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New York

# Forest Owner

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March-April, 1980

# THE NEW YORK FOREST OWNERS ASSOCIATION



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## WELCOME OUR NEW MEMBERS

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## FRONT COVER:

Any day now you can take a walk in your woods and find the lovely Hepatica. There are two types, those with round lobed leaves (three) and 6-10 petals (sepals) and those with sharp lobed leaves (5-7). Children sometimes gather these pale pink, blue, lavender or white flowers to put in May baskets. Thus the name May flowers. They are one of the first welcome signs of spring.



# ANNOUNCEMENT

## ANNUAL MEETING

Saturday, April 19, 1980  
 Marshall Hall  
 College of Environmental Science and Forestry  
 Syracuse, New York

*Theme: The 1980's — A Decade of Opportunities For Forest Owners*

Details by special mailing

## AUTOBIOGRAPHY OF A TREE FARM

In December of 1953 I was purchased by a pair of young men who had formed a partnership to grow Christmas trees so they could earn some extra money to help put their then young children through college. Through the ASCS (Agricultural Stabilization & Conservation Service) they purchased 10,000 scotch pine seedlings from the state nursery in 1954 and planted them in one of my fields along the road.

(My fields had been pastured from about 1924 to 1947 and nothing had been done with me from then until 1954. Only deer had grazed on my pastures. My hardwoods had been harvested in 1923 and 1924.)

The forester advised my new owners that since they had gotten the seedlings through the ASCS, they had actually embarked on a reforestation program and the young trees were not supposed to be sold as Christmas trees or dug for ornamental use. However, since the seedlings were planted on a 5 ft. x 5 ft. spacing, they would have to be thinned and the thinnings could be sold as Christmas trees.

This was fine with them so every year for about 7 years they continued to set out 10,000 tree seedlings per year in my old pastures. They varied the species occasionally, one year getting white spruce and balsam, another year a few blue spruce and the rest white spruce, then all scotch pine, then all white spruce.

During the first few summers they spent their time clearing my pastures of thorn apple and killing scrub hardwoods by girdling and filling the girdle with a sodium arsenite solution by means of a "Cornell tree killing tool".

In about the third year of their ownership (1957) they sold enough hardwood timber to more than recoup my initial cost to them. In 1959 they had a one acre pond built and by 1962 had erected a cabin on its shore. In the late 1950's they made me a member of the American Tree Farm System.

I was pleased by all this improvement. A forest management map and plan had been prepared for my new owners early in January of 1954, right after they acquired me, by District Forester W.W. "Doc" Clingan. Of my total 150 acres, he indicated that there were a total of 95 woodland acres. He then indicated where they should put their new seedlings. On copies of this map they wrote down how many seedlings were planted each year in each area.

Twenty-six years have now passed. My, what a change in my appearance! My hardwood timber has all been thinned but 10 acres, which my owner says will be done this year. Some timber maple was taken out in 1972 but this merely served to enhance the growth of the remaining trees.

One of my partner owners decided to retire in 1970 and sold his half to the other partner. The children whose college education was to be helped by the Christmas tree sales have all gotten their degrees and are living their own lives. However, they love to come back and visit me, to picnic by the pond, fish and swim in it, cross country ski over my many new woodland access roads, cut firewood from the downed thinnings and hunt for deer that roam my hardwoods or hide in the now dense growth of scotch pine and spruce.

Oh, yes! The trees that were left after the thinning for Christmas trees are now twenty-five and thirty feet tall. They need to have their lower limbs knocked off and some additional thinning. I understand there is no market for scotch pine logs so I'm sorry my good fields are a worthless crop. I must admit that it's nice to have the deer bed down among those trees and to have their roots drink up all the water that falls on me. My Owner's consulting forester says those scotch pine are serving as a nurse crop for future maple timber because the maple has to grow up branch free to stay ahead of the pine in height.

My owner continues to study and learn new ways to improve me. He has bought seedlings from private nurseries for a number of years. These he carefully shapes and cares for them to improve them for the Christmas tree market. He uses the services of the state forester to mark hardwood trees for thinning. He usually signs up through ASCS for the Timber Stand Improvement Plan or the Forestry Incentives Program (FIP). He says this gives him added incentive to follow those practices.

He is a director of the New York Christmas Tree Growers Association, and the New York Forest Owners Association. He learns from these organizations through their many magazines, seminars and visits to other tree farms and plantations. He contributes his knowledge to newcomers in the business through articles in those magazines and by having other people visit me in groups to learn by seeing and having state foresters serve as guides and lecturers.

**Continued on Page 8**

## NYFOA SCANDINAVIAN TOUR

### August 14-27, 1980

Come with the New York Forest Owners Association to the woods of Denmark, Sweden, and Finland!

#### ITINERARY

**August 14**—Depart JFK airport in New York.

**August 15**—Arrive in Copenhagen in late morning, transfer by private bus to hotel. To help you catch up on "jet lag" the rest of the day is free for relaxation and exploring. Hotel Triton.

**August 16**—Breakfast at the hotel and suggested visits to shops along the famous Strøget, a walking street in the heart of the city. An afternoon sightseeing tour includes the little mermaid, Rosenberg Castle, and other Copenhagen highlights. Not confirmed: an evening meeting with the **Danish Forest Owners Association**. Here we expect to learn how they are organized and what they see as problems and opportunities. Probability for this is high.

**August 17**—After breakfast at the hotel, we drive in our private bus to North Sealand to visit a Christmas tree plantation and the Danish Museum of Forestry. Lunch served en route. Late afternoon arrival back in Copenhagen. Last chance for an evening fling in the famous Tivoli Gardens. Hotel Triton.

**August 18**—Breakfast in the hotel, then an expedition to Elsinore for a visit to an experimental forestry plantation and Kronberg Castle, setting for "Hamlet." Overnight at an old Danish "Kro" (inn).

**August 19**—After breakfast you'll have a short while to explore a small Danish town before catching a ferry to Sweden. Our Swedish bus and guide will meet us there at Helsingfors, then on to the Klippan paper mill. Visit also to the Morrum pulp mill before arriving in the late afternoon in Vaxjo. Evening in this small town on your own. Hotel: Esso Motor Hotel.

**August 20 and 21**—These two days will be largely devoted to visiting the people at **Sodra Skogsagarna**, a cooperative of Swedish forest owners. Their organization with its professional approach to management and marketing may be an inspiration to forest owner associations in the Northeast. Esso Motor Hotel, both nights.

**August 22**—After an early breakfast at the hotel, continue in our private bus to the Kinda saw mill. Visit also the Norra Kville national park on our way through the beautiful southern provinces to Stockholm. Overnight at Hotel Birger Jarl.

**August 23**—Breakfast at the hotel sets you for a morning of shopping and an afternoon sightseeing tour of the Swedish capital. Visits to the Old Town and Royal Palace are included. Overnight on board a modern ship headed for Helsinki, Finland.

**August 24**—A bus will meet us in Finland for a sightseeing tour and transfer to hotel. The Cathedral, Market Square, and Sibelius Monument will be seen. Relax in the afternoon to be ready for a possible evening with members of the Finnish Forest Owners Cooperative. Hotel Presidentti.

**August 25**—Trip to Layliainen to see the Haapastensyrja tree breeding center, then the Harviala nursery. Drive to Hameenlinna and its medieval Hame castle. Overnight in the small town of Aulanko. Evening free. Hotel Aulanko.

**August 26**—Breakfast at the hotel. Make a morning visit to a private forestry owner. Time is also reserved for discussions. Activities of the local forestry association will be introduced. Early in the afternoon drive south to Helsinki with a visit to the Riihimaki saw mill enroute. Evening on your own, to explore Helsinki's wonderful restaurants. Hotel Presidentti.

**August 27**—Breakfast in your hotel. Your last morning in Helsinki is reserved for your own professional contacts, last minute gift buying or wandering. Flight back to New York.

NOTE: while we shall do our utmost to adhere to this schedule, some changes may be necessary due to reasons beyond our control.

#### 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 3 city sightseeing tours. Noon and evening meals are not included, with some exceptions. Thirty people can be accommodated, first come, first served. Inquire for single supplement fee.

I am presently communicating with Scandinavian forest owner organizations to see if overnight stays with host families can be arranged.

Regular mailings will be sent to registrants. OUR ALPINE TOUR to Bavaria, Austria, and Switzerland in 1977 was a great success. This trip promises to be every bit as good! And the price is, remarkably, only \$200 more!

Please come! You're invited!

MAIL TO: Alan R. Knight  
257 Owego Street  
Candor, New York  
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

## On The Calendar

**WOODWORKERS' SEMINAR**  
Tappan Zee Towne House, Nyack, N.Y.  
Saturday, April 19, 1980  
(Exit 11, Interstate 87)  
9:00 a.m. to 4:30 p.m.

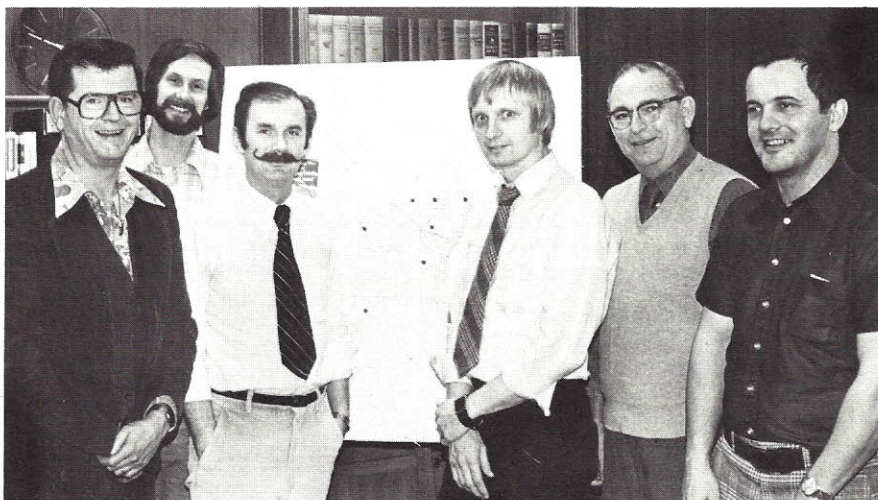
**DESCRIPTION:** This Seminar will emphasize new developments in the field of wood technology and utilization and will be of particular interest to wood products manufacturers in the metropolitan area.

#### TOPICS:

*Extending the Nation's Wood Supply Through Research:* serpentine end matching; press laminated red oak for furniture; water repellent treatments of wood.

*New Developments in the Use of Wood Residues for Energy:* latest equipment; government emission standards and regulations.

For further information, contact: Dean, School of Continuing Education, College of Environmental Science and Forestry, Syracuse, NY 13210 (315) 473-8755.



(Left to Right) William "Dick" Seymour, U.S.D.A. Cooperatives Specialist; Jay Tuttle, graduate student at the SUNY College of Environmental Science and Forestry in Syracuse; George K. Hecht, Albany County Cooperative Extension Community Resource Development Specialist; Dr. Bruce L. Anderson, Department of Agricultural Economics of the New York State College of Agriculture and Life Sciences at Cornell University; Jean Fisher, School of Forestry at SUNY College of Environmental Science and Forestry in Syracuse; and John G. Kramer, New York State Department of Environmental Conservation, Bureau of Forest Resource Management make plans for the forestry cooperatives meeting which was attended by over 60 persons on February 21, 1980 at the Albany County Cooperative Extension Center in Voorheesville, N.Y.

February 21, 1980 at the Albany County Cooperative Extension Association's Voorheesville headquarters was a landmark in documenting information about the development of forestry cooperatives in New York. Over 60 persons participated in a meeting to discuss cooperatives as they relate to forest management and buying firewood. During the program it was announced that a major state-of-the-art conference on forestry cooperatives probably will be held in Syracuse within the next 12 months.

Cooperatives Specialist **William "Dick" Seymour** from Washington D.C.'s Economics, Statistics and Cooperatives Service of the U.S.D.A. was one of the featured speakers on February 21 in Albany County.

To help people gain an appreciation of how commonplace cooperatives are nowadays, it was mentioned that Agway, Inc., credit unions, cooperative housing units, and mutual insurance companies are all classified as cooperatives.

Seymour noted, however, that cooperatives are not a panacea and that the main ingredient for success is an investment of time which includes "meetings, work, and sweat." He went on to note that through a cooperative "you can change blood, sweat, and tears into blood, sweat, and a better return" (more income). In addition he implied that one may lose some freedom of choice by participating in a cooperative when he asked, "Are you willing to give up a little of your individuality to cooperatively gain."

Another prominent speaker was **Dr. Bruce Anderson**, a professor from Cornell University's Department of Agricultural Economics at the New York State College of Agriculture and Life Sciences. He specializes in all kinds of agricultural cooperatives.

Agway, Inc. Dr. Anderson reported, is not only a cooperative doing 2 billion dollars worth of business annually, but is one of the 200 largest U.S. corporations. He noted, however, that "Agway started as a small informal group over 50 years ago."

**Income taxes** may be one important reason for the cooperative form of business. According to Dr. Bruce Anderson, an advantage of cooperatives is that their income is taxed only once at either the cooperative or the individual level if certain IRS stipulations are met. In contrast the income of regular stock corporations is taxed at both the corporate profit level and again as dividends to individuals.

Three characteristics which describe a cooperative according to Anderson are:

1. **Net income** is distributed according to patronage which is the volume of business done by members with the cooperative.

2. **Capital investment** will receive only a small return which is limited to 8% by New York State Law.

3. **Democratic control** is exercised over the cooperative with each member normally having only one vote regardless of member's patronage level although this may be modified.

**What is a cooperative?** According to Dr. Anderson's definition, "A cooperative is an alternative form of business organization

## COOPERATIVES IN FORESTRY TO SAVE MONEY

by

David W. Taber

Cooperative Extension Specialist  
Wood Utilization Service  
School of Forestry  
SUNY College of Environmental  
Science and Forestry  
Syracuse, N.Y. 13210  
(Telephone 315/473-8766)

(You saw it first in the Forest Owner)

*New emphasis is being given to forestry cooperatives as a solution for increased firewood costs.*

*Not everyone is interested in making the commitment which is necessary to form a forestry cooperative. However, some people are finding that their needs can be met through group action and association-power.*

designed to accomplish what could not be done effectively by members as individuals." And Anderson explained that a cooperative is designed to do collectively what people find uneconomical to do individually.

**Group success** through a cooperative form of business according to the Cornell University professor depends upon the following 3 factors:

1. **Product commitment** by members of a cooperative so that in times of both high and low prices, the product is continually marketed;

2. **Financial commitment** by all members of a cooperative so each has a vested interest;

3. **Psychological commitment** by members of a cooperative, which means that each member is willing to give his/her time to understand what is going on and what the organization is doing.

In addition to these 3 factors which are necessary for individuals to achieve success as a group, Dr. Anderson commented that "good management is essential." And he went on to explain that a cooperative should have a competent manager who has specialized knowledge necessary to handle the organization's affairs.

Forestry cooperatives presently operate in the states of Maine, North Carolina, Indiana, Mississippi, and Washington, according to cooperatives specialist, Dick Seymour. Under development, he reported, are forestry cooperatives in Ulster County, New York; Connecticut; and Northeastern Pennsylvania.

Continued on Page 8

# Argyll Estates

## Trustees of the 10th Duke of Argyll

All correspondence to be addressed to

J.T. KENNEDY SHORT  
CHAMBERLAIN OF ARGYLL

Telephone No. Inveraray

(0499) 2203

Argyll Estates Office,  
Cherry Park,  
Inveraray, Argyll.

Scotland

PA32 8XE

Dear Evelyn,

I enclose some notes on our Woodlands at Inveraray which I hope will be of use and interest to you. Please feel free to adapt them to your own particular requirements. It is difficult, when you don't know your audience, to be sure of their special interests. Forestry in this country uses metric units and these in the main have been used with Imperial conversions in most cases. Most of your questions are answered in the article, except as follows:

We do not grow trees for the Christmas festivities on a commercial scale as we are too far from large centers of population.

### Introduction

Inveraray, the ancient capital of Argyll and home of the Earls and Dukes of Argyll since the sixteenth century, is situated at the mouth of the River Aray at the Northern end of Loch Fyne on the West Coast of Scotland.

The present Town and Castle were built during the second half of the eighteenth century by the third and fifth Dukes of Argyll and could be described as one of the earliest examples of urban re-development in Scotland. Formerly, an important centre of the fishing industry, Inveraray is now best known as a tourist resort being visited by thousands of holiday-makers annually.

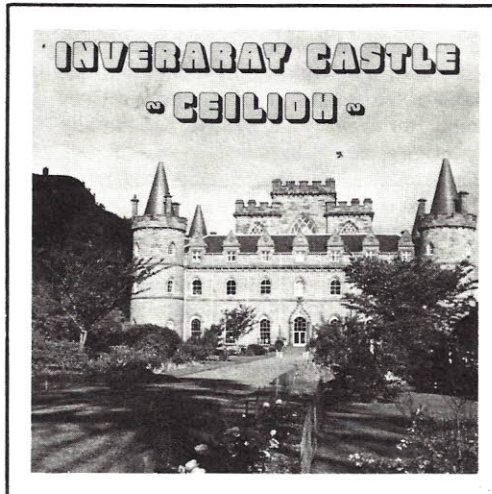
The other main occupations are forestry and farming with a significant number of its residents being engaged in the construction industry. The population of the town is around 500.

### Climate

Inveraray lies at latitude 56° 14' N which is to the North of Goose Bay in Labrador and the Southern tip of Alaska. In spite of this northerly location, the area has a remarkably mild climate with very short periods of snow and severe frost. However, like most western seaboard in the Northern hemisphere, the climate is characterized by high rainfall (80-100 inches per annum) and strong winds. The driest months are in the main during the period March to May. The mean temperature range extends from 1c (34f) to 17c (63f).

### Geology and Soils

The whole of the west coast of Scotland is very complex geologically, with some of the oldest rocks found anywhere in the world. The greatest part of the land surrounding Inveraray is underlain by metamorphic schists of the Dalradian Series. They were formed, some 600-700 million years ago, by the deposition of sediments in shallow seas.



About 500 million years ago the Caledonian orogeny occurred affecting land forms as far away as Greenland to the west and Norway to the east. The softer sediments were converted to harder schists.

Many of these areas weather easily to form good fertile soils. During the Devonian period, the area was subjected to considerable volcanic activity and the intrusion of large volumes of molten magma which cooled to form granite rocks. Where these rocks occur shallow soils are found. The present configuration of the ground owes its origin mainly to the ice age of around 1 million years ago. Large areas are overlain with deep glacial deposits.

The soils in the area owe their origin partly to the ice activity and partly to weathering. They are generally fertile **but the absence of a tree cover has resulted in extensive degradation.** The better drained ground gave rise to podsoils and iron pan soils, and where drainage is impeded, gleying is found. Deep peats are common on the flat areas — depths of 6 to 10 feet being common.

### Topography and Elevation

The northern part of Inveraray Estate is trisected by the River Aray and Shire resulting in the ground sloping into the valley bottoms with steep declivities in places. The southern end of the Estate, bounded by the Leacann Burn, has a generally southeasterly aspect. The highest ground is found in the north and to the west of the property reaching just over 3000 ft. AMSL. The eastern edge drops down to sea level.

### Natural Woodland

Although it is chiefly conifers which are planted in Argyll, the natural woodland of the area is Oak (*Quercus petraea*) but regrettably, little of it remains. Large areas were harvested some on a coppice rotation during the eighteenth and early nineteenth century for charcoal production and the tanning industry.

A few indigenous Scots Pine (*Pinus sylvestris*) are thought to occur in the area. It was because of the paucity of natural conifer species, there being only three — namely Scots Pine, Juniper and Yew — that exotic species were used when the great forestry expansion was commenced early this century.

### History of Plantations

There is evidence that the **Campbells of Argyll have actively managed their woodland since the thirteenth century.** The first definite record of planting at Inveraray was that carried out by the 8th Earl, the Marquis of Argyll (1598-1611). An avenue of Lime trees approximately quarter of a mile in length which leads up to the Castle dates from this period and was in part responsible for the siting of the Castle.

The ninth Earl (1629-1685) continued the tree planting work of his father, receiving advice from the noted Silviculturalist **John Evelyn.** **Some of the trees planted**

included Laburnam, Sycamore, Firs, Oaks, Beech and Elms. The third Duke (1682-1761) who commenced the construction of Inveraray Castle, together with his successors the 4th and 5th Dukes of Argyll, were active tree planters.

A contemporary describes how the house was surrounded with more than a million trees which occupied several miles square. Another notes how "One could ride for miles through plantations — for three miles up the River Aray."

Many of the trees planted at this time were from the Eastern States of America. This is evident from a list of 29,657 trees planted at Inveraray in the spring of 1756 by the gardener and recorded in his journal, notably 90 American Larch, 80 Red Cedars, 190 Pinaster, 67 Foreign Oaks, 40 Black and White Walnuts, 38 New England Pine, 20 Three Leaf Pines, 55 Carolina Cherry, 55 Dutch Alders, 20 White Cedars, 20 Balm of Gilead Firs and 17 Tulip Trees. (Researched by E. Cregeen and recorded in Professor Anderson's "History of Scottish Forestry" Vol. 1).

Unfortunately, there is little evidence that any of these trees remain today, with the exception of one valiant old 'White' pine (*Pinus Strobus*). Plantations continued to be established over the next hundred years. Perhaps the most significant period of forestry expansion was initiated by the eighth Duke (1823-1900). During the latter part of the nineteenth century it became fashionable amongst landowners in this country to plant some of the species recently discovered in the natural forests of Northwest America. One of the most notable examples of this period of planting is Balantyre Wood (P 1888) which was intended to be an experimental area. It is recorded that two of the plots — one of Ground Fir (*Abies Grandis*) and the other of Western Hemlock (*Tsuga Hetrophylla*) are the first groups planted in this country.

Other species in the wood are Western Red Cedar (*Thuza Plicata*), Douglas Fir (*Pseudotsuga Menziesii*) and Sitka Spruce (*Picea Sitchensis*) during the last ninety years they have grown to a height, in many cases, of over 150 feet. All the species are capable of producing fertile seed and are now regenerating freely.

Regrettably, there followed a period of inactivity during which virtually no replanting was undertaken.

The last War 1939-45 made great demands on the home grown timbers of the UK and the ever readiness of the Argyll family to assist the war effort caused large inroads to be made into the huge stock of the estate's mature timber. A similar situation had occurred after the First World War and had resulted in the setting up of the Forestry Commission.

Their chief task was to acquire suitable land on the open market and to plant the ground with trees. After the Second World War the British Government, determined to encourage additional forestry expansion so

as to reduce the Country's dependence on overseas supplies, launched in 1947, the successful Dedication scheme.

This was designed to enlist the aid of the private landowner and especially those whose woods had been felled during the War. In return for a legally binding Deed of Covent (England and Wales) Agreement (Scotland) in which the owner undertook to 'Dedicate' an area of ground for all time coming to forestry purposes the owner was given various forms of great aid.

#### Present Day Woodlands

In 1949 with the death of the 10th Duke of Argyll, Trustees were appointed to manage the Estate. A survey of the woods was commissioned by them and a report produced. The result was that a Head Forester, trained by the Forestry Commission, was appointed and a decision taken to dedicate some 800 ha (2000 acres) and embark on a programme of replanting about 40 ha (100 acres) per annum. In 1953 the first compartment was planted. Over the next 14 years the programme continued as planned. It was largely financed by felling what mature timber remained and the reasonably generous grant aid.

The methods of establishment varied according to the ground conditions. Where possible, specially adapted forestry ploughs were used to drain the ground. In some cases the furrows were cut at a close spacing of around 1.8 m (6 ft) and in other areas at 6.1 m (20 ft.). In the latter case the ridge would be cut up and pieces distributed at regular distances between the furrows. Because of the high rainfall the trees were planted on top of the ridge or mound.

Where mineral soil was found without a significant covering of peat the trees would be planted without drainage work. The chief species used, in order of importance were Sitka Spruce (*Picea Sitchensis*), Larch (*Larix spp* notably *Dedicida*, *Leptolepis*, *Eurolepis*), Norway Spruce (*Picea Abies*), Lodge Pole Pine (*Pinus Contorta*) and Douglas Fir (*Pseudotsuga Mensiesii*).

By 1967 most of the old woodland areas had been re-established and a decision was taken to Dedicate a further 1450 ha (3580 acres) bringing the total forest area to about two and a quarter thousand hectares (5555 acres). The new ground was almost entirely bare on which no trees grew.

By this time methods of establishment had changed considerably. All ground except that which was too steep was cultivated or drained. In the case of the former, shallower ploughs were used with a tine attachment which broke up the hard compact soil to allow penetration by the tree roots. Wet peaty ground was ploughed with draining ploughs as before at around 1.8 m intervals.

Finally the whole area was "cross drained" so as to form a drainage system and to prevent excessive erosion. In line with current practice these newly ploughed and planted areas were given a dressing of phosphate.

In the early days this was applied by hand

but during the seventies helicopters were in regular use for the work and the Estate made use of this method for some of its new woods. Indeed some of the first plantations were also treated in this way at a rate of 375 hg per ha (3 cut/acre).

At the present time most of the planting and re-planting program has been satisfactorily completed. During the 1950's and early 1960's the Estate ran its own tree nursery to supply its needs. This method remained economical as long as wages remained low but increases required mechanisation and as the numbers produced did not justify this type of development the nursery was closed and trees purchased from specialised firms.

#### Harvesting

The main preoccupation of the woods staff at present is the initiation and development of the harvesting of the plantations which were established during the fifties. The timber is still relatively small but the practice is to thin the woods so as to improve the quality of the remaining trees.

In general this may take place every 3 to 4 years. In order to facilitate the fairly difficult task complete rows are removed, the simplest form being to take out every fourth one but other more complex forms were used on occasion. The Estate uses an agricultural tractor to which has been mounted a cable way winch (double drawn) to extract the trees. This type of equipment is in common use in Great Britain but it was developed in the Forests of Scandanavia.

The Estate sells the timber to both paper pulp mills and chipboard producing mills but it is also converting suitably straight trees into the round fencing stakes for farming. Prior to use for the latter purpose these are peeled and creosoted. A limited quantity of the timber is suitable, even at this young age, for lumber and is sold for the purpose to local sawmills. The Estate has a small, formerly water driven sawmill, but owing to its age is only put into occasional use.

Before closing this section on harvesting it is worth recording that about every type of extraction system has been used at some time or other on the Estate. It is believed that use was made of the rivers and lochs to float the large trees to other destinations. Horses have been harnessed and track laying were the chief methods after the last war. Large wheeled frame-steering tractors have performed excellently with some of the huge trees in difficult conditions.

As has already been mentioned, cable cranes are in use at present. Of perhaps most interest, a helicopter was hired to remove timber from a precipitous bank. Workers in the wood fixed chokers to the trees which in turn were attached to the helicopter as it hovered above. The pilot was able to jettison the trees over the log dump without landing. Up to 27 tons were removed per hour and although the method was slightly more costly than conventional methods it was amply justified, on the type of terrain.

Continued on next page



*THE TRILLIUM* is another of the flowers common to our woods in spring. There are often masses of White Trillium in an area. These may turn pink as they get older. *THE PAINTED TRILLIUM* has a crimson blaze at the base of its wavy white petals. It is not as common in my woods. *THE RED OR PURPLE TRILLIUM* is also less common, and has an unpleasant odor.



*WILD GINGER* is found early in the spring in the woods. The leaves are large, heart-shaped with hairy stalks. There are two leaves and nestled in the center close to the ground is a red flower. During Revolutionary War times, it was used by the colonists who could not get their usual supply of ginger from Jamaica.



*SQUIRREL CORN* is another of the wood's treasures. This creamy white flower is of the Bleeding Heart family, and similar to Dutchman's Breeches, but the flowers are fragrant, more heartshaped and lack the elongated spurs. The roots resemble grains of corn.

Photographs by Dr. Josiah Lowe

**Inverary, Continued**

**Future**

No decision has been made to extend the forest area further, much depends on the viability of the upland farms on the Estate and the continuing attractiveness of grants and fiscal incentives. Forestry is a long term investment and although the present scheme of management has been going for over twenty years, it will be another decade before the full benefits are realised. XXX

*Argyll Castle at Inverary in the Highlands of Scotland. I had heard of their long time interest in forest management and after going there and seeing for myself thought you might be interested in finding out how they practice forestry in another corner of the world.*

— Editor

**MARCH**

"A peck of March dust is worth a King's ransom."

"So many misties in March  
So many frosties in May."

"March'll search ye, April try ye, May'll tell whether live or die ye."

**APRIL**

"April weather, rain and Sunshine both together."

"When April blows his horn, 'tis good for both hay and corn."

"A cold is both positive and negative, sometimes the eyes have it and sometimes the nose."

**Dr. Josiah Lowe**

Although Dr. Lowe became Professor Emeritus several years ago he continues to teach courses at the College of Environmental Science and Forestry. A course in Spring Wild Flowers is one of them.

His camera is ever ready to photograph something rare or beautiful and the pictures of the flowers on this page and the front cover are some of his collection.

Joe Lowe is known world wide for his knowledge of fungi (Mycology) and eagerly searches new discoveries. But at this time of year spring flowers take first place.



**AUTOBIOGRAPHY OF A TREE FARM**

Continued

Another thing he does that I like is to hire a consulting forester to mark my merchantable trees, take bids, award contracts and supervise the cutting. He believes he not only gets the most money possible that way, he maintains my forest in the best condition.

I've enjoyed telling you about myself. My owner, Howard O. Ward, of 240 Owego St., Candor, N.Y. 13743 says you can write to him if you have some questions about me.

Ward Tree Farm



**COOPERATIVES IN FORESTRY**

Continued

**Development of a Forest Products Management and Marketing Cooperative in Maine** is a 42 page report by William R. Seymour, Cooperative Development Division, USDA-ESCS, (U.S.D.A. Economics, Statistics and Cooperatives Service) 500 12th St. S.W. (room 500), Washington, D.C. 20250. This report covers the woodlot owners' cooperative in the Dover-Foxcroft area of Maine. According to Seymour, "Preliminary data indicates that by organizing a forest management and marketing cooperative, woodlot owners could increase their net income per acre harvested by up to 24 percent."

In New York State the Ulster Energy Cooperative, according to David Strong, is being formed to economically assist member-participants in a number of ways including: 1. obtaining firewood less expensively, and 2. purchasing less expensively by group action such items as insulation and smoke detectors.

Persons interested in additional information about forestry cooperatives may wish to contact Cooperative Extension, or the USDA Economics, Statistics and Cooperatives Service in Washington, D.C.



## Sodra Skogsagarna

Sodra Skogsagarna, Sweden's second largest forestry company, is owned by 44,000 private forest owners in seven counties in Southern Sweden. Together they own two million hectares (ca 5 million acres) of productive forest land and are members of the Sodra Skogsagarna cooperative association. Each member has one vote regardless of the area of forest land which he owns.

Each year the members produce a total of six million cubic metres of timber, part of which is worked up in the company's own industries while part is sold to foreign companies. The forest service is the responsibility of the Forestry Division.

The subsidiary company, Sodra Skogsagarna AB, is responsible for the industrial activity. This is subdivided into four divisions: the Wood Mechanical Division, the Pulp Division and two paper divisions, one for Packaging and the other for the Klippan group.

Approximately 55 per cent of the total production of Sodra Skogsagarna goes to export. The company has sales offices in ten European countries.

The central management is based at the head offices in Vaxjo.

### Sales

1977: 2,675 million Kronor including exports 1,352 million Kronor

1978 (budget): approx. 2,948 million Kronor

*In the autumn of 1976, building work started on Sodra Skogsagarna's new pulp mill at Monsteras with a planned annual production of 300,000 tonnes of bleached kraft pulp.*

*Now, when this is written in the spring of 1978, most of the purchases have been made and the erection of the mill has reached the half-way stage. Some building work remains but the installation of the large machines has commenced.*



**This past year those impossible-to-split firewood sections finally came to rest in our old rose garden, and their presence prompted the development of a care-free herb garden. So successful was the effort — that in sheer delight I photographed the display. I am equally delighted to be able to pass the results on. Joan Teresa, Somerset, N.J.**

*The picture shows work on the pulp digester house.*

*Water treatment will be trimmed during the autumn. The barking drums are in place in the wood room. During an interim period from the end of 1978 chips will be produced for the old mill.*

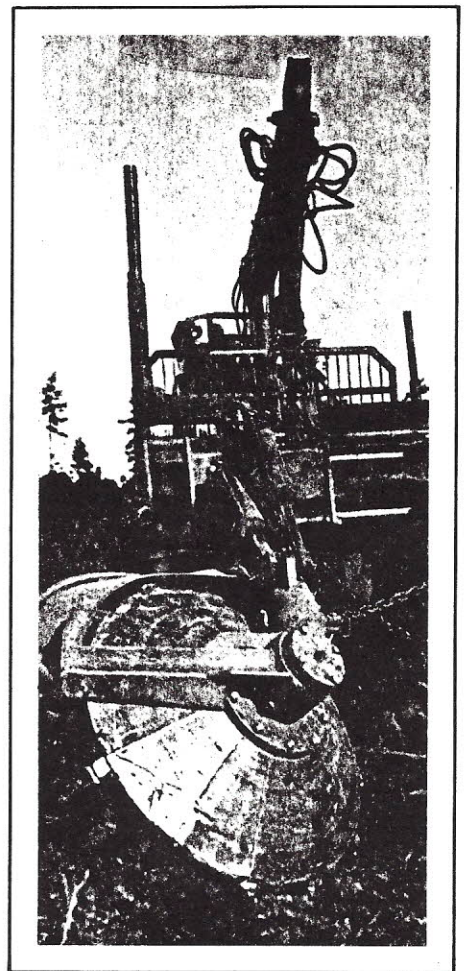
*Altogether, 800 persons are involved in the building and installation work and 50 persons are involved in the project organisation.*

*An important condition if the planting of a new forest stand is to be successful is that as favourable an environment as possible be created for the fragile plants.*

*Soil scarification is a good method. If the ground is scarified before planting, competition from other vegetations for light, water and nutrition is reduced. The water supply becomes more uniform and the soil temperature higher since the sun's rays reach down to the exposed soil. At night the stored warmth radiates out and reduces the risk of frost damage. Soil scarification tends to drive away weevils and thus reduce damage to the plants by these insects.*

*Soil scarification is increasingly popular among Sodra Skogsagarna's members and a five-fold increase in the area scarified has been noted during the last five years.*

*The work is efficiently and cheaply carried out if forest machines and scarifiers are used. The picture shows scarification using a forst harrow.*



### PULP

Pulp mills for bleached kraft pulp at Monsteras, Morrum, Varo and for unbleached at Delary, production of mechanical and thermomechanical pulp at Gota and sulphite mills at Boksholm and Lessebo.

### Production

660,000 tonnes of kraft pulp  
73,000 tonnes of mechanical pulp  
60,000 tonnes of sulphite pulp

### FORESTRY

The Forestry Division deals with the purchase and sale of timber raw material and is responsible for the supply of raw material to the industries. It also provides the members with forest service.

The activities of Sodra Skogsagarna are spread over twelve regions, which comprise in turn a total of 96 forestry sections.

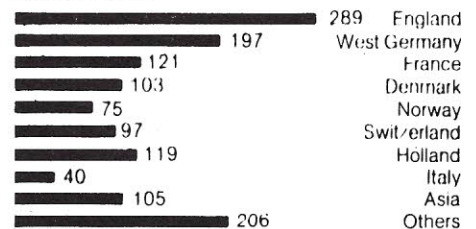
80 per cent of the forest in the area covered by Sodra Skogsagarna is privately owned. About 70 per cent of these private owners are members of Sodra Skogsagarna.

### WOOD MECHANICS

15 sawmills, particle board factories at Laholm, Aryd and Hultsfred, house factory at Hultsfred.

### Distrib. of export deliveries on markets

Sales SKr million



### Production

470,000 cubic metres of sawn wood products  
270,000 cubic metres of particle board  
1,671 prefabricated houses  
11,000 cubic metres of creosoted wood

### PAPER

#### Packaging

Paper mill and sack factory at Stromsnasbruk, board mill at Fridafors, paper mill at Emsfors.

#### Production

35,000 tonnes of board and cartonboard  
55,000 tonnes of paper  
68 million sacks

#### Klippan

Paper mills at Klippan, Ostana, Lesebo, Langasjonas and Havrestrom.

# THINNING OF FOREST LANDS

There are two principal activities that influence forests and their productivity. Forest harvesting, improperly carried out, can be harmful. Poor practices may result in poor regeneration or poor growing stock. The harvesting of immature trees, or soil erosion. Forest thinning, on the other hand, offers the best opportunity for improving the value or productivity of woodlands. Proper thinning is based on an understanding of how forests grow.

The upper limit of forest productivity depends on solar energy and the ability of three species to convert it into growth. Productivity is lowered by limiting factors in the environment—limitations in:

(a) Climate (amount and distribution of rainfall, length of growing season, etc.)

(b) biota (helpful effects of mycorrhizae, earthworms, other soil organisms or micro-organisms, birds that control insect pests, etc.) (destructive effects of overbrowsing by deer, soil erosion caused by man, etc.)

(c) physiography (especially topography, including aspect, exposure, elevation—exposed slopes vs. coves, dry south and west vs. moist north aspects, etc.)

(d) soils (depth, aeration, drainage, water holding capacity, nutrient cycling, etc.)

Thus each forest site has a relatively fixed productive capacity. Growth varies little whether spread over 1000 small trees, each with very slow growth, or a hundred large thrifty trees. Untended forests often have high stand densities, resulting in gradual mortality of some trees and slow growth in others. Occasional natural catastrophes, such as hurricane or fire, may topple or thin out some trees and permit faster growth of those remaining.

People usually have little influence on the productivity of forest sites (they can sometimes increase it by fertilization, irrigation, etc. or they can decrease it by causing soil erosion). But they can control stand density, principally by timely and judicious thinning out of crowded trees, and select the individual stems on which forest growth will be concentrated. Thinning of forests to produce bigger and better trees for useful products is the most effective and most needed forest management activity in New York and most other forest regions.

## Objectives

The manner of thinning varies with the purpose of the forest owner. A common objective is to obtain high quality timber for veneer (furniture, paneling), flooring, structural or other kinds of lumber. Large high-yielding sugar trees for maple syrup may be an objective. Fuelwood is an increasingly common objective, but it shouldn't be obtained by cutting the biggest and best trees. Usually enough fuelwood, and sometimes pulpwood, can be obtained from the smaller and deformed trees that are

Robert R. Morrow

Dept. of Natural Resources,  
Cornell University

thinned out to promote the growth of the better trees into high value timber. Over the lifetime (rotation) of a forest, at least half of the total productivity, otherwise wasted, can be thinned out for fuel and other uses. The remaining half can be harvested at maturity, often for excellent prices.

## Procedure

An orderly procedure in both planning and doing the thinning entails the following steps:

(a) Determine objective—timber, sugar, other.

(b) Mark favored or crop trees wanted for future growth—usually 100-150 trees per acre for timber; often fewer for sugar. For selection of crop trees, see below.

(c) Mark for removal those trees that interfere with growth of the crop trees. Look at the tree crowns for evidence of branch interference and crown wear (leaf and twig abrasion). The bigger trees with large crowns are the chief competitors; overtopped trees are often harmless and need not be cut. Occasionally valuable trees may be clumped together; some should be removed. Pay attention to special competitors such as wolf trees (very large, spreading trees) and whips (small trees with small crowns that whip easily in the wind and wear away nearby crowns).

Amount or degree of thinning depends on age and vigor of crop trees, management objectives, plans for later thinnings, possible effect on insects or pathogens, etc. Foresters can provide guidelines or sample tree marking plots.

(d) Thin the stand, utilizing the cut trees for fuel or other appropriate purposes. Sprouting from stumps of cut trees can be controlled by spraying them with kerosene or fuel oil.

If you have no use for the wood, trees can be deadened by squirting kerosene or other oils in a frill of axe cuts that completely encircle the stem. This can be done anytime, except during sap flow, and is especially effective in fall and early winter treatments. Trees die slowly over a period of 2 to 5 years, the result of chemical girdling, and eventually break and fall in the wind.

## Selection of Crop Trees

This is the most critical step since all future thinnings and future value growth depend on the selected trees. Small paint marks may be used to identify crop trees.

(a) Timber. Crop tree selection is guided by current and potential value of individual trees and, to a lesser extent, spacing. Crop tree selection criteria include:

Species of high value

Healthy, vigorous crowns in upper

crown class

Well-spaced, although groups of 2 or 3 trees close together are permissible.

(b) Sugar. Criteria for selection include:  
Sugar or black maple, and individual trees tested and known to have high sugar content or to flow well

Large, deep, vigorous, and healthy crowns

Large stems

Reasonably well-spaced.

In comparison with timber trees, sugar trees should have deep branching, preferably reaching to the base of the tree; they can be deformed or multiple-stemmed; and they can have some heartrot, but preferably no sap rot. In addition sugar bushes should be thinned earlier in life and much more heavily than timber forests. Because of these differences, it is often undesirable to manage for both timber and sugar together.

## Summary

Forests are renewable and the source of useful products. Thinning makes more trees grow into more usable timber. It also has a 2-fold effect on energy. It makes thinned wood directly available for fuel while hastening the growth of crop trees. Conversion of crop trees into useful building and other products is much less energy-intensive than metal, brick, concrete, or plastic counterparts.

In addition, thinning allows more light to reach the forest floor, stimulating low level plant growth to add to wildlife habitat. It can make forests more open and useful for recreation. And it can even increase water supplies until regrowth again closes the forest canopy.

In the final analysis, forests can be thought of as giant solar energy collectors. The object of thinning is to direct this energy into growth forms that are useful to us. XXX

## CORRECTION

(The article on page 7 of the Jan.-Feb. Forest Owner, entitled "Potential Losses Associated with Harvesting Forest Biomass for Energy" was incorrectly attributed to John Stanturf. The article contained excerpts from a publication with the same title, printed in Cornell's Conservation Circular, and written by Robert R. Morrow. The conclusion was from an accompanying article written by John Stanturf.)

**Teacher:** Who was the smallest man in history?

**Kenny:** The soldier who went to sleep on his watch.

**A conference** is a gathering of important people who singly can do nothing, but together can decide that nothing can be done.

Wood and man have coexisted on this planet from the beginning and wood, as a renewable resource, has provided man with tools, weapons and shelter. During the millennia of man's development he learned how to make it harder and stronger. This modification was accomplished by drying and heat tempering his wooden tools and weapons. As man increased his knowledge of the world he lived in he attempted other modifications of the basic resource to better fit his increased requirements. Over the years tars, pitches, creosote, resins and salts have been used to coat wood or fill its porous structure.

During the early 1960's a new class of chemicals containing one or more double bonds was used to treat wood: vinyl type monomers that could be polymerized into the solid polymer by means of free radicals (2). This vinyl polymerization was an improvement over the condensation polymerization reaction because the free radical catalyst was neither acidic nor basic, nor does the reaction leave behind a reaction product that must be removed from the final composite, such as water. The acid and base catalysts used with the other treatments degrade the cellulose chain and cause brittleness of the composite. Vinyl polymers have a large range of properties from soft rubber to hard brittle solids depending upon the groups attached to the carbon-carbon backbone.

Since most vinyl monomers are non-polar, there is little if any interaction with the hydroxyl groups attached to the cellulose molecule. In general, vinyl polymers simply bulk the wood structure by filling the capillaries, vessels and other void spaces in the wood structure.

#### Physical Properties

Wood, when dry, has unique physical properties in that its tensile strength, bending strength, compression strength, impact resistance and hardness per unit weight are the highest of all construction materials. The hydrogen bonding, the unique helical structure of the cell walls, the combination of the linear cellulose molecules with the three dimensional lignin molecules impregnated with low molecular weight extractives makes wood an infinitely variable resource. All the unusual features of wood are the reason for the "ART" of wood treatment.

#### Commercial Applications

**Radiation Process.** Commercial production of wood-polymer composites began in the mid 1960's using the radiation process. **Parquet flooring** was the primary product and the increased hardness and abrasion resistance were used to advantage in high traffic commercial installations. The long life and ease of maintenance justified the increased cost over normal flooring. Of the several original companies who produced irradiated wood-plastic composites only one is a serious high volume producer today. The ARCO Chemical Company, a Division

## WOOD-POLYMER COMPOSITES AND THEIR INDUSTRIAL APPLICATIONS

by

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of Atlantic Richfield at Karthaus, Pa. started production in 1968 using the facilities built at this location by a former nuclear reactor company (16). Their production has increased from 1600 to 400,000 square feet of flooring per month. Over the last five years over 8,000,000 square feet of wood-acrylic flooring was installed in the United States and most of this was produced by ARCO under the trade name of PermaGrain (17). The original terminology wood-polymer, wood-plastic composites, and WPC has given way to acrylic-wood for commercial products.

**Red Oak** is the wood most used for the production of irradiated acrylic-wood parquet flooring, however acrylic Aspen chip board and acrylic particle board are finding their way into the flooring market. Smaller amounts of maple, ash and black walnut have been used. The polymer loading of red oak is about 40% which makes the acrylic-wood flooring quite expensive, approximately three times that of ordinary red oak parquet flooring. The enhanced beauty of acrylic-wood is one of its primary selling points along with its greater hardness and abrasion resistance. Maintenance consists of wet mopping and machine buffing to restore the original luster (ARCO supplies a special maintenance kit). Cigarette burns can be removed by simply steel wooling away the charred wood, and buffing, since the finish is throughout the thickness of the acrylic-wood. An untreated red oak floor must be stripped of its old finish and a new finish applied every year or even less in high traffic areas. When the total cost of installation and yearly maintenance over the life of the floor is considered, the cost of acrylic-wood flooring is one of the least expensive. The data in Table VI was compiled by ARCO in 1972. It is estimated that for red oak parquet flooring the cost of the wood is 50%, the cost of the MMA monomer, dyes, crosslinkers and fire retardants is 25%, and the labor and overhead is 25% (17).

ARCO also produces a smaller volume of acrylic-wood for other uses. Eight foot long sections of hand rails are produced using maple and ash. Again the superior abrasion resistance and hardness are important as well as the look and feel of the finished hand rail. **During the past year more than a half million knife handles of acrylic black walnut have been produced** for a cutlery company whose high quality products are sold through jewelry stores. In this case the esthetic properties of looks, feel and weight

are the key to increased sales. Other small quantities of acrylic-wood for **archery bows, stair treads, window sills and golf clubs** have been produced. It must be understood that most production information is proprietary and not made available for public distribution.

**Catalyst-heat Process.** At the present time production using the catalyst-heat process for making wood-polymer composites is much smaller than the radiation process, but its use is much more widespread throughout the United States and the world. **The simplicity of the catalyst-heat process and low initial cost to begin production is the key to the use by small companies who make high cost small volume items.**

The first small production system was assembled by the Bowling Division of AMF in 1966 when the first wood-plastic billiard cues were produced. The initial impregnation unit cost two hundred dollars and the dry kiln associated with the saw mill was used as a heat source for curing the wood-monomer, which was enclosed in a capped pipe. After several successive size increases the production system consisted of a ten inch pipe six feet long with end caps as the impregnation tank and a similar pipe with an insulated copper steam coil wound along its length was used as a curing oven. The catalyzed monomer was stored in five gallon cans in a refrigerator at 34°F. The monomer solution was transferred to the impregnation chamber by hand pouring. A high volume exhaust fan at floor level removed the monomer vapors. The total volume of catalyzed monomer for each treatment was 35 gallons. Since each batch of fifty cues absorbed five gallons of catalyzed monomer, five gallons of new monomer solution (0.25% Vazo and 5% crosslinker) was prepared for each run. By adding new catalyzed monomer to the thirty gallons from the previous run the proper inhibitor level was maintained and the level of extractives was kept at a low level. With this system the curing time was about four hours for each batch and three to four runs each day gave the required level of production. This level of production was maintained for several years until the market became saturated, and AMF discontinued their billiard line. The cost of making the wood-plastic cue at that time was fifty cents and this cost was recoverable by increasing the price of the cue by five dollars. Total cost of the treating system was less than two thousand dollars. In addition to the billiard cues, AMF Bowling Division produced hard maple wood-plastic bowling alley flooring for numerous test facilities, but the bowling alley boom died out before commercial installations were built. **Other items were produced in limited quantities, such as, lacrosse sticks, dynamite tamping sticks, police night sticks and chair arms. At the present time the treating plant is in storage.** XXX



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## How to Make An Ash Broom

I found this bit of Woods lore in an old book, WISDOM OF THE WOODS, by Dan Beard, c. 1920.

Take a piece of ash about the size of a broom handle and with a sharp knife shave one end (see fig. 1) until you have strips long enough to bend over and make a broom. (fig. 2)

Whittle the handle down to make a proper sized handle. (fig. 3)

This broom is easier to make than it is to bring one from home.

others, maybe everyone wouldn't think is another story. XXX



Fig. 1

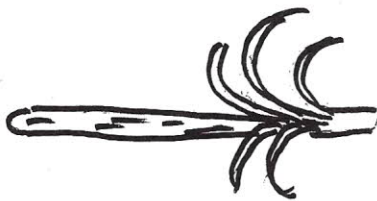


Fig. 2



Fig. 3

## ASK A FORESTER

By Al Roberts  
*I LIKE STUMPS*

Every woods should have some stumps in it.\*\* They let you know that it is a working woods, not just an idle, inefficient, do nothing woods. I like stumps because they can tell me so much about so many things. How come, you say, there should always be stumps in the woods? Well, young woods, on a good site should be thinned every five to eight years, and an older woods can have a harvest every ten to fifteen years. I hardly ever cut a tree down or see a fresh stump that I don't look it over carefully to see what I can see. (Maybe that's why I **can't** make any money cutting firewood). Some of the things I can see are pretty obvious, but others maybe everyone wouldn't think about. Here are some of the things.

The most obvious thing you can see is the width of the growth rings, which of course, tells how fast the tree was growing. On cherry, ash and oak you should be getting rings 1/4 inch wide. If you are not, the stand should have been thinned sooner. All species are capable of that rate under certain conditions, but usually six rings to the inch is considered good. I bought my woods 13 years ago and thinned it. I'm thinning again now (the third time), and it is gratifying to count back on the rings 10 to 12 years and see how the growth increased.

You can also figure out a little of the history of your woods from the stumps. In my woods there is a scattering of huge stumps cut 15 years ago. The stumps of the trees I'm thinning out now all have about 45 growth rings. So until 45 years ago my woods was an open pasture, with scattered shade trees. When the cows were removed the old pasture trees seeded all around themselves and a new woods started to grow. The old trees were cut for timber when the new woods was 30 years old.

Stumps, in their various stages of deterioration let you know how long ago the

timber was cut. I had a man who wanted some advice on what he called his "virgin forest". At least it had not been cut for many, many years. He had just recently bought it. Visions of sugar plums danced through my head as I contemplated the timber sale I would conduct for him. But as we entered the woods, what to my wondering eyes should appear but stumps! I hated to disillusion him, but I told him his woods had been pretty heavily cut within the past ten years. He had been taken, but I'm not sure he believed me. He was going to get a second opinion.

You can also tell a little bit about the woods owners from the stumps. Was the woods heavily cut, with all the stumps being small? Either the owner was awfully hard up, or awfully ignorant. Or are there big stumps, all of them sound and solid? I guess the owner didn't know enough to have the culls cut. Is there paint on the side of each stump? Good. It must have been marked by a forester.

Timber cutters leave behind them tell-tale evidence of their skill or lack of it, or their care or lack of it in felling trees. When I look at some stumps I wonder how the cutter knew which way to run when the tree started to go... uneven cuts in all directions and no hinge left to guide the direction of fall. Some cutters **consciously** use no hinge or undercut. It saves time, and the tree will roll out of a tree it otherwise might hang up in. He doesn't care to take the time to direction-fell the trees to avoid damage to the remaining stand.

Stumps enable you to reconstruct the sad tale of a timber trespass. By measuring the stumps and estimating the length of logs removed, from the position of the tops, a volume table will show the number of board feet stolen. Then try to collect.... But that is another story.

\*\*Except a limited amount of wilderness acreage to serve as museums.