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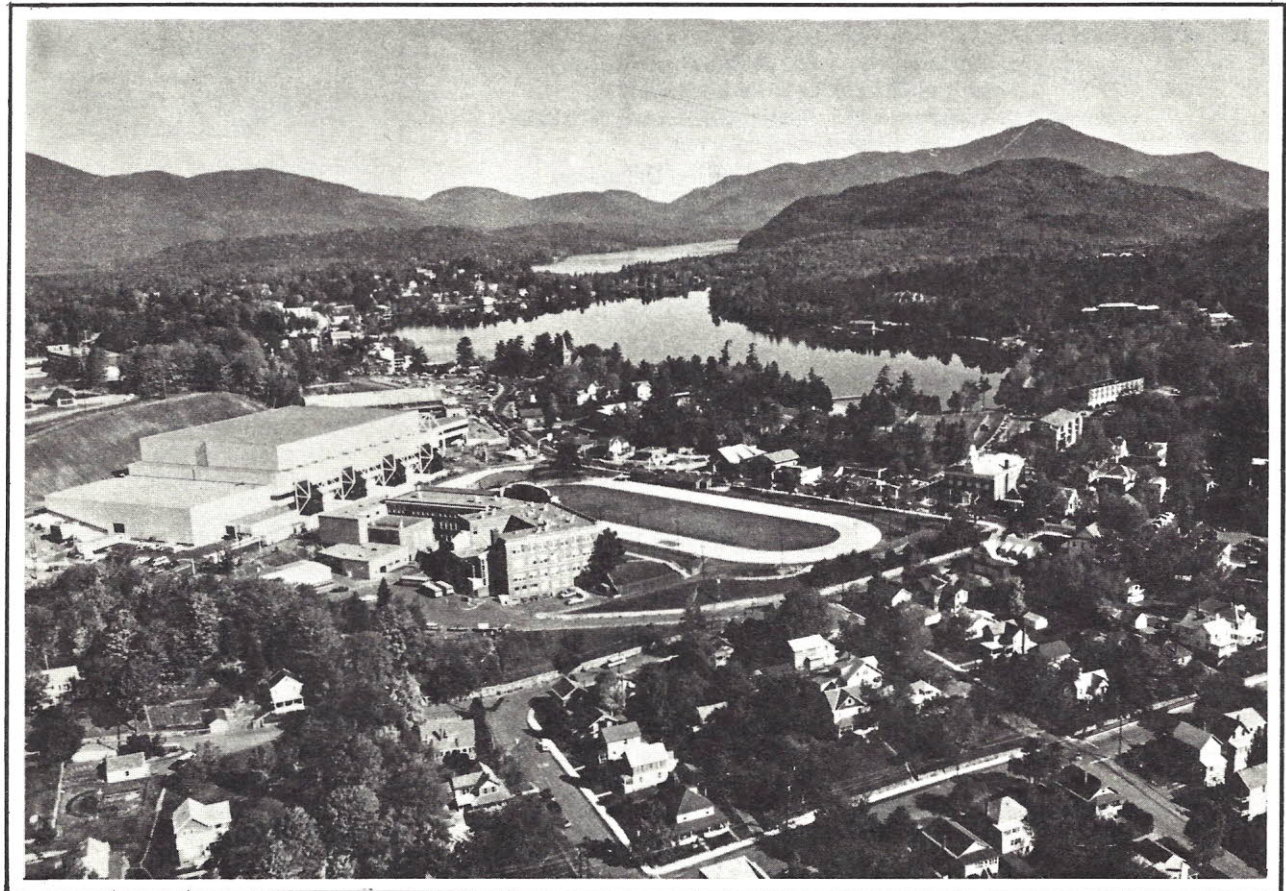
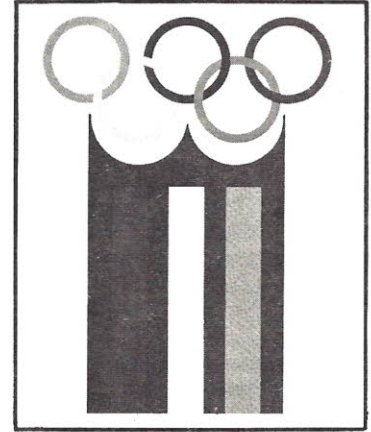
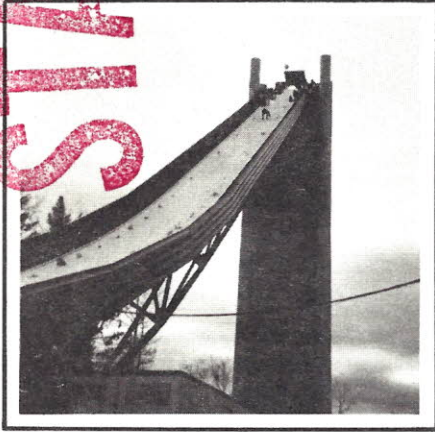
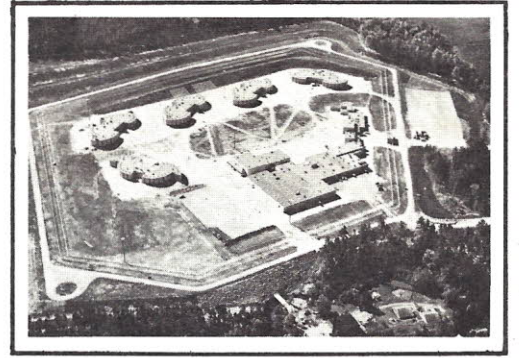
FEB 5 1980

New York

# Forest Owner

STACKS

DEPARTMENT OF  
ENVIRONMENTAL CONSERVATION  
AND FORESTRY



January - February 1980



Vol. 18 #1

# THE NEW YORK FOREST OWNERS ASSOCIATION



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Cobleskill, NY 12043

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**Emiel Palmer**  
5822 S. Salina St.  
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*Membership Secretary*  
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204 Varian Rd.  
Peekskill, NY 10566



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## WELCOME OUR NEW MEMBERS

**Robert R. Caldwell**  
Wolfe Lumber Mill, Inc.  
8416 Ridge Rd.  
Gasport, NY 14067

**Christian Heights Camp, Inc.**  
c/o Gary T. Peirce  
3361 Dickersonville Rd.  
Ransomville, NY 14131

**R.F. Cruickshank**  
Route # 28  
Glenford, NY 12433

**Brian Heath**  
Hoosac School  
Hoosick, NY 12089

**Abraham Hirsch**  
41 Beverly Rd.  
Upper Montclair, NJ 07043

**Duncan C. Howlett**  
Center Lovell, ME 04016

**Mr. & Mrs. W.P. Lightfoot**  
R.D.#1, Stickley Rd.  
Corning, NY 14830

**George Mitchell**  
Northern Logger  
Old Forge, NY 13420

**Joseph A. Powers**  
1228 River Rd.  
Edgewater, NJ 07020

**Mary C. McCarty**  
54 West Malloryville Rd.  
Route #2  
Freeville, NY 13068

**Robert Mottingdorfer**  
102 East 22nd St.  
New York, NY 10010

**Russell L. Seaman**  
1402 Brigham Rd.  
Chapel Hill, NC 27514

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**NEW YORK FOREST OWNERS  
Association**

Evelyn A. Stock  
*Editor*

*President*  
**ROBERT M. SAND**  
Odessa, NY 14869

*First Vice President*  
**HOWARD O. WARD**  
240 Owego St.  
Candor, NY 13743

*2nd Vice President*  
**ROBERT L. EDMONDS**  
R#3, Box 99  
Marathon, NY 13803

*3rd Vice President*  
**PROF. ROBERT R. MORROW**  
Dept. Natural Resources  
Fernow Hall, Cornell Univ.  
Ithaca, NY 13852



**New Members, Continued**  
**Christian R. Sonne, Family**  
West Lake Rd.  
Tuxedo Park, NY 10987

**Paul & Francis Szasz**  
Box 253, Sharps Landing  
Germantown, NY 12526

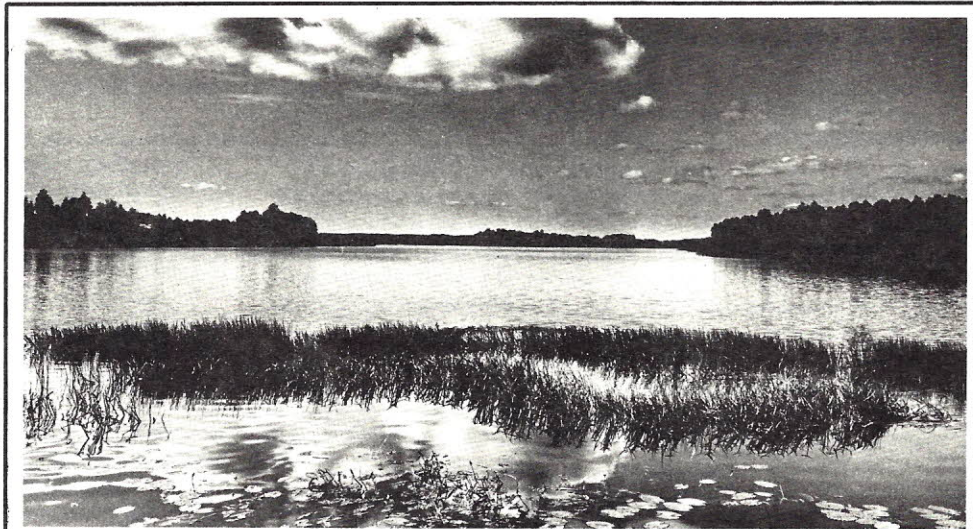
**Raymond E. Wappman**  
2142 Lawrence Rd.  
Marcellus, NY 13108



## FRONT COVER:

Scenes from the Olympic area in Lake Placid. The new Olympic arena; ski jump; complex where the athletes will stay. Pictures by courtesy of the Olympic public relations office. Bobsled on the zag bobsled turn, courtesy of Dr. Ketchledge.

# NYFOA SCANDINAVIAN TOUR SET FOR AUGUST



After years of transatlantic correspondence and planning, I'm ready to announce some firm details for the Scandinavian tour. I invite you to join your friends in the Forest Owners Association as they tour the woodlots, small towns, and cities of Denmark, Sweden, and Finland. And considering inflation and energy costs, the price is remarkably low.

Our goal is simple — to gather experiences, to see how other folks in another part of the world make the most of their forests. Of course, we'll have some fun, too!

Many who took our tour to Bavaria, Austria and Switzerland said it was special, the best trip they'd had before or since. I'm working hard to make this trip every bit as memorable.

Most sincerely,  
**Alan R. Knight**

### ITINERARY

- 14 August 1980 ..... Depart JFK for Copenhagen
- 15 August ..... Arrive Copenhagen, rest of the day free.
- 16 August ..... Guided sightseeing tour of Copenhagen.
- 17 August ..... Bus excursion north of Copenhagen to Christmas tree plantation and Danish Forestry Museum.
- 18 August ..... Travel from Copenhagen to Vaxjo, Sweden. Enroute, visit Elsinore Castle (setting for **Hamlet**) and a private forest holding.
- 19-23 August ..... Intensive visit hosted by Sodra Skogsagarna (roughly translated: a co-op of the Swedish Forest Owners).
- 23 August ..... Overnight steamer to Helsinki.
- 24 August ..... Sightseeing tour of Helsinki.
- 25-27 August ..... Finnish forestry visits, arranged with assistance of Finnish Forestry Association. Included will be a visit to a tree breeding center, a Finnish forest owners co-op, and forests and woodlots.
- 27 August ..... Flight back to JFK.

**Details:** Price — \$1196 per person, based on 30 people each paying \$700 by 27 March '80, after which time air fares are expected to rise. People booking after that date will pay somewhat more.

All payment due by 25 June '80. In the event of your cancellation, all but \$100 per person will be refunded.

Price includes air fare and tax, private bus in each country, double accommodations with private bath in excellent tourist class hotels, necessary ship or train travel, guides, continental breakfasts, and city sightseeing tours. Noon and evening meals are not included.

Thirty people can be accommodated, first come, first served.

Still in the negotiation stage are a few overnight stays with forest owner host families and additional charges for those desiring single rooms.

**Let's go!** You've got almost five months to think it over, and almost three months to make early bookings to hold your lower air fare. A regular newsletter will be sent to registrants.

Join us...for another trip of a lifetime. Application form on page 4.



MAIL TO: Alan R. Knight, 257 Owego Street, Candor, NY 13743

Please reserve \_\_\_\_\_ places for the NY Forest Owners Scandinavian tour. I

have enclosed a check for \$ \_\_\_\_\_. I have read and understand the conditions.

Names \_\_\_\_\_

Address \_\_\_\_\_ Zip \_\_\_\_\_

Telephone ( ) \_\_\_\_\_

MAKE CHECKS PAYABLE TO NY FOREST OWNERS ASSOCIATION

P.O. Non-members may come, too. Pass the word!

## The Fight To Save Our Endangered Trees

*Could all the world's forest lands be in danger of extinction?*

**By Philip R. Smith, Jr.**

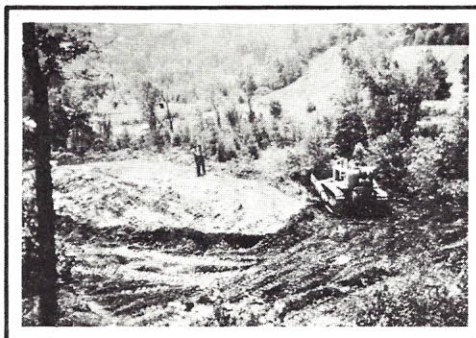
For all the years man has inhabited the earth, trees have been not only a source of fuel, building material, and profit, but fountainheads of peace and spiritual renewal as well. Legends tell of both Buddha and Joan of Arc meditating beneath trees; the Druids of ancient Britain worshiped trees, and trees figure largely in the early tales of the Hindus and Hebrews.

Now our forests are threatened as never before in the earth's history, and if they are destroyed, man himself will disappear from the earth because large wooded areas are vital to the quality of our soil, air, and water.

Five thousand years ago, the Minoan civilization flourished on the Mediterranean island of Crete. Thick woodlands on the Cretan hillsides were cut to make ships for the mighty Minoan navy. These forests were replaced by olive trees, but olive trees have shallow root networks and their leaves contribute little water to the hot environment. The lack of moisture in the air and nutrients in the topsoil caused erosion. Ultimately, agriculture failed, and a weakened nation fell prey to pirates and robbers. In the early 1900's, archeologists found the palace of Knossos, once center of the flourishing Minoan civilization. It was buried in topsoil and dust.

Nearly a thousand years after the fall of the Minoans, Plato warned the Greeks of the consequences of cutting down their forests. No one listened. Today Greece is largely denuded of trees.

Man is now cutting down the world's forests at an alarmingly accelerating rate. This could cause even worse dangers than the ruin of the land. Every conversion of woodland to agriculture steps up the supply of carbon dioxide (CO<sub>2</sub>) in the earth's atmosphere. Plants take the carbon dioxide out of the air. Presumably they do this at



**At an exhausted strip mine in the United States, men and machines work to prepare the land for reforestation. Rapid replanting is vital to prevent widespread erosion.**

about the same rate animals breathe it into the atmosphere, since there is no evidence in earth's history of any drastic build-up or depletion. Massive deforestation, however, will likely increase the carbon dioxide level enough to affect the temperature of the earth. Some meteorologists call this the "greenhouse effect" and predict the earth's average temperature will increase at least five degrees Celsius by 1990. This would melt thousands of hectares of polar ice, raising the sea level and endangering many coastal communities.

Some forward-looking men and nations are taking steps to prevent global disaster. But for the most part the history of forest preservation, like that of most conservation efforts, is one of too few, too little, and too late.

Even nations with a better-than-average history of concern for wooded lands often have been deplorably lacking in implementation of conservation efforts. King Edward IV of England passed a "law for regeneration of cut-over woodland" in 1482, but more than a century later, when the nation was faced with the threat of invasion by the

Spanish Armada, Elizabeth I had to send to Norway for wood to build ships.

Everywhere the pattern has been the same: long-term preservation of woodlands has given way to immediate needs. From the 16th to the 19th centuries, Germany was a leader in systematic timber management. German foresters were considered the best, and were employed all over Europe and even in the far-flung British empire. But the urgent needs of two world wars gave the German forests a blow from which they only now are beginning to recover.

In Spain, where centuries of unplanned cutting have depleted the woodlands except in inaccessible mountain areas, governmental reforestation programs have met difficulties. Where sheep and goats graze freely, seedling trees are often consumed as rapidly as they can be planted. Again, immediate need takes precedence over more farsighted programs. This pattern is seen more and more, particularly in poorer and less industrialized nations, where wood for home fuel and vegetation for fodder must take first place over lumber and erosion control.

Much of Brazil, particularly in the northeast, has been stripped in a generation. In 1900, the area known as The Hump was nearly 50 percent wooded; today only five percent remains. And, according to some scientists, Brazil's jungle-spanning Trans-Amazonica Highway is an ecological disaster of nationwide proportions.

In Bolivia and Peru, the slopes of the Andean valleys are nearly treeless. In Cuba, overcutting has eliminated three-fourths of the forests since World War I. Castro has begun reforestation programs, but progress is slow. In Venezuela and Chile, where small farmers clear land for crops by "slash and burn" methods, remaining forest areas are largely in inaccessible mountain areas.

Argentina gives us an example of the "profits today, to hell with tomorrow"



philosophy at its worst. One of the main products from the Argentinian forests is the red quebracho tree, which supplies four-fifths of the world's tannin (used in tanning leather). Before age 75, the trees are of no value; most being cut today are between 200 and 500 years old. No effort is being made to replace them, and by the year 2000, the tree will be eliminated.

Mexico was well on its way to total deforestation of all easily reached areas when, in 1951, the government banned all timber cutting in 22 (of 29) states. Since then, cutting has resumed in many areas, under strict control. The use of fire in clearing agricultural lands is forbidden.

One hopeful note is the implementation of United States reforestation methods into Latin American countries by large lumber companies. While cutting timber for their own benefit, which is also an economic boost to nations badly in need of profitable exports, the companies also show how to manage forests as a sustained-yield crop, thus avoiding some of the excesses of the past.

Unfortunately this is one of only a few bright spots in a world which often seems determined to cut its forests down to the last tree. Especially in the Third World, economic pressures and the inspiration of developed nations have led to deforestation at an alarming pace.

In the Philippines, more than half the forests have been destroyed in the last 50 years. Thailand was three-fourths wooded only 20 years ago; now it is 11 percent forested. Madagascar, originally 90 percent wooded, is now down to less than 10 percent. New Zealand has hacked down more than six million hectares of forest.

In the developed nations, loss of forests would be an economic and ecological tragedy, as well as an aesthetic one. But for large areas of the earth, deforestation is a part of everyday living.

There is an acute shortage of wood in parts of Africa, Asia, and Latin America. Fully half the trees cut in the world today are used as fuel for cooking and heating. (The other half is destroyed primarily by the overgrazing of animals and the slash-and-burn method of clearing land for farms.) As a consequence, it is becoming ever more difficult for people in many deforested areas to gather even the minimum wood necessary for their daily use.

In India, firewood is so scarce that special guard squads combat tree-poaching in legally protected areas. Landowners, who once allowed their landless laborers to cut down and sell their trees, now do it themselves.

In Nepal, long lines of men, women, and children toil upward into the mountains to gather wood for daily consumption. This task used to take an hour or two. It now takes an entire day. If there is any excess wood, the mountain people, bent double under their loads, will pick their way down

the mountainsides to Katmandu to sell it.

Due to scarcity of wood, a laborer in Niger, in sub-Sahara Africa, has to spend one-quarter of his income to buy wood for cooking and heating. In nearby Upper Volta, where all the trees within a 70-kilometre radius of the capital city have already been used for fuel, the fraction of time and money spent for wood is closer to one-third.

In the People's Republic of China, where the government is attempting to return trees to a land which has not supported forests for almost three thousand years, young seedlings on commune plantations have been uprooted to cook meals.

Peasants in the uplands of Korea have not only felled the trees but have also literally raked the countryside clean of everything which would burn: shrubs, seedlings, leaves, grass, and litter.

As wood becomes scarcer or nonexistent, people are forced to other sources of fuel. In India, Pakistan, Bangladesh, the Sahel (sub-Sahara Africa), Ethiopia, Iraq, and in the nearly treeless Andean valleys of Bolivia and Peru, cow dung is that substitute.

The world over, tons of animal wastes are used as fuel yearly. Visitors to almost any village in the subcontinent of India are greeted by pyramids of hand-molded dung patties drying in the sun. That dung is used in cooking instead of being returned to the earth to enrich the soil is ecologically tragic. India's National Commission on Agriculture recently declared: "Use of cow dung as fuel is virtually a crime."

Thus a vicious cycle is maintained. The land is denuded of trees, causing massive erosion. Needed fertilizers are burned in place of wood, so the soil deteriorates further. Much Indian countryside resembles a moonscape of washed-out hills and barren valleys. As one Indian official asked, "Even if we grow enough food for our people in the year 2000, how in the world will they cook it?"

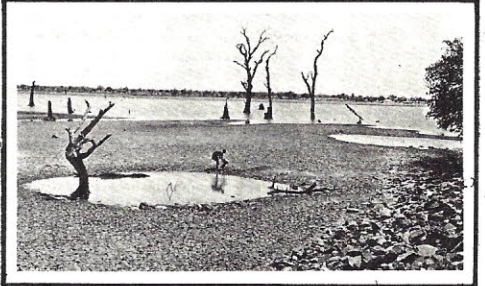
All of nature is in a delicate balance, and mankind is learning, nearly too late, that we can alter even a single element of this ecological cycle only at the risk of consequences both massive and disastrous. For example, a great belt of rain forest once lined the slopes of Mount Kilimanjaro in Tanzania. Some years ago an "expert" decided this area could become a rich source of timber. The local people were allowed to cut down the native trees for firewood, and pine trees were planted.

What the experts failed to realize, however, is that the native rain forests are ecologically essential, since they help keep the air cool. With their deep root systems which reach down to the underground water table, the native trees transfer water from the sub-strata into the atmosphere. Broadleaved trees evaporate this water and help cool the air by extracting heat through heat vaporization. The rain forests actually drip rain.

Pines, however, are shallow-rooted and have a low rate of water loss from their needles. They are also resinous and highly flammable. No sooner had the pines become established than the African heat—far too much for them—began drying them out. The stage was set for a mammoth forest fire, which not only engulfed thousands of hectares of pines, but destroyed much of the remaining rain forest as well!

Nowhere is nature's interdependence better shown than in the intimate link between vegetation and soil. Each is so vulnerable to tampering with the other that, in the end, one of the prime casualties of mankind's war on trees is the world's food supply.

Trees preserve soil's stability, fertility, and ability to retain moisture. Do away with trees, and the cycle is thrown into reverse. The land becomes barren and brittle. Topsoil is blown away. Water begins to run off and erode the denuded landscape rather than soaking into it. Droughts set in and a manmade desert is established. This happened in the "dust bowl" years ago in the Great Plains of the United States, and more recently in the semi-arid regions of Sahelian Africa.



**A drought scene in Upper Volta, part of Sahelian Africa. In the background are the muddy remnants of a once-flourishing waterhole; around it bare trunks show where trees had grown.**

South of the Sahara Desert, retreat of the trees and the destruction of vegetation by overgrazing is allowing the desert to advance southward at a rate that can actually be seen. As the precious soil washes off the treeless terrain, it kills off life in the rivers, ruins fishing, clogs expensive reservoirs, and blocks vital irrigation and navigation systems. The silt also reduces the carrying capacity of the rivers and increases their tendency to overflow and flood the neighboring countryside.

While this loss of cropland is bad enough in ordinary times, in dry seasons it is disastrous. The drought which ravaged the Sahel from 1967 to 1974 killed at least 100,000 people and subjected millions more to severe malnutrition and forced resettlement as the desert took over lands which once served as their homes and sources of food. With fodder as well as vegetation for human consumption in short supply, some areas lost up to half their grazing herds in 1973, the year the drought climaxed.

In areas such as this a vicious circle



operates. Plentiful rainfall creates optimism, leading residents to build up their herds. But as a drought worsens, both humans and animals struggle for bare survival, and consumption of every scrap of vegetation can damage the soil beyond repair.

Such situations call for all-fronts battles to reclaim the land. Limitation of grazing herds, irrigation, soil enrichment, high-yield crops, progressive farming methods, and massive reforestation efforts—all must work together if progress is to be made. Fortunately, emphasizes Harold Dregne, a leading authority on arid land agriculture, few of the degraded areas have yet reached the point of no return. But the task must begin now!

The intimate connection between forestation and food-crop production exists the world over, but is perhaps best illustrated in the fight to contain the desert sands of Sahelian Africa and Asia Minor. Trees in these areas not only help hold the arable soil intact against wind and water erosion, but also form a vital part of a windbreak system to stop the encroaching desert. It is an example of man wrestling farmland from nature as clear-cut as that of the dike-building of the European Low Countries. Tree planting could well mean the difference between food and starvation for thousands of people.

What can individuals do to help? Much. First, be aware of the problem, and help others develop awareness. Organize a program around this article. Perhaps your club could develop an educational project to bring the facts to your area, and couple it with a fund-raising activity earmarked for reforestation efforts somewhere in the world.

Seven of the 12 developing desert nations showing serious declines in per capita grain production from 1950 to 1975 are: Ethiopia, Jordan, Lebanon, Mali, Morocco, Niger, and Tunisia. What about a matched club or matched district project for the express purpose of aiding reforestation and halting the spread of the desert in those nations?

Unlike many areas of critical global importance, in reforestation, small groups or even individuals can make a big difference. A single person can set out up to a thousand seedlings a day by hand; two men with a tractor-pulled machine can plant as many as ten thousand. Given proper care, the trees a club can plant in a weekend will be a forest in a few years, offering the best possible protection for the soil, increasing the land's worth, and providing a green, growing haven.

In your own locality or around the world the need is for everyone to reach out—and offer a tree. We can leave behind us a beneficial legacy which will aid all mankind for generations to come. \* \* \*



**A forestry worker plants seedlings in a recently logged area. One club could plant a whole forest in a weekend, creating a valuable legacy for generations to come.**

#### CREDITS

"The Fight to Save Our Trees" by Philip R. Smith which appeared in the April, 1979 issue of the ROTARIAN is reprinted in this issue of the FOREST OWNER, by permission of the Editorial Secretary of the ROTARIAN. Howard Ward of Candor, New York and director of the NYFOA sent this very interesting article on to us.

#### CHRISTMAS TREE GROWERS MEET

The New York Christmas Tree Grower's Association held their winter meeting at the College of Environmental Science and Forestry January 11 and 12.

Insect and disease problems, quarantine, Scleroideris canker, recertification of pesticide operators, laws, taxes, liabilities, marketing, prices, problems of landowners, trends in different parts of the state, and basics of starting a Christmas tree plantation were some of the topics discussed.

The meetings were well attended. There were 82 in attendance on Friday and 175 on Saturday. The total membership is 375.

#### TAKE CARE WITH WOOD STOVE

More and more Americans are turning to wood as a substitute or auxiliary fuel to beat the heating price crunch.

With an estimated million new woodburning stoves being installed each year, we fear we will see this winter more than the usual number of tragic fires.

Deadly fires can often be traced to either unsafe installation or improper use of wood stoves. They are often placed too close to walls, ceilings or other combustible areas or objects. They often are not vented safely. Wood fires also emit residue that can result in chimney fires that spread through a dwelling.

Householders—at their peril—often use flammable liquids to start the fire or let it burn unattended.

Wood stoves are useful and pleasant, but an old caution applies: Handle with care.

"The snow covering the ditches reduces the temperature during the spring thaw. Thus, the frost tends to move straight upward through the road bed instead of into the ditch channel...The result is the breakdown of the road surface as the road bed collapses into the voids left by the frost."

Snow piled in ditches at side of road and snowbanks shaded by trees keep roads wet and muddy longer than when sunlight reaches snow to melt it.

If ditches are cleared of snow, "Most of the frost moves towards the ditches instead of straight up through the road surface thus helping to maintain the bearing capacity of the road. Another idea to help increase the snow melt along these narrow roads is to punch holes in the snow down into the ditch channel. This will allow the warmer daytime air to get into the ditch channel and help reduce frost damage to the road."

Dave Taber

"Empire State Timberman"

#### LEGAL POINT ON SALES TAX

A Pennsylvania lawyer just contacted me regarding a \$30,000 liability owed to the state due to government audit. POINT: Know the facts of law. Document what you do through records to protect you in future years. Always record date, name, address, and phone number of government agents who provide you with "legal" information which can make you financially liable.

Available from me to help are:

(A) "Timber Harvesters Guide to the Sales and Use Tax Law of New York State & ANNEX 1" (September, 1977)

and

(B) "Wood Using Industry Guide to the Sales and Use Tax Law of New York State" (July 4, 1976).

Dave Taber

SUNY College of Environmental  
Science and Forestry



Two men were discussing the high rate of taxes and government waste of money. Just then a school bus passed them. "See what I mean," exclaimed one. "When I was a boy we walked three miles to school and three miles back home each day. Now, we spend \$10,000 for a bus to pick the children up so they don't have to walk. Then, we spend \$100,000 for a gymnasium so they can get exercise."



Then there's the sad tale about the two story house. The real estate man told him one story before he bought it and another one afterward.



## Potential Losses Associated with Harvesting Forest Biomass for Energy

Rising costs of fossil fuels have spurred many homeowners to return to the renewable fuel of the past — wood. The most accessible trees, often near roadsides, have been cut first. Foresters, seeking a market for the excess of small, low value trees that need to be thinned out of forest stands, have welcomed the rapid increase in fuelwood demand. One timber company increased its annual sales of cull logs from a few hundred to 10,000 tons in a 3-year period — and at handsome prices.

But this is only the beginning. Wood can also be used to generate steam for heating industrial or public buildings, including schools, and for making electricity, and with much less air pollution than coal. Stoked in large furnaces, wood tends to burn more efficiently and with less pollution than in many home furnaces.

On the other hand, wood is less efficient than fossil fuels, containing less energy per unit of weight. Trees are bulky, scattered, and full of water. They are expensive to harvest, transport, handle, and dry. Huge areas of forestland are needed for continuous supplies. Even so, the concept of harvesting **forest biomass for energy has spread rapidly. Recent predictions of national wood harvest have varied from doubling to increases of 5 to 10 times. The latter would include extensive fuel forests with frequent harvests (perhaps every 1-5 years) of above-ground parts (stem and branches) of fast-growing species and large energy inputs for planting, fertilizer, machines, transport, and possibly irrigation. Such energy farming might increase the contribution of wood to the national energy budget from its current level of about one percent to some 5 to 10 percent.**

In the past, environmental losses from forest harvesting, such as soil erosion, have been largely preventable or minimized with the relatively conservative **stemwood harvests** that occurred only once or twice a century. But a combination of **whole tree harvests (WTH), short rotations, on a grand scale** for energy is quite another situation, especially since we already have the technical capacity to cause a decline of forest productivity or even outright forest destruction. Some potential

losses associated with magnified harvesting of forest biomass follow:

### 1. Reduced soil productivity from loss of nutrients, organic matter, and/or soil structure.

Briefly, nutrient accumulation in branches, twigs, leaves, bark, and roots is usually several times higher (wt. basis) than in the stem. Thus WTH may yield some 50 percent more fiber than stemwood harvests, while more than tripling nutrient removals. Since trees accumulate much of their nutrient content at early ages, short rotation (20 or 30 years or less) can compound nutrient losses. Soil nutrients are replaced slowly by weathering, atmospheric discharges, and biological activity. There is insufficient knowledge concerning replacement rates, but it appears that, for most forestland, natural replenishment will be too little where both WTH and short rotations are used. Of the two, short rotations appear to be more serious. Many forests can retain their productivity following WTH, provided it occurs only once or twice a century. Of course, nutrients can be replaced by fertilizing or recycling the ash, but at a cost.

While nutrients are the focus of current attention, the physical structure and/or organic matter content of soils **may be even more important** to productivity. Soil structure, once destroyed, may take decades for renewal. Unfortunately, our knowledge here is more limited than with nutrients. Harvesting equipment has been improved to distribute weight loads and reduce soil compaction, but harvest of forest biomass at short intervals is a threat to soils with fragile physical characteristics.

Fragility of soils in forest-rich regions of Southeastern United States has been especially well-documented.

### 2. Reduced soil productivity from soil erosion.

Past erosion has been largely determined by the quality and amount of forest road construction and skidding practices, as well as soil characteristics and topography. Increased harvest of forest biomass will likely increase soil erosion because of (a) increased activity (more fiber harvested per acre, more often, more acres) and (b) less soil protection following removal of branches and disturbance of litter associated with WTH. Nutrient losses from erosion become especially important when combined with losses from biomass removal. With suitable precautions,

they should be much less. Harvesting forest biomass will require more roads. They will have to be better roads to handle increased traffic, while reducing erosion.

### 3. Loss of valuable growing stock from indiscriminant cutting.

Proper thinning of forest stands favors the best trees for future growth and removes the chief competitors. This increases the production of timber through faster growth rates of the favored trees. **Thinning has a two-fold effect in increasing energy.** Second, increased timber is available for conversion into useful building and other products; this conversion requires **several times less energy** than metal, brick, concrete, or plastic counterparts. The indirect energy savings from growing an acre of timber may exceed the fuel energy in several acres of biomass. Thus cutting potential timber trees for fuel is "penny wise and pound foolish." Done on a large scale, it could reduce timber productivity for decades or even centuries.

Indiscriminant cutting may be done by ignorant people seeking fuel-wood or by big costly harvesting machines. The latter are more important, by far. Costly machines have to produce at rapid rates to pay for themselves; they work best in clearcuts (some are too big for anything else); even when designed for selection cutting, there is always the financial temptation to overcut.

## Conclusion

Wood for fuel is attractive because it requires only technology that is "on-the-shelf" — developed and ready for use. It may be unrealistic to say that direct conversion of wood to electricity or heat will make a big contribution, in terms of megawatts; but wood **is** a relatively untapped energy resource which can contribute significantly to the short-term energy supply. The greatest long-term contribution undoubtedly is as a replacement for energy-intensive building materials and as a chemical feedstock in the place of oil and natural gas. The degree to which the energy potential of wood will be realized depends upon the price of petroleum, which is increasing rapidly. We can safely predict that the energy potential of wood will take on increasing significance in the years to come.

— John Stanturf





## **Report to the New York State Assembly Committee on Environmental Conservation**

Maurice D. Hinchey, Chairman

I would like to direct my comments to the Adirondack Park Agency Law which requires a permit for the removal of all or substantially all timber on a unit of land 25 acres or more which will hereafter be referred to as "clearcutting."

This law has been in effect for a number of years and so far no definitions of "clearcut" or "unit" of land have been determined.

I have been involved in five meetings with various A.P.A. staff, some public and some private, and so far not one A.P.A. representative has been able to identify a specific problem due to clearcutting.

In order for a permit system to function effectively specific problems relating to an action must be determined. If this is not done then nothing is accomplished. There must be a specific problem to be controlled along with substantiated reasons why it is a problem. If this is not done then a permit cannot be approved or rejected as there would be no sound reason to do either.

The A.P.A. does not know how much clearcutting, whether it be silvicultural or legal definition, is being done in the Adirondacks, nor do they know if there are any significant adverse ecological impacts from clearcutting.

In addition to this they have no trained Forester on the staff, and yet they have decided that clearcutting of the Adirondacks is a threat and they are taking steps to control it.

Lacking a definable problem the A.P.A. has had to create one. Their problem summarized is as follows; The energy crisis with its resulting increases in demand for wood coupled with acid rain, technological advances in timber harvesting and processing, and changing tax policies will drive the forest industry to rape the Adirondacks.

Although some of these items have had a detrimental effect on the industry it is not likely the timber base will be destroyed.

Industry has been developing new machinery, investing in new and varied types of processing plants to improve methods of harvest, utilization, and

quality of residual timber. It is not in the best interest of industry to have invested many hundreds of millions of dollars into new and old processing plants for the purpose of damaging the resource they depend on.

A.P.A. personnel have been making public statements to support their convictions that clearcutting threatens the Adirondacks and cite as their only factual argument that they have received 10-12 applications for clearcutting and one is for 800 acres. They fail to mention that the 800 acre application is for clearcutting several parcels on an 800 acre management unit area, not an 800 acre clearcut.

Irresponsible and misleading statements like this are not conducive to the development of a successful permit system.

I strongly urge that, instead of allowing another unnecessary state bureaucracy to grow and further stifle the economy, a committee be named by you to study this issue to determine if any significant problems caused by clearcutting exist and if so what they are and how they can be controlled.

I further propose that this committee be composed of professional Foresters from the various disciplines and that the study be conducted by the S.U.N.Y. School of Environmental Science and Forestry, Department of Environmental Conservation, Society of American Foresters and Forest Industry representatives.

The law states that "clearcutting" shall require a permit. However, no criteria are given for refusing or authorizing a permit. This committee's task should be to determine what, if any, significant problems might be encountered as a direct result of clearcutting that are not already covered by other state and federal laws, what criteria can be applied to modify these problems, and develop definitions of "all or Substantially all" and "25 acre unit."

Robert L. Meyer, President  
Empire State Forest Products  
Associations

## **Personal Observations of the Current Status Of Forest Technology and Policy Regarding Private Landowners**

Presented by: Christian Gearwar  
Lake George, New York  
September 14, 1979

There is potential in New York State to expand the use of silvicultural practices and create employment in the sector of non-industrial private landowners. Forest technology gives us the knowledge and the means to apply accurate silvicultural prescriptions. Forest policy establishes guidelines and monitors decisions concerning the practice of forestry. These are all true statements and can form the basis for effective forest management.

Unfortunately, there are too many non-industrial forest landowners who are unaware that forestry services are available or of why they are beneficial. This ignorance results in several usually irreversible conditions; prime woodlands becoming non-productive for many years due to heavy cutting or poor logging practices; people refusing to sell forest products from their land due to a previous bad experience or knowledge of someone else's misfortune, an unfavorable stigma attached to timber harvesting that feeds fuel to the rationale of preservation. This is bad, we can't practice forestry without cutting trees.

To illustrate this point, I will relate to you two real life situations that I have personal knowledge of. The first one involved an absentee landowner who owned some prime quality hardwood sawtimber. The owner was approached many times by prospective buyers, who advised him that he should sell his timber. The owner was familiar with the results of several poor harvesting operations that had been conducted in the area and assumed these to be typical. He had no intention of having his land transformed into such a "horrible mess" and thus refused to speak with anyone concerned with harvesting timber, forester or otherwise.

One winter while the owner was at home, a great distance from his woodlot, someone nearly denuded his woodlot of trees and left long before he had knowledge of the theft. This person now has a raspberry rotation to look at

Continued on Page 11



## Opportunities and Obstacles in Using Biomass for Fuel

By John Stanturf  
Lecturer in Forest Soils  
Department of Agronomy  
Cornell University  
Ithaca, NY 14853

Viewing forests as an energy resource is not a new or even very imaginative idea. Once wood was our major fuel. It continues to be the primary fuel of most of the world's population. Wood for fuel looks attractive to us once again because prices of other fuels have skyrocketed. Additionally, the public imagination is engaged when wood fuel is described in terms of an alternative, renewable, or solar energy source. Realistic appraisals of the potential contribution of forests to national energy supplies must focus on technical issues.

I see three demands for wood fuel: home and commercial heating; industrial heating, and generating electricity. The demand for home firewood will no doubt pick up after this coming winter's fuel bills arrive. I suspect that the proposed Federal subsidies for home heating will not extend to homeowners who are the most likely consumers to convert from other heating fuels to wood. At any rate we are approaching the point where firewood gatherers have depleted easily obtained stocks and greater capital investment in equipment will be more necessary than many can afford. In my view, the supply system will soon be the same, whether ultimate use is home heating or generating electricity at a NYSEG power plant.

Let me illustrate the viability of industrial use of wood fuel with some examples. The public power utility in Burlington, Vt. converted a coal furnace to burn wood chips. They generated between 5 and 8 megawatts of power using about 150 tons of chips a day. (The variability in output was due to differences in moisture content of the chips.) Based on these results, the utility plans to construct a 50 megawatt power plant using 1500 tons of wood a day (American City and County. March 1978. "Vermont utility tests wood power.")

Closer to home, we have tried to convince the Cornell University administration to consider burning wood chips at the schools heating plant. Other institutions such as hospitals, prisons or

military bases could use wood-fueled steam plants for heating alone and realize considerable savings on oil and gas or even coal.

Large-scale generating plants using only wood fuel probably will never be competitive with large-scale coal-fired plants (due to the large land area needed, excessive transportation costs are introduced). But smaller existing plants, using oil or natural gas could be converted to wood and operate less expensively than a new coal-fired plant of similar size (25-100 mw). Such a wood-fired plant might even be cheaper to operate than an existing oil-fired plant converted to coal (Rose, D.W. and K.P. Olson, 1979. Wood — An economical and reliable fuel for generating electricity in Northern Minnesota. *J. Forestry* 77:88-90).

If we can accept that there is at least a potential industrial demand for wood fuel, the question of supply becomes important. In my judgement, the most attractive possibility in the Northeast lies in using our under-utilized standing forests. More intensive management, particularly thinning, could double wood production. This of course is wild speculation. The data available in the resurvey of N.Y. forest lands, published in 1970, don't allow precise estimates of our present supply picture. A recent study in West Virginia is illustrative, however. Using forest inventory data and biomass prediction equations, this researcher estimated the annual growth **in excess** of current harvest at 34 million tons. All residential and commercial energy needs, or 44% of the industrial demand, could be met with one half of this 34 million tons (Sarles, R.L. 1979. Wood fuel potential in West Virginia. For. Serv. Res. Note. NE-279). Tantalizing as these gross estimates may be, we must still face the problem of showing that a wood chip supply industry is economically feasible. Dr. Jerry Hass in the business school at Cornell did a quick and dirty commercial analysis of a wood chip operation, and I've updated his figures a bit. The system we envision utilizes a feller buncher, grapple skidder, chipper, and three live-bottom trailers and a tractor and some accessory equipment. We would need four equipment operators and a foreman. The expected life of the machinery is 12000 hours, so we used a six-year life-time for the operation. Equipment costs ran to \$325,000; annualized capital costs were over \$100,000. Annual operating expenses

were \$260,000, mostly for labor and fuel.

Our productivity estimates came from a forest service study Methods and economics. USDA For. Serv. Research paper NC-137.). They were working in dense pole stands and had yields of 45 tons/acre, which we felt were too high for our conditions. To make a long story shorter, we estimated the unit cost of wood chips, collected at a central point not far from the woods, to range from \$12 to \$17 per ton. This assumes there is no stumpage cost. In other words, the landowner gets only the increased value from the thinning operation in payment for the wood. At \$12-14/ton delivered, wood chips compete favorably with coal at \$40/ton at the Cornell Heating Plant. Comparisons to oil are of course better. To really be competitive, however, we have to cut labor costs or increase productivity, or wait until the price of other fuels rises a bit more.

In conclusion, I think the opportunity is there for some well-financed wood chip operations to get started and be profitable. The obstacles I see, though, are many:

1. The uncertainty of supply. This breaks down along economic lines—can we assume no stumpage value for thinned wood? Are the logistics right? That is, are there sufficient dense pole stands within reasonable transport distance from demand centers to make an operation pay?

2. The uncertainty of demand for chips. We've experienced a great deal of resistance to this idea at Cornell. Can we convince people, especially financial institutions of the viability of wood chips for fuel?

3. The uncertainty of long-term renewability of the resource if managed intensively. A recent conference here at Syracuse brought together experts from all over the world to look at the impacts of intensive harvesting on forest nutrient cycles. My sense of the discussion is that if we move carefully, there is no reason to expect we can't harvest more intensively. This is not to say that we can do it on any site at any time, or that we won't have to increase inputs such as fertilizer.

These uncertainties of supply, demand, and renewability will only be reduced by trying commercial scale operations. We have enough desk-top studies using highly aggregated data (like the forest survey) and professional judgment. The time has come to act, and act quickly. . . .





## The Tree as Symbol



I often pass a gracious tree  
Whose name I can't identify  
But still I bow in courtesy  
It waves a bough, in kind reply.  
I do not know your name, Oh tree  
(Are you a hemlock or a pine?)  
But why should that embarrass me?  
Quite probably, you don't know mine.  
Christopher Morley



### U.S. BURNING MORE FIREWOOD

The number of tons of wood residues now removed from national forests is more than six times greater than in 1973 when the federal government first opened the woods to the public for free firewood. More than 7.3 million green tons were picked up in fiscal 1978, compared with 1.1 million in 1973.

Making use of waste wood is the first step in looking to wood as an energy source, experts say. Wood now makes up about 2 percent of the nation's fuel supply, and federal experts believe it could be 7 percent, saving more than 2.5 million barrels of oil a day.



To sit on rocks, to muse o'er flood and fell;  
To slowly trace the forest's shady scene,  
Where things that own not man's dominion  
dwell,  
And mortal foot hath ne'er or rarely been!  
To climb the trackless mountain all unseen,  
With the wild flock, that never need a  
fold;  
Alone o'er steeps and foaming falls to lean;  
This is not solitude: tis but to hold  
Converse with nature's charms, And view  
her stores unrolled.

Byron



The tree is one of the most traditional of symbols. The traditional tree is often of no particular genus, but some trees have been singled out as the tree of life, or the sacred tree to particular religious sects. The oak was sacred to the Celts; the ash to the Scandinavian peoples; the lime tree to the German tribes; the fig tree to the Indus of India.

There were many mythological stories of the ancient Gods and trees; for example, there was Jupiter and the oak, Apollo and the laurel; Osiris and the cedar; and Attis and the pine.

At its best in symbology, the tree denotes the life of the cosmos: its consistence, growth, proliferation, generative and regenerative processes. It stands for inexhaustible life, and is equivalent to a symbol of immortality. The concept of life without death stands for absolute reality. The tree becomes a symbol of this absolute reality, that is, of the center of the world. Because the tree has a long vertical shape, the center of the world symbolism is expressed in terms of a world axis.

The tree with its roots underground and its branches rising to the sky symbolizes an upward thrust and is therefore related to other symbols, such as the ladder and the mountain.

It is interesting to note that the worlds of tree-symbolism reflect the structure of the tree: roots, trunk and limbs with their foliage, symbol of the inexhaustible life process, growth and development. Different mythologies and folklores have different shades of meaning. Some of these are merely aspects of basic symbolism, but there is a subtlety to others which adds enrichment to the symbol.

At the primitive level there is the Tree of Life and the Tree of Death. Others know it as the Tree of the knowledge of good and evil; but the two trees are merely two different ways of expressing the same idea.

In India the Banyan tree is sacred because Buddha prayed under this species tree. In India there is a wedding ceremony in which the man and woman are symbolically married to a tree. The tree of life as found in celestial Jerusalem, bears twelve fruits or sun shapes. There is a triple tree in India, with three suns and the image of their Hindu trinity. Other types of trees have been the tree of knowledge and the sea tree.

### JANUARY

Then came old January,  
wrapped well in many weeds  
To keep the cold away, Yet  
did he quake and quiver like  
to quell. And blew his nayles  
to warm them if he may;  
For they were numbed with  
holding all the day, an  
Hatchet keene, with which  
he felled wood, And from  
the trees did lop the needlesse  
spray

Faerie Queen, & Spenser



What does your husband do: one wife  
asked another.

"He's an expediter."

"What's that?"

"Well, it's hard to explain, but if we  
women did what he does, they'd call it  
nagging."



### ON THE CALENDAR

Environmental Law and Regulations—a 6 week short course to be held Monday nights, March 17 through April 21. The instructor is Sidney L. Manes, Syracuse Attorney. Please contact Dean of School of Continuing Education, SUNY College of Environmental Science and Forestry. 473-8755 (315 area).

There will be a seminar for the woodworker in the Tappansee Town House, Saturday, April 19th. For more information, please contact Mrs. Anderson, (315) 473-8755.





instead of a beautiful stand of timber.

The second situation involves a person who spent a great deal of money to purchase a piece of property in the Adirondacks. When he discovered that the property contained some valuable timber, he became interested in the aspect of selling it. However, he thought it ridiculous to pay for an inventory or ask for professional guidance. The cost of hiring a forester to assist in making decisions would be negligible compared to the selling price of the property. Nevertheless, the owner refuses to pay for it. This owner is a prime candidate to be "ripped off."

These two owners have one thing in common, ignorance. The fault, I believe, is ours. As professionals, we share the same interests, the same convictions, but they didn't get the message. We know the proper way to manage some of our renewable resources, but if the people who need this expertise don't know where to get it, they can be easily misled.

As I see it, we have basically two approaches if we intend to significantly improve this situation. Either we support some form of mandatory regulation for forest owners or we improve our rapport with the non-industrial private landowner. The first approach is certainly more direct and possibly more effective. However, the cost of implementing and enforcing such a program would be great. Also, it goes against my grain. Regulation is a nasty word. The second approach is much more passive, but will be effective if we make a concerted effort.

We sit in this conference room to discuss current problems and I am impressed by the dedication and knowledge of the people here, but when I get out into the real world I see the problems I have mentioned that will really take some effort to improve. I feel that all sectors of the forestry profession, governmental, private consulting and industrial, have got to work together to make a significant advancement. Foresters are beneficial to the landowner by enforcing proper harvesting practices, better utilization, better markets and proper silviculture to name just a few.

I hope my experiences have conjured similar ones in your mind that you are familiar with. My conclusion is that we are heading in the right direction, but we need a more concerted effort and a lot more teamwork. \* \* \*

## GOOD RESOURCE MANAGEMENT

By Richard Nason

### Members of the Assembly, Ladies and Gentlemen:

My name is **Richard Nason**. I am Woodlands Superintendent for Finch, Pruyn and Company, Incorporated located in Glens Falls, New York. We manufacture fine papers utilizing roundwood as a raw material. Finch, Pruyn is greatly concerned with good resource management—on our own land, State-owned lands and lands owned by the general public. I would like to address two areas of special interest to Finch, Pruyn—timber harvesters and benefits to forest landowners.

To increase the production of raw materials from our forest resources, we need many new professional timber harvesters. Presently it is difficult to obtain the necessary professional wood harvesters to sustain our present production levels, especially in the pulp and paper industries. Many contractors move from area to area, producing wood first for one mill and then another depending on the ease of the operation and the amount of money they can obtain for their products. With many industries expanding their use of raw materials and new mills being constructed, there will be a shortage of timber harvesters to meet the demand for the raw materials. This is especially true in meeting the demand for firewood. Presently, there is a greater demand for firewood than the existing contractors can produce. At Finch, Pruyn we are planning a 20-25% increase in our paper production, and consequently, the same demand for raw materials over the next 2 to 3 years. To meet this demand we will need approximately 75 to 100 more timber harvesters to harvest this raw material. These new people will need approximately \$4 million worth of equipment in order to harvest the additional raw materials that we will need.

One answer to the problem of too few timber harvesters is the establishment of training schools to teach young men how to be good professional timber harvesters capable of earning a respectable income. Presently in New York, we do not have any schools at the post-high school level to teach and train students to become professional wood harvesters. There is a training school at the Washington County Vocational

Technical Institute at Calais, Maine that does an excellent job training wood harvesters. Many students from New York have attended the Wood Harvesting Training Program to learn wood harvesting skills. The only drawback to the Maine program is that they concentrate their training on how to harvest tree-length spruce and balsam which is conducive to harvesting methods in Maine. Many of the New York students stay on and work in Maine. We at Finch, Pruyn have started our own training program to expand the number of professional timber harvesters available to meet our new demands for raw materials. Presently we have six students and one instructor in our program, and we are very pleased with the progress that they have made to date. We also need to find a way of financing equipment for new people interested in establishing themselves in the business of harvesting raw materials. Presently, banks are very reluctant to grant loans on new equipment to people who have not established themselves in the business community and to young people who have not established a good credit rating.

Many benefits are achieved from good management of our forest resources. Utilizing a multiple use forest management concept, the landowner can realize: (1) a monetary return from his land at the time of each cutting cycle which varies from 10 to 20 years; (2) an increase in wildlife population, especially whitetail deer since they browse on the tops of harvested trees and the new growth resulting from a harvesting operation; and (3) use of the land for recreation such as hiking, cross-country skiing and snowmobiling which would be enhanced by the use of trails and roads through the managed forest.

Unfortunately, there are a great many landowners reluctant to harvest or manage their property. They feel that cutting trees destroys the beauty of their land, while, in fact, through good forest management, the esthetics can be retained and can continue to be one of the benefits of well-managed landholdings. With the increased demand for forest products from our forest resource, we in the forest industry are faced with the problem of a shortage of timber harvesters and a decline in the forest land base from which to obtain the necessary forest resource to operate our industry.







Evelyn A. Stock  
Editor  
5756 Ike Dixon Rd.  
Camillus, N.Y. 13031

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## Publications You Should Know About

### INSIDE WOOD MASTERPIECE OF NATURE

By William M. Harlow

The author, Dr. William M. Harlow, Emeritus Professor, State University of New York, College of Environmental Science and Forestry, develops in a clear, fascinating text the story of wood, the most wonderful and useful natural material in the world.

When you look at a towering tree trunk, you can hardly imagine the marvelous structure of the wood inside, unless you have seen it through a microscope. This 8½ x 11 inch book has more than 100 photographic halftones of wood structure, most of them never before published. These are seen at natural size, through the hand lens, the light microscope; and finally there are electron micrographs at 7,150 and 16,000 times actual size. Other photos show the enormous strength of wood, the resistance of large sized beams to fire, why it decays, what you can do about it; and some of its 5,000 uses. Wood as a material is featured, and how trees grow bark and wood.

Some questions answered: - Why does wood shrink and swell? Why are some woods so heavy that an oven-dry piece will sink in water? During a house fire, why is a thick-walled wooden chest five times safer for storage of valuable papers than a steel cash box? What is reaction wood, and how does it help to straighten a leaning tree? What is so-called "dry rot", and why did it destroy more wooden ships than all the wars of history? Why is paper made from wood fibers so important? How do modern sculptors use ammonia-treated strips of wood?

For all those in the wood using industry, and for you who have ever whittled a stick of wood, admired its beauty of grain and

texture, or felt its warmth, this non-technical book provides endless interest and pleasure.

Congratulations are due Dr. William Harlow for producing a book brief enough to be read in two sittings, scope enough to embrace the whole field, authoritative enough to be beyond reproach, readable enough for non-scientists, and exciting enough to captivate the minds of young people looking for challenges relevant to our times in all important ways.

Dr. George G. Marra  
Washington State University  
Pullman, Wash.

Available from The American Forestry Association, 1319 18th St., N.W., Washington, D.C., 20036. Please send me..... copies of "Inside Wood" at \$6.50 (Hard Covers, 120 pages).



### WAYS OF THE WOODS

by William M. Harlow

Subtitled "A Guide to the Skills and Spirit of the Woodland Experience," this fascinating book has just been released by The American Forestry Association. In it there is something for everyone, no matter what age, no matter how experienced in the forest. Inquisitive youngsters and professional foresters will enjoy this book. Harlow's forty years experience in forestry and camping are conveyed on every page of this, his second book to be published by the Association.

Learn about — axmanship, poisonous plants, shelter building, hypothermia, safe drinking water, knife sharpening, fire starting with a bow, topographic map use, organized summer camps, wilderness personalities, campfire layout, tree felling, edible wild plants, and more.

Available from the American Forestry Association, 1319—18th Street, N.W., Washington, D.C. 20036.

### AUDIOVISUALS ON ENVIRONMENT ARE AVAILABLE

ITHACA, N.Y. — The Audio-Visual Resource Center at Cornell University has published a listing of all 16mm films, videotapes and audiotapes that they have available on conservation and the environment.

Some of the audiovisuals are familiar favorites such as "The Eternal Forest," "This is the Mallard," "World of the Beaver," "Trash Tells A Tale." Others recently released include "Land, with Love and Respect," "Habitat — A Special Place," and "Burning Wood." Some will appeal to students just learning about the delicate relationship of all things on Earth. Others delve into complex problems people have been trying to solve for generations.

A free catalog of these audiovisuals is available from the Audio-Visual Resource Center at the N.Y. State College of Agriculture and Life Sciences at Cornell. Many of the films were produced by the College. To receive a copy of the catalog, write to: Environment, Audio-Visual Resource Center, Box 47, Roberts Hall, Cornell University, Ithaca, N.Y. 14853.

### HOW MUCH IS ONE BILLION DOLLARS?

One can hardly pick up a paper nowadays, or a current news magazine, without seeing "billions" tossed around like leaves on an autumn wind.

Did you ever sit down and think HOW MUCH IS ONE BILLION DOLLARS... really? If a company started business back in 1 A.D. with a billion dollars in capital, and lost \$1,000 every day since, it would still be in business today... and would not go broke for another 840 years. That's ONE BILLION DOLLARS.

Just something to think about!

H. Glenn Anthony  
Executive Director  
GFA Newsletter, 10/31/79