

INFLUENCE OF LUMBERING UPON FORESTRY

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The writer, I believe, is the oldest man in that group of still young Americans who call themselves "foresters." As I think of the history of the past fifteen years I am struck with two exactly opposite views of it. The progress in some ways is no less than marvelous. That before the year 1908, 160,000,000 acres of national forests would be established there would have been few, I think, fifteen years ago able confidently to foretell. Forestry education too has become widely established and recognized, while more important than that is the place forestry occupies in the public mind. The whole country is sown with the idea; all classes of people are receptive and hospitable; even the hardest-headed business man is inquiring what there is in it for him.

On the other hand, when I think of the record of these fifteen years in some other lines, foresters seem to me to have been surprisingly blind, and the record of their achievements extremely small. I refer now to the application of forestry ideas to the actual management of timber lands. There are, it is true, a few pet and exceptional tracts in the country where forestry ideas in a detailed way are carried out. At the other end of the scale, too, in the way of state laws for protection and of favorable consideration on the part of the people, a great deal, as already mentioned, has indeed been done. Between these two extremes, in the actual control of the policy of large bodies of forest land, seems to me to be a very important field where foresters up to date have had very little effect. This has not been because of lack of attempts to do it. If every forester who has started out in a business enterprise had stuck to it and succeeded in it, if all the plans made and money spent had resulted as was

hoped and intended, foresters and forestry principles would now be controlling a material percentage of the forest land of the country. As I understand it the results are not at all of that nature, and the fact is generally recognized.

It seems to me important at the present time that we look this matter squarely in the face, see what has been the trouble with our plans in the past and draw clear conclusions as to the future. This paper, as far as it goes, is meant to be a contribution to that discussion. That the experience and thinking of the writer have been mainly in this very line may be justification for entering upon it. Poor execution of the task may be partly explained by the fact that this paper in the main was very hastily prepared.

One reason why we have not succeeded better seems to me to be that few of us have really taken the point of view of the forest-owner. The owner of a piece of property is interested in it because of its value or income. Whatever will enable him to get more out of his property he wants. An expenditure that costs more than it brings in is to him a disadvantage. Stock maintained and future income assured he values, or most owners do, but present value and present income naturally figure larger in his calculations. *Now, it seems to me that foresters have laid too much stress on the future and taken too little account of income and expenditure at the present time.* That is a natural thing with their training, and the ideas they carry are the ones which business distinctly lacks, but disproportionate valuation of these things is a great hindrance to present and actual efficiency. To spend \$5 an acre in extra cost of operation in order to save reproduction which may only secure an added value of \$2 to the cut-over land is a proposition to which no business-like man is going to be attracted.

What I mean to say is that foresters up-to-date have been mainly interested in demonstrating forestry principles abstractly, not in using their knowledge for the benefit of for-

est-owners. As I see it they have gone to the forest-owner with a proposition to demonstrate certain things at his expense, not with a genuine offer to put knowledge and service at his command. That may be a good thing to do in certain circumstances. For all I know, it may have been the deliberate, considered purpose of the men who directed those operations. But in my judgment it is a principle which will not be effective for any considerable length of time.

Secondly, it seems to me that we have *often professed and assumed to do more than from our position we possibly could do*. Just as in some States it has been assumed that good forest management could be secured by the passage of a few general laws, so foresters in many cases seem to have taken it for granted that forest management consists in laying down a few general principles on paper. We do not seem to have realized that after determining what should be done comes the work of actually getting it done, and that this is much the more difficult and important matter. It is told how in the civil war an old lumberman actually built a bridge for an army to cross over before the engineer corps could get round to draw the plans for such a structure. Now foresters seem to me to have been largely working in a parallel way. While they have been making beautiful plans for the management of forest property, the plain men on the ground charged with actual responsibility have been actually managing the woods, mainly according to their inherited lights and training. I do not see how this matter could well be otherwise as long as foresters do not assume direct control. Good forest management is not more a matter of correct principles than it is of efficient handling of local circumstances. Still more is it a matter of actually getting things done,—in other words, of good business organization and management. And the man who stands outside and expects to handle things at long range is, in my opinion, choosing a very disadvantageous and ineffective position.

I may be wrong, but I have the very strong feeling that at least those hard-headed business men who are the owners and controllers of a large share of the country's forests never will pay any particular attention to a man who is not in their own pay and employ. The reasons are many and convincing. They know in the first place that men never will be sure of their ground, never will distinguish the merely plausible from that which will actually do the work, until they have tested their ideas by experience. They know further that local circumstances and the working organization are very important elements in the case. Again, they are firm believers in the idea that nothing so promotes caution and thoroughness in most men as to have their own interests directly involved. Lastly, they want a man to stay in given circumstances long enough to profit by his own mistakes.

The upshot of what I have said is that nine-tenths of good forest management turns on the men who are in actual charge on the ground. Plans for them to go by may make some improvement, but the character and training of the men themselves are the main thing. The actual woodsmen are to my mind also the foresters of a country, and if in the United States technically trained men ever expect really to control the destiny of the forests, they have got to be in positions of that kind, and their make-up and training must be such as to render them efficient therein. The situation in my opinion is hospitable for men of that type. What will actually happen depends on the men.

The third reason why the efforts of foresters for management more nearly in the line of forestry principles have resulted in so little is the fact that they have not as a rule understood lumbering operations on the mechanical and financial side. A thing may be desirable in itself and yet cost so much that a man is better off without it. Now foresters in my experience of them have been mainly ob-

livious to this matter of cost as represented in lumbering operations, and further than that seem to have paid no sufficient regard to the silvicultural effect of lumbering operations of different types. This is, in effect, to concentrate attention on the end to be gained without proper consideration of the expense or the means by which it is to be secured. This was perhaps unavoidable with their training, and it was placing emphasis where emphasis clearly needed to be laid, but in my opinion it is a matter which has hampered us heavily in the past in the way of securing actual results, and it must in the future be definitely discarded if anything like due results are to be obtained. This whole conception of a forester who is not also a lumberman as far as I know, is both temporary and local. The German forest officer is not such a man. In school he is carefully trained in lumbering and in all such engineering subjects as concern him, and when he leaves school he goes to managing his forest, on forestry principles to be sure, but also from the business point of view. He makes the best of the market; he has his working force under thorough system and control; when he plans an operation he has in view not the silvicultural effect alone but the cost as well. I have the strong feeling that forestry training in this country, to date, in this important particular has fallen below the European model which was supposed to be our pattern; and this in a country devoted more than others to present returns and tangible results seems to me a very great limitation.

I could present numerous examples from widely scattered fields to illustrate my meaning. I will, however, confine myself in this direction to citing one example and putting one question.

First, can anyone point to a case where a forest-owner has purposely and consistently practiced conservative cutting where logging by railroad was employed?

Second, last fall I had the privilege in the Service Build-

ing of looking over a considerable number of technical men's reports on timber sales. I was particularly struck for one thing with the considerations referred to as affecting the plan of marking. These with one exception were of a purely silvicultural nature. Only one man out of the lot, as far as his report showed, recognized the fact that the plan of marking might influence the cost of logging and so affect stumpage, or that taking the grown timber out might have an effect on the small growth then standing and, even if planned and carried out in certain ways, defeat his whole silvicultural scheme. I have no doubt the case was much better than showed on the face of it. I know many of the men in the West and have too much respect for their clear-headedness to believe that they will long or generally overlook essential things.

Early last winter, when asked to read a paper before the Society, I chose as my subject "The Influence of Lumbering upon Forestry." I realize fully that what has been written is not appropriate to that title and can only say that at the present writing it is impossible for me to develop that subject in an orderly or satisfactory way. The gist of what I would say, however, may perhaps be inferred from what has been written. It seems to me that in the present circumstances the lumbermen of the country have quite as much to teach foresters as the other way round. Further, while men may usefully serve in various capacities, according to my view no man can be an efficient practitioner of the profession of forestry who does not combine the qualifications of both sets of men. Some may say that lumbering in many circumstances is a simple affair, requiring little or no training. So, I would answer, are oftentimes the silvicultural principles that can in any case be applied.

For the remainder of this paper I will try to discuss a question that should be of interest to all foresters on general principles, though it may be far from the line of work of

some. That is the question how far and under what circumstances the principles of forestry recommend themselves for adoption on lands owned by individuals and business concerns. We have had a good deal of experience on this line in the last ten years with varying results, and it seems as if some reasonably clear inferences ought to result from its consideration. Very likely other men have already carefully considered the same thing.

A good deal turns here on our definition of forestry. If it includes, as it seems to me it certainly should, first-class economy in the utilization of timber resources and cheapest and most effective operation of the same, it is clear that the forest-owner wants it and can really afford to have nothing less. In fact, my idea of the way in which foresters will gain their footing in business and win positions of command therein is through service in just that field. Land surveying, map-making, inspection of cutting, laying out roads and railroads are things which foresters can soon learn to do better than anybody else, and they are all matters which affect profit and the solvency of business concerns. These things as actualities ought to be identified with the name of forestry, and the presence of a forester in a business should be a guarantee that in these important matters it is thoroughly sound. This much men properly trained can quickly furnish, and when it is in hand their standing will be secure and their judgment trusted. They will not have to recommend or beg for whatever is practicable in the way of protection or reproduction.

There is, however, another and more difficult matter here—the relation to business and investment on the financial side. There are two interests here to be considered—that of the owner of woodland and that of protection, growth, and reproduction on the land. The questions arise: How far are the two interests identical? Where and why do they clash? How can they best be adapted to one another?

The answer to these questions is not simple and foregone. In my opinion the man who thinks forestry and business can never and nowhere be harmonized is just as much in error as the optimist who thinks they always can. At first glance indeed the problem looks difficult.

We have been well schooled in the past on the length of time it takes to grow timber—anywhere from fifty to one hundred and fifty years. On the other hand it has been often pointed out that the American business man has but a short range of view, looking generally to the amassing of a fortune during the course of a business life. This is largely true and at first glance the two interests seem irreconcilable, but when we look closely hopeful signs and ameliorating circumstances are found that greatly modify the case.

Within the home field of the writer the best illustration of what is meant is found in the paper mill. Paper-making is one of the great, profitable, and growing industries of the northeastern section of the country, and one that is dependent on the forest for its raw material.

A great feature in the business is the comparative costliness of the plant. A mill plant which consumes seven millions of spruce a year, and which, carrying the wood through the stages of mechanical pulp and sulphite fiber, turns out fifty tons of paper a day, costs not far from \$1,000,000; and that investment is mainly in a fixed form, one that can not be abandoned without loss if timber supplies run out. An assured supply of wood is essential to the safety of the investment, and that as a final dependence when native supplies are gone can be secured only through growth. Of course we know that resources are great; we know, too, of the reliance placed on the great stocks north of our borders in Canada; but good forestry on our own lands already has a pointed interest in this connection, and sooner or later it will be the main reliance. Everything in this field is working toward forestry. The great business

forces are driving full in our direction. The paper mill with its own forest backing, and this handled in the most careful fashion for the general safety and profit of the business, looks like the form under which a large section of the eastern forests will be permanently held.

Another illustration is afforded by a great timberland estate, consisting of many hundred thousand acres, scattered across much of the width of northern Maine. This property was built up during the lifetime of one very able and active man, but in recent years has fallen to others of different temperament. These men believe in growing timberland and are glad to retain their investment in that form as far as may be done. Consequently they are alert in the matter of protection and are practicing conservative cutting in the best form they know.

These instances illustrate a fact that is doubtless true in other localities and in many relations. It is that in the field where business and the woods touch one another, financial conditions are frequently right for forestry, that indeed landowners in some cases are now reaching out for it and seeking the best guidance they can find. The men in actual control of that work would seem to be in their field the real foresters. Old woodsmen are doing it for the most part now because they are known and because at their hands owners feel safe from blunders, but technically trained men can get the work to do when it is clear that they can do it any better.

It should be clearly realized also that forestry is very often perfectly sound on the financial side and yet, for some reason entirely independent of that fact, its interests are disregarded. An excellent illustration is the following:

A business man of the writer's acquaintance had a piece of thrifty fir and spruce timber, well located in every way, which he was cutting to the lowest practicable limit. The good policy of cutting on the piece was not disputed, but it seemed to be a pity to sacrifice the smaller and more rapid-

growing stuff, and in consequence a little study of growth was made, with the idea of showing the owner where his interests lay. This study showed in the first place that the small fir, from eight to twelve inches in diameter, breast-high, which constituted a large share of the stand in question, was growing in merchantable contents at the rate of about ten per cent. a year; and secondly that sticks four inches in diameter at sixteen feet above the ground, which was the lowest merchantable limit,—sticks, that is to say, which cost all they were worth to get them to the mill,—were worth to grow, liberal discounts being made for risks taken upon them, no less than five cents, or one-third of an hour's time for common labor. This last was obtained by taking the stumpage value of a stick when it would scale one hundred feet, and discounting back at five per cent. compound interest for the number of years required by a tree four inches in diameter sixteen feet from the ground to reach that size. Two inferences were drawn from these results, and it would hardly seem possible to dispute them,—first, that the smaller merchantable timber on that ground was very handsome property to hold for income, and second, that the value of the smaller trees justified the exercise of great care in the logging. The proposition was safeguarded too. Everyone concerned knew that there was very little to be feared either from fire or wind.

Here, if ever, was a case where the interests of forestry seemed to go hand in hand with those of business. But that, as a matter of fact, was not the way in which the owner viewed it. Notes coming due were the big feature in his horizon, and no matter what it cost him in the way of profitable assets, he had to have ready money to meet them. So he not only cut his timber clean but he let out the work without restriction to the man who would do it cheapest. To stop ten per cent. income in order to extinguish five per cent. indebtedness, may or may not be good business

management, but that at any rate is the action into which some men's excess of enterprise frequently leads them.

The second-growth pine lands of New England illustrate all sides of the matter. A good deal has lately been learned about them in a scientific way, but long ago the vital fact was grasped by hundreds of men that these woods are vastly productive, that they are safe, and that they pay a big interest on investment. In fact, great areas of these woods are handled very close to true forestry principles to-day.

But take the case of the men who, as foresters look at it, are on the wrong side of this question; the men who are rushing the cut perhaps to an extent that is beyond the best interests of the country. What is their relation to the matter? If we understand this thoroughly, perhaps it may be possible with the light obtained to introduce a counteracting influence.

The motive of course is financial gain. The portable sawmill man has no interest in the land or its production. His money is made in manufacturing, and his profit is proportioned to the volume of his cut. He knows exactly what he can make out of a piece of timber, and the owner with his less exact knowledge, sometimes in financial necessity, is as putty in his hands. It is not that forestry is not sound here, financially speaking. On the contrary, the owner's interest runs in harmony with the best development of the woods; but there is a party here, a strong and well equipped party, whose interests are all on the side of rapid cutting, and divorced from those of the land. The portable sawmill man buying one lot of timber to turn into cash in order that he may buy another is the clearest type of those men who, as the stock phrase has it, are devastating the country. He is not to be blamed, of course. His business can not be interfered with. The effective remedy against him is that the lands should be in the hands of strong, conservative people, people who know their value and are resolved and

able to secure the best returns. That fact constitutes the opportunity of foresters. It is a financial as well as an educational one.

The principle underlying all these illustrations is a very important one and must be carefully limited and guarded. Considerable size in a forest property makes regulated management easier, and consolidation of holdings therefore might be thought to yield a sure prospect of better forest management. That, however, is not a safe inference. Many large firms, owners of great tracts of virgin timber, hold them only for early exploitation. They are that kind of men; their history is all of that nature; their organization is adapted to that end, and the value of cut-over or newly stocked land seems trivial alongside their mature timber. Forestry does not appeal to such men, and anything worthy of the name probably will come about only with the second growth and under state ownership, or after the dispersal of these holdings among owners of entirely different type. Consolidation, too, is sometimes of purely speculative nature, and holds out no promise of the careful employment of resources.

The farmer is sometimes a fairly good forester, and I could point to a number of bodies of land in New England, held by their owners with the backing of small manufacturing enterprises or mills sawing for local demand, that in the past have been handled with care and foresight. These are most profitable to the country in every way, and it is to be expected that as time passes their number will largely increase. Actual dispersal of property into small holdings, however, is by no means a sure indication of better forest management. At any rate the great tracts of permanent forest, which must be the source of the materials of commerce and exportation, never will be handled in that way.

Permanence of ownership is one thing that is generally recognized as telling very clearly in forest condition and

management. Almost every new purchaser cuts heavily to reduce capital investment, and that legitimate principle, carried beyond reasonable bounds in the case of those tracts which have been the football of traders and speculators, has wrought havoc with their resources and cut down their growing power.

The type of forest and the methods of operation determined by its topography often go far to settle the question of policy. The factors that tell here are too numerous to be dealt with, and I must be satisfied with a single illustration. Thus in Northern New England abundance of drivable water makes frequent and moderate operations profitable, and through that means a condition has been brought about in the natural course of affairs very favorable to growth and reproduction. On the other hand, when no such streams were available, the land when it was reached has been subject to a very thorough and heavy cut and reproduction put at all possible disadvantage.

The mere fact of residence in the locality where his investment lies seems often to determine the attitude of the owner toward his property. Men who expect always to live in a community naturally develop an interest in its permanent prosperity and the conservation of its resources, whereas the outsider with no such interest may have in view only the quick accumulation of profits to be taken out of the country for investment or expenditure elsewhere. Regions could be named where this fact seems to control the whole organization and method of business, where too the former type of management, side by side with the other, is proving itself actually more profitable in every point of view.

In Europe the family instinct has allied itself with forestry and found in forest investments an excellent means of perpetuating family dominance and wealth. So far in this country no movement in that direction is perceptible. More promising perhaps in our conditions is the corporate

form of ownership which extends the outlook of the owner and which, affording at the center of management a field for active and enterprising men, allows a share at least of the financial load to be turned over to the general investor with his willingness to accept a small, if regular and secure, income. I have great hopes of the development of this idea in the near future. At any rate, the way will be open for many a profitable and conservative enterprise when foresters have secured the confidence of the investing public.

Looking more broadly, however, at business as based on the forest, we may observe a general and perfectly natural movement that tends progressively to harmonize the owner's interests with those of foresighted management. It is a change in the type of owners and operators, involving a willingness to make large investments and accept smaller pro-rata returns. In former times a trade in timber lands was not thought a good one unless the purchaser could pay for the land by the first year's operation. In buying property to-day the purchaser looks forward frequently to costly development and deferred returns. Forest properties have multiplied in value not alone because of increased stumpage values, but because of the abundance of capital on which men were glad to accept smaller returns. Timberland properties have been looked on latterly not altogether as a stand for doing business but more and more as a form of invested capital, with the feeling and the desire for permanence which that fact gives. That movement of the past is growing in dimensions and force. It is one which calls more and more for management directed toward yield in the long run, which is the root of the forestry idea. It is a movement which must in the nature of the case go on until the returns from forest investments reach the level of those from every other line of investment that is equally stable and secure.

I have been endeavoring in these last pages to point out

the financial and other circumstances which make it possible or desirable for the owner of forest property to adopt those principles of management which we look on as embodying good forestry. I dare say that the impression left is far from clear, and I will therefore endeavor in closing to restate briefly a few main points.

First, old-time lumbermen and lumber firms are in large measure hopeless. They are so accustomed to enormous returns and to doing business in a large and also a loose way that the business of forestry looks to them pitifully small.

Second, staple lines of manufacture, using wood where the manufacturing plant is costly, have a heavy interest in permanent forest supplies. On that account they have in some cases invested heavily in forest property and used it in careful fashion. That movement seems likely to increase.

Third, the selection method of management is commonly the first one to be employed in regulated fashion. It would seem also to be the best one in critical circumstances because there is always a stock on the ground to secure reproduction and to furnish a motive for protection. Cheap natural means of transportation, such as drivable streams, are favorable to this as they render a light and frequent cut feasible and profitable.

Fourth, any circumstance such as residence, family considerations or other property interest nearby, which renders an owner's interest in his forest property permanent, disposes him to foresighted management. On the other hand, with dickering, with speculation, with rapid turning of assets forestry can have nothing in common.

Fifth, as the country grows richer and capital looks for a less and less interest return, a condition is being gradually brought about which is more and more favorable to the practice of regulated forestry. Foresters should understand this clearly and endeavor to organize forest ownership in attractive forms.