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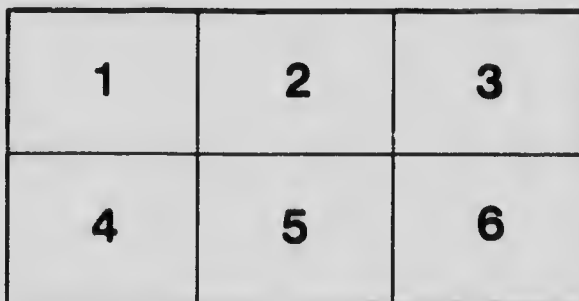
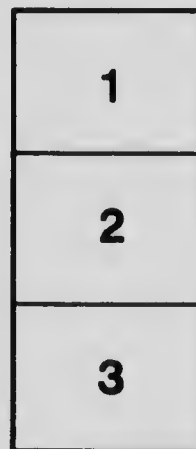
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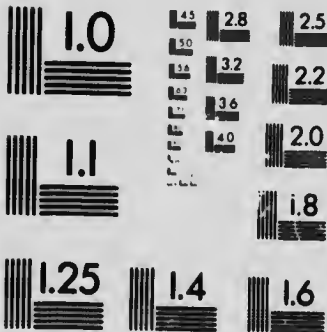
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Canada's Interest in Forestry

ADDRESS



By

B. E. Fernow, LL.D.

Dean, Faculty of Forestry, University of Toronto.

Before The Canadian Club of Montreal

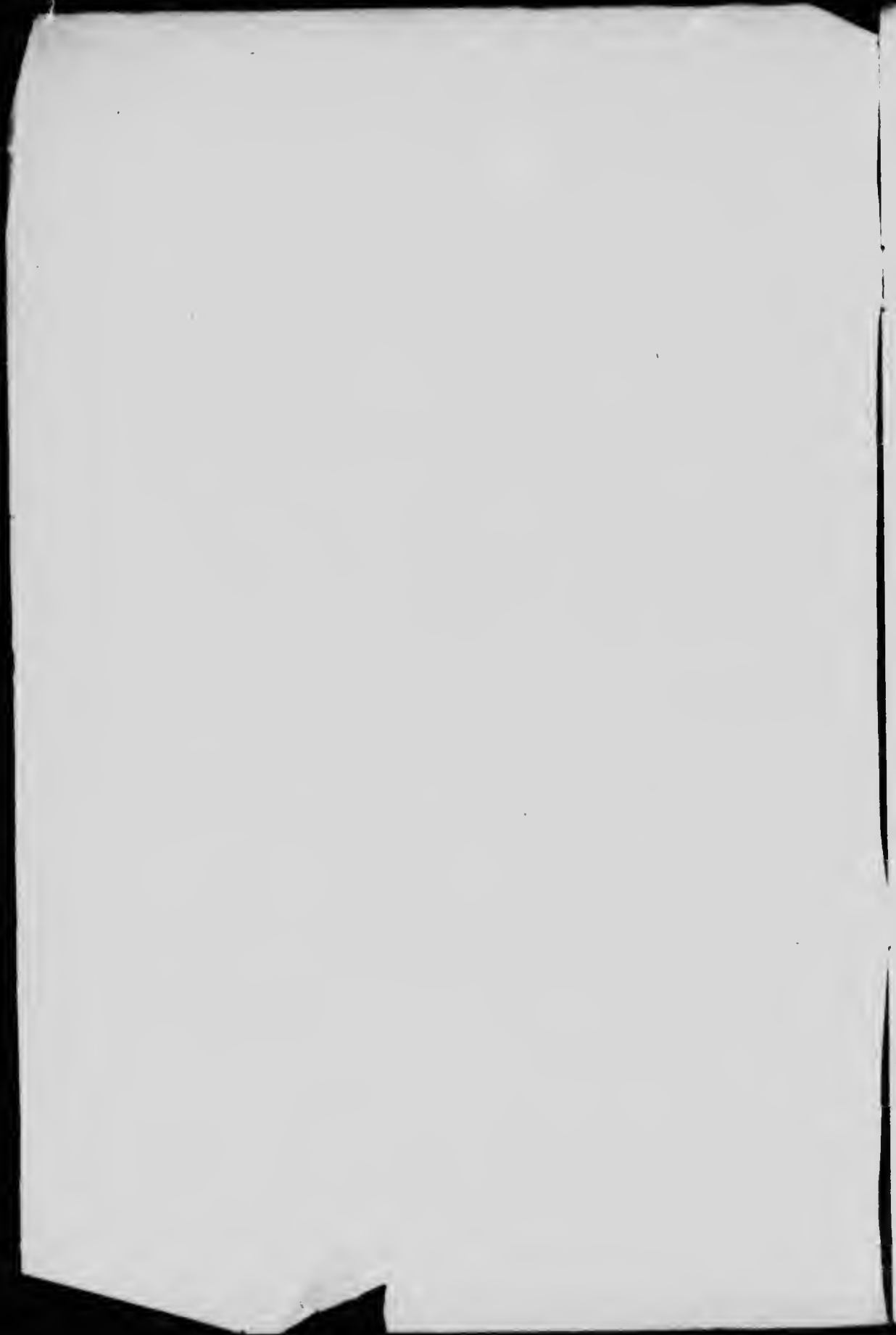
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CANADA'S INTEREST IN FORESTRY

Dr. FERNOW.—*Gentlemen*,—I consider it a great honour to be called upon to address you because I feel that by such a call I am admitted — a new comer — to the patriotic endeavour which animates the young generation of Canadians who desire to place their country on a basis, economical as well as political, such as the vast natural resources and possibilities of your great country warrant.

I read in your Constitution, "It is the purpose of the Club to foster patriotism by encouraging the study of the institutions, history, arts, literature and resources of Canada, and by endeavouring to unite Canadians in such work for the welfare and progress of the Dominion as may be desirable and expedient."

I am glad to see that not only the development of patriotic sentiment and public spirit in the abstract, but concrete activity, *work* for the welfare and progress of the Dominion, is called for. I hope that this activity exhibits itself not only in listening to talks and in forming your own opinions, but in impressing these opinions on your fellow citizens and governments, and in real active work on behalf of some of the many reforms of national character which call for a sturdy disinterested patriotism.

This is an age of reforms everywhere. At every hand political, economical and social questions and problems clamour for consideration and solution, and, if we are not to be swamped in our endeavour to be good all around, it becomes necessary to classify the many problems, and select for our first endeavour those which cannot wait for their adjustment without entailing serious moral or material detriment to the continued welfare and healthy progress of our civilization. We must recognize that there are some reforms which, while desirable, may be postponed without serious impairment of our welfare, while there are other troubles which if left without consideration and adjustment at the proper time cause irremediable damage, become incapable of adjustment, and with sadness we may recognize too late that we have lost the chance!

Whether to extend the suffrage to women, whether to abolish or reform the Senate, whether to have a high tariff or no tariff, an income tax or a headtax, direct or indirect taxation, bimetallism or a single standard, national banks or private

banks, are matters which may, if not properly adjusted, cause temporary inconvenience, but no permanent harm can come to the community by delaying their adjustment.

But whether fertile lands are turned into deserts, forests into waste places, brooks into torrents, and rivers changed from means of power and intercourse into means of destruction and desolation — these are questions which concern the material existence itself of society. There are ill advised procedures which, without causing immediate trouble or injuring present interests, insidiously undermine the very foundations of your national structure, and which, if not checked in time, cause irreparable loss — and these we must attack first.

In the last analysis all prosperity, power and happiness of a nation is based on two factors: man and soil. The permanent prosperity of your nation depends on the moral character of its people and on the wisdom with which your natural resources, the soil in particular, are used.

In spite of the fact that you have still a vast unsettled empire, to my mind the most pressing problems of Canada which urgently require adjustment with a view to a satisfactory future, are proper immigration, colonization and land policies. These three problems are most closely related. They are, indeed, interdependent and the one cannot be solved without touching the others.

As to the first two I can only briefly warn you against repeating the mistakes of our neighbours in considering quantity rather than quality, rapidity in amassing wealth and expansion of trade instead of character and solidity, the ultimate national aims. If you have any conception that Canada is capable of enduring as a nation for a thousand years, do not be in a hurry to dispose of your resources wastefully. Do not think that permanent prosperity comes from opening up all your mines at once, marketing all your timber as rapidly as possible, disposing of all your farm lands lavishly.

Develop wisely rather than rapidly, and at every measure that is presented with a view to increase of speed, look sharply to make sure that the factor of safety is not neglected.

All the great diversity of activities, of industries, of sources of wealth, which characterize the modern civilization and give employment to the millions, have their origin more or less directly in that primary source of wealth, nay of life itself, the soil.

And next to it stands water. Soil and water are our richest treasures, the waste of which threatens the very foundations of a commonwealth. The fertility and the stability of the soil are in closest relation to water conditions and these again are most directly dependent on the condition of the soil cover.

And here it is that the broad problems of colonization and land policy touch the narrower problems which during these two days has brought together for its discussion a small group of devoted patriots, the problem of soil cover, of forest preservation, the forestry problem. It is in this problem more particularly that I am expected to interest you.

If you are the active citizens that your membership in this Club stamps you to be, you must, of course, have become familiar with the arguments which have been advanced for the last quarter-century, namely ever since in 1882, in this very city, the first American Forestry Congress met — the arguments for a reform in the manner of the treatment of your timber resources.

Every possible argument has been brought forward — I could not formulate any new one — and these arguments have been reiterated in the public prints over and over again, so that I should feel positively inane were I to repeat them before such an intelligent audience. All I propose to do is to accentuate those aspects of the question which come nearest to forming a part of the broader problem of a proper land policy.

A few weeks ago I addressed the Canadian Club of Toronto on this same subject and there I laid stress on the material value of our timber wealth. I pointed out that, relatively speaking, the timber area — the area of commercial timber of Canada is small, that the saw mill capacity of the United States would suffice to get rid of the entire estimated log timber supply of Canada in less than fifteen years.

But within these last few weeks, the other side of the forestry question, namely the relation of forest cover to soil and water conditions, has impressed itself on me as in the end the much more important, the more pressing, and of much more moment than the material considerations.

While the rapid and uneconomical destruction of our timber wealth must appear foolish and prejudicial to the material prosperity of the country, after all we can perhaps exist without wood, at least we could get along with very much less than we now use, substituting iron, stone, concrete; and perhaps there is still time to reproduce what we need before the virgin supplies are exhausted. Again, you must have heard a good deal of talk about the enormous inroads which the paper pulp industry is making upon your spruce woods, and that the United States manufacturers have fixed their eyes upon your vast supplies of that description to feed their mills. It should be patent to every sane man that now is the time to carefully consider the propriety of so managing this valuable resource that not only for the present but for all future it yield the greatest profit to the country that holds it.

There is no question that Canada, if she adopt now a wise forest policy, can

soon become the controller of the wood markets of the world, and of the paper trade in special.

But even so, while it would be poor political economy and foolish to let the destructive policy continue, and to allow, without adequate compensation, the decimation of this rich resource, and, while it would be a pity if in the cutting of the spruce, as is likely to be the case under present methods, a large amount of valuable material of the wealth of the nation were wasted, it would not be as great a disaster as some try to make us believe, for there is really no need for pulp-wood in the world. The world has existed, and quite comfortably, before paper was made from wood, and it certainly can again. A number of other vegetable fibres will answer; it is only a question of cost that has brought wood so prominently into use for paper. To be sure, a large amount of unnecessary and undesirable printing would perhaps be eradicated by the increase in the cost of paper to the advantage of the world.

Yet, while this mismanagement of a resource that would be kept producing forever must be a detriment to the material welfare of the country, it could be endured, and means for alleviating the evil can be devised, and moreover the restoration of mismanaged forests is by no means an impossible thing as Germany has proved, *provided the soil is left*.

But there is a danger, a damage, a disaster which lurks, hardly realized, in the reckless treatment of your woodlands, infinitely more serious, the loss of the soil. Denude your soil of its protective forest cover by axe and repeated fires, expose it to the wasting of the waters, and it will lose its stability and change its location — it actually runs away.

In general terms the influence of forest cover on stability of soil and equableness of waterflow is well known and understood, but it is perhaps not fully realized that the importance of this influence is variable with topography, character of rock and climate. While there are, for instance, in the United States large areas which suffer but little from the erosion of bared slopes, your country is particularly unfavourably situated from this point of view, for a large part, the larger part of your eastern provinces at least, is country composed of hard Laurentian and Huronian rock which makes soil only slowly and for the most part only thinly overlaid with soil.

Destroy the protective forest cover of this rocky country and soon the thin soil is washed off and the naked rock remains, a stone desert.

That this is not mere theory, but a result experienced over and over again in all parts of the world, even on this continent, and in your own country, can be attested by many here.

If you want to study the effects of denudation in your own country, visit the Sudbury or the Muskoka districts and you will see how a rock desert is started.

As yet, only here and there noticeable, soon the repetition of fires — and they repeat themselves easily on ground once burnt — will produce results such as are described by Prof. Roth from Wisconsin; a close neighbour in some respects not unsimilar to your conditions. A careful inspection from town to town made ten years ago brought out the information that of the eight million acres of cut over land one half is as nearly desert as it can become in the climate of Wisconsin. *A desert of four million acres made by man in less than fifty years.*

It will take hundreds of years before this and a similarly conditioned can be made useful again. Contemplate what a loss to the commonwealth, what a hindrance to civilization within the State, such foolish and unnecessary mismanagement of natural resources brings in its train!

But while the loss of the soil calls for active interference with the destructive tendencies of our present generation, this is not the end of the disaster.

As I stated at the outset, water conditions and soil conditions are so intimately interwoven that the deterioration of the latter means invariably the deterioration of the former. Again to quote from the report on Wisconsin:—"The flow of all rivers has changed during the last forty years; navigation has been abandoned on the Wisconsin, logging and rafting has become more difficult on all rivers, and the Fox River is failing to furnish the power which it formerly supplied in abundance."

First comes the washing of the soil from higher to lower levels, and that means ultimately into the riverbeds, filling them up with debris, then, as there is nothing to retard the run off or to soak in and retain for general drainage the surplus of rainfall, high and low water stages, floods and droughts, in the rivers become accentuated, and what was once a stream for the production of water power has become a dangerous enemy to civilized life.

You all have heard of the magnificent water powers which are to make Canada a great industrial nation. Let your Hydro-Electric Commissions look out that the conditions which are essential to the utilization of these powers are not destroyed before, or perhaps still worse, after their development has been undertaken.

Axe and fire, and especially the latter, are greater enemies of your prosperity than monopolies of capital or labour. These latter can be controlled, but the results of the former, especially of repeated fires, become ultimately irremediable. As the apostle St. John in his later life came to the conclusion that in the simple prescription, "Love one another," was included all Christianity, so I have come to the conclusion that in the injunction "Keep out of the fire," is expressed the principal

need of a forest policy, for forestry — conservative use of the forest — cannot be instituted where fire is master.

Even if we were to cut off all our timber and squander it ever so wastefully, our loss would be small and it would be capable of restoration. But where fire and water are allowed to do their destructive work, the foundation is torn away and the loss may become irreparable.

What then is needed in Canada everywhere above all other measures in dealing with the forest problems is: (1) reduction of the causes of forest fires; (2) increase of the forces to prevent the origin of forest fires and to extinguish them; (3) such division in the use of soils as will open to settlement only bona fide farm soils; (4) such administration of the remaining timber wealth as recognizes the interests of the future.

To my mind these four problems can only be solved by a radical change in present methods of disposing of lands in general, whether for the timber or for settlement, and in changing the attitude of governments so that they will consider Crown lands rather as the capital of the future than the spoils of the present.

The causes of forest fires are largely the existence of irresponsible people in the woods, in a minor degree the lack of responsibility on the part of the railroads for the damage they occasion, but mainly that it has not dawned on the people or the governments that there is value in the mere forest cover, and more value in the young growth than in the old timber. As soon as this is fully realized, as soon as the Governments will vigorously undertake to protect this property of the people, not only the log timber, but the young growth, which is now abandoned to its fate, the difficulties of reducing the fire fiend will vanish.

And when such efforts are made, it will also become just and right to impose upon lumbermen such conditions as regards the disposal of their debris as will reduce the danger from the slash they leave behind.

At the same time a vigorous educational campaign needs to be carried on to show the people that it is patriotism to keep out and to put out fires. And in this campaign each one of you individually and jointly can become powerful allies.

In carrying out such a policy the first step might best be the withdrawal of all unlicensed timber lands from the operation of the old license system, as Quebec has practically done last year, and placing them in forest reservations.

An examination of the condition of these reserves with a view of segregating the lands fit for farm use and settlement, and with a view of planning for the rational conservative disposal of the mature timber on these lands, as well as on those to be kept permanently in forest reserves, is naturally the second step.

The third step would be an equitable adjustment of rights and obligations between Government and present license holders, with a view of preserving the capital value of the limits and of remanding them in a reasonable time to the Government's ownership and administration.

This involves also an adjustment of the quarrel between the lumberman and the settlers. While undoubtedly lumbermen have repeatedly taken advantage of the opportunities for favouring themselves in handling their limits, they undoubtedly also have had grievances which came from loose methods in permitting settlement within their limits. It is notorious that, as in the United States, pseudo-settlers have again and again been permitted to locate within licensed lands with no other object than to get hold of the timber, abandoning the location after they have robbed it of the timber, or disposed of it to the licensee, and in other ways having disturbed peaceful development.

Even bona fide settlers ignorant enough and permitted to settle on poor lands are a menace to the interests of the community, and are frequently the cause of destructive forest fires. You may have noticed in the papers lately an account of such a settler in Pontiac County, Quebec, in clearing for a five bushel potato patch, destroying timber to the value of three million dollars, by allowing his fire to run — and the land is now a worthless desert. A careful revision of the conditions of settlement which permit such baneful usage is urgently called for.

That I may not appear as only criticizing and fault-finding, I shall add that beginnings in developing these ideas practically have been made by the Dominion Government in the West, and by the Province of Quebec. And only this week the Government of Ontario has committed itself to all the propositions which a forester could reasonably demand, namely, increase of the protective service, extension of the reservation policy, equitable arrangements with the present license holders, and disposal of timber henceforth under forestry rules.

All these steps proposed are in the right direction, and all that is needed is to fearlessly follow the trails and not to be afraid to spend money even for apparently dead work, which will bring results, at compound interest, in the end as it has done in other parts of the world.

It goes without saying that to carry out such proposals will require the organization of properly manned departments, and we hope at the University of Toronto that when the graduates of the new Faculty of Forestry are ready for responsible work, these policies will have been inaugurated, as indeed, beginnings in that direction have already been made.

And now I shall try in the remaining five minutes to make you complete foresters, and give you seven axiomatic forestry tenets, which nobody can deny, one for each day in the week.

1. *Forests grow to be used.*—Beware of the sentimentalists who would try to make you believe differently. Wood is a necessity of civilized life, and both lumbermen and foresters are in the same business of supplying wood materials. Only there is a difference in the manner of their use, namely, destructive and conservative use, the latter providing for perpetual supplies, for future needs.

2. *Not all forest growth is desirable and to be maintained.*—Wherever agricultural soil is covered by it, eventually the forest must be removed. But beware of classing as farm soils those which are too thin to stand the drain which farm crops make on it and those which are wasted easily when cleared. These must be kept under forest cover perpetually.

3. *In the virgin forest there is practically no growth.*—The virgin forest, as far as production is concerned, is at a standstill, it neither grows more nor less, for whatever grows in it is offset by decay — it is a dead capital, the maintenance of the investment eating up the interest. To make it a live capital which by its annual growth accumulates interest, in order to reproduce a new crop, the axe is needed to remove the overmature old stand and give light and room for a vigorous growth of the young.

But there is no one method which is the best, as for instance cutting to a certain diameter limit. This is merely a device to rob the forest less; it may or it may not lead to forest perpetuation. There are various methods known to the technically educated forester which accomplish the result, namely a vigorous young crop, to be chosen according to varying conditions.

4. *Forests are self-perpetuating.*—As long as the fire is kept out forests may be cut and will reproduce themselves even without the assistance of man, and so far as a mere soil cover is concerned, Nature will provide it. But from the economic point of view the reproduction may not be satisfactory, for Nature does not take into account time and the requirements of man; she produces weed trees as readily as valuable kinds, and cares not whether the best product in the shortest time is secured, and hence my fifth tenet:—

5. *The forester is needed to direct the work of Nature.*—The virgin woods are mostly composed of a mixture of economically valuable and of weed trees. Culling the valuable and leaving the weed trees in possession can have only one effect, namely, to reproduce the latter in larger number, and, therefore, to make a poorer forest than it was before, hence the lumberman who necessarily works for the present dollar without an eye to the future, and takes out only the valuable kinds, is bound to deteriorate the value of the future forest. The forester may decrease this deterioration by the manner in which he cuts the old crop, or by proper methods he can also secure a superior new crop.

6. *Forest crops are slow crops.*—Even under best management it takes in our

northern climate at least sixty years to produce a saw log from the seed, and to secure an acre of saw logs of medium size not less than eighty or one hundred years must be allowed. This time element is naturally discouraging to private enterprise which engages in business for immediate results. The average lumberman can, therefore, not be expected to go far in conservative methods, unless he contemplates a long future for his business, or is compensated by the community.

7. *Forestry is the business of the State or Municipality.*—The long time element makes it incumbent on the guardians of the future to undertake the business of forest cropping. Moreover, forestry, as far as it is concerned in the reproduction of a crop for a distant future, means financially "foregoing present revenue or making present expenditure or investments for the sake of future revenues." It is profitable only in the long run, and hence again, although there are ways in which the forester can be of financial value to the present day lumberman, only governments can finally engage in providing for the future.

