; (2) the management of coppice, and (3) the cultivation of osiers, he shows how these methods must be abandoned, owing to the special products being no longer in sufficient demand. Coppice must be converted into high forest, and in order to do this, he advocates the cutting clean and fencing of the woodlands and their planting. The species he advocates are Douglas fir, Sitka spruce and Japanese larch. Objections to the planting of these exotic species are answered and prices of seedlings of the different species at Continental nurseries given (British nurseries not having any large stock of them on hand).

"Shikar, Travel and Natural History Notes," and other departments are well represented.

*Forest Leaves* for October presents three papers read at the recent Chambersburg meeting of the Pennsylvania Forestry Association. These are "Co-operative Forestry," by Prof. Green, Chief of the Department of Forestry, Ohio Experiment Station; "Wood-lot Forestry," by Prof. F. W. Besley, State Forester of Maryland, and "The Farm Woodlot in Pennsylvania," by Prof. Hugh P. Baker, of the Department of Forestry, Pennsylvania State College. Prof. Baker describes the present state of woodlots in the state and gives suggestions for improvement and management. Prof. Green describes the origin (largely from planting catalpa groves) of the scheme of co-operation between the state and private owners in Ohio and their methods, which include in each case a preliminary visit and subsequent visits much as is done in the scheme of the Forestry Branch. Some public institutions (including one city owning its own waterworks) have also connected themselves with the scheme. In "Woodlot Forestry" Prof. Besley advocates model wood-lots in each county and points out the lack of exact information as to the growth of forest trees and consequent difficulty in inducing private owners to practise forestry. State Forester Alfred Gaskill, of New Jersey, in "A Paid State Fire Service," outlines the New Jersey plan of organizing their fire service and mentions its annual cost to the state (\$4,000) and other statistics. Dr. Rothrock writes on the Laurel, or Shingle, Oak (*Quercus imbricaria*) and also writes in defence of the planting of black locust done some years ago by the Pennsylvania Railway Company.

*The Oregon Forester* is a small monthly of twelve to sixteen pages, the organ of the Oregon Forestry Association, which started publication in March of the present year. Among the topics treated in the first numbers are "The Taxation of Forest Lands," "State Control of Oregon Water Resources," and other topics of local interest.

*The Minnesota Forester*, while not pretentious in form, presents many readable notes of forestry in the United States and other countries. In the June number Prof. Roth presents "The Forestry Situation in a Nutshell." It is the official bulletin of the Minnesota Forestry Association.

## NOTES

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**CANADA'S FOREST AREA.** Further investigation has led Dean Fernow, of the Faculty of Forestry of the University of Toronto, to the conclusion that his estimate of 300,000,000 acres as the extent of the commercially valuable timber land of Canada is too high, and he now believes that 200,000,000 acres would be much nearer the mark. The commercially valuable forests of Canada, he reasons, are those comprised within the ranges of the white (and red) pine in Eastern Canada, and the Douglas fir in British Columbia. A certain proportion has to be subtracted from this to provide for the land that is at too great an altitude for the growth of trees, rocky land and other waste land, and when all this has been done there remains little more than the figure cited.

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**THE LARCH SAWFLY.** Along the valley of the Nerepis River, a tributary of the St. John River, in King's and Queen's Counties, New Brunswick, the larch sawfly is reported to be doing much damage to the tamaracks, having quite defoliated many of the trees.

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**DESERVED HONOR.** Members of the Forestry Association all over the Dominion will join with the Journal in hearty congratulations to Rev. Father A. E. Burke, our Provincial Vice-President for Prince Edward Island, on his receiving the degree of Doctor of Divinity from Laval University. Forestry has no more sincere and whole-hearted advocate in our country than Rev. Dr. Burke, and all lovers of the cause will rejoice to see this honor conferred on him.

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**DOYLE RULE vs. MILL RUN.** Some of the students of the Mont Alto (Penna.) Forest School recently followed through the mill a number of logs, with the object of comparing the mill run with the number of feet as given by the Doyle log rule. The logs were found to yield 1,439 board feet of lumber, while the tally as given by the Doyle rule gave only 952 feet. The mill cut thus ran fifty per cent. over what the Doyle rule gave. The saw was a circular, with one-quarter inch kerf. No doubt other investigations would show results very similar.

PEAT UNDER FORESTS. Mr. J. M. Macoun, late Editor of the Journal, has for some weeks past been exploring for peat in the vicinity of Ottawa and elsewhere. In his investigation he found that in what is usually termed a "tamarack swamp" as great a depth of peat frequently exists as in any open bog—a result quite unlooked for but of great importance.

A FRENCH VIEW. "That classification into farming lands and forest lands seems to me a very useful one. Had it existed in France, we should not have stupidly cleared hundreds of hectares which must now be reforested. The herbaceous flora and the condition of the arborescent vegetation will guide you more surely, perhaps, and above all more rapidly, than the analysis of the chemist. Include at once in farming lands the surfaces that are manifestly fertile. It will always be time, as colonization spreads, to slightly decrease the forest territories by gradually giving the best parcels of that territory to the farmers."—M. Henry, Professor at the Forest School at Nancy, in a letter to Mr. G. C. Piché, M.F., Forester to the Dept. of Lands and Forests, Province of Quebec.

VALUED ASSISTANCE. "The ecclesiastical authorities throughout the province continue to aid us materially in the good work of safeguarding our staple product, the forest crop, and every bishop approved of the circular to their parishioners, and permitted the reading of the same in the various parish churches." Extract from Mr. W. C. J. Hall's report on forest protection in the Province of Quebec.

JAPAN'S FOREST AREA. The total forest area of Japan, including that owned by the State, the Imperial House, communities and private individuals, is said to be about 50,000,000 acres, inclusive of barren and denuded lands. According to the latest statistics 21 per cent. of the stands are coniferous forests, 25 per cent. hardwoods, 45 per cent. mixed and 9 per cent. cleared or barren lands.

CAROLINA POPLAR. In the annual report of the Nebraska Board of Agriculture for 1906-1907 is given a preliminary report of an enquiry made by C. E. Bessey in regard to a tree which is being "boomed" by nurserymen under the name of "Carolina poplar." As to the exact classification of the tree there is still some dispute. It is not clear that it is distinct from the cottonwood (*Populus deltoides*). *Populus angulata* is a name that has frequently been given to the "Carolina poplar." The tree requires a good deal of moisture

and will not thrive on a dry soil. The report recommends this tree for planting where shade, protection and fuel are wanted in the shortest time possible, but for lumber the western cottonwood is to be preferred, for it will produce a larger tree and is apparently longer lived.

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RECENTLY PUBLISHED. "The Planting and Care of a Forest of Evergreens" is the subject of Bulletin No. 2 of the Forestry Branch, recently issued. Mr. A. Knechtel, Inspector of Dominion Forest Reserves, is the author. Copies may be had free on application to the Superintendent of Forestry.

The Forestry Branch has also issued a pamphlet giving the statistics up to the present of the distribution of trees in Manitoba, Saskatchewan and Alberta, and giving full particulars of steps necessary to obtain the trees. It is profusely illustrated. Copies may be had on application to the Superintendent of Forestry.

The Canadian Forestry Association has lately published two pamphlets, "The Forests and the People," and "Conservation of Natural Resources Contained in the Forest, the Field and the Mine." The former gives an outline of the need of forestry in Canada, what forestry has accomplished in other countries and the work and objects of the Association. The latter contains briefs of a number of the addresses delivered at the conference of Governors of the States held in the month of May last at the White House, pursuant to the call of President Roosevelt. A limited number of copies remain, which may be obtained on application to Mr. F. W. H. Jacombe, Assistant-Secretary of the Association, Forestry Branch, Ottawa, Ont.

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NEW ZEALAND'S  
TIMBER  
DECREASING. The Hon. R. McNab, the Minister of Lands (of New Zealand), has had an interview with several well known timber millers on the subject of the government's intention with regard to forests. It was pointed out by the deputation that unless fresh reserves were opened up for milling purposes several mills would be compelled to close down, and that one or two were even then on the point of stopping. The Government was asked to definitely define its policy in the matter. Mr. McNab assured the deputation that his department was keenly alive to the importance of the industry, and he promised to secure reports and make an early announcement of the Government's policy in regard to timber reserves generally, and in particular those specifically mentioned by the millers.—*The Standard of Empire.*

SUGGESTIONS FOR  
BRITISH  
COLUMBIA FOREST  
MANAGEMENT.

That the Province of British Columbia should have a forestry commission, that fire protection should be put in the hands of a force of men trained as well as the Northwest Mounted Police and altogether free from political influence and that the first faculty of the British Columbia provincial university to be established should be a faculty of forestry—these are some of the suggestions made some time ago in an address given by Mr. G. O. Buchanan, a well-known British Columbia lumberman, to the Nelson (B.C.) University Club. Other suggestions were the prohibition of the cutting of immature timber, the substitution of sawn ties for hewn ones, the discouragement of the manufacture of lumber in advance of requirements and the reservation of all land above 3,000 feet in altitude in the coast districts and 4,000 feet in the interior. He would also have the remainder of the timber on provincial lands held for a long time to come, liberal terms offered for the surrender of existing licenses and the withdrawal of the largest possible amount of timber from the market. Mr. Buchanan has made some excellent suggestions, and it is to be hoped that the British Columbia Government will put some of them into practice.

WANT  
COMMISSION  
APPOINTED.

The following is the text of the resolution passed in May last, after a long discussion, by the Montreal Board of Trade:—

“Whereas, serious inroads are being made into Canada’s easily accessible timber supply and such denudation would greatly impair the efficiency of water powers and would also lead to the sterility of the soil, as is conclusively proven by the experience of other countries;

“Whereas, according to the Department of Agriculture at Ottawa, the quantity of pulpwood exported to the United States during the calendar year 1907 was 810,541 cords, and there is every indication of that amount being constantly increased;

“Whereas, the manufacture in Canada of this wood into pulp and paper would mean a great increase of industrial wealth;

“Whereas, this question of forestry and forest industries is a vital one for the whole Dominion of Canada, and it is advisable that the resources in question should be guarded and protected;

“Therefore, resolved, that the Council of the Montreal Board of Trade hereby advocates the appointment by the Dominion Government of a commission to investigate and report on the forest area and water powers of Canada; the quantity

of timber of all descriptions manufactured in Canada, including that used by the pulp and paper industries; the quantity of timber used for pulpwood manufactured in Canada, also the quantity of lumber, pulpwood, pulp and paper exported from Canada, and the effect such exportation has had and is likely to have on the general prosperity of Canada, and further to suggest what steps should be taken to further protect the extensive forest areas from fire, and the unlawful cutting of small timber."

WANT LAW                      The Quebec City Chambre de Commerce,  
STRICTLY ENFORCED. at a recent meeting, passed the following  
resolution:—

Que les feux qui détruisent nos forêts tous les ans et qui paraissent causer encore plus de dommages, cette année que les années dernières font éprouver à la province de Québec des pertes incalculables, que ces incendies destructeurs sont rarement dus à des causes de force majeure, mais sont dus plutôt, dans le plus grand nombre des cas à l'incurie.

Que cette Chambre tout en étant convaincue que nos autorités provinciales exercent la surveillance la plus active, pour empêcher dans toute la mesure du possible de pareilles conflagrations, désire qu'elles appliquent dans toute leur vigueur les lois existantes, afin de punir comme ils le méritent, ceux qui par leur coupable incurie sont les auteurs de semblables catastrophes.

Que le secrétaire reçoive instructions de communiquer de suite cette résolution au premier-ministre de cette province, de même qu'au ministre des Terres et Forêts.

The resolution was moved by M. Léon M. Carrier, seconded by M. G. A. Vandry.

FOREWARNED, In view of the great losses sustained in British  
BUT— Columbia during the past summer, no one can wish to throw in the faces of the authorities of the province any past remissness on their part in the protection of their forests, especially in view of the strengthening, this spring, of their force of forest rangers. It seems, however, no more than just to the Canadian Forestry Association to note that on more than one occasion it has tried to impress upon the authorities of that province the importance of taking better care of those forests. At a meeting of the Board of Directors on September 27th, 1901, on motion of Mr. E. Stewart, seconded by Prof. John Macoun, it was

"Resolved that the Committee desires to call attention to the necessity for a revision of the 'Bush Fires Act' of British

Columbia, and especially with reference to Section 9 of the said Act. They are of the opinion that the penalties mentioned therein are too light, and would suggest that all after the word 'exceeding' in the fourth line thereof be struck out and the following substituted therefor: "two hundred dollars nor less than twenty dollars and in default of payment thereof shall be imprisoned for a term not exceeding six months, and in addition to such penalty shall be liable to civil action for damages at the suit of any person whose property has been injured or destroyed by any such fire; and any railway company permitting a locomotive engine to be run in violation of the provision of Section 7 of this Act shall be liable to a penalty of \$200 for each offence, to be recovered with costs in any court of competent jurisdiction, and shall also be liable to civil action for any damages that may have resulted from negligence in this regard.

"Resolved, also that a copy of this resolution be sent to the local Forestry Association of British Columbia, asking their co-operation in the matter; also to the Honorable the Commissioner of Lands and Works for that Province, and to His Honor the Lieutenant Governor of British Columbia."

Again, at a meeting of the Board of Directors on October 27th, 1904, on motion of Mr. E. Stewart, seconded by Mr. Thos. Southworth, it was

"Resolved, that in view of the annual destruction of timber in British Columbia and the difficulty of guarding the forests from fires the Board of Directors of the Canadian Forestry Association begs respectfully to submit its view that it is desirable that the 'Bush Fires Act' of that province should be amended so as to prohibit the starting of fires for the clearing of land between the first day of May and the first day of November in each year unless a special permit for that purpose be granted by the Forest Ranger or other officer appointed for the district in which such permission is asked."

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FOREST TAXATION. At the recent convention of the International (formerly National) Tax Association held in the Legislative Buildings in Toronto, on October 9th and 10th, the question of the taxation of forests was taken up, and the following resolution passed: "Resolved, that it is within the legitimate province of tax laws to encourage the growth of forests in order to protect watersheds and ensure a future supply of timber, and legislation, or constitutional amendment where necessary, is recommended for this purpose." The International Tax Association is composed of specialists in the study and regulation of taxes throughout the continent, and

its action shows that the attitude of foresters in contending for a lower and more equitable rate of taxation on forest land is recognized as the correct one by men who have given exhaustive study to this theme.

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A "BARK STUDY." The frontispiece of the Journal this month presents a "bark study," exhibiting and contrasting the barks of the two most common Eastern poplars, namely, the Aspen (*Populus tremuloides*) and the Balm of Gilead (*Populus balsamifera*). On the reserves in Manitoba both of these species are very common, the Balm occurring in the low moist land along streams, while higher up the Aspen is the prevailing species.

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CANADIAN LUMBERMEN'S ASSOCIATION. The Canadian Lumbermen's Association was formed at Ottawa on June 24th last, at a meeting held in the Board of Trade rooms. This Association is intended to follow generally the lines of the National Wholesale Lumber Dealers' Association of the United States, looking after legislation affecting lumbermen, tariffs and railway rates and other matters of general interest. Its objects are to promote the interests and conserve the rights of lumbermen in regard to wholesale selling and distribution of lumber throughout Canada. The officers of the Association are the following: Honorary President, J. R. Booth, of Ottawa; President, Gordon C. Edwards, of Ottawa; Vice-President, J. B. Miller, of Toronto; Treasurer, R. G. Cameron, of Ottawa; Directors, W. J. Sheppard, of Midland; J. H. McFadden and Henry J. Bartlet, of the Temagami Lumber Company; Walter C. Laidlaw, of Toronto; J. C. Browne, of Ottawa; Fred. W. Avery, of Ottawa; J. S. Gillies, of Braeside; E. H. Lemay, of Montreal; D. H. McLennan, of Montreal; Alex. McLaurin, of Charlemagne; William Power, M. P., of Quebec; W. Price, of Quebec, and W. B. Snowball, of Chatham, New Brunswick. The Association has its office and headquarters in Ottawa; the Secretary is Mr. Frank Hawkins.

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"On September 1st, 1894, the forest fires swept over that portion of the state surrounding Hinckley. It wiped out that town completely, damaged several other towns, burned over four hundred people, left over two thousand others homeless and destroyed property valued at \$25,000,000. Investigation showed that the loss was the result of carelessness in regard to forest fires in their incipiency. It was shown that a reasonable amount of money expended by the state in patrol and other preventive measures would preclude any such disasters in the future.

Under the pressure of public opinion and the findings in regard to the cause of the loss the legislature grudgingly appropriated \$6,500 for forest protection, \$1,500 to be paid to a chief forest fire warden. The legislature seemed to feel that it had met the requirements, but it had totally ignored the "reasonable amount."

Fourteen years later another fire wipes another town off the map, damages others, leaves thousands of people homeless, destroys five million dollars worth of property. Investigation shows that the fire was caused by carelessness and neglect in fighting fire when it was small.

The direct and immediate loss from these two great conflagrations was about \$30,000,000. The consequent loss of wealth production in the following years would probably amount to more than that, but is ignored in these calculations, because few people look deep enough to see it. The direct losses then, from these two fires would pay the state appropriation for fire protection, as it now stands, for the next four thousand six hundred years. Is that not rather a low insurance rate, especially when it is remembered that these two fires form only a fraction of the total losses to the state? The Forestry Commissioner has at his disposal about a quarter of a mill an acre for the protection of the land under his care. No business concern in the world would expect to get adequate protection at such ridiculously low rates.

—MINNESOTA FORESTER.

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**A FORWARD MOVEMENT.** During the summer an energetic movement has been commenced to increase the membership of the Forestry Association. A pamphlet entitled "The Forests and the People" has been prepared, treating briefly, among other things, of the need of forestry for Canada, forestry work already being carried on in the country, the results of forestry in other countries, forest fires, and, last but by no means least, the work of the Association. An active canvass has also been carried on in the cities of Ottawa and Montreal by Mr. Roy L. Campbell, of the former place, who has met with good success in his work of inducing many prominent men of these places to become members of the Association. Up to date the number of members added to the Association's ranks since the beginning of this forward movement has been about two hundred, the number of members now standing at over 1,500.

**DOKIS INDIAN LIMITS SOLD** On June 24th last, there was held at the Russell House, Ottawa, a sale of limits belonging to the Dokis Indians, of Northern Ontario, situated on their reserve between Lake Nipissing and the French River. The berths aggregated seventy square miles, and were said to contain about a hundred million feet of timber. The lands were divided into eight berths, and the total amount of the bonuses bid was \$871,500. In addition to this ground rent and stumpage dues will have to be paid on the timber.

The areas of the different berths, together with the bonuses bid for each, are as follows: No. 1, 7.95 square miles, \$178,000.00; No. 2, 5.29 square miles, \$69,000.00; No. 3, 7.34 square miles, \$68,500.00; No. 4, 8.05 square miles, \$114,000.00; No. 5, 7.89 square miles, \$58,000.00; No. 6, 8.65 square miles, \$151,000.00; No. 7, 6.48 square miles, \$131,000.00; No. 8, 9.34 square miles, \$102,000.00. The money received as bonus is placed to the credit of the funds of the Band, less the amount deducted for cost of management and the sum specified in the surrender to be paid the Band. The ground rent and the renewal fees are paid annually, together with the Crown dues at the rate of \$2.00 per thousand feet B.M., or \$50.00 per thousand cubic feet, if squared timber is made. The licenses are limited to the term of ten years.

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