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Proceedings
of the
Blaine House Conference
on Forestry

January 21-22, 1981

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1981 Blaine House Conference on Forestry

Joseph E. Brennan
Governor

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Commissioner of Conservation

Nancy Ross
Conference Chairperson and Moderator

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JOSEPH E. BRENNAN
GOVERNOR

STATE OF MAINE
DEPARTMENT OF CONSERVATION

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RICHARD E. BARRINGER
COMMISSIONER

February 11, 1981

Governor Joseph E. Brennan
Executive Department
State House Station #1
Augusta, ME 04333

Dear Governor Brennan:

It is my singular pleasure to report to you on the Blaine House Conference on Forestry of January 21-22, 1981.

Three hundred and fifty people attended the Conference and, from all reports, feel it was a great success. Many expressed praise for the Conference, enthusiasm for its proceedings, and the wish that it have an impact on both private and public forest policy in Maine. Another measure of its success was the high level of attention given the Conference by the mass media, including radio, television, and the press.

From the formal proceedings of the Conference, you will learn that the speakers and participants sounded several major themes:

1. **Government Regulation:** Many complained of oppressive State government regulation, especially in the environmental area. The feeling was expressed that staff are at times "overzealous" in carrying out environmental laws, and regulations are often burdensome and unnecessary. Regulators and at least one regulatee argued in turn that Maine has reasonable environmental regulations, reasonably enforced.
2. **Intensified Forest Management:** I am struck by the optimism and determination of Maine's foresters to pursue intensified management of the resource. Most speakers agreed that more intensive forest management is needed if we are to realize the potential of our forest in an era of growing demand for its many products. In particular, we shall need deliberate replacement of mature timber stands through individual stand prescription, rather than the traditional, widespread selection cutting of large diameter trees regardless of age. To carry out this kind of improved management, we badly need the USFS 1980-81 Forest Resurvey data and greater competence in analyzing, disseminating, and using this information.
3. **Service Foresters:** Several speakers called for maintenance or expansion of the service forester program. It was argued that the program not only sustains the productivity of small forestland holdings but also supports the preservation of land in forest use. This in turn gives us clean air, clean water, wildlife habitat, and recreational space, especially near urban areas where these resources are in shortest supply.
4. **Government-Industry-Interest Group Relations:** Many echoed one speaker who called for greater flexibility, tolerance, and patience on the part of us all in matters of Maine forestry and forest policy. Commitment to long-term forest sustainability and cooperation among affected interests were two often-used expressions. I believe the Conference recognized that State government should and must play a conciliatory role in mediating among the several interests concerned with Maine's forests. The Executive

Governor Joseph E. Brennan

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and Legislative branches of State government, if they are successful in this role, will forge the public interest from the interplay of these many concerns.

It was clear by the Conference's end that the participants very much want something to come of it. The Department of Conservation will work to see that the process of conciliation I speak of above continues and manifests itself in responsive forest policy and responsible State programs. In addition, we shall study the proceedings to identify specific tasks this Department and its several agencies might undertake to address the needs expressed at the Conference. I am confident that the private owners and managers of the forest resource will do their share, as well.

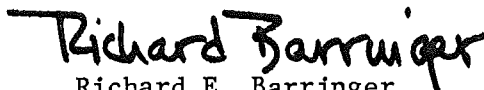
Because the Conference was such a great success, and because I feel there is a continuing need for this kind of gathering, I recommend that you institute the Conference as a permanent event, perhaps to be held biennially to coincide with the convening of Legislatures.

Finally, let me express my singular gratitude to the Forest Advisory Committee of the Department of Conservation, to the Steering Committee of the Conference, to the staff of this Department, and to the 350 participants for making the 1981 Blaine House Conference on Forestry so great a success. On behalf of all of them, I thank you for the opportunity afforded us and the entire Maine forestry community by this Conference.

There is little doubt that the Conference admirably achieved your objectives of bringing the attention of your Administration and the general public to bear on our most important resource-based industry; of facilitating communication among the many parties with an interest in Maine forestry; and of focusing our current concerns, perceptions, and problems toward constructive solutions.

The 1981 Blaine House Conference on Forestry was a happy beginning in many respects; let us continue!

Sincerely,


Richard E. Barringer
Commissioner

REB/ehp

cc: Participants, 1981 Blaine House Conference on Forestry

WELCOME

Kenneth Stratton, Director
Maine Forest Service

I am very pleased that you are able to be with us and to share with us an exchange of thoughts and experience with Maine's forest resource. When we sit back for a moment and consider, over the past ten or fifteen years--and that's not a very long time at all--the changes that have taken place in technology, management systems, the economy, and the degree of public involvement in all of our affairs, then we have to be deeply concerned about what we're all going to be faced with in the decade ahead. We certainly are going to be facing, I believe, very dramatic changes in all aspects of the forest resource. The serious consequences of inflation, the increased consumption of wood by industry, and the grave concerns expressed by the public present us with difficulties, with challenges, and at the same time, opportunities in our management of the forest resource.

To meet these challenges, the collective thinking of all of us will be needed. I really believe that nothing short of a cooperative effort between all interested parties will enable us to ensure the future of our Maine resource. Nothing short of a cooperative effort will enable any single one of us to succeed.

I hope that this conference will be viewed as a first step in this effort of cooperation between all interested parties. We have on our agenda a highly competent and varied group of speakers and panelists. They will present their views on industrial development, timber supply, forest management, and the impact of government on the forest industry. I hope that all of you will participate actively in this conference, with your own questions and comments, along with those of the speakers and panelists, to help make this a success for all of us.

Seminar I

Opportunities for Forest Industry Development in Maine

Key Speaker: "The Future for the Forest Industries"

John Wishart, Vice President, Timber and
Timberlands, Georgia-Pacific Corporation.

Panelists:

Nathaniel Bowditch,
Maine Development Foundation

William Bullock,
Merrill Trust Company

John Godfrey,
Louisiana Pacific Corporation

A. J. "Ben" Haug,
Forster Manufacturing Company, Inc.

Discussion

JOHN WISHART

John Wishart is Georgia Pacific's National Vice President for Timberlands. In this position he oversees forestry, timber supply and forest research.

Previously, Mr. Wishart was Division Forest Manager at Georgia-Pacific's Crossett, Arkansas Division. After receiving his masters degree at Yale School of Forestry, Mr. Wishart joined a predecessor company at Crossett.

He is president of the Southern Forest Institute, Chairman of the Private Forest Management Committee of the National Forest Products Association, and member of several state forestry associations.

THE FUTURE FOR THE FOREST INDUSTRIES

by John E. Wishart
Georgia-Pacific Corporation

I salute Governor Brennan for bringing this group together to discuss such a vital, important topic.

Certainly, the forest industries are important to the state of Maine. They employ more than 30,000 workers . . . or about 8 percent of Maine's total employment. Total direct payroll exceeds \$450 million.

Total value of production is more than \$2 billion, which provides wages and salaries for many suppliers and contractors . . . and also generates local, state, and federal taxes.

Just as the forest industries are important to Maine, Maine is important to Georgia-Pacific . . . because of the investment we have already made here . . . and because of the potential we see for the future in Maine.

Our operations here in Maine--and across the border in New Brunswick--reflect the pattern we've established in our businesses across the country. That pattern includes highly integrated and decentralized operations . . . and a strong focus on resource management.

These factors have helped us become the fastest-growing Fortune 500 corporation over the past quarter century. That period roughly corresponds to our program of integrated diversification from being tied only to the building products industry.

We began this in 1957, with a pulp mill at Toledo, Oregon. Today we are among the top ten U. S. paper producers.

We entered the chemical business in much the same way in 1959, by installing a resin operation at one of our West Coast plywood facilities. This allowed us to supply our own glues to bond the wood veneers into a panel.

Today, our chemical division makes resins . . . feedstocks . . . and feedstocks for feedstocks. We've done much the same thing in papermaking chemicals. And we now derive a great many chemicals from wood.

We use some of our chemical production in our own plants and sell the rest to outside customers.

There's more to our integration than what I've just described . . . but I think that gives you a pretty fair overview of how we operate. We look for maximum efficiency . . . and for the best use of our resources. This gives maximum benefit to Georgia-Pacific as well as to the communities where we operate.

We've basically followed that pattern in this region.

In the 18 years since we acquired the St. Croix Paper Company, we've invested a tremendous amount of time, effort and money to improve and integrate our operations.

We began by spending about \$100 million to replace the old sulfite pulp mill with a kraft mill. And in 1972, we added our Flying Yankee pulp drier that began producing hardwood and softwood kraft pulp for domestic and overseas markets.

After we finished improving our pulp operation, our Woodland Division then moved into building-materials production, when we added a chip-n-saw plant in 1975. It can turn out 50 million board feet of 2x4s each year, and also produces chips for pulp.

What doesn't go for lumber or pulp chips goes for energy. We're completely energy self-sufficient at this plant. The boiler burns bark, sawdust, and other waste wood to heat the mill and to dry the studs. And the excess steam powers a turbine that generates more than enough electricity to run the plant.

During this period, we were also spending more than \$20 million to control and reduce air and water pollution.

As part of this integrated expansion, we added a new plywood plant across the border at McAdam, New Brunswick, in our Canadian timberlands. The chips from this plant come to the United States to be made into pulp.

Just this year, we've taken one further step by adding a waferboard plant at Woodland. Waferboard uses flakes of wood bonded together with exterior-grade resins to make a 4x8-foot panel that is competitive with structural plywood.

This plant is using low-grade softwood that formerly was usable only for pulp. This plant will also be energy self-sufficient, by contributing its "wastes" to the boiler in the adjacent chip-n-saw plant and sharing the process steam and electricity.

What has our expansion done for the people of Maine?

In terms of jobs, we've nearly doubled our employment since 1963. And our annual payroll has increased sixfold--to \$31.5 million. Of course, taxes and purchases from other Maine businesses have also increased.

Before we purchased St. Croix in 1963, there was no market for low-grade hardwood. Since then, we've more than doubled our demands for wood--to 800,000 cords of hardwood and softwood each year. And we're now purchasing almost 50 percent of our wood supply from independent producers, which provides a market for small Maine businesses.

Well, that's the past. Now what about the future?

As I said earlier, we see a lot of potential in the state of Maine. But, we're also aware that the world is full of unfulfilled potential. We know that good results require persistent and productive effort.

The greatest challenge we face--both in the short- and long-term--is the need to increase our supplies of wood fiber to meet a steadily increasing demand for it.

As a company, Georgia-Pacific practices intensive forest management on all its lands . . . and we offer our expertise to others.

We own and manage more than 500,000 acres here in Maine and almost 400,000 across the border in New Brunswick. We also offer a free landowners' assistance program, where we help independent landowners develop and implement a management plan. We are currently working with more than 100 Maine small woodlot owners on about 23,000 acres.

We are also among the most active companies in genetic tree improvement. Our eight greenhouses in Maine and New Brunswick grow 2 million seedlings each year, which we plant in harvested areas and in disaster areas.

We choose our method of harvest according to species, site and conditions. We get 80 percent of our timber with selective harvest.

We get the other 20 percent by clearcutting where we have budworm infestation, low-quality timber, or undesirable species, and replant with healthy, higher-valued trees that are more disease and insect-resistant. We're replanting these lands with as many trees as we harvest from our entire Maine acreage each year.

Once harvested, the low-grade hardwoods are put through a whole-tree chipper while still in the forest. This increases the use we get from those trees by at least 30 percent. The high-grade hardwoods go for sawlogs and veneer. All of our trees go to their highest and best use. And this allows us to use species once considered useless.

We repeat this pattern wherever we operate worldwide. We innovate and make maximum use of the resource.

But as much as we can do by ourselves, it's not enough. U. S. Forest Service figures show a 4.4 billion cubic foot shortfall from U. S. forests in the year 2030. And that includes a 300 million cubic foot shortfall in the Northeast. That represents a great deal of lost revenue . . . many jobs that will never exist . . . and many more products that will never be enjoyed.

The problem is well known. The outcome depends on how well we work together to turn it into an opportunity.

We can divide Maine's challenges into two categories--innate and acquired.

Under innate, you have distance from markets and weather. Under acquired, you have pests like spruce budworm, saddled prominent and gypsy moth. You also have the jumble of regulations and the generally adversarial atmosphere that came to divide the various elements of our society during the 1960s and '70s.

There's not much you can do to change the innate characteristics of your environment.

Maine is distant from major markets, which makes for high transportation costs . . . and is a factor that reduces the competitive position of this state.

Your short growing season means it takes trees longer to put on the same amount of fiber than in warmer climates. In terms of manufacturing, the extra heating required during the winter months also puts this state at a competitive disadvantage to your southern neighbors.

On the acquired side, we can do a better job of controlling pests than we have been. But this will require changes in the other acquired characteristic--the adversarial relationships that seem to have become part of our system.

In terms of pest control, we've made great advances . . . with many more to come. But, some groups have gone overboard in their reaction to supposed risks of scientifically created and tested pesticides. It's not that these risks do not exist--there are risks in everything--but often the response to them ignores the very minimal nature of the risk . . . and totally ignores the benefits of their use.

But pesticides aren't the only issue here. The basic issue is the ability to plan for progress . . . with confidence you'll be able to carry out that plan.

Instead, we now seem to have a system stacked against doing something . . . and in favor of doing nothing. We've developed a maze of studies . . . hearings . . . petitions . . . initiatives . . . and appeals that allow--and even encourage--delay, postponement, and the continual possibility of a change of plan.

As a manager, you can't build, expand, or update a plant in such an uncertain environment.

In the case of Maine, we have been able to find enough certainty and cooperation to invest substantial amounts for expansion. But, this state is not entirely free from the problems of over-regulation.

We are particularly concerned about the erosion of our management rights as property owners . . . unwarranted influence granted to narrow-interest activist groups . . . and some agency staff people who are overzealous in carrying out what they perceive as their mandate.

We are concerned, for example, at the harvest restrictions your state is putting on "unorganized" private lands. This is the kind of situation that makes a company think twice about a possible expansion . . . or about coming into a state in the first place.

However, we still see these problems as a gray lining on a relatively silver cloud in this state.

You also have some very real opportunities to move forward.

Your tremendous forest resource gives you a great advantage. Although Maine is far from being the largest state, it is the most heavily forested state. And in a world where demands for wood fiber are increasing, that's quite an asset. Particularly since it's a renewable resource.

Also, this state has another advantage because its labor force has long experience in the forest industries.

Even your distance from market may become an advantage some day . . . if it succeeds in regionalizing the Northeast for Northeastern products. It's getting very expensive to ship Southern pine to the northern states . . . and the transportation cost for Douglas fir is already virtually prohibitive. Products like our Woodland waferboard could very well represent a substantial regional product in just a few years.

All regions have their innate advantages and disadvantages. They must compensate for their disadvantages by making the best use of their advantages in the great competition for industry and jobs now taking place throughout our nation.

So, in this regard, you are in competition with other regions, states, and communities for economic prosperity.

The key ingredient in this competition is the commitment to progress . . . and the willingness to work together to achieve it.

This does not mean an end to environmental protection . . . or any beneficial changes of the past two decades.

The spirit behind these reforms represents an important force in improving the quality of life in this country.

In the case of Georgia-Pacific--and I'm sure I speak for the rest of our industry--we support strong environmental safeguards. We're in business for the long run . . . and good soil and water are important to our future.

What we need is not less idealism, but more realism:

- We have to realize that everything has costs . . . and that we have to balance these costs against resulting benefits.
- We have to realize that we do not have enough of anything to do everything.
- We have to realize that this country no longer holds the favored position it enjoyed for more than a generation after World War II . . . that we now have formidable foreign trading competitors . . . and a dangerous reliance on foreign resources.
- Most important, we have to realize that we need to work together.

In this cooperative effort, industry must continue to come up with innovations in its products . . . in its processes . . . and in its management of resources.

For these efforts to succeed, we need an environment where there are fewer regulations, fairly and reasonably applied . . . and policies that promote progress and productivity.

I hope that this conference is a step in that direction.

Response by Nathaniel Bowditch

Nathaniel Bowditch is President of the Maine Development Foundation. Before heading the Foundation, he helped create and then headed Lewiston Tomorrow which coordinated planning and funding for a \$22 million downtown redevelopment program in Lewiston, Maine. He has a Master of Public Affairs and Urban Planning degree from Princeton University and an undergraduate degree from Harvard University.

I am particularly pleased to be here today for three reasons:

First, because it is an honor to be on a panel with such an exceptional and accomplished group of individuals involved in the management and financing of Maine forest products industries.

Second, because an industry as prominent and important as is the forest products industry in Maine deserves the kind of attention and focus, perhaps on a regular basis, that this conference will hopefully provide.

And third, because the Maine Development Foundation has, for the past few months, been pursuing a project to analyze the prospects for further development in Maine's paper converting and wood products industries and to support further business development in these high value-added sectors of the forest economy.

Since that project has almost reached a conclusion, today's panel on "Opportunities for Forest Industry Development in Maine" offers me the chance to share the preliminary results of that project with you, with the hope that it gives us some direction for the 1980's.

Before going any further, I do want to echo John Wishart's remarks about the importance of Maine's forest industries. Forest industries do represent the principal element of Maine's economy. And, together with our other great resource, the ocean, the Maine woods have a pervasive influence on every one of us who live here. There is, in fact, a fascination with the forest and the ocean in Maine. And that fascination seems to swing like a pendulum from one extreme to another, from an emphasis on regulation to an emphasis on resource development.

I believe that the pendulum is now swinging in the direction of resource development in Maine and because we believe this is where the action is and must be, we at the Maine Development Foundation are deeply involved in projects to

accelerate development within our fishing industry and our forest products industries.

Our work in secondary paper and wood products manufacturing was initiated at the request of Governor Brennan, the State Development Office, and the Department of Conservation. They approached us, and said they believed the major opportunities for Maine forest industry growth and expansion were in secondary, value-added manufacturing. They asked the foundation to undertake a project to separate myth from reality in new or expanded secondary forest products manufacturing and to identify ten opportunities which, by the public and private sector working aggressively together, might be brought to fruition.

Our work has taken us throughout Maine and the Northeast. We have traveled to over 50 companies in the wood and paper business where we have talked with over 100 of the most knowledgeable people in the business. Some of those we talked with are in this audience today. We have found a number of positive factors which make us bullish about the future of Maine forest products industries over the long haul. These include:

1. Resource availability trends favor the northeast and Maine.
2. Rapid increases in petroleum prices are making wood and paper more viable in applications where they compete with plastics.
3. Export demand for forest products is growing.
4. As "natural" products, wood products are becoming more desirable.
5. Increasing transportation costs, to echo a point John Wishart made, are encouraging regional production.
6. Management of Maine companies, large and small, continues to become ever more sophisticated.
7. As wood becomes more scarce, its uses will be upgraded.

To temper our enthusiasm, though, we also have observed the following negative factors:

1. Growth markets are generally not in the northeast: most new paper-converting plants are in the mid-south, southeast, and west.

2. Maine is a fine paper state, producing short, strong fibers from slow growing trees. We are not a packaging grade pulp state.
3. Paper converters are relatively lower-wage operations which typically do not want to locate near primary producers.
4. Paper pricing practices equalize delivered costs, which has encouraged business executives to locate converting plants close to their markets.
5. Paper-makers in Maine are diversifying laterally, and have not, to date, pursued forward integration as aggressively.
6. Maine wood products companies are typically small, production-oriented operations where management skills are stretched to the hilt.
7. Many wood products operations are, by nature, low-to-medium technology, relatively low margin, slow growth industries which make components, not finished products, and which have a difficult time attracting capital.

A closer analysis of these, and other, positive and negative factors have led us to the following general conclusions:

1. We must be practical in our expectations about the future. We must understand that by and large the forest products industries are basic industries, the bread and butter of the Maine economy, and therefore not likely to be characterized by widespread dramatic new growth opportunities.
2. On the other hand, in total, Maine's paper and wood industries are huge, and modest opportunity can translate into many exciting new and expanding business activities and significant economic gains for the state and its citizens.
3. Secondary processing of paper in Maine, for export to the rest of the nation and overseas, is, with a few notable exceptions, almost totally underdeveloped. The exceptions are Keyes Fibre, Tampax, U. S. Gypsum, a handful of the larger commercial printers, and a few corrugated box companies who get their raw material from the south.

For a host of reasons, most paper converters, if they are to expand into Maine, will do so for factors relatively unrelated to the proximity of the primary product, unless they have a special relationship with a primary producer that would be enhanced by a Maine location. To interest these companies in a Maine location will take nothing short of an aggressive, targeted industrial recruiting and business development effort, preferably in concert with the major primary producers. Our research suggests that such an effort should concentrate on the following paper converting industries:

- A. Business forms.
- B. Envelopes.
- C. Printing of periodicals.
- D. Offset commercial printing.
- E. Pressed and molded pulp.
- F. Greeting card publishers
- G. Disposable paper products.

Of these seven opportunity areas, business forms deserve special attention. This could be an especially fast growth industry sector for Maine.

- 4. The wood products industry is pervasive in Maine. These enterprises are relatively easy entry businesses, with low-to-medium skill level requirements. And the wood products companies in Maine tend to deal in components, not finished products, although this tendency is shifting gradually.

As will be pointed out by others today, these small wood products companies are the economic backbone of much of rural Maine and their modernization and growth are vital to this state's economic well-being.

But there are no easy solutions here. There will need to be a continued public private effort to work with these small companies and help them obtain the necessary investment capital, modernize their facilities, move toward a more proprietary product orientation, and increase their marketing sophistication.

So, too, are there specific areas for new business development in the secondary manufacturing of wood in Maine. The central opportunities would appear to be:

- A. Millwork (doors and windows).
- B. Prefabricated wood buildings.
- C. Furniture.
- D. Composition board (including waferboard, oriented strand board, and perhaps medium density fibre board).

5. We have so far uncovered during the course of this project, 25 business opportunity situations, some of which will certainly be on our final list of ten opportunities and for which we have great hopes. Others are situations which call for an ongoing business assistance effort.

The final points I want to make this morning relate to the Maine business environment and what it will take to get a substantial number of those business opportunity situations in to the business success column. Remember I observed that Maine must compete for paper and wood processing companies on the basis of its total business climate, not just the availability of trees. I believe we are seeing improvement in our competitive position here in Maine due to rising transportation and energy costs, due to other increased costs of doing business out-of-state, and because of the great attributes of our Maine labor force. Because of this improved competitive position, and with the pendulum continuing to swing (as I believe it must) in the direction of aggressive resource development, the stage is set for real progress. Government must, on its part, commit itself to the kind of ongoing regulatory reform that streamlines and simplifies the task of doing business in Maine. Increasing the equity of the investment tax credit to include additional companies, large and small, would certainly be appropriate to support new development and expansion projects. Continuation of the technical services program at the University of Maine and the provision of business assistance services are also imperative. And government should commit itself to a long-term, focused industrial development and recruiting effort.

But government cannot bear the whole burden. In fact, these government efforts, particularly the business development and recruiting effort I am suggesting, will only be effective if the primary producers participate actively and enthusiastically in a working partnership with government to encourage further growth in the secondary paper and wood processing industries.

On our part, in the months ahead we at the Maine Development Foundation will be devoting our resources to building that partnership and working intensively on the opportunities we have identified.

Response by William C. Bullock, Jr.

William Bullock, Jr. is President, Chief Executive Officer and Director of Merrill Bankshares Company and Merrill Trust Company, Bangor. Mr. Bullock holds a B.A. Degree from Yale University and attended New York University School of Business Administration. He is a Director of the Associated Industries of Maine.

I would like to address my remarks especially to John Wishart's comments regarding the problems of over-regulation that we have in the State of Maine not only as it applies to the forest products industry but to business, in general, both large and small.

Merrill Bankshares Company with assets of half a billion dollars is one of the largest banking organizations in our state and with its 50 branches located from Aroostook County in the north to Washington County in the east and Franklin County in the west, is by far the most important banking institution serving the areas of our state where the forest products industry is located. In reviewing our banking market, it is estimated that more than 50% of our deposits, both commercial and retail, are dependent in one way or other on the forest products industry of our State. Needless to say, our company and the people that we serve feel very dependent upon this major industry and believe strongly that our future is very dependent upon a healthy and fair regulatory climate in our State.

During the decade of the Seventies, total forest product industry capital expenditures in Maine exceeded one billion dollars. In 1980 dollars, that's more than 2 billion, almost double our State's current budget for the biennium. This indeed is a most impressive figure considering our State's dismal economic statistics. While many people are aware of the industry's capital expenditures, they do not realize that a substantial portion of these expenditures were to replace antiquated facilities and not for new capacity. In looking to the Eighties, we must be realistic in realizing that the industry has more viable alternatives than the State of Maine in the south and west where energy and transportation problems are substantially more favorable coupled with more favorable forest regeneration and fiber growth rates. In addition and most importantly, many of these states encourage industry expansion of this type much more so than Maine.

Today our State has the dubious distinction of having not only one of the highest corporate and personal income tax rates in this country but one of the highest estate tax rates. In fact, it's not only unattractive tax-wise to live in this state but people cannot even afford to die in the State of Maine. These statistics are even more distressing when we consider the fact that Maine ranks, I believe, 48th out of all 50 states in our country in per capita income.

In addition to these taxes, we have one of the highest Workmen's Compensation taxes which, in looking at the paper industry alone, is almost three times what the industry pays in other major forest products states such as Wisconsin. In addition, we are all aware of the substantial penalty that has been placed upon our successful Maine businesses to replenish our unemployment insurance funds deficit.

In addition to the taxes paid by all businesses, the forest products industry is subject to specific discriminatory taxes such as the spruce budworm tax. In addition, it is also penalized by the unrealistic capitalization rate of 8½% in the Tree Growth Tax. Today, with a prime rate of 20% and with government securities yielding 16%, is a return of 8½% anywhere near realistic?

While we have very protective environmental legislation at the Federal level, our State has chosen to add its own layer of supervision and regulation. I might add that it's not only in the area of environmental regulation but consumer protection and so on, that we have built up this unnecessary duplication of punitive State regulations. Furthermore, this duplication and the bureaucracy which it has caused is one of the reasons that we enjoy the exorbitant tax rates which we have in Maine.

Recently, Ms. Barbara Cottrell of the State Development Office stated that a recent study named Maine among the top 15 states in the country in a survey, as being favorable towards business. When we consider the fact that we are one of the poorest states in the country, we cannot develop the pulp and paper industry or other industries during the decade of the Eighties unless we are ranked as the top state in the country regarding our attitude towards business regulation.

Yesterday, Ronald Reagan assumed the presidency of our country with his Number One campaign promise and stated goal of his administration being to get government off the backs of business and the people. We must have a similar commitment from the executive and legislative branches of our State government in Maine. It is only if we can change the PR of the 1970s in Maine which stood for punitive regulation of business to the real PR of public relations in the 1980s that we can expect to meet the challenges of the 1980s: ensure a healthy forest products industry, major improvements in the economic development of our State and an improvement in the living standards of our people.

Response by John Godfrey

John Godfrey received a B.A. Degree from Harvard University in 1970 and an M.B.A. Degree in 1974. From 1974 until 1976, Mr. Godfrey was assistant to the Vice President (operations) of Great Northern Paper Company. In 1976 he became manager of Investor Relations for Great Northern Nekoosa Corporation, the parent company of Great Northern Paper. Mr. Godfrey joined Louisiana-Pacific Corporation in 1980.

I am pleased to be here as a representative of a major forest products company which is in the process of expanding into Maine. Louisiana Pacific, for those of you who are not familiar with the company, is the 2nd largest producer of lumber in the United States. It's a company that is just eight years old. Its most easterly manufacturing location at the moment is Hayward, Wisconsin, a location which the people at corporate headquarters in Portland, Oregon, think of as being on the East Coast.

The history of the forest products industry in Maine is one of changing fortunes. Major developments took place over the last hundred years or so and Maine's forest products industry changed accordingly. Present economic and industry changes will determine the course of the industry in the future. Mr. Wishart mentioned transportation costs, as did Nate Bowditch, as being important at the moment. They've always been important. There was an era when Bangor shipped more lumber than any other port in the world. At the time, there were huge forests of virgin trees in the Pacific Northwest. However, there was no transcontinental railroad, there was no Panama Canal, and the major markets were in the Northeast where industry was flourishing because of water power. One of the reasons that West Coast lumber has largely replaced Eastern lumber in all markets, including Maine, between 1870 and 1970, has been an enormous improvement in the relative transportation costs. This is changing at the moment. I would like to identify a couple of additional changes which may affect our future. One, which is quite important to Louisiana Pacific and to our decision to build a waferboard mill in Houlton, is the declining size of logs in the Pacific Northwest. Western plywood mills were built to run efficiently on large Douglas fir logs, which are 100 or 200 years old. The supply of these logs is diminishing. And as the supply diminishes, manufacturers are forced to use smaller and smaller logs, which makes their production less efficient. The few remaining large logs have become expensive. The net effect of this has been a rapid escalation in the cost of producing Douglas fir plywood. And the same effect, although not quite as dramatic, exists in the South with Southern plywood.

This trend led Louisiana Pacific to build a waferboard mill in Hayward, Wisconsin, in 1979. Waferboard is a product which is structurally similar and, in usage, almost identical to plywood. Unlike plywood, it can be made from small trees and from common species. From Wisconsin, we can ship waferboard to the South and to the Midwest. The company feels that the strength of the trend of increasing cost of plywood manufacture is such that additional investment in waferboard is justified. And that additional investment in the near future is going to take place in Houlton, Maine. Our Maine waferboard will take advantage both of the increasing cost of shipping plywood from the South and from the Northwest to Eastern markets, and of increasing costs of plywood production. We think that these trends are going to continue.

The amount of wood available from any forest is partially a function of economics. For each increase in the cost of landing Douglas fir or Southern pine lumber in Boston, the size of the economic forest in Maine grows. Previously inoperable spruce and fir stands become operable, hemlock studs begin to look more and more attractive, and sawmills become able to tolerate smaller wood and lower quality wood in Maine. In the case of waferboard, a market is created for a species of wood--poplar--which has heretofore been viewed as trash. The spruce-fir which has been locked up in stands that are essentially poplar become economically harvestable when a market is created for poplar. Therefore, as we look to the future of availability of wood in Maine, we think it's good. And we think that the economic forces at work may, in effect, increase the size of the forest from which we can harvest.

Transportation and declining Western log size may work to Maine's advantage. The spruce budworm will not. The pest exists only in Maine and Canada, so that Southern mills are unaffected. If the inventory of spruce and fir declines in Maine, then manufacturers will have to accept higher logging costs to get the trees that are left. They will have to accept smaller and lower quality trees. And paper mills may have to shift to hardwood, which will decrease the quality of pulp. Since the problem is not nationwide, Southern mills will be relatively better off, since they have none of the Maine budworm-related problems. If the problem is severe enough, it could result in decreased production. At best, it will decrease the profitability of mills in Maine and decrease the appetite of the companies doing business in Maine for further expansion.

There is much talk today about the rise of oil prices and its potential effect on the Maine forests. While it may be the case today that it is not economical to harvest wood strictly for the purpose of using it as fuel, there are wastes of production--bark, sawdust, etc.--which do take on an increasing economic value.

As the so-called wastes, or the former wastes, become more and more valuable, the trees from which they come become more and more valuable. We are able to harvest more trees from each acre, and harvest more acres, thus effectively increasing the wood supply.

As a new member of Maine's family of Fortune 500 forest products companies, LP is obviously optimistic about the future of the industry here. While one can identify some favorable and some unfavorable trends, we clearly feel that on balance, there is a good future for the forest products industry in Maine and we are very glad to be here.

Response by A. J. "Ben" Haug

A. J. "Ben" Haug is President of Forster Manufacturing Company in Wilton. He has a Bachelors Degree from Marquette University and a Ph D from the Institute of Paper Chemistry. He retired in 1978 as the Division Vice President of Scott Paper Company. He is a director of several Maine businesses and a member of the World Trade Council and Chairman of the Planning Committee of the Colby Institute for Management.

The State of Maine is fortunate to have the large private owners of the forest lands and the paper companies. Both represent important assets, since they provide a major share of the economic foundation of the state, as you've heard mentioned before this morning. Obviously, because of their size and the major impact of a financial nature that they have, these entities are very highly visible. Not nearly as visible, but of great importance to the state, are the smaller forest operations and wood products industry. These smaller operations range in size from several employees upwards to the hundreds. They represent company facilities the size of a large garage to multi-plant operations, and a few acres of woodlands to several thousand acres, which is the range for the small timberland operators. Small though they be, they are a very vital part of the Maine economy, and represent mainstays in the many small outlying communities throughout the state. They exist because of the entrepreneurial worth of their owners and because of the assets Maine possesses, especially its wood supply.

The State of Maine's forest industries, large and small, provide directly and indirectly, 33 percent of the jobs in Maine. Certainly that statistic is enough to justify clearly its importance. That there are as many as 20,000 independent contractors and loggers, and 361 mills and operators engaged in processing round wood into forest products is prima facie evidence that Mainers have the capability and the ability to successfully run these kinds of businesses. They have seen opportunities and do have the necessary entrepreneurial qualities to put it all together.

It should be recognized that the wood products business is an international business. Surely, just about everybody in the United States today is very well aware that the manufacture of automobiles is an international business. But not too many recognize that the same thing is true of wood products.

The small woodland operator and wood product industry that I represent have many problems today. The regulations that confront all business and the overall economic policies and climate set by our government become of special significance to small enterprises of these types, because of the limited management time and expertise to both carry them out and to cope. Many of these non-productive rites do little to enhance the health of the business, and they eat away at profitability and accelerate the aging of managers. I can assure you that is so. I think of that more often as I grow older...

It's most important that policy-makers, state and federal, recognize the need to put Maine and our country in as favorable a position as possible with respect to regulation, monetary policies, and tariffs, so that its businesses can compete. One can easily develop a wailing-wall list of problems confronting businesses today. I'm not going to do that. They've been adequately expressed and I agree with them. But I would like to re-emphasize that there are positive things that are ingredients for success in small wood products businesses. Certainly, our supply of wood, people with knowledge and a desire to develop this business, and, lastly, a good work ethic. And then the wood wastes themselves provide an important source of process energy, which makes it unique in the world of industry and business today. That these exist are given. But we must preserve and enhance them.

Almost completely irrespective of the type of wood product, the major cost is the wood itself. The cost of harvested and delivered logs is where you start. But then follows the fullest possible utilization of that precious resource. Therefore, I would like to suggest that all matters concerning our woodlands that affect the cost of wood should be carefully considered. The manner and extent to which woodlands are taxed, legislation and regulations affecting the labor costs, and the harvesting and hauling efficiencies thus become of obvious prime importance. Also, to insure an adequate supply of top-quality logs, those of us on the user end appeal to the large landowners in this way: You have the control to insure that the extra effort is spent to segregate these logs and save them for the specialty user. It is simply a terrible waste for this wood to go into chips or bolts or other uses where the quality is of no real importance. Because of rising material costs, the ability to substitute and utilize different species and to develop improved recovery becomes increasingly more important. This is the responsibility of the management of these businesses.

I respectfully suggest that all those who in any way influence these important factors just outlined carefully evaluate the role and position of the small woodlands operation and operators in our state. I ask, what practical alternatives exist to maintain the vitality of the small communities in the areas in which many of us operate, in the event that operations were to cease? They have been going on for many, many years--since the turn of the century for some of them. And I have a difficult time imagining what will rise in their place to support the people directly employed and the service functions that support these operating people. Hardly unique, the small wood businesses and industry of Maine need a growth-oriented and a healthy economy. Monetary policies and tax laws and regulations that are designed to aid, stimulate, and enhance profits are the prescriptions that will help.

In summary, we have the hay, we got the horses. We ask that the track be properly groomed and that the odds be reasonable. And then watch them run and be winners!

DISCUSSION

Rob Gardiner (Natural Resources Council): All of the speakers have commented on the increased diversification in the use of wood and, in particular, on the intentions to use certain species of wood which were not used at all previously, or to make much higher use out of them. My question is: as you get more value from this resource, using this kind of diversification, do you feel it is consistent with what I and perhaps others who are considered environmentalists view as good environmental practices? It seems to me that it is. For example, as you use poplar-- Mr. Godfrey made reference to the fact that his new plant would be using poplar--the need for herbicides is reduced and you use the kind of wood which is produced naturally. Other examples of this might be in preservation of soils, etc. Are there any environmental protection practices which you feel are holding back the opportunities for Maine to diversify in the use of the wood resources, and therefore to gain economic advantage?

John Godfrey: I'm probably the least likely person to answer that question, because my company's facility is, in effect, going to be the "garbage dump" for the wood harvesting operations and land management of the other companies. I mentioned that we'll use poplar. We're going to use that because, for the most part, nobody else wants it for anything. And in some cases it stands in the way of prudent forest management. If, for some reason, somebody should decide that they want poplar for something else, we're not particular; there are other species which are also regarded as being of low value that we can use too. So I think that there is no environmental practice that is particularly abhorrent to us. In fact, it would be someone who was going after a particular high-value species in demand who might answer that better than I could.

Ben Haug: My point was simply that, in an effort to control costs, manufacturers, where possible, substitute species which are available. I don't know that I can speak specifically to the question of whether there is any environmental push or law that prohibits the expansion into these other species.

John Wishart: I think probably most of the environmental restrictions apply primarily to all species where they do occur. There are some that regulate the forest in a manner that is perceived by the public to be desirable, but not necessarily desirable from the point of view of the species itself. For example, clear-cutting is good forest manage-

ment in many cases, as in the case of poplar itself, which you mentioned. Now, one good way to manage poplar is to clear-cut the land. And it's one of the fastest-growing trees that you can have come back. In many places there are prohibitions against clear-cutting. The use of herbicides, as you mentioned, is very undesirable for brush removal in many cases, where you could get rid of, for example, beech, hard maple, etc. It has been my experience over many years that, no matter what your product is, quality wood is important. Now, you can use these other things, but if you were the landowner managing the forest for the greatest economic return from the forest, the highest grade product is what you need and want, and what is good for society. Now, the use of these more undesirable trees is, in a sense, good forest management to clean up your forest so you can do better. In the case of waferboard, if you want to stick with aspen, then clear-cut and stand back and watch the suckers and sprouts come up. On the other hand, aspen is not the only specie to use also. As I said, our waferboard plant is using spruce, and we've tried white cedar, and there are several others. I think the most outstanding environmental restriction that is bothering us right now, from an economic point of view, is the utter loss of spruce and fir from spruce budworm. Of course, we're shot down on control of that.

Bill Butler (Maine Woodsmen Assoc.): I'd like to point out that the remarks of several panelists indicate that they have assumed, for the purpose of development of the forest industry, that there will be a supply of wood. The most important question in woodsmen's minds is: is the supply adequate? Will the jobs in the woods be there, and, thereafter, the jobs in the mills? I'd like to read you a quotation in the December, 1980 issue of a magazine called Logging Management by John Wishart, who stated: "As a result of this policy (which is the policy in the Pacific Northwest by the industry vis-a-vis the national forest), the forest industry is cutting twice the annual growth on its lands to supply raw material to its mills and plants. Even so, some mills and plants have closed, and industry analysts are predicting that more will follow." The question that I wish Mr. Wishart and others of you would address is: If that's happening elsewhere on industrial lands--over-cutting--is it also happening here? And will we have such a situation with the loss of jobs in the woods and in the mills?

John Wishart: The statement was on the overcutting of growth. Now, growth is a function of the health of the forests. In the Northwest, the national forests are primarily old-growth trees. And old-growth trees frequently have a negative growth. In other words, more trees die in an area than would permit an increase in growth. Now, the best growth comes from young, vigorous, properly managed

forests. And in the case of the Northwest, about 60 percent of the saw timber in the nation is on the national forests in the Northwest. And because of whatever kind of restrictions you want to call them--environmental or whatever--primarily to use the Forest Service formula of non-declining, even-flow yield is that the cut on the national forests is below what good forest management calls for. Now, the purpose of that is to maintain the economy of communities in the Northwest, or wherever they are near the national forests. In an attempt to help the economy of these communities, the reverse is taking place. Sawmills have changed, machinery has changed, and we no longer are in an economy that is dependent upon oxen, horses, and mules; we are in a 1980s economy that demands - because of high labor costs, high equipment costs, and high money costs - high production. And therefore, we have cutting policies, at least in the national forests, that are geared to the horse-and-buggy days, and these communities are not able to supply the needs of the wood. Now, what has happened is that during the good years of the 1970s, these mills have put off maintenance. All of a sudden now these mills are going down. The value of Douglas fir timber on the West Coast has been around \$700 per thousand board-feet. By failing to cut this timber, it is costing the American people, the U.S. Treasury, billions of dollars in lost revenues. Many of these trees are going to look just like the spruce fir in Maine: they are going to die, they are going to fall down. So, as a result, many of the mills in the West that do have timberlands are overcutting their land in order to maintain their mill operations. Last week the Governor of Oregon said to the loggers that ten years ago there were 221 mills operating in the State of Oregon; today, there are 72 less. And these have gone down for lack of timber and for other economic reasons, primarily obsolescence of the mills. Now, can it happen in Maine? It could happen, but I don't think it will. Our forests here are much younger and much more diversified. I think that Maine faces a very healthy future with very healthy, young-growth forests. And, as I said, I think our major problem is inability to get out the dying spruce and fir.

Thomas Rumpf (Maine Forest Service): I work in the budworm program and that problem has come up a lot today. In the Maine Forest Service, we are concerned about the problem and its impact on wood supply in Maine. My question, Mr. Wishart, comes from one of your remarks at the very beginning of your talk, where you were talking about different characteristics of the Maine forest and the Maine situation--contrasting acquired characteristics with inherent characteristics. I was somewhat curious that you listed budworm as an acquired characteristic. It is my understanding that budworm has been around in the Maine forests for millenia.

I do understand that this may put the forestry industry in Maine at somewhat of a disadvantage, but I am also concerned about the fact that it is a long-term problem that is not going to go away. Do you think that because of budworm the forest industry in Maine will face an increasingly difficult problem in terms of expansion of wood supply? Or do you think there are other opportunities, both in terms of improved utilization of other species and increased utilization of smaller trees, along with a continuing protection program of some extent that will enable us to overcome the problems of fluctuating supply of spruce-fir due to budworm?

John Wishart: I think that anybody who is dependent on spruce-fir is probably in for some serious problems in the next several years, and maybe even for longer than that. Anybody who has the flexibility of changing to another specie, I don't think there's any problem. If all your spruce and fir dies, I think you're going to grow as many tons-per-acre per year after the epidemic as before. The ability of the land to produce is not going to change. It's a matter of what it grows. I think for a decade we're probably going to have a golden opportunity for salvage of spruce-fir. As all of you know, 70-80 years ago the same thing occurred. And what is dying now is what has come up since the last budworm epidemic. Of course, the opportunity is here for other species. I mentioned the pulp-and-paper mill at Woodland which is now 100 percent on hardwood. Yet, at one time, it was 100 percent on spruce-fir. That's one indication of change. And John Godfrey has told about his waferboard plant, which is going to be 100 percent aspen. So these opportunities are available. If the spruce-fir and all the softwoods disappears, then we can go to aspen or hardwoods or anything else in the waferboard plant. In our plywood plant at McAdam, we're peeling hardwood. So these flexibilities are there, and we're going to have to face them. The old virgin timber was high quality. In the South, everybody is using second-growth, and the same is true in the Northeast now. So I see no problem at all. The growth is there. It's a matter of flexibility of the user.

Ben Haug: When you indicate that things may right themselves in the long run, is there not a real danger if we turn our backs on control by spraying, a program of containment? If you get huge and wide-scale loss of the spruce-fir, there's going to be quite an interval of time where there could be some very serious dislocation. And that's why I think there's a need for all parties concerned to take advantage of what means we have. I know the spraying is a two-sided fence. But, nonetheless, it does contain and does mitigate the extent of the problem. In just a few years if you were to literally wipe out the whole spruce-fir forest of Maine, there are mills and users of the products of those mills that could not easily make the switch

to some other wood. That would put undue pressure on the other species as well. So there is a need, I think, for a balanced approach and continued research to find out some way to control the budworm. But I don't think we can allow the forest to just be wiped out, without an effort at defense.

John Wishart: I was merely asked a question about alternatives. I personally think we ought to try to correct the spruce budworm situation. I don't think there's any question about that. And I think the only reason anybody is going to get into the alternatives is (1) they are going to have to accept something not as desirable, or (2) they are going to have to accept an increasing volume of material that results from the demise of the conifers. So I think the most desirable is the spruce-fir, because that's what people have chosen for 100-150 years. So I agree with you 100 percent.

Kenneth Rollins (Forest Products Marketing & Management Association): My question is for Mr. Bowditch and Mr. Bullock. Mr. Bullock, what is the current Treasury Bill interest rate this week?

William Bullock: As I said in my remarks, it has been as high as 16 percent. I think six-month savings certificates will pay 14.72 percent...

Kenneth Rollins: I know that's the figure, but what I'm concerned with is what Merrill does with the money I give Merrill. I am concerned with the economic development of secondary and tertiary enterprises in Maine. And I am concerned that very few, if any, of the banks in Maine are encouraging economic development as much as they should. Can you tell me that I'm all wrong? And can you tell Nate Bowditch that I'm all wrong?

William Bullock: I'll do my best. Looking at any bank's assets, we have basically two types: investments and loans. In the case of our bank, our investments are divided about 50 percent between short-term government securities, which we have to keep for liquidity purposes, and municipal obligations of the state and political subdivisions--a great majority of which are invested in Maine, in towns like Millinocket, Baileyville, where the Woodland mill is, to provide the municipal services to meet the needs of the pulp and paper industry. As it pertains to loans, one-third of our loans are in real estate (almost all of which are located in this state), one-third are in consumer loans. Besides the loans to buy vehicles and consumer products, we have a very great portion of those loans financing vehicles for contractors--loaders, skidders, trucks--to bring the forest products to the mills. Lastly, one-third of our loans are in the commercial category. Here, again, I see a number of my customers in the room. Better than half of our commercial loans are invested in the forest products industry.

We participate not only in the major credit of the large forest products companies but in the small wood products sawmills in the state. In fact, we have a recent television ad that specifically shows the way we aid small sawmills in the northern part of the state.

Nate Bowditch: I have no way of knowing the extent or percentage of portfolios of various banks in the state that are involved in the wood products industry. I've got to assume that it is significant. And I've got to make a few general comments. First of all, there are many rural-based banks--whether they are located there or whether they have branches there--who have to understand, as Ben pointed out and as I mentioned, that forest product outfits in this state keep much of rural Maine alive and eating and working. And those banks are the banks that are out there making the loans that allow those businesses to function. I think I can further buttress that observation by saying that, at the Development Foundation, where we deal with a number of clients that might be businesses looking for ways of putting together a financial package to modernize, or whatever, to pursue their growth--many of those clients are brought to us by financial institutions, who become a full partner in the partnership that we enter into in trying to work with those businesses to help them go where they want to go. The last thing I want to say is that the Maine Development Foundation itself is a vehicle in Maine--a non-profit, statewide development corporation--which is financed to the tune of about 50 percent by private businesses and companies that become members and make investments in its affairs. In fact, the Development Foundation took in somewhere in the neighborhood of \$100,000 in corporator fee investments last year, a substantial portion of which came from Maine financial institutions, which comprise one of our most solid bases in terms of corporate members. Finally, there is a separate institution in Maine that has just been launched by the legislature and has recently been capitalized--a venture capital company known as the Maine Capital Corporation. We at the Foundation are helping to provide management services to it. The Maine Capital Corporation has been financed by stock purchases by some 32 companies and individuals in this state. And over half of the purchasers of the stock of that first-ever Mainwide venture capital company were purchased by Maine financial institutions--savings banks as well as commercial lenders. So I guess while a good deal of discussion has been and will continue about how conservatively do Maine financial institutions approach business development--that will always be a debated issue and there's nothing that anybody here today can do to dispel that image, or to do away with that discussion. I see a great deal of evidence that Maine financial institutions are involved daily in specific ways, and involved ever more in new programmatic ways to fuel growth--and with a great emphasis on the forest products industry.

SWEDISH FORESTRY TECHNIQUES

This 16mm, colour film, produced by the Swedish Logging Foundation, received international recognition in Zaragoza and Santarem in 1978. The film was introduced by Joakim Hermelin, Director of Forestry Extension at the University of New Brunswick.

Ladies and Gentlemen:

I hope this film will give you some food for thought. To place this Swedish film in a true perspective, I shall have to give you a background of Swedish Forestry History.

It begins in approximately 1850, when the Industrial Revolution swept over Europe. Sawlogs became a commodity and Sweden was highgraded from one end to the other. During the same time period, forest industries started to buy up farm forest land.

By the turn of the century, 25 percent of the forest land had been bought, leaving 25 percent in public ownership and 50 percent in the hands of farmers. This distribution is basically the same in 1981.

During these fifty years of highgrading the forest, there was a growing concern that there would not be enough wood left for the future.

Around 1900, a few farsighted politicians started lobbying for a more organized approach to forestry. They managed to implement forest legislation, which stated in principle, that if one tree was harvested, another tree should be planted. This legislation also curtailed purchases of forest land by the industry; thereby, limiting the possibilities for expansion of the forest industry controlled land base. Industry could only purchase wood from private land, not the land on which it was growing. The forest act, therefore, had an important impact on preserving a viable rural community.

The film you are going to see today will show the results of about 80 years of organized management of a forest resource. Over these 80 years, this resource has not only doubled its forest capital, but also provided the raw material for a viable and competitive forest industry

TEXT OF THE FILM "SWEDISH FORESTRY METHODS"

The forests in Sweden play an important part in the country's economy, accounting for 25 percent of exports and employing some 250,000 people. But there has also been a valuable recreational aspect to the forest since time immemorial. Every Swede has enjoyed right of access to the forest and has made good use of this right. Therefore, it is easy to understand that the management of the forest is close to the heart of every Swede.

Methods and machines developed must continue to be profitable, yet disrupt this sensitive environment as little as possible. This is no mean task for the research and development men. The operation covers 53.5 million hectares, and the conditions vary considerably. Sometimes the ground is level and firm, but more often it is rocky, steep or soft. In winter, the snow can be a meter deep or more. The stands also differ. Although pine and spruce predominate, hardwoods are found to a varying extent throughout the country. The trees range in size from the small ones extracted in early thinning to the very large ones on the mature stands.

All this, then, man and machine have to cope with together. Let us look at some of the principal operations to see how they go about it.

When a stand is about a hundred years old, it is time to harvest the wood. Clear-cutting has been found to be the most suitable method for harvesting and regeneration in Sweden. There are many ways of carrying out this work.

We are now going to examine three common systems. In the first system, felling is carried out manually with a chainsaw...still the most common method used in Sweden. Felling is hazardous work, so it is important that the proper working technique is employed. The faller, like the one here, must wear proper protective clothing, use a good saw and equipment for directing the fall of the tree. This device has a flexible bag inflated by the combustion pressure of the chainsaw engine. This tree falls exactly where the faller intended it to.

Two fallers with chainsaws must generally be assigned to supply the mechanical limber which follows them. The limber grips the trees at the top end, the tops are cut off and the stem is limbed by two pairs of wrap-around knives. The limbed stems are then piled up along the strip road, making ideal conditions for subsequent extraction with a clam-bunk skidder. This skidder has a load capacity of more than ten cubic meters of solid wood.

The tree lengths are sometimes bucked up a haul road, but in this case, they will be trucked directly to the mill. Loading is carried out by means of a hydraulic loader. By loading some of the stems top first, the size of the load can be increased. To drive a long rig like this along the narrow forest roads requires considerable skill, but it is not difficult for a competent driver with a vehicle designed for such conditions.

In the next system, the felling operation is mechanized. The trees are cut and then placed in neat rows. This machine can manage about two trees a minute. Subsequent processing is done by a limber-bucker, or processor, as it is also known. Limbing is carried out by wrap-around belt-type knives, bucking by a circular saw, and the top is cut off by shears. The operator decides where the cuts should be made and programs the machine accordingly. The saw logs are discharged onto the ground, and the pulpwood bolts sorted into two different baskets. These are emptied when full.

The wood is then extracted by means of a forwarder. This forwarder has a boom reach of 6.5 meters, and can carry a load of about twelve metric tons. All Swedish machines have safety cabs, providing comfortable and safe working conditions for the operators.

The third logging system employs a harvester. This machine fells the trees, limbs them with wrap-around knives, and bucks the stems with a chainsaw. Although the logs fall straight to the ground, the operator can sort them roughly by turning the processing unit.

Bucking is carried out automatically to lengths selected by the operator. Here, again, a large forwarder--this time able to carry as much as fifteen tons--delivers the wood to the haul road, where the wood is piled in high stacks.

Trucks and trailers are used to haul the processed wood to the mill. In most cases, each truck is equipped with a hydraulic grapple loader, so the driver can load the wood himself. When the rear stack on the trailer is full, the driver extends the trailer, to obtain the full load space. The maximum payload permitted for this vehicle combination on Swedish public roads is 35 metric tons. The average transport distance to the mill in Sweden is 70 kilometers.

One after another, truckloads arrive at the mill, 24 hours a day, all year round. After the driver has undone the straps, the mill's loader takes over. At a rate of about six tons per lift, the loader quickly unloads the rig and stacks the wood ready for processing in the mill. After about fifteen minutes, this truck drives off to collect another load from the forest.

Let us return to the forest again.

Swedish law requires that once a forest has been cut, a new forest must be established in its place. In most cases, the first operation to be carried out is scarification.

Scarification means that the top layer of the ground is removed, leaving the mineral soil exposed in patches or furrows. This is heavy work, so it is almost always done by machines. The exposed patches are at least 30 centimeters square, and, wherever possible, the mineral soil is in the form of mounds or beds. Scarification creates favorable growing conditions for the seedlings.

Container seedlings are now being used to an increasing extent. Their roots grow in a clod of fertilized peat, which remains on the roots when the seedlings are planted. Planting is still largely performed manually. An experienced worker can plant as many as 1,500 seedlings per day.

In Sweden, some 400,000,000 seedlings, on about 200,000 hectares, must be planted every year during the relatively short spring and autumn seasons. To meet this demand in the future, the planting work will also have to be mechanized.

This forwarder is pulling a planting machine designed for planting forest land. First, a dual-row scarifier unit is creating the patches we talked about earlier. Further back are two planting units, which plant the seedlings in the patches. The seedlings are fed automatically from the plant magazine and then conveyed out to the planting heads. If the planting operation is successful, it won't be long before we have a fine young stand growing on the cutover.

Natural regeneration, particularly of birch and aspen, often results in too many stems per hectare. Consequently, when the young stand is between two and four meters tall, it should be cleaned. The cleaning operation reduces the number of stems per hectare and encourages the growth of the most valuable young trees. Cleaning is carried out almost exclusively using special light-weight brush saws.

About ten years later, the stand has again grown too dense. This is the time for thinning. The purpose of thinning is twofold: to improve the growing conditions of the residual trees by reducing competition and to extract saleable wood. There are many alternative systems to choose from. We shall examine three.

In the first case, most of the work is manual. The worker cuts the trees with a chainsaw. He then limbs three sides of the stem and marks the stem for bucking. Notice

that he has felled the tree over a pile of wood, thereby achieving a comfortable working height. He then cuts off the top, turns the stem, delimits the remaining side and, finally, bucks the stem. The wood is then stacked in piles, some of which will be along a strip road and others up to fifteen meters inside the stand. In the latter case, the wood must be piled so it can be reached by the forwarder's boom. The forwarder, equipped with a boom with a reach of up to fifteen meters, operates along the strip road. The strip roads can be located up to forty meters apart. When unloading, the boom operates as a conventional hydraulic grapple loader.

In thinning work, too, efforts are being made to mechanize the processing. In the second thinning system, the trees are felled manually, at right angles to the strip roads. The processing unit is mounted on the skidder chassis. They are then processed mechanically by a machine which grips the tops of bucks of the trees, limbs them with wrap-around knives and then bucks the stems with a chainsaw into lengths selected by the operator. In thinning, a smaller type of forwarder is used. This forwarder has a load capacity of about nine tons. The tires are extra wide and easy on the ground.

In the third system, the trees are felled at right angles, away from the strip road, ready for winching back to the road. The hydraulic winch is mounted on a conventional grapple loader. Both the speed of the winch and the movement of the boom are radio-controlled. In practice, the winch can be used to drag trees lying up to thirty meters away from the strip road. The strip roads' spacing will then be sixty meters. A limber-bucker moves along the strip road. Limbing is carried out by wrap-around knives, bucking by a chainsaw and topping by shears. Here, too, the base vehicle is the skidder and extraction is done conventionally by means of a forwarder.

Although we have looked at several forestry machines and systems, they are just examples of what has been developed for coping with the diverse and difficult conditions facing Swedish forestry. Since similar conditions can be found in other countries, the Swedish systems have come to be used on a large scale internationally. In many cases, only minor modifications have been necessary, although some totally new methods and machines have also been developed. However, one thing that the Swedish experience has demonstrated conclusively is that the vast majority of problems can be overcome by collaboration between user, manufacturer and researcher.

END OF FILM TEXT

Seminar II

The Shape of Maine's Timber Supply

Key Speaker: "Maine's Timber Supply"

Lloyd Irland, Director
Bureau of Public Lands
Department of Conservation

Panelists:

Gordon Baskerville,
New Brunswick Dept. of Natural Resources

David Field,
University of Maine at Orono

Neal Kingsley,
U. S. Forest Service

James Robbins,
Robbins Lumber Company

Discussion

LLOYD IRLAND

Lloyd Irland is Director of the Bureau of Public Lands in the Maine Department of Conservation. From 1976 to 1979, he was in charge of the State of Maine's Spruce Budworm Suppression Program. Before that he was Assistant Professor of Forest Economics at Yale School of Forestry and Environmental Studies.

Throughout his career, both as a professional forest economist and a civil servant, Dr. Irland has devoted a great deal of thought, attention, and many written words to questions of timber supply, beginning with his doctoral thesis at Yale on the subject "Is Timber Scarce?"

MAINE'S TIMBER SUPPLY

by Lloyd Irland
Bureau of Public Lands

In 1848, State Land Agent Samuel Cony expressed his view of the importance of Maine's forest to the State's future. He wrote: "While our wildlands are unoccupied or unimproved, they are of no more value than an equal area of ocean." The fact that we are all here today suggests that the general view has changed dramatically. Mr. Cony was employed to help settle the wildlands. But his world was gone before the Civil War. Since then, families have left Maine farms by the tens of thousands. Maine's forest covers a greater acreage now than it did in 1848. And the output and employment based on forests are more important to Maine than they were then.

With no guarantee that my foresight is superior to Mr. Cony's, I'll summarize for you key aspects of Maine's timber supply. First, I'll take a quick look at major changes in the past century, the two great transformations in Maine's forest industry, from 1880 to 1920 and from 1970 to 1990, and the condition of the forest as it is today. This is a risky enterprise, since the U. S. Forest Service will publish new data in about two years. Neal is going to tell you a little about that, so I regard my remarks as hypotheses to be tested against the information that will emerge from that survey.

Our forest is a resource of many dimensions, of course. Timber stands growing industrial wood also shelter grouse and deer, protect watersheds, provide a setting for tourism and recreation, and shelter our homes from the wind. But I won't talk about these any further today, because my principal concern is with the industrial perspective on the forest as a source of raw materials for industry.

A CENTURY OF CHANGE

It's useful to recount the features of a century of change, from 1880 to 1980. The forest acreage of the State has increased somewhat. I think at the moment it is probably peaking. The number of farms has been reduced by more than

50,000. Much of that land has gone into other farms, so it wasn't lost to agriculture. The pulpwood harvest was nominal a century ago. Now, it's in excess of 3 million cords a year. Interestingly, the lumber output in Maine is less than it was in 1880. That's not counting logs that are shipped to Canada and made into lumber. So total production of lumber based on Maine timber would be higher than it was in 1880. But what is milled within the borders of the state is actually less.

The consumption of fuel wood in domestic use is significantly less than it was in 1880, but at the present rate it won't take many more years to reach the same level of 1.2 million cords that was estimated in 1880. The employment in the forest products industry was probably under-counted in the 1880 census, but it's fascinating to notice how the importance of the forest products industry to the State's economy has roughly doubled since 1880. The level of employment has significantly increased, and the proportion of the forest industry in total manufacturing is almost double. It's about one-third now, and it was much less in 1880. That was a bit of a surprise to me that I discovered only in preparing for this conference.

In 1880, the wood pulp paper industry, which was to fix the shape of the next century in Maine's woods, was barely visible. In spectacular growth from 1890 to 1920, it became a major factor in the economy, providing 13,000 jobs by 1919. The paper made from wood quickly swept competing papers from the market. But by 1920 the stage was set for rapid growth in the paper business in other parts of the country.

The spruce budworm outbreak of 1912-1920 killed a tremendous volume of timber, but had little economic impact. It undoubtedly raised harvesting costs for a few companies, and put Great Northern, in particular, through a decade of anxious scratching for wood (which is documented in Les Hazelton's paper in the 1974 Forest Service Symposium on Budworm). But the collapse of Maine's softwood lumber industry in the face of competition from the South and West, and the plateau reached by the New England paper industry, meant that the budworm damage was no serious threat to production or jobs. The collapse of wood consumption in the Great Depression, which was very dramatic, was termed "an enforced conservation program" by Forester James W. Sewall, who reported to the State Tax Assessor the condition of the Maine forest in 1933. And of course that enforced conservation program gave the state a harsh decade, with far greater worries than timber supply.

From the graph prepared by Ted Tryon, you can see the collapse of wood consumption in the late Twenties. The trees weren't gone, but Northeastern lumber was simply driven off the market by the Panama Canal, which opened up the lumber from the Pacific Northwest and British Columbia that took over the east coast market for the next forty or fifty years. That situation is now reversing.

At the risk of oversimplifying, Maine forest products marked time (in terms of the technology and the approach taken to managing the woods) in the third century after 1940. Brushland left by farmers grew into merchantable stands. The spruce-fir grew vigorously, recovering from budworm, as forest surveys in 1958 and 1970 showed. Lumber output limped along, bottoming out in 1963 before returning to slow growth due largely to the paper companies entering the stud lumber business in earnest.

During this century, state and landowner forestry programs have had a favorable impact on the timber balance. The most significant, without doubt, has been fire control. It is really fascinating, and professionally useful, to look through the old Forest Commissioners' reports from about 1892 to World War I. There were interesting reviews of the revegetation after dramatic fires in the nineteenth century, the origin of the barrens in eastern Maine, and a lot of other fascinating information.

The application of professional forestry on industry land has been impressive. From 1967 to 1977, twelve major companies increased their forestry staffs from 81 to 181 foresters. State and other programs for small private holdings have also had an impact. In the most recent year, Maine Forest Service foresters assisted 4800 landowners in treating almost 16,000 acres -- in harvest cutting, tree planting, timber stand improvement, and pruning. I am told that up to 40 percent of the cutting in some local areas is done with the benefit of professional supervision from foresters, whether from companies, consultants, or with the State. The benefits of these assistance efforts, of course, will emerge over a long period of time as they boost productivity, but they are not likely to have a dramatic effect on the future timber supply. A white pine blister rush program that was very active between World War I and the 1950's certainly had a favorable effect on the quality of the white pine resource.

Trade has always been important to this state. It is interesting how that theme of trade has shifted over our history. In colonial times, potash and firewood went to Boston by water. Ships themselves were a major export. They loaded the ships with the King's masts -- and sold them to his enemies. Stealing timber was practiced by the King's own timber agents. And that's still an honorable

trade in some parts of this state. But it's one with a fine and honorable history. Some of the finest citizens of Maine engaged in that trade, at one point or another in their careers, in the past. In the pine and spruce logging days, the schooners left Bangor with decks stacked with lumber, bound for all corners of the globe. And logs floated down the St. John to be milled in New Brunswick. This period is nicely covered in Professor Smith's book on the Maine lumber industry.

Today, our timber still supports a very large Canadian lumber industry, but it's in Quebec and not New Brunswick. And a significant portion of the industry's log supply depends on Canadian loggers. Maine leads the nation in paper-making capacity, but I was interested to learn that one-sixth of the pulp that goes into our paper mills comes from outside the state. At the same time, some of our mills ship pulp elsewhere, to other states in New England and to other parts of the country. And our builders import shingles, plywood and particle board from Canada, Oregon and Georgia. I can offer as a useful generalization that Maine's forest industry has always been more constrained by costs and by the market than it has been by the supply of timber. I believe that has almost always been the case in the past. There are a few examples where exhaustion of premium-quality trees led to the decline of specific industries, like the mast trade, and the hardwood plywood industry, which has gone through more than one boom-and-bust after clearing out areas of high-grade logs. But even in those instances, there were very powerful forces of competition from other regions. So what I am saying is that, when you look at the ebb and flow of major forest products industries in Maine in the past, usually it is attributable to competition from other regions, and not to the exhaustion of timber here. We have never cut out in Maine in the same sense that has been true of some other parts of the country.

TWO ERAS OF TRANSFORMATION

Now I'm going to talk about two eras of transformation in the forest products industries in Maine. I would identify these as from 1880 to 1920, and 1970 to 1990. The last major transformation was roughly 1880-1920, marked by the peaking of the Bangor log drives in 1872; by the small boxboard boom in southern Maine, peaking around 1910; and by the creation, from virtually nothing, of a major paper industry in less than thirty years, up until about World War I.

The decades of 1970-1990 will mark another age of transformation. We are now in the middle of that period. John Godfrey and John Wishart, who spoke earlier today, are making that transformation happen, as are many of you in this room. Today we are at the close of a major investment

boom that brought the industries of the 1890s -- paper and lumber -- to their mature stage in Maine. A road system is being built which will assist in intensive forest management. And, for the first time in our state's history, timber supply will be a significant constraint to expanding capacity in these traditional industries.

The industrial revolution in Maine's forest industry, which was gathering speed so dramatically in the 1880s, may see its peak in 1980. Forest growth and condition of the inventory cannot sustain continued industry growth at recent rates without radical increases in intensive forest management and changes in industry technology. The expansion of industrial capacity to the limits of the resource brings Maine into this era of transformation. I believe that we have taken the technical concepts of the 1880s as far as they can go. But the transformation is going to continue.

Industries based on new uses of wood are arriving. Waferboard mills are abuilding. And their owners confidently predict that more are coming, even hoping to take business away from their own southern pine plywood mills. Energy uses of wood are booming, and cogeneration may turn the paper industry into a net power seller, recalling the early history of the paper industry. The wood industry, therefore, is creating a diversified, complex, and modern pattern of wood use. And no longer will the state be simply categorized by single forest product, as a mast reserve, as a spruce sawmill state, or as a paper plantation.

The limits of physical supply are clear. We were over-cutting several important species in 1970. The inventory of live spruce and fir will fall significantly in the next few decades. This would occur even in the absence of the current budworm outbreak, because of the unbalanced age structure of the forest. The limits of economic supply may be just as serious. In southern Maine, loggers must comb many acres to acquire their needs from the small land-owners. In local areas there, fuelwood has diverted a sizable hardwood harvest from the paper industry, squeezing the supply further. Some small owners resist cutting of any kind, while others stand by and permit abusive and reckless slashing of their woods.

The new integrated wood industry now being created is partly in response to these very conditions -- the recognition that a changing pattern of wood use is going to be required to sustain growth in Maine. The forest industry will continue to grow. And it will do so by using smaller sized and new species that are currently underutilized, as John Godfrey mentioned; by producing the integrated product mix of the modern forest industry; and by controlling costs to compete effectively with other regions.

CONDITION OF THE FOREST

Now I'm going to offer some observations on the conditions of the forest as it is now, in 1980. First of all, I'll talk about spruce-fir, then pine, and finally hardwoods.

In 1906, Forest Commissioner Edgar Ring wrote that balsam fir "should be considered a weed in our forest garden, and eradicated as soon as possible," He didn't know how close he was to seeing that. The spruce-fir forests recently entered a stage of maturity following the 1912-1920 budworm outbreak and the cutting since. The huge volume and acreage in mature age classes renders the forest highly vulnerable to spruce budworm. In addition, most stands are overstocked and display substantial mortality in small trees due to overcrowding. While budworm damage has driven growth almost to zero over large areas, spraying has preserved good tree conditions over large areas. There will be a sizable decline in spruce-fir inventory over the next twenty years, even if the budworm were to vanish tomorrow.

Some four or five years ago, Ted Tryon put together the evidence that he could find on the volumes in the spruce-fir resource in Maine, and came up with a fascinating table which I have attached. He estimated a total growing stock of 70 million cords in 1902. By 1933, despite the collapse of consumption that took place in the late Twenties, the inventory was down to 43 million cords. It has now tripled from that level, to 135 million cords by 1968. And I guess there are a few people in this room who might be able to give a better estimate than I could of where it has peaked in the late 1970s. But I am quite sure that the new forest survey will show that it has in fact peaked, and is now on its way down under pressure of the budworm mortality, normal aging in the fir component, and the higher level of consumption.

The pine timber resource of the Pine Tree State is in poor condition. Despite occasional exceptions, second-growth stands everywhere display overstocking, poor quality, and damage from blister rust and weevil. Decades of past indifference have wasted a huge economic benefit that might have resulted from pine management. Recently, strong lumber demand and better mill technology have enabled aggressive producers to increase production and to institute improved management on their lands. Pine sawtimber was being overcut in 1970, and the situation has probably not improved since then. Foresters expect that pine will prove to be a transitional type following farm abandonment, as southern pine seems to be. Today's pine stands will probably be replaced by mixed and hardwood stands. Despite the degraded condition of the resource, it offers high potential for larger timber output and higher wood quality. Intensive management can overcome the problems of blister rust and the weevil.

But this will demand a forestry effort on a scale not previously considered. Improved markets are making such an effort both possible and rewarding.

Maine has two hardwood forests, both of them degraded and ragged, but for different reasons. The vast hardwood and mixedwood forests of the north are either ignored or degraded each time they are culled through for spruce logs and the occasional maple or birch veneer log. Inadequate markets for low-quality hardwoods have hindered management there. Some foresters believe that clearcutting in spruce-fir is creating more hardwood forests, but only time will tell. In southern Maine, the hardwood forests, including those growing on abandoned farmland, are reaching maturity, and in some areas have already sustained a long history of cutting. Past grazing, high grading, and sloppy cutting have left behind sprout forests loaded with culls and wolf trees. Where well-stocked vigorous stands are present, they face the competing dangers of overstocking or premature reckless cutting. These hardwood forests present a poor picture. Cut every generation with little regard for the future, they present real silvicultural challenges. I might say that the foresters in my agency face those regularly on the public lots we are working with.

That these forests continue to produce as well as they do is not due to human stewardship and foresight; it is because these forests, largely of tolerant species, possess a high degree of natural resilience, and recover rapidly from disturbance or mismanagement. Conspicuous local exceptions to this bleak picture abound. Many small properties have been managed carefully for decades, and have received national recognition through the Tree Farm Program. Some of the people so recognized are here with us today... The state of silviculture on industry land was limited in 1950, but is now in vigorous development.

But these favorable trends and gratifying local examples should not mislead us. Maine's forest is in lousy shape. Its log quality is declining, important species and size classes are being overcut, and too much harvesting -- especially on small ownerships -- is degrading the forest rather than improving it. Regeneration, usually unplanned, is frequently not of the most desirable species, and rarely receives serious management attention. Foresters attribute this poor condition to past landowner indifference, low stumpage prices, lack of information, inadequate logger training, and inadequate markets. I could add what Mr. Hermelin was talking about, too: inadequate pride of ownership.

What pressures will the future forest face? The forest's current condition will set the limits on what can be produced in the next twenty years. The forces that were most important in Maine's forest history were those most difficult to foresee. In 1920, many could see a dim future for making lumber in New England, because competition with large West Coast timber was possible. Few could see, however, what the growth of the Southern paper industry would mean over the 1930-1970 period. In 1970, it was not possible to see the resurgence of wood as a major space-heating fuel. It should have been possible to predict a serious spruce-fir supply crisis in the 1980s. But the public record displays few examples of such prescience. I might mention that it is fascinating to read the assessments of the future of the New England paper industry that were published by the U. S. Forest Service in the 1920s and 1930s and even the early 1940s, when they were saying that the paper mills in New England were simply going to be cut out, there would be no more wood left, and the industry would vanish. Those kinds of predictions have been confounded by the tremendous regrowth of the forest and, to a limited extent, by the intervention of forestry practices and forest protection.

This has not changed. The forces that will bring us to the year 2000 cannot all be foreseen today. I think that this fact requires us to be as conservative as possible in our forest stewardship. We should avoid increases in industry capacity that would bring overcutting. We should not rely overmuch on optimistic, untested predictions of yields that intensive forestry may bring. We should remember how many decades it will take before such practices can be implemented on significant acreage. We should not forget that, despite our best efforts, fire, insects, fungi, and the wind will take, as they always have, their share of the forest yield.

The U. S. Forest Service predicts large increases in wood products output from Northeastern forests over the next half-century. (Table 7) These increases, if shared fully by Maine, would double the State's total wood production. This would be well above levels achieved at any time in the past.

Can a doubling of cut be sustained? As a biological and technical matter, I would say that such sustainable increases are at the limit, but are possible. To make such a level sustainable would require doubling the growth rate on the average acre of commercial forestland. This would require silviculture of a high order, and a lot of money. I can flatly state that, at the current level of industry capacity, of forest management and utilization standards; and general landowner interest, a doubling of Maine wood output cannot be accomplished on a sustainable basis. It is not even clear that a doubling would be economically

feasible in light of the investment costs involved. I would judge, however, that such an increase could be accomplished with skillful forestry with minimal damage to the nontimber resources of the forest.

What will be the leading timber supply challenges, then, looking at this background and looking ahead? We can see that demand is going to increase for wood products. We can see that the forest is in pretty poor shape, but offers us tremendous opportunities for continued industrial growth, as long as that growth is based on new principles. Some of the things that are changing have been before you today. What are the challenges facing us now?

First of all, to develop and implement a successful industrial transition strategy to weather the near-term decline in spruce-fir inventory. This decline, caused by age-class imbalance and by the budworm, cannot be halted -- though it is hardly fatal for the industry's long-term prospects. The sooner this fact is fully recognized, the sooner the technical brainpower in our industry can set about implementing the transition. Partly because of this inventory decline, I expect Maine papermills of the year 2000 to be a lot different as today's mills are from those of the 1880s. The strategy will differ, of course, for each mill and for each landowner.

Second, using the markets and timber values provided by the new integrated wood industry, implement sound management of the State's hardwood forests. The technical tools to do this have existed for years. The markets are emerging, but the determination must yet be created.

Third, implement a serious program of research, development, and management for the pine and pine-hardwood forests. Again, many of the necessary tools are at hand. The markets are improving. What is lacking is a serious education, extension and management program.

To improve the State's forests on the necessary scale will require dramatic changes in our way of managing the forest. Tens of thousands of small owners will have to be convinced that sound forestry is the right thing to do, is worth the trouble, and will benefit them and their descendants. The forestry effort on the State's vast industrial and non-industrial holdings will have to be doubled. Application of silvicultural knowledge and use of suitable logging machinery will have to advance steadily.

The temptation to dump these tasks onto the State should be avoided. Foresters have been too successful in depicting good forestry as a government responsibility. It is time to

start placing the responsibility back where it belongs: on the private landowners. Simultaneously, we must improve the public capability to support private forestry--through better technical support, extension, research, and a favorable tax climate for both forest land ownership and for forest industry. The point about favorable tax climate was emphasized by several of the speakers this morning.

Finally, the multiple-use values of the forest, as they are affected by more intensive timber management, must be continually appraised, explained and promoted. I think that most of the adverse effects of timber harvesting result from lack of time, lack of knowledge, financial pressures, or simple laziness. These and other constraints hinder the conservation of multiple-use values, but they can be addressed and overcome by serious private and public leadership. It must be said, too, that professional foresters' sensitivity to wildlife, aesthetic values, and erosion will need continuous attention.

To outline a program to meet these needs is not my purpose. In Maine we have the leaders who can work together to develop that program. And many of them are here today. We must understand how serious the condition of the forest is. We must welcome the opportunity provided by improving markets in the current transformation of our industry. We must find new ways to upgrade silvicultural practice on all the State's forests. Finally, we must accept the challenge of convincing landowners that good forestry is a responsibility of the landowner -- and no one else. In that regard, I'd like to quote Aldo Leopold, one of the great conservationists of our century. When I assumed my responsibilities at the Bureau, I gave every member of my staff a copy of his book, Sand County Almanac written in the late 1940's. I said that we may not achieve it all the time, but the ideals we are looking for are in here. Mr. Leopold wrote:

We set out a generation ago to convince the American landowner to control fire, to grow forests, to manage wildlife. He did not respond well. We have virtually no forestry, and mighty little range management, game management, wildflower management, pollution control, or erosion control being practiced voluntarily by private landowners. In many instances the abuse of private land is worse than it was before we started...

To assuage our inner frustration over this failure, we have found us a meadowlark. I don't know which dog first caught the scent. I do know that every dog on the field whipped into an enthusiastic backing-point. I did myself. The meadowlark was the idea that if the private landowner won't practice conservation, let's build a bureau to do it for him.

...our children are the signature to the roster of history; our land is merely the place our money was made. There is as yet no social stigma in the possession of a gullied farm, a wrecked forest, or a polluted stream, provided the dividends suffice to send the youngsters to college. Whatever ails the land, the government will fix it.

I guess I can't say it better.

ATTACHMENT 1

KEY STATISTICS -- Century of Change

	1880	1980	REMARKS
Forest Acreage (Millions)	13 - 15	17	Expansion of forest probably halted by now.
Number of Farms	64,000	8,000	
Lumber Output (Million bf.)	566	522	Large log shipments to Quebec not counted here.
Pulpwood Harvest (Million cords)	Nominal	3.2	Industry uses imported roundwood and chips from Canadian mills.
Mill residue used for pulp (cords)	Nominal	760,000	
Fuelwood - Domestic use (cords)	1.2 million	750,000	
Employment, forest industry	9,000	33,000	Slightly below 1950 level.
Forest Industry, % of total mfg. employment	17	30	

ATTACHMENT 2

Tyron's Estimates of Maine Spruce-Fir Timber Supply

Spruce and Fir Estimates

All in Rough Cords

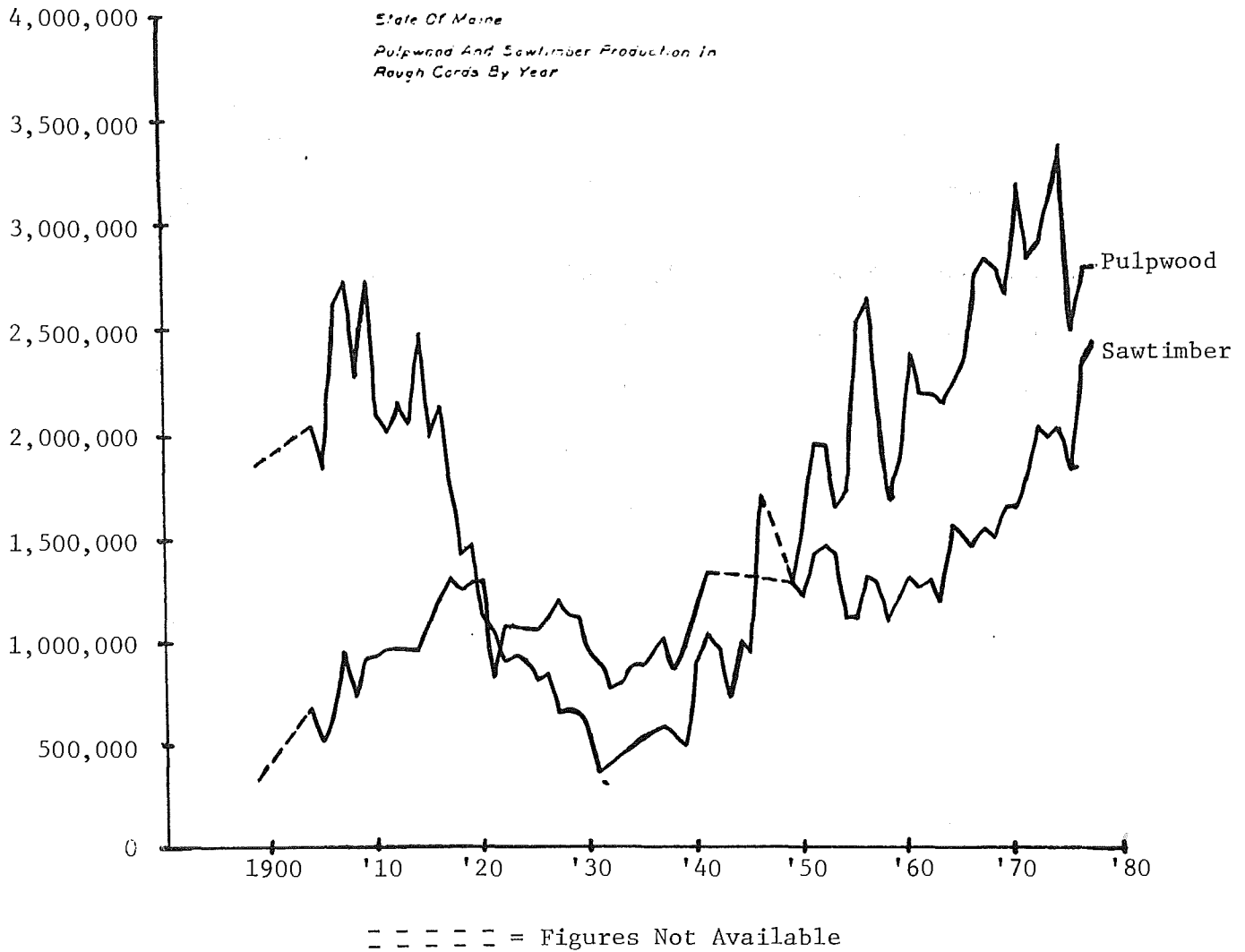
Year	Growing Stock	Growth	Drain from Cut	Acres	Source
1902	70,000,000	2,000,000	1,000,000	13,400,000	Ralph Hosmer U.S.F.S.
1917	78,000,000	2,340,000	2,000,000	15,000,000	Forrest Colby
1933	43,000,000	1,320,000	1,300,000	16,677,000	J. W. Sewall
1944	50,000,000	1,720,000	1,400,000	16,666,500	J. W. Sewall
1958	86,200,000	4,000,000	2,000,000	16,417,000	U.S.F.S.
1968	135,000,000	5,000,000	2,200,000	16,894,000	U.S.F.S.

SOURCE: Theodore C. Tryon, unpublished paper, March 15, 1976.

ATTACHMENT 3

State of Maine

Pulpwood and Sawtimber Production in
Rough Cords by Year



Source: Theodore C. Tryon, unpublished paper, 1976, based on State data.

ATTACHMENT 4

REPORTS ON MAINE TIMBER SUPPLY 1880 - 1979

YEAR	AUTHOR	SOURCE	REMARKS
1880	Sargent	Tenth Census of U. S.	Low volume estimates criticized by later writers; praises good condition of Maine forest.
1896	Cary	Report of the Forest Commissioner, 1896	Detailed description of forest conditions, growth, and log output. No overall supply-demand estimate.
1902	Hosmer	Quoted in Forest Comm. Report, 1902	Based on Hosmer, concludes, "there is no immediate danger of a timber famine."
1917	Colby	Report of Forest Comm., 1917	Estimates severe overcut, predicts "a state of complete timber exhaustion."
1933	Sewall	Report of Me. Bureau of Taxation	Detailed statistics; finds low stocking, spruce-fir growth slightly above cut. Described Depression as "somewhat of an enforced conservation program."
1956	Sewall	Report of Me. Bureau of Taxation	Detailed data; notes spruce-fir recovery from budworm. Outlook "not discouraging, though growth (cu. ft.) only above cut, and sawtimber overcut."
1956	U.S.F.S	Ferguson and Longwood Northeastern Sta., 1960	First field-based modern statistical survey finds growth-cut surplus.
1970	U.S.F.S.	Ferguson and Kingsley, Resource Bull. NE-26, 1972	Finds large growth-cut surplus for spruce-fir, but poor quality and overcutting in some species of sawtimber.
1979	Forest Industries Council	Me. Forest Productivity Report	Reviews opportunities for management intensification.
1979	Joseph, Irland, and Howard	Planning Report, Maine Forest Service	Reviews issues in changing timber supply situation.
1979	Seymour, Mott, and Kleinschmidt	Greenwoods Project, UMO	First sophisticated projection model applied to spruce-fir supply in Maine, designed to predict outcome of alternative budworm control strategies.
1980	Field	CFRU Res. Bull. No. 2	Reviews spruce-fir situation in detail based on landowner data.
1983	U.S.F.S.	New Evaluation 1980-81	Will be the most important one in Maine's history.

ATTACHMENT 5

Table 7. Percent and project output levels, U. S. and Northeastern States,¹ 1952-2030. Projections based on future equilibrium price levels.

Item	1952	1976	2000	2030	Percent Increase 1976-2030
<u>Paper and Board</u>	24.4	59.9	116.1	182.0	203
U. S. Total					
Production million tons					
Northeastern					
Pulp production million tons	2,700	3,720 ²	7,005	10,460	181
Roundwood consumption million cubic feet	---	374 ²	634	899	140
Chip consumption million cubic feet	---	94 ²	156	228	142
<u>Lumber</u>					
U. S. consumption billion board feet	39.2	42.8	52.1	55.9	31
U. S. production " " "	37.5	36.3	39.9	47.0	29
Northeastern:					
Softwood production " " "	1.3	0.8	1.0	1.2	50
Hardwood production " " "	8.9	1.5	1.9	2.7	80

Source: U.S.F.S., Analysis of the timber situation in the U. S., 1952-2030, review draft, 1980, pp. 442, 444, 450, 451.

¹ Northeastern States: New England plus New York, Pennsylvania, New Jersey, West Virginia, Maryland, and Delaware.

² Data for 1975.

Response by Gordon Baskerville

Gordon Baskerville is Assistant Deputy Minister of the New Brunswick Department of Natural Resources. Before assuming his current position, Mr. Baskerville served in research and program management positions with the Canadian Forest Service and was Professor of Forest Ecology at the University of New Brunswick.

Listening to Lloyd Irland, one could feel right at home. The New Brunswick forestry community has gone through similar hand-wringing with respect to the status of our forest resource and the industry based upon it. As it becomes clear that our situation is indeed serious, some interesting things have happened. Most notably, there is much less breast-beating about errors of the past, a lot more concern about how to do things better in the future and, with this, a marvelous degree of joint action by government and industry in addressing the problems which we face together.

To put our experience in the context of the description Lloyd has just given I will begin with a thumb-nail sketch of our problem in New Brunswick. The productive forest area of New Brunswick is approximately 80% of that in the State of Maine, while the annual harvest is some 120% of that of the State of Maine. Thus, for each acre of productive forest in New Brunswick we harvest almost twice as much. New Brunswick harvests more volume for each acre of productive forest than any other province in Canada, including British Columbia. This intensive utilization reflects a very large dependence of N. B. society on the forest resource as a base for our economy. The status of that forest resource is a major concern, and has been the subject of intense analysis over the past half-dozen years.

Put simply, every stand that will be harvested over the next forty years in New Brunswick is growing somewhere in the forest today. Over that time horizon, new initiatives, such as plantings made this year or in succeeding years, will not influence our supply picture. Further, analyses reveal that we need each and every one of the stands which are mature, or will mature, in the next forty years. Specifically, every stand that will mature in the next forty years in New Brunswick is already committed for use in some processing plant. The bottom line here is that, even with a commitment to management, which is also the highest per acre of forest in the Country, we will be unable to harvest stands of the present quality classes for pulp and saw-logs in all portions of the Province over the next forty years. We face some regional shortages, with respect to particular products, in the time-span of fifteen to twenty-five years from now. Beyond that all is roses as our extensive managed stands will by then be coming on line.

There is not much uncertainty in the above forecast. Our currently mature spruce and fir forest is virtually all 55-65 years of age. These extensive stands date from the 1913-19 budworm outbreak. The next oldest substantive age class, is in 30 year old cut-overs. Clearly, the harvest of the present 60 year old forest must be extended over a time period sufficiently long to allow the stands on cut-overs from the early 1950's to reach a size suitable for harvest. That older age class is already in decline, as the balsam fir component gradually dies out from over-maturity. Uncertainty with respect to these older stands lies only in the rate at which they will decline. There is uncertainty in the probable development of the younger forest with respect to volume yield, but it is clear that these yields will generally be less than the forest we are currently harvesting. In summary, all of the stands that we will harvest in the next forty years are growing in the forest now, and all of those stands are needed to maintain the current forest-based industry. Our current levels of management and improved utilization, should allow us to just maintain our industry through a critical period some fifteen to twenty-five years from now, although with some reduction in quality of raw material. Any loss of growing stock from the older age class, as a result of spruce budworm caused mortality, will shorten the liquidation period of that mature forest, and enhance the severity of the short-age problem. Similarly, budworm defoliation of the younger forest, which results in a reduction of the growth rate, will lengthen the time for it to replace the older forest, and thereby also enhance the severity of the shortage problem. In this context you can understand the reason for intensive protection programs in New Brunswick.

With the realization of the enormity of our problem has come a restructuring of forest management involving a high degree of industry/government co-operation. A new Crown Lands & Forests Act last summer virtually rewrote the rules for access to the forest, and for management responsibility. On both industrial and governmental fronts, there is aggressive forest management action.

There are several messages for Maine from our experience. First, the realization of our situation did not come suddenly, nor did it come easily. There has been argument surrounding forecasts of problems over the past twenty years. The crucial milestone is the open recognition that a problem exists. That is, technical demonstration of a probable future problem is not sufficient to generate a response on behalf of society. To initiate a true forest management response, requires that the forestry community in particular, and society in general comprehend the dimensions of the problem.

The second message is that in the transition from argument to realization, three kinds of people merged and played significant roles. The first group look back in time, to point out

all of the errors, and bad guys, in the past. No discussion of forest management with these folks escapes the endless, and pointless, ritual of assigning blame for past "mistakes". Their approach is analogous to that of a coroner's inquest to examine a fatality and determine the cause of death and assign the blame. I do not deny that this sort of thing is necessary in our society. However, I will contend, as strenuously as possible, that it is the dead wrong perspective from which to view the long-term management of a resource which grows as slowly as a forest, and which requires a forty year planning horizon into the future.

The second group of people refused, in the face of any and all evidence, to concede that a problem existed in the future. These folks have a fundamental belief that, no matter what the situation, we will be rescued by either technology or better data. Changes in technology will render all forecasts of difficult times untrue, and as the future unfolds, and new problems emerge, there will always be a technological solution that provides an immediate answer, without the necessity of waiting for trees to grow. The second rallying cry of the non-believers is the 'more-data-needed' syndrome. All studies of the future conclude with the statement that more data is needed. This is a ritualistic statement apparently so necessary that no forecast of the future can be printed without it. The non-believers use this as a lever to indicate that if we "really knew" the situation, that is, if we had the really correct data, we would see the problem as a non-problem.

The third group are those who have thoughtfully examined the reasonably possible futures, and comprehend the problems for what they are. These people acknowledge that the source of the problems lies partly in the actions of themselves, and others, in the past. They do not, however, dwell unduly on assigning the blame. These people believe that the situation is serious and requires immediate action, but that it is tractible. These people have sufficient comprehension of the problem that they are able to propose alternative solutions. They believe that there are courses of action which, if taken in a timely manner, and prosecuted with sufficient will and vigor, can lead to an acceptable future.

A third message is that it is important to adopt a positive attitude, and to see problems as opportunities. For those who will go to the intellectual trouble of a thoughtful analysis of reasonably possible futures there is every reason not only for optimism, but for enthusiasm. For the first time, New Brunswick can no longer avoid a management problem by moving harvest operations further north, or further east, because these options are no longer available. In fact, all the simple technological fix solutions have been removed by the passage of time, by budworm, and by economic growth.

The only alternative left is to actually manage the forest resource. I do not under-estimate the problem, nor the incredible demand that it places on dollar and manpower resources, but I am an enthusiastic participant in the drastic, but positive, action towards integrated management of our forest resource.

The most important message from our experience is that there will be no real management action until the problem is acknowledged. As Maine moves from a position of abundance of forest resources, to one of under-supply, and a clear need for active management, you will encounter the three kinds of people I have just described. The first are of little assistance, in my opinion. The second constitute a real danger, in that they effectively delay actions which society finds costly, especially in the context of the benefits being enjoyed by a future generation. The definitions of our problems in New Brunswick, that we accept in 1981, were readily available in thoughtful writings of the 1950's. Of course, now the problems are more serious and there are fewer options open to solve them. The difference is that our society now believes they must divert dollar and manpower resources to forest management, and from other forms of expenditure, if we are to maintain the forest-based economy. You should concentrate maximum effort on enlarging that group who have reached a comprehension of the problem that includes a firm belief that aggressive action is both needed and can be effective. For in the final analysis, until this group has the majority, no effective long-range management of the forest resource will occur. This has not come a year too soon in New Brunswick. It remains to be seen if Maine can learn from our experience.

Response by David Field

Dave Field is Associate Research Professor at the University of Maine School of Forest Resources at Orono. He is editor of the Maine Forest Review and author of 15 publications in forest economics and management science. He has been a forester at the White Mountain National Forest and Assistant Professor of Operations Analysis at the Yale School of Forestry and Environmental Studies. He is also President of the Maine Appalachian Trail Club.

I was interested in Lloyd's quote from land agent Samuel Cony in 1848 that unimproved wildlands are worth no more than an equal area of ocean. With the price of lobster and the extent of oil drilling, I'm not sure the comparison is all that unfavorable. On this panel, it has fallen to my lot to be concerned about what would happen if Maine did suffer a timber shortage. This is sort of a gloom-and-doom talk, but it has a silver lining: it need not happen. And the purpose of the talk is to reinforce the importance of insuring that it doesn't happen.

Dr. Irland has offered a provocative overview of the development of Maine's forest economy and the prospects for its future. I agree with much of what he had to say and his work should cause all of us to reflect seriously on what Maine's forests mean to the state and to its people. What would happen if we ran short of timber? First, let's consider what we have to lose.¹

Maine is the most heavily-forested (90%) state in the U.S. and contains a higher percentage (98%) of privately-owned forest land than any other state. It ranks first in the nation in acreage of industrial forest land (More than twelve percent of all of the commercial timberland in the U.S. that is owned by forest industry is located in Maine.) and leads all other states in paper production capacity.

During 1979, 5,396,000 cords of timber were cut in Maine. Of this total, 3,178,000 cords were pulpwood and 2,218,000 cords were sawlogs and specialty bolts. Seventy-three percent of the cut was softwood; twenty-seven percent hardwood.

In 1979, Maine's 1,100 timber processors employed 33,950 workers and paid gross wages of \$468,361,000. The value added in manufacture during 1977 by the state's paper and solid wood products firms totaled \$965,600,000. The total value of product shipments from those firms in 1978 was \$2,413,943,000. From 1970-1978, Maine's timber-based industries spent an average

¹ Statistics reported in this paper, unless another source is indicated, are from Field, 1980a.

of \$168,500,000 each year for plant modernization and equipment in Maine.

Maine's wood processors employ (1979) 29 percent of the state's manufacturing workers, pay (1978) 37 percent of all Maine manufacturing wages, account (1977) for 41 percent of all the value added in Maine manufacturing, and contribute (1978) 42 percent of the value of all manufactured goods produced in the state. You have heard or read statistics like these before. You should understand, clearly, that these impressive percentages are based on Maine's manufacturing sector alone, and do not reflect the many employees and economic flows of the trade, government, services, construction, and other non-manufacturing sectors of our economy. Although Maine's forest industries employ 29 percent of the State's manufacturing workers, they account for only eight percent of all Maine employees. However, these other activities could barely exist without the basic harvesting and production work of forestry, farming, fishing, and manufacturing. (Even those services dependent on tourism would suffer from the absence of the roads, utilities, and enterprises that have evolved to serve employees of the less seasonal activities of Maine's rural communities.) Moreover, the manufacturing industries, especially the paper industry, sell most of their products outside of the state. The dollars that flow from outside buyers of Maine products allow Maine workers to buy the many things they want and need that are produced outside the state.

Let us now look more closely at the connections between Maine's economic well-being and its timber resource. Let me elaborate, first, on the term "value added". The value added in manufacture is the value of finished goods less the cost of materials, supplies, fuel, electrical energy, and sales. It represents, then, the dollars generated by the sales of manufactured goods that are available to pay wages and salaries, interest on debts, profits, taxes, and the reserves that are needed to balance the depreciation and depletion of capital assets. Value added is considered by the U.S. Department of Commerce (1978) to be "the best value measure available for comparing the relative economic importance of manufacturing among industries and geographic areas."

I have noted that the value added in manufacture of Maine's timber-based products during 1977 was nearly one billion dollars. Without question, all of the activities in Maine that depend on wood products generate a larger total value added to the state's economy than does manufacturing alone. The U.S. Forest Service (Hair, 1963; Phelps, 1980) has studied this question at length and has developed estimates of values added attributable to timber, at about five-year

intervals from 1954 through 1972, in six activities:² For every dollar's worth of stumpage cut in Maine during 1972, \$1.81 was added to the economy through timber harvesting, \$11.12 in primary manufacturing, \$3.65 in secondary manufacturing, \$2.06 in construction, \$0.37 in transportation, and \$0.77 in marketing, for a total of \$19.78 added for every dollar's worth of stumpage cut.³ The total value of stumpage cut in 1972 (\$24,550,000) indicates a total value added attributed to timber of \$510,150,000.

² The Forest Service estimates prepared by Hair (1963) and Phelps (1980) are not based on an input-output study. Though one can correctly say that for every dollar of stumpage cut in Maine an additional X dollars in value is added in other timber-based economic activities, it cannot be said that the additional value has necessarily been generated by timber cut only in the state. However, such a generalization is probably more accurate for Maine than it would be for most states.

The Forest Service estimates are also rather conservative. Values added attributed to timber are based on the proportion of all raw materials used in a production activity that timber represents. Thus, if only 70 percent of the raw material used is wood-based, and the rest includes chemicals, metals, and so on, then only 70 percent of the total value added in manufacture is attributed to timber, despite the fact that there may be no substitute for the wood component.

³ It's interesting to note that the value added attributed to timber used in primary manufacturing plays a far more significant role in Maine than in the U.S. as a whole. (\$11.12 per dollar of stumpage cut vs. \$3.59, in 1972.) This is largely due to the presence of the paper industry, where integrated primary and secondary processing is the rule in Maine rather than the exception. It is often pointed out that Massachusetts employs more people in its paper industries than does Maine, and realizes a value added attributed to timber that is much higher because all of its processing is at secondary and higher levels. These observations are true, but miss a point of difference between job quantity and job quality.

"...the character of the paper industry differs considerably from state to state. In the more heavily forested states the capital intensity of the industry tends to be much higher than elsewhere and wage rates in paper are correspondingly high, regardless of the prevailing wage for manufacturing in general. Thus the capital-labor ratio for paper is much higher in Maine than in Massachusetts and wages are also higher in Maine--even though Maine's average manufacturing wage is more than 10 percent below that in Massachusetts." (Browne, Mieszkowski, and Syron, 1980)

Indeed, the Paper and Allied Products industry is the only manufacturing industry in Maine that pays an average hourly wage higher than its counterparts elsewhere in the United States.

In terms of "real" dollars (adjusted for inflation), the value added attributed to timber, per dollar of stumpage cut, has varied from \$24.79 in 1954 to \$26.69 in 1958, \$23.33 in 1963, \$19.39 in 1967, and \$17.67 in 1972. (The 1972 value for the U.S. as a whole was \$15.56.) The current dollar (not adjusted for inflation) value added has remained remarkably close to \$20 over the years. Applying this to the estimated \$72,000,000 worth of stumpage harvested in Maine during 1978 (Field, 1980b) indicates a total value added attributable to timber for that year of \$1,440,000,000.

Clearly, the public's stake in Maine's timber resource is great. Appreciation of this fact allows us to address the question of timber shortage in perspective.

Timber famine has been forecast throughout this century, sometimes by public officials seeking an excuse for increased public regulation of private forest lands, but more often by concerned professional foresters whose best judgement of the future simply could not foresee the changing demand patterns, effective forest protection efforts, and technological innovations that forestalled the expected shortages. I grew up in a western Maine landscape dominated by dead paper birch (legacy of the "birch dieback" of the late 1930s) and in an atmosphere of doom among the birch-dependent specialty-product mills of that region. But we underestimated the resiliency of the species and the industry is with us still. Over the past few years, there has been some weakening of hardwood pulpwood supply flows as loggers have diverted their resources to meeting demands of fuelwood markets. But, this has reflected more a temporary shortage of loggers in a particular market, and effective price competition for logging services by fuelwood buyers, than a shortage of timber.

Barring the absolute extinction of a resource, such as the carrier pigeon, there is no such thing as a difference between economic supply and economic demand. There is only a difference between what we want and what is available at a given price. Long, long before the supply of something disappears absolutely, its price makes it unavailable to many who would like to possess it. A timber shortage need not be sudden and catastrophic to destroy an economy that is heavily dependent on it.

A shortage of timber would mean, first, a rise in the mill-delivered price for roundwood, then a rise in stumpage prices as mills and loggers pay more and more for an increasingly scarce resource. Landowners would not be especially unhappy about such a turn of events.

As the shortage deepened, those landowners who still held some of the scarce timber would enjoy the steadily increasing prices for their property. Some might well hold their timber off the market, speculating on still higher prices and thus accelerating the development of the shortage. Timber would

flow in from further and further away from each mill until mill timbersheds overlapped to such an extent as to stabilize relative prices over large areas. Those wood processors with large landholdings might choose to rely more on their own resources (and would probably be condemned for attempting to hold market prices down) or might choose to hold their timber in reserve and draw more from others (and be accused of exploiting owners of small woodlands and saving their own timber in anticipation of still higher prices).

Loggers would probably enjoy a larger share of increasing mill-delivered prices until high stumpage rates began to force the less efficient out of the business. This would probably be the first part of the forest economy to suffer employment and payroll losses, but small mills would not be far behind.

Forest products firms exist in very competitive markets for their products. There are very real limits to the extent to which they can pass increased costs on to their customers without losing business and reducing production. As mill-delivered prices for roundwood increase, less efficient mills will reduce costs, lay off employees, and eventually fail, leaving their customers to those processors in Maine or other regions who are better able to compete. Those workers who cannot find other work at all will become a burden to the State. Some will shift to jobs that simply circulate dollars within the state's economy, rather than bringing in new money from sales beyond our boundaries. Others may have to leave the state and seek work elsewhere, losing whatever they value about life in Maine.

You may say that a large pulp and paper mill would never simply "shut down", that the owners have too large a stake in the investment to allow such a thing to happen. Yet, a timber shortage would force economic losses in such a mill that, though more gradual, could be just as sure and painful as in the case of the small sawmill. Employees of a paper mill hard-pressed by rising wood costs might, like the Chrysler workers who have just accepted a \$46/week pay cut, face the hard choice of reduced wages or lost jobs. In a truly severe timber shortage, even large mills could not compete with others not so hard-pressed and would, indeed, shut down.

A timber shortage is unlike the kinds of shortages most of us are familiar with. Our real concern over timber supply is not for the present. We have more than enough timber to meet our current demands for this year and the next. But, forestry is a very long-term enterprise; one that is vulnerable to changes in both the natural and social worlds to a degree experienced in few other ventures. These facts make forest management profoundly different from the management of short-term assets. Alternatives are far more numerous and complex, commitments are far more irrevocable, and errors of judgement are far more costly than in ventures where the consequences of

decisions are soon known and readily dealt with. At best, timber shortages could cause Maine to miss opportunities for healthy economic growth. At worst, poor forestry planning could prove devastating to Maine's economy. That is the essence of the public's stake in Maine's timber supply.

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Response by Neal P. Kingsley

Neal Kingsley received a BS in Forestry from the University of New Hampshire in 1961 and an MS in Forest Economics from the University of New Hampshire in 1963. He is presently Principle Resource Analyst and Resource Analysis Group Leader at the U.S. Forest Service's Northeastern Forest Experiment Station.

During 1980-81, we will be conducting a forest survey in Maine for the third time. The previous surveys were done in the periods 1954-58 and 1968-70. The reason for these surveys is that on May 22, 1928, Congress passed the McSweeney-McNary Forest Research Act, which mandated the USDA Forest Service to gather statistics on the forest resources of all of the states on a periodic basis. While the law did not specifically say so, these early McSweeney-McNary surveys were very much concerned with timber. Little or no data on other forest resources were gathered.

The assessment provisions of McSweeney-McNary were amended and broadened to include all renewable resources by the Renewable Resources Planning Act of 1974, the National Forest Management Act of 1976, and the Renewable Resources Research Act of 1978. Because of these Acts, the inventories we are doing today are substantially different from those that we did in the Fifties. In addition to timber data, we are also gathering information related to wildlife habitat, recreation potential, and soils. And with the current interest in wood as an energy resource, we are also gathering data on the aboveground woody biomass.

Another new undertaking with this inventory in Maine is digitizing of all of our forest field plot locations. By transferring the photo points to U.S. Geological Survey quad sheets, and precisely determining their location with coordinates, we will be able to provide estimates for areas as small as one-quarter of a million acres. That may sound small, but when you consider as extensive an inventory as we do, that is a relatively small area. Previously, with an extensive inventory system, we were locked into providing data for entire county units as the smallest level. With a county the size of Aroostook, which is larger than Connecticut, that is not terribly helpful for many applications. With digitized plot locations we will be able to select a point on a map

for, say, a potential mill site, and develop inventory estimates of the wood procurement area around this location. This work, which we consider a giant step forward, is being done at Orono by Ken Hendren, Jim Rea, and others. Many other states that we will be inventorying in the future are looking into this, so we see something here that should be very helpful in the future.

Naturally, an undertaking as large as the 1980 re-inventory requires a lot of planning and discussion. Fully 2 years before taking the first field plot, we held a series of meetings with people who are interested in the Maine forest resource. These included representatives of the Bureau of Forestry, the forest industry, landowners, recreationists, wildlife biologists, and university people; in short, just about anyone who has had any kind of interest in the State's forest lands. Through these meetings, we were able to learn the major concerns and needs of the people. With this information, we could begin to address these concerns and provide the data that were needed.

I should point out that no inventory design--like no man--can be all things to all people. Because of this, we are forced to concede that there are some questions that our inventory cannot answer, such as those that require mapped data. Throughout our discussions, it became obvious that a good method of tackling many of our concerns was to set task forces to address particular problems. To name a few, we have a task force to deal with the problem of obtaining adequate up-to-date aerial photography, one to address problems of concern to industry, one to work on obtaining financial assistance for the survey, and one on recreation.

The first stage in conducting an intensive inventory such as this is interpretation. In Maine, we will analyze stereoscopically and classify by volume class nearly 70,000 aerial photographs of the State. These points form a base on which we select our field plots. The data collected on field plots are used to stratify the photo interpretive data. We will collect inventory data on 3,697 field plots. Of these, 902 are 1/5-acre circular plots, and 320 are variable-radius 10-point plots that have been measured at least once before. The remaining 2,475 plots are newly designed 5-point plots. These are being used for the first time in any survey in the State of Maine. This plot design should improve our efficiency in the field by enabling us to gather significantly more data, both on the timber resource and on the associated forest

resources. These plots also can be remeasured during the fourth survey to provide us with even better growth information that we have had in the past.

In 1980, our field season concentrated on the unorganized portion of the State, namely, Aroostook, Piscataquis, and Somerset Counties. During this past field season, our crews measured 1,218 plots. This is not as many as we had hoped to complete. The time needed to train our crews in new field procedures slowed progress somewhat, but other factors that also slowed us are the miles and miles of new roads in the north woods. Many of these roads are not on maps or aerial photos. So our crews often had to spend time just figuring out where they were. We have always emphasized quality over quantity in our field work, and we will willingly bite the bullet for the sake of quality. Next summer, however, we expect to have a large enough field staff to complete the field work. Most of these people will be experienced; and we also will have roads that are on a map. This means that next field season we plan to take 2,479 plots--more than twice the number taken last year.

The forest survey is only one part, albeit a major part, of an in-depth look into the forest resource situation in Maine. Another important part of our work over the past decade has been a series of land ownership studies. In the Northeast, where 82 percent of the commercial forest land is in the hands of non-industrial private owners, the availability of timber and the level of forest management, as well as many other things, hinge greatly on the attitudes and objectives of private owners. True, Maine is not typical in toto of the 13 other states that we inventory. In fact, Maine accounts for 8 of the 13 million acres of forest industry land in the entire Northeast. But this is concentrated in the North. Southern and western Maine contain primarily nonindustrial ownerships. And here the ownership pattern is similar to nearby states.

To conduct the ownership study, we will mail a questionnaire to the owner of each plot that falls on privately owned land. This means we will probably mail out about 2,000 questionnaires to Maine owners. The ownership study will, for the first time, provide us with information about the forest-land owners in the State: who they are, their ownership objectives and their attitudes toward forest management and timber cutting. With this information, we will be able to estimate the amount of timber these owners might make available under various conditions, and what obstacles need to be overcome to encourage forest management on the nonindustrial forest lands.

There have been a number of ownership studies over the years for various reasons. But, to my knowledge, none has been undertaken for the entire State of Maine.

Another important phase of the inventory is the canvas of primary wood-using plants. All processors of Maine-grown timber will be canvassed to determine what species and what volumes are being used for what products. Because harvesters of timber in Maine are required to report what they cut in Maine, the State has the best information on cutting trends of any state that we inventory. This information, coupled with the additional data that we will obtain from the mill canvas, will make possible in-depth analysis of timber products trends in the State.

In addition to these somewhat standard reports, we plan to publish various technical articles and papers based on the data from the inventory. We also plan to publish nontechnical, general-interest articles to help make the public more aware of Maine's forest resource situation.

When we have completed all of this, we will have a mountain of data related to Maine's forest resource-- in fact, more data than are available for any other state in the nation. We will then be able to tackle such questions as: What is the real impact of spruce budworm? What are future potential problems and how can they be headed off before they become problems? What timber management alternatives are there? What are the potentials for wildlife habitat and recreation? We also will be able to assess the interaction between these various forest resources and their uses.

I believe this inventory will show that Maine is at a crossroads. For years, the abundance of timber and ability of Maine's forest resources to produce timber kept ahead of demand. Despite repeated high grading and general custodial forest management, this resource has been meeting the demand for wood for more than 300 years. However, the last decade has seen a significant upswing in timber production. Maine today boasts the largest softwood sawmill east of the Mississippi. Pulpwood production is at an alltime high. And we hear talk of new products such as waferboard and chipboard. During this same decade, spruce budworm devastation increased significantly as more and more stands of balsam fir matured. During the Seventies, interest in Maine's forest for recreational and esthetic enjoyment also increased. The

results of this survey probably will show that the continued development and growth of Maine's forest industries will require a coordinated effort at total forest management.

Undoubtedly, this inventory will show some precarious growth and removal ratios, and probably some overcutting in some regions of the State and in some important species. We can expect to see a continuing decline in the quality of the hardwood resource. For Maine's forest industry to continue to grow in a healthy manner, these trends must be reversed. If they are not, the prospect is economic stagnation and eventual decline.

Before I am labeled a prophet of doom, let me say that I do not see Maine's forest economy either stagnating or declining, for a number of reasons. The boom-and-bust days are gone forever. There are no vast untapped sources of wood, as there were a hundred years ago. The same past decade that saw a tremendous increase in the production of timber products and in the destruction of standing timber by the spruce budworm also saw a heightened awareness of forestry by Maine's people. The inventory will undoubtedly show that the potential of Maine's forest resource to produce timber is substantially greater than the present level of production. When this potential and a public interest in forest management are brought together, and mixed well with Yankee ingenuity and determination, I have little doubt that Maine will continue to be a major forest products producer.

Response by Jim Robbins

Jim Robbins is Vice President, Director and Sales Manager of Robbins Lumber Company in Searsmont. He is a forester with a Bachelors Degree in Forestry from the University of Maine at Orono. Mr. Robbins is Chairman of the Processors' Program Committee of the Maine Forest Products Council and a Director of the Northeastern Lumber Manufacturers Association.

I have been asked to speak to you today on "The Shape of Maine's Timber Supply". I would like to tell you how I perceive our markets today and in the future and what I think we need to do with our forests to meet these demands.

The demand on our forests will be greatly increased. Already we are seeing many retail lumber yards switching back to eastern lumber because of numerous reasons. For example, freight from Idaho to the Boston market on pine has gone from \$78 to \$96 per thousand board-feet since last summer. We in Maine can deliver pine to the Boston market for under \$20 per thousand board-feet. We now have much better equipment at the eastern sawmills to compete with the west. We have become much more aggressive in our marketing and we have an extremely strong grading agency in the New England Lumberman's Association (NeLMA) to back up our quality control.

We are also going to see better utilization of our eastern species, For example, tamarack, formerly used only for pulpwood, is now a very desirable dimension species and is sold right along with hemlock.

We will see much wood being exported from our forests. A tremendous amount of logs have been, and will continue to be, exported to Quebec (as well as the jobs that go with them). Many NeLMA mills have already exported to many European countries and NeLMA recently sponsored a group of lumber buyers from Sweden. We should be exporting lumber, not logs, because of the value added for foreign trade and most importantly for the jobs provided for Maine citizens.

The spruce budworm also throws tremendous pressure on our forest as it destroys our raw material.

Wilderness areas also throw more pressure onto us because of the single-use versus the multiple-use concept.

The need for electricity endangers our forests from flooding from hydro projects such as Dickey-Lincoln. We also will see biomass and woodwaste from sawmills being burned for electrical generation. Right now there exists the potential for at least 20 megawatts generating capacity from sawmills in Maine. The paper companies are also gearing up to generate with woodwaste.

The 1980's were supposed to be boom years for housing. So far they have been a bust. But, the potential demand is still there. The nation badly needs housing. The only thing holding back housing now is high interest rates. As soon as rates drop, prices will rise as well as the demand for wood.

Those who think our forest industry has peaked in Maine are greatly mistaken. We will continue to use much more of the tree than in the past. We have just scratched the surface with the use of biomass which I believe will be used for fuel in the very near future. In a recent study done on one of our own red pine plantations, we found that figuring biomass, a 17 year old plantation had produced over 4 1/2 cords growth per acre per year. This is some different than the 1/2 - 1 cord per acre we are used to talking about here in Maine.

Low grade species and slash can be converted to biomass at the same time we are harvesting the more valuable products. Just think of how removing all this trash off the land will help us in site preparation for replanting to genetically superior species.

I believe the demand for firewood will begin to level off as more people switch to coal - unless the acid rain problem creates legislation forbidding the use of coal. So far, I believe that firewood demand hasn't hurt the paper mills, but rather has helped the loggers survive depressed pulpwood prices.

I believe we can meet the challenges ahead of us in the forests - but we must play our cards right. We are seeing tremendous research coming out of the University of Maine's Cooperative Forestry Research Unit. A recent fertilization study on white pine, for example, shows increases in growth from 35 to 55 percent. A full time geneticist has recently been added to the staff. I believe the Cooperative Forestry Research Unit is one of the best things that has ever happened to the Maine forests. We are fortunate to have a terrific research staff on board.

It is encouraging to see the paper companies finally replanting. I believe that every acre in this state that is cut should be either cut selectively or else clear cut and replanted to desirable species. However, we should be careful to discourage pure stand management. I believe that white pine is a badly neglected resource in this state. I have long said that if the paper companies planted white pine in with their spruce and fir that they could make enough on the pine to pay for the growing of the spruce-fir for the paper mills. It's true that they would have to spend some money fighting blister rust but maybe more than that could be saved from fighting the spruce budworm.

I realize that millions of acres can't be changed overnight but we have to start sometime. I believe all of us in Maine could learn a lot from the success in forest management programs from the likes of Weyerhaeuser and J.D. Irving in New Brunswick. I admit to being prejudiced towards white pine. One tends to get that way when he owns a white pine sawmill.

I believe that lump sum stumpage agreements should be outlawed in Maine. All stumpage should be sold by the thousand or cord. Lump sum agreements tend to encourage stripping because anything left cuts into the loggers profits.

In the future we must convince our state and federal politicians that multiple use is the answer. If we are to increase production from our woodlands, we can't afford single-use management. Just imagine for a minute now, if from Bangor north, only logging was allowed - no hunting, fishing, snowmobiling, camping, canoeing, etc. and no motorized vehicles - except of course skidders and log trucks. This sounds ridiculous, right? But isn't the reverse of this now what is happening on much of our federal and state lands? Just look at the Alaska land settlement which recently tied up over 100 million acres. A study done by Ted Tryon in 1976 shows that in 1902 there were 70 million cords of spruce-fir growing on 13.4 million acres, or 5.2 cords per acre. In 1968, there were 135 million cords growing on 16,394,000 acres or 8 cords per acre. I don't think that industry has been that bad a steward of the land. However, with today's modern methods we should be able to do much better.

Lloyd Irland mentioned that we will need to double the forestry effort and convince tens of thousands of small woodland owners of the benefits of good forest management. I agree. But how are we going to convince them if the state pulls all of its foresters out of the woods? They certainly won't put any credence into anything the state suggests to them after that. The past few years have seen feverish planning in Augusta with a build-up in administrative costs. Planning for what? Now the state threatens to cut out our service foresters, back out of the spruce budworm commitment, and practically eliminate the blister rust program. The state may be saving money but it is also taking giant steps towards destroying our forest resource. I find it disgusting that out of all the divisions of the Bureau of Forestry that the only division not being cut in the proposed budget for the fiscal year 1982-83 is Planning and Development. I suggest that if the Department of Conservation wants to save money that it cut out some of the frivolous programs such as urban forestry and the shade tree program, try to cut down on administrative costs, and meanwhile take the handcuffs off the service foresters so they can spend more than 20% of their time marking wood.

The land in this state has been high graded for years. I agree with Lloyd that our forests are in lousy shape. However, we are just beginning to scratch the surface in what we can accomplish. The service foresters in this state have had a tremendous impact on the small woodland owner. Don't forget, that the majority of the wood industry in the southern half of the state depends on the small woodland owner for its wood supply.

Our company started a tree farm family program with two foresters each working one-half of their time on other people's land, at no charge, in Waldo and Knox counties. We did this because we realized that with only one state service forester in the area, he couldn't possibly handle all the land management needed. Now that we have jumped in to help the state, the state is abandoning ship, so that now we won't have any more foresters in our area than we did before. Needless to say, it doesn't give us much confidence or encouragement to want to do more. If the state thinks that industry will pick up the slack, don't forget that many mill operations can't afford foresters to work on other people's land - especially in markets like we are now experiencing. Private consultants can and will be an important factor for the medium sized landowner but the small landowner can't afford the private consultant - and even if he can, you won't be able to convince him that he should hire one. It's hard enough to convince them that they need forestry assistance when the services are offered for free. I suggest that the Governor do a survey in Waldo county of 100 small landowners and see just how many would hire a private consultant at \$100-\$150 per day. I guarantee you that very few would ever say yes - especially when the local logger comes along and says that he doesn't need a forester because he has cut wood all his life. We all know what happens then. In 1930, 19 service foresters served 4500 different landowners comprising a total acreage of 126,500 acres. I consider that to be a significant amount of land management that can't afford to be sacrificed.

In the 1980 United State Forest Service Maine team review, it states that "the Maine Forest Service needs to re-establish its visibility and leadership in forestry issues in the state by moving beyond the constraining stereotypes of fighting fires, killing insects, and marking trees!" I disagree with this statement 100 percent. I believe that whoever came up with that statement has some misdirected ideas of what the objectives of forestry are. Those activities are the basics of forest management. Let us not forget what our primary objectives in forestry are. Let's get back to the basics.

I was pleased to see that a film on Swedish forestry methods was being shown today. Sweden has been in a desperate situation for wood fiber. She now has over 2000 people managing practically the same size forest as we have here in Maine. We have 24 and the Governor wants to eliminate those. Must we wait until our situation is desperate before we start to get serious?

I suggest that we start to get serious by creating a new separate Department of Forestry with foresters running it. As our new President, Ronald Reagan says, "It's time for a new beginning".

We have a tremendous potential market turning our way. Are we going to get serious about our forestry and capitalize on this tremendous opportunity for the State of Maine? Let's stop our floundering around and get on with it. It would be a terrible shame to let this opportunity pass us by.

DISCUSSION

Lloyd Irland: There's some reason to believe that Baskerville's "worst case" is already happening here in Maine; i.e., in the two-three year period between publication of initial forecasts of the likely spruce-fir shortage and the generation of more data, spruce budworm protection decisions have been made by landowners in Maine which, in the aggregate, are likely to produce by this fall an irreversible supply shortfall ultimately. The situation in Maine is unlike that in New Brunswick, where government is not only able but must take a central role because it owns much of the land. Here government has withdrawn almost completely from the decision-making process--a move, by the way, which didn't receive much applause, sentiments about "getting government off our backs" notwithstanding. And the marketplace doesn't seem to have been able to react to the situation. We may very well be sitting here today blithely accepting a future management situation that we don't want. And not doing anything about it. In my perception, some aspects of the cost allocation and the protection program in New Brunswick have some merit for us here in Maine. I wonder whether Gordon Baskerville would share with us the approach that is utilized in New Brunswick. I am thinking in particular of the partitioning of costs between the consumers and the producers.

Gordon Baskerville: The cost-sharing agreement for protection in New Brunswick is like Topsy--it just grew. And it changes. But basically all of the protection is done by a company that is 90 percent government-owned and 10 percent industry. That's FPL, Forest Protection, Ltd. The funding for it is essentially 70 percent from Provincial government, 30 percent from large industry. Now, that's arrived at by a very complicated formula, but basically it's an insurance policy. Industry pays in proportion to its freehold land, in proportion to its draw on wood--its actual consumption from year to year. And they all pay, whether or not they get protection in a given year. In other words, it is an insurance approach. If you applied the numbers that I just gave you, it wouldn't work out to 70-30 government-industry. The government pays a subsidy on the Crown Lands. Right now, it's 50 percent of the cost of protecting Crown Lands. And the government right now picks up, to the extent possible, the full costs of the protection of small freeholders--acres under 500 acres. That's been real cheap the last four years because 100 percent of those acreages are in the set-back zone and aren't protected. So, the bottom line is that industry pays 30 percent of the operating costs of Forest Protection, Ltd.,

and the Provincial government right now pays 70 percent. Of the 70 percent, about half comes from treating small freehold acreages and about half from a subsidy on the Crown Lands.

William Butler: I have another question for Gordon Baskerville. I believe that you said we can no longer solve the problem by moving--north, south, east, west, or whatever. As you know, the woodsmen are very concerned about whether our forests will be regenerated, by replanting if necessary. However, you seem to assume that someone will have to solve the problem. And I wonder why you haven't considered that perhaps the people who have cut the wood can go away. What compulsion is there, or what could you suggest for Maine, that would require that we solve the problem?

Gordon Baskerville: Somebody said earlier that you don't act until you see the handwriting on the wall, which means that you have to be fairly close to it. When you get up close enough to the wall where you can read the handwriting, then you have to believe that the social constraints on that "elephant" are absolutely and utterly incredible. We would solve our problems in New Brunswick overnight by just doing away with the sawmills. They're all inefficient and they're just causing a huge problem. All we'd have to do is just wipe them out and we'd have it made. You better believe that in our woods supply analyses that is not an option.

Seminar III

What is Happening in Forest Management in Maine

Key Speaker: "The Forest and Maine's Future"

David Smith,
Professor of Silviculture,
Yale School of Forestry & Environmental Studies

Panelists:

Duncan Howlett,
Small Woodland Owners Association

Robert LaBonta,
Scott Paper Company

Jon Lund,
Natural Resources Council of Maine

Maxwell McCormack,
University of Maine at Orono

Discussion

DAVID M. SMITH

David M. Smith is the Morris Jesup Professor of Silviculture at the Yale University School of Forestry and Environmental Studies where he has taught since 1948. He is the author of the textbook "Practice of Silviculture," which, in English and Spanish editions, is used throughout the world. He is a 1941 Botany graduate of the University of Rhode Island and did all of his graduate study at Yale. In 1972-73 he was silvicultural consultant to the President's Advisory Panel on Timber and the Environment. He has been involved in New England forestry for 40 years and has been responsible for the management of Yale's forests in central New England for most of this time. Since 1967 he has been forestry consultant to the Baskahegan Company, a 100,000-acre ownership in eastern Maine. During the past few years he has overseen the work of several of his doctoral students who have been making studies of spruce-fir silviculture in Maine in conjunction with the Northeastern Forest Experiment Station and the University of Maine.

THE FOREST AND MAINE'S FUTURE

David M. Smith
Professor of Silviculture
Yale University

In silvicultural management, or any other enterprise, it is necessary to capitalize on the comparative advantages of any situation and elude the consequences of the disadvantages. Most of this discourse has to do with the ways in which the natural ecological factors operating in Maine forests show the way to attainment of economic objectives through silvicultural treatment.

Some of the things I am going to say are fraught with the dangers of excessive generalization. However, forests--especially those in this part of the world--are very flexible, resilient systems. They respond to all kinds of different treatment. There are all sorts of different ways of growing trees and no single ways that are better than all others. Much of logical silviculture consists of a little bit of this and a little bit of that. People get concerned about herbicides and insecticides. There are certainly places where they don't fit the circumstances, but others where they do. Sometimes one plants, and sometimes one doesn't plant. The best that can be done in all of situations is to have foresters, with due regard for other knowledgeable people, prescribe carefully planned treatments for any particular kind of forest, on a stand-by-stand basis. While no two stands are the same there have to be limits on the variety of different prescriptions, at least for administrative convenience.

Maine has an exceedingly well-watered climate in which it is virtually impossible to keep trees from starting and growing. Except in some limited areas of dry soil, the abundant water supply has other consequences that are either desirable or undesirable, depending on the viewpoint. For example--and provided that certain lessons learned in October, 1947 are not forgotten--forest fires are easier to keep in check than in almost any other kind of forest in the world. The important agencies of damage historically, or at least in nature, have been biotic pests and wind. But fire seldom has been.

Forests regenerate themselves in nature after lethal disturbances. The species that one finds in any particular locality are adapted to the kinds of disturbances which they

were subjected to in nature. We've come along much more recently, and the way we operate basically in silviculture is to figure out what kind of natural disturbance created some result that we like, and then to simulate that disturbance. The windstorms and pests that have ruled the forests of Maine in nature are more nearly the enemies of large trees than of small ones. Fire kills the forest from the bottom up; wind and insects kill it from the top down. And, as a result, most of the important tree species that we have are adapted to becoming established almost exclusively in varying degrees of shade beneath the old stands. There they tend to persist as seedlings, commonly for very long periods, and to retain the capacity to start rapid growth when their parent succumbs. Just as they are not adapted to fire, many of them are also not particularly adapted to severe or sudden exposure to sunlight, desiccation, and that sort of thing. Neither has it been necessary for them to adapt themselves to grow rapidly in height after they germinate. They haven't developed these adaptations because they didn't have to in their natural environment.

With respect to this matter, the Maine forest--or what our Canadian neighbors appropriately call the Acadian forest--is very different from the more nearly fire-ruled forests that occur farther north or very much farther to the west and south. Actually, most of the forests of the world in nature were governed by fire, and are in silvicultural practice best managed by kinds of treatments that ape the effects of fire. There are natural fire-following "pioneer" species in Maine. It happens that in most cases we tend to regard these as weeds of the forests. They are typified by gray birch, aspen, pin cherry, and, at the southern and northern fringes of Maine, pitch and jack pine. We could utilize these species more than we do and doubtless will, but not with great enthusiasm. There are some other fire-followers: red pine, paper birch, upland black spruce, as well as the larches, both native and exotic. These have better reputations than the weeds referred to earlier, but, except for paper birch, they are not particularly common in Maine. This is probably because we haven't had enough fires. It is significant, however, that these medium-grade fire-followers are about the only ones that exhibit the rapid rates of juvenile height growth that are necessary to make an economic success of planting trees. If somebody spends money planting trees, they want something that is going to jump up quickly. Unfortunately, many of Maine's most important species are not adapted to do that. They are instead adapted to start as so-called advance growth underneath the old stands.

Acadia is a Micmac land of plenty. The Acadia that Maine shares with the Maritime Provinces is a kind of forestry utopia--although with certain qualifications. The chief thing which makes it such is the bountiful supply of regeneration which usually seems to well up continually underneath the old

stands. In fact, it has sometimes appeared to me that if a silviculturist envisioned some magic forest that might be found beyond the Pearly Gates, it would probably be a version of the Acadian spruce-fir forest, free of black flies or budworms.

Furthermore, it is a forest composed mostly of photosynthetically efficient species which, at least after they have managed to get into the sapling stage, produce wood at rates which are really amply respectable, and are often sustained over remarkably long periods. This circumstance actually compensates, to some extent, for the moderately short growing season. One peculiarity of the situation is the fact that super-abundant water supply actually hinders production in fully as many parts of the spruce-fir forest as it helps. In fact, in the long run, one of the surest ways we might have of increasing the productivity of our important spruce-fir forest would be to emulate the Finns and drain parts of it. There is such a thing as altogether too much poorly oxygenated water.

To get back to the matter of the advance growth, if we have the wit to use it properly, the easy natural regeneration of abundant advance growth confers a very valuable advantage. Given the cost of planting, with site preparation, and the post-planting control of pioneer weeds, I estimate that this advantage is worth something on the order of \$100 an acre. Were it not for the higher logging costs and precommercial thinning that are often needed to get comparable results from natural regeneration, the advantage would be \$200 or more an acre.

Everything is a sword that cuts both ways. The chief problem with the bountiful regeneration in Maine forests is that it commonly leads to stands with far too many trees for proper tree diameter. This problem is so serious that it causes something like 50-75 percent of the actual total production of Maine forests to be diverted into food for the fungi and insects that feed on the dead, suppressed trees that have lost the race and fall to the forest floor. The faster we can develop the kinds of logging machinery and wood technology that are necessary to thin the Maine woods and divert some of this really remarkable production into fiber and fuel--rather than fungus fodder--the better it will be. It will not only increase the actual yield that we capture from this production, but it will also make the remaining trees grow better through the thinning process. It is no accident that one of the world's leading advocates of some of the desirable lines of attack is Professor Harold Young of the Complete Tree Institute of the University of Maine. He didn't have to look very far from Orono to see the reasons for them. Forests are among the most productive kinds of vegetation that exist, but the difference between the gross biological production and that conventionally utilized has

always been discouragingly large. Maine is simply a place where the overcrowding of forest stands that leads to this difference is vastly greater than it is in most other forests.

The seemingly ever-flowing well-spring of regeneration has led us into paths of rather dangerous complacency. The forests of Maine have been skimmed or high-graded for the biggest and best trees, starting with the harvest of coastal white pine back in the seventeenth century. It is both a wonder and testimony to the Acadian features of the situation that forests not only remain but also that they are still as respectably good as they are. However, the successive high-gradings have proceeded so uniformly that virtually nothing remains to show how fine the original forest was, or, more importantly, how good a really well-managed forest might be. On the other hand, it is not necessarily easy to perceive that the Maine forest in general is much better stocked with merchantable timber than it was several decades ago. Lloyd Irland has presented you with very good statistical evidence of this. This better condition can be a trap in its own right.

The awkward situation is an imbalance of age classes which seems most acute in the important spruce-fir type, but it is not limited to it. Forests of these shade-tolerant or shade-enduring, advance-growth species typically develop distributions of tree diameter which seem to make them, like the theoretical all-age forest, manageable by what foresters call the selection system. However, as far as many forests in Maine and other parts of this general part of the continent are concerned, this is a mirage. Because of previous treatment by people and nature, most of the stands that we have in this region are more nearly even-aged than otherwise. Vast areas of the spruce-fir forest were restarted from advance growth after the 1912-1920 budworm outbreak and the harvest of spruce and other remaining species that followed soon after that devastating episode. In many instances, and for quite a few years, we have simply been making partial cuttings, often merely in the nature of certain kinds of thinning, in a very large age-class which is now about sixty years old, dating from 1920. We are now in the midst of the unfortunate situation in which the balsam fir in these stands has become susceptible to budworm attack almost all at once. Phil Chadbourne of Bethel has observed a number of times that three foggy nights will kill a fir tree. There is a large supply of this quick-growing and useful species, but it is a very perishable commodity. Having it in the forest is like having a time bomb, set to explode at about sixty years. The only question is, who gets it? Do we harvest it? Does the budworm do it? If neither we nor the budworm get it, the heart-rots will set the stage for the wind to break it down.

While all of the forest types of Maine have a very well

demonstrated capacity to bounce back after the partial cutting of the larger trees, it is very easy to go back to the well once too often. This problem results from interpreting the even-aged condition as the uneven-aged condition. Successive harvests become increasingly meager, as the average diameters decline under what really amounts to a kind of high-grading. While one can get away with a certain amount of this, there is an end to it all. If this style of cutting prevails in all stands, or even in very many ones, as has commonly been the case in Maine, the whole forest is apt to become uniformly and subtly depleted. This situation can turn into a nightmare, and there are precedents for it.

In the spruce forests of Norway, the same kind of degenerative selective cutting went on for many decades, until the problem was recognized and corrective action was instituted in the 1940's. The degraded stands left by repeated partial cuttings of a high-grading nature were referred to in Norwegian by a colorful expression, "The Green Lie:" The forest that looked good if you viewed it from across the valley, through the wrong end of a telescope. Norwegian spruce forests are not blessed with either good advance-growth regeneration or the comparatively rapid growth rates that are available to us in Maine. The rotations are on the order of 110 years long and the trees don't get very large in that time. Back in the late 1940's, the Norwegians commenced systematic replacement of these old stands with planted ones, because they didn't have so much opportunity to rely on advance growth. However, given their resolution about sustained yield and the necessity of 110-year rotation, it will still take them until about the year 2055 to complete the change-over.

A somewhat similar situation lies ahead of us in Maine, but fortunately the corrective action can be swifter and easier, provided that we recognize the situation and take appropriate action. The crucial step is to start the deliberate replacement of some old stands with ones that are truly young, but not necessarily absolutely new. Some resolute embarkation on even-aged management and the regulation of final harvest cutting by area (rather than by adjusting diameter distribution) is something that will facilitate the process. While it is only a crude guess, I imagine that it might take about 80 years to complete this process, if we set forth to convert about one-eightieth of the forest annually. This is based on an estimate of about an eighty-year rotation for spruce, not fir. It would also mean a continuation of some sort of partial cutting in a component of the total forest which diminishes by one-eightieth every year.

Such partial cuttings can follow a variety of patterns. The most logical basic one would be to harvest the fir as early as possible in the process and to repeat the action in each subsequent partial cutting; the likelihood of eliminating

balsam fir seems vanishingly small. The more enduring spruces can be stretched out to the end of whatever rotation length is chosen through perhaps as many of three more partial cuttings. The ultimate step of stand replacement would come with cuttings so heavy that they would look very much like clearcuttings, except that it would be best if they had the effect of releasing pre-established advance-growth seedlings or saplings of fir and spruce. Readjustment of the age-class distribution would call for making the replacement step earlier in some stands than in others. This readjustment would definitely call for treating some stands differently from otherwise similar ones, a necessary difference that would leave many on-lookers very puzzled.

As far as the spruce-fir type is concerned, the good advance growth confers and advantages which is much more feeble in Scandinavia and almost all other places where spruce trees grow. In Maine, one has the option of starting over again with younger spruces and firs that are already present and in the sapling stage. This isn't anything new. Most of the abundant sixty-year age-class actually started in this way. During the era of horse logging there were sequences of successive cutting coupled with budworm losses which, by the 1920's, had created extensive areas of youngish saplings. The subsequent diameter-limit cuts for pulpwood removed much of the older residual trees and left the stands, now sixty years, dating from the time of the release of the advance growth, free to grow. The trees are actually older than sixty years, but most of their productive potential has been realized in the last sixty years.

If this kind of expeditious regeneration is to be accomplished, it will require harvesting machinery which, like old-fashioned horse-skidding, does not destroy too many saplings. Unfortunately, in recent years, the Maine woods have become altogether too full of machinery which is not tailored to this crucial consideration.

We also have the problem that firs and spruces, especially red and white spruces, don't grow very fast during the seedling state; they do when they reach sapling size. If we can operate so that we start over with saplings 10-15 feet tall, we have an opportunity to get an effective head-start of something equivalent to ten or fifteen years on the next rotation. On the other hand, if ponderous extraction machinery causes something akin to true clearcutting, where one had to start over with truly new seedlings, several problems must be faced. In the first place, small firs and spruces aren't necessarily going to stand the exposure. In the second place, if they do, they're apt to get overwhelmed by fast-growing weed's, pioneers like gray birch and pin cherry or red maple stump sprouts. If these are not eliminated by such measures as aerial application of herbicides, one suffers about fifteen years of lost time. In other words, the difference between the heavy-handed cutting that destroys

the advance growth and the attempt to leave this sapling growth of advance generation is something like twenty-five or thirty years of potential growth. This is probably about 12 cords per acre.

The crucial problem with logging destruction of advance growth in the spruce-fir type is the fact that spruces, and especially the true firs, are not (with the exception of upland black spruce) really adapted either to germinate or to survive very well as small seedlings in full exposure to sunlight. As far as the true firs are concerned, the evidence for this discouraging conclusion is something which mounts on a worldwide basis. I did not realize until about 15 years ago, when I saw some silvicultural disasters in the High Cascades of Washington and Oregon. There they have some true firs which make balsam fir look like a poor relation, but they wouldn't stand the exposure of clear-cutting. I came back to this part of the country and belatedly observed that balsam fir had to be about 6 inches tall before it too would stand exposure to the sun. Recently I was discussing the matter with a student from the Indian province of Kashmir who was concerned with growing true firs in the Himalayas. They don't stand exposure either, and clearcutting and planting doesn't work. Actually this had been learned in central Europe a long time ago. Much of the reason why regimes of partial cutting are fashionable in Switzerland, Bavaria, and Austria, is that there is a kind of true fir, the European silver fir, which foresters are very eager to grow. They found out long ago that it doesn't stand exposure. We've just been finding out the same thing the hard way and too late.

The same general situation applies to the regeneration of virtually all the important timber species of Maine. It is not merely a case in which they can start as understory advance growth. An increasing body of experimental evidence shows that they are ill-adapted to start in any other way. Among Maine foresters, this lesson about the importance of advance growth has been known for a very long time. There are many other parts of the country where foresters won't believe that advance growth is good for anything, but Maine foresters have known and depended on it for decades. We shouldn't forget this knowledge; the evidence for it gets stronger rather than weaker.

While this does call for heavy reliance on various kinds of partial cutting, it would be highly desirable to begin to alter the styles of partial cutting that have long prevailed. Such alteration may be like reversing the course of an ocean liner; it isn't something one is going to do overnight. The human system is a rather ponderous one. Nevertheless the practice of cutting the larger trees and using their smaller contemporaries as residual growing stock, if pursued too far, is fundamentally counterproductive. We've been doing it mostly because it makes for lower harvesting costs. It's cheaper to

handle a given volume of product from large trees than it is from small ones. The fact that many Maine forests can respond for a time in moderately generous fashion to this kind of treatment shouldn't obscure the dangers of the approach.

It is a matter of fundamental principle that in even-age'd stands it is the biggest and best trees that grow best both in terms of quantity of wood and the financial returns on their own value. If this be the case, it is desirable to begin to alter partial cutting so that more of the harvest comes from thinning out smaller trees and more well-spaced ones of moderately large size are left to continue the good growth that they are already making. The point is that much of our partial cutting has actually been removing the best-growing trees and leaving small ones that are not necessarily capable of growing well enough to compensate for the loss. There are, of course, important exceptions to this generality. Certainly it is useful from all standpoints to harvest the short-lived balsam fir early in any rotation. The same is, in general, true of paper birch. The ones to try to encourage for the long pull are the more enduring and less perishable ones, such as the spruce's, sugar maple, or the best-growing conifer we have, white pine. In all of this, one is chronically concerned about losses: wind, insects, fungi, and ice. This is something which is inevitably with us in forest management. For example, some of the forests of this world that have been managed best and longest are the famous ones of the Black Forest in southwestern Germany. I was quite astonished a couple of years ago to learn that in this predominantly spruce forest, in spite of very orderly management, one-fifth of the average annual harvest comes from the salvage of blow-down. There are strenuous efforts to thin the stands hard enough to make the trees strong enough to withstand the wind. This suggests that we might well resign ourselves to recognizing salvage as a continual process in the handling of forest stands. Salvage means roads. One of the most grinding problems that still faces the management of forests in Maine is that of making them accessible for management and all the other purposes and uses they have. We are in an unfortunate situation in which the fat of the old growth paid for improvements in stream-driving and winter haul roads that went to the low ground, to lakes and streams. Now we have to buy our way back in again over truck roads that come from the high ground. The forest is going to be easier to manage when we have this new transportation network in place. Let us hope it is not again rendered obsolete by technological change.

I might briefly mention one other item which should be on the long agenda of unfinished business in Maine silviculture. That is learning more about how to manage the so-called mixed-wood type--mixtures of hardwoods and conifers. These forests--composed mostly of fir, red maple, spruce, and birch--cover vast areas. They actually have productivity equal to, or greater than, either the spruce-fir or northern hardwood types which have attracted more attention. They may also be somewhat more resistant to damage. This is an important forest type

that keeps getting overlooked because it doesn't fit our orderly classification; it is neither softwood nor hardwood, so it falls between the chairs.

We ought to get down to cases and figure out how to handle mixedwood forests and sites. They may be the best places for converting hardwoods to softwood, because the soils are better and more productive than true spruce-fir soils. One of the things which shouldn't be overlooked is that the evergreen softwoods are fundamentally more efficient in production than the deciduous trees, simply because they get more than one year's use of one annual investment in leafy sugar factory.

Another important point is that the sandy soil of southwestern Maine, or some other parts of this locality, are part of the largest area in the country that is well adapted to growing eastern white pine. This is a silvicultural task which is best done well, or not at all, but success provides rich rewards.

It is also possible to grow respectable hardwoods on the better forest soils in Maine. However, repeated high-grading can and has caused even more problems in hardwood forests than in those of the spruce-fir type. The development of good hardwood forests depends on regenerating them by cutting heavy enough to release the small advance growth of such species as maple and ash, and to induce the germination of new birch seedlings--although yellow birch can come from advance growth. Partial cutting plays an important role in managing hardwood stands while they are developing, but when the time comes to replace them, it does require heavy cutting to release the advance growth. In fact, perhaps the hardwood forests in Maine are one place where the true regeneration cuttings have not been heavy enough.

In conclusion, most of the suggested improvements in practice turn on the view that the Maine forest consists mostly of shade-tolerant, advance-growth-dependent species that grow in stands that are more nearly even-aged than otherwise. This was an interpretation which I dimly suspected a quarter-century ago; all that I think I have learned since simply makes the hypothesis stronger. There are plenty of problems and there always will be. The most important thing is that this Acadian forest is full of all sorts of opportunities. And if the opportunities are recognized and appropriately grasped, there is ample reason to foresee that the Maine woods will become even finer and more useful to society than they were in the bygone era when they became legendary.

Response by Duncan Howlett

Duncan Howlett is the founder and first president of the Small Woodland Owners Association of Maine. In 1974 the American Forestry Association made him Citizen Conservationist of the year and in 1976, he was named the outstanding tree farmer in Maine and in New England.

There is much to be said on behalf of the small woodland owner, but the hour is late, my time is short, it is warm for those of us who, yesterday, were working outdoors in zero cold; you are tired and I am tired, so I will go straight to the point and try to answer the Governor's call for a consideration of the economic aspect of Maine's forests, insofar as the small woodland owner is concerned.

That means, so we are told, some 100,000 owners and perhaps 5,000,000 acres of forest land. Specifically for me, representing the Small Woodland Owners Association of Maine as I do, it means over 600 dues-paying members, managing over 125,000 acres of forest which might otherwise go to house lots, shopping centers, or be merged into larger industrial holdings.

Let me lay before you a single proposition. It is also a recommendation and we hereby lay it before the Governor and the Department of Conservation with all the urgency we can command.

Proposition

The citizen ownership and management of forest lands, in units large and small, is to be encouraged in every possible way here in Maine.

The reasons for this recommendation are important to notice.

1. A very desirable expansion of our total forest resource will result from the encouragement of citizen ownership and management of forest lands.
2. Conversely, without such encouragement we can expect a steady shrinking of citizen ownership of forest lands, and consequently of the total forest resource, particularly in the more populous areas of the state as these lands are converted to other uses.
3. There is today a rising insistence by the public on the right of the public to make use of privately held land. This development has had a strong negative influence on forest ownership, both present and prospective.

4. There is also today an increasing public demand for control of private forest use, including the control of logging practices and silvicultural methods. This development is also negative in its effect on citizen forest ownership.
5. The complexities of forest management are so great and the return on small units so small that assistance is necessary to induce citizen ownership and management of forest lands.

To implement this recommendation we urge that the following steps be taken immediately.

1. Continue the Tree Growth Tax Law, modified so that heavily forested towns are not asked to bear an undue part of the resulting tax burden.
2. Expand, not diminish or cancel the present Service Forester program of assistance to small woodland owners, those who own say 10 to 50 or so acres.
3. Discontinue such service to those who can and should pay for it themselves.
4. Improve and expand ACP and FIP programs, with realistic pay scales for workers in those programs.

The result in economic terms, our standard for this Conference will be a greatly increased number of jobs in many areas. Some examples are: sales and service for chain saws and other hand logging equipment; sales and service for heavy logging equipment--skidders, loaders, trucks, etc; jobs for loggers, jobs for foresters, State, industrial, and consulting; jobs for mill workers in wood-related industries; all of the foregoing due to the increased flow of logs and fiber from private non-industrial forest ownership and management. The secondary impact of all this activity should be plain despite the difficulty of measuring it in more precise numbers.

In conclusion, let me point to a gain in other non-economic values that may prove more important to the overall welfare of the State in the long run. I refer to values we call recreational, esthetic, social, cultural yes even spiritual. In this area, the encouragement of small woodland ownership and management here in Maine will mean a state dotted with small forest especially in our more heavily populated areas where woodland is needed most. Such encouragement will mean more clean air and clean water, again in our more urban areas where they are in shortest supply. It will mean a greater habitat for wildlife, not only for deer for hunters and beaver for trappers but a habitat for birds, shrubs, flora and fauna of all types; for this is the kind of individual the small woodland owner is apt to be--one who enjoys the forest because of values like these.

In sum let us encourage the small woodland owner because he or she needs such encouragement to buy, to keep and to manage forest land in small units. And let us remember, that in addition to the economic benefits we can expect from such encouragement, we shall improve the quality of life generally. And after all, isn't that our ultimate aim in all that we try to do?

Response by Robert LaBonta

Robert LaBonta received a BS in Forestry from the University of Montana. He joined Scott Paper Company as a forester in 1952 at Scott's West Coast operations in Everett, Washington and became Chief Forester there in 1957. In 1969, he became manager of Woodlands for Scott's northeast operations in Winslow, Maine, his present position.

Dr. Smith's short course in Maine silviculture was interesting and most encouraging to someone in my position. It was interesting in that I learned from it; it was encouraging in that he suggests that the silvics of Maine's forest permits a great deal of flexibility in management of those forests.

Flexibility is critical if we are to meet widely accepted forecasts of future demands for the many products of the forest, and if we in Maine are to enjoy the vast potential of an expanding forest industry. That is a potential unequalled in any other area of endeavor open to our state in my admittedly somewhat biased opinion. But forest management is more than pure silviculture. Forest management is impacted by such diverse factors as consumer demand and satisfaction, both quantitative and qualitative; product researchers and marketing specialists; special interest groups from SAM to PEST, and from NRA to NRCM; our elected officials, federal and state agencies of all persuasions; bankers and all the influencers of inflation and interest rates, whoever and whatever they might be; and yes, the omnipresent OPEC. In brief, the body politic is intimately involved in forest management. We must hope -- we must, in fact, work hard to assure -- that the body politic allows the forest manager a large measure of professional flexibility, just as nature does. That will continue to be a tough chore for us, one that will require regular and continuing attention.

What is happening to forest management in Maine? It seems safe to say it is intensifying. The stage of intensification, relative to some other forested areas in the U.S., is, in my judgment, just short of adolescence. As with the adolescent child, we can anticipate a surge in development that will surprise us, despite the fact that we know it's coming. But for the spruce budworm catastrophe, it would be more pleasant and certainly more constructive to discuss forest management in Maine and its immense potential for major, sound industrial development. Unfortunately, the budworm is directing a very large portion of the forest management now going on in Maine. And the budworm's ravages are surely destroying more growth than could be gained by a much higher level of management intensity than we are capable of achieving for some time to come.

Again, unfortunately, the body politic, for whatever reason, has failed to recognize the magnitude of the budworm disaster to the state, and has identified it as a problem "for the paper companies." This attitude may reflect the no-growth philosophy which permeated some segments of society during the Sixties and Seventies. Whatever its source, that perception threatens to place severe restrictions on Maine's future opportunities for several decades to come. Perhaps a policy turn-around could still salvage much. Surely, Maine deserves something more than mere survival. Surely, growth and opportunity are important, too.

The budworm must be considered in any discussion of forest management in Maine, but I would like to move along to a few more positive things that are happening. A young forester fortunate enough to find a job and start a career in Maine today has some exciting times ahead. So much will happen so fast that it will be difficult to stay abreast. I am fortunate to have already experienced that which I predict. For a decade and a half, beginning nearly three decades ago in the Pacific Northwest, I observed and participated in the transition from a very extensive form of forestry -- in other words, provide some protection and let nature take its course -- to some of the most intensive forest management practiced anywhere in the world. That transition was inexorable, driven by economics laced with a good share of foresight, and participated in by the body politic.

The first need for intensified forest management is knowledge: learning what can be done and what can't. That is being acquired at an ever quickening pace in Maine. The University has long provided it, and now the major landowners have added great strength by privately financing the Cooperative Forest Research Unit through the University. In fairness, it must be said that many other educational institutions besides the University of Maine contribute in many ways to forest management in Maine. Yale, for instance, Syracuse, Duke, and perhaps even Montana, to cite just a few. Additionally, many and perhaps most of the major landowners have their own research organization. The people involved in this research are plowing the ground -- sometimes literally -- learning the best techniques for developing a better and more productive forest.

Technology will play a big role in intensifying forest management, both in the area of working with nature in improving forest productivity (the conventional concept of forest management) and in the area of forest utilization, without which it all becomes academic. Any of us who have been in the business for a few years can think of examples of changes in wood utilization, without which some of the conventional existing forest management opportunities would be invalid, and other opportunities with great promise could not be considered.

People are planting trees in Maine and establishing nurseries in which to start them. Can you imagine planting trees in Maine -- where you can't keep trees out? Someone did a long time ago on some of our land. Forty years later these trees had grown at the rate of 1.5 cords per acre per year. That is not your average growth rate in Maine. I do not have any idea how much of that sort of thing is going to happen, but it serves to illustrate an admittedly outstanding case of the biologically possible.

There is a host of forestry activities that might be identified as intensive forestry. I suppose a survey could be made to determine how much is being done, or has been done, in each category. Perhaps such a survey exists. I didn't look. At the current stage of development, such statistics would be misleading and would seriously distort the real world, in that the real world of intensive forestry in Maine lies in the future -- the near future, I think. At some future point, it is likely that activity will reach some degree of stability. But if we are in fact approaching adolescence, there may be magnum jumps in activity in any given year or succession of years. Recent history is not very indicative during this phase.

I don't believe this is the place to try to enumerate everything that has happened in forest management in Maine. I also do not believe, just because Maine juts up and away from the rest of the country geographically, that it can or should exist in a vacuum. I do believe that the forecast of doubling of world demand for forest products by 2030 will impact at least proportionally in Maine. I do believe that this will soon be reflected in the intensification of forest management in Maine, as it has elsewhere.

The greatest deterrent to realizing the exciting future that might be is for us to believe that we have all the answers now, to inhibit in some way the exercise of sound professional management by dedicated, professional managers as they build on an ever growing body of knowledge. As our panel leader suggested, nature has been generous in permitting considerable latitude and flexibility in managing Maine's forests. If we are to achieve success, if we are to enjoy the benefits of an expanded forest resource achieved through intensified forest management, the body politic must be no less generous in providing flexibility. The returns are worth the considerable effort it will take to assure positive interaction between forest management and the public.

Response by Jon Lund

Jon Lund is a graduate of Bowdoin College and Harvard Law School. Mr. Lund served three terms in the Maine House of Representatives and one term in the Maine Senate prior to his election as Maine Attorney General in 1973. He is now in private law practice in Augusta with the firm of Lund Wilk Scott & Goodall and is serving his second term as President of the Natural Resources Council of Maine.

As a spokesman for the Natural Resources Council of Maine I am speaking on behalf of individuals who are neither land-owners nor industry nor direct consumers -- only indirect consumers of forest products. But, contrary to what some may believe, conservationists are not opposed to the harvesting of trees. They recognize that wood comes from trees, and that usually if you want to get the wood, you've got to kill the tree. Conservationists are, however, often known by what they oppose, which leads to the adversarial climate that was spoken of earlier by Br. Bullock.

I'd like to state, if I could, some of the things that conservation interests would tend to support when it comes to forest management. I think they would tend to support forest management that makes minimum use of chemicals --- herbicides and pesticides, that pose hazards to non-target plants, to wildlife, and, last but not least, hazards to man; a forest management that is carried on without erosion and siltation problems to clog our rivers and streams and ponds; a management that recognizes that the forests are not only a source of fiber but also a habitat for wildlife, an area for recreation -- in short, a multiple-use area. Last, but certainly not least, a forest management that minimizes waste. In this connection, I'd like to make note of Professor Smith's comment that some 75 percent of the biomass production of our forests now goes to waste. I'd like to come back to that later.

The members of the panel have had an opportunity to see an advance copy of Professor Smith's remarks. It was difficult for me to anticipate how they would be received orally, but as I read them, my initial reaction was one of disappointment. The topic, as I understood it, was to be "what is happening in forest management in Maine". And yet he changed his title slightly to "Forest Management in Maine". I was expecting to look at an airplane photograph view of what is going on in Maine, but he has provided us rather with a worm's-eye view of what is going on in the forest in Maine. I think it is appropriate for him to do that however, because our earlier speakers today provided more of the airplane view.

At the risk of being redundant, let me restate what I understood Professor Smith to be saying: That in Maine, not fire but wind and pests are the major natural harvesters and, as a consequence, the important and valuable species are those that thrive initially in shade rather than in conditions that are like fire. And he concludes, why not manage our forests

in a way that simulates the natural forces of harvesting, namely, wind and pests, and rely less upon methods that are similar to fire -- methods more like clearcutting.

I would say that conservationists find a great deal to support in the views expressed by Professor Smith. We would see the prospect for reduced use of chemicals. And while Professor McCormack may disagree, I think many of us have serious misgivings about their use.

We would be utilizing management techniques that take advantage of Maine's natural growing characteristics, with less reliance on clearcuts and the long-range questions that their use presents. Additionally, Professor Smith points out the need for developing harvesting equipment and techniques that do less damage to young growth and to make greater use of the natural advantages inherent in our Maine forests. This would seem to carry with it the implication of the avoidance of a monoculture. And I think many conservationists have concern about the hazards of producing a limited variety of trees because of their susceptibility to various kinds of pestilence.

Let me return, for a moment, to the adversarial climate that was referred to earlier. As a spokesman for conservation interests, perhaps I am in a minority on this program but numerically within the state, I may well not be in such a minority. The adversarial climate that has arisen in Maine, in my view, has arisen because a number of people -- perhaps a lot of people -- in this state have concluded that, if they want their views to be heard, those views have to be expressed in organizations and in an adversarial climate. If everybody was happy with what was going on in the environment, there wouldn't be any Natural Resources Council. There wouldn't be any of the several other organizations that are concerned with the environment in Maine. And so long as there are differences in opinion, the adversarial role is one that must necessarily exist. The desirable result, I would say, would be to encourage dialogue in programs such as this, and to give opportunities for expression of views before it becomes necessary to take an adversary position.

I referred earlier to the question of waste. It seems to me that we should take some recognition here of the fact that nationally the per capita income of this state is nearly at the bottom of the totem pole. And just as our forests are an important element in our state economy, they can be an important element in improving the financial lot of many of our citizens. Thinking as a conservationist, I am reminded of a line from "My Fair Lady." At one point the father of the girl is asked about morality. And he says: "Morality? We're too poor to have any morality". If we in Maine are primarily concerned only with where the next meal is coming from, then Maine is not going to be a fruitful area for the development of an environmental ethic.

If, on the other hand, we in Maine can make wiser, more economical use of our forest resource then surely our economy will be improved and the quality of our environment enhanced.

Response by Maxwell McCormack

Maxwell McCormack is Research Professor of Forest Resources in the Cooperative Forestry Research Unit at the University of Maine at Orono. His specialty is Silviculture. Dr. McCormack's interest is in forest regeneration and he has worked on thinning and growth responses in spruce-fir; interactions between harvesting methods, site quality, and forest stand development; herbicides, and Christmas tree production.

Although I have not been in his classes, in many ways I consider myself a student of Professor David Smith. Generally, I agree with what he said. I would like to pursue some points, emphasize a few of his, add a few of my own, and perhaps address a little more specifically the question on the program, "What is happening in forest management in Maine?" To do this, of course, one must consider what has happened in the past and anticipate what is going to happen.

As I reviewed Dave Smith's comments, I became intrigued with the silviculturist's vision of the magic forest that might be beyond the Pearly Gates. It might be an insect-free version of the Acadian spruce-fir forest as Dave suggests. I think beyond the Pearly Gates, also, there is probably no wind to cause blowdowns, there are uniform sites, there are no stored seeds or sprouts of undesirable species; there exists a consistent, regular production of desirables, with survival and establishment assured. Also, there has been no detrimental disruption which requires repair. And there has been no narrowing of the genetic base.

What is the real world, this side of the Pearly Gates, where utilization of the resource to satisfy the needs of society and economics obligates us to practice sound forestry? I think, to look at what is happening in Maine, that it would be appropriate to mention a few examples. My examples are not all inclusive, by any means. And I ask forgiveness of my friends and colleagues who could just as well be among these examples. In the interest of skimming over a few significant ones, I suggest you consider these for observation, discussion, and visiting.

In terms of effective transfer of knowledge to small landowners, we have the example of Dave Clement and Wayne Jackson. You always have to include the two of them together. They are a very effective team. Looking back over the years in terms of intensive culture of white pine, the Chadbourne operation. As an example of consistency in the execution of a scientifically based plan, John Hartranft. Recognizing a realistic ratio of foresters per acre of forest land, Jim Robbins. Someone prac-

ting silviculture with a real effort at trying to understand the structure and development of spruce-fir stands, go north and spend a day in the woods with Ed Chase. For one of the most outstanding examples of manipulation of stocking levels and thinning practices, spend a day with Dick Griffith. To observe a leading example of regeneration programs and putting disrupted stands back in order, get together with Oscar Selin and Roger Mitchell. Specific research programs to support what is happening in forestry are also part of the whole program. You might want to stop in Bangor and see Charlie Webb. I'd probably slip across the border and spend a little time with Pat Marceau. The other two people I had in mind over there gave us the honor of being with us today (Gordon Baskerville and Joakim Hermelin).

Short-term economics do not superimpose well on long-term biological frameworks. Long-term economics will be dependent on a sound biological framework. Diameter-limit cuts have high-graded stands and attempted to build growth on inferior trees. Neglected has been the point of the consequent narrowing of the genetic base from which comes the surge of natural regeneration. Categories of site quality which include consideration of access and impact must be the basis for establishing management priorities. Intensive culture of domesticated trees on productive sites can add new dimensions of efficiency in forest production. At the same time, we must harness the magnificent potentials of natural regeneration--that tide of advanced growth that Dave Smith referred to. The emphasis is on "advanced."

Odds for success vary with site, season, species, growing conditions, and timing. On the same site, the odds are different from one year to the next. We must beware of over-extrapolating our isolated successes.

Silviculture practices must be coordinated in management systems that recognize integrated possibilities between the extremes. For example, between clearcut and selection is an infinite variety and combination of patch cuts and partial patch planting. And in the process, the genetic base must be maintained, hopefully improved, or, where required, rebuilt. It is at this point that I differ with one of Dave's statements about watching the planted spruce trees grow slowly. There is no question in my mind that we can plant spruces and watch them grow rapidly. Within limits of healthy physiological condition, the growth capabilities of our forests are beyond our most optimistic estimates--regardless of tree age. We should leave the myths and debates of evenaged versus unevenaged management behind us, and address land areas, tree conditions, and stocking levels. The growth gains pursued in various exotic silvicultural practices, for the present, can best be gained through manipulation of stand density which recognizes tree quality. Give the trees room to grow. More attention should be directed toward young developing stands in anticipation of development potentials,

rather than remedial catch-up in stands which are over-the-hill; in condition, not in age.

Harvesting methods interact with site and existing stand conditions to determine development, or lack of it, in the next stand. We must consider efficiency and woodsman safety, but, above all, biological integrity must be maintained. Biomass harvests look good and increase yields. But there is an unanswered question about the long-term impact of these practices on site. Ownership must be considered. Where are the workable acreages and how are the forest management needs to be served? Continuity of sound forest resource management must span changes in ownership, executive shuffle, and politics. Armchair instant experts, political expediency, and antitrust have seriously deterred progress in the last few years. There is no substitute for qualified forest scientists who can communicate effectively and be in direct, realistic contact with landowners, executives, politicians, and the forests.

I will close by borrowing a quote. With the Superbowl coming up this weekend, it is especially appropriate.

"One of the greatest football players of our time makes the distinction between a player who is 'quick' and a player who is 'soon.' In his description, the 'quick' player is the man who waits until the last moment and then moves with nervous and desperate haste in the little time he has left. The man who is 'soon,' however, almost invariably arrives ahead of the man who is 'quick,' because he has thought out in advance exactly where he is going and how to get there, and when the moment comes he does not delay his start, makes no false motions, and thereby makes and keeps himself efficient. Forestry is preëminently a profession for the 'soon' man, for it is the steady preparation long in advance, the well-thought-out plan well stuck to, which in forestry brings success."

Those words were in 1914 by Gifford Pinchot (Pinchot, G. 1914. The Training of a Forester. Lippincott Co. Philadelphia).

DISCUSSION

Rob Gardiner (Natural Resources Council): Two questions, the first for Professor Smith. I inferred from your remarks that you would have some kind of management in the spruce-fir section of the Maine woods, which would do something like shelter-wood cuts. But I'd like you to elaborate on that.

Professor David Smith: There are a variety of kinds of spruce-fir forest, but the most common kind--if we skip over the very poorly drained black spruce bogs--are ones in which the fir trees temporarily outrace the spruce. It would appear to me that the logical course of action, in the first place, as Max indicated, is to get them thinned out any we can, as early as we can. The next step is kind of a race to beat the various damaging agents to the fir trees, to reduce those before the stand is fifty or sixty years old. And then to string it out with the spruce. There are a variety of different ways to manipulate that. But there does have to come a time when one starts over. It would appear to me that ideally one would open the stands up enough to get new advance growth quite well started before one started over. One of the things we lack is the kind of logging equipment necessary to get the stuff out without smashing up the advance growth. That's going to take some technological development. Oddly enough, we used to be able to do it with horses. It's not impossible even at present. Some of this, in a sense, is sort of draining the stand away in several stages before we can start over again. At the time of the replacement, I would have to indicate that it would look, at least from a long distance, suspiciously like clearcutting.

Rob Gardiner: My other question is for Max McCormack and Bob LaBonta. It has to do with their estimates of the cost of the intensive management per acre, and how that compares with the prescription of Dr. Smith about not using the techniques which would require site preparation, nursery stocks, planting and replanting where there was failure to succeed in the first planting, herbicide treatment, thinning and the like. Can you provide some sort of comparison of your estimates of the selective cut prescription of Dr. Smith and the clearcut and intensive management techniques?

Max McCormack: I suspect it would be difficult for us to address specific costs. And I suspect maybe it shouldn't be done in some cases. I feel there's a little misunderstanding here. When you talk about intensive forestry, believe it or not, the first example that comes to my mind is a sequence of partial cuts by which we manipulate the

species composition and levels of stocking through a system of natural regeneration. And then I work down from there. So when you talk about intensive forestry, that's first on my list. As you go toward what I gather from the other comments is an example of what you have in mind, let's say, clearcut, site preparation, planting and assuring the establishment of that planting--it is difficult to evaluate those costs directly, because in some cases the technology is there to guarantee the stocking level, the species composition, and have them grow at least three times as fast in the first ten years of development than would likely occur following the example we have to observe of natural regeneration. And where the real benefit might come in this intensive situation--let's say, straight rows of trees, even check-rows (Irving's plantations in New Brunswick are check-row), the payoff might be in the way those could be mechanically thinned effectively, and a very significant reduction in other intermediate practices that might be necessary. Some of those needs we can anticipate--it might be a pest problem that would be easier to manage more effectively at a lower cost--and certainly our harvesting costs would be much lower. So to really put a figure on it is beyond my ability right here, because of the complex possible benefits, the other benefits that occur at different stages of the rotation. I go back to my first example of what intensive forestry is. Our problem is that we are faced with remedial work, and we are not able to develop those stands in this kind of system. We haven't been intensive enough in the past to have that experience. But I think and hope we're right on the edge of that.

Robert LaBonta: I'm grateful to hear Max say that we definitely cannot talk about costs. I would be in deep trouble if we started talking about that. I have to answer somewhat as Max did. I can't even tell you any more than I could tell what my children were going to do in college at the adolescent stage. (It turned out they did a lot better than I expected and I'm grateful for that.) In Maine, with the oversupply and past surplus of wood, I think there is no way that we can relate the past to the future. I don't think we've even begun to realize the demand that is going to be put on the forest. I think we're going to have some gaps because of the spruce budworm. But I have to believe that world demand is there and it's going to hit Maine. We don't yet know how to manage the forest at all. I think we're just feeling our way at this point.

Joseph Lupsha: My question is for Mr. Lund. In his remarks, he used the term conservationist a number of times. I am wondering whether he might have a viewpoint on what the environmentalists feel about Maine forest resources.

Jon Lund: I'm not sure whether that's a serious question or not. I'm taking it a facetious one, because a few years ago, if a person was a conservationist, he wanted to conserve the rivers from pollution. Later on, in some circles, he became known as an environmentalist. And, most recently and most inappropriately, I think, now I've heard the term ecologist, which I personally abhor. But I was using the term conservationist as some of you might use the term environmentalist.

Seminar IV

Economic Impact of Maine Government on the Forest Industry

Key Speaker: "Having One's Cake, and Cutting it Too"

Peter Yacavone, President
Great Northern Paper Company

Panelists:

Charles Blood,
Maine Land Use Regulation Commission

Richard Anderson,
Land Reclamation, Inc.

Christopher Lockwood,
Maine Municipal Association

Henry Warren,
Maine Department of Environmental Protection

Discussion

PETER YACAVONE

Peter Yacavone is President of Great Northern Paper Company and an Executive Vice President of Great Northern Nekoosa Corporation. He joined Great Northern Paper as Assistant Controller in Millinocket, Maine in 1966 and lived there for three years. He was named Controller in 1968. From 1970 to 1973, Mr. Yacavone was an Assistant Treasurer and Assistant Controller of Consolidated Edison Company, a utility with headquarters in New York City. He became treasurer of Great Northern Nekoosa in 1973. Mr. Yacavone was named senior Vice President responsible for the Great Northern Paper Division of GNN and designated as President of Great Northern Paper in 1979.

Born in Hartford, Connecticut, Mr. Yacavone is a graduate of the University of Hartford (1950) with a degree in business administration. He was a manager with the accounting firm of Price Waterhouse & Company before joining Great Northern.

HAVING ONE'S CAKE, AND CUTTING IT TOO

by Peter Yacavone
Great Northern Paper Company

There has been a forest industry in the State of Maine for 250 years.

The industry has remained an important part of the economy of the state since the time when pine for masts was first shipped to England. And the industry has always remained in the public eye. That's understandable. It is the dominant industry in a state which has little industry.

Historians tell us there was a public outcry at the close of the Revolution because the Maine lumber trade was "played out". The King's surveyors had stripped the coast of its best oak and pine. The Portuguese had taken the pipe-staves for their wine. The English of Bermuda had been cutting along the coast for a century and a half.

When the Province of Maine broke away from Massachusetts, there was a deadlock over ownership of forest lands. Maine balked at paying four cents an acre for eight million acres. It was 30 years before the two compromised at 30-1/3 cents per acre.

In A History of Lumbering in Maine 1861-1960, Dr. David C. Smith concluded:

"By 1860 it had become clear to many, if not most, that the predominant feature of the northeast corner geography, the forest, was destined to remain. Most of the state remained unsettled, despite all efforts to change this; the fortunes of the state rose and fell as did the lumber market, and even as it was in 1604 most of Maine was a trackless forested frontier. How best to master this frontier and not ruin it, to utilize it and still maintain it, to have one's cake and cut it too, this was the central problem of life in the region and it is a problem that has never been settled to everyone's satisfaction."

How can the forest industry and the state have one's cake (the forest) and cut it, too? That essentially sums up the subject I have been asked to discuss: the economic impact of Maine government on the forest industry.

I plan to talk a few minutes first on how I view the relationship between our business and state government. Next I have some thoughts on the future. Finally, I hope to be more specific in three areas of mutual concern for the forest industry and state government.

Recently a reporter asked me why some businessmen had warned of plant closings and an exodus of industry from Maine in the heat of the debates over environmental laws in the Sixties and Seventies.

The reporter didn't have any specific statements by businessmen to offer -- just an impression that it was the truth. I really don't know the answer. I suggested it was more likely businessmen complained that imposing stringent regulations on Maine mills -- more stringent than in other states -- would put them at a competitive disadvantage. The Maine air pollution standards are an example of what I mean.

There were shrill voices raised by many of the debaters in those days, and not just by those speaking for business. In a biography of former Governor Kenneth Curtis, author Kermit Lipez quoted from an April 25, 1969 editorial in Maine Times:

"The land spoilers are on the brink of a statewide bulldozer assault that will make Maine people cover their ears at the roar. The oilmen are turning the state into a giant platform for another spire in their global empire. Miners are ready to strip the state of its soil in their exploitation of the resources that lie beneath.

"How many ways is Maine being raped?"

"Too many to count.

"And among the ugliest faces at the scene is the face of the state's government, encouraging the rapers instead of defending the state against them."

While Maine Times is the newspaper I have quoted, the press in general, and understandably I believe, has supported most of the regulations imposed to protect Maine's natural beauty. Editorials have reflected a view that you could have your cake and eat it too. In a sense that has happened. Maine's forest industry has expanded even while regulation and the associated costs have multiplied. However, much of the paper industry expansion in Maine in recent years resulted from the fact that existing facilities needed to be upgraded to remain competitive. With a large land base, it was logical to upgrade. Thus, to a certain extent, expansion in Maine has been of necessity.

Several examples come to mind:

With 885,000 acres of Maine timberlands, Scott closed down a pulp mill at Winslow and spent \$220 million on a new pulp mill at Skowhegan.

With 890,000 acres, Diamond International at Old Town closed down a sulfite pulp mill and spent \$24 million expanding its kraft mill. This was followed by the addition of a tissue machine. Diamond also built a stud mill and announced they are seeking environmental permits to build a waferboard mill.

With 550,000 acres, Georgia-Pacific shut down a ground-wood pulp mill and a paper machine while rebuilding another paper machine and investing in lumber and waferboard facilities.

With 1-1/2 million acres, International Paper spent \$175 million to increase paper production in Jay.

With 760,000 acres, St. Regis spent \$85 million to expand paper production at Bucksport and also went into the lumber business.

From the biography of Governor Curtis, however, one gathers that the issues of a decade ago were far different than those now faced by our leaders in government. Maine people accepted a new income tax in 1970 to provide funds for the state's university system, school subsidy costs, salary increases for state workers and additional benefits for the aging and the poor.

Today, I believe, public sentiment is against new taxes and against new programs in government.

All of us are awed by statistics such as those telling of the growth of the Federal Register. When the Register first appeared in 1936, it ran 2,411 pages for the entire year. In the 1979, the publication required 61,261 pages.

We read carefully the published public notices of state agencies daily in Maine newspapers and the flood of regulatory activities seems to be ever increasing. One agency alone, the Department of Environmental Protection has nearly 400 pages of regulations. When regulations in proposed form are added, the total is nearly 600 pages of regulations...from one agency! Perhaps if Maine had not felt the need to have its own hazardous waste survey, in addition to that of EPA, or its own hazardous waste interim license program, in addition to that of EPA, these regulations would not be so voluminous.

I have no doubt that the growth of state government has led to regulations which need re-examination. Still I believe there will always be a need for some regulation. I

accept that the State Department of Environmental Protection has an important job to perform in the public interest. I appreciate that Governor Brennan (and before him the late Governor Longley) has opposed new taxation. But I would like to see a more positive approach to government regulation -- one that could provide fewer and less complicated regulations than we now have and which would recognize the economic impact of compliance. If the time spent on proposing and writing new regulations was devoted to reviewing energy related applications and working with companies on energy proposals, we would not have the backlog of such applications which now exists.

I believe the signs of the times point to such an approach. We've matured. The prophets of gloom and doom have been replaced by cooler heads who accept that environmental regulations designed to protect public health are here to stay and that goals such as "zero pollution" can't stand up to the new economic tests facing proposed regulations. Let's exercise this same maturity and admit that more regulation is not the answer to solving our problems.

This maturity has already led to the logical consideration of new approaches. One such example is taking place in East Millinocket. Federal and state funds are scarce for municipal water pollution treatment facilities. East Millinocket's town system isn't built. For several months the company, the town and representatives of state and federal agencies have been involved in a study of the town using the company's treatment plant. If the company's rights can be safeguarded and all of the legal barriers overcome, Great Northern will agree to a trial operation. I am told it will be the first such program in the country.

Peter Newman, the editor of Maclean's, a Canadian weekly news magazine, saw a new course for his nation's neighbors following the November election:

"The election results signal the most fundamental shift in American thinking since Roosevelt's sweep of 1932. Reagan's romp revives the simplistic credo dear to America's fundamentalists: that the essential role of government is to remove constraints on its citizens. This was the overwhelming sentiment that carried Reagan into office and that must now animate his deliberations and decisions. The perfectability of the American dream and inevitability of its triumph have been given a terrifying powerful new lease on life."

Let's hope Mr. Newman is an accurate judge of U.S. thinking.

Now let me turn to specifics.

I have said several times that the Great Northern Paper organization faces three major challenges in doing business in Maine...

High cost labor;
High cost energy; and
High cost wood.

I am basing that statement on a comparison of operating costs within Great Northern Nekoosa Corporation which has other divisions with pulp and paper facilities in Arkansas, Georgia and Wisconsin.

Working together, I believe there are steps the forest industry and the state can take to improve Maine's competitive position.

First, labor costs:

I read with interest the call by participants in the Blaine House Conference on Small Business to reduce the cost of Workers' Compensation Insurance premiums.

Let us compare the so-called manual rates per hundred dollar of payroll in effect in 1980 for Great Northern Nekoosa operating companies in the four states in which we have pulp and paper mills:

In Wisconsin.....	\$1.55
In Georgia.....	\$2.73
In Arkansas.....	\$2.98
In Maine.....	\$6.48

Our cost was actually less because of favorable experience.

But still the cost for Maine was more than double that of the cost in any of the other states.

Great Northern paid out an estimated \$4.7 million in 1980 for Workers' Compensation Insurance. Our costs have increased over 250% in the last six years.

Speaking at the annual meeting of Associated Industries of Maine, Workers' Compensation Commission Chairman Charles Devoe said a large amount of cash can be saved by employers and insurers if the average time lag on a claim can be slashed from nine months to six weeks. He hopes to see this happen by July. Mr. Devoe had several other proposals for cutting administrative costs and simplifying the process. These proposals should be given every consideration.

We believe our employees deserve all necessary benefits. However, let's do away with administrative waste and a com-

pensation system that encourages remaining out of work rather than returning to work.

Now let us turn to energy:

As you may or may not know, we consumed approximately 2.4 million barrels of imported oil in 1980 to generate steam and electricity for papermaking in Millinocket and East Millinocket.

Last month we started up a \$36 million boiler in which waste bark is the fuel. It means we can run the East Millinocket mill at two-thirds capacity if our oil supplies are cut off. We'll back out 400,000 barrels of oil a year with this unit.

However, as a result of delays in the granting of federal environmental permits for the East Millinocket boiler, we will use an extra 200,000 barrels of oil.

Last October we filed an application with the DEP asking approval to replace oil with coal in two boilers of the Millinocket mill. If we can get the permits, the project will take 2-1/2 years to complete. Again, if oil supplies are cut off, the mill would be able to operate at reduced capacity. And the company will substitute coal for 800,000 barrels of oil. The cost of this project is expected to be about \$50 million.

The company has also asked the Federal Energy Regulatory Agency for permission to study another hydroelectric facility on the West Branch of the Penobscot River four miles below Ripogenus Dam -- a project in the \$100 million range.

And like all of you, we are doing all we can (and spending millions) to conserve energy.

If efforts such as these are in the interest of Maine's citizens, and I believe they are, the state could consider:

One, putting a ceiling on the "windfall profits" tax state government is collecting on industrial oil -- the 5% sales tax. The highest priced oil in the areas in which GNN operates is also the highest taxed. Oil delivered to Millinocket has climbed from \$11.02 in 1976 to \$35.94 a barrel today. The tax has climbed from \$.50 in 1976 to \$1.66. The tax went up over 200% in four years.

If putting a ceiling on the sales tax isn't acceptable, why not a reimbursement formula or tax credit to reward those who eliminate oil consumption?

But perhaps the most necessary step of all is for prompt state action on applications for permits to convert from oil

to alternate energy sources. The state did little for 60 days after our coal applications were filed. Nearly 125,000 barrels of oil were consumed during that period. If the state is serious about reducing oil reliance, situations like this cannot be tolerated. Despite repeated urgings to act on our application, we were told that the staff did not have the time. Yet, during this time period, the air staff found the time to compile several hundred pages of procedures on air monitoring assurance which go beyond federal requirements. Furthermore, the air staff was required by law to spend time investigating alleged violations of a state sulfur dioxide standard thrown out many years ago by the U.S. Environmental Protection Agency for lack of supporting evidence. This Maine standard is much stricter than those applying to mills with which we compete in other states and in Canada.

Finally, I want to discuss state regulations and laws pertaining to the forest.

The high cost of wood in Maine reflects all the things our company has to do to manage the forests and to harvest wood -- costs such as the operating of camps, the building and maintaining of an extensive road network, spending millions to fight the spruce budworm and the long growth cycle and lower wood density of the North. In Arkansas, Georgia and Wisconsin, other places where wood is used by companies of Great Northern Nekoosa, there are no such costs. Wood comes mostly from areas close to public roads, cut by men who live at home. Pest control is less expensive because less land is owned by our sister companies but mainly because there is no comparable problem.

In Maine, the assurance of a long-term wood supply at costs competitive with other regions can be helped by...

Retaining the present tax structure.

I recognize the criticism of the Tree Growth Tax Law but the intent of the law remains as desirable today as it was in 1970 when approved by the Legislature. It is designed to encourage sound forest management by taxing on the basis of productivity. The law also provides the stability needed when a crop takes a half century to mature.

It is apparent that the eligibility provisions need tightening up.

The annual revision of stumpage values would answer complaints about low valuations.

Towns experiencing a demonstrably adverse "tax shift" should be adequately reimbursed. I dispute those who say the funds for reimbursement must come from taxes on timberlands. A severance tax on wood at the time of harvest would open up a new revenue source for the bureaucrats and the politicians

to tap for other causes in the future. For 1980, Great Northern Paper will pay \$18.5 million in state and local taxes. Combined with that paid by other individuals and companies in the forest industry, that revenue should be sufficient to allow reimbursement under the Tree Growth formula.

There is the issue of regulating road construction on privately owned lands: How much is actually needed to protect the public interest?

In his book, Maine Lingo, John Gould describes the term Golden Road in this manner:

"A new term in Maine lore, this is the private highway of the Great Northern Paper Company into their land holdings north of Moosehead Lake. Called Golden Road because of its expense, it replaces the Penobscot River as a means of transporting pulpwood from woods to mill. It is a gravel road, unpaved, but otherwise one of the finest engineered highways in the state."

I quote Mr. Gould because he refers to the road as "one of the finest engineered highways in the state." Before a road is built by Great Northern, it is carefully planned -- costs and environmental effects considered by our specialists. Most of the company's timberlands are in the unorganized territory. If the road crosses a stream or river or approaches the shoreline of a lake, we have to get a permit or notify the state. That's true if a bog, or a slope, or a deer yard, or a historic site is involved -- even if we own the area.

Incidentally, since Maine Lingo, was published, approximately a third of the Golden Road has been paved.

Harold Klaiber of Scott Paper Company in November told the Land Use Regulation Commission of the desirability of logging roads, saying in part:

"Rightly or wrongly, I have the distinct impression that logging roads are considered by many to be inherently bad, and the amount of road construction should be held to the absolute minimum, and perhaps in many areas prohibited altogether. This attitude seems to prevail even though doing so may result in waste or at the very least the inefficient utilization of our timber resources. I sometimes believe that we have lost sight of the fact that the construction of logging roads is absolutely essential to the continuation of the forest products industry and to the general welfare of Maine citizens. We also seem to have lost sight of the fact that in an extremely large portion of the state these logging roads are either the only access or

provide significant additional access for recreational uses such as hunting, fishing, snowmobiling, cross country skiing and recreational driving..."

Great Northern has had accidents in which logging roads washed out and streams were silted -- very few considering the scope of our road network. When accidents occurred, we have promptly notified authorities and solved the problem to the best of our ability. Our policy is to cooperate in every way with the state agencies.

Logging roads yield many benefits with few risks.

But for the past year I have been distressed to see the many people from Great Northern and the entire industry, and from LURC and the State Department of Environmental Protection who have been struggling over additional regulations for such roads. Rather than spend dozens of hours drafting regulations and holding public hearings to impose regulations which are written by those who have never built a logging road and which do no more than require responsible companies to do what they already do, LURC would be well advised to spend more time educating small contractors on matters of erosion and sediment control.

Great Northern does not need this unnecessary cost and it should not exist.

Finally, there is the ever present spruce budworm problem.

If ever the privately-owned forests needed public protection, it is in this period. Only government can do some things -- including dealing with disasters. In the minds of some foresters, including ours, there is a disaster in the making.

While public opinion polls have shown steady and substantial support for spraying to control the budworm, the public outcry against spraying continues. There is a vocal minority opposed to all spraying.

But there is no scientific information available to convince me that spraying should cease. Nevertheless, the industry just went through 30 hours of hearings to defend carbaryl, the principal tool used to fight the budworm. These hearings were held by the state to consider restricting the use of carbaryl, despite the fact that millions of dollars in research effort and time had been spent on the federal level giving this pesticide a clean bill of health.

This is a case where government can cross boundary lines, tax people for services rendered and otherwise do a job which no single company can do. And someone must protect the spruce

and fir on woodlots not owned by companies such as Great Northern. Federal aid to make protection of such woodlots possible is essential. With the support of Governor Brennan and a united Maine Congressional Delegation we won the battle last year and I am optimistic over federal funding for 1981.

The matter of the forest industry and the state having its cake and cutting it, too, is complicated. I've only touched on key issues as seen from a Great Northern point of view. Let me sum up:

-- The State of Maine and forest industry have historic ties which have stood many tests;

-- Regulators and the regulated forest industry have matured in their relationships;

-- In many cases the forest industry and the state would benefit from fewer and less complicated regulations, and a recognition by the regulators of the economic impact of compliance;

-- The State of Maine should re-examine policies which make existing industrial facilities less competitive with those in other states and in Eastern Canada.

In the book Free to Choose, Milton and Rose Friedman wrote:

"Fortunately, we are waking up. We are again recognizing the dangers of an over-governed society, coming to understand that good objectives can be perverted by bad means, that reliance on the freedom of people to control their own lives in accordance with their own values is the surest way to achieve the full potential of a great society."

Thank you.

Response by Charles Blood

Charles Blood is Chairman of the Land Use Regulation Commission of the Department of Conservation, a wood broker, and landowner. Mr. Blood graduated from Dartmouth College.

Peter Yacavone touched on a number of areas within our topic concerning the economic impact of Maine government on the forest industry. I'll speak basically to the relationship between the Land Use Regulation Commission and the forest industry. Issues of taxation and budworm spraying, Workmens' Compensation and so forth, I'll leave to my fellow panelists, because perhaps they know something about those topics.

Glancing around the audience today, I see many familiar faces, but some of you may not know me. I've been a member of the Land Use Regulation Commission (LURC) for over five years, and chairman for two years. I've been a key participant in writing the comprehensive land use plan for the unorganized townships of Maine, which comprise approximately ten million acres, or fifty percent of the state's area. I've been equally involved in the drafting of all the Commission's regulations now in effect. I have a good feeling about the process we have followed. I know that the Commission members and the staff have tried very diligently to recommend only such regulations as are necessary to carry out our legislative mandate, and to see that those regulations have practical applications which truly protect those resources of Maine which have been widely recognized as needing protection. I'm sure we do not have a perfect product. And many of you will second that. That is why we have a continuing log of problem areas which need to be looked at. Every once in a while, we will try to achieve a steady-state by adopting new or modified regulations to meet real needs. But the instant we do, a new log page will be opened--to assure that the Commission remains a flexible, responsive, and responsible agency. Some would say that this evolutionary process is disruptive of their long-range planning. I say it is essential to the continuing acceptance of LURC's concept, and a fair price to pay for keeping regulations close to current needs.

Turning more particularly to Peter Yacavone's presentation, I must express some disappointment that he has presented only the Great Northern Paper Company's view of the relationship between forest land owners and state government, and has avoided any detailed dollars-and-cents discussion of our topic, namely, the economic impact of Maine government on the forest industry. I think, don't you, that Mr. Yacavone

intended his words to be somewhat of a criticism of LURC, and there is at least an implication that we cause his company expense, not to the long-run benefit of the people of Maine. But he stopped short of the type of analysis which would give us all a sound basis for discussion. In all sincerity, what are the details? How large are these expenses in relation to overall costs? In what way can we reduce them--and still perform our function?

Now, I will freely admit that, within the spectrum of forest land owners and operators, the Great Northern places high in environmental consciousness. But their activities are only a fraction of the total activities taking place in the woods, and quite clearly, some others in the field do not demonstrate the same level of awareness as does Great Northern.

Timber harvesting near water bodies, and road-building in general, have a high potential for causing environmental damage--notably erosion and subsequent sedimentation problems in our waters. The asserted historical lack of problems, even if true, cannot be projected into the future. Water transport of timber having been discontinued, overland transport remains the only practical alternative. And the increasing demand for timber means, in part, that new acreage has to be opened to harvesting. Inevitably, road systems will proliferate. Many formerly overlooked timber areas--some in wet places, some on steep slopes, some in wildlife habitats, and some near water bodies--will be given closer scrutiny as a source of this needed timber. The potential for long-term and even irreversible damage to what many consider to be the essence of Maine--its great wildlands area--is surely an expanding concern. To say that the past predicts the future of this area is unrealistic. The set of conditions is vastly different and becoming more fluid almost daily through new harvesting technology. To provide a positive prognosis for this area and to protect the public interest from the irresponsible and the uneducated, reasonable regulation, reasonably enforced, will always be necessary.

Although I don't want to get into any kind of contest with Peter, I can't let pass his remarks about the recently adopted guidelines for road-building in management zones under the Site Location Law. It is a simple fact that the forest industry, including Great Northern, participated from the outset in face-to-face sit-down meetings while these guidelines were prepared. They are highly responsive to the expressed concerns of those affected. I would also say that there was no struggle of any note, nor any time wasted in doing this task.

As to his remark that LURC would be well-advised to spend more time educating small contractors, I say that we do this now to the full extent of our resources. Wouldn't it be appropriate for Great Northern to increase its training program for small contractors?

Let me tell you briefly about my hopes for the future of the relationship between LURC and the forest industry. I hope we can communicate with each other in an ongoing way, more effectively than in the past and with a minimum of adversary posturing. Let us honestly identify what the on-the-ground problems are, and develop those reasonable regulations and guidelines which, if followed, will protect that essence of Maine's north woods so beloved by most of us. At the same time, LURC should listen to the problems of profitability which industry may have, and solicit the hard facts as to the economic impact of its actions. In response, industry should provide more solid cost data to clarify and reinforce its position that some controls impose an unreasonable burden on it in relation to the public benefit derived from these controls.

Finally, keep in mind that there are at least two commission members--John Walker and myself--whose livelihoods come from the woods. We've both built roads and faced many of the same problems that industry has. We'll know what you're trying to say and we'll listen.

Maine depends on its forest industry members. We want you to be strong. We want you to be successful. Together, we can do it. Together, Mr, Yacavone, we can have our cake and cut it, too.

Response by Richard Anderson

Richard Anderson has a B.S. degree in Wildlife Conservation from UMO and served as a biologist with the Maine Department of Fisheries and Wildlife. From 1971 to 1977 he was Executive Director of the Maine Audubon Society. Mr. Anderson was appointed Commissioner of the Department of Conservation in February, 1981.

After listening to the remarks of yesterday's speakers, I would like to make a general comment concerning over-regulation. I would suggest that I've never met anyone who advocated over-regulation as a way to solve problems. Fortunately or unfortunately, everyone's specific definition of over-regulation is different. The legislature passes legislation, the bureaucracy implements the regulations, and the opportunities for public or private input into the system are virtually unlimited. And we've all participated in those systems.

Just a couple of specific examples. We all know about the recent proposed solid waste regulations that the Department of Environmental Protection put out in published form about two months ago. Those regulations were subjected to hearings in both Portland and Bangor and Presque Isle. Most of us went to one or another of those hearings. All had our say. Since that time the DEP has held a number of workshop meetings with interested persons to permit them input into the proposed regulations. Everyone had input who wanted that opportunity. That included industry, environmentalists, and municipalities. Those regulations are presently in the process of being rewritten, taking into account all the comments that were gathered from interested parties. And another hearing will be held on the rewritten regulations. In my opinion, that's the way to develop effective regulations. We all may have had problems with them in the initial draft, but the best method is to give everybody who wants to have some input into those kind of regulations the opportunity to influence the outcome.

I think I'm the only person on any of these panels who has been both a regulator and a regulatee. Having served on the DEP, I would be the first to admit that I didn't really appreciate all the problems of the regulatees. Now, having applied to the DEP and been granted the first approved coal ash landfill in the State of Maine I've had some experience being a regulatee. It took a long time. I developed a really good appreciation of how much money you have to spend and how much time you have to spend going through regulations, writing applications and working with the DEP staff. As some of you know, when my application got to the Board of Environmental Protection, it was voted down. Needless to say, that created

a little consternation, since I thought I had picked a satisfactory place and put together the best landfill application that had ever been submitted to the DEP. But we regrouped, asked the DEP to reconsider our application, got a little better organized, went back to the DEP a month later--and the application was finally approved. There are a number of conditions but they are all conditions that I think are reasonable and acceptable. So, while we all get to places where we feel frustrated and thwarted by regulators agencies, if you persist and have a good plan, my opinion is that the chances of success are very good.

This kind of process of give-and-take has been going on for a long time, with an ebb and flow of regulatory legislation. It's my feeling that it has worked pretty well over the time that we've applied it. We all know the ingredients of effective regulation. The goal of effective regulations that solve problems without creating unnecessary hardships seem to me a goal that we all agree on. But when you put unnecessary hardship in, not everyone can agree on what constitutes unnecessary hardship. There is always going to be conflict over those kinds of things. It's like the elephant cartoon of Gordon Baskerville. We're never going to have just one person driving the elephant in one direction. No matter what the situation, there are going to be people trying to tell the driver which direction he ought to be going in. I think we just have to accept that and try to develop a cooperative system where we don't waste too much time trying to pull the elephant in one direction or the other, and have an end result of the elephant going in the most reasonable direction.

I have one specific comment on Mr. Yacavone's talk. The Workmen's Compensation cost of \$6 for manual labor in the paper business sounds pretty good to someone like myself who is in the recycling industry. The cost of Workmen's Compensation in the recycling industry--which we're all enthusiastic about and would like to promote--is not \$6 per \$100 of salary, but \$21 per \$100 of salary. I think that is significantly more than anyone else is paying.

The state and federal government commitment to the spruce budworm control program began in 1954 and continues today. I would say that the industry in the early years was content to let government carry the ball and also most of the cost. It's only been in recent years that Maine's large landowners have begun significant efforts to deal with the threat. The magnitude of the budworm problem clearly requires a closely coordinated approach by industry and government. This seems to me to be the direction in which we are moving. I would agree that there are always going to be people who will object to the use of chemicals, but I think we can always expect people from both ends of the spectrum to disagree on the approaches to be used in situations like the budworm problem. There are middle grounds. I think that the newly

organized Pesticides Control Board is a step in the right direction in trying to get everyone moving in a common direction. I would say that the role of government in the budworm program ought to continue to be to encourage control methods that minimize the use of large-scale applications of chemical agents. I think that twenty years of experience, starting in 1954, when we thought we were going to be able to control budworm with a pound per acre of DDT, ought to convince all of us that we may be able to keep trees alive and provide orderly applications of other methods, but we can't rely on spraying as a long-term method of solving that problem.

I see the adversary relationship between large landowners and environmental groups, which has existed over the last fifteen or twenty years, gradually changing to a more cooperative spirit. Large landowners and mill operators have solved a lot of environmental problems in the past fifteen years. I think that's a positive accomplishment we can all look back on. We sometimes complain about the bureaucracy, complain about the legislative process and about regulations. But if we all stop and look at what has happened in the last fifteen years, we would all agree that there must have been a lot of things that were done right. I think that the Penobscot River is probably one of the best examples in the United States of industry-government cooperation. And there were more Atlantic Salmon caught in 1980 in two miles of the Penobscot River than there were anywhere else on earth. But we sometimes forget such things in discussions of what is happening today or what is going to happen tomorrow. Most of the things that have been accomplished in the last fifteen years, I think we would all agree, were in positive directions.

I think Mainers will continue to insist on high performance standards, but will be just as insistent that the implementation of these standards be effective, timely, consistent, and realistic. And I think that's a goal we can all work for. At the same time, I'm sure there's always room for improvement with that kind of goal.

Response by Christopher Lockwood

Christopher Lockwood is Executive Director of the Maine Municipal Association. He has a Masters of Public Administration degree from the University of Washington at Seattle and his B.A. from St. Lawrence University.

Before I get into my comments, for those of you who might not be familiar with the Maine Municipal Association, I'd like to indicate that we are a voluntary association, open to membership for all of the cities, towns, and plantations in the State of Maine. MMA was founded in 1937 and at the present time 478 of the 498 cities, towns, and plantations are active members. We have an executive committee and legislative policy committee that are elected from the membership. We provide a wide variety of services to municipal officials and also represent municipal interests at the state and federal level.

In reviewing Mr. Yacavone's remarks, I found that in many ways municipalities would identify and find a real kinship with what he was saying about the dilemmas, the frustrations, and the costs that the forest industry is incurring and has incurred over the last ten to twenty years. At the bottom of the intergovernmental ladder, municipalities also are very vocal in resisting mandates from the state and federal governments. We also have expressed concern at the proliferation of administrative agency regulations, and insisted that the economic cost be taken into consideration when such regulations were adopted. But I think that Dick Anderson's comments provided a much needed tempering of that over-generalization. And I would have to say that, while municipalities have expressed great concern over the recent proposed Department of Environmental Protection regulations on solid waste, we, too, have shared in the process of review and comment. I think it is a strong process. I also would have to pick up on Mr. Yacavone's comment about the hazardous waste regulations. If Maine hadn't seen fit to do its own work in the area of hazardous waste management maybe the regulations that DEP has wouldn't be quite as lengthy. It is my understanding, though, that as a result of the year-long effort to look into the hazardous waste situation in Maine, we've found that we have a much better handle on the problem confronting the State of Maine and perhaps the need for regulation is far less than if we had just let the federal government do it. So I do think it is important for us all to resist the temptation to over-generalize, although we are certainly just as articulate and vocal in expressing outcry at state and federal regulations.

When it comes to the costs of Workers' Compensation, municipalities are employers just like the private sector, and we share those concerns. Providing the necessary benefits is one thing; but a lot of the present provisions of Workers' Compensation legislation in this state, I think, - could stand some scrutiny. Benefits could still be provided, but incentives to return to work could be strengthened, thereby reducing Workers' Compensation costs. Reducing red-tape and streamlining the whole process is just as close to the heart of municipalities as it is to people in the private sector.

I think the project that Mr. Yacavone mentioned in East Millinocket, to try to have a cooperative effort on a waste water treatment facility between the town and company is an excellent example of something that we are going to have to see increasingly in the years to come: government, industry, and private taxpayers have all found themselves stretched to the limit. We really do need to take an innovative approach in trying to see how we can cooperatively address our common problems.

I think one of the best examples of that is in the area of solid waste. Over the last five or ten years, the cost of solid waste disposal has spiraled. The people bearing that cost obviously are the taxpayers. More directly, the municipalities are finding that the local property taxes are having to be increased. It seems that the more examples and the more projects that we could put together where industry could utilize solid waste to help generate energy, and thereby reduce its cost, would help to also convert a problem area into a major opportunity for the entire state. So we'd like to suggest that there are a number of areas in which municipalities would identify with the private sector, and certainly many areas on which to work cooperatively.

I think one of the main purposes of having a representative of municipal government on this panel was to express some comments with regard to the Tree Growth Law. Obviously, over the last few years, there has been a tremendous amount of criticism from municipal officials with regard to the impact of the Tree Growth Law. Before I give you an update on the present position of the MMA on the Tree Growth Law, I'd like to make a comment about the situation in which the State of Maine and municipalities find themselves at the beginning of the 110th legislative session. Essentially, I think everybody is supportive of the Governor's intention not to increase taxes. Like Dick Anderson, I haven't heard of anybody who is in favor of over-regulation; and I can't think of anybody who is in favor of over-taxation. From a municipal standpoint, though, I think it is important for us to be very clear in what we've been saying to the Governor and to the State legislators, which is essentially that if we're going to say that there should not be a tax increase, let's be honest and recognize that we're dealing not only with

the state sales tax and the state income tax but also with the property tax. And things that happen at the state government level can have a major impact on what happens to the local property tax. Examples of that would be the major cost of teacher retirement. We clearly were fearful that the state, which is presently paying for the cost of teacher retirement, might in some way or other try to shift that cost onto the local property tax. And we felt that if that was done, it would still be a tax increase, it just wouldn't have happened directly at the state level. So that really is the main theme that municipal officials have been carrying to the Governor and the legislature.

Looking at the Tree Growth Law, I would have to respectfully suggest that in the past decade several major things have happened as far as the tax structure on industry, and especially the forest industry. In the 1970's, we had the inventory tax eliminated, the Uniform Property Tax was eliminated, and we had the enactment of the Tree Growth Law. Looking at that, I'm obviously not in as good a position as Mr. Yacavone might be to say whether or not the forest industry is still at a competitive disadvantage with other areas of the country. But I would say that those are fairly significant actions which have been taken. As we look ahead to a decade of scarcity, it's going to be important to recognize how much government can afford to give a break to one particular area of the population, or of industry, and how much do the state and municipalities need to operate on. With respect to the Tree Growth Law, the major concern that municipal officials have had is not whether or not there should be a Tree Growth Law, but it's the fact that it was a state policy enacted by the legislature and approved by the voters in the early 1970's, to encourage the growth of trees and proper management to preserve that resource. At the time it was originally enacted, the legislation contained a commitment that 90 percent of the tax loss that might be experienced by individual municipalities would be reimbursed. As a result of revaluation and a number of other factors, however, we have found that that in fact has not occurred. What has happened, in a number of the smaller municipalities in particular, has been a tremendous tax shift. The individual homeowner is having to pick up a much larger property tax burden as a direct result of the Tree Growth Law. So essentially what we're saying is that the problem, from a municipal government perspective, is not with the Tree Growth Law in substance, but with the fact that, although it is a state policy, it is being financed disproportionately by various citizens throughout the state and by various municipalities. That is the mainstream of concern coming from the municipal level.

In the past few months, the position of the MMA with regard to the Tree Growth Law has undergone some fairly significant changes. Many of you, I am sure, are aware that in previous years the MMA's position was to abandon the productivity approach as far as the Tree Growth Law was concerned

This has been modified to a point where the MMA is now in favor of retaining the productivity approach, but looking for some changes with regard to several items in the legislation. One has to do with eligibility criteria. Another is possible changes in the discount factor. Possible regionalization of values: rather than computing them on a country-by-country basis, more accurately looking at the value of the timber in various regions. I would not agree with Mr. Yacavone's remarks that putting stumpage values on an annual basis would have a significant effect in correcting the inequities, but that certainly would be one more component on the revisions we would seek. Lastly, we would continue to seek complete reimbursement to municipalities for the tax loss which is incurred as a result of the Tree Growth Law. We have been meeting with various members of the legislature, the Governor's office, members of various interest groups as well as the forest industry, and we are hopeful of seeing some change in the Tree Growth Law that essentially would preserve the substance of the law from the standpoint of the general public but take away the problems in that we would now have a state policy that is financed by the state as a whole rather than by individual taxpayers and municipalities on a disproportionate basis.

In closing, I just would mention that although that is the official position of our membership, there are a large number--I believe more than one hundred--smaller municipalities who in 1980 initiated a petition drive that called for outright repeal of the Tree Growth Law. It is my understanding that they now have about 15,000 signatures, which is far short of what is needed. But the petition is addressed to the 110th Legislature and it would be possible for them to continue during the course of 1981 to gather signatures and to submit those to the next general session of the 110th Legislature, which would be at the beginning of 1982. So whether or not that will happen, I would suggest would in large part depend on what, if anything, happens during the current session.

Response by Henry Warren

Henry Warren has served as Commissioner of the Maine Department of Environmental Protection since 1977. He is Chairman of the New England Interstate Water Pollution Control Commission. Mr. Warren has a Bachelor's degree in Labor Relations from Cornell University and a Master's degree in Public Administration from the University of Pittsburgh.

Mr. Yacavone clearly knows the admonition that a good speech should begin with a catchy title. Not to be outdone, I have turned to a book and subsequent movie by Judith Rossner to borrow an idea, and I entitle my comments, "Looking for Mr. Five Percent." In the current fashion, I attach a subtitle: "The Story of a Balancing Act." Mr. Yacavone has presented you and me with a challenge for the future that I am quite happy to accept. I think it is imperative that we all embark on the quest with an agreement on the underlying assumptions. I propose to devote a few moments to some of the questions and assumptions that we must deal with now and in the future.

Some years ago, former Commissioner Bill Adams (subsequently the Regional Administrator for EPA in Boston) and I were sitting in his office pondering which new set of regulations we could devise to bedevil industry with that month. He made an observation which in retrospect seems to me to have been a profound one. He said that 95 percent of the people in Maine want to do the right thing, and will do the right thing, if you provide a little guidance and a reasonable purpose for them to follow. But government designs laws and regulations to direct the 5 percent who would not otherwise do it right. The problem is that we can't identify the 5 percent, so we put 100 percent of the people through the same hoop. Thus, I would contend that an accurate portrait of a reasonable regulator is someone who is always looking for "Mr. Five Percent."

Now, it would be nice if it were merely a matter of dividing up the good guys from the bad guys...and then focus your attention on the five percent. Unfortunately, people and companies don't often fit into neat categories. And even if they do, there's probably a lawyer somewhere who will tell you why that does not apply in this special case. In fact, the same company can be on this side and on that side at the same time. At the risk of offending Mr. Yacavone, I'd like to use Great Northern as an illustration in focusing on these problems--not because it is the only illustration I could pick but because he is here.

Let me preface those comments, however, by saying that we in the DEP have had excellent relations with Great Northern over the years. And I am not aware of any problem that we have not been able to work out. But the fact is that the system provides for some tension between the regulatory agency and a regulated industry. I think it should. We need to make every effort to minimize that tension through cooperative efforts. And I like to think that in Maine we have been more successful than not. But the underlying assumption is that a corporation is basically a single-purpose entity that will not survive if it is not successful in attaining that purpose: making a profit. That assumption is at the core of the free-enterprise system, at least on paper. Another fundamental assumption must be that the goals of this single-purpose entity may not always be consistent with the public interest--however that may be defined in our system at any given time. And any agency like the DEP almost always finds itself pressured by competing definitions of the public interest--usually all legitimate definitions. The one underlying assumption for this Commissioner, then, is to balance these competing interests with the overriding goal of finding that public interest.

Now we have one of the major corporations in the state, one of our largest private employers, our largest landowner, a good corporate citizen, a dominating factor in its host community, a company that has done an excellent job of cleaning up its water discharges and has worked with us to solve sewage treatment problems in East Millinocket, a company that has been well managed, has invested well to remain competitive in its industry. Surely that company belongs in the 95 percent category. And I think it does and I'd be happy to praise Great Northern at any opportunity for their efforts. Over here, on the other hand, we have a company that is the largest single fossil-fuel user in the State of Maine, a company that has recorded a minimum of 248 violations of federal and state sulfur dioxide standards over a period of four years of monitoring, a company that continues to have higher than predicted emission values after the installation of substantial new equipment to control those emissions, a company located in an area that has had continuing violations of federal and state standards for suspended particulate matter over a five-year monitoring period, and a company that now wants speedy action on an application to convert its boilers to coal but cannot assure us that the resulting license capacity will not increase air quality impact in this very marginal area, a company that insists on DEP action on an application which lacks some very fundamental data. Does that company belong in the five-percent category? Perhaps not, if you're passing out black hats. But if you acknowledge the need to be especially careful of the

public interest in such a community, and the need for close scrutiny of data where violations exist and a new control system is unproven, then that proposal should go into the five percent for a focus of attention. Perhaps, as Henry Magnuson has suggested to me, that is a cynical approach. I prefer to think of it as doing the job we are mandated to do under state and federal law.

Let's look at a few additional aspects of this set of competing interests which an agency like the DEP must respond to. For example, it is clear that conversion to coal is, and will continue to be, a major response to the oil supply cost dilemma we now face. DEP recognizes that objective, and we have no difficulty with it. It is equally clear that the by-products of burning coal can create, among other things, acid rain--which has a high potential for the destruction of our lakes and may well damage the very forest which Mr. Yacavone quite properly wishes to protect. The use of coal also results in waste products which, if improperly handled, will lead to the destruction of irreplaceable groundwater resources in this state. Wherein lies the public interest? And how shall we find that balance? Without doubt, the imposition of environmental regulations increases costs, and these show up on the balance sheet quite clearly. But the public has a balance sheet, too. It surely shows significant costs when the air is fouled and the water is used as a waste sink. These costs may not be as measurable, but you would have a hard time convincing the people of Love Canal and Gray, Maine, of that fact. Again, the DEP must balance these competing costs. And I would contend that it does so with every decision it makes. We do not, after all, live in a vacuum.

Even more poignant are the competing interests which occur within the Department. Examples abound. Do we take Great Northern or Boise Cascade or CMP or S.D. Warren first? They all have major investments. And they all claim, and will get, substantial savings from our early action. Or do we seek more staff to handle the current overload--and thus increase the size of the bureaucracy? Do we insist on complete economic information to back up applications, at the risk of public disclosure of competitive data? Or do we make decisions on the limited data, which then lead to the kind of court suits that we have in the Martin Marietta case? Do we try to maintain regulations which protect Maine's generally clean environment, or do we assume standards that are also applicable and designed for Elizabeth, New Jersey, and Cleveland, Ohio, are good enough? Do we assume delegation of federal programs to the maximum extent possible to reduce duplication, and do we improve access by running it

from Augusta? Or do we let federal regulations and procedures govern our lives, at the same time reducing the state bureaucracy? Do we approve a license for a badly needed hazardous waste incinerator, or respond to the pleas of local citizens who say, not in our backyard? Do we embody our processes in regulations which create volumes of paper--and, incidentally, bind the staff more than anyone else? Or do we act on a case-by-case basis, subject to the whims of the Board and to attack by every aggrieved party?

There are no easy answers to these questions, but I have been in Maine long enough to know that there are more than enough good will and good intentions to resolve them. I, too, believe there is a new maturity growing between industry, government, and environmental interests. And I expect to be able to return here in five years with a speech entitled, "Looking for Mr. One Percent." But I do not agree with Mr. Yacavone's suggestion that a return to simplistic credos is the answer--any more than I agree with candidate Regan's statement that "once you've seen one pine tree, you've seen them all." I believe that reaching this joint goal will require an acknowledgement that the public interest is, after all, a sum total of the competing private interests, and that balance is the objective. In that sense, I believe that Mr. Yacavone and I share the same goals. And I look forward to the give-and-take that will result from our efforts to reach them.

DISCUSSION

Charles Blood: Wouldn't it be appropriate, for instance, for Great Northern to increase its training program for small contractors? I had a little more in mind. It seems to me, if Great Northern is really sincere about these concerns, this is a private function and not a function of state government. We all know that private industry can do it better than government.

Peter Yacavone: I guess the easy response to that is to say: we do that all the time. And I think that we do. The point that I was trying to make is that I believe, in many instances, the regulatory body has a responsibility for education as well as regulation. I was trying to suggest that it would be helpful if some of the time spent on what someone from my position might describe as excessive regulation (and I use that word very cautiously--that obviously is defined in each of our minds as we care to define it)...to have the regulatory body also participate in the education process rather than devote any time whatsoever to what I might define personally as excessive regulation.

Charles Blood: Here's a tough question, one that I've been asking for years...And since Peter Yacavone is a financial man, he can't duck it very easily. As I said, we keep hearing that the things we are doing by way of regulation are very costly to companies. For some considerable time, we have been asking Great Northern and other companies, what are the details? How large are these expenses in relation to overall costs? And in what way can we reduce them--and still perform our function?

Peter Yacavone: Cost of regulation is extremely difficult to define. Occasionally, some of the very large companies in the United States have attempted to do so by quantifying in some way the processing of paperwork, the time spent by staff, and so forth. We don't do that. We don't have a cost system that says these dollars are what we spend on interfacing and satisfying the regulations of the Department of Environmental Protection, and these dollars are what we spend on satisfying the regulations of the Land Use Regulation Commission. It's an insidious, hidden type of cost. It means that you need another forester, another clerk, another supervisor. I appreciate your problem--when people say that it's costly you have a legitimate question when you ask well, how much? And the fellow stands up and says: I can't tell you how much. All I can tell you is that the costs are real, the costs are there. As far as Great Northern Paper Co. is concerned, under the best cost system that we could have, I probably could not tell you

the cost of regulation completely. We could identify people who spend a substantial part of their time on such matters. We could identify certain out-of-pocket expenditures. But you'd never really have the full cost of regulation. On the other hand, I'd also be quick to admit that obviously some of that is a normal, legitimate cost of doing business. How you'd identify the excessive costs from the normal costs of doing business--we'd then quarrel about that. So I appreciate your question, but I don't think I have a good answer, other than to say that we know we have a cost, and the cost should not exceed that of normal regulation. I start to object when it becomes excessive.

Ronald Lovaglio (International Paper Company): Mr. Blood, you mentioned that the forest industry should provide solid cost data. Would you please share with us specifically what you consider solid cost data to be?

Charles Blood: Suppose you were going to build a road somewhere, your own way. And you knew it would cost you \$6.94 a running foot. And we come along and tell you that you have to put in twice as many culverts, change the slope, put it somewhere else, put in more settling basins, and so on. Now, does it cost you a nickel more or a dollar more per foot? Your engineers, I presume, have a pretty good idea. It's common things like that we're interested in, because we get a lot of flak. But nobody will ever tell us.

Robert Chaffee (Exec. Dir., Maine Forest Products Council): I have a question for Mr. Lockwood pertaining to his comments on the Tree Growth Tax. Do I understand correctly that the Maine Municipal Association has some problems with the funding source for the towns' reimbursement, where indeed some towns are disproportionately impacted? As you heard Mr. Yacavone say, a great many tax dollars are being paid directly into various coffers--state and local--in various forms. And, as you know, we have maintained that that is a good source for an adequate level of reimbursement. Is there some problem with that source for revenue for reimbursement?

Christopher Lockwood: No, as long as the reimbursement is there, I don't think you'd find municipalities expressing concern with regard to the Tree Growth Law.

Robert Chaffee: I have a comment. When you talked about annualization, and whether that would have an impact, the thrust of most of the remarks of yesterday's panelists was basically an optimistic picture of utilization of the resource. Many of the processors indicated that will drive up the price of the resource, which translates into stumpage, which translates into a quicker, if annualized, productivity value for your purposes.

Christopher Lockwood: I appreciate that. The comment that I intended--and perhaps I wasn't as clear as I should have been--is that, in and of itself, I don't think is going to solve the problem. It might help, but it's not going to be the total solution.

Doc Hodgins: My remarks are directed to Peter Yacavone, who is under heavy pressure here today. In the last two days, we've heard much about the adversary relations between environmentalists, industry, and government. I'm well aware of it, having been cast in the role of a somewhat shrill, if not extreme, environmentalist. A word that I haven't heard is "accountability" and that gets to Mr. Yacavone's profession--that of bookkeeping. I would like to ask about the external costs that are going to loom very large in the Eighties. My question to you would be: what would you do if I could wave a wand and take all the regulations off your back? If I removed government from your operation, what would you do? Specifically, what would you do in your coal conversion proposed for your Millinocket plant? Some time ago, I did some computation on your 1978-79 air emission license, and I got, conservatively, something like ten tons a day of the oxides of nitrogen, sulfur dioxides, and particulates. This has great meaning, of course, in terms of acid rain, visibility, health, and heavy metals. You want to shift your burden of internal cost to coal, which will provide you an economic advantage. But presently, you are not using any electrostatic precipitation or scrubbers. Now I ask you, if you can do this in the most responsible manner, without government regulation, what is your plan?

Peter Yacavone: I'd first say that it's very difficult to envision an environment in the near term without regulation. The statement that you make with respect to the economic advantage that will be achieved by Great Northern Paper Company with the conversion of two boilers that were designed to burn coal initially, and are currently burning No. 6 fuel oil, and hopefully will be authorized to be converted back to the burning of coal--is incorrect. There is no significant economic advantage at the present time. By that I mean, when you invest the funds from \$50 million, compare the operating costs before and after, for coal as compared to oil--recognizing the cost of each of the fuels and other operating costs attendant on operating the facility--at current prices, the return is very modest, extremely modest. At the time that project was presented to our board of directors for tentative approval (tentative in the sense that there were a couple of conditions attached to the approval request), there was actually a negative return. The purpose of that conversion was to eliminate our dependence on roughly 800,000 barrels of imported oil. All of the oil that Great Northern Paper Company uses comes from Venezuela. We don't control the

supply. Our purpose here is to eliminate a portion of our current level of dependency. So I first want to make the point that we are not requesting this for economic benefit. I'd very much like to see a substantial economic return. I'm very reluctant, as is our management and our board of directors, to make expenditures of that magnitude without a return.

I'm not personally versed in all of the numbers relative to suspended solids, SO₂ emissions, metallic content, and so forth. I think that our objective with the new facilities that we have to control air emissions is to be in full compliance not only with the federal air emission standard with respect to SO₂ but the state level as well. We would expect, after the conversion, to have the same levels that currently exist, which are substantially below the state standard. I don't think we want to eliminate the need to have clean air. I think that we want to be careful that we don't have a situation where we go beyond what is appropriate with respect to regulation to achieve clean air. I think that the conversion that our engineers and environmental specialists and consultants have designed will satisfy the state's requirements. Hopefully, we will be at current levels, or something less, all of which would be in compliance.

Margaret McCain (Pine Tree Legal Assistance): I have two questions for Peter Yacavone. The first is in the context of your concern about eliminating regulations that put Maine business at a competitive disadvantage and, similarly, eliminating detrimental government restraints. My question is: Would you favor the elimination of the regulations which permit foreign woods contractors and loggers to work in Maine, given that they put Maine people at a competitive disadvantage (i.e., they can accept lesser amounts of U.S. dollars for compensation)?

Peter Yacavone: Are you referring to the so-called bonded labor?

Margaret McCain: Bonded labor or commuter visa programs, yes.

Peter Yacavone: Great Northern Paper Company does not have any bonded labor. We do have commuter visas. That's a very complicated question. It would not be realistic for me to attempt a simplistic answer. I would say this. As far as Great Northern Paper Company is concerned, we have so many job opportunities in our wood operation. If there were qualified people to fill those jobs, and they were Maine residents--citizens of the United States--I personally would not understand why we would not choose first from that labor pool. That's the only way I can answer that question.

Margaret McCain: I have another question with regard to Workmen's Compensation. This year alone, I believe, some ten or fifteen loggers have died so far. So I think that those rates are not arbitrary; they are set according to experience. My question for you: If it were shown that those high rates were directly correlated to piece-rate pay scales, would you be willing to work to eliminate that and replace it by hourly or salaried pay schemes?

Peter Yacavone: I have difficulty in relating Workmen's Compensation to the method of payment.

Margaret McCain: Looking at the different Workmen's Compensation rates in the different states, there appears to be a direct correlation to whether people are paid on a piece-rate system rather than hourly or by salary. If you were given information to confirm that, would you seek to eliminate your piece-rate pay system in Great Northern?

Peter Yacavone: I'm not trying to avoid answering your question, but it gets too far into the realm of speculation. And I prefer not to try to comment. I just don't feel I have enough facts to evaluate that.

Lester DeCoster (Regional Manager, American Forest Inst.): Any panelist can address my question. It seems to me that we're going to have regulations. That is not really debatable. But there is debate on which way we go: whether we have general guidelines that aren't too specific, or whether we have regulations that, point by point, address every possible question. Some people think that the way to streamline regulations is to answer every question in detail. Some feel that the best way is to avoid that and have general guidelines. I'd be interested in the panelists' views on this.

Richard Anderson: My comment on performance standards versus absolute standards is that sometimes one system works and sometimes another system works. I think it's pretty hard to come up with anything but absolute numbers when you're dealing with air pollution and water pollution. On the other hand, it seems to me that performance standards in building logging roads, or cutting timber in certain Land Use Regulation Commission zones, are appropriate. It seems to me that performance standards are to be preferred when you can apply them effectively.

Henry Warren: I'd say that specific regulations apply to the "five percent." As I said in my remarks, that's why you end up with all that fine print--because you have a small number of people who, for whatever reason--intentional or unintentional--need that kind of specific guidance. I see that need diminishing. In fact, some regulations, including the hated logging road regulations which

Mr. Yacavone referred to, are written largely in terms of performance standards. As far as I know, they are working, I don't know for sure because, contrary to his opinion, we don't have inspectors in the north woods looking for logging road violations.

Charles Blood: What Land Use Regulation Commission has tried to do in many instances, is to write specific standards. If you don't want to follow those standards, then generally speaking, we say, submit your ideas for a permit.

Vernon Ryans: For many years, I served as president of a corporation. When Henry Warren talked about single-purpose entities, I would ask if he thinks it proper in dealing with the public of the State of Maine to class corporations as a single-purpose entity, in contrast to proprietorships, or persons who work for wages, or those who lobby in government with a single purpose in mind? There are other interests--not necessarily conservationists or environmentalists but perhaps preservationists--who operate with a single purpose in mind.

Henry Warren: In the context of my comments, I think you would have to agree that you would not have been in business for very long had you had not made a profit. Therefore, any private businessman's view of the world is a single-purpose one in that sense. Obviously, in day-to-day life and in successfully achieving that purpose, there are a lot of other things that occur. I meant only to contrast it to that set of tasks undertaken by government, where there is seldom agreement on what the purpose is, except in broad sweeping terms that have no meaning when it comes to day-to-day application.

REMARKS

by Joseph E. Brennan, Governor

I am pleased to have this opportunity to join you at this Blaine House Conference on Forestry. I sponsored this conference because I thought it was vital to focus the attention of my administration and of the public on the most important resource-based industry in this state. This conference is another part of my administration's effort to examine the relationship between government and the private sector, to identify the problems, to recommend solutions, to become better informed about the effect our decisions have on industry, and to seek ways that government can create a better climate for business within our state. I also feel very strongly that it is important to get government and business together. I know that, over the years, one of the reasons attributed to the decline of the economy in the Northeastern region of this nation has been that hostility that has existed between government and business. During the course of my administration, I have tried to do what I can to reduce that hostility so that we might work together for the betterment of this state.

It seems important that we focus particular attention on the forest industries. After all, 90 percent of our state is forested; the products of our forests mean about \$2 billion a year to our economy; and a substantial percentage of the working population makes a living from cutting wood, or manufactured products from it. Moreover, there have been some important and some far-reaching developments relating to the use of our forests. Our energy problems, for example, have certainly had an effect. Wood is a key resource that is helping us to conserve our use of imported oil. The great increase in the use of wood as a fuel has prompted a growing public awareness of wood and the woods. We have seen a trend away from the conventional use of wood and into new products, such as waferboard, flakeboard, and fuel pellets.

I have sought to promote the export of our wood and our wood products during my two trade missions to Europe. There has been an increase in wood exports, and we are expecting more substantial exports during the 1980's. In fact, this is one of the major underlying assumptions behind by administration's efforts to develop cargo port facilities at Searsport and Portland.

We have had, in recent months, other Blaine House conferences relating to the health of the Maine economy. There was a Blaine House Conference on Tourism and another on Small Business. So it seemed natural to hold a similar

conference to bring together people with different views and perspectives for an extended discussion of the role our diverse forest products industry will play in our economic future. And I do want to thank each of you for your willingness to participate.

The focus of my remarks today relates to an issue which I know is of concern to many of you here and to thousands of people who are not here. I wish to take this opportunity to explain why I have recommended a budget that proposes some significant changes in our funding of the Maine Forest Service. I am sure that all of you are aware that I have proposed reducing the Service Forestry Program.

Let me begin by discussing the context in which this recommendation was made. First, financing a state government is no different, in principle, from trying to meet a family budget, or running a business within revenues. The difference is in magnitude and complexity. But the core assumption is the same: we cannot spend more money than we take in. Accordingly, this year's budget was subjected to a rigorous review with two basic rules in mind. First, there would be no tax increase. Second, every single program which state government runs had to be measured against every other program, so that priorities could be established. The mandate of the people of this state is unmistakable. They want an end to the continuing spiral of growth and expense in government. My rules made it clear that new programs and initiatives could only be undertaken by eliminating other programs which outlived their effectiveness, accomplished their purpose, or simply cannot be justified when there are more urgent priorities.

Let me assure you that this program has not been unfairly singled out. It was merely one of a number of programs which I felt were of a lesser priority than that of taking steps to face up to a problem that is decades old - not of my making, not of the making of this legislature - that of ensuring a financially solvent retirement fund for the teachers of our state. In all, my budget makes program reductions amounting to more than \$10 million. This is a first in modern Maine government. So the Service Forestry Program is not alone. The medical community, for example, is losing a program that is very dear to it, by which the state has purchased slots in out-of-state medical schools for Maine students.

We are also cutting the Bookmobile program, a very popular but cost-inefficient method of serving some of our remote communities.

We are eliminating the Division of Special Investigation for Drugs, which has not, in our judgement, effectively served its intended purpose.

There are other programs, some of them with very strong constituencies. We fully appreciate that and we are ready to address it. The point is, we cannot allow the size of our budgets to grow indefinitely each time government wants to solve a new problem or correct old mistakes.

I see a continued and a vital role for the state in forestry. We have an obligation to provide the protective services offered by the Fire Control Division, and by the Insect and Disease Surveillance and Detection Programs. In reviewing the Service Forestry Program, however, I saw a program that had been in place - without any review of the underlying assumptions - for more than three decades. And I asked, as I often did in the budget process, whether the priorities that were seen by a Legislature thirty years ago are still appropriate today. I asked whether the state should have programs that offer free services to the public--specifically, direct subsidies to individuals to assist in their private businesses. Of course, we've had many program to assist in the promotion of various businesses. But these tend to go to promote entire sectors of the economy and not to individuals. And often these programs are paid for, or matched by, revenues raised by the industries we are helping. And even in the area of human services, in the programs we have to assist some of the neediest, most dependent citizens, some of these services are provided not free to the recipients but are on a sliding-scale basis according to the recipient's ability to pay. It hardly seems fair that the frail elderly should be subjected to more stringent standards than those who own forest land.

Finally, I am taking a particularly hard look at programs that could be performed as well, if not better, by the private sector. There are sixty private forestry consultants in Maine and thirteen industrial foresters with the landowners assistance programs of industry. These people can play a greater role in providing forestry consultation to private landowners.

This decision to reduce the Service Forestry Program shouldn't be misinterpreted. I am well aware that further expansion of the forest industries will require high-quality timber. And I know as well as you do that such timber is the direct result of good management. I believe the Maine Forest Service should take a leadership role in all aspects of forest management. Therefore, I am restoring some funds to the Service Forestry Program. Indeed, I would like to see the Service Forestry Program playing a role beyond that of providing one type of activity for one type of landowner.

The Forest Service has assigned specific foresters to concentrate on certain specialty areas and on the new economic, social, and technological problems that affect forestry today; i.e., spraying of herbicides and pesticides,

erosion, and sedimentation, and the use of the forest as a renewable energy resource. I applaud those efforts. The Forest Service is the logical place for landowners throughout the state to turn for advice and policy direction on these and other critical forestry issues. These specialties should be presented to landowners in this state through a concerted public education effort. This education effort should also focus on teaching the general public more about the forest resource of our state and on convincing thousands of small landowners of the importance and the financial return as a result of good forest management.

Regional workshops, mass media, printed materials can reach more landowners with fewer foresters--and still make available the technical information that our Service Foresters provide. This shift in emphasis will, I believe, help landowners to help themselves. To further the wise use and development of our resource, I want to see our State Foresters working closely with landowner cooperatives, industrial landowners, groups like the Small Woodland Owners Association, regional planning commissions, Cooperative Extension programs, government agencies, and environmental groups.

Finally, I recognize that some areas and individuals in the state could not receive consulting services if they were not available through the Maine Forest Service. While I am advocating a move away from the one-on-one forester-landowner contract, I am not suggesting that such relationships be eliminated altogether. I am directing the Forest Service to consider which direct services should be retained, and what fees for those services would be fair and reasonable.

One other major shift in my budget is in funding for spruce budworm control. I am recommending that we continue to make every effort to suppress this infestation. But when money is tight, we must look to the people who benefit most directly from the program to pay for it themselves. Because there are ways to keep the budworm program operating without direct financial help from the state, I believe that we should move in that direction. I will continue to look to the staff of the Maine Forest Service to run this budworm program, and I remain enthusiastic in my support for such efforts as budworm woodlot management, environmental monitoring, and integrated pest management planning with landowners.

I ask that all of you think about how we might face the problems of the 1980's in our state. We can no longer depend on increased public spending to solve our problems. I welcome suggestions to resolve the very real conflicts that arise when there is simply not enough money to go around.

In summation, we are all citizens first of this state. We are foresters, associated with the paper industry, lawyers, doctors, whatever, second, third, fourth, and fifth. It is never easy to speak to a group and say that you are going to recommend the reduction of a program in which they are interested. But we are in a time of scarce resources. It is a time in which choices must be made. We made those choices based on the information available to us. We appreciate our fallibility. According to the legislative process, we now make these recommendations to the legislature. The appropriate hearings will be held. I respect that process. I hope you respect that process. I trust that those who disagree with the recommendations we made will be heard during the course of that process. The legislature is in a position to make adjustments accordingly. We will respect their judgement.

Response of Richard E. Barringer

The task has fallen to me to attempt to recapitulate what has happened here over the past two days. It is a privilege for me to succeed at the rostrum the many speakers and panelists we have had here. Once again, let me express my great gratitude to each of them from all of us.

While the sponsorship of this conference was that of Governor Brennan, the inspiration and suggestion for it was that of Nancy Ross. I'd like to thank her for her conduct and arrangement of it, as well.

I'd also like to acknowledge the work of the steering committee who assisted her. Without exception, every person we asked to do something--to organize and present this conference to you, said yes; there were no refusals, no second choices. Everyone we asked agreed, and that made organizing and presenting it to you a joy. That fact says something about the state of Maine forestry, as well as the attendance we have had the last two days.

I'd like to go back and to restate Governor Brennan's purpose in organizing this conference. The Governor sponsored the conference because he wanted to bring the attention of his administration and of the public on the most important resource-based industry in this state; to facilitate communication among us; and to focus attention on our current concerns, perceptions, and problems. I think we've come quite a long way in the past two days in these regards.

We've seen John Wishart come across the country to argue that U.S. industry is no longer in the favored position it has enjoyed since World War II. He listed the innate and acquired disadvantage of doing business in Maine, and was the first in a long line of people to cite the need for cooperation and commitment to long-term forest sustainability in Maine.

We heard William Bullock complain of the problems of over-regulation in Maine, and echo President Reagan's call to "get government off the backs of industry and people."

We heard John Godfrey express optimism about the future of Maine's forest industry.

Ben Haug reminded us of the international marketplace of which we are now part, the place of small business within it, and the problems of taxation, labor, and harvesting regulations.

We heard Lloyd Irland, Dave Field, and Neal Kingsley cite the problems in our timber inventory generated by past harvesting practices. They cited the need for augmented planning and analytic capabilities, if we are to realize the future potential of our forests.

We heard Jim Robbins discuss the shift back to Eastern lumber, the problems of white pine, and the spruce budworm. We heard him condemn proposed budget cuts in Service Forestry, and call once again for a Department of Forestry.

We heard Duncan Howlett appeal for modification in the Tree Growth Tax law, expressing the consensus that it is a good law that deserves adaptation rather than rejection. He called for expanded forestry services rather than less, and argued for discontinuance of those services to people who afford to pay for them. He asked for expanded FIP and ACP programs as well.

In what I thought was a brilliant performance, we heard David Smith present the dynamics of natural regeneration and advanced growth in the Acadian forest, argue persuasively for appropriate technologies, and advocate a new approach to partial cutting in this forest.

Bob LaBonta reminded us all of the influence of economics and politics on silviculture and intensive management, suggesting that intensive management in Maine is in its adolescence; and called for greater flexibility, tolerance, and patience on the part of all of us.

Max McCormack listed the efforts that are now being made by many of you toward "intensive" forestry in Maine. It made me feel good and I hope it made you feel good, as well. He cited the complexity of intensive management in Maine, and quoted eloquently from Gifford Pinchot.

Jon Lund, in a somewhat mysterious reference, expressed the interest of "conservationists", alluded to the adversarial climate which others have cited, and prescribed a greater dialogue and communication as a remedy.

Peter Yacavone cited the problems before us all that never besitted our predecessors, in combination: high labor costs, high energy costs, and now high wood costs, as well. He called for a more mature relationship among government and industry.

Dick Anderson, once a regulator, talked of his enlarged perspective as a regulatee.

Charlie Blood and Henry Warren argued articulately for reasonable regulation, reasonably enforced against the ignorant and the irresponsible. They, too, seek more communication to temper the tension that is built into our adversary system of regulation within the law. I thought they carefully and sensitively portrayed the balancing act that is asked of them by our society.

Chris Lockwood described the communication that is ongoing between the government and the private sector to adjust the Maine Tree Growth Tax law.

And Governor Brennan, finally, cited the budget woes besetting the state presently. He established his objective: no new taxes, and no new programs without commensurate cuts. He listed his values, I thought, rather well. Any program that the state delivers should be urgent and timely in terms of its responsiveness to the real needs of the people of this state. It should be based upon ability-to-pay or not to pay. And there should be no alternative service available through the private sector. Those are all principles which I believe we share. He made his recommendations, explained them, and left the door open to alternatives, I thought--left it wide open. He said that his recommendations are now a matter to be taken before the Legislature for final disposition.

Whither have we come in the last two days? What have I heard? What I have heard is certainly not what others of you have heard, for I cannot know what you've heard. I have not heard a consensus of opinions or of perspectives. Each of us comes from a different place and sees the world differently. What I did hear is a consensus on principle, on the importance of the long-term sustainability of the Maine forest as an overriding goal of all of us. Underlying all the debates over regulation, taxation, herbicides, clear-cutting, recreation, and wildlife--are abiding themes of government-landowner relationships in Maine. We in Maine are emerging from a long era of intense conflict and mistrust. What can we learn from those years?

I personally see in the emerging concern for long-term forest sustainability a new challenge for the public-private relationship in Maine. It is a challenge of mutual conciliation among the several factions with an abiding interest in the resource and in the many values it represents. It is the challenge of overcoming mistrust and hostility, of bending competing forces into constructive channels through the processes of both cooperation and conflict. For, while I acknowledge that the possibilities of conflict are great, I also believe that conflict between government and landowners and differing public-interest groups are an inherent and even a valuable feature of our democratic society.

A certain level of healthy conflict improves decisions, tests personal strengths and weaknesses, informs the public as it needs to be informed, and enriches all of us. In Maine, we have weathered several highly contentious government-landowner conflicts over the past decade. Where has it brought us?

Maine's forests are now in poor shape. Many acres are stocked with cull trees and low-value species. Maturity and over-maturity are the general rule, reflecting a recent history of under-use and shoddy partial cutting. Forest productivity is under serious stress from spruce budworm. To restore our forests to a high level of timber productivity, consistent with wildlife, water, and aesthetic values, is a challenge worthy of the best efforts of landowners, foresters, industry, the university, citizens, and government alike. We have never done it before. It was easy to degrade this forest--as easy as falling off a log. To restore, repair, and protect this resource will take decades of serious and often contentious and frustrating effort. Mistakes will be made. But let us avoid the mistake of hastily seeking a single solution in comprehensive regulation, or in public subsidy efforts, or in more government reorganization. The problem demands careful, sustained innovation, trial-and-error, debate and learning. It demands patience, commitment, and understanding. And, above all, it will require mutual respect among all the actors with a stake in the outcome. A respect born of candor, humility, and, I hope, good humor. For, if we are to find the truth in these matters--indeed, if it exists at all--it will only be found in what Justice Holmes called the comparative marketplace of ideas, in the civilized clash of wills and interests and opinions. The truth is tough; the question is, are we equal to its demands of our standards of conduct and of reason?

It is true that significant social and ecological interests often conflict with the economic interests of the private landowner. These conflicts cannot, and should not, always be posed as landowner versus the public. First, the word "public" does not here refer to the population-at-large, but rather to a number of constituencies, each with a particular interest as to how the forest should best be managed. Often these constituencies have values which conflict to a greater extent with each other than with those of the industrial forest landowner. Some conflicts over forest use in Maine include: using pesticides to protect growth and yield, as opposed to not spraying in order to maintain a pristine environment; sedimentation of streams and certain cutting practices which reduce fish populations; wildlife biologists wanting to cover to insure deer populations, while land managers seek to remove dead and dying fir trees. The list can go on and on. The picture drawn is one where a limited number of acres are asked to meet the seemingly unlimited demands of a number of constituencies with partial interests,

partial perspectives, and partial concerns. The point is that we are living in a working landscape. There are, and will be, conflicting activities occurring in our woods. As government and industry leaders, we must do our best to acknowledge these conflicts as legitimate and abiding; to articulate them in ways that may yield their resolution rather than confrontation; and to conciliate among the contending parties.

In the mid-1960's, Stewart Udall approached the Governor of Maine and told him the State had better do something to protect the Allagash, a beautiful string of rivers and lakes in northern Maine; if not, the Feds would soon take over. (One way to scare people in Maine, as you know, is to tell them the Feds are on the way.) This set off an exceedingly contentious conflict between landowners, the federal government, and the State--which persists even today. I was delighted recently to hear a land manager who has been one of the most outspoken opponents of the Waterway talk of a trip he and his wife had taken on the Waterway, and of just how beautiful he had found it. He is right. The Waterway is lovely and well worth the past and possible future struggles over it.

The Waterway, however, may be considered a 1960's approach to conflicts over multiple use; that is, when high-value recreational land is identified, buy it. That case cannot be duplicated in the 1980's; financial constraints do not permit such lavish expenditures, nor is it necessarily desirable. Today in Maine we are approaching the Penobscot River with another formula. We and the Greater Northern Paper Company are working closely to develop a conservation easement and resource management plan that will allow continuing use of the river as both an economic and a recreational resource. The plan is aimed at setting up a mechanism to resolve issues as they develop, and not a rigid plan that can become cumbersome and outmoded. The effort, though not without conflict, will produce less anger than acquisition of the Allagash. It is an effort that requires constant cooperation. The final agreement will be one mutually arrived at.

From the Allagash debate we learned the power of symbolic conflicts to dominate consideration of practical facts and options. We must learn to be more sensitive to the reality of symbolic factors--of landowner pride in past stewardship, of the fear of foot-in-the-door ambitions by government, and of the legitimate concerns of the multiple users--whom we at times honor more in word than we do in deed.

Conflict, I am saying, inheres in the human condition; some amount of it is with us always. But I firmly believe that the unhealthy and disagreeable aspects of conflict are at a maximum so long as we view each confrontation as what is known as a zero-sum game, in which my gains are necessarily

your losses, and vice-versa. In fact, there are few, if any, zero-sum games in Maine for industry and government. And the energy which we invest in confrontation is not available for reasoned debate, constructive alternatives, and healthy conciliation, from which we both may benefit.

I also conclude that a desire for permanent, comprehensive solutions to our problems is really quite destructive. Life is too complex, ever-changing, and, indeed, ambiguous to admit of such answers to our most perplexing problems. We must learn to be comfortable using our sense of timing to deal with those problems that are truly strategic and are ready for our intervention. Finally, we need the best people we can find for this continuing effort; people who understand that solutions do not come easily and do not remain static; people who thrive in situations that demand flexibility and have the ability to deal with ambiguity; people who can accept President Reagan's call for "new beginnings" without looking backward for solutions to today's and tomorrow's problems.

We in and of Maine forestry, are the inheritors of true conservation. If so, where are the John Muir's, the Gifford Pinchot's, the Austin Carey's of today? I believe they are with us--some of them in this room yesterday and today. What I see among you is a powerful felt need for cooperation in the face of great challenge, for new mechanisms for dealing with conflict, for conciliation rather than confrontation.

The opportunity of today is to transmit to the Governor and to the Legislature our conclusions. The Department will undertake to do that. I also see a great opportunity in regular occasions to reaffirm what we have reaffirmed in the past twenty-four hours...As Ecclesiastes tells us: ..."Get wisdom, get knowledge, but with all thy getting, get understanding." The search for understanding will not eliminate conflict of perspectives, of interests, of wills. It may minimize these, however, and build a basis of trust upon which we may together build a better future. We must acknowledge the co-equality of each others' interests, as well as their mutuality; and, above all, as Lawrence Robbins has often said to me, "Don't take it personally!"

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The Department will undertake to review the proceedings of the last two days and to produce a letter which we shall transmit to the Governor, summarizing what we have learned from you. We will send a copy of that letter to each person who has registered for this conference. We also are going to print proceedings and, funds permitting, we shall make a copy available to each of you...

Now I shall be happy to entertain any questions you may have, either about my future, the Department, the budget...

DISCUSSION

Charles Webb: I am a professional forester in the State of Maine and also employed by International Paper Company in Bangor. In our activities in Bangor, we are basically interested in growing better trees, faster. Also, an economic fact of life of which we are constantly reminded is that capital goes where it is treated best. Within our corporation, we have a very intense competition for capital. I find myself competing intensively with some of my colleagues in the South to try to attract capital towards the Northeast, to encourage increased forest productivity. And one of the things I am interested in (and this conference is certainly a meaningful step in that direction) is the evolution of some type of policy or specific plan to really encourage capital to come into the State of Maine to increase forest productivity. That may not be a question, but I think it's something that should be addressed. We've heard repeated references to the "adversary attitude." Being "from away" and having experienced attitudes in other parts of the country, to me especially this adversary attitude is very noticeable. It has been a creative attitude, when everybody is agreeing there's not much progress, and we've made lots of progress in recent years--at least the four years that I've been here. But I would like to see come out of this--and I really didn't hear it this morning in the Governor's remarks--a specific, positive plan to really encourage outside capital to come into the State of Maine and give us a good rate of return in this era of 20 percent prime rates.

Dick Barringer: I shall be happy to transmit that suggestion. I find it of great merit and perhaps we can pursue it at an early time.

Lawrence Robbins: Since Governor Brennan couldn't stay, the comments I have will be directed toward you in the hope that you might convey them to the Governor...In the forest industry maybe we are oversensitive, but sometimes we have felt that State government has not been receptive or sympathetic, and maybe sometimes even hostile to us. We haven't considered it a particularly good political environment to work in...There are some things I wish we could have discussed with the Governor, particularly his cutbacks. Maybe they are justified, but I feel they are not. And I feel if a consensus were taken within this room, probably a very large percentage would not agree with him. Now, I know we have to work within our budget, but sometimes considering something an expense is actually an investment, particularly in fire control, and I would include the blister rust program and the service forester programs. The forest resource we have, being as big and as important as it is in the State of Maine, I don't think it

should be neglected. I think white pine has been neglected. It needs to have its place in the sun. I think it needs a lot of work and particularly in the blister rust area. I do think this should not be cut back...You say we have some latitude. I don't know how much latitude we have, or how you define latitude. I'm sure this will come up at the legislative hearings. If it does, I'm sure many of us will speak and try to get the Governor to change his mind. If it's a cutback in expense that is justified, we will buy that; but if, in fact, we think it is challenging and downgrading the future of our forest, I don't think we will buy this concept and probably will do whatever we can to turn this around.

Dick Barringer: I, too, regret that the Governor was not able to stay. I thought it would have been helpful to all of us had he been able to. So that the record is clear, let me explain two things. One of the things the Governor asked me to do this year was to chair a cabinet committee to review the Maine State Retirement System. The state retirement system, while not in immediate jeopardy, is in serious long-term jeopardy. The problem largely derives from unfunded liability incurred some decades ago, which has not been funded properly by the Legislature in the past. We are now facing a deficit of \$100-120 million in that fund. It is not responsible of the Governor not to address this problem. Accordingly, the cabinet committee urged him to abide by the recommendation of the Trustees of the System to add an additional \$17-19 million in each year of the upcoming biennium. That's a heavy addition, inasmuch as federal revenue sharing was cut back and there are court orders respecting both Thomaston and Pineland that have to be abided by this year. That presented a very serious budgetary problem, in the context of which the Governor made some personal decisions as to what programs, given his values and his perspective on overall State responsibilities, he would recommend to the Legislature to be cut. The program cuts he recommended for our Department were made without the recommendation of either the Maine Forest Service or the Department of Conservation. In fact, his recommendations were made contrary to our own. But ours is not his perspective, and ours is not his responsibility. And I respect him for that. As he said, the final judgment will be made by the Legislature. He has made his recommendations. It is up to them now to appraise the situation, to make their evaluation of the State's fiscal situation, and to make the final determination as to how they wish to address it. He did the best he could. The process now is a political one. And the decision will be made by the Appropriations Committee and the entire Legislature. All of you who have feelings, I trust, will be in touch with these people. You should be. That's the way our political system is supposed to work.

Ed Woodbury commented that "the people" are going to make the decision on this, and it's appropriate that they do. That's the way we've structured our government and our society. I'm sure none of you disagrees that, from time to time, all the

programs the government conducts should be re-examined and re-evaluated in terms of their responsiveness to current needs. That's what I see going on. And I have every confidence that the Service Forestry program will fare well in the Legislature.

With respect to budworm, let me say specifically that the recommendation was a very difficult one. It was the Governor's, not ours. My perspective is that the General Fund commitment to budworm represents an abiding, good-faith agreement among the many parties who participated in the formulation of the new budworm policy as a legitimate, long-term commitment by the people of this State to the problem. I think it will be regrettable if General Funding for the program terminates. But, again, my perspective on the State's responsibilities and problems is not that of Governor Brennan. I respect him and his situation... It's not going to be an easy session for the Appropriations Committee. I can assure you of that. I am sure you appreciate that it is difficult for Governor Brennan to come before an audience with bad news. He is doing it to quite a few at the moment.

Leon Williams: I left here last night very thrilled by the discussions we'd had during the day. All these fine papers had been written, well-delivered, and the wonderful attendance showed the great interest in forests in the State of Maine. And then it dawned on me that, over the years, I'd attended a lot of these enthusiastic meetings. And nothing was done about it! So my question is, what are we going to do? Who is going to do it? And when?...A few years ago, we had a legislative order to study the forest situation in the State of Maine. Douglas Smith was chairman of that committee. Fred Hutchinson, Vice President of the University of Maine,...was on it. We had hearings practically all over the State, on practically every matter pertaining to forestry. We had field trips...People put in a lot of time preparing reports--just as people have put in a lot of time preparing for this meeting. We had a good report. In fact, we came up with about the same conclusions. We asked for value-added. That's the weakness of the forest products industry in Maine--we ship it out and let some other states get the benefit of the value-added...I think a lot of people are going to be awfully startled when the next U. S. Forest Service report comes out two years from now. I'm afraid some of the corporate boardroom members are going to wonder if they can continue their operation in Maine, or decide to move somewhere else where the timber resource is cheaper. (And I get my information not from PhD's but from folks traveling and working all over the State of Maine, who know what is in their particular system, and know what is happening to growth.) I'm sure it's going to be very startling for us folks in the lumber mills. That's a fear I have, but that's an aside--I was telling about what happened to the report. We got out a good report. We were strong on management. We believed that the district foresters were spending too much time on paperwork. Everyone testified they should spend more time in the field. There was discussion of pine blister rust. After all, the pine is quite important in this State. As far as any practical application,

we've done away with doing anything about pine blister rust in the State of Maine. I believe the reason that the pine had such a comeback in Maine was the fine work that the joint federal, state, and local governments did during the 1930's and 1940's in eradicating to a large extent the pine blister rust. Now, in the last few years, we've gone back and it's going back fast. Unless we recognize that problem, we're going to be right back where we were.

I never heard anyone mention that committee report since. It was presented to the Legislature in due time and placed on file. As far as I can find out, it's still on file. And I asked Dick Barringer if he'd ever read it since, and he admitted he hadn't. And he had done a lot for that report. And that's what I am fearful is going to happen to all the good work here. You'll send out that report to us and we'll let it gather dust. As Commissioner, I think you've got an obligation to the forests of Maine, to the industry, to the citizens of the State, to try to do something to help out in this line--even maybe against the Governor's wishes. It can be done. Heads of departments can stand on their own feet. But is this going to go the same way of that other report? I think the Governor threw down the challenge. But something can be done about it in the Legislature...It can be done. I condemn industry because they do not have able men elected to the Legislature that will be ready to fight for the industry. They rely too much on the fact that you hire a few high-priced lobbyists. Lobbyists, powerful as they are maybe in some corners, legislators know their lobbyists. And the members have a lot more authority. So I challenge this group to get involved in government.

Dick Barringer: Thank you, Leon. The Governor wasn't the only one to lay down a challenge today.

Robert Chaffee: I represented the Council which Leon Williams belongs to as a lobbyist....In fairness to those of you who represent corporations, I'm sorry that each day the conference didn't remind all that no prices should be discussed. And that's one of the reasons that information has not been exchanged very well over the last few years--because of anti-trust considerations. We really should stay away from any kind of dollars-and-cents remarks in our exchanges.

The Blaine House Conference on Small Business, which the Governor alluded to in his speech, evolved some 44 priorities. To our knowledge--those of us who follow the Legislature on a daily basis--the Governor has not introduced, nor does he seem to plan to introduce, one bill which relates to the priorities as outlined at that particular conference, which took place at four locations in Maine. Do you know if the Governor is going to take your letter and/or your Department recommendations and in any way use his power to introduce legislation, to propose anything as a result of this conference?

Dick Barringer: The morning that he met with the steering

committee and me at breakfast, he indicated that he looked to this conference to give him direction and advice with respect to policy matters affecting Maine forests and forestry. There is no commitment on his part that he will abide by anything we suggest. But he said that he welcomed the opportunity to receive that guidance. I shall represent our common interest before him as energetically as I can. That's the best I can promise.

Robert Chaffee: The second question: May we ask what your plans are?

Dick Barringer: Nothing more nor less than what has been in the papers so far. The Governor has some plans for the State Planning Office, to make it the principal policy development and coordination arm of his Administration. He has asked me if I would think about moving to that position on his staff. I have told him that I like very much what I do now. It would be my singular pleasure to continue to do it through this term of his Administration. I believe that the confirmation hearings we went through last year provided the basis for some very effective accomplishments that we've had in the meantime. I look forward to a couple more years doing good things here. So I'm strongly inclined to stay where I am.

Ron Lavallio (IP): In your comments on Dr. Smith's talk, you said he called for a new type of harvesting through partial cutting. I think that oversimplifies a lot what Dr. Smith said. Since some of these comments will go to the Governor for his consideration, I think we should review briefly all that Dr. Smith said. We need to prescribe individual silvicultural prescriptions, on a stand-by-stand basis. Planting must be species-adapted to rapid growth. One of the surest ways to increase productivity is through drainage of our wetlands. The bountiful growth we have in natural regeneration leads to overstocking. The selection system is a mirage. Partial cuttings, thinnings, are better than selection across ages. Finally, repeated partial cutting progressively degenerates the genetic stock. Even under a series of partial cuttings, rotation does come. It's not pretty, but it is necessary. I think that summarizes what Dr. Smith was recommending. He said we need deliberate replacement of the old stands, area control--not diameter control--and a continuation of partial cutting that decreases by one-eightieth each year for eighty years.

Dick Barringer: I acknowledge and appreciate your amplification of my very brief comment on his remarks. I thought that Max McCormack yesterday amplified upon Professor Smith's prescription and elaborated its complexity with an eloquence that I could not attempt to equal. So I'm quite aware of what you're saying and I appreciate it.

Max McCormack: I'd just like to come back to Ron's comment and a statement that has been made many times throughout the conference. It recurred again this morning in Peter Yacavone's

presentation. It concerns me maybe because I might tend to be an idealistic silviculturalist. But we hear about watching the trees grow slowly. You recall that yesterday I differed with Dave on planted trees and watching them grow slowly. We talk about our long rotation and that we are sort of forced into living with this long-term growth period, long rotations, slow growth, however you want to look at it. I think this is a mistake. Hardly a day goes by now that we don't review our field data which indicates that we have not even begun to touch the potential of the species that we have on the sites where they are growing in Maine, to grow rapidly. I wish people would look more in that direction, instead of trying to live with what we've been experiencing--partly because we've not managed the stand the way we could manage it and actually achieve shorter rotations and rapid growth.

Kenneth Rollins (Forest Products Management and Marketing Asso., Piscataquis County): I feel this whole conference has been a very good educational experience...Not one speaker insulted the intelligence of the audience...The selection of speakers and of panelists was excellent and very appropriate. I also feel, if we're concerned about the cost of State government and taxpayers' money, those of us who feel that having a set of proceedings is worthwhile ought to be willing to pay for them ourselves...

Dick Barringer: We will attempt to use any surplus funds from the registration funds to make copies of the proceedings available to everybody. If we cannot do that, we'll make them available at whatever the marginal cost is beyond that. So there will be a copy available for everybody, either through the registration fee or at nominal cost.

Thank you for having been such a good audience. It was a pleasure seeing you all.