

BLACK ROCK FOREST PAPERS

HENRY H. TRYON, DIRECTOR

ECONOMIC RELATIONS OF THE BLACK ROCK FOREST

By

CALVIN W. STILLMAN



CORNWALL-ON-THE-HUDSON, NEW YORK

FOREWORD

THIS interesting discussion presents a somewhat novel aspect of this Forest in particular, and of similarly located, privately-owned woodlands in general. Certain of the points made herein are somewhat at variance with currently accepted lines of thought, and, while the undersigned members of the Forest staff do not, as yet, concur wholly on all of these, we do feel that these pages carry much stimulus for active cerebration. Hearty, honest, sincere discussion usually makes for progress; and it is in the hope that such helpful debate will be provoked that this paper has been prepared.

HENRY H. TRYON, *Director*

RAYMOND F. FINN, *Ass't. Director*

ECONOMIC RELATIONS OF THE BLACK ROCK FOREST

By CALVIN W. STILLMAN

WHAT should be the canons of policy-making for Black Rock Forest? What are the questions which should be asked, before answers are sought?

It is to open discussion of these points that the following monograph is presented. In the course of the discussion I will have certain things to say about forestry as a field of knowledge, and forestry as a profession. This is necessary to the discussion of the problem, and I beg of my readers to understand that I intend in no way to cast aspersions upon what I consider to be a fine and hardworking group of men. To the appendix has been relegated certain material which may assist in opening up research lines suggested in the body of this paper. Discussion of the few points will be treated most lightly in the text which follows. This is emphatically a preliminary, and I hope a provocative, discussion of the subject. I shall omit the formality of definition and description of Black Rock Forest, which has been covered by Tryon.¹

In descending from the sublime to the particular the choice of ladders is so profuse that every explorer is bound to land in someone's ridiculous. This is the occupational hazard of the philosopher, however, and I won't let it detain me. But before I start down, I want to discourse a moment on the broader aspects of our problem.

First of all, Black Rock Forest is space on the face of the earth; it is defined by metes and bounds; it has legal existence; from the roots of the common law descend certain rights and duties associated with the ownership of real property. But quite irrespective of the juridical tradition, Black Rock Forest lies in the midst of one of the two greatest industrial areas of the world. This we tend to forget when we walk in the woods.

The nature of the location of Black Rock Forest suggests a potential social pressure not now evident, quite at variance with the tradition of ownership in fee simple absolute. This pressure may bring it to pass that Black Rock Forest's greatest usefulness will be as a site—a site for what, is immaterial—the practical here is less important than the principle. By way of extremes may I suggest the possibilities of, (a) educational or recreational use for the growing millions of the Northeastern industrial area, spreading as they are over the improving network of roads, and (b) a use related to the national security, having to do with the proximity of West Point and the facility with which shelters could be built in advance of another war, without disturbing farms and homes.

With the eradication of space as a factor in communications and vacations, the recreational possibilities of land become limited in another meaning of that contemporary phrase, "no place to hide". As air travel and automobiles make mockery of "new fields to conquer", we must look down at our toes for the enjoyment of the

outdoors; we must search for old fields to wander. Enjoyment of space as a macrocosm must be replaced by its enjoyment as a microcosm. It is increasingly difficult to use space or distance as a means to "get away from it all". These factors, I submit, will increase the demands upon open lands within the Northeastern industrial orbit.

I have introduced this discussion merely to point out that there is a large field for research in the relations of forests and their administrators to the world about them. We all know that there are many uses for forest land other than the growing of trees; I won't list them here. I shall submit merely that lines of profitable research might be directed into the legal relations of landowner and state, and the forest's relations with groups of persons who may have interests in the land other than the primary ones of the managing forester. Unsalable uses of forest land may pay dividends, for instance, in political support from friendly groups. This subject will not be pursued further, since the research interests of Black Rock Forest for the last twenty years have been defined as the determination of the best and quickest ways of growing commercial hardwoods. Therefore from here the discussion will be limited to problems of land-use related to resources which are (a) renewable and (b) removable. The further limitation to commercial hardwoods presents no problem. All other resources and problems are impounded in the area which is mercifully reserved for another study.

The word "best" implies the presence of a strong dash of value-judgment. This certainly characterizes the profession of forestry; every forester holds strong opinions concerning what is "good" forestry, and what "should" be done in a given situation, sometimes perhaps finding himself at odds with democratic expressions of opinion. But a strong sense of mission and organizational morale make the profession one of the most interesting for the student of such phenomena, and the profession's chief locus operandi, the United States Forest Service, is consequently a model of integrity and effectiveness. It is beyond the realm of forestry, but it would be an excellent problem for a political scientist to explore the clash between the uncompromising idealism of the Forest Service and perfectly legitimate contrary opinions from the body politic or from other branches of the government. The troubles of the Service with the 80th Congress, so well documented by Bernard DeVoto² in recent issues of *Harper's*, can be attributed in part at least to the built-in rigidity of the Forest Service's ideology.

Use of the word "quickest" opens up a very large and very serious area of thought. Unfortunately, today's mature hardwoods germinated while Booth was plotting the assassination of Lincoln. Thus to be "commercial", a forestry project has to be allowed a very long period

in which to pay off. No matter how much cordwood and minor salable wood products can be culled from a growing stand, the turn-over of the really valuable material is very slow indeed. Let us see what is involved here.

Within the long turn-over lurks the very serious matter of uncertainty. I use this term advisedly, to include everything that can happen to keep a forester's plans from coming true ten, fifty, eighty years in the future. A few of the elements are insurable—which are properly called risks. These uncertainties can be bought away by buying insurance, if it is available, with the new uncertainty perhaps of collecting from the insurance company.

Let us lump fire, disease, and storm damage among the insurable risks, and see what there is that cannot be insured against. First is new social relations; new laws and regulations applying to the private use of forest land. Second is changing cost-price relationships. It is important to keep these two in mind; organized farmers have learned how to manipulate the first to modify the second. This suggests the greatest single area for research toward a national program for private forestry; the use of the now-familiar forward pricing and commodity loans which have been so highly successful in the corn and cotton sectors of the economy. I refer all forest economists to D. Gale Johnson's book, "Forward Prices for Agriculture".³

With the long turn-over and the many areas of uncertainty arises the bald problem of the return on an investment in forestry. There is nothing intrinsically unprofitable about forest enterprises; other industries may prosper with more serious problems. But it is the bitter truth that when one comes to a real problem in forest management, with actual prices and costs, the conclusion becomes unavoidable that forestry is a safe investment only in the short run. In any longer period too many things can get out of hand; too few factors can be controlled; too few elements are even relatively certain. Here is a very large area for research in forest economics. Fortunately a little material is appearing in the journals. It is interesting that Luther's controversial article⁴ reported a yield of 1.68% on invested capital for a ten-year period, albeit a period of depression. Government bonds would have paid nearly twice as much.

The considerations mentioned so far lead to the single proposition which will seem most heretical. This is, that I think the concept of sustained-yield management is misleading, and as taught, erroneous. The notion of sustained-yield management is wrapped in an aura of nearly religious devotion among foresters; it ranks high among their concepts of the good, the true, and the beautiful. It is understandable, therefore, if the concept has not been scrutinized with sufficient skepticism. The concept was imported from Europe by the great foresters of the last century, notably Fernow and Pinchot. But it is interesting that Fernow always maintained that under American conditions European forestry was im-

practical. Perhaps it was that the virility of Pinchot's idealism permitted no such doubts; at least we know what Pinchot thought of Fernow.⁵ These early pioneers in American forestry saw in Europe beautiful stands of long-managed forest trees. What they failed to appreciate, with the apparent exception of Fernow, was the stable character of the societies in which these forestry operations had taken place.

Time passes slowly in Europe; property-rights and social relations have had a stability that has outlasted wars and social upheavals. Towns have been in the same places for centuries; few new roads are built; until recently prices and employment conditions have changed hardly at all compared with the American experience. Forests in such societies could well be under management for many years; there was security, and the terms of trade favored the production of forest products; labor was cheap and wood costly.

There was hope that the United States would settle down into a peaceful world of fixed status at the turn of the century, and again there was hope during Harding's "normalcy". Now we know that these hopes were illusory, and if there is any one thing of which we can be sure in our own future, it is that the forces of change in our time are just getting up steam. It is hard to conceive of a poorer society in which to establish forest management which depends upon stability and predictability for long periods into the future.

Sustained-yield management, defined as long-run plans for production of logs or major forest products of any kind, simply doesn't make sense in our time. We can be sure of almost nothing. We don't even know that "there will always be a demand for nice clear logs", for although someone is sure to want them, we don't know that they will be in a position to pay what we ask for them. In short, we don't know what cost and price relationships will be in the future; we don't know what the demand for forest products will be at any level of assumed prices. We don't know what will happen to taxes, labor costs, and costs of forest protection. We do know that this country's industry is adept at shifting to new materials when they appear slightly more economical than older ones.

Altogether too much has been written in the national and international forestry press of an "unsatisfied demand" for lumber. This is prominent as well in material published by the Food and Agriculture Organization of the United Nations.^{6,7} Much is made of the international "demand" for forest products, but little is said of the foreign exchange crisis in country after country desperately needing foreign materials. If the list of commodities upon which priorities are to be established for import purposes includes rehabilitation of machine tool industries, correction of vitamin deficiencies, even bulk wheat to avoid the nastier kinds of starvation, the priority number for Douglas fir will not be very high. It amounts to a minor delusion of the profession, this discussion of "demand" without mention of price.

"Demand" has no meaning apart from price. Past

uses for wood do not extend forward through periods of stringency, as do rock formations through an earthquake. It is a reasonable assumption that when the mists rise and inflation ceases its distortions of the present, it will develop that the recent years of wood scarcity have destroyed even *old* markets for wood at *old* price-ratios. This will have been true because industries forced to change to a wood-substitute will find it more economical to continue working in the new material; producing, in effect, a new product. Notice the shift from wood to metal in home furnishings.

The literature in forest economics has no reference that I have seen to the fact that elasticity of substitution is high among basic commodities, and income-elasticity correspondingly low. What happens to demand for forest products as a nation grows in wealth—do the forest industries hold their position, relative to other industries, or do they tend to slip back into chronic depression? As national income increases, does demand for forest products grow less rapidly—as with cereals and potatoes—or more rapidly—as with livestock products? Particularly in the long run—and in no other terms can we discuss forestry as it is taught—the substitution of new and cheaper materials for old and accepted ones is a special phenomenon of our industrial society. There is a wide area for research in forest economics simply in estimating the income-elasticity and the elasticity of demand in the long run for forest products. How fast are the ductile metals and the plastics replacing wood? How rapidly does a price-increase retire buyers from the market? Let me put it this way—assume that the price of hardwood flooring doubles, and that consumption falls off at once by fifteen percent (we can assume an inelastic demand in the short run, in the present). What will have happened to demand for hardwood flooring after ten years, all other factors remaining constant? Will the consumption of hardwood flooring remain at the level it struck just after the price-hike, or will an increasingly elastic demand for the commodity, and softening sales, indicate an irrevocable shift to newer types of flooring and a permanently shrunken market for hardwoods? My choice of hardwood flooring as an example was not purely by chance; I have noticed a news item to the effect that dealers in the commodity are trying to get export limits raised because, they claim, they can't sell enough in this country.

There is a vast field for research in that sector of forestry and its social relations which properly fall within the narrower definitions of forest economics. Here I refer to the details of sharing with the taxing authority the benefits and burdens of fire protection, wildlife resources, public assistance in management and marketing. I think that we can expect further extension of public control over private forestry. The weight of professional opinion trends in this direction, although the rebel group within the Society recently captured the presidency in the name of private forestry. This, I submit, is a passing phase; with the next trial of free enterprise, the private-forestry group will submerge again in

favor of those foresters who believe that only public ownership can provide the conditions they feel necessary for "good" forestry.

I feel that there are great unexplored possibilities for private forestry under the wing of government assistance. There is little worthwhile discussion of this possibility in the publications I have been able to find. Mason's⁸ article deserves an accolade for hitting upon at least the single most critical problem; Cline's comments are in themselves indicative of a stream of thought.

In place of the traditional concept of sustained-yield management, with all its apparatus of implicit assumptions and, I might add, inflexibility of product, I should like to suggest a new concept—what we might call "sustained value management". I am shifting from a product-emphasis to a relation-emphasis; from "yield" to "value". Let me formulate my concept thus:

The objective of rational business management of a forest property should be to attain the total stream of future products which, discounted to the present, will give the highest present value. By discounting, I mean two things. First, I mean the normal valuation in the present of a future return, discounted to the present by ordinary capital accounting, and second, each such future return discounted further by an index of uncertainty.

For example, a forest plot might be expected to yield a cash crop each year for the next eighty years. The present value of the plot would be calculated as the total of the present values of each future year's yield (less costs, of course). A sustained-value plan in the present, then, would be the management plan providing the largest total of present values of future returns, given assumptions of future prices, the interest rate, and an index for uncertainty in each future year. Let us take a single year for further clarification:

The yield of the plot in 1959, ten years hence, may be assumed to sell for \$1,000 in that year. Discounting to the present at the E-bond rate would reduce the present value of 1959's crop to \$750. Further reduce this by an index of uncertainty—let us take 30%—and the present value of the decade-distant return emerges as \$525. Perform this operation for each year—with the uncertainty factor rising sharply in the later years—and total. So handling the uncertainty discount will center attention, from the profit-making point of view, on the closer years. This is entirely as it should be. It does not require that the forest planner make no plans for later years; it requires only that he take cognizance of the real costs of uncertainty. This procedure suggests one step further; uncertainty discounts can be reduced for future years if plans include—at a cost of course—provisions for flexibility. Many a factory manager has had to rip out practically new machinery to meet a competitor's improved process. The wise man builds with an eye to such needs; he makes his floors heavier than necessary, his doors wider—and charges it up to reducing the uncertainties of the future.

Estimating uncertainty-coefficients opens another area

for guess-work and rules of thumb, but this is for the better—the alternative to recognizing the difficulties of the situation is to ignore them, which isn't safe.

In short, I suggest that forest managers should make firm plans for no more than ten years ahead, probably; general plans including present outlays of any size for no more than twenty-five years ahead. Even more important, I think that foresters would earn more respect from the harder-headed of those whom they would advise if they would confine their advice to terms such as these. Note, if you please, Rawlings comment⁹ that in his area the average tenure of land is only twenty years. Unexhausted improvements can theoretically be charged to the next occupant, but will the next occupant be willing to take over a complex management plan in mid-stream? What of the land that is rented? Half the farms in the nation are rented, and the custom has been for one third of the tenants to move every year. What does this imply for farm forestry?

I have completed the argument; now for the application. What should Black Rock Forest do in the face of these considerations?

I submit that Black Rock Forest should learn more of its neighborhood, in terms of interest in forestry. We know that farms and farming have been abandoned, but we don't know much about land use—the purposes for which persons hold land, the sizes of the blocks, the possibilities of interest in forestry. If there has been a survey of these matters, I haven't been able to learn of it. It is a proper responsibility of the School of Forestry to make such surveys—or of the Conservation Department—but their answers to my letters have not indicated much activity along these lines.

So, we know little of the future, and little of the real needs in the area. I submit that since we can expect the Forest to best leave the settlement of these problems to agencies better suited thereto, the Forest should adjust to these uncertainties as data of its problem, and devote its energies to the one factor most surely fixed—pure science.

I'm sure that there's lots to be learned about how trees grow; lots that could be learned which is of no immediate importance, yet which will be of fundamental importance in the unknown future. Perhaps some day the Forest will contribute to the welfare of the world by sponsoring study of the respiration of the star-nosed mole. We don't know what will be "practical" in the future, even the quite near future. So, I suggest concentration upon pure knowledge, let us say to the extent of seventy percent of the research budget. The remainder of the budget might then be used for applying what is known to the problems of the day. I'd even go so far as to suggest that it might be wise to allow others to come to the Forest with problems as they see them, rather than to think up a reform and to try to peddle it. This is pretty far from forest-idealism, but I think it is common sense. I would not preach forestry to people as an abstract virtue; I would let its immediate merits sell it. Above all, in this *ad hoc* forestry pro-

gram, I would be ready to change signals with every new increase in the wage-rate of unskilled labor, and with every new plastic that threatens a forest product.

I don't think Black Rock Forest should ever be expected to pay its own way. To make it do so would be to waste the really great research resources which are there. Paying its way would prove only that a forest of that size and in those conditions can pay its way in the present. The present is a notably short period, and there are few, if any, similar blocks of land with similar conditions. But to use the resources for pure research in forest biology, and to deduce principles which could be applied to *any* forest stand in the neighborhood with appropriate trimming to meet local conditions—this makes sense. Further, this makes so much sense that the necessary funds should be forthcoming from agencies and institutions and just plain people interested in having the problems solved.

Possibilities for *ad hoc* short-runish adaptations of forest knowledge are well enough known to all of us. There's farm forestry—in which, it must be remembered, the farm comes first.^{9, 10, 11, 12} In this connection, very important plans are under way at the Littauer Center in Cambridge. I urge your collaborating with this group in any excursions into farm forestry research or wasteland forestry research emanating from Black Rock Forest. Marketing of forest products is not a proper area for Black Rock Forest activity; this is taken care of under the Forest Practice Act.¹³ Listing and locating wood-using industries is similarly a State responsibility; the State College of Forestry has written me that a new list of wood-using industries is on its way. There are the unromantic possibilities of hardwood pulp, and of using whole hardwoods in making roofing paper. There's even the talk about livestock feed from sawdust. All this is in the province of the Northeastern Wood Utilization Council in New Haven.¹⁴

That's the picture as I see it, and I'd like to close with a final comment from Gifford Pinchot,

"... in the long run Forestry cannot succeed unless the people who live in and near the forest are for it and not against it".

REFERENCES

- ¹H. H. Tryon, "The Black Rock Forest", Black Rock Forest Bulletin I. Cornwall, New York 1930.
- ²Bernard DeVoto, "The anxious West" Harper's vol. 193 serial no. 1159 December 1946; "The West against itself" and "The easy chair" Harper's vol. 194 serial no. 1160 January 1947; "The easy chair" vol. 194 serial no. 1165 June 1947; "Sacred cows and public lands" vol. 195 serial no. 1178 July 1948.
- ³D. Gale Johnson, "Forward prices for agriculture" University of Chicago Press. Chicago 1947.
- ⁴Thomas F. Luther, "This business of private forestry" *Journal of Forestry* 45:7 July 1947.
- ⁵Gifford Pinchot, "Breaking new ground" Harcourt Brace, New York 1947. Final excerpt is from his page 17.
- ⁶Food and Agriculture Organization of the United Nations, "National progress in food and agriculture programs", November 1948.

7 "Yearbook of Forest product statistics", November 1948.

8 Earl G. Mason, "The social approach to sustained yield management" *Journal of Forestry* 46:12, December 1948, with comment by Albert C. Cline, and a rejoinder.

Asks for a federal program to assist the creation of family-size forests, with small mills to serve them; the national forests then to serve as a counter-cyclical buffer. Cline's comment is that nothing is efficient unless it is large.

9 Brown R. Rawlings, "Overcoming handicaps in farm forestry", *Monthly Review*, Federal Reserve Board of Atlanta 33:8 August 21, 1948.

A good discussion of the problem in the South, particularly of the cultural factors and the problem of turn-over. Emphasizes that the program will make sense only if the forestry is made part of the farm.

10 John F. Proston, "Lessons from the farm forestry projects" *Journal of Forestry* 44:1, January 1946.

Emphasis must be on the worth of the forestry project to the farm. Experience under the Norris-Doxey Act of May 18, 1937.

11 "Aids in farm forestry" *Journal of Forestry* 44:10, October 1946.

12 "Building a farm forestry clientele" *Journal of Forestry* 46:5, May 1948.

13 "The New York Forest practice act" *Forestry Bulletin* 21, State of New York, Conservation Department. Albany, 1947.

14 Northeastern Wood Utilization Council, Edgar L. Heermance, Secretary, 839 Chapel St., New Haven, Conn.

Publishers of bulletins and a series called "Wood Notes".

ADDITIONAL REFERENCES

Clifford J. Hynning, "State conservation of natural resources", National Resources Committee, Washington, D.C., Government Printing Office, 1939.

"On the whole, the courts have tended to favor the growth of State management of natural resources, whereas the conservation of human resources has frequently met with strong judicial opposition. This different legal fate may be explained by the availability of such theories of law as sovereign ownership and the prevention of waste, both of which have high prestige value in the legal system. Where the management of resources rests entirely on the police power (as in the case of labor legislation), the conflict between laissez-faire individualism and other theories appears in the open." (p. 1)

H. H. Chapman, "Recreational interests as affecting professional forestry activities" *Journal of Forestry* 46:4 April 1948.

Recreational users of forest lands don't ask much and can be powerful allies.

"Forest policies and laws", *Journal of Forestry* 46:8, August 1948.

A detailed outline of potential and actual problems in forest land-use. A major problem that is evident but not listed is the value-system of the profession itself.

Perry H. Merrill, "Farm forestry—a state forester's viewpoint," *Journal of Forestry* 46:12, December 1948.

A plea for placing management of private forest lands in the hands of the state forester, because "He knows the markets, the people, and the trees." (p. 881)

"Proceedings of the Forest Products Research Society" vol. 1. Forest Products Research Society, P. O. Box 2010, University Station, Madison 5, Wisconsin.

This organization publishes a magazine, "Wood".

"Thomas' register of American manufacturers" 38th ed. 1948 vol. 1, column 8954, "Lumber".

Names and address by states of factories using forest products.

"Present lumber situation in the United States and possible measures to increase supply" *Journal of Forestry* 44:5, May 1946 (Report of the United States Forest Service to the Subcommittee of the Senate Committee on Agriculture and Forestry to investigate the lumber situation. Submitted March 12, 1946).

Richard J. Bandekow, "Present and potential sources of tannin in the United States", *Journal of Forestry* 45:10, October 1947.

Hemlock, oak, and sumac. Chestnut oak bark seems to have possibilities.

Charles A. Gillett, "The forest industries public action program" *Journal of Forestry* 44:10, October 1946.

Wood-using industries have a stake in forest production.

C. D. Dosker, "A look ahead in forest utilization" *Journal of Forestry* 45:5 May 1947.

Problems of using second-growth lumber, and of making big ones of little ones.

"During the war our company successfully manufactured for marine use white oak ships timbers in both flat and curved sections using the synthetic adhesives commercially available in this country. The end product was far better than the timbers of large dimension cut from the finest of mature trees. It had the advantage that you knew the location of every defect that could be admitted into the finished piece. . . . The product of small and large trees alike can now be made to the size required." (p. 351)

"Not including the war years, we have for many years seen a gradual decline in the per capita consumption of lumber." (p. 352)

H. H. Sloss, "Turning cordwood into dimension stock" *Journal of Forestry* 44:4 April 1946.

Trees down to 6-inch d.b.h. become merchantable as dimension stock with a modified edger.

M. H. Collett, "Utilization of hardwoods in the pulp and paper industry" *Journal of Forestry* 45:6, June 1947.

Hardwoods have high pulp yield, but the bark is hard to get off, and the pulp is shorter-fibered than is coniferous pulp. Species must be separated before cooking.

Lowell F. Bailey, "Leaf oils from Tennessee Valley conifers" *Journal of Forestry* 46:12, December 1948.

Essential oils from conifers.

"Treated sawdust is hailed as farm feed . . ." Item in the *New York Times* September 14, 1948, referring to a report at a meeting of the American Chemical Society.

Donald W. Winters, "Feltwood in forest management" *Journal of Forestry* 45:6, June 1947.

Roofing felts made of hardwoods of any grade, unpeeled, knots, branches, and all.

Hardy L. Shirley, "The challenge in Northeast forests" *Journal of Forestry* 44:1 January 1946.

Lists the smaller forest products that can be taken from Northeastern woods, but it can hardly be said that he meets the "challenge".

Torkel Holsoe, "The cooperative association approach to the private forestry problem" *Journal of Forestry* 46:7, July 1948.

There is a vast literature on cooperative marketing in general which might best be sampled before trusting to this device.