THE CONSERVATIONIST

OCTOBER-NOVEMBER 1974 75¢

Six-kilowatt home-sized Sailwing wind generator, soon to go into production by Grumman Aerospace Corporation. It is here mounted on a truck for testing at Grumman's Calverton, Long Island, facility. See EQ News Supplement.

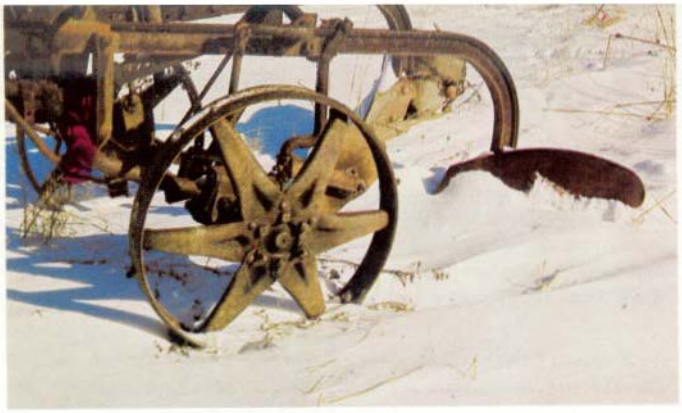

Photo by Richard B. Fischer

THE CONSERVATIONIST

Volume 29, Number 2 / October-November 1974

COVERS: I The Osprey's Nest, by Winslow Homer, Sterling and Francine Clark Art Institute, Williamstown, Mass.; II Home-size wind generator, Grumman Aerospace Corporation; III Forest Diorama, by Wayne Trimm; IV Beaver Pond, Newcomb, by Ed Kenney

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PAGE TWO *about this issue*

With this issue we present a special section on the forests of New York State, introduced appropriately with a reproduction of Winslow Homer's famous watercolor entitled "Old Friends" which includes one of his many portraits of his favorite Adirondack guide. We are indebted to the Worcester, Massachusetts, Museum of Art for the right to reproduce this painting.

JOHN COOK (From Farmland to Forest) graduated from Colgate last year and is presently working for an MA in science education at Cornell. This article had its origin in discussions with Field Editor Paul Kelsey, a neighbor, about the return of the goshawk, and its implication as to changing land use.

CONNIE KOMAREK and BILL RODEN collaborated on "Your Host in the Woods." Connie is acting editor of New York State Environment who joined this department soon after completing her studies in resource management at State University College of Environmental Science and Forestry in Syracuse. Bill Roden of Diamond Point is community relations specialist with the department at Region 5 headquarters, Warrensburg, who is widely known as an outdoor columnist and former president of the New York State Conservation Council.

RICHARD CIPPERLY (Managing the Forests) is an associate forester in DEC's Bureau of State and Private Forestry. He began work with the department in the Warrensburg office in 1964 after graduation from the College of Forestry at Syracuse. He lives in Round Lake and gives his spare time to various municipal programs in the village. He owns a woodlot in Warren County where, he says, he practices what he preaches.

PAULA WILENS METZLER (Chronicler of an Era) grew up in the foothills of the Adirondacks which may have given her that taste for history which resulted in the article on Frank Dodge and the portfolio of his pioneering photography. She supplied the old Christmas cards which graced our December-January issue two years ago. She also collects other material objects of Adirondack culture: cross-cut saws, logging lamps, snowshoes, and of course turn-of-the-century photography on glass plates. A housewife with a four-year-old son, she is presently working toward a degree in history at Russell Sage. Her husband, Keith Metzler, is chief of exhibit design for the New York State Museum.

METZLER

PAFUNDI

MARIA PAFUNDI (Paper to Pallets to Pickaxe Handles) is a staff writer for the Community Relations Office of the State University College of Environmental Science and Forestry in Syracuse. After graduating from Syracuse University's Newhouse School of Public Communications with a master's degree in journalism, she joined a special HEW project studying health manpower in the United States. Many of her published articles deal with the problems of the elderly in this country, and most recently, higher education in the environmental sciences. Her favorite hobby is skiing in the northern Adirondacks.

DEDERICK

MARVIN SCHMID (Managing a Watershed) is also a graduate of the College of Forestry at Syracuse who spent 20 odd years in lumber before he returned to college to prepare for a career teaching earth science. He lives in Westport with Mrs. Schmid, has three grown daughters and four grandsons. He is an engineer technician with Joseph Kestner, Jr., a consulting engineer specializing in water supply and waste water treatment. His avocation is "helping some pet white pines grow."

An addendum to this special section is Wayne Trimm's "Forest Diorama" appearing as this issue's Earth Almanac, and his painting on Cover III, temporarily substituting for his popular Sketchbook.

Our feature on the coyote was proposed and then organized for us by Vernon Husek, chief wildlife biologist with this department. Contributors to what might be called a symposium include ROBERT E. CHAMBERS, associate professor of biology and ROGER A. POST, member of the department of forest zoology, both at SUNY College of Environmental Science and Forestry at Syracuse; STUART CAMERON, wildlife manager of DEC's region 6;

(Continued on page 37)

THE EDITOR THE GOVERNOR THE COMMISSIONER

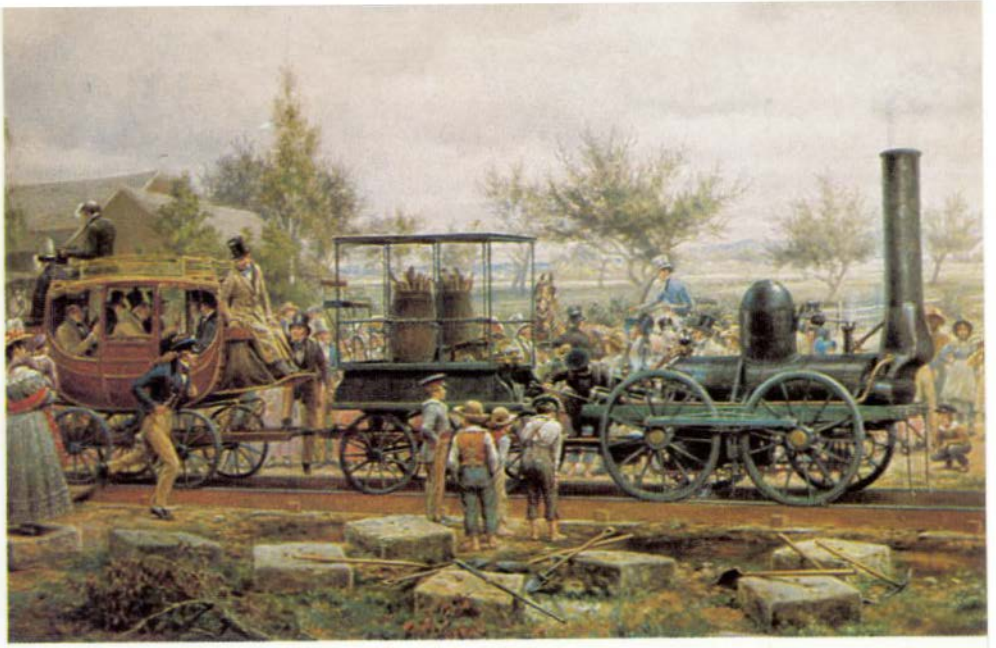
Governor Malcolm Wilson announced July 17 that THE CONSERVATIONIST magazine, published bimonthly by the New York State Department of Environmental Conservation, has received the first place international magazine award for 1973 from the American Association for Conservation Information. The award is given annually by the AACI to the best magazine in the field of environmental conservation. Competing for the award each year are magazines from the United States, Canada and Mexico.

"We are proud that this coveted award has come to New York State," Governor Wilson said. "The AACI is a professional organization devoted to the advancement and improvement of conservation information and education programs throughout the North American continent."

In entering the magazine in the annual competition Robert F. Hall, editor, stated that its purpose is "to inculcate in our readers the truth that man's happiness and survival depend upon his living in harmony with his natural surroundings. Its corollary is our secondary purpose to unite the hunters and fishermen, the pioneer environmentalists, with the broader public in a powerful movement to preserve our environment and its concomitant blessings."

The comment of the judges in announcing the award was that THE CONSERVATIONIST is "a solid, first-rate, readable, informative, above all intelligent job throughout."

On the Right Track



First train to Albany by Edward Lamson Henry
Albany Institute of History and Art

"By total weight of pollutants discharged into the air, the internal combustion engine accounts for more than half the nation's air pollution."

THE sentence above comes from a new booklet, issued by the Department of Environmental Conservation, entitled "It Stacks Up! — Air Pollution explained in plain English."

The booklet continues: "Mass transit systems generate far less pollution than do automobiles for each passenger mile of service provided. Mass transit is also more efficient in the use of energy, land and other resources."

Of the various forms of mass transit available, railroads are the least polluting and the most economical in terms of energy. Because of this environmentalists are encouraged by the trend in governmental policies away from proliferating highways and towards restoring and revitalizing railroad transportation.

In July New York State suspended plans for enlarging the Long Island Expressway in Queens and instituted new studies of alternatives for moving people and freight along this well traveled route. A new emphasis was placed on such possible solutions as improvement of rail and bus facilities and utilization of exclusive lanes on the Expressway for buses, car pools and even commercial traffic.

More than a year ago, the state was calling for federal assistance for the operations of public transit systems and, for its part, the Legislature approved funds to acquire rail lines abandoned or about to be abandoned but considered vital to the economy of affected communities.

New York State was a highly effective force in enactment by Congress of the Regional Railroad Reorganization Act (the Triple R Act) which is expected to be the instrument to restore and revitalize railroad transportation in the Northeast.

The Federal legislation provides that Amtrak must make passenger service available when states demanding it agree to assume two thirds of any operational losses, with federal funds making up the deficit. Under this arrangement we are assured that service between New York City and Montreal on the Hudson Valley-Lake Champlain route (a magnificently scenic route) will be restored. There is, at this writing, a good possibility of direct New York-Detroit service, via Albany and Buffalo and New York-Binghamton service.

This represents a substantial victory for New York communities. The first programs out of Washington after Triple R was passed omitted the Albany-Montreal service and took a negative attitude toward many branch lines of vital importance to upstate communities.

In hearings before the Interstate Commerce Commission, state agencies made a vigorous presentation of these needs. New York's case was documented in detail, largely because intensive studies of the railroad problem had been underway for more than a year, covering all aspects of the problem — social, economic and environmental.

It has been this state's position that mass transit, and especially rail transportation, is desirable not only because of the growing energy shortage and the increasing pollution from highway traffic, but because the people need and want better railroad facilities.

The decline in the quality and convenience of railroad service has been a major factor in the catastrophic decrease in railroad revenues. As that service improves, patronage increase is certain. Already, during Amtrak's brief history, patronage increase in this state has been dramatic. Empire Service riders for 1973 were up 38 percent compared with 1972.

Testimony before the Interstate Commerce Commission made the point that a crucial factor in improved rail service is the need to rehabilitate the deteriorated roadbed, a major operation. This will mean smoother and faster riding, but it is obvious that this necessary improvement is impossible without substantial federal aid. — R.F.H.

The Coyote

by Robert E. Chambers,
Peter N. Gaskin, Roger A. Post
and Stuart A. Cameron

SOME call them wolves. Some call them coydogs or coyotes. Others prefer the safer connotation of wild canid. Why should there be such confusion about the identification of New York's large wild carnivore, and what, really, is it?

Most of the confusion arises because our coyote is much larger than its western counterpart and because large New York coyotes are as big as small eastern timber wolves. For the past four years the senior authors have collaborated in their efforts to learn more about the pedigree and ecology of these fascinating animals. Of more than 200 specimens examined during this period, the largest weighed 52 pounds. A few publicized cases of "wolves," reputed to weigh nearly 100 pounds or more, were found to weigh less than 50 pounds. As expected, we found it impossible to rely only on size and physical appearance to identify an individual animal. Although there was a tendency toward uniform coloration and marking, a few specimens of either red or black color have been examined.

Drs. Barbara Lawrence and William Bossert, zoologists at Harvard University, had already examined specimens of similar animals from throughout New England. Based on a technique of skull analysis which clearly separates dogs, coyotes and wolves, it was concluded that the New England animals should be referred to as the eastern coyote. Behavioral studies and breeding experiments by Helenette and Walter Silver in New Hampshire have caused them to agree with the Harvard studies.

Using the same techniques of skull analysis as Drs. Lawrence and Bossert on nearly 150 specimens, we have arrived at the same conclusion, thus confirming the previous position of New York and other authorities that a coyote population exists in New York. However, nature is never that simple. It is now known that coyotes, wolves and dogs are all capable of interbreeding with each other. Therefore, the possibility exists (and our data suggest it has happened) that the family history of some animals in our population of coyotes may have included either or both dogs and wolves.

Three factors could account for this: (1) feral dogs are common in parts of New York, (2) parts of New York are within dispersal distance of Ontario wolf populations, and (3) New York residents bring wolves or wolf-dog hybrids into the state as pets or for zoo displays, some of which escape. Since New York's coyote population has expanded greatly in the past 30 years and is now known to exist in at least 34 counties, it is doubtful if occasional matings with dogs, or even wolves, will substantially alter the basic coyote qualities of the population.

No aspect of the coyote's life style attracts more attention and concern than its food habits. Some sportsmen in New York are convinced that the coyote contributes heavily to deer losses each year and thus deserves to be eliminated on sight; some farmers express apprehension that their calves, lambs or other livestock will fall prey to the coyote. Evidence collected to date in New York and other northern states suggests that these concerns are ill-founded.

In one sample of 56 scats collected in northern Onondaga County in 1973, mice, cottontail rabbits, woodchucks, muskrats and berries were the most frequent items in the coyotes' diet. Many of these samples were obtained in late summer and fall. Examination of 29 coyote stomachs from northern New York counties collected during late fall and winter of 1971 and 1972 revealed that snowshoe hare and white-tailed deer were the primary food sources. This is consistent with the earlier findings of Dr. William Hamilton of Cornell, who examined more than fifteen hundred scats from throughout the Adirondacks from 1956 to 1961. Deer and snowshoe hare were the most frequently eaten items during the winter months with hare, deer, fruit and insects being most important in the summer diet. Fruit and insects accounted for nearly one-third of the summer diet.

In all of the coyote food habit studies where deer appear to be important, they are most heavily represented in the late fall and winter when carcasses of hunter-wounded and winter-killed deer are most abundant. Tracking studies in Michigan clearly demonstrated that the vast majority of deer eaten by coyotes was in the form of carrion available as a result of hunting season and winter mortality.

The questions, "Do coyotes ever kill deer?" and, "Do coyotes ever kill sheep?" must certainly be answered, "Yes!". Reliable observations of both exist. Those questions and their answer should not, however, provide the basis for formation of coyote management attitudes and pro-

A puzzling world Play Rest

grams. The critical question is, "What is the importance of coyote predation to deer populations and sheep-raisers in general?" Based on our knowledge to date we are forced to adopt the position that the coyote is *not* an important limiting factor, and local problems should be handled as special cases.

Based on coyote bounty records in New York, there appear to be two periods of sharp increase in our coyote population; the first occurred during 1958-1961 and the second during 1969-1973. Both of these pronounced upward trends followed on the heels of severe winter periods which produced high rates of winter mortality in deer thus making a larger than usual number of deer carcasses available as coyote food, particularly during the pre-denning and early denning period. Although specific data on reproduction for New York's coyotes is not available for those periods, it is the opinion of these authors that there was probably an increase in litter size and/or survival of coyote pups during those winters and springs of high carrion availability. Such responses in reproduction by carnivorous animals to increased availability of food have been frequently documented, particularly in northern climates where alternate food sources are scarce during late winter periods.

Since coyote numbers appeared to be increasing at the same time that northern deer herd levels were declining and at very low levels (and carrion availability was high), it seems unreasonable to speculate that coyote reproduction increased as a result of direct predation on deer populations that were low.

But not all coyote populations depend on the availability of flesh foods during the winter. Most of the foregoing has been concerned with coyotes in northern New York in heavily-forested areas of sparse or no agriculture. During the winter of 1971-72 our attention was focused on a population of coyotes in western Onondaga County. Inspection of nearly 100 scats during that winter revealed that the major foods eaten during that period were apples and corn, many scats consisting of nothing but these two foods.

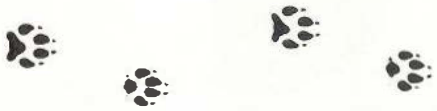
The most frequent flesh food in these scats was dairy calves obtained by the coyotes as carrion when local farmers disposed of their dead calf carcasses. Since all cattle were confined to barns during this period and personal contact with the farmers indicated no loss of live calves to coyotes, we are certain that any calves eaten by the coyotes were those dead ones discarded by farmers. It was interesting to note the calm tolerance of calf mortality in the barns by the farmers and the simultaneous apprehension that coyotes *might* kill a calf. To date, we have *no authenticated* instance of a coyote killing a calf.

Other ways in which coyotes benefit from agricultural activities are reflected in the frequent reports of coyotes seen scavenging through freshly-spread manure (which often contains dead animals or their parts) and the common observation by many rural residents of coyotes "mousing" in hay fields. Field mice are the most frequently eaten small mammal in all of our food habit observations. The greater abundance and diversity of foods available to coyotes in semi-agricultural areas suggest that such habitat would be preferred over extensively forested conditions. Although accurate population data are lacking, kill records and observation frequencies in New York suggest that, within its established range, coyote populations *are* more dense in areas containing a mixture of agricultural and forested lands.

Similar to its western counterpart, we can categorize the coyote in New York as being primarily a predator of rodents, hares and rabbits, a scavenger of large animal carrion and a vegetarian at those times and places when fruits are especially abundant and flesh is scarce. There is currently no evidence to suggest that the coyote's food habits qualify him as an enemy of or a competitor with man in New York. Perhaps even more than his size and physical appearance, the coyote's food habits set him apart from the wolf whose diet consists almost entirely of big game animals. Small mammals and rodents, which represent the bulk of the coyote's diet, comprise only a small part of a wolf's diet, and wolves have never been known to consume the quantity of fruit and insects eaten by coyotes.

Since 1970, we have obtained movement information on nine of 19 ear tagged coyotes. Most of these nine were shot by hunters within two years and 30 miles from where they were first captured. The most notable recovery has been of a young male coyote tagged near Watertown in October, 1970 and shot

Coyote talk



Portrait of "Howdy"
New York State coyote

near Saratoga in June, 1971 — 120 miles from its original capture site. This was probably a dispersal movement such as is often evidenced by the young of many species, particularly males, when they move from their original home population to where they establish themselves as adults. It is by means of such movements that coyotes and other species extend their range: red foxes are known to disperse up to 100 miles. Such long dispersal movements help explain how New York's coyote population has extended itself from a few northern counties in the 1940's to Orange, Delaware, Broome, Cayuga and Cattaragus Counties (and points between) by 1974.

Movement information obtained from four radio-marked coyotes during the late summer and early fall of 1973 suggests a great difference in the range sizes of coyotes relative to sex and age. One yearling (1.5 years) male traveled over a 10 to 20 square mile home range between late July and early October. He was known to also make occasional wandering movements of several miles in one night during this time. By contrast, a yearling female and a male pup remained within a two to three square mile home range during the same period.

Our data on movements to date are admittedly scanty, but we now know that future efforts toward the radio-tracking of coyotes will likely he successful and will provide us with much needed information on their activities and movements.

The increase in both coyote numbers and range in New York during the past 30 years speaks well for the adjustment of this animal to the presence and activities of man. It is encouraging to note the tolerance and appreciation which are displayed toward this animal by many of his human neighbors. Many of those persons living in coyote range to whom we have talked have been charmed by his evening or moonlight "serenades" and enjoy the knowledge of his presence.

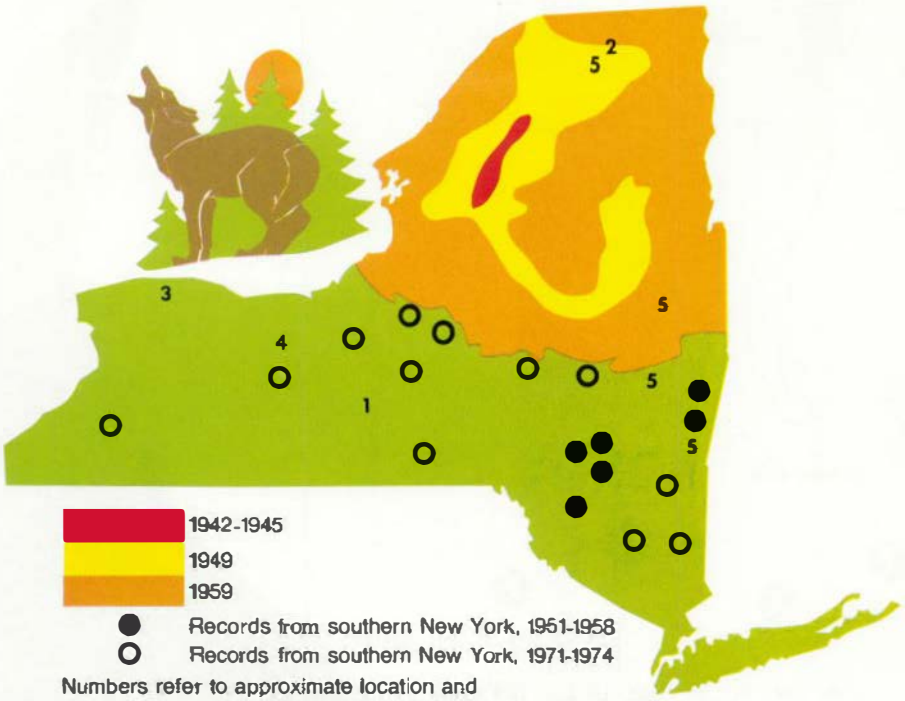
Recent trends in the fur market have placed this species in a highly regarded position by trappers; high quality pelts were worth $25 or more during the winter of 1973-74. For many years, several groups have enjoyed hunting New York's "brush wolf" during the winter months.

What seems to be needed most at the moment is legislation which would legally designate the coyote as a "game animal" and/or "furbearer." This would permit the Department of Environmental Conservation to regulate the means by which and the times when this species would be legally harvested. There are currently no restrictions on hunting or trapping of coyotes in New York. This would provide the best long-term insurance of the coyote's survival in New York. Although this may seem to be an incongruous argument to certain sections of today's public, the fact is that regulated hunting and trapping of an animal species has never resulted in its extirpation or extinction. It has been unregulated harvest which has dramatically depleted certain of our wildlife species. We consider it high time that a species of such great aesthetic, sporting and economic value he afforded the same regulation and protection as that given to most of our other valuable wildlife species.

In the meantime, we will continue to seek the answers to more specific questions concerning the ecology and wise management of our fascinating and challenging coyote.

The Coyote Moves East

by C. W. Severinghaus



Numbers refer to approximate location and years of "coyote" sightings — 1. 1920, 2. 1925, 3. 1926, 4. 1928, 5. 1934

WILD canids, living and reproducing as a wild population were not commonly known in New York prior to the 1940's. In 1936 three wild canids taken in Saratoga County were identified as one coyote and two hybrids. Five wild canids taken in the northern Adirondacks in 1936-37 numbered four hybrids and one coyote. During these years, the wild canids taken were gray coyote-like animals. Mongrel types, such as became numerous a decade later along the outskirts of central Adirondack forests, were rare. It is generally accepted that all these early records were "escaped animals brought here as pups by visitors in the West." Whatever their origin, the animals apparently did not persist.

The eastward expansion of the coyote's range north of the Great Lakes from western Ontario has been traced. It is evident that coyotes were present along the northern side of the St. Lawrence River in Ontario about 1935 and in Quebec by 1944. Thus it was possible for coyotes to reach New York by crossing the St. Lawrence. It is known that in 1941 at least six coyotes, mascots of troops from Oklahoma and Texas, were released at what is now Camp Drum.

A contribution of Federal Aid in Wildlife Restoration.

In the 1940's and 1950's a population of hybrids (coydogs) developed in the northwestern peripheral Adirondacks and spread into the interior. The mother of a coydog litter was usually reported to be coyote-like and these individuals were elusive and difficult to hunt or trap. By 1942-43 these wild hybrid canines were being taken in northern Lewis and southwestern St. Lawrence Counties. The author saw more than 10 of these. They were big animals weighing 35 to 50 pounds. The hair coloration varied from white through darker colors to black; there was no consistent pattern, for litter mates caught at the same den site had differing colors and patterns. There was one conspicuous similarity according to hunters and trappers: it was difficult to catch adult animals. Also, it was believed that these animals lived in winter near deer wintering areas.

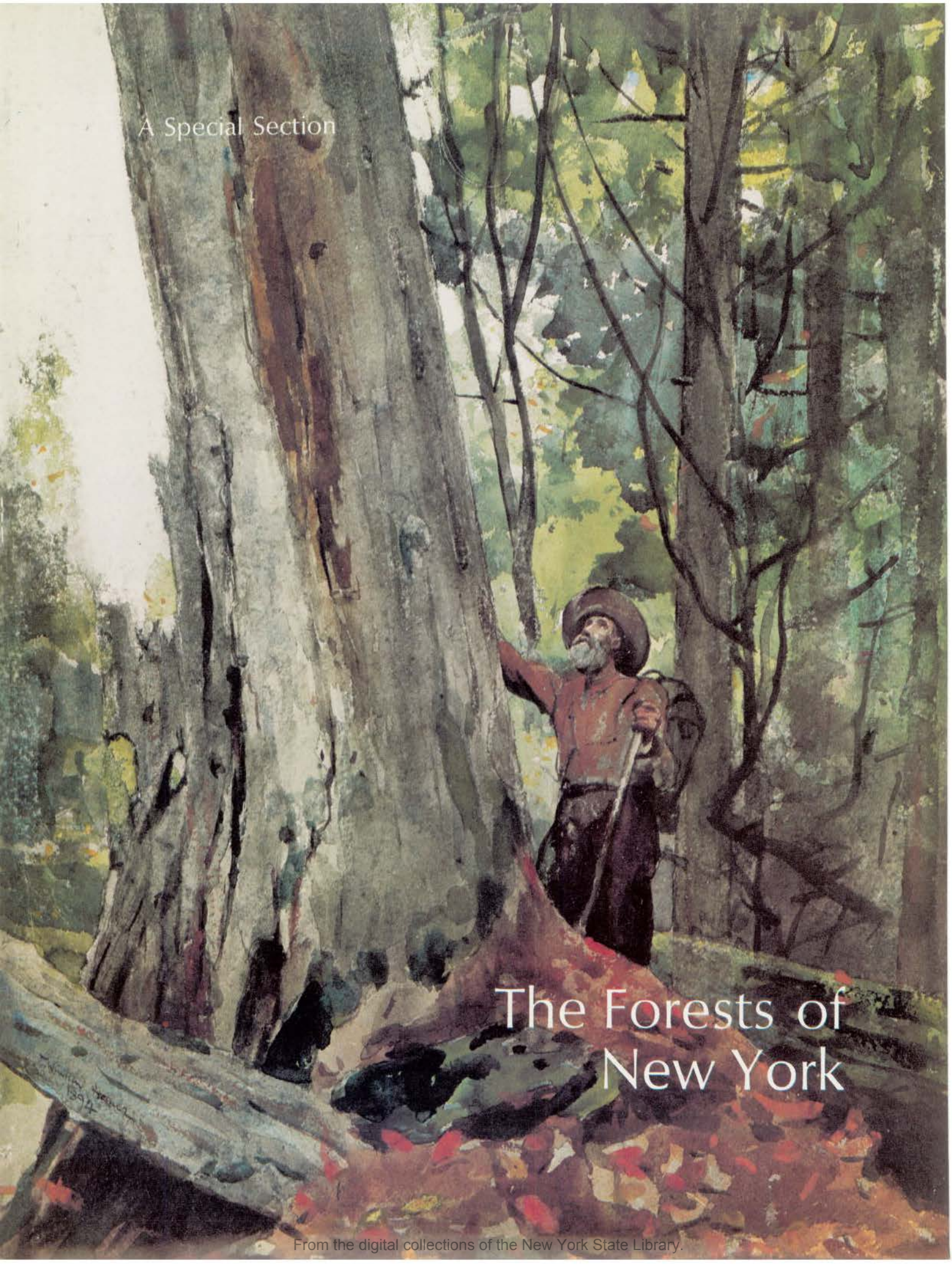
Available information indicates that these wild canids spread southward and northeastward. They were seen and killed along the periphery of the forest but were slow in penetrating the interior. The coyote-like canids present in Franklin County in the 1930's had apparently disappeared. By 1945 grayish-coated animals were being taken which strongly resembled coyotes in appearance and which obviously differed from wild hybrids previously encountered.

Five specimens, all having the grayish coat color resembling that of a coyote were examined in 1945 by Dr. H. T. Jackson of the U. S. Biological Survey who identified one as a possible hybrid, the second as a domestic dog, and the third as "without a doubt the coyote, *Canis latrans*." The other two specimens were, according to Dr. W. J. Hamilton of Cornell, "uncertain species, not true coyote, and not conspicuously dog." These specimens were from St. Lawrence County (3) and Lewis County (2) while the coyote came from the town of Rossie, St. Lawrence County. These five specimens were selected from hundreds of wild canids taken by hunters and trappers because they did appear to he coyotes.

By 1950 the wild gray canids were present in most localities of the central Adirondacks and were seen more frequently in peripheral areas. The population was extending its range. Progressive distribution in the state is shown in the accompanying map.

As these animals spread along the margin between the central and peripheral Adirondacks, it was observed that the first litters in a newly-occupied area were almost always obviously coydogs. George Buckley, caretaker at DeBar

(Continued on page 36)



A Special Section

The Forests of New York

Summer Farm Scene. George Henry Durrie, 1860, Shelburne Museum, Shelburne, Vt.

From Farmland

We wonder whether the dream of
American Liberty —
Was two hundred years of pine and hardwood
And three generations of grass —
And the generations are up; the years over

We don't know

— Land of the Free, by Archibald MacLeish

IN New York's south central highlands — the most extensive upland area of the state — outdoorsmen are enjoying wilderness recreation where, just a hundred years ago, crops, pastures, and hay meadows flourished. Few New Yorkers realize that many thousands of acres of the state's forests stand on former farmland. The year 1887 marked the peak of these farms but by 1925 many had been abandoned, their land stripped bare. The Hewitt Act of 1929 authorized the state to purchase up to a million acres of this abandoned land, and by the late thirties the work of reforestation and reclamation was well underway.

Today, the old farms and the men who worked them are all but forgotten. To retrace the succession of this land from worn-out marginal farmland to today's forests is to unravel the cord which is man and nature interacting, revealing a story which few ever see. For natural changes in vegetative cover occur slowly, so slowly that a perspective of several decades is needed to see clearly the successional changes which create forest from farmland. But to start with reforestation is to start in the middle of the story — the beginning lies farther back in time. Cultural as well as natural history decides the shape and cover of the land; man himself can decide where and when succession occurs. Therefore, we begin back when white pine forests blanketed the slopes of the glaciated hills and settlers first cleared the hilltops with sharp blades and high hopes.

Much of central New York State was settled immediately after the Revolutionary War. The expanding population of the brand new United States was hungry for land and reports of good farming country quickly spread from soldiers who had campaigned against the Indians in what is now central New York.

It was only natural that the hills would he settled first, away from the fever-ridden valleys and swamps. The settlers' farms were small and nearly self-sufficient. Farmers quickly cleared the forest cover; huge virgin stands of white pine provided good income from lumber mills, their gnarled stumps making good fences between pastures. Hardwood not used for housing was piled in the fields and burned. The Erie Canal system, which opened in 1825, provided transportation to local markets for any excess corn, rye, or flax. Timothy hay was raised and sold to the bargemen for their horses.

Early on, the farmers at the higher elevations began to experience problems. The amount of glacial till deposited on the higher areas bad not been as extensive as in the valleys and the topsoil was correspondingly thinner. Stripped of the forest cover, innocent of any crop rotation, and exposed to sheet erosion, the topsoil soon vanished — the remaining

Overleaf: Old Friends, Winslow Homer. Worcester Art Museum, Worcester, Mass.

Abandoned farm. Photo by Wayne Trimm

to Forest

by John C. Cook

volusia clays and hardpan proved useless for farming. Ahandonment, beginning on a large scale in 1880, became the only alternative for farmers faced with the double-edged problem of poor soils and increased competition from the continually updated technological methods of farming elsewhere in the country.

In addition. railroads had opened up the fertile Midwest resulting in small-scale subsistence farms being replaced by the large-scale cash crop and dairy style of agriculture. Local grain markets collapsed along with the canal system as railroad shipments from Chicago to New York became faster and cheaper. Young people back on the hill farms left to seek easier ways of living leaving only the old folks to hang on, then pass away. The farms were left to rot.

Between 1880 and 1925, twenty percent of all farms in south central New York were abandoned. Clearly. an inadvertent mistake had heen made and it was marked hy the slow and painful removal of the people from their land.

Early in the 1900's, the state realized that the rapidly increasing acreage of abandoned farmland was becoming a major social, economic, and land use problem. The sinking price of this land — generally under four dollars per acre — encouraged a pattern of exploitation of both poor New Yorkers and recent immigrants. Convinced of their ability to farm this attractively priced land, these people invested their meager savings in hill farms. It usually took less than ten years to dash their hopes. Their savings lost, they could only move on. This unhappy story repeated itself each time the land changed hands.

Unending cycles of poor land and poverty is a familiar refrain throughout the world when economic and population factors combine to overburden the productivity yields of the land. This case was unusual in that the cycle was recognized and disrupted.

It was determined that this land should permanently be removed from public markets to stop the exploitation of both land and people. Spearheaded by Cornell University's Department of Agricultural Economics, the first land classification plans were developed in the twenties to identify and isolate those areas most in need of reclamation. The amount of work put into the classification effort resulted in the easy passage of the so.called Hewitt Act which, with attendant amendments, provided for up to one million acres to be acquired at the state level. At the same time, it was publicized that the acquired land would be reforested for timber production, erosion control, and public hunting and recreation.

It should he made clear that the state didn't force farmers and their families off of land that had been "condemned," for it bought only abandoned and freely sold property from owners only too glad to sell. "State pays cash" was a commonly heard remark of the time. The Great Depression of the 1930's and the Second World War slowed down the project; the state ultimately purchased 600,000 of the projected one million acres.

If one looks at a State Recreation Areas map today, the solid green blocks

Goshawk. Photo by W. Trimm

of State Forest are sprinkled throughout the south central region, not clumped together in one large block. The state organized the purchasing of the abandoned lands around the sites of the CCC (Civilian Conservation Corps) camps. Hence the scattered regions of forest. The state had two choices for rehabilitating the land; let it revert via natural succession, or reforest tracts of land with hand-planted conifers using CCC help. This was a departure from the commitment that New York State had already made to the protection and preservation of existing wilderness areas. Unlike the older Adirondack State Park, the Hewitt area reforestation program was a deliberate attempt to reintroduce wild tracts of land back into intensively settled and cultivated areas, a recognition of the still novel idea that some areas are best left wild.

The first approach to reforestation — natural succession — is a very slow process in any situation. Since the worst areas of the abandoned land had been stripped of all vegetation and ravaged by sheet erosion, sixty years only begins to produce native forest cover. Succession begins, on humanly disturbed areas, as various "weeds" spring up. Plants such as burdock, nettles, shepherd's purse and chicory thrive in areas where others cannot grow. Gradually, the light-seeded trees such as trembling aspen and grey birch "colonize" the area as the wind sows their seed far and wide. As the years pass, the native hardwoods begin slowly to invade the area and species of the hickories and oaks, hard maples and white ash gain a foothold and begin to shade the sun-loving aspens out of their favored habitat. Areas not as severely damaged sometimes held a few remaining hardwoods and these acted as seed trees. With this immediate source of seed, successional growth could sometimes "skip" the intermediary stages and become a hardwood forest more quickly. This has been the case in a number of Hewitt areas and these are now stands of pole timber hardwood.

The second approach to reforestation, that of coniferous plantations, provides a contrast to natural reforestation in that a mature forest can be achieved in about twenty-five years as opposed to the forty to sixty years needed by natural succession. This method involved hand-planting three year old seedlings and was laboriously slow. Yet with the help of the CCC beginning in 1933, 273,028 acres of abandoned farmland were reforested with 315 million trees. A wide variety of species was used: scotch, red, and white pines, ponderosa and jack pine, Norway spruce and some others. At the time there was no planning for the planting of the trees — whatever was available was put in the ground.

Because conifer plantations grow so much more quickly than native hardwood forests, white-tailed deer, fox, rabbit, grouse, and many other animals are provided with cover many years before adequate native cover could exist. In a sense, plantations provide emergency relief for soil and wildlife until the native cover reaches sufficient growth.

Today, the mature forests resulting from both approaches to reforestation are beginning to attract greater attention as the population explosion begins to cause overuse of the better known wilderness areas. Whereas in 1929 the Hewitt Act itself recognized the recreational values of reforested land, it tended to focus more sharply on the importance of future timber production for an assured supply of lumber and paper. As a result of forty years of practical forestry initiated by the CCC in '33 and '49, and of cull technology developed only within the past three years, it seems that both the hardwood and reforested tracts can now produce usable timber. In today's scheme of things, however, in my opinion timber production will play a minor role compared to the ability of the reforested areas to meet the increasing need of civilized man to escape to areas of beauty, quiet, and peace. Unnoticed by most New Yorkers, reforestation has managed to reintroduce substantial amounts of wild forest well within reach of some of the more heavily populated regions of the state. As the trend toward posting privately owned tracts of forest continues to remove more and more land from general circulation, the Hewitt areas can help absorb the skyrocketing demands for rec-

reational wilderness. They are part of the mostly untapped reservoir of State Forests which will eventually replace the traditionally accessible private land.

And for persons who do seek wilderness close to home, the reforested areas have much to offer, for native plants and animals displaced by the farming of a century ago are now returning. Wild turkey are re-establishing viable populations. Snowshoe hare tracks are appearing on cold winter ridges with increasing frequency. Perhaps the most dramatic symbol of the success of reforestation is the discovery of a string of nesting goshawk sites stretching down across the state through the reforested areas. This fiercest of all native birds of prey demands large areas of wild deciduous woods. In the past hundred years, only rarely have goshawk nests south of the Adirondacks been reported until, within the past ten years, over a dozen nests have been counted and verified in Tompkins and Cortland Counties alone. The presence of these raptors is undeniable proof of the return of forests to the highlands.

One hundred and fifty years were needed for this cycle to complete itself. Although great stands of white pine may never again shade the hills of central New York, other forests now protect the soil and provide cover for wildlife. These forests are extremely important, for their history shows the possibility of restoring terribly abused land to health and productivity. And for those with eyes which see such things, the reforested acres stand as a memorial to the many who tried and failed to make their living there: stone walls still run through the woodlands, a few apple trees manage to survive through the years, and every spring, here and there a lilac blooms among the silent stretches of forest, marking the spot where some forgotten farm woman used to stand and smell its fragrance.

As population pressures increase and worldwide food production capacity becomes overextended, it may become necessary to return to agricultural production some marginal farmlands which have reverted to forests. These efforts — made with recognition of the weight of social benefit as a factor in the cost/benefit equation — would he enhanced by modern agriculture technology not available to the farmers who failed in their struggle to compete and survive on their hillside acres.

Photo: New York's Food and Life Sciences

Thinned only once, this 50-year-old red pine plantation has no future, with no young growth to replace mature trees after harvest.

Plantation Management

by Paul Kelsey
Photographs by Author

LEFT untouched abandoned farm fields start a steady progression of changes in vegetation from weeds to brambles to shrubs to sun loving trees to the final climax forest of the particular site. Each plant community along the way has its own associated animal community unlike the one before or after. It may, however, be years before the land is tangibly paying its way.

This process can be accelerated by reforestation, and annually thousands of acres are planted to conifers in New York. To live up to their expectations, these plantations must be "gardened" just like any other monocrop that man plants, though on a much slower and more extended scale. If not, disappointing failures in the production of both timber and wildlife will follow.

It is usually about four or five years before the young trees attain enough size to have any effect on the field around them, but then as they grow and produce more cover, they begin to attract wildlife that requires more brushy cover. During the next decade they abound with life, but as the branches begin to close in and shade out the low vegetation on the ground, another change starts to grip the site. In the absence of ground vegetation there is little or no food or cover for things living on the forest floor. In addition, the competition between the conifers for sun, nutrients and water causes them to slow up their rapid growth.

In red pine this occurs at about 15 years. Because at this age there is no commercial value to the stems, the most practical way to thin the plantation is to cut and drop every third row. This gives the remaining trees more crown space, so their crowns — the food producing part of the tree — can continue to grow. Sunlight which reaches the forest floor revives the ground vegetation, restoring the wildlife value by regenerating food plants.

If the site is right for red pine the crowns will close in every 10 to 15 years, and as they do the ground cover again diminishes as does the vitality of the trees. Now the trees are large enough that they can be used for pulp, poles. or chips. Using the access lanes created by the removal of the trees during the initial thinning, another third of the volume can he removed.

Following the second thinning the crowns will move higher so there is open space under the forest cover. In the ground vegetation we should begin to see the reasonably shade tolerant seedlings of maple, ash, cherry, and other hardwoods. They will have adequate light to thrive as long as the periodic thinning continues, removing about one third of the volume every time the crown closes. By the time the final red pine are removed, these young trees will be well on their way to becoming timber trees on their own with their own understory of young hardwoods.

If man does not thin the plantation sufficiently, nature will, but it may take decades. In the process of competition, even the dominant trees which eventually will shade out and kill the lesser ones, will grow tall and slim, and in this whip-like condition may easily be blown down and the plantation lost. In the meanwhile the understory, which should be producing the future replacement trees, is shaded out and the limited growth remaining creates a wildlife desert because of inadequate food and protective cover. This serious concern of early wildlife managers can be overcome with good plantation management as described.

The principles are the same for all species of conifers, only the time interval varies because of different growth habits and tolerances.

Following second thinning, hardwood seedlings are in evidence, furnishing food and cover to wildlife.

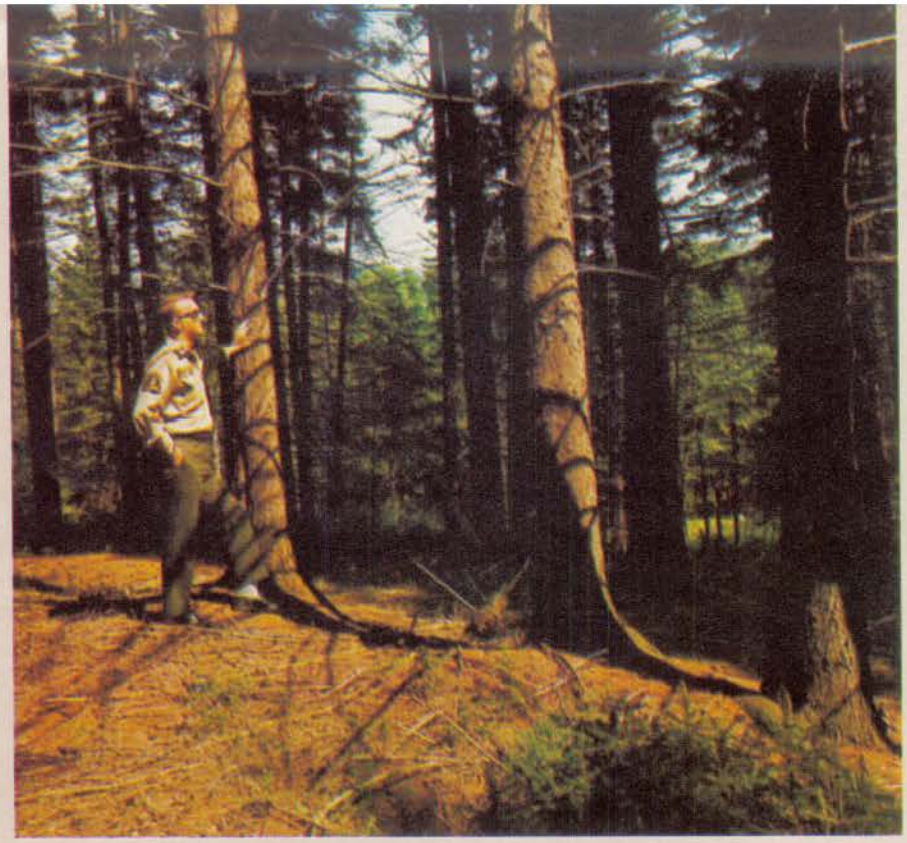


Photo by Nick Drahos

Managing the Forests

State foresters nurture the people's trees and provide help to landowners

by Richard Cipperly

IN order to undertake any management scheme, including management of land, it is necessary to define and understand the objectives of owning or manipulating that which is to be managed.

In the forestry program of the Department of Environmental Conservation we concern ourselves with two forest management systems — that of state forests and that of private forest land.

State forest management objectives are set forth in the law authorizing acquisition of the original reforestation areas:

" . . . lands outside of the Adirondack park and the Catskill park as defined . . . which are adapted for reforestation and the establishment and maintenance thereon of forests for watershed protection, the production of timber and other forest products, and for recreation and kindred purposes."

The objectives of the private woodlands owner are rarely defined, vary greatly, and many times may change according to the immediate needs of the owner. Because of this diversity it is easier to explain separately the management of state forests and private forests.

Multiple-use state forest areas and wildlife management lands — slightly over two percent of the total land area of New York State — are located in most counties of the state outside of the Adirondack and Catskill Parks.

By 1920, because of the decline of agriculture in New York, thousands of acres of submarginal farmlands were abandoned. This acreage was unproductive and no longer contributed to the local tax base.

During the early 1900's, the legislature authorized the state to acquire lands for reforestation, wildlife management and other conservation purposes outside of the Adirondack and Catskill Park boundaries. Since the inception of these programs, 720,000 acres were purchased and converted into more than 400 state forest areas. These areas provide not only multiple-use benefits to the people of the state, but have also been returned to the local tax rolls.

In 1960, New York State voters approved the Park and Recreation Land Acquisition Bond Act. Under this accelerated land acquisition program, nearly 150,000 acres of multiple-use areas were placed under public ownership. These areas were managed cooperatively by the Department's Division of Lands and Forests and Division of Fish and Wildlife. There are now more than 850,000 acres of forest land managed for the benefit of the people of the state.

During the first decades of state forest ownership, most of the management effort was devoted largely to surveying and identifying areas on the ground. In addition large scale efforts in planting tree seedlings were carried out on suitable open areas.

After this initial effort there were good records of the extent of the public ownership, and the location of new tree plantations but little was known of the composition or character of the natural forest stands. This determined the scope of DEC's present program of records or forest inventory. The inventory system now in use permits department foresters to obtain and record a multitude of factors about each stand of trees in state forests. Information includes data on slope, drainage, site productivity, volume of timber,

Students get summer work in DEC tree nursery. Photo by N. Drahos.

distribution of tree species, recreation and wildlife potential and other characteristics.

The inventory begins with a mapping phase to identify forest stands of different composition and ages; next a field examination is made of each stand to sample tree volumes, health and vigor and exact species composition. A field evaluation is also made of wildlife potential and other natural features.

Data is then processed by computer which compiles and calculates timber volumes and prints all collected data in useful table form for the forest manager. With the inventory at hand the next logical step in managing our forest resource is to develop a master plan which integrates all phases of management to be considered on a given area.

This planning effort, which involves experts from forestry, recreation, wildlife and watershed planning, may be done on any scale but we have generally chosen to restrict plans to about 10,000 acres as a workable management unit. The success of the plan depends upon the manager's ability to recognize what forest uses may be compatible or integrated.

While all uses may be considered for each management unit, it is often necessary, as with recreation areas, to consider one use more dominant than others. Most large forest areas lend themselves well to the integration of uses such as timber management, wildlife habitat improvement and forms of more extensive recreation such as hunting, snowshoeing and hiking.

The most important benefit of a written management plan is in providing a schedule of work to be done and establishing a priority of forest improvement projects. This becomes most important when one project may depend on the completion of others.

In scheduling stands for timber harvest on state land, volumes are calculated, annual growth is estimated and stands are scheduled for harvest so as to provide a sustained flow of products without depleting the renewable timber resource.

With present timber demand at a high level it is now possible to accomplish more forest improvement work through commercial sales than in the past. Formerly, plantations were thinned with axe and chain saw; now increased utilization of material by forest industries has made it possible to market these thinnings with considerable dollar return to the state.

Because of their close proximity to large urban areas, recreational use of state forests has greatly increased. Much of management effort is now devoted to increasing their recreational facilities. In the 1960's horse trail systems were developed and in recent years snowmobile trails have been opened for winter recreational activities and travel.

Several hiking clubs, under permit, have assisted the department in the construction and maintenance of foot trails. In the past few years the use of motorcycles and mini-bikes has become a popular sport in state forests. However, uncontrolled use of motorized vehicles can be harmful to the environment. Restrictive zoning is thus needed to insure equal enjoyment and environmental protection.

Through the Cooperative Forest Management Program the department is authorized to provide forest management assistance without cost to private owners of forest land in New York State, including marking services. The department has no labor force to carry out private reforestation plantings, forest improvement operations or actual timber harvesting. Current lists of consulting and timber contractors are available to the landowner wishing these services.

The management of private forest lands, as pointed out earlier, presents specific problems to the forest manager because of the diversity of objectives of the owners. A number of studies have shown timber production rarely ranks as a prime objective for the small wood-

A tree plantation devoted to Scotch pine, an especially fast growing species suitable for Christmas trees. Photo by N. Drahos.

land owner. Rather, the objectives of the owner include outdoor recreation, investment, a retreat from the city and just personal satisfaction. Therefore, the forest manager's first effort in dealing with private owners is generally one of both education and salesmanship.

In most cases forest management, including harvesting of mature trees if appropriate, can he a very effective means of accomplishing the owner's objectives. With increasing travel costs, spiraling land values and increasing assessments, management for forestry income may now even be a prerequisite to continued ownership of property.

After determining the broad objectives of the owner and discussing the parameters within which the forester should operate, the next step is an inventory of the resource, following methods similar to those used to inventory state forests. While the inventory on private land does not provide detailed computer printouts of tree species and volumes, the same basic field sampling procedures applied on state land are used to gain information.

Because of the variety of technical assistance programs available from several public agencies, it is necessary to work very closely with the owner, inspecting his property and recommending alternatives. Referrals on specific fish and wildlife needs are made to DEC's Division of Fish and Wildlife, requests for drainage, ponds, recreation development and similar projects are made to the USDA, Soil Conservation Service.

After determining land management considerations the owner wishes to pursue, the next step is development of a resource management plan. The plan may encompass the entire tract, or only that portion he wishes to dedicate as a manageable forest resource. The most important elements of the plan are a map identifying forest stands and a schedule of work to be accomplished to meet landowner objectives.

Depending on stand age and condition, owners may qualify for federal financial assistance in forest improvement. This program, administered by the U.S. Department of Agriculture, provides incentive payments under the Rural Environmental Conservation Program and the Forestry Incentives Program for such items as tree and shruh planting, thinning, and removal of cull trees. Many of the projects are devoted to increasing timber production while others may be directed to increasing wildlife food and cover, esthetics, and erosion control. DEC foresters are responsible for the technical forestry aspects of this federal cost sharing program.

Should a timber sale be indicated the forester can advise the owner on methods of sale and provide guidelines for developing a contract which includes restrictions suited both to the objectives of the owner and protection of forest resource. The services of a timber agent can also he made available to handle the actual sale at nominal cost, deductible as an operating expense.

Technological advance in lumbering, the shearer both cuts and handles the trees. N.Y.S. DEC Photo.

With ever increasing demands for the products of a forest environment, whether it be wood, recreation, wildlife or fresh air and clean water, applied forest management on the state and privately owned forest lands of New York is becoming increasingly more important.

Cordwood for the pulp mill, ready on the truck trail on Cuyler Hill. Photo by P. Kelsey.

Paper to Pallets to Pickaxe Handles

Products of New York's Forests

by Maria A. Pafundi

FACT: Sixty percent of New York State — 17 million acres — is now forest land.

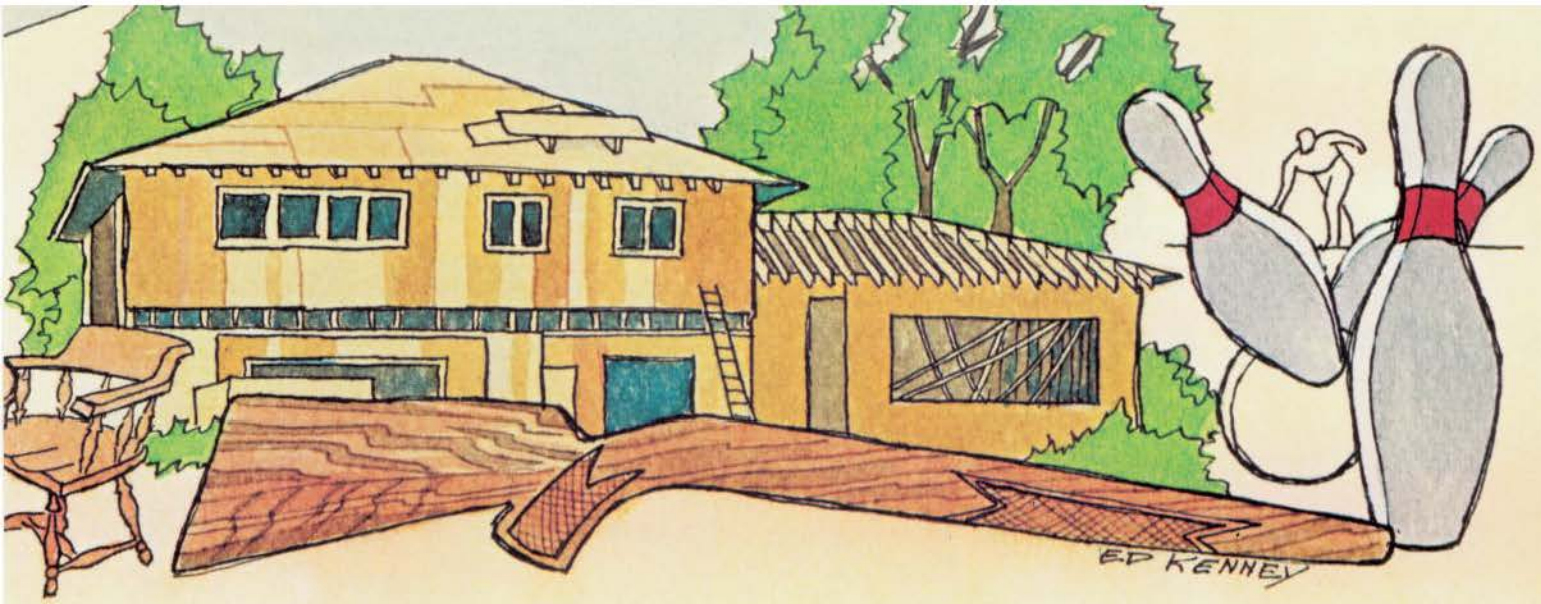
Fact: New York generates 10 percent of the total U. S. wood-based income.

Fact: The most intensive use of timber resources in the world is in the garment industry of Manhattan.

During 1948-50, the first forest resources survey of New York State was taken. Eighteen years later, the resurvey showed many significant changes. During that period, the commercial forest land increased almost 14 percent to 14,281,000 acres. Growing stock volume increased 20 percent to 12,200 million cubic feet. Sawtimber volume now amounts to 24,408 million board feet, up almost 11 percent.

The net annual growth of growing stock for 1967 averaged 245 million cubic feet, including 656 million board feet of sawtimber. Timber removals for that same year were 137 million cubic feet including 463 million board feet of sawtimber. Experts point to these figures to contend that timber can be harvested on a sustained yield basis for needed consumer products without depleting a natural resource.

New York loggers harvest about 150 million cubic feet of timber each year.



About half of the total harvest is made into logs, the bulk of which goes to the state's 750 lumber mills, the rest to its six veneer plants. Of the remaining harvested wood, well over 90 percent is shipped to the pulp mills of New York State for processing into paper and allied products. The remainder is used for fuelwood, posts, utility poles and charcoal.

Other primary forest products include the three million Christmas trees grown each year, and maple syrup, with New York topping Vermont in 1974.

New York has about 2,000 firms exclusive of the paper industry in the business of converting lumber, veneer and allied raw materials into finished products that range from archery sets and baseball bats to wooden boxes. More than half of these operations are located in New York City, close to their markets.

The wood furniture industry of the state, long centered near Jamestown, faces some difficult problems. These are attributed to the increasing popularity of versatile and attractive plastic, vinyl and metal furniture, and the high wage scales of skilled furniture craftspeople which push the price of wood furniture above what many consumers are willing to pay.

The wooden pallet manufacturers however, are faring much better. Wooden pallets — platforms of lumber nailed together and fitted with a wood frame — are used by forklift trucks in transporting virtually every product from food to cement bags.

Equally important with the production of wood and wood products is the transportation, marketing and retailing of wood products.

In the 1800's the transportation of timber had a significant effect upon the development of New York State: the Erie Barge Canal System was enlarged primarily to provide cheap transportation of lumber from western Adirondack sawmills to cities along the east coast; Albany turned from its role as a fur-trading center to become the lumber capital of the country. Short-line railroads criss-crossed the state carrying great quantities of logs to the many hundreds of large sawmills.

Today less than 10 percent of the wood New Yorkers use comes from their own lands — the main direction of wood flow is *into* the state. The Pacific Northwest and the Southern states send large quantities of construction materials. New Yorkers, in the center of a great market, flourish as lumber and plywood brokers and shippers. New Yorkers are skilled in bringing the raw materials into higher and final stages of manufacture — furniture, fixtures, houses and clothing made from rayon and cellulose acetate fabrics. One interesting spin-off occurs in the concrete world of Manhattan: there are more than 100 firms which deal exclusively in buying and selling wooden pallets to transport the vast quantities of goods that each day pass through New York's harbor. Again, as the center of the country's publishing industry, Manhattan supports a large number of firms which supply paper to publishers. Altogether, according to the forest economists, persons engaged in the marketing and shipping of wood products in New York account for one-third of the total employment in timber-based activities in the state. They turn out their goods at the rate of more than three billion dollars per year, consuming more than half themselves and sending the remainder back to the rest of the world.

An unpublished thesis by Harold E. Burghart at the SUNY College of Environmental Science and Forestry, reports that employment attributable to timber in all economic activities in New York in 1967 was the equivalent of 224,240 full-time jobs. This represented about one out of 34 employees or 2.9 percent of the total state employment. This is a reduction in the significance of timber-dependent employment for the 4.1 percent and 3.3 percent found for 1958 and 1963.

The 1967 value added, attributable to timber, was $2.6 billion — or 3.0 percent of the gross state product. Value added, declined steadily through 1958, 1963 and 1967. But as Burghart points out, no other state comes close to matching New York in the absolute amount of employment and value added generated by timber.

There are several factors which have a negative influence on industrial expansion in New York. These include the higher costs of labor as compared to most competing areas; a decline in the quality of hardwood sawtimber (56 percent of the hardwood and softwood sawtimber volume is in trees less than 15 inches d.b.h.—diameter at breast height); urban population pressure for recreational uses of forest land; and a growing concern for timber availability when the land ownership pattern shows that 59 percent of the forest is owned by miscellaneous private persons.

On the other hand, several factors are favorable to the further expansion of wood products industries in New York: proximity to urban markets; an extensive highway system; available rail and steamship transportation; experienced labor force; recreational, social, cultural and medical benefits of a progressive and developed state; and increasing taxes and costs in other states.

Chronicler of an Era

Frank Dodge's photographs record logging, mining, and farming in the Adirondacks almost a century ago

by Paula Wilens Metzler

Frank and Carrie Dodge

A North Country native, Frank Dodge was born in 1882 near Fairfield, Herkimer County. His twenty-year-old father was an "instrument-man" with the Adirondack Survey, where he worked under the direction of Lorrin Kelley, foreman-assistant to Verplank Colvin. By the time his father reached his middle years he was suffering from a respiratory disorder that made it necessary for his son to carry his survey instruments. Thus, Dodge learned to appreciate the problems of survival in the Adirondack woods.

Frank Dodge's first interest was the ministry; however his youthful attempts to qualify for an "exhorter's license" were unsuccessful. After a brief period of study at Cornell he served a circuit of Adirondack schools as a physical training instructor. He experienced many a rugged incident attempting to teach new concepts of formalized exercise to the children of miners, farmers and loggers. His curriculum of formal exercise included planting trees for the purpose of replacing those being harvested by local lumbermen.

When family obligations increased out of proportion to his teaching salary Dodge became bookkeeper, surveyor and office manager to the Helterline Lumber Company. It was at this point that the camera began to occupy a larger portion of his time. He concentrated upon a cluster of villages and the surrounding territory of Stratford, Salisbury, Emmondsburgh and Caroga Lake — or rather their residents concentrated upon him. The only photographer in the immediate vicinity, he soon began to record important community and family events.

Dodge walked in the woods just for the sake of taking pictures of animals. He needed no retinue of guides toting equipment. He was his own guide, taking pictures of such things as snakes when most people would have dispatched them as rapidly as possible. Lacking a fancy lahoratory, he developed his photographs in a studio located in a deserted building near his Stratford home.

In 1913, Dodge obtained a Model T Ford and a chauffeur's license, thereby establishing an early taxi service to supplement his income. A skilled carpenter, he built a number of homes in the Salisbury-Stratford area. When Pine Camp (Camp Drum) was being constructed he became a commuting carpenter for the duration of the project, returning home on weekends. During spare moments he was the trombonist in the Salisbury Band.

When Dodge purchased the Crossman House Hotel, he not only obtained living quarters for his family, but a ballroom, pool hall and bar combination belonging to a fraternal order known as the Maccabees. Undoubtedly it was his ability to control invasions of roughnecks at the dances at the Maccabee Lodge that led to his appointment as Justice of the Peace. Subsequently, Dodge was elected Supervisor of the Town of Salisbury. In later years he was able to renew his interest in education as president of the board of education for the Dolgeville Central School District. Following his death in 1959 his photographs were saved by his son, The Reverend Alan Dodge, who graciously surprised me with them one memorable Adirondack evening.

The Dodge photographs illustrate a slice of Adirondack history that is seldom revealed: the daily life of the Adirondack resident. However, the photographs and his life style suggest that there were aspects to Adirondack life at the turn of the century other than picturesque groups in lean-tos, grand hotels, sportsmen, tourists, colorful lumber camps, abandoned mines, deserted villages and interesting hermits. Unlike traditional Gilded Era photography, Dodge's photographs are devoid of bleached reincarnations of the noble savage: no posturing guides, as Jamieson described some of them, posing for publicity shots.

The popular imagination, once held captive by lantern-slide shows concerned with preservation of the Adirondack wilderness, was now involved with larger issues of humanitarian reform. National magazines that had once focused attention upon the destruction of the North Woods and the necessity of establishing an Adirondack Forest Preserve turned to expose political corruption; the meat and wheat trusts, corporate monopolies and banking cartels. Reformers became more concerned with the effects of demon-rum than the activities of lumbermen.

To be sure, concepts related to both wilderness preservation and conservation remained part of an emerging national movement toward progressivism, that like the financial panic of 1893, signaled the decline of the Gilded Era. In 1894 legislation that designated an Adirondack forest preserve forever wild became part of the New York State Constitution. Traditionally described as the most loved and most hated piece of legislation in New York State, this legal commandment was not widely approved by Adirondack residents. The forever wild clause ap-

plied to 729,917 acres in a region encompassing approximately ten million acres. Thus the stage was set whereby a tangible change in a portion of the regional environment would be blamed for economic and social shifts occurring both within and without the region.

At a time when the lines between those who had supported the philosophy of wilderness preservation and those who believed their best interests would be served by unrestrained use of a dwindling Adirondack resource were severely drawn and tense, Frank Dodge walked the middle ground. In so doing, he not only demonstrated a basic concept of forest management, hut a tendency to live somewhat dangerously. The records of the courts suggest that a segment of the Adirondack population lived in open violation of conservation laws relating to both forest and game management. It is also a matter of record that a few individuals were not above threats directed toward more law-abiding neighbors. The principles, practices and politics of conservation were in precarious formative balance. Unmanaged timber harvesting was continuing at the same time that the science of silviculture was becoming institutionalized within the state.

Without the assurances of Social Security, unemployment insurance, and workmen's compensation, Adirondack survival was an acute adaptive process that demanded both calculated planning and flexibility. Survival tactics might call for any possible combination of farming, hunting, trapping, mining, working in a stone quarry, logging, shrewd Yankee trading, sometime evasions of the law, as well as playing the role of Leatherstocking for the "sports." As each Adirondack resident maximized his options, his maneuvers seldom left room for visionary ideals of wilderness preservation.

Dodge's photographs reveal quiet pride in killing a large bear or deer that will never find its way to the taxidermist. His Adirondack children are as scrubby as they really were. He documents inevitable change: e.g. the last surviving veterans of the Grand Army of the Republic. Technology is arriving via the horse; an animal that still occupies a prominent place in many family photographs. There are problems in learning the innards of a machine far from the urban culture that manufactured it. His neighbors' faces reveal the vicissitudes of combat with a traditionally fragile wildnerness economy becoming more brittle. The new social philosophies, that would do so much to alleviate the precarious conditions of the urban poor, were not as yet deemed applicable in a wilderness environment.

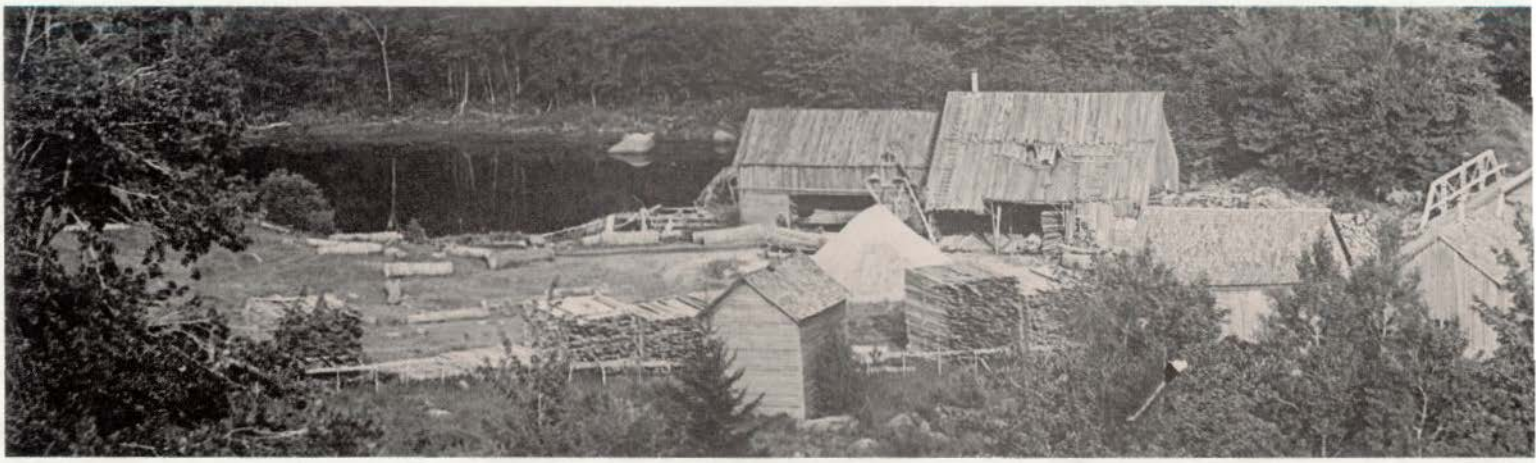
For the most part, Adirondack history has been recorded by individuals who tried in vain to escape the complexities of an era characterized by rapid industrialization, urbanization and associated problems. Affluent tourists and sportsmen fled to the North Woods where life was believed to be less complicated, more ideal, somehow more pure in the bosom of nature. The greater the scenic vista the greater the truth. The more rugged an Adirondack character the more exotic he became. The more difficult his struggle for existence the more noble he was believed to be. Gilded Age urbanites, and the artists and writers who served them, were seldom able to see beyond their own self-proclaimed notion of wilderness life.

Even today, eighty years after the fact, the forever-wild clause is a highly emotional subject that can turn a pleasant conversation into a rout. There are those who view forever-wild as a surviving vestige of the power of privileged Gilded Era aristocrats to "padlock the Adirondacks" and drive the native from the woods. To others, forever-wild is an equally potent symbol of a monumental fight to save the Adirondacks from the inevitable ravages of the lumbermen who functioned as an extension of the economic philosophy of laissez-faire.

The tension created between the desire to preserve the wilderness and the need to use it is a significant ingredient in the American experience. This conflict is reflected in sharp detail within the history of the North Woods. Frank Dodge becomes a significant part of this history, not only because his photography assists in penetrating the facade of the Gilded Age on the run, but because he understood the necessity of logical compromise: conservation. Most importantly, he tried to teach this concept to school children.

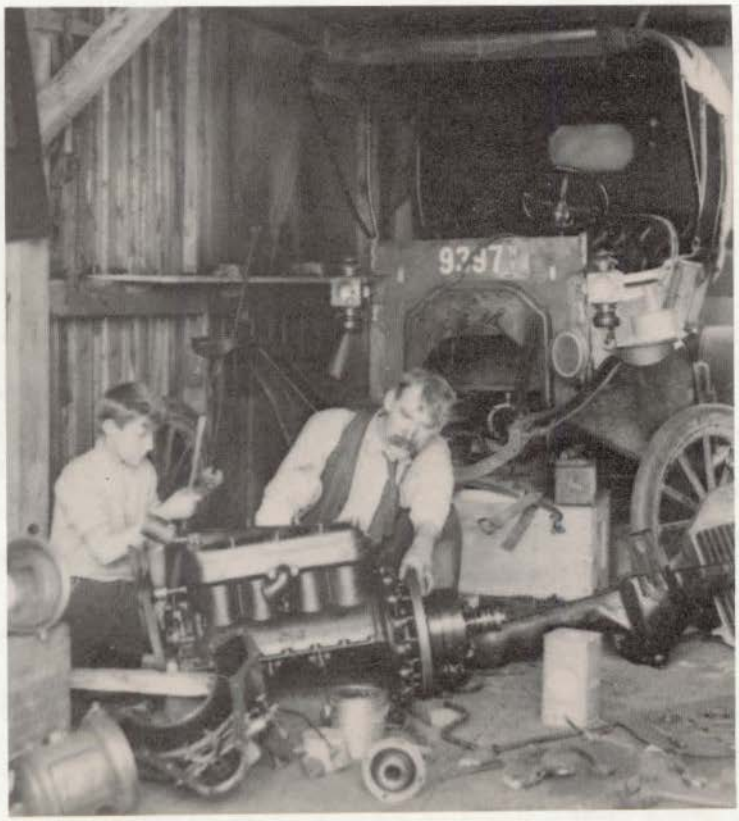
"You may sing about your parties, your parties and your plays,
But pity us poor lumber boys, go jouncing on our sleighs."

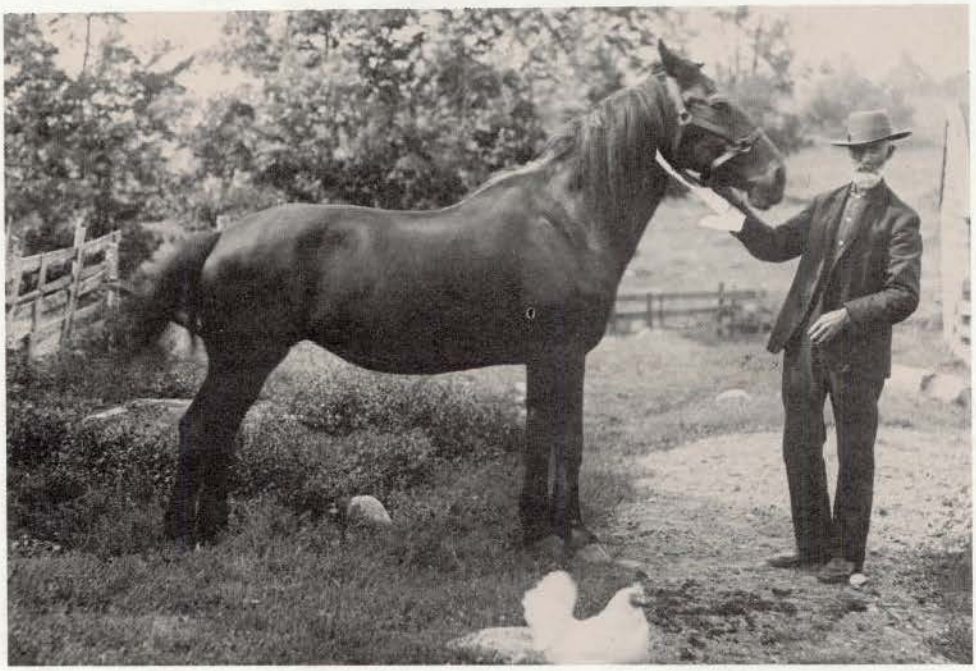
Adirondack folksong; Once More a Lumbering Go.
Folk-Legacy Records, Inc.



A time of giants

Progress

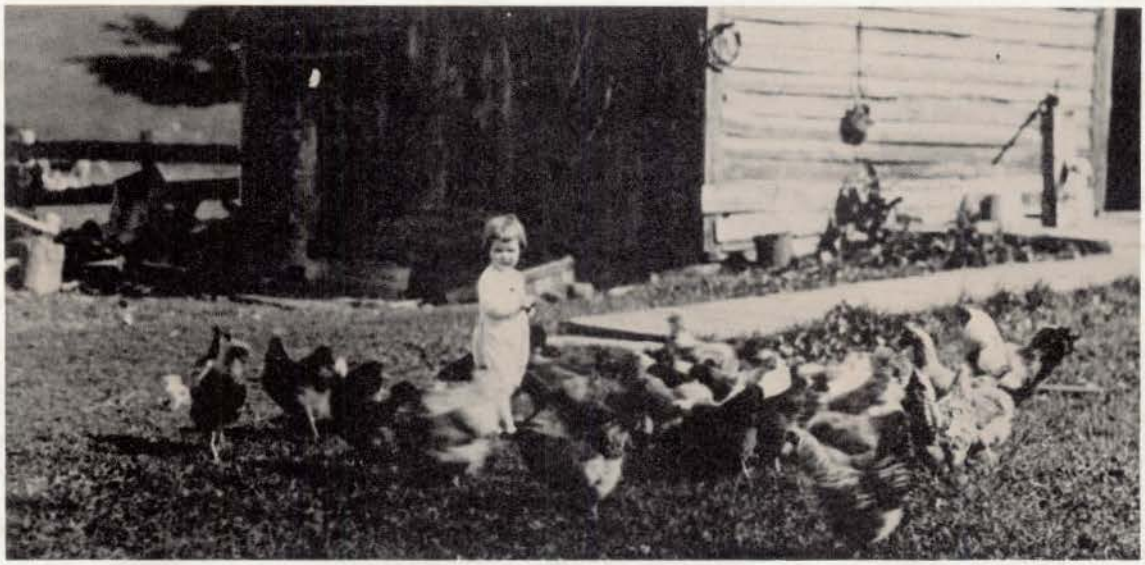




Pride

Industry. Iron at Irondale.

Fresh snow.



Surrounded

Special events.

Conservationist Essay

Managing a Watershed

by Marvin Schmid

Westport, N. Y.

FOR almost five generations the clay soils of the Champlain Valley have produced food and fodder and today are still abundantly fertile. A mile or so from the lake the clay ends abruptly in a nearly level line which follows the configurations of the Adirondack foothills. Farmers know this as the "clay line", a more reasonable name than the tag, "glacial drift", which geologists have put on the sandy, gravelly soils of the hills. Although the glacial soil was nearly sterile except for a top layer of ancient forest humus, the early settlers farmed it with some success in producing hay. Successive crops and erosion depleted the fragile humus and by 1900 the land had returned to forest and brush pasturage for sheep and cattle.

In the Westport area there exists a resource deep within the glacial drift that is more valuable than any plants that can be grown. Underground water, invisible of course, until it meets impenetrable clay or bedrock and comes rushing and bubbling to the surface in clear, cool mountain springs.

About one hundred years ago two of these springs so excited the imagination of a resident, Tom Lee, that he went into the water business. By purchasing farms and easements from eleven different owners he consolidated an entire watershed of 1500 acres and then laid water pipes to supply the village with natural, uncontaminated (even by chlorine) mountain spring water. That supply has never failed us. A measure of the water's quality is attested in the fact that Mr. Lee bottled and shipped the water. This water once graced the dining table of the first Roosevelt to occupy the White House.

In the 1930's the Lee family heirs sold the water company and the entire watershed to the Village of Westport. For several decades under public ownership the water company was operated about the way that Tom Lee had except that the depression had turned off the demand for bottled table water. From time to time suggestions were made that the village might benefit from harvesting timber which had vigorously reestablished itself on the abandoned farms. Such ideas were viewed as heretical as it was common knowledge that you planted trees on watersheds and never never cut trees down.

Then in the 1950's water shortages began to make headlines in downstate newspapers. Westport's first lady mayor possessed a gift of prescience and sought professional advice in the management of the watershed forest. Dave Strong and Don Peterson of Adirondack Forestry Service, Inc., of Wilmington, N. Y., were employed to make a thorough study of the area and to prepare a management plan that would insure a maximum of water quantity and quality.

In 1961 the Village Board of Trustees decided to put the plan into action. To the surprise and dismay of many residents the plan had determined that on much of the forest there were too many trees! How could this be?

Very little was known about the relationships of forests to groundwater supply until the U. S. Forest Service established an outdoor hydrological laboratory at Coweeta, N. C., about forty years ago and more recently at Hubbard Brook in New Hampshire's White Mountains and on the Fernow Forest in West Virginia. Most of our knowledge about watershed management comes from the years of experimentation at Coweeta and their findings have been verified and amplified at the two newer research stations.

The efficiency of plants — trees, shrubs, grasses — in maintaining a watershed mantle has never been disputed though studies have revealed many complexities. For instance, a dense forest canopy of leaves often intercepts 12 to 20 percent of the precipitation preventing it from reaching the ground. A 34-inch annual rainfall is thus shrunk to 28 inches of usable water. Also, as we all realize on reflection, plants use a great deal of water. Accurate measurements have shown that a medium size elm can transpire as much as 2,000 gallons on a hot, dry, clear day. While soil types and conditions vary, the generalized results are conclusive; trees use water in large quantities, particularly in late summer and early fall when they may cause excessive loss of groundwater. Of equal importance is the finding that partial cutting under controlled conditions does not affect water quality. It is evident that the real importance of trees and other vegetation is to continually replenish and protect the top layer of absorbent humus.

The first improvement cutting was done on 68 acres during the winter of 1962-63 with 30 to 50 percent of the stand marked for removal by the professional foresters. The volume harvested amounted to 365,000 feet of logs and 78 cords of pulpwood. However, it was difficult for many to believe that the watershed had been improved and campaigns were launched to stop the enterprise. Committees were formed and studies made, all of which essentially verified the forester's plan; to so regulate the forest cover as to produce the maximum of water quantity and quality.

In nine of the past ten winters the work has continued with 883 acres receiving an initial stand improvement. Over 2½ million feet of timber and 1,000 cords of pulpwood have been made available to North Country industry. The average net return has exceeded $60 an acre and the village has accumulated over $56,000 in a water system improvement fund. It must be borne in mind that the trees removed in this first cut were either poorly formed, diseased, over mature, or overly dense and limiting the entry of precipitation to the ground.

Many residents having lived now with scientific forest management for ten years find it absurd that so many others cannot see the wisdom of some similar plan for the 1¼ million acres of Forest Preserve recently classified as other than wilderness in character. Some residents urge even faster cutting and have to be reminded that the only valid reason to cut at all is to improve the watershed quality of the forest.

In our "Conservationist Essay" feature, we open our pages to innovative and sometimes controversial ideas which are not necessarily the position or the policy of the Department of Environmental Conservation. — The Editor

Your Host in the Woods

Newcomb Lake

Photo by Winslow F. Adler

Three paper companies open vast acreage of Adirondack forest land to sportsmen

by Connie Komarek and Bill Roden

NEW York's North Country is essentially a 6-million acre forest. Punctuated though it is by cow pastures and oases of neon, the land north of the Thruway between Lake Champlain and Tug Hill gives even the casual visitor an overwhelming sense of GREEN.

But the casual tourist, on a jaunt through the High Peaks or a week's visit to Lake George or Placid, seldom realizes that much of the mountain greenery is in private hands — where it provides a strong economic base for Adirondack residents as well as a healthy, aesthetically pleasing environment for all New Yorkers.

More than a half million acres of Adirondack land are owned by International Paper Co., St. Regis Paper Co., and Finch, Pruyn and Co. These three companies, along with several smaller paper and sawmill operations, help provide wildlife habitat, safeguard watersheds and maintain the forested, open space of the area for the millions of recreationists who pass through the Blue Line each year.

The larger forest based companies, which depend on their Adirondack holdings for pulpwood and saw timber are multiple-use managers. While they assert vigorously that their prime interest in the Adirondacks is timber production, they are quick to point out the other benefits that well-managed forest land provides.

Finch, Pruyn's woodlands manager Norwood (Woody) Olmsted recalled that his company first recognized the need to control use of its Central Adirondack timber land after World War II.

"Our immediate need was to control promiscuous uses of our lands which could result in fires and other kinds of waste," Olmsted explained.

"We also knew that the young, vigorous forest that we cultivate improves opportunities for hunting, fishing and other kinds of recreation.

"But if we allowed uncontrolled public use we would soon become only the

average or less. If wildlife populations are over-harvested, new populations are lost, and only a small portion of the forest potential is used for fish and wildlife.

"A controlled system, on the other hand, allows us to fulfill all the recreation potentials which are compatible with the plants, animals, water and air on our land."

To realize its controlled use objectives, the company invited the towns of Blue Mountain Lake, Newcomb, Minerva, Indian Lake, North Hudson, Long Lake and Schroon to develop recreation plans for using nearby Finch, Pruyn lands. These towns formed local hunting and fishing clubs which leased Finch, Pruyn land for 10-year periods at nominal costs.

Because the demand for recreational use of private Adirondack land has increased dramatically over the past 15 years, Finch, Pruyn has expanded recreation into an integral part of its forest management program.

"Since 1963, recreation on a controlled use basis has been an equal part of our multiple use management program," Olmsted said, adding that fees paid by leasees of Finch, Pruyn land help pay some of the management costs and offset the taxes that the company must pay on its 153,000 acres.

Sportsmen's clubs which lease Finch, Pruyn lands find hunting opportunities to their liking. "About four times as much big game is harvested on Finch, Pruyn land than in the rest of the Adirondack Park because of the total resources management program we follow," Olmsted claimed. He added that the hunter also has easier access to Finch, Pruyn land than to forest preserve land because almost every acre is within a half mile of a road.

The company's 350 miles of all-weather roads have enabled it to capitalize on the snowmobile boom through a controlled-use venture which Olmsted believes is also safeguarding the timber resource. Members of hunting and fishing clubs can join a snowmobile association sponsored by Finch, Pruyn and enjoy trails between Indian Lake and North Hudson.

In 1972, 81,249 man days of recreational use were recorded on Finch, Pruyn lands. Hunters made up 17 percent of the users; fishermen, 14 percent; snowmobilers, 10 percent; and other users, 55 percent.

Olmsted now worries that "the protectionist philosophy in the Adirondack Park has precluded the expansion of mass recreation in the forest preserve."

"Somehow the private land owner has to take up the slack," he said, but added that Finch, Pruyn land is already getting almost as much recreational use as it can stand.

St. Regis Paper Company, which owns over 155,000 Adirondack acres, operates under much the same multiple use system as does Finch, Pruyn — controlled-use recreation which protects the timber crop.

John Gould, St. Regis' Eastern regional public relations manager, emphasized that "St. Regis Paper Company will not quickly move to meet a hastily developed public demand without being convinced that the timber resource is protected and that our main objective of producing wood is met."

Still, St. Regis leases its lands to 35 clubs for recreational purposes, and feels that at least 10,000 recreationists are served each year through the program.

"For the most part, the clubs involve people who live in New York State or who have formerly lived here," Gould explained.

"One club has been formed by a group of our employees at the Deferiet pulp and paper mill. Other clubs are from such cities as Buffalo, Binghamton, Syracuse and others throughout our own North Country."

The company leases land along the St. Regis River to the towns of Waverly

Photo Finch, Pruyn & Co.

and Santa Clara. A lease under the Fish and Wildlife Management Act makes an area on the St. Regis River open to public use. And in the town of Clare, a picnic area has been established on Tooley Pond.

"In all these cases," Gould said, "minimal fees are charged to cover administrative costs."

Fees are also charged for the leases granted to organized clubs. "These fees are set under the philosophy that the recreational opportunities within a commercial timberland have a value — and that the person who has a right to hunt,

Photo Finch, Pruyn & Co.

fish, ski, hike or whatever must share in the costs," Gould said.

Because of the nation's growing needs for timber, St. Regis feels that forestry alone could sustain its continued interest in the Adirondacks.

"We regard our land ownership as a viable investment today. It is not the intention of St. Regis Paper Company at this point to greatly intensify its recreational programs.

"Our managers are confident that the lease program under the posting law is providing a wise recreational use of our lands to many New York State residents . . . and that the program itself provides management with sufficient control to guard against many land problems," Gould stressed.

The Adirondack's single largest timber producing land owner, International Paper Company, takes a much broader view of public use of private land.

"IP feels that it just is not right to lock up a resource that traditionally has been available to the public," explained James Carlaw, assistant general manager at IP.

The primary purpose of the company's 250,000 Adirondack acres is to provide a supply of pulpwood for IP mills at Corinth and Ticonderoga but most of IP's holdings are open to the public for day-use recreation.

The company draws the line at overnight camping. "We feel that the state has enough public campsites — which provide things like litter cleanup and sanitary facilities — to handle the public demand," Carlaw said.

"There are exceptions to the no-camping rule," he added. "IP maintains a lean-to on Tupper Lake which can serve as a starting point or a terminus for people making a canoe trip through the Fulton Chain of Lakes — this area attracts a great deal of use." There is also

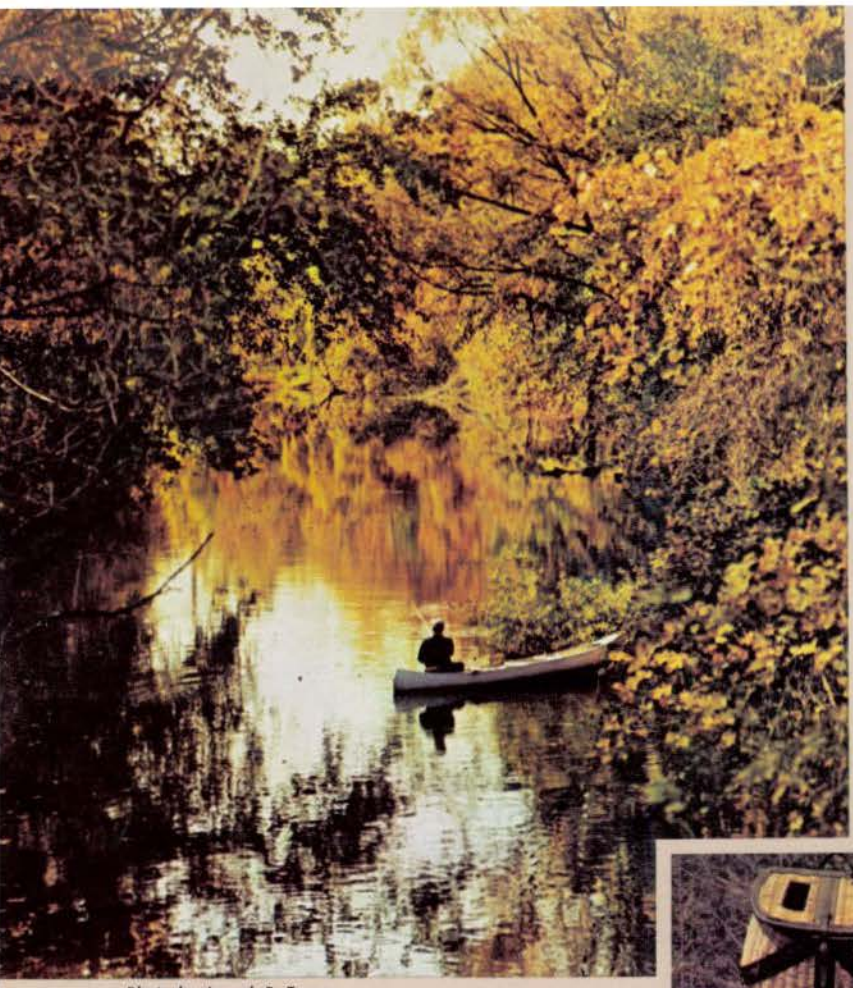


Photo by Joseph P. Turon

a camping area on IP land in the Town of Webb near Stillwater Reservoir established for sportsmen using IP's 7500 acre FWMA area located on the Big Moose-Stillwater Road.

International Paper has had a long history of cooperation with DEC and its predecessor agencies in managing Adirondack lands. The company is the single largest cooperator in the Fish and Wildlife Management Act program under which private land is made available to sportsmen in exchange for added law enforcement patrols during the hunting season and consultation on game management issues.

Approximately 60,000 acres of IP's total Adirondack holdings are enrolled in the FWMA program, and the Speculator Tree Farm was the first cooperative area established under the act.

"We joined FWMA in order to better the deer herd in the Adirondacks," Carlaw explained. The company issues sportsmen's maps of the FWMA areas in an attempt to give hunters confidence to venture away from the main highways and achieve better distribution of the deer harvest.

While IP does not do habitat management on its land, its program of partial cutting accomplishes the same results.

Photo Finch, Pruyn & Co.

"We don't remove all the cover, and this provides deer yards in softwood areas. Cutting hardwoods gives deer browse," Carlaw said.

"In some areas it's gotten to the point that when you start a chain saw all the deer come out to watch," he added.

A deer population in balance with the range is important to sound timber management, Carlaw pointed out. To illustrate his point, he cited a piece of land near Tupper Lake which IP had purchased from another company. The former owner had leased the land to a hunting club which had not used the area enough to keep the deer population down.

The result, Carlaw said, was the deer herd had grown so large it prevented almost all natural reproduction of tree seedlings on the ground.

"The area looked like a park," he commented. "There were the big trees, but the deer had eaten almost all the lower browse plants.

"We weren't able to convince the club to hunt more intensively, so we eventually had to cancel their lease," he said. "The land is now part of the FWMA program and is getting a good natural reproduction of tree seedlings."

IP has tried a system of fee hunting on its lands in the Town of Day — once a private estate with a reputation for superlative hunting. The system has been in operation for about four years with good success, Carlaw reported.

The company has tried to establish a revenue producing snowmobiling area at Day as well. "The idea was that snowmobilers would pay a fee to use trails in the area which IP would groom and maintain. But the area proved too small to interest avid snowmobilers — it was an artistic success, but an economic failure," he conceded.

A more satisfactory system for snowmobiling has been to lease trails to Adirondack towns. The towns maintain snowmobile trails and carry insurance to protect IP in case a user gets hurt. The towns can then charge snowmobilers a fee for using the trails. The system provides the towns with additional income, stimulates the tourist trade during the winter months, and also gives IP some money to help offset taxes on the lands.

"If timber land were taxed according to its use, the landowner, could really afford to grow trees. The Forest Practice Board has been trying to get a revised tax system, but we've not had much success so far," Carlaw said. "Right now about 20 percent of our taxes are recovered through the revenues we get from recreation."

All the major timber companies agree that they intend to stay in the Adirondacks for a long time to come — although some feel they have been hard hit by New York's stringent anti-pollution laws.

"We're a local company, and we feel a responsibility to the community," explained Woody Olmsted of Finch, Pruyn. "We in industry have done much in our area to combat the pollution of our environment. We are far ahead of the private sector in this area, and we are committed to continue this improvement."

All New Yorkers have a vital interest in seeing that Finch, Pruyn and all other Adirondack timber producers continue their stewardship of the state's greatest multiple-use forest — providing a strong economic base and a significant aesthetic and recreation resource for everyone.

Hunting Licenses

Sportsmen's souvenirs of the past

by Robert W. Darrow

LIKE fishing, hunting in New York was subject to regulations in the form of open and closed seasons, bag limits, restrictions on methods and penalties for violations long before hunters were required to have a license. The idea of a license was initially applied to nonresidents only and seems to have originated as a reaction to the fact that New Yorkers were being charged a fee to hunt and fish in Canada. The following, from its report for 1899, is the first mention of the subject in the annual reports of the Forest, Fish and Game Commission.

> "Inasmuch as the Dominion of Canada imposes a tax for hunting and fishing (except on the St. Lawrence River within the boundaries of the St. Lawrence River Park) against citizens of this State, we recommend that a similar tax be imposed upon the citizens of the Dominion of Canada."

Note that the proposed provision was termed a tax rather than a license. In 1895, North Dakota became the first state to institute a hunting license, followed shortly by a number of others. The view of the New York commission is further indicated by the following recommendation in its report for 1900.

> "That there shall be no discrimination by this State in the matter of hunting and fishing against any citizen of the United States except in cases of citizens of States which discriminate against the State of New York."

Then in its report for 1901, the Commission made the following recommendation to the Legislature.

> "That a license fee of fifty dollars be imposed on nonresident hunters, excepting members of organized clubs in the Adirondacks who shall present certificates of membership, and Adirondack landowners."

Also in the report for 1901, the philosophy behind the license proposal is reflected in the chief game protectors's statement giving it as one of his recommendations.

> "Enacting a law charging a license fee to nonresidents for the privilege of hunting in this State, thereby in a measure reserving the game to the citizens of the State who are paying a large amount annually to propagate and protect it. This proposition may meet with some objection from a few hotel keepers, but it is no more than justice to the taxpayers who are called upon to pay a license in nearly every State into which they may go to hunt. It is particularly true of Canada where many of our citizens who go hunting are compelled to pay a large license fee for that privilege. The revenue derived from this source and from the licensing of guides should be placed at the disposal of the Commission to further aid in carrying on the work of protection."

However, the Legislature continued to think in terms of reciprocity and, in 1902, enacted a new section in the Forest, Fish and Game Law which required all nonresidents, from states or provinces which charged a fee to residents of New York, to have a license to take fish or game in the state unless they owned land in the state on which the taxes were not delinquent. No fee for such a license was specified.

In 1903, this section of the law was amended to include the provision that:

> "Game shall not be taken by any such nonresident [i.e., one not owning non-tax-delinquent land in the State] except pursuant to a license issued on payment of a fee not less in amount than the fee, if any, required of a resident of New York for taking game in the state or country where such nonresident resides and if there be none, then on payment of such fee as the commission shall prescribe."

This was somewhat less ambiguous concerning the fees to be charged, but administration of the license provision apparently was lax since the report of the Forest, Fish and Game Commission for 1905 stated "In the fall of 1905 the issuing of nonresident hunting licenses was begun by the [new] Commission on the advice of the Attorney General that the existing law was mandatory. The requirement was made generally known through the daily papers, and the publications appealing directly to sportsmen. The first application for a license was received from New Jersey on September 26th . . ." There was a total of 67 licenses sold in 1905, and 96 in 1906.

In the Commission's report for 1906, Commissioner Whipple recommended ". . . that a law be enacted providing for a license to be paid by every person using or carrying a gun in the State of New York, the fee to be not less than One Dollar . . . At the same time the law should make provision for a flat nonresident license of not less than Fifteen Dollars, nor more than Twenty-Five." Of

(Continued on page 47)

Setting Waterfowl Seasons

by Stephen Browne

A picturesque vision of wings over water to the observer of wildlife, an epicurean delight to the gourmet, a challenge to the hunter and an expensive aggravation to a farmer whose crops have been ravaged — all are appropriate references to migratory waterfowl.

The primary goal of waterfowl management is to perpetuate all species at maximum levels compatible with the public interest, and close to the ability of the habitat to support the birds. Harvest management, controlled by hunting regulations, is one method used to achieve that goal.

Arriving at those regulations is a complex task of coordination which obtains information from many sources, evaluates it, weighs the hopes and aspirations of many groups, then — Solomon-like — sets waterfowl seasons and bag limits best suited to the interest of the future of ducks and geese and to the interests of most people.

Setting waterfowl seasons has always seemed controversial. In 1919 Dr. Arthur A. Allen said "the man who hunts in the marshes would like to have all the shooting end when the marshes freeze over while the man who hunts on the lake would like to have it begin about that time. . . ." At the time Dr. Allen was writing, a hunter could shoot 25 ducks, 8 geese and 8 brant a day for 107 days, from September 16 to December 31.

Even so, in 1918 New York hunters reported shooting only 110,000 ducks, 1,400 geese and 250 brant. Now around 300,000 ducks and 50,000 geese are taken annually by nearly 90,000 New York hunters — a remarkable level of recreational hunting maintained by sophisticated waterfowl management in an era which has witnessed vast degradation of habitat.

The authority for federal responsibility in the management of migratory birds is spelled out in treaties with Great Britain (for Canada) and Mexico and the Migratory Bird Treaty Act of 1918. The Bureau of Sport Fisheries and Wildlife (BSFW) reports to the Secretary of the Interior on matters relating to fish and wildlife protection and management. It is he who is responsible for regulating the taking of migratory birds.

New York law stipulates that "the Department of Environmental Conservation shall, by order, make regulations in relation to migratory game birds *to conform with federal regulations . . .*" (italics supplied).

The BSFW is responsible for overall management of waterfowl in the U. S. Because of the size of this responsibility and the interlocking (and sometimes conflicting) responsibilities of the state conservation departments, the country has been broken down into four administrative units called flyways. New York, the other 15 states bordering the Atlantic ocean, and West Virginia form the Atlantic Flyway, within which functions the Atlantic Waterfowl Council whose voting members are the directors of each state wildlife agency in the flyway, the maritime provinces and Ontario. Non-voting associate members include such groups as Ducks Unlimited, the Wildlife Management Institute and the Audubon Society. The objective of the council is to promote sound waterfowl management.

Season setting is basically controlled by the treaties which give a list of what migratory birds may be hunted, the maximum season length and the earliest and latest dates a season may be open. The BSFW imposes further restrictions on the states. Included in federal prerogative is the final decision on zoning which rests with the U. S. Department of the Interior, *not* the N. Y. S. Department of Environmental Conservation.

Seasons for ducks and geese are set separately. They do not have to open on the same date or run concurrently.

In the next level of responsibility, the Commissioner of Environmental Conservation signs the order creating a waterfowl season for New York, basing his decision on the advice of the staff of the Division of Fish and Wildlife. This staff conducts studies of waterfowl populations, hunter needs, and also seeks the advice of sportsmen.

The job of setting next year's seasons started years ago with the accumulation of information on waterfowl populations, the effects of hunting regulations and research into waterfowl and techniques to manage them. In addition there are annual surveys to measure bird production, hunter kill, losses to disease and predators, habitat changes and other factors governing what waterfowl populations will be during the coming hunting season. Banding programs, aerial population counts and questionnaires to hunters all contribute to the sum of information used.

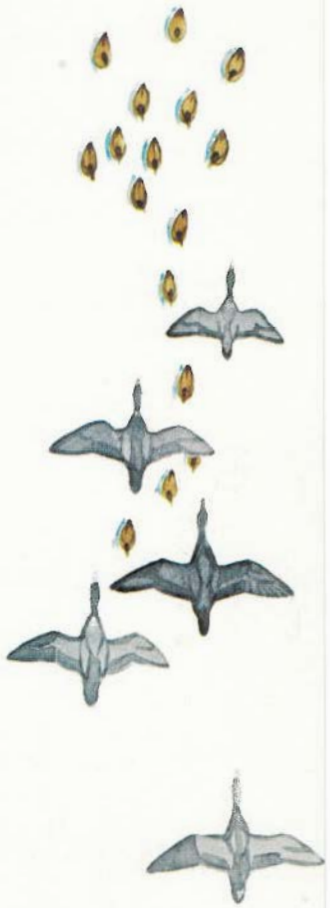
The Migratory Bird Regulations Schedule (see facing page) shows both the pressures of time and the interplay of participating agencies, organizations and councils moving toward establishment of regulations in time for dissemination to the public by late August. Within the schedule framework are countless meetings, lengthy and sometimes tumultuous debate, and even some corridor campaigning.

As soon as New York State receives the framework list of restrictions and options within which all states in a flyway must work in setting their seasons, Environmental Conservation's central staff and regional wildlife managers meet to discuss the status of waterfowl populations. After a meeting with the Waterfowl Committee of the New York Conservation Council, all factors are weighed and recommendations are given to the Commissioner who then sets the season.

This brief review can only hint at the complexities involved in the process which results in the ultimate decision. Every year brings different conditions, a new mandatory framework from the federal agency, an outpouring of opinion and sentiment from the hunters themselves, and a continuing need for compromise. Without a detailed knowledge of relevant, up-to-date information and data, it is difficult for the individual to assess the merit of current regulations.

But the goal always remains the same: a season which will best serve the interests of the most people, and at the same time one which will add to the insurance there will be wild wings over the water for countless generations to come.

Migratory Bird Regulations Schedule



January — 1st day: B.S.F.W. considers basics; shooting hours; outside dates; special regulations for scaup, teal, mergansers, sea ducks; seasons for coots, swans, cranes, most geese, brant, pigeons, rails, gallinule, snipe; zoning and boundary waters; experimental seasons, units within flyways; Alaska waterfowl and cranes.

2nd day: B.S.F.W. meets with representatives from the flyway councils to discuss duck population objectives, probable range of regulations for coming year.

Early February — B.S.F.W. proposals on above *to States (Councils) for review* by April 30.

March — ** Flyway Council Technical Section workshop.*

May — Proposals finalized *or* rejected *or* deferred.

June — B.S.F.W. considers dove, woodcock regulations, *conference for migratory shore and upland game birds.* Topics include non-waterfowl items deferred in May.

July-August — Annual waterfowl regulations meetings.
Topics include annual duck regulations, goose regulations, plus waterfowl items deferred in May.

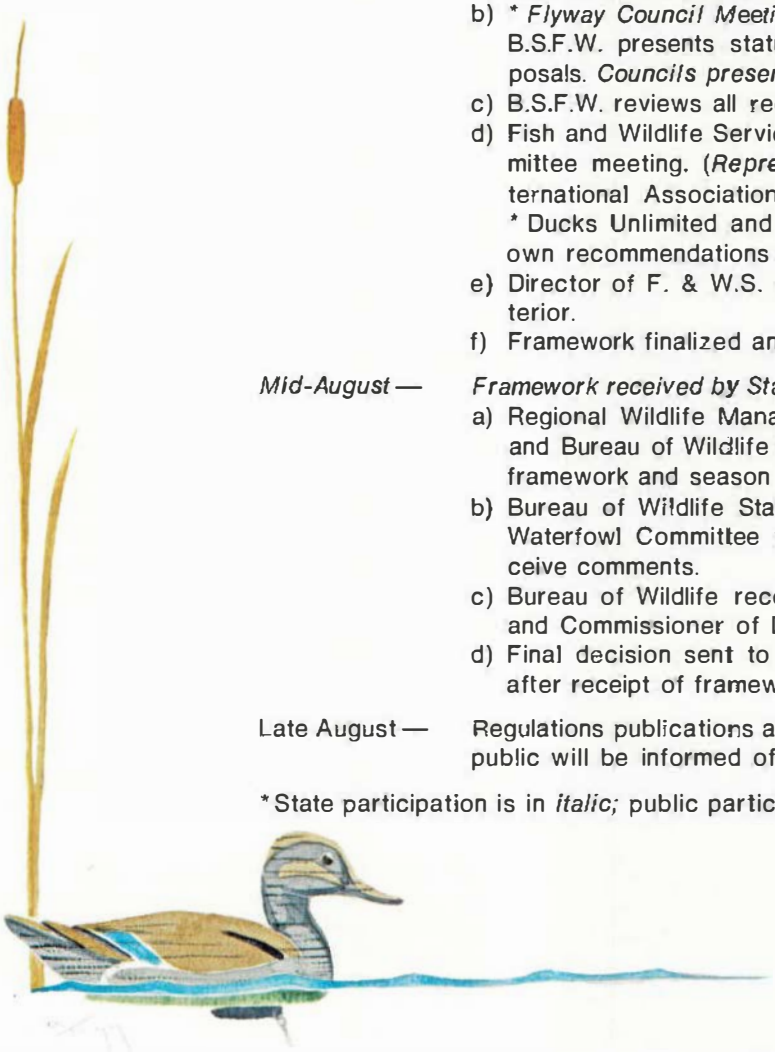
a) B.S.F.W. in-house meeting. Review waterfowl status. Staff regulations proposals.
b) ** Flyway Council Meetings* (All states represented) B.S.F.W. presents status of waterfowl and regulations proposals. *Councils present recommendations.*
c) B.S.F.W. reviews all recommendations.
d) Fish and Wildlife Service Director's waterfowl advisory committee meeting. (*Representatives from Flyway Councils,* International Association of Fish and Game Commissioners, * Ducks Unlimited and * other private groups), present their own recommendations after hearing B.S.F.W. proposals.
e) Director of F. & W.S. recommendations to Secretary of Interior.
f) Framework finalized and sent to States for season selection.

Mid-August — *Framework received by States.*

a) Regional Wildlife Managers, Regional Conservation Officers and Bureau of Wildlife Staff meet to review waterfowl status, framework and season recommendations.
b) Bureau of Wildlife Staff meets with *Conservation Council Waterfowl Committee to present recommendations and receive comments.
c) Bureau of Wildlife recommends season to Division Director and Commissioner of DEC.
d) Final decision sent to Fish and Wildlife Service (Ten days after receipt of framework).

Late August — Regulations publications and news releases prepared so that the public will be informed of waterfowl season decisions.

*State participation is in *italic;* public participation is starred (*)



Hidden Beauty

Greenbrier root

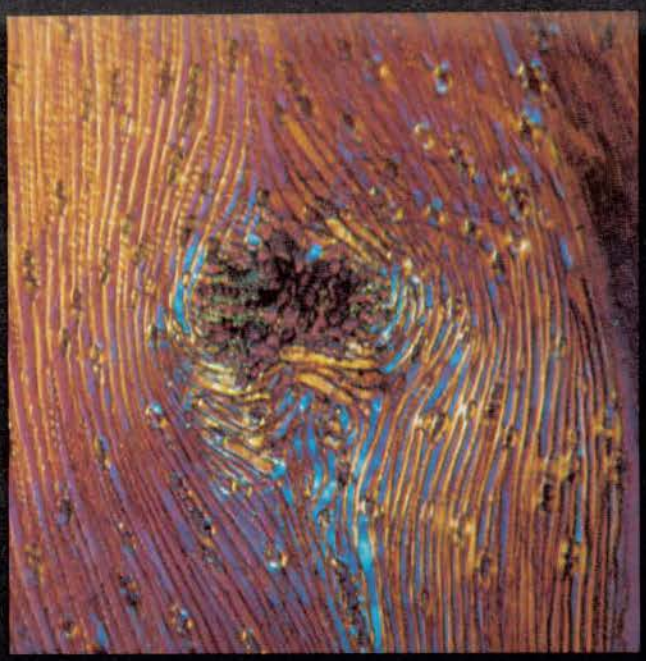
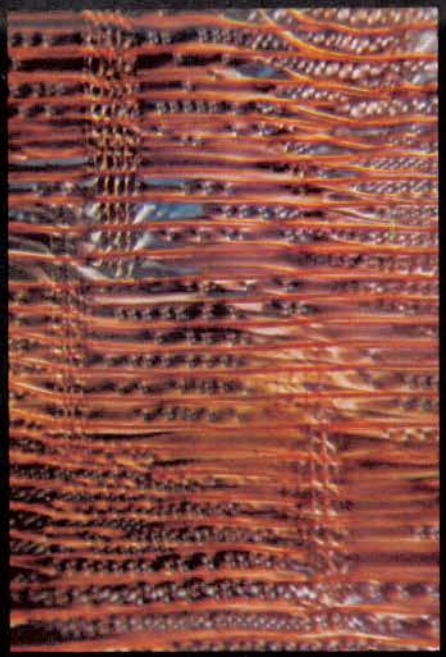
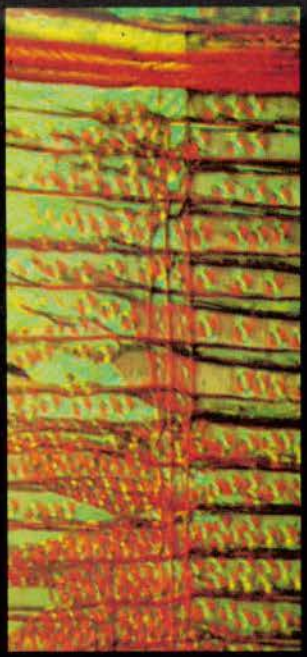
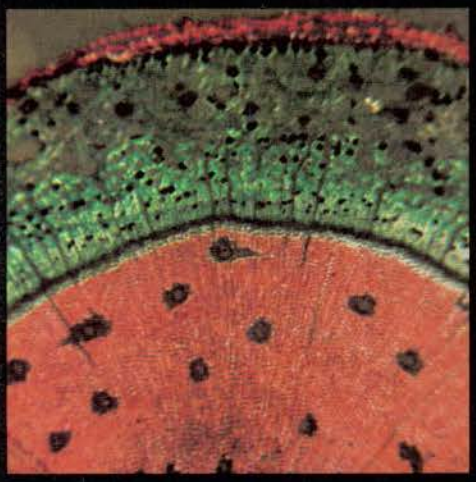
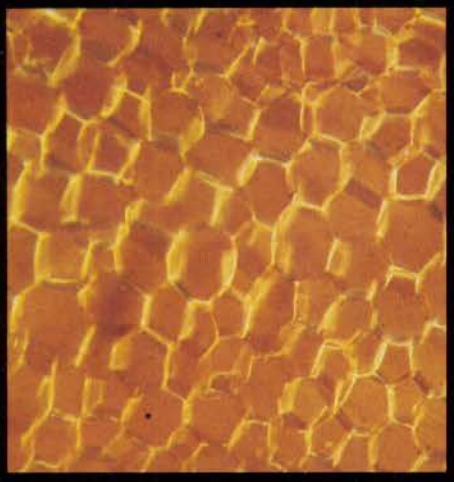
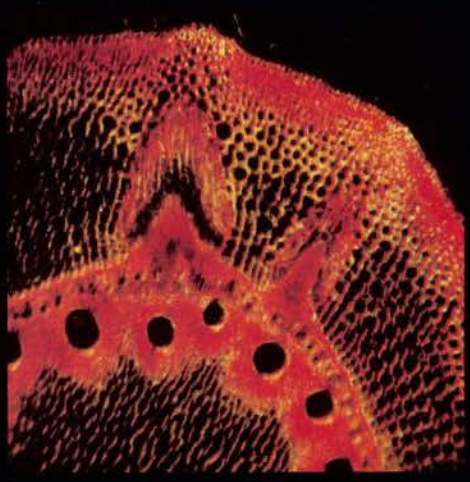
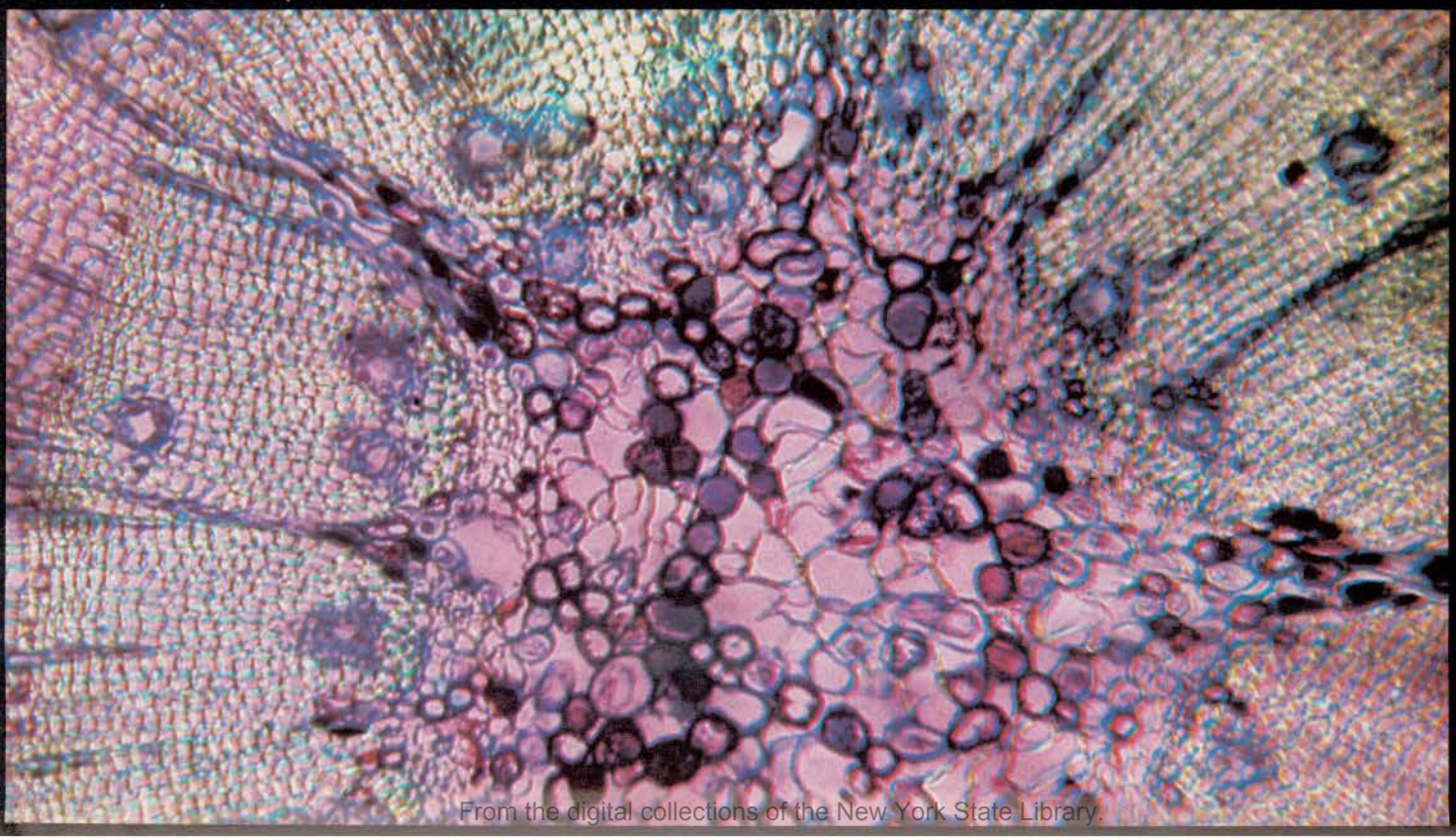
WHEN observing the majestic beauty of a forest or the delicate shades of a spring flower, few realize that a hidden beauty of internal structure equally striking exists in the very plants being admired.

Other than high school biology students, most amateur naturalists seldom have the opportunity to view the subtleties of delicate cellular arrangements found in most vascular plants. Professional students of botany have long ago established that the particular cellular arrangements of plants evolved over the millennia. Present tissue distribution provides for the most efficient functioning of the various life supporting processes for the current environmental conditions.

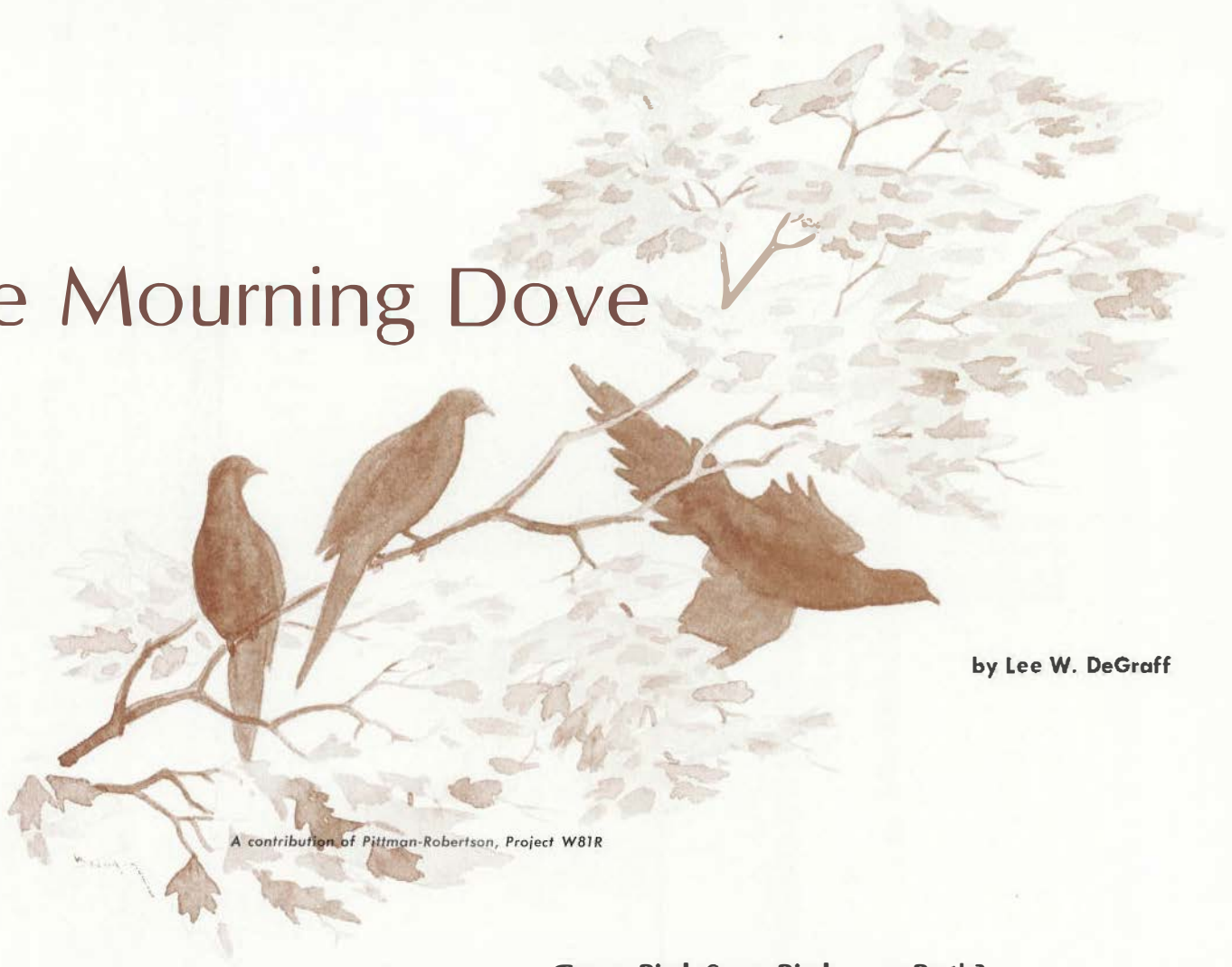
Although general uniformity throughout the vascular plants is demonstrated in the function of xylem and phloem tissues — the plumbing of vascular plants — the most essential distinction internally between the major divisions of plants is in the arrangement of these tissues. So as to enable students to study these structures with less difficulty, various stains that exhibit an affinity for particular plant tissues are used. When viewed under polarized light the crystalline stains exhibit a fascinating array of color some of which approach a jewel-like brilliance. Some of the arrangements of tissues offer interesting comparisons with manmade objects of art such as the patterns in clothing, expensive jewelry designs and some even suggest a resemblance to stained glassed windows.

Text and Photos by William J. Dederick

Left top, basswood; middle, tulip tree; bottom, persimmon; facing page top left, pine stem knot; middle, pine stem; right, Sequoia stem; middle left, pine stem; middle, fern rhizome; right, corn root; bottom, pine stem pith.

The Mourning Dove



A contribution of Pittman-Robertson, Project W81R

by Lee W. DeGraff

Game Bird, Song Bird — or Both?

IF you want to get in a good scrap, try talking about mourning dove hunting in New York. It's perhaps the most controversial subject related to hunting in any state which does not have a dove season. The federal Bureau of Wildlife feels that a dove season in New York is both permissible and justifiable. Under current New York law, however, this species is considered a song bird, and seasons cannot be set. Bills introduced in the Legislature to give the dove status of game bird have never succeeded in becoming law, due principally to lack of hunter support coupled with opposition from anti-hunting groups.

A convention between this country and Great Britain in 1916, and another with Mexico in 1936 set the stage for the protection of migratory birds, designating some as game birds and others as non-game birds. The resulting Migratory Bird Treaty Act provided the Secretary of the Interior authority to set open seasons on migratory game birds as defined in these conventions. The mourning dove is included in one of the families (*Columbidae*) classed as game birds. *The Act's objective was not to provide birds for hunting — on the contrary, its goal is to provide protection from indiscriminate shooting.* Those responsible for its operation still function in that capacity, as evidenced by the recent addition of the common crow to the list of migratory game birds — a bird which was previously completely unprotected. Operating within the framework of federal regulations, a dove season in this state would provide the opportunity to hunt in New York a bird now hunted in 31 other states.

We've known relatively little about the dove in New York. There are more birds in the state today than there were 30 or 40 years ago, and through our participation in an annual breeding dove survey run by the U. S. Fish and Wildlife Service, we knew generally that our major breeding dove populations are in the Lake Plains area of western New York and on Long Island. But we knew next to nothing about what ultimately happens to the doves which nest and breed here, or those which migrate through New York from southern Canada and the Maritime Provinces. In 1966, we began a statewide dove banding program. After five years, we had banded over 10,000 birds, 70 percent of which were youngsters. All bandings took place from June through September. What we learned was that our "song bird" was hunted in every eastern state that had an open season from Pennsylvania to Florida and Louisiana!

A look at the map will give you an idea of how widely dispersed the hunting

take was. Of all the banded doves taken by hunters, 60 percent were shot the same year in which they were banded, 28 percent the second year following banding and the remaining 12 percent within the next five years. Assuming that band returns from hunting are a reflection of bird availability, it is apparent that after the first two hunting seasons, nearly 90 percent of the banded population is gone. All shot out? Hardly, because interestingly enough, of the 10,000 plus doves that we banded, only 148—1½ percent — were reported shot.

Studies of the U. S. Fish and Wildlife Service have shown that an average of 3 out of 9 hunters who shoot a banded dove actually report it, so in reality about 445 or 5 percent of the banded doves were taken hy hunters. What happened to the other 95 percent? Mother Nature is not kind — the perils of living in the wild are many. Federal studies also show that a young dove which has reached the age of flight has a one in four chance of hecoming a year old. If it's one of this lucky 25 percent, it has only a one in three chance of becoming two years old — whether or not it was raised in a state which has a hunting season. Thus the effect of hunting is relatively insignificant, because a high mortality rate is a fact of the mourning dove's life.

In addition to understanding the dynamics of the New York dove, we were interested in knowing something of the nesting habits of these birds. We particularly wanted to understand the duration of nesting with respect to the possible opening of a season.

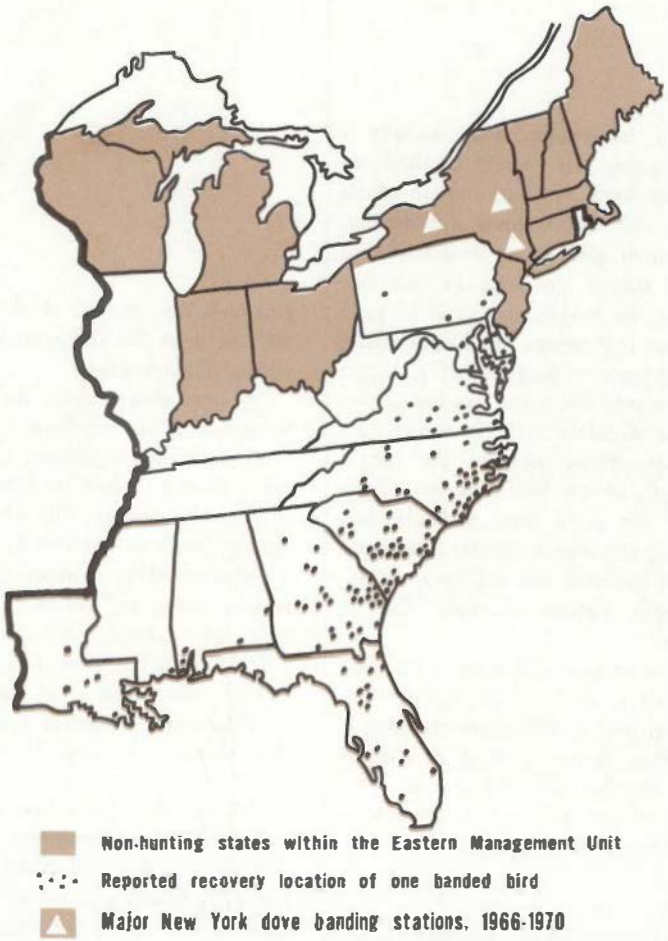
The dove is a continuous nester. Unlike most birds, which will only renest if the previous nest is destroyed, or if disturhance causes abandonment, the dove will nest and rear young several times during the spring and summer. Generally two eggs are laid and incubation takes approximately 14 days. Both parents take turns incubating the eggs. During this period, specialized cells in the crop of the parents produce a cell "sluff" which the parents feed the youngsters upon hatching. It is commonly referred to as "dove milk" or "pigeon milk". This feeding goes on for about two weeks, until the young birds are ahle to fly. So from the time incubation starts until the young birds are capahle of flight, a period of about 28 days is encompassed. The nesting cycle is then repeated.

We set out in 1970 to find out just how long doves will continue to nest. Since breeding behavior of most bird species is triggered — and inhibited — by the length of daylight hours and to a certain extent, temperature, we subjectively felt that little if any nesting would be taking place at this latitude by late August. However, we could not prove it. An experimental study was begun on the state-owned property now known as Five-Rivers Educational Center, to determine if this information could be acquired. Systematic searches were made at regular intervals throughout the summer on a 10-acre area of the center and one nearby private parcel.

The searches disclosed 14 nests; the numbers of nests located are not enough to prove or disprove any point, but the information strongly suggests a waning of nesting activity from mid- to late summer. Ten of the 14 nests were activated in April and May, the earliest being April 1; one was found in August, the clutch beginning on the 20th. Austerity budgets in 1971 forced us to discontinue the study after one month of operation. We feel that the technique can provide the information — it should he acquired, particularly on Long Island where milder weather may allow a longer nesting and brood rearing period.

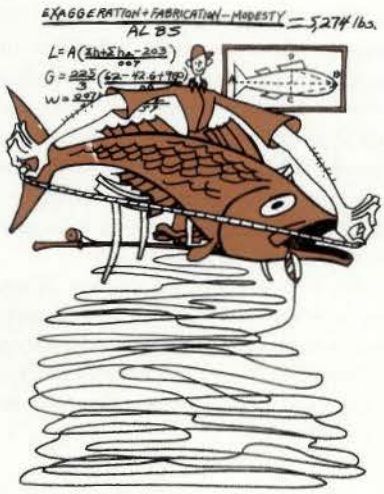
Based on our present knowledge, a New York season could be set to preclude the possibility of shooting adult birds which may be rearing young at the same time that it could avoid reduction of our wintering populations. A conservative approach could establish seasons from late September through the first week in October. Under the most extreme hunting pressure conditions, we would probably not take more than 15 percent of the population passing through New York, providing hunting opportunity to New Yorkers, which up to now has been offered to hunters of other states. Opponents of hunting should know that there are approximately 1,000,000 dove hunters in the eastern states which are open to hunting — and they take about 20,000,000 mourning doves each year. If a hunter takes one out of five of all doves, there must have been 100 million to begin with, of which about 70 million will die each year, hunting or not!

We have enough biological information to demonstrate that the mourning dove is now hunted elsewhere, and could he hunted in New York without detriment to the dove. Facts justify a dove season in this state.



OUTDOOR TIPS

Estimating Fish Weight



What fisherman hasn't caught a bragging-size fish when he had no scales to back up his estimate of its weight, and who believes a fisherman who cannot give some documentation for his stories. As long as you can measure the length and girth of your fish, even if it means knotting a string the appropriate lengths for accurate measurement when you get home, you can get a fairly reliable weight for your fish. First, measure the length and girth of the fish in inches. Then square the girth and multiply this figure by the length. Divide this grand total by 800 and you will have the approximate weight of your fish in pounds.

For example, you have a 25 inch fish with a girth of 20 inches. The girth squared is 400, times the length, 25 inches, gives a total of 10,000. Divide this by 800 and you have the weight of the fish — 12.5 pounds. — Paul Kelsey

Coyote

(Continued from page 8)

Mountain Game Refuge, Town of Duane, Franklin County, killed at least 10 young animals all of which had mongrel coat colors and patterns, chiefly white-black-gray mixtures. He complained that he could not trap the "gray devils" and that they were always too far away to shoot.

During the late 1940's and 1950's many killed coydogs were inspected at deer checking stations in the Adirondacks and some were sent to the Wildlife Research Laboratory in Delmar. Unfortunately, these observations were incidental to other studies and interest centered on the few specimens that exhibited strong coyote-like characteristics. No skulls or skins of the hybrids were preserved, and few photographs were taken. Should any readers have good pictures of coydogs taken during the 1940's and 1950's in the Adirondacks, copies of them would be welcomed by the Department of Environmental Conservation.

Submissive

A few photographs do survive: the Syracuse Post Standard of August 21, 1949 published a picture of five Adirondack "wolves" taken by Edward Maunton in Franklin County. The Albany Knickerbocker News of October 11, 1950 carried a picture of three animals, two considered to be coyotes and the third a hybrid. Another photograph, illustrating variety of coloration in the same litter among such hybrids was taken at a den in the Town of Dickinson, Franklin County in 1958. The mother was seen at a distance and looked to be a coyote.

During the 1950's animals essentially coyote-like in appearance became predominant in the wild canid population in the Adirondacks. In recent years hybrids have become more infrequent.

Also during the 1950's a few reports told of hybrids outside the Adirondack region. The Chatham Courier of March 8, 1951 reports the occurrence of a pack of coydogs in the Austerlitz Mountains of Columbia County. Three specimens were taken in the Catskills in the summer of 1957, at Roxbury, Delaware County; Lexington, Greene County, and Neversink, Sullivan County. A hybrid was taken

Hesitating

at Shandaken in Ulster County in 1958 and an apparently authentic report records another in Rensselaer County in 1958. Since then, wild canids have been found elsewhere in southern New York.

Information provided the author June 24, 1974 by Drs. Robert E. Chambers and Ward B. Stone states that wild coyote-like canids have been identified from the counties of Broome, Cattaraugus, Cayuga, Cortland, Dutchess, Madison, Onondaga, Orange, Otsego, Putnam, Schoharie and Yates between 1971 and 1974.

By the 1960's the coydog animals had largely disappeared and by the latter part

Mouse

of that decade, especially in the central Adirondacks, there had become established a population of animals that fit the general description of the eastern coyote (*Canis latrans, var.*).

Knowing something of the history of wild canids in New York may help to make the eastern coyote an interesting resident of the state.

Page Two

(Continued from page 2)

C. W. SEVERINGHAUS, supervising wildlife biologist, and PETER GASKIN.

STEPHEN BROWNE (Setting Waterfowl Seasons) is associate wildlife biologist with the department's wildlife research laboratory at Delmar.

ROBERT DARROW (Hunting Licenses) is editor of the Fish and Game Journal, published quarterly by DEC's division of fish and wildlife.

LEE DEGRAFF (The Mourning Dove — Game Bird, Song Bird — or Both) is associate wildlife biologist and is in charge of the department's upland game bird research program. He is author of "Return of the Wild Turkey" in our October-November 1973 issue, and has written previously for this magazine and for the New York Fish and Game Journal.

WILLIAM J. DEDERICK (Hidden Beauty) is a Kingston high school science teacher whose photomicrography, developed for classroom application, is receiving widening application in other areas, such as on record jackets and book covers. Teachers and others interested in obtaining information about the techniques involved in achieving such colorful and instructive pictures with camera and microscope can write to him at Kingston High School, Kingston, N.Y. 12401.

In the E● News supplement we continue our series of articles on alternative sources of energy with KAREN MAGNUSON BEIL writing "Watts in the Wind." Karen is a special publications writer in our Division of Educational Services. Her article on water power appeared in June-July and one on tidal power in August-September.

JONATHAN KAPSTEIN (A New Attack on Wildlife Rabies) is chief of the Canadian Bureau of Business Week with headquarters in Toronto. He spent four years covering Latin America out of Rio de Janeiro before transferring to Toronto. He wrote "An Adirondacker in the Amazon" in our issue of February-March 1972.

Winner 1973 N.Y.S. Big Buck Club Award

Typical whitetailed deer scored at 154 5/8 points (140 is minimum), taken by Ezra H. Stephenson at Tassel Hill, town of Paris, Oneida County on November 19, 1973. The largest typical buck of the 1973 bow-hunting season, not shown, score 137 2/8 points, was taken in the town of Lebanon in Madison County by Anson Proseus, Jr.

For information on the N.Y.S. Big Buck Club send a stamped self addressed envelope to the club at 90 Maxwell Road, Caledonia, New York, 14423.

ATTENTION TEACHERS

A Teaching Guide to this issue of THE CONSERVATIONIST is available. If you wish a copy (it is appropriate for indoor or outdoor instruction), fill out the coupon below and mail it to Office of Publications Distribution, Department of Environmental Conservation, Albany, N. Y. 12201.

Name_____(ON 74)

School_____

Address_____City_____Zip_____

Book Reviews

Conducted by Joan Taylor

The Ancient Adirondacks, by Lincoln Barnett, 184 pages, Time-Life Books, Dept. 3601, Chicago, Ill. 60611, $7.95.

It is understandable that, in this noisy and crowded age of technology, wilderness makes an infinitely larger and more profound appeal to man. Reflecting this growing interest, and in the process of preparing practical measures to implement it, Congress adopted the Wilderness Act of 1964 and found it useful to define wilderness.

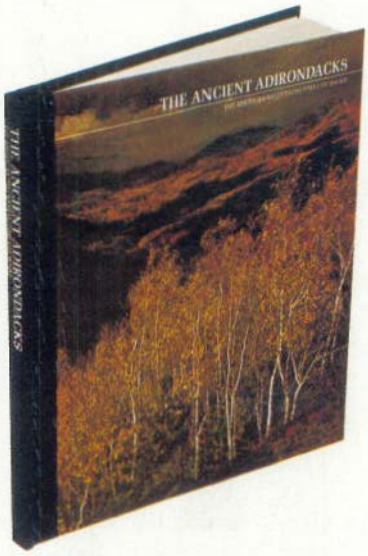
A wilderness, said Congress, is "an area where the earth and its community of life are untrammeled by man — where man himself is a visitor who does not remain." Further, the act says that a wilderness is an area of undeveloped forest land retaining its primeval character and influence, affected primarily hy the forces of nature with the imprint of man's work suhstantially unnoticeable.

Some inspired genius of the puhlishing firm of Time-Life Books conceived a project of issuing a series of books on the American wilderness, each volume treating in text and color photography a clearly defined wilderness area. The series includes volumes on the Grand Canyon, the High Sierra, the Atlantic heaches, Alaska, the Northeast Coast, Baja California, the North Woods and the Great Divide.

And now, of particular interest to us, Time-Life Books has published a ninth in the series, this one entitled "The Ancient Adirondacks" and devoted to the six-million-acre Adirondack Park and its "forever wild" forested mountains.

The editors' choice of an author was similarly inspired. He is Lincoln Barnett of Westport, New York, whose familiarity with the Adirondacks began when he came to Camp Dudley on Lake Champlain at age 14 and has continued and developed as he backpacked the trails to the summits of most of the Adirondack peaks during the past forty years.

As a former science editor of Life magazine, and a science writer for several publishers, Barnett brings to his story a knowledge of the geology and natural history of the Adirondacks absent from other general interest books about the region. But he is also a gifted and sensitive writer. The reader who accompanies



him vicariously climbing Noonmark or Marcy or Haystack, hiking the Moose River plains, or canoeing the white water of the upper Hudson, not only savors the seasonal moods of the Adirondack woods, he also collects an amazing amount of information on the flora, fauna and rocks of this wilderness.

The human history of the region, like its natural history, comes through in the context of Barnett's travels, mostly on foot, with such knowledgeable Adirondackers as George Davis, Clarence Petty, and Greenleaf Chase. It seemed to me that the human history covered in such standard works as those of Donaldson and William Chapman White was all here in Barnett's hook. And there is more recent material, too, such as the story of the great mudslide of June 1963 on Giant of the Valley, the hig blowdown in the hurricane of 1950, and the devastating forest fires of 1903.

Barnett is at home in the Adirondacks at every season and this fact together with his talent as a writer enables him to convey a sense of the solitude of the wilderness, the vastness of the wild forest, and the realization that here man is most at home when he recognizes he is, as Congress so well put it, only a visitor who does not remain. The photographs in full color are of course magnificent but in some cases one wishes for better reproduction. — R.F.H.

Humane Reproduction, Formulated by the Committee on Preventive Psychiatry, Group for the Advancement of Psychiatry, 141 pages, Charles Scribner's Sons, New York, paper, $2.95.

The addition of the letter "e" to the word *Human* gives a clue to the contents of this short book. Humane Reproduction, to the authors, is just that. They state in the introduction that their purpose is to show that prevention of unwanted children is a significant factor in the promotion of mental health and the prevention of mental disorders. It is clear, concise, and packs a tremendous amount of information in the 110 pages of text, to which are added notes, an excellent bibliography and index, as well as a list of the members of the Group for the Advancement of Psychiatry.

Though a respectably technical work, it is easy for the layman to read and is devoid of the jargon so often found in such literature. They discuss the family as a unit, and in the context of modern society. They face the problems, both physical and psychological, that individuals encounter in family planning. Finally, and most important, they present a detailed list of the services and educational needs for the solution of many of the problems engendered by unwanted children, those waifs of society of whom more than 300,000 today are shunted in and out of foster homes and institutions.

This slender paperback should be a mandatory handbook for all persons concerned with health care, family and child services, public housing, day care centers, delinquency, unexplained violence and related fields. The late much-respected Alan F. Guttmacher M.D. summed it up as a very important contribution to the field of human sexuality.— Catherine H. Campbell

A Man From the Past, by Roy C. Higby, 157 pages, Big Moose Press, Box 180, Big Moose, N. Y. 13331, $3.50 plus 75¢ postage and handling.

"A Man From the Past" relates to life in the woods, viewed both from today and at the turn of the last century.

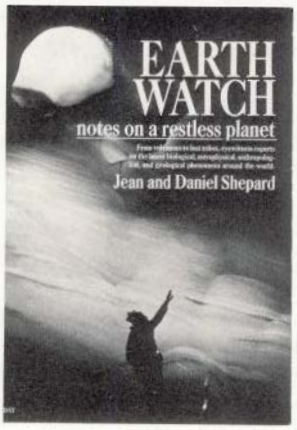
Delightful stories of events surrounding woods life and hotel guests will be found throughout, as will descriptions of various tragedies which occurred in the Big Moose Lake area.

The author, having lived his life in the woods is quick to give his opinions on a variety of subjects ranging from

land management policies to those related to fish and wildlife and in so doing, criticizes in numerous instances the policies and practices of the Department of Environmental Conservation, while at the same time praising the forest fire control systems that have been developed.

Mr. Higby has difficulty in accepting the changes which have taken place in the Adirondacks during the past fifty years as I am sure others have as well.

We share his views that the Adirondack guide will never return as in his heyday, that the average user is not as woods-wise as was his grandfather who grew up on the farm, that litter removal and misuse of public lands do present problems. We do not share his view that the average individual visiting the Adirondacks today would rather play tennis than hike or climb a neighboring peak—the statistics at my elbow speak otherwise. — Randolph Kerr



Earth Watch — notes on a restless planet, Jean and Daniel Shepard. 238 pages, Doubleday, $8.95.

The Smithsonian Institution in September 1968 established at Cambridge, Mass., its Center for Short-Lived Phenomena, described as "an early alert system and clearing house for the reception and dissemination of information on short-lived natural events." Using advanced communication facilities, some 2,700 registered correspondents, including scientists in many disciplines, in 143 countries around the globe report such events as earthquakes, volcanic eruptions, birth of new islands, the fall of meteorites and abrupt changes in biological and ecological systems.

This book is a selective record of reports received and disseminated by the center through 1972. There is variety in the reports, some relating vast destruction and loss of life, some of events which merely need an explanation. In October 1968, St. Louis was invaded by a mass of ballooning spiders. In the fall of 1970, the migration of millions of monarch butterflies was observed. The inhabitants of Victoria, Australia in 1969 were visited by a plague of millions of house mice which destroyed farm crops. In Malaysia, 160 miles north of Kuala Lumpur, on November 7, 1970, residents reported a war between some 10,000 frogs. Investigating scientists, however, interpreted the holocaust as an enormous frog love-in. The depredations of Australian coral by "Crown of Thorns" starfish is a chapter with subsequently a happy ending.

Included in this volume are reports of the recent contact with two Stone Age peoples, one the Tasaday Forest people of the Philippines, the other the Akurijo Indian tribe in Surinam.

Some short-lived events, such as the Santa Barbara oil spill, have their origin in man's miscalculations, and the authors suggest that while man is part of nature, he is "the reasoning part" and therefore accountable. — R.F.H.

Ecology: Selected Concepts, by David B. Sutton and N. Paul Harmon, with introduction by Garrett Hardin, 287 pages, John Wiley and Sons, 10016, $3.95.

If nothing else, the recent energy crisis has made it very apparent that the environmental movement has changed. No longer are good intentions and strong emotions enough to carry vital environmental causes to successful conclusions. Environmentalists of the future will have to be far better informed than ever before, whether they are civic-minded activists, high school or university teachers, or informal students of ecological affairs.

As a self-teaching textbook, "Ecology: Selected Concepts" fills such a need simply, clearly, and accurately. Its purpose is the education of the dedicated amateur or beginning student who wants to know why an environmentally aware public is a must in the modern field. In the opinion of Garrett Hardin, noted human ecologist, this book does not merely rehash old ecological cliches, it continually answers pointed questions about *why* an understanding of earth systems is so vital, and *why* that understanding is still absent today. Another strong point about this text is its design for individualized instruction at one's own pace. The reader, not the authors, determines the optimum conditions for learning. Frequent spot-testing lets the student know immediately whether or not a concept has been mastered, or whether further concentration is necessary before moving on.

"Ecology: Selected Concepts" should find many uses among a variety of interested readers in New York State schools at many levels of instruction. More advanced high school students, in addition to participants in adult education classes, will find the book simple to read and easy to understand. The use of show-off words has been sacrificed for clarity and conciseness of expression. College students in a variety of ecology courses and environmental studies programs — which are so often plagued by senior faculty members all too engrossed in the esoteric jargon of their fields — will find this book especially helpful in navigating the seas of university vocabulary overkill. This book will go a long way toward making the general reader and the student better prepared to interpret ecological problems in terms that the public at large can understand and appreciate. Indeed, it is time for all environmental educators to realize that this is what their field is all about. — Alfred Runte, Dept. of Environmental Studies, University of California.

At Home With The High Ones, a portfolio of photographs and text, by John S. Crawford, 32 pp. text, 32 color photographs, Alaska Northwest Publishing Co., Box 4-EEE, Anchorage, Alaska 99509, $9.95, 50¢ postage.

John S. Crawford, outdoor author, nature cameraman and wildlife researcher has assembled a superb portfolio of photographs of seldom seen inhabitants of the mountains of western United States and Canada. These include the coyote, gray wolf, Rocky Mountain cougar, grizzly bear, Canada lynx, hoary marmots, Rocky Mountain goats, Dall sheep, Rocky Mountain bighorns, together with some spectacular landscapes. The photographs are of a quality which should make them useful as teaching aids, and of artistic merit as well.

To augment the photographs, Mr. Crawford has written informally of some of his experiences in making the photographic record. His style is easy, informative, and entertaining. Indicative is his account of watching a golden eagle making wind-hissing dives at a bighorn sheep which finally stood on its hind

hoofs, jabbing with its front hoofs at the side-slipping golden in what was obviously play rather than attack. Since then, says author Crawford, "I've seen other golden eagles in sporting play with other bighorns, the Rocky Mountain goat, and even the high-ranking grizzly. These encounters tell something of the proud and spirited nature of the high-dwellers — of both eagles and the earthbound, and, to me, they are all among the most fascinating of the world's wild animals." His portfolio reflects his statement. — H.W.T.

Modern Turkey Hunting, by James F. Brady, 160 pages, Crown Publishers, Inc., $6.95.

If you have ever hunted the wild turkey, James F. Brady's book "Modern Turkey Hunting" will relive for you the heart-pounding experience reserved for those who have confronted this wily bird in his woodland habitat. Nonhunters will find Brady's book an easy-to-read and understand account of how, through prudent wildlife management, the wild turkey has been rescued from the brink of extinction to become numerous enough to support both spring and fall hunting seasons.

Brady describes a recent encounter with a gobbler during the spring season: ". . . I removed the lidded box-type turkey call from my jacket and dropped the camouflaged face mask into position.

"The turkey gobbled once more, and stroking the well-chalked lid across the thin edge of the box, I answered with the staccato *keow-keow-keow*, which is the mating call of the hen turkey. *Gilobble-obble-obble! Gilobble-obble-obble!* The sound rang through the morning air as the gobbler answered my call. Three or four minutes passed, and I sounded the mating call again. *Keow-keow-keow-keow!* The answering gobble came from a point much closer to me now. With shaking hands, I put the call aside and picked up my shotgun." Brady is an experienced turkey hunter and the outcome should not come as a surprise.

He is adept at placing the reader at his side to participate in what some consider to be the ultimate sport and his story provides fascinating reading.

He leaves no illusions that turkey hunting is easy but his book, illustrated with numerous photographs, does touch all the bases that will help the turkey hunter score during the spring or fall season. He describes how wildlife biologists have been able to establish wild birds in a wider geographic area through the trap-and-transfer program similar to that used in New York. (All or parts of 20 counties in New York were open to turkey hunting during the past spring season). He tells how to find turkey habitat and recognize signs indicating turkeys are nearby.

Subsequent chapters describe the art of calling wild turkeys, most effective turkey guns, clothing, use of a compass and incidental equipment that will make the hunt more meaningful and enjoyable. The book's final chapters focus on the hunter, the aesthetics of turkey hunting and prospects for the future of the nation's largest and most elusive upland game bird. — Arthur Woldt

The New Cross-Country Ski Book, 4th edition, by John Caldwell, 144 pages, Stephen Greene Press, Brattleboro, Vermont, $3.95.

This book should be the first to be read by all beginning cross-counry skiers. It is well illustrated and the relaxed approach is very easy to read.

Caldwell avoids overwhelming the novice with terminology and still manages to explain enough basic information to enable him to start skiing immediately.

There are very few improvements that could be suggested. The addition of an index would be helpful for someone needing to locate the explanation of a particular topic. In this revised edition there are new updated chapters which encourage the reader to occasionally flip pages. This tends to interrupt Caldwell's otherwise comfortable style.

We see many similarities between X-C and sailing. After only a few basic instructions a greenhorn can do either well enough to have a lot of fun. Later, his desire to improve will probably lead him to look for books and other sources of tips from experts.

Both activities have benefited greatly from rapidly improved technology developed in the finely tuned competition of racing programs. Caldwell has done an excellent job of sharing his expertise in this phase of the sport.

We are looking forward to the day when Caldwell will write another longer book. His excellent credentials indicate that he has a great deal of technical knowledge to contribute. — Robert P. Jubinville, John F. Dowd.

Books Received

Ice Age Lost, by Gwen Schultz, 342 pages, Anchor Press/Doubleday, Garden City, N. Y., $10.00.

The Fifth Horseman Is Riding, by Larry Van Goethem, 150 pages, Macmillan Pub. Co., Inc., $4.95.

Our Ecological Crisis, Its Biological, Economic, and Political Dimensions, by Grahame Smith, Henry Steck, Gerald Surette, 198 pages, Macmillan Publishing Co., Inc., $5.95, $2.95 paperback.

Drifter, by Daniel P. Mannix, 248 pages, Reader's Digest Press, dist. by E. P. Dutton & Co., Inc., $6.95.

Spirit of Survival, A Natural and Personal History of Terns, by John Hay, 175 pages, E. P. Dutton & Co., Inc., $7.95.

Preserving Man's Environment, by Pavoni, Hagerty, Heer, 308 pages, Data Courier, Inc., 620 South Fifth St., Louisville, Ky. 40202, $13.95.

Man, Nature and Ecology, Reid, Lauwerys, Joffe, Tucker, Intro. by Sir Julian Huxley, 419 pages, Doubleday & Co., Inc., $14.95.

A Funny Thing Happened . . . and A Hunt In the Yukon, by George Witter, 92 pages, Exposition Press, Inc., Jericho, N. Y. 11753, $6.00.

There Really Was A Dodo, by Esther S. and Bernard L. Gordon, 26 pages, Henry Z. Walck, Inc., div. of David McKay Co., Inc., $4.95, Younger readers.

The Urban Organism, by Spenser W. Havlick, 515 pages, Macmillan Pub. Co., Inc., $12.95.

Naturalist In the Sudan, by Charles Sweeney, 240 pages, Taplinger Pub. Co., $8.50.

Jenny's Corner, by Frederic Bell, 58 pages, Random House Inc., $3.95.

Save the Earth, An Ecology Handbook for Kids, by Betty Miles, Illus. by Claire Nivola, 91 pages, Alfred A. Knopf, $2.50.

Ellen Swallow, The Woman Who Founded Ecology, by Robert Clarke, 276 pages, Follett Pub. Co., $7.95.

Pilgrim at Tinker Creek, by Annie Dillard, 271 pages, Harpers Magazine Press, $7.95.

It Stacks Up!, Air Pollution explained in plain English, free brochure, N. Y. S. Dept. of Environmental Conservation, Publications Distribution, Room 107, 50 Wolf Rd., Albany, N. Y. 12201.

Your Questions Answered

conducted by Paul Kelsey

Tamarack

This spring while fishing in a stream near Depauville which empties into Lake Ontario, I came upon a grove of about 25 trees of varying ages which I could not identify. They appeared to be coniferous trees with some of last year's cones on the needleless branches. Light purple buds about the size of the end of my finger were starting to grow at the end of the branches. Can you identify this curious tree?

Murray H. Getman, Albany

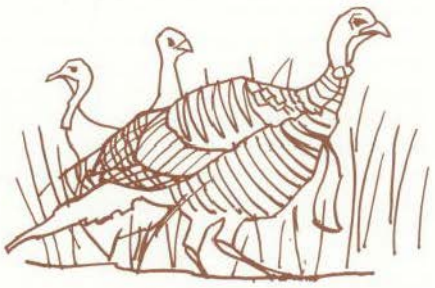
Since the grove of trees in question was not of even age we assume that they are native trees. The only "deciduous evergreen" native to Jefferson County is the tamarack *(Larix laricina)*. The one to three buds at the tip of the twig which grow into the new twigs are globous and would fit your description. The male and female "flowers" of conifers are often similar to your description, but ones on tamarack should be on wood that is one year older. The twigs have characteristic bumps or warts where the new needles will grow. (See THE CONSERVATIONIST D-J 59-60, The Conifers of New York, by Fred E. Winch, Jr.)

Ice Air Space

While discussing ice fishing on Conesus Lake, a friend stated that there was an air space between the ice and the water. I argued that since water seeps up through the cracks in the ice, and that when you chop a hole in the ice, the water rises in it there could be no air space. Will you please settle our argument.

Al Jenkins, Conesus

Ice is the surface layer of water which has turned from a liquid state to a solid state. It gets progressively thicker as the cold water immediately under it freezes and becomes part of the solid H_2O rather than the liquid. Ice and water are therefore normally in contact. It is true that you will often find an air space under ice covering streams or small enough water areas that the ice has strength enough to bridge. In these cases the water level has gone down after the ice formed. On larger lakes when this occurs, the ice cracks around the edge dropping the main body of ice onto the water and leaving the outer fringe of ice resting on the shore. Water then often seeps up around the edge and out onto the ice, making it sloppy to get out to solid ice to fish.



Turkey Trapping

During the last several summers the Department of Environmental Conservation has been trapping turkeys in the vicinity of our property in the Town of Humphrey, Cattaraugus County. By the time fall rolls around there is hardly a turkey to be found. If the department's trapping and tagging and/or transporting turkeys so frightens them, it seems only fair that this operation be performed in different areas each year.

Gary Hahn, Lakeview

The trapping that you have observed is part of a pre-hunting season banding program carried out in Ellicottville, Franklinville, Humphrey and Great Valley to help the department determine what percent of the turkey population is shot each year by hunters. During the last three years we have banded and released at the trapsite between 200 and 300 wild turkeys. Hunters have reported shooting approximately 20 percent of these birds. Extremes in movement may occur between flocks even in the same area, with recovery distances varying from less than half a mile to 15 miles. Turkeys are very mobile and as a matter of course may travel several miles a day just in the normal feeding activities. Changes in feeding conditions, such as ripening of fruit, or the fall of nuts may cause very abrupt changes. In the spring, a young hen may travel as far as 25 miles from her winter range in search of nesting territory. It is also known that consistently high hunting pressure can cause flocks to move out, or to break up and move out without even regrouping. Lee DeGraff, who heads the Upland Game Bird Studies of the department, recognizes that there is a temporary disruption of turkeys following trapping, but his observations of five years of trapping over 1,000 turkeys in the four-town area indicates that the flocks quickly regroup and resume normal life. Band returns certainly indicate that there is no mass exodus from any of the trapping areas. The shifting you have observed is more likely caused by seasonal changes in food supply or some similar natural cause.

Wild Turkey

This afternoon I sighted a wild turkey while driving slowly through the State Forest in the Town of Hartwick about half a mile south of Arnold Lake. The bird was about 150-200 feet ahead in a small semi-cleared area, and ran a short distance until it was hidden behind several trees. I stopped the car, and after a few moments, got out. The bird again came into view, running off into the woods. I would have supposed that at the first sight of the approaching car it would have flown off through the woods, for I thought they were exceedingly wary.

Herbert E. Armstrong, Milford

Turkeys are exceedingly wary, but like other wildlife, they have learned that as long as a car is moving along the road, it is not going to cause them any trouble. They will simply get out of the way and let it pass. As soon as you opened the car door and stepped out, you became the item of concern, and the turkey beat a hasty retreat into the woods on foot, their usual manner of retreat. You have to really come upon one unaware to have it take to the air. They are capable fliers, but given the choice, they will slip out of sight on foot.

Brook Lamprey

I would like to know more about the brook lamprey. I have watched them breeding before the snow has gone, I have dredged them from the gravel of a trout stream that cuts through my property, and I have kept them for short spells in aquariums. They require well aerated water, but what food they eat, I don't know, for I can find no reference to it. Perhaps others may be interested in learning more about these fascinating little fish.

Chester N. Bentham, Silver Creek

Throughout New York, the American lamprey *(Lampetra lamottei)* is the small lamprey found in streams, though in western New York, the northern brook lamprey *(Ichthyomyzon fossor)* may also be present. The latter has a single continuous dorsal fin, while the former has a notch in its dorsal fin ahead of its vent. Like all lamprey, they spawn in the gravel riffs. In a few days the eggs hatch and drift with the current, settling out in backwaters where they burrow into the mud and ooze at the bottom. Here the larvae, or ammocoetes, live for about five years, straining their food, primarily algae, from the ooze. They emerge in late summer or early fall, and lose the fleshy hood which has covered their mouth-parts, and they de-

velop a true sucking disk mouth with a few blunt teeth. The brook lamprey is not parasitic, in fact, after it emerges from the mud it ceases to feed and its digestive tract begins to degenerate. They move into the spawning sections of the streams where they remain until spring, when they spawn and die. The ones that you dredged up were quite likely adults that were hiding the daylight hours away under the rocks.

Sunday Deer Hunting

Why are bow hunters permitted to hunt on Sunday in the western part of the state, while the regular gun hunters can not. Sunday hunting in the western part would give the working man another day to hunt big game.

Robert C. Webb, Syracuse

The reason for not permitting gun hunting for deer in the western part of the state is simply that the landowners could not stand the intense hunting pressure that would occur. The resulting posting would mean that the working man would lose more than he would gain. Periodically the landowner attitude has been rechecked to see if there has been any change. Last summer, the Fish and Wildlife Board in Region #7, in cooperation with the Cooperative Extension Service in Chenango and Madison Counties, conducted a survey of landowners to get their current reaction.

Madison County	
In favor of Sunday deer hunting	41
Opposed	232
Total	273
Would post if Sunday hunting is allowed	140
Would not post	54
Total	194
Chenango County	
In favor of Sunday hunting	77
Opposed	160
Total	237
Would post if Sunday hunting was permitted	117
Would not post	70
Total	187

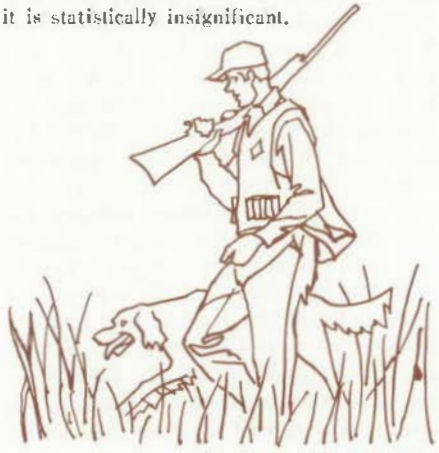
Though there are some who oppose bow hunting, the archer has not made himself unwelcome on private land for several reasons. There are fewer — this year there were 70,000 compared with 600,000 gunners. They hunt quietly by themselves instead of in large noisy groups. As a group, their standard of sporting ethics is higher than those of the gunners. This is shown in many ways, not the least of which is the relative amount of litter that they leave behind. As long as the department's aim is to furnish the maximum amount of recreation possible, the archer should be encouraged, rather than deprived of hunting time for the actions of gunners.

Population Control Hunting

Although I enjoy hunting, I have a question regarding hunting as a method of controlling deer populations. When natural predators, such as the wolf, kept the deer herd in check, prey was usually the most defenseless — the sick, weak, oldest or youngest. This left the strongest and smartest to survive and pass on their noble traits to their offspring. Hunting, though often random, can be quite selective. The major difference is that the experienced hunters would not settle for anything but a prime trophy. Doesn't this lead to many inferior bucks mating that would not have had the opportunity if the trophy buck had not been shot in its prime? Couldn't this cause negative evolutionary trends in our deer herd if carried out over a sustained period of time?

Lou Ruggiero, North White Plains

This question is being heard more often as various preservationist groups try to find evidence against hunting. First, there is a difference between trophy hunting and population control hunting. Trophy hunting occurs when the population is not crowding the carrying capacity of its range, but where there are mature animals which approach maximum size. There is data which some people interpret to indicate that trophy hunting of mountain sheep is downgrading their gene pool. More than once, however, people have used the same data to prove diametrically opposing positions. I am not well enough acquainted with the sheep situation to make judgment. Deer herd control hunting in New York is an entirely different proposition. We are counting on many hunters taking many deer for biological reasons, rather than a few hunters removing just a few animals for recreational purposes. In his dreams the average deer hunter may be selective, but when he gets in the field, the first buck that comes down the trail is the one he tries to take. Ones that he reports he passed up were probably ones at which he couldn't get a shot or just plain missed. Admittedly there are a few hunters who are selective, but that usually means they don't kill a deer. The number of trophy deer that are taken by choice, rather than chance, is so small it is statistically insignificant.



Antler Shedding

During the third week in March I saw two bucks with their complete sets of antlers feeding together in a field in northern Genesee County where we have always had a healthy deer herd. I thought that bucks shed their antlers between mid-December and mid-January. Is it normal for deer to hold their antlers as late as mid-March? If not, how do you account for these two? What effect will this have on antler development this year?

Robert J. Belluscio, LeRoy

Antler shedding is quite variable, with the first being shed about December 1, the last sometime in March, and the bulk between mid-December and mid-January. There is also an occasional unexplained variation from one year to the next. This has been demonstrated on the Seneca Army Depot where winter hunting seasons have been held since 1964. On one of these odd years, because of a legislative oversight, no season could be held in 1969, resulting in too many deer on the range during that winter. The following season two interesting things were noted. First, there were very few fawns that matured enough to breed compared to about half the fawns being bred during the years of adequate food. Second, the bucks lost their antlers earlier than they had during the previous years. I recall that at the time this led to some speculation that having doe fawns maturing during the early winter might be enough stimulation to the bucks to keep their testosterone level up sufficiently to delay loss of antlers. I know of no work that has been done to take this out of the class of speculation. I had an experience similar to yours while observing geese in the vicinity of Aurora, also high quality deer range, when I saw two antlered bucks in a herd of ten deer grazing in winter wheat on March 25.

Porcupines

We are great lovers of the outdoors and have forty acres in Chautauqua County where we camp and are often joined by friends on weekends. We have a problem though, for the porcupines come out of the woods at about 10 p.m. and have chewed up pieces of plywood, anything made of rubber, cardboard boxes, plastic wheels, and even chewed on the tires of our trailer and towing vehicles while we were sleeping. They are unprotected, but the only advice that we can get on their control is to kill them with a .22 rifle. Can you help us discourage these destructive creatures?

Mrs. Clarence Crowell, North Tonawanda

At least you are not alone, for this is a problem faced by people wherever porcupines exist. To the best of my knowledge no effective repellent has been developed, however, some friends have found that a two foot fence around the portion of the property that they

want to protect is effective. Though porcupines can climb, apparently their drive to get to the other side of the fence is not very great as long as they aren't aware of something very enticing within. In your locality they are uncommon enough so that if you killed one or two, probably you would solve your problem. Shooting in the dark or with a flashlight, you might find that heavy loads in a shotgun would be not only more effective, but also safer.

Lake Maps

Kindly send me some information concerning equipment for bass fishing and any information about contour depth maps for lakes on Long Island.

Santo Coudelias, Brentwood

There is so much available in sporting magazines and books about bass fishing that I don't know of any effort that the department has made to publish anything on this subject. I am sure that your local librarian can help you find some good books on bass fishing. Contour maps of some of the state's lakes have been printed in THE CONSERVATIONIST and are available as reprints. You will find these listed in the department's Publication List, and may be obtained by writing to our Albany address. The Fisheries Manager, in the Regional office at Building 40, SUNY, Stony Brook, N. Y. 11790, has in his files, contour maps for many of the waters they manage. They may be able to send you a copy, or at least let you study them in the office. In addition, Kent H. Wilcoxson's book "Anglers Guide to Freshwater Fishing In New York" has many lake contour maps. It is available from Book Production Services, 5 Elm Street, Danvers, Massachusetts 01923.

Squirrel Pruners

We have a family of red squirrels living in the spruce trees in our front yard. This winter they have been overly busy pruning them until the ground underneath is covered with a blanket of 3" tips of healthy growth. Are they damaging the trees, and what is the purpose of the pruning job?

Otis H. Pendell, Jr., Marathon

A blanket of spruce tips on the snow under spruce is a common enough sight that it is hard to believe that it is causing any serious problem. I have heard this phenomenon discussed many times, and the only solution I have heard goes right along with my own observations. During the fall and winter, squirrels nip off the cones of pine and spruce and store them for later use. I have seen them cut spruce cones, let them fall to the ground, where they then pick them up and transport them to their cache. In the process many spruce twigs were also cut off. I can find no explanation better than that the pruning is a byproduct of cone collecting.

The Bog Turtle

"Rarest of reptiles"

Bog turtles (*Clemmys muhlenbergi*) are among the world's smallest, adults usually measuring about 3 inches along the length of the upper shell. Easily identified by wide, squarish skin patches of red-orange-yellow on either side of the head, the mud-colored bog turtle lives in isolated colonies spread over a ten state area, ranging from western Massachusetts to central New York to western North Carolina.

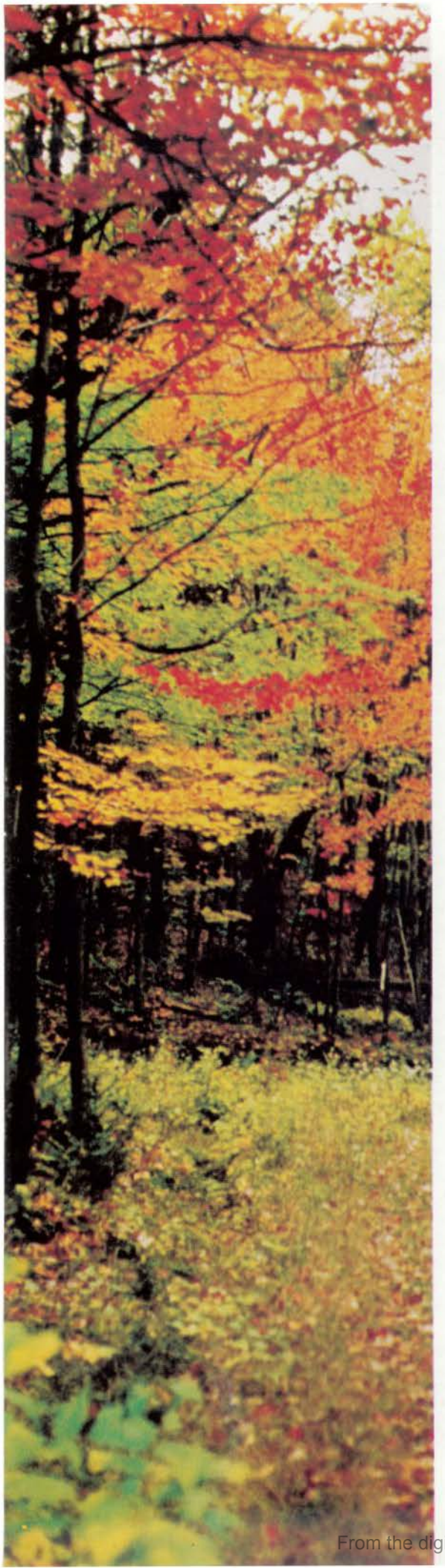
Originally rare, the bog turtle's favored habitat of sphagnum bogs has shrunk or been changed due to land reclamation. The species may be disappearing from the wild.

In "The Bog Turtle, Swampland Aristocrat" (CONSERVATIONIST, Aug.-Sept., 1960), Gerald Schneider wrote: "Surprisingly little is known . . . full details are lacking concerning hours of activity, breeding, nesting, and even feeding habits of wild bog turtles . . . Berries and parts of insects were noted as stomach content of a wild bog turtle . . . earthworms and carrion are probably regular foods . . . Because they lack webbed feet and are poor swimmers, bog turtles could not prey on live fishes, aquatic insects, and other fast swimming animals . . . Bog turtles are all the more interesting because we know so little about them."

This sentiment is echoed by John L. Behler, Jr., who terms the bog turtle "one of our rarest and most mysterious reptiles." As Assistant Curator of Herpetology at the Bronx Zoo, Mr. Behler was in the fortunate position of being able to add to the store of bog turtle knowledge when a male and two females of the species were donated to the zoo. A miniature "bog" was created in a large metal trough with plants from the natural habitat planted atop a layer of mud. In late spring of 1973 courting behavior was observed: on August 25th one of the females laid a clutch of five eggs: on October 12th the first of four hatchlings, none larger than a quarter, appeared. These four turtles should reach sexual maturity in five to six years. Mr. Behler plans additional miniature bogs to house his growing family of bog turtles and hopes to learn more about the behavior of the species.

Just as Gerald Schneider wrote more than a decade ago: "There is a wonderful opportunity for enthusiasts to get outdoors and make original observations on the bog turtle and its behavior. One needs only record what he sees bog turtles doing during different times of the day or year to make worthwhile contributions to our knowledge."

Perhaps the combination of observations of both wild and captive bog turtles, plus legal protection may yet result in the saving of this endangered species. — Wayne Trimm



LETTERS

Water power

In her article "Water over the Dam" Ms. Beil is quite right about the possibility of revitalizing our hydroelectric power stations and perhaps converting fossil fuel or even potentially damaging atomic power plants to a much more environmentally compatible source of energy. Where dams have been built there is not much harm that can develop by converting to hydroelectric power. However, if and when new dams are to be built the same environmental problems are there to haunt us: destruction of valuable agricultural land which we can ill afford, loss of prime wildlife habitat which may affect endangered species, warming of the water which affects aquatic ecosystems, silting in of impoundments, reduced water flow below the dam and the prevention of migration of migratory spawning fish. It must be remembered that dams and pollution combined to virtually eliminate salmon and shad runs in downstate New York. The states of Idaho and Alaska which Ms. Beil mentions as potential developers of hydroelectric energy maintain large anadromous fish populations which are dependent on the large rivers free of dams (or a few dams with fish ladders), to accommodate these migratory species. Alaska's commercial fishery (largely salmon) accounts for nearly two thirds of the state's economy. Alaskans will have to do a lot of soul searching before doing much dam building if they wish to maintain that viable fishery economy. So, there is no panacea when it comes to developing new sources of energy, merely compromises and choosing the lesser of two or more evils.

Lawrence W. Jackson, Delmar

My compliments to Karen Magnuson Beil on "Water Over the Dam." May I contribute to the final question: "Is hydro a romantic whim?"

At the Lyons Falls Division we operate three hydro stations on the Black and Moose Rivers with a total installed capacity of 9,725 KVA. In calendar 1973 our total hydro generation was 34,689,100 KWH. Far from being neglected we have upgraded and increased our hydro generating facilities. Hydro #7, 1500 KVA went on line 6/17/67; hydro #8, 1125 KVA went on line 4/2/71 and hydro #9, 1000 KVA on line 3/26/74.

Since 1967 hydro installed capacity at the mill has been increased by 36 percent. To operate our pulp and paper mill energy produced by hydro is supplemented by our own steam turbine generation and by Niagara Mohawk. With our tie to the utility, surplus energy is put into Niagara Mohawk as it has been available.

On the Black and Moose Rivers hydro is romantic, but not a whim. Stations are small but productive. The sight of a hydro generator purring smoothly without noise and environmental pollution leads us to believe there is a better way. There is a better way and hydro is it, let's get at it.

Leslie J. Dolhof, General Manager
Georgia Pacific, Lyons Falls Division
Lyons Falls

I read your article on hydroelectric power with interest (June-July, 1974). The water wheel "of undetermined location" shown on page 12 looked very familiar. By now you must have heard from some Cape Codders who will tell you that the wheel is part of the Old Grist Mill located in Brewster, Massachusetts. The mill is situated just below a well-known herring spawning area and the stream runs directly to the Bay. The mill area is heavily visited during the herring run.

Robert Abbey, Shutesbury, Mass.

Praises diversity

I find THE CONSERVATIONIST one of the most diverse and interesting magazines that exists in the conservation field. The articles are well written and there is space for reader response. Also I feel that the state of New York and the Department of Environmental Conservation have one of the most advanced and enlightened programs for conservation that exists in the United States.

Keep up the good work!

Helen Ehesle

Taxing energy

I want to express my appreciation for that fascinating essay by Gilbert Tauber (June-July, 1974). What a beautiful idea! I've been reading articles on the energy dilemma and on the pros and cons of "going nuclear" to supply more electricity. Then last week our school district, a very large rural one, voted down the budget proposed for next year. This essay you printed seems a rational and fair approach to the problems raised when I think about both these issues. And there is the larger issue, the moral one. Should we who are relatively wealthy continue to use far

more energy than others when much of what we use can be labeled frivolous or wasteful? A good stiff tax that was fair and did not, for once, hurt the poorer people the most could save us from our own excesses. It could save our environment and our health in the long run. It could give us back a sense of being our brother's keeper at least to a degree. That may sound like a lot to hope for, but Mr. Tauber's essay was the most hopeful thing I've read in some time. Thank you for printing it. It should be reprinted all over the state.

Dorothy Cairns, Springville

Mr. Tauber's article "A Tax on Energy" is a prime example of our every freedom being removed from us by our self-perpetuating government.

By all means remove the local school tax, thereby removing the control of the schools and their manner of operation from the individuals and give it to Big Brother.

As Mr. Tauber states "these taxes (on energy) would be feasible only if they replaced existing ones that are less palatable and less consistent with national goals." What national goals? Dictatorship?

Also stated, "the proposed tax charge would remove unfair burden from elderly home owners." By what? Boarding up all but one room and living like cave dwellers of centuries past.

Curtis D. Paye, Cleveland

Death for an Opossum

Near Poughkeepsie in Dutchess County, I found a dead opossum *(Didelphis virginiana)* 18 feet above the ground in a tree. I also observed that there was a can in the tree. Upon closer examination I realized what had happened. Along a nearby road people had dumped their trash. The opossum had apparently been rummaging through the trash and evidently backed up to a large juice can. The opossum's tail caught between the lid and the can's side. The opossum climbed to the top of the tree where the can became lodged in a fork of the tree. The opossum died hanging from the fork. It had frantically chewed the branches off around it.

This is a dramatic example of the alteration of an ecosystem by man's pollution. Humans have the power to drastically alter their environment, and this is but one small example of how good a job we are doing.

Jerry Blossom, Saugerties

View of Olana

A most enjoyable article — "Frederic Church and Olana" — June-July 1974. Why not tell your readers that an excellent view of this magnificent structure may be had by crossing the Rip Van Winkle Bridge from west to east and looking up — there it is in all its splendor!

Theresa Fichtel, Ashburnham, Mass.

fishing facts

by Jay "Fishy" Fullum

Try Making Your Own

IN THE PAST FEW YEARS MORE AND MORE FISHERMEN ARE MAKING THEIR OWN FISHING LURES.

HUNTING SEASON IS AN EXCELLENT TIME TO COLLECT MANY OF THE RAW MATERIALS. FEATHERS FROM WATER FOWL, UPLAND GAME BIRDS AND FUR FROM SMALL GAME ANIMALS, DEER, AND BEAR ARE ALL USED. TRAPPERS CAN ALSO SUPPLY FOX, BEAVER AND MUSKRAT FUR.

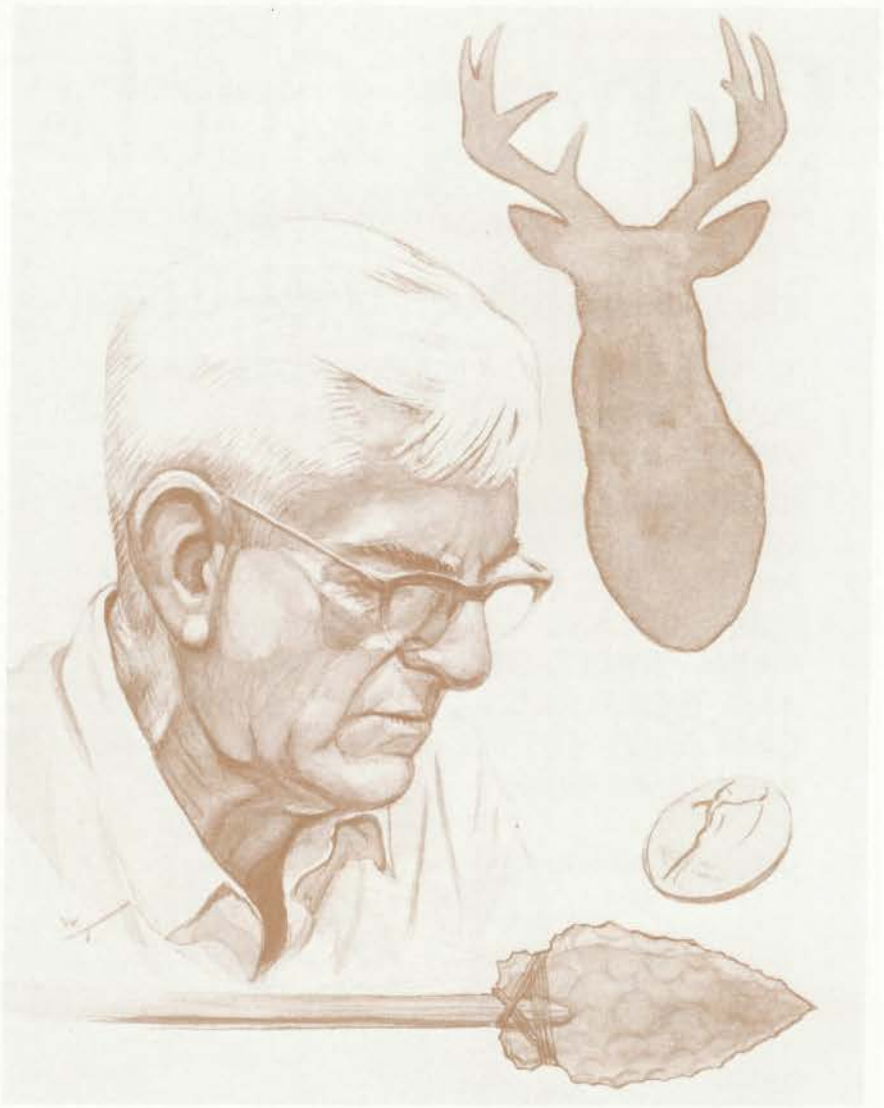
LEARN TO MAKE YOUR OWN LURES OR TRADE FUR OR FEATHERS FOR THE FINISHED PRODUCT. MOST TYERS ARE HAPPY TO TRADE LURES FOR BIRD OR ANIMAL SKINS.

ASK THE EXPERT

As a service to our fishing friends, the expert invites questions on specific topics.

Do you have a question on late fall fishing and equipment? If so, send it in to Jay "Fishy" Fullum.

THE CONSERVATIONIST
50 Wolf Rd., Albany, N. Y. 12201



1974 Bowhunting Stamp

Dr. Paul Crouch

Father of bowhunting

The 1974 bowhunting stamp honors the late Dr. Paul Crouch of Oxford (1896-1973), the man most responsible for making it possible for all of us to enjoy the sport of bowhunting in New York.

One of the early enthusiasts of the longbow, Doc won National Archery Association championships in 1925 and 1927. More important to him was insuring that organized archery received leadership and organizational direction. His efforts resulted in the conservation law in 1947 which legalized hunting of deer with the bow and arrow in New York State. In 1952 he persuaded the New York Conservation Council as to the advantages of bowhunting with the result that additional legislation was enacted allowing taking of deer of either sex in a special archery season prior to the regular big game season.

His international fame came when he organized the financial drive which raised expenses for men's and women's archery teams to represent the U. S. in world championships at Prague in 1957 and Brussels in 1958. Crouch was awarded the Thompson Medal of Honor in 1957.

Without Dr. Crouch, we would not have the sport of bowhunting as we know it today.

Bill Wadsworth
New York State Field Archery Association and National Field Archery Association

Appreciative reader

I doubt if any conservation magazine in this, or any other state, has ever equaled your June-July 1974 issue.

I just can't think of enough superlatives to express my appreciation. Of course, I say this with every issue that I have been getting, but this one has completely swept me off my feet. My only hope is that the school children will take advantage of the opportunity of learning something about their state by reading it.

Basil Filardi, Jr., White Plains

Central Park

Olmsted and Vaux designed Central Park for one express purpose: "To supply to hundreds of thousands of tired workers, who have no opportunity to spend their summers in the country, a specimen of God's handiwork that shall be to them, inexpensively, what a month or two in the Adirondacks is, at great cost, to those in easier circumstances."

Having for many years enjoyed both the Adirondacks and the Catskills, I would like to point out that what has happened to Central Park is human vandalism, commercial greed, and misunderstanding of the park's primary, noble purpose. And this is exactly what is now happening to the Adirondacks, originally dedicated to the far-seeing concept of serving the people best through a policy of remaining "forever wild."

If true conservation is to serve its purpose, it will recognize that the fate of the Adirondacks, the Catskills, and all other public lands, and in all states, is inextricably linked with that of Central Park. United in the purpose of serving their original and permanent need, they will stand; divided, they are all in danger of falling.

Bill Toporcer, Penfield

Brotherhood Winery

Mr. Kosikowski in his article about New York State wineries, did not mention one of the oldest of them, still in operation — the Brotherhood Winery, at Washingtonville, Orange County, established around 1839. One can still take a guided tour through the cellars there and learn about the art of wine-making and tasting from the experts.

Anne Mazanek, Warwick

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Hunting Licenses

(Continued from page 29)

interest relative to previous license philosophy is his further comment: "The present retaliatory license is of little consequence."

The matter of a hunting license was pursued in the Commission's report for 1907 as follows:

> ". . . there should be a hunting license law. The experience of many other states and countries makes it plain that such a law operates to protect game. It is easily enforced. Nonresidents are made to pay for the right they get in our State to fish and hunt, and they are taxed in no other way. If such a law is enacted, it will be very useful in protecting song birds and birds of plumage, and a large revenue will be collected under it to defray the expenses of protection, which revenue will only come from those who receive the largest amount of benefit from protection — the hunters and sportsmen."

The Laws of 1908 included a complete recodification of the Forest, Fish and Game Law which became effective April 14, 1908. It provided for a hunting license as follows:

> "No person or persons shall at any time hunt, pursue or kill with a gun any of the wild animals, fowl or birds that are protected during any part of the year, nor shall use a gun for hunting except as herein provided without first having procured a license so to do and then only during the respective periods of the year when it shall be lawful."

Thus, for the first time, a hunting license was required of everyone, resident and nonresident. The fees were $1.10 and $20.50, respectively. The one exception was that owners and lessees of farm land, and their immediate families, actually occupying and cultivating such lands, could hunt thereon without a license during the open season.

A provision was added in 1911 for a nonresident who was a taxpayer in the state at the time of application to purchase a license for $10.50, but this was discontinued in 1916 when this fee was applied to all nonresidents and aliens. In general, licenses corresponding to those issued for residents have been available to nonresidents, but at higher fees. At the same time, the entire fee structure has been revised upward from time to time.

From 1912 to 1925, the license was a combined hunting and trapping license. In 1926, it became a combined hunting, trapping and fishing license. Then in 1940, separate licenses to hunt, fish and trap, as well as a combined hunting and fishing license, were issued. Except that the nonresident combined hunting and fishing license was discontinued in 1955, this is the present arrangement.

In 1927, the special deer license was instituted which became the big game (deer and bear) license in 1949. Residents have always been able to purchase this license whether or not they held a hunting (small game) license; however, possession of the latter has been required of nonresidents as a prerequisite. For one year, 1970, the separate hunting and big game licenses for nonresidents were abolished and a combined license substituted, but the hunting license was reinstated in 1971, and in 1973 the combined license replaced by a separate big game license.

A special archery license, entitling the holder to hunt deer and bear for a short period prior to the regular big game season, was instituted in 1948 and continued until 1967 when it was succeeded by the bowhunting stamp. Prior to 1967, this was a separate license although a nonresident was required to also have a hunting license. Since then, both residents and nonresidents have been required to have a big game license to which the bowhunting stamp must be affixed.

The exemption for farmers and their immediate families when hunting on their own land has been continued with respect to small game. However, since it was established, they have been required to have the special deer or big game license to hunt such species regardless of where they hunted. Issuance of free hunting licenses to residents 70 years or more of age was authorized in 1965, and the privilege was extended to cover big game licenses in 1968. Since the mid-1940's, provisions have been made for hunting without license (except for deer and bear) by members of the U. S. Armed Forces, as well as for the issuance of free hunting and big game licenses to certain disabled veterans and to certain Indians residing on reservations in the state.

There was no age limitation on those who might hold a hunting license until 1926 when a person was required to be at least 16 years old to be eligible. The law was amended in 1942 to provide that minors 14 or 15 years old can be issued a hunting license and hunt, except for deer or bear, when accompanied by a parent, guardian or person over 21, designated in writing by a parent or guardian, who must also possess a hunting license. In 1953, a provision was added requiring a person 16 or 17 years old, who holds a big game license but has not hunted under such a license, to be accompanied, when hunting deer or bear, by a licensed adult (as above) who has had at least one year's experience in hunting such game.

Of interest in connection with the history of hunting licenses is the issuance of buttons to be worn conspicuously while afield. Such a button, indicating the type and number of the license, was issued with each license sold from 1917 to 1941, except for the years 1922 and 1923. The practice was discontinued after the fall of 1941 as a means of saving metal during World War II.

However, as an aid to landowners in identifying licensed hunters afield, cardboard back tags have been issued with all licenses to hunt since 1954. Although still in force elsewhere, the requirement of wearing these in the Northern Zone was repealed in 1966.

Consideration of licenses and permits, such as the special antlerless deer license and the deer hunting party permit, that are issued only pursuant to special regulations promulgated by department order has been omitted from this account.

Forest Diorama

THE forest has both vertical and horizontal living space, very much like a large apartment building housing a variety of rooms done in various styles located on different floors.

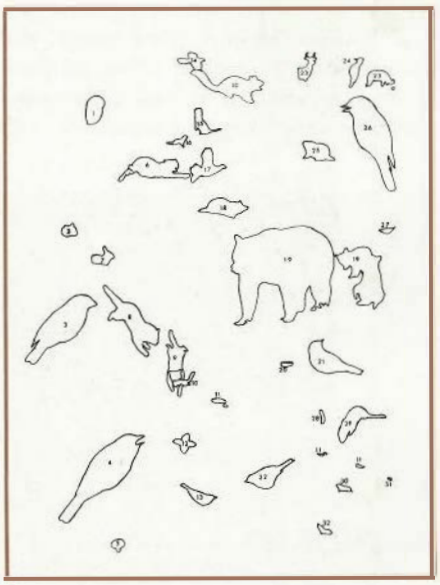
In most Northern forests there are three more or less distinct vertical stratifications, two fairly productive and the third less so. The best area is the ground with a tremendous variety of conditions allowing for the needs of many species of living creatures. Sometimes these are found in immense numbers, as with microscopic forms. In general, the ground may be considered a travel zone as well. The second most productive area is the forest canopy with many types and sizes and shapes of tree leaves and branches often forming an interlocking and intricate mosaic. This is the realm of the birds, many insects, and some of the lighter weight and more agile mammals. The branches are also used as highways by some of these smaller mammals.

Between these two areas is the stem or support zone; less productive but vital to the functions of the others. It is here that much travel is done by woodland fliers and where confrontations often occur. Because it is usually more or less open, it is also the alert zone where danger signs are detected. Many creatures move freely from zone to zone in pursuit of their needs. For example, the goshawk hunting this area will cause a moving alert as it searches for a careless mouse or rabbit.

Besides the actual living places the forest provides, it also moderates extremes of weather. Intense summer heat is deflected by the canopy; winter winds are slowed or stopped; rain is intercepted and water runoff is slowed. In winter the trees cause snow to collect in deep insulating layers so the thin forest soils stay relatively warm. Without this protection many forest plants and animals would perish. During winter storms the trees form a buffer for deer. Unfortunately, deer often stay too long within these areas and without adequate food suffer from malnutrition. In mature forests there is little food within reach of deer, actually an animal of "edges" more than continuous forests.

Many animals of the forest are equipped with large eyes or with light sensory organs which compensate for the low light level. Some are color-adapted to blend with this environment — the mottled pattern of the grouse and the seasonal color changes of the varying hare and weasel, for example.

If untouched by man or fire or blowdown this forest will continue to grow, to mature and change, but now very slowly. And while it changes it will be home to a myriad of special creatures both as residents and as visitors. — Wayne Trimm



1. saw-whet owl 2. flying squirrel 3. evening grosbeak 4. hermit thrush 5. bolete mushroom 6. bobcat 7. varying hare 8. fisher 9. marten 10. red squirrel 11. shelf fungi 12. bunch-berry 13. Canada warbler 14. goshawk 15. otter 16. mink 17. ruffed grouse 18. raccoon 19. black bears 20. coral fungus 21. Blackburnian warbler 22. ruby-crowned kinglet 23. white-tailed deer 24. pileated woodpecker 25. porcupine 26. gray jay 27. water thrush 28. gypsy moth caterpillar 29. weasel 30. pine mouse 31. tiger beetle 32. shrew.

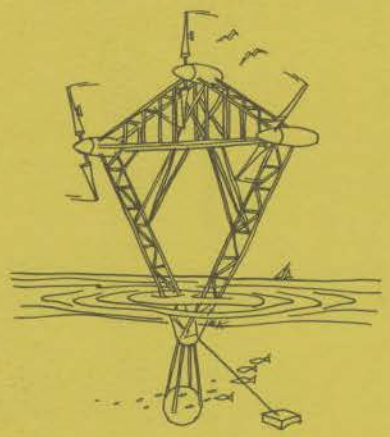
EQ News

Supplement to THE CONSERVATIONIST

OCTOBER-NOVEMBER 1974

Watts in the Wind

by Karen Magnuson Beil



There's free energy everywhere, and a power hungry world is beginning to assess the potential in every breeze, gust and gale. From computerized sailing "dyna ships" on the drawing boards to sophisticated power generators, the evidence is mounting daily that wind is a missing piece to the jumbled energy puzzle.

Companies with money down oil wells or wrapped up in nuclear atoms are generally disinterested, reticent or openly turned-off by windpower.

Investors and utilities, wide-eyed, curious, but cautious, still have cold feet when it comes to putting money in the wind.

But inventors are huddling over mathematical models, windplants-in-miniature, and aerodynamic blades, and are putting their heads together on a tireless, non-polluting energy source that we seem to think we've just discovered — Wind.

Even Madison Avenue will soon realize that tilting at windmills for the sake of client oil companies will not hold back the potential of windpower. Ironic that the flurry of their anti-wind campaigns comes so closely behind the rejuvenated interest in windpower by the scientific community and the cash outlays for wind research by national foundations.

"Let's get on with it," says one highly respected member of the scientific research circle. He is Dr. William E. Heronemus, professor of Civil Engineering at the University of Massachusetts and one of the most outspoken advocates of alternate energy sources.

Due to what Dr. Heronemus calls the "madcap nature" of exponential energy growth, the amount of energy this nation used during the 110 years from 1860 to 1970 matches the amount we'll use in 15 years from 1970 to 1985. To accommodate our insatiable power thirst, New York utilities are planning major electric energy expansion (mostly in the areas of fossil fuel and nuclear) to increase their current generating capacity by 130 percent or almost 33,000 megawatts of new generating capacity by 1990. The total capacity then will be a whopping 58,000 megawatts.

Solar energy is abundant, but diffuse and hard to extract. Windpower, a more concentrated form of solar energy, could provide us with 20 percent of our electric requirements by the year 2000, according to the Solar Energy Panel of the National Science Foundation and National Aeronautics and Space Administration. More than 300 billion kilowatt-hours yearly could be extracted from New England's offshore winds; 180 billion off the mid-Atlantic seaboard; 210 billion in the Great Plains; 190 billion off the Texas Gulf Coast; and perhaps 400 billion along the Aleutian chain, providing us with non-polluting, constantly replenished energy.

New Englanders and New Yorkers pay the highest energy bills in the nation and still may well worry about keeping warm in winters to come. But those winter westerlies, which can chill through even the warmest down parka, may eventually heat our homes. Wind, a bonus from the sun, could be harnessed, Dr. Heronemus proposes, by a chain of 83 streamlined wind generating units, off the New England coast on Georges Bank and the Nantucket and New York Shoals. Dr. Heronemus envisions the generators perched on floating buoys and out of sight from shore with the capability of producing 160 billion kilowatt-hours a year. Each station would have at least a capacity of 3.4 to 6.0 megawatts.

What happens when the wind doesn't blow? Store the energy during windy periods, and it can be ready on demand and not dependent on constant winds. We've already got technologically proven storage methods. Perhaps one of the most promising is hydrogen gas. The wind-generated electricity out at sea could be used to separate water into hydrogen and oxygen by electrolysis. The hydrogen gas then would be shipped through underwater pipelines to the mainland where the H_2 could be reconverted into electricity by a fuel cell. The oxygen gas by-product could be used either at the windplant site or piped to the nearest harbor as a rejuvenator for oxygen-depleted water. As it bubbles into the sea, the oxygen gas enriches both the waters and the fishery.

Contrasted with the environmental and thermal pollution created by nuclear plants, the Offshore Wind Power System would produce little environmental impact other than visual. Heronemus added, "Construction of the system will disturb only a very minor fraction of the seabed of a fertile fishing ground. Once operation has started, disturbance will approach zero."

Cost has been the primary detriment to wind development. However, Dr. Heronemus believes the proposed offshore system is not only feasible but would be less costly to build than nuclear plants for the same output. "We have been the victims of high pressure salesmanship," Heronemus was quoted recently. "Two years ago, the nuclear advocates were saying economics dictated more and more plants. Now all they say about costs is that they're 'disappointed' they've gone so high over earlier predictions." Despite massive cooling towers, nuclear plants release substantial waste heat into the atmosphere. Heronemus claims the nuclear waste heat will cause cloud, fog and mist formation and eventually could cause considerable weather modification.

New York may not be Texas with its oil wells; it's not Pennsylvania with its coal mines. Environmentally we're thankful. But we have Lake Ontario winds. In another ambitious proposal, Dr. Heronemus suggests that a series of four installations of 538 wind stations be located over the U. S. portion of Lake Ontario that could generate more electricity than is presently generated by nuclear and fossil fuel plants in that region.

This study of the Ontario wind potential was requested by the Oswego Ecology Action Group because they fear the consequences of the planned nuclear plant

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constructions on the lake's shores. Even though it is a relatively deep and cold lake, its heat sink capacity in certain areas has been overused. This refers to the water's ability to absorb heat from its surrounding environment, including waste heat from power plants, without detrimental increase in the lake's temperature. This country is rapidly running out of heat sink, which most alternate energy supporters say will be a blow in windpower's favor.

Three plant designs have been suggested for Ontario. But the least offensive from the aesthetic standpoint would be the twin 200-foot-propeller, 4-megawatt floating station, which from the shore would appear to be an extremely thin, blurred vertical line against the horizon. Not only is the lake attractive for wind power, the land from Oswego eastward has excellent winds.

Another pioneer in harnessing the winds is Grumman Aerospace Corporation, presently involved in building a small prototype wind generator based on a semi-rigid airfoil design from Princeton University. The 300-pound unit, Sailwing, boasts a 25-foot diameter rotor with dacron cloth sails and an aluminum mast. The three-bladed unit can produce its maximum power of six to seven kilowatts when the rotor is turning at 90 to 100 rpm in a 20 mph wind. With a larger electrical generator, this same unit can produce 12 kilowatts in 26 mph winds.

During the summer, the Sailwing underwent extensive performance tests, and it is expected that Grumman will have units commercially available by the end of the year.

Residential or vacation homes could readily use this size of windplant as a primary energy source or as a fuel saver. The cost of energy storage and the size and constancy of prevailing winds are conditions to be considered with each installation.

Grumman's Solar Energy Systems group, headed by Dr. Robert Madey, has sized the Sailwing for residential use on Long Island assuming an average energy demand of 20 kilowatt-hours per residence per day and an average annual wind velocity of 15 mph. Since winds are stronger and more constant at higher elevations, the blades in this case were mounted on a 50-foot tower. A Grumman spokesman said a five-kilowatt system could produce about 12,500 kilowatt-hours yearly, amply accommodating the average Long Island home with the right winds.

Dr. Madey pointed out that windpower would be especially useful in ski areas where winds are blustery to power lifts and snowmakers, as well as domestic electric power and water heating in lodges, local chalets and townhouses. It could be tied into existing grid facilities to firm up the power output, or storage capabilities could be worked out using lead acid batteries or eventually flywheels.

The Department of Environmental Conservation is considering the purchase of three Grumman Sailwing plants to evaluate potential economic benefits of a pollution-free system. The possible sitings, critically dependent on meteorologic data, include DEC's Lake Ontario research station at Cape Vincent, Belleayre Ski Area, and Rogers Education Center at Sherburne.

During the next fiscal year, NSF will spend $7 million on windmill research, jumping considerably from this year's fiscal kitty of $1.5 million and last year's $200,000. DEC has joined the race for NSF funding with a proposal to explore the wind potentials in New York. The joint team of DEC-Columbia University researchers believes that the primary future user of windpower will be the public utility group. So the team will investigate the possibility of plugging wind-borne electricity directly into the existing utility power grid.

The team will also examine the energy-intensive industries of the state. A significant part of this study will involve determining which industries are located in sufficiently windy regions and which particular industries could best put the wind to work. For instance, one of the country's largest zinc ore extraction industries is located in the windy St. Lawrence River Valley. The Energy Fuel Office of the Public Service Commission has pinpointed the highest electricity users in the industrial quarter, notably the iron and steel industry, aluminum, pulp and paper plants, paper and allied products, chemicals, petroleum and coal products and cement plants.

The third and perhaps most intriguing idea is a sort of cross-pollination of existing hydropower and wind to come up with a unique, new hybrid. "A combination of wind and water power will yield a desirable balance of power," says Dr. Jerome F. Collins, principal investigator for the DEC team. "Water can be stored for times when the wind dies down — and when the wind blows, its power can go directly to the grid. This eliminates the need for expensive storage systems."

The coupling of wind and water will also increase the output and efficiency of the existing hydroplants which dot the state. Most desirable would be hydroplants with ratings under 10 megawatts. There are about 125 hydroplants in the state of which one-third are industrial and municipal plants averaging two megawatt capacities.

Without having to install reversing water turbines, the windplant would reduce the lowering of the upper level storage pond above the dam. Then when the wind dies down, the "saved" water would be released downstream — generating power as it rushes through the turbines. The obvious environmental plus with this system is the ability to reduce the impoundment drawdown and environmentally unwise low water conditions above the dam.

Dr. Sidney Schwartz, program manager for the joint project, said, "We expect that wind energy added to the hydro plant may offset the undesirable trend of hydroplant retirement by making these plants cost-effective elements of a total electric energy grid system. During times of peak electric demand, you can use water and wind simultaneously to increase power. In this system the hydro makes up for the intermittent nature of the winds."

The team will also analyze potential impacts using criteria of site ecology, the aesthetic impact (noise, architectural, and landscape), wind shadow (upwind and downwind air rights), potential local weather effects, safety, reliability, land use, access, rights-of-way, and fossil fuel conservation and beneficial effects on air quality.

With our native mountain areas, and the high winds along the Great Lakes and off the Long Island coast, we should have no trouble borrowing power from the winds.

"Don't be fuelish," TV ads have warned us recently, prompted by our energy plight. Yet at the very core of our nation's energy policy (some people question if there *is* a policy) is the dig-drill-burn chant of the coal-oil-and-fission folk. Windpower still blows clean, inexhaustible energy all over the face of the Earth. And at the same time, the face of the Earth is being scarred with coal mines; it's being pricked and punctured by oil drills and is threatened with becoming one giant repository for nuclear garbage, which our children will have to guard with their lives — literally.

Why should we plot this self-destructive route? Why should our economy be dictated by the foreign policy of the Middle Eastern nations — while wind rushes through our fingers like ever so many kilowatts in search of a home — to heat, to light, to cool, to power?

A New Attack on Wildlife Rabies

by Jonathan Kapstein

Back in 1806 when the New York State Legislature unanimously voted to award $1,000 to one John M. Crous for discovering a cure tor rabies, it was strictly wishful thinking. According to medical historian Berton Roueché in his excellent book, "A Field Guide to Disease," Crous' rabies cure was a pill whose components included a pinch of the pulverized jawbone of a dog, a bit of dried colt's tongue, and a dash of corroded copper taken from an English penny of the reign of George I.

But the legislature's piece of early nineteenth century wishing was perfectly understandable. Even the notion of rabies has always engendered terror and compelled attention. For one thing, it is transmitted by the maniacal bite of an afflicted creature. For another, it is invariably fatal. (Considering that the untreated death rate for bubonic plague and yellow fever are 50 percent, the 100 percent death rate for rabies is all the more impressive.)

But rabies is not widespread — at least not in humans. The last case contracted in New York State was 21 years ago. The disease rages primarily in wildlife. And indeed, New York, working under a federal grant, is the only state in the nation with active medical research going on into rabies immunization. Meanwhile, the neighboring Canadian province of Ontario — which is something of a reservoir of wildlife rabies for New York — is working with an experimental program that would control rabies by immunizing wild animals with an oral vaccine. It is the first such program anywhere in the world.

Ontario now is well into the second year of a $450,000 program of vaccine development and trials of a bait system. The main target is the red fox, which accounts for 40 percent of all wild animal rabies. Skunks account for 16 percent, and the remainder is divided up among raccoons, coyotes, bats, and the odd squirrel. Dr. Charles MacInnes, wildlife supervisor in the Ontario Ministry of Natural Resources, warns however that the program so far is strictly a pilot one: "The vaccine currently works fine in the lab, but it isn't safety tested for use in the field yet. One of the problems is, if we put it out as a bait there's always a chance a child would pick it up and eat it. So we have to make sure it's safe."

Wildlife rabies has been a serious problem in farm regions of western Ontario since 1955, when it appeared as an epidemic spreading from the Northwest Territories and has remained endemic ever since. (Explorers and trappers as far back as the late 1600's reported that a strange disease periodically wiped out sled dog teams in the NWT, and researchers suspect the disease may have been rabies even then.)

One problem however in using an oral vaccine for foxes is that they bolt their food. Once the immunizing virus reaches the stomach, enzymes and acids neutralize it. So experimenters were faced with the need to delay the oral vaccine in the animal's mouth and throat long enough for the weakened live virus to be absorbed through mucous membrance. In New York, Dr. John Debbie of the Health Department Research unit in Guilderland outlines one alternative: "We're working on a good method of bait application with a coated capsule that won't break down in the stomach but can work through the intestinal wall." In Ontario, meanwhile, the experimenters are trying a freeze-dried vaccine mixed with a dried gel that absorbs moisture in the animal's mouth and becomes a sticky, taffy-like mass giving the vaccine time to be absorbed.

Current field trials are underway using a neutral gel mixed with a small dose of tetracycline. The antibiotic shows up as bright yellow in the animal's teeth under fluorescent light. The bait is put out in clear plastic bags smeared with attractants and with a small coded label that tells anyone picking the bag up by chance that it's a harmless test.

In the first pilot experiment in 1972, Ontario wildlife biologists autopsied 600 animals sent to them by trappers. "We tested whether the tetracycline program would work," says Dr. MacInnes, "and it did. We checked those carcasses, and 11 percent of the foxes, 37 percent of the skunks, and 17 percent of the raccoons had tried the bait bags."

About a year ago, the experimenters put out 8,000 bait bags working with 15 local trappers in an attempt to saturate one area between Lake Huron and Erie. Dr. MacInnes, a Montrealer who earned his Ph.D. from Cornell, explains: "We are trying to find out now whether it's worthwhile to embark on a large-scale immunization program." By comparison, to wipe out rabies in an urban dog population, 70 percent of the dogs would have to be immunized. So, as Dr. MacInnes notes, "What we have to find out is how many animals we have to reach with the bait. In the meantime, it looks encouraging."

According to Connaught Medical Laboratories Ltd. in Toronto, the medical research portion of the Ontario team, the oral vaccine immunizes the laboratory foxes with about 80 percent success — considered a reasonable level. But again, field trials and laboratory work are two different things. Up to now, there is no published target date for field trials of the vaccine with the bait.

David Johnston, the Ontario biologist in charge of the bait development program, says that if and when it has been determined that a vaccine is safe for field use, a first step, full-scale trial could be held perhaps on an island where wildlife is easily controlled.

Dr. MacInnes, notes that the red fox population in Ontario is about one-tenth the level of what it was in the early 50's before rabies showed up. "Theoretically," he says, "rabies shouldn't persist in a fox population. Foxes are so susceptible that the disease shouldn't survive. Foxes are 20 to 100 times more susceptible than dogs, as shown by testing with diluted solutions. So it may be that foxes are the biggest single source of danger but skunks or mice may be necessary to keep rabies going."

The Ontario researchers note too that some areas in the U.S. tried to get rid of rabies by wiping out foxes in affected areas, but that didn't work.

Now, Dr. Ward Stone of the Department of Environmental Conservation's Wildlife Research Center in Delmar figures that the epidemic of sarcoptic mange "has greatly reduced rabies in foxes in New York State because of its effect on the fox population." He observes that no cases of rabies were reported in 1973 among red foxes, which had been the principal vector in New York State. "Actually," he says, "we're quite worried about mange. It could make foxes rare, and its effect has not yet been felt in Ontario."

New York's budget for wildlife rabies research is $120,000 annually, and Dr. Stone is not too optimistic about the Ontario program: "it's not very efficient to

(Continued on EQ IV)

EQ News Briefs

Governor Malcolm Wilson has announced the purchase of 160 acres in the Pine Bush section of Albany County as a nature preserve and study area. The purchase was approved by the State Nature and Historical Preserve Trust, which administers funds under the Unique Natural Areas Program authorized by the Environmental Quality Bond Act of 1972. Created by the last major glacier as it passed through New York State, the sandy Pine Bush area has been cited in scientific literature for its unique ecology. Under a state-municipal purchase plan, a total of 356 contiguous acres would be purchased for public ownership. The state would acquire 160 acres for about $500,000 through the Bond Act. The balance of 196 acres would be purchased by the City of Albany and the Town of Guilderland with the help of a $300,000 Federal grant.

* * *

Lawn care products to produce flawless green velvet lawns may be the death of birds and even small animals. DEC pathologist Ward Stone documented one case in which at least 12 to 15 geese died on a Huntington, L. i. golf course which had been treated with an organophosphate pesticide. DEC investigated the death of 200-300 ducks in Rochester and determined the cause to be previous application of organophosphates. Stone points out that there is a certain, undeniable "incompatibility of wall-to-wall carpeting of lawns and birds."

* * *

Attempting to meet stringent 1985 national goals for zero-discharge of pollutants into navigable waters, both the EPA and the Department of Environmental Conservation are giving serious consideration to the age-old method of waste-water land disposal — a sort of "living filter." Earlier this year, Commissioner James L. Biggane approved a construction permit for the state's first spray irrigation sewage disposal project to be located on a residential development in Greene County. In this method of land application, the wastewater first undergoes tertiary treatment at a plant, then is sprayed through elevated nozzles over a large area of land and allowed to percolate through the soil. This percolation process helps remove nutrients from the water before reaching the ground water table or streams. It is a water reuse technique which harmonizes with the natural hydrologic cycle.

Albert C. Jensen, DEC Regional Supervisor of Marine and Coastal Resources and frequent contributor to the Conservationist, has been awarded the George Washington Honor Medal by the Freedoms Foundation. The foundation, dedicated to strengthening and upholding the principles of American government, commended Jensen for his "outstanding achievement in bringing about a better understanding of the American way of life." The award was prompted by an article Jensen authored, entitled "Human Goals — Values for Living."

* * *

Niagara Mohawk has revealed in its employee publication that the company "is studying the feasibility of several new sites, and is also investigating the economics of rehabilitating some older hydroelectric plants to improve their operating efficiency."

"Present fuel shortages and rapidly escalating fuel prices raise the possibility that it may be feasible to develop hydroelectric sites previously rejected on economic grounds." The article concludes, however, that any further hydroelectric development within their franchise would be minimal and would not affect their announced plans for nuclear and coal-fired generation.

* * *

In our June-July isaue, we incorrectly stated that "Next season, according to the Department of the Interior, all waterfowl hunters in the Atlantic Flyway — which includes all of New York State — will be required to use only iron shot." The Department of Interior will not make a decision on the banning of lead shot until after release and review of an environmental impact statement. Lead shot will not be banned for the 1974 waterfowl hunting season.

* * *

Trash and garbage will be the fuel used to heat and cool the Empire State Plaza, the State Capitol, the Alfred E. Smith Building and the Education Department Building in an agreement between the City of Albany and two state departments, Governor Wilson has announced.

Nearly 110,000 tons of mixed solid waste will be processed from Albany, Cohoes and Watervliet. Approximately 80 percent of the waste will be recovered and marketed as energy and ferrous scrap projects, which will offset the higher capital and operating costs for the new system. It is expected that the life of the present landfill now estimated at five years will be extended another 15 years.

Sweet fern, sassafras, painted trillium and 65 other varieties of indigenous trees, shrubs and wildflowers will deck a recreated rural countryside along the new Staten Island toll plaza of Outerbridge Crossing next year. The bridge which links Tottenville, Staten island and Perth Amboy, N. J., was opened in 1928, and the Port Authority intends to landscape and restore the forest which orlginally grew on the site, providing a buffer between the Staten island community and the expanding highway system.

Rabies

(Continued from EQ III)

try to immunize wildlife. A properly regulated harvest by hunters and trappers could reduce rabies by keeping population density down." The Ontario researchers agree and emphasize that their program is strictly a pilot one. In fact, they are getting double-barreled assistance because the prices on red fox pelts have soared in recent years from 50¢ to $50 each, meaning more trapping pressure and more donated carcasses to work with.

Statistics give one reason for the difference in emphasis between New York and Ontario. In New York State, only 30 cases of animal rabies were reported in the last statistical year, compared to 1,694 in Ontario which was the down side of a cycle from the overall annual average of 2,000 cases.

"This year in New York State," warns Dr. Debbie, "with a low fox population, bats will be the number one problem. Bats are the one wild animal that live closest to humans. Bats bite whether or not they have rabies, so those bitten will have to undergo treatment if the bat isn't caught. Adds Ontario's Dr. Macinnes, "We know that bats in Ontario have rabies, and since bats are migratory they could be bringing it from the south. But bats are an entirely separate and distinct problem from foxes."

The more wildlife biologists investigate rabies, the more unanswered questions appear: Why is it so rare among wolves and nonexistent among bears? Do birds such as hawks or even herring gulls ever catch rabies? Does it persist among lemmings or even rabbits in the North Woods? But meanwhile, the Ontario researchers were faced with the problem of how to attract foxes to bite the plastic bags. Initially, the bags were smeared with meat and with pheromones, hormone-like substances whose scent would attract the foxes. "We tested 40 or 50 attractant substances on captive foxes," recalls a researcher. "Number one this year is Gorgonzola cheese."