THE CONSERVATIONIST

State of New York Conservation Department December-January 1966-67

Silver Linings: 1966, 1967

The drouth has been the most valuable disaster to hit New York since the Great Depression. We say that because we have been looking back over the past year, and forward to 1967. For a conservationist, the view is brightening

When the water got scarce, people began to worry about so much of it being polluted. This made a lot of conservationists overnight. Their newly-opened eyes began to notice how much of their land was ugly, dirty and deteriorating.

Thus, the most notable advance of the past year has been the increased sensitivity of the public to real or foreseen threats to our environment. The most visible example of this new sensitivity was the opposition to the proposed pumped storage power plant at Storm King Mountain on the Hudson River. But from alarms about pesticides to court actions against land takings for highways, the public has become aware that natural resources can be lost forever.

Secondly, a groundswell arose to preserve our natural beauty. For the first time in the history of this State, the Governor called a conference on natural beauty. The resulting discussions were specific. There followed valuable similar conferences in several counties.

The year 1966 also saw the campaign against pollution begin to roll. Definite cutoff dates were set for water pollution following approval of the Pure Waters Bond issue and court citations issued. Prodded by research findings, startled by smogs, people began to talk about air pollution throughout the Nation. Both industry and communities saw that they must act on pollution.

More and more in 1966, the average citizen began to encounter land and water which the State had acquired for his future recreation. Further, the Legislature proposed and voters approved a $200 million bond issue to develop these lands.

Probably the major accomplishment of 1966 was the general acceptance of the idea that use and development of a large natural area — the Hudson River Valley — should be planned and controlled "to protect its scenic, historic and cultural resources."

And in 1967 — after the passage of 29 years — there will be another Constitutional Convention. Although partisans of one view or another on the Forest Preserve may look upon this with apprehension, it is healthy that the future role of this priceless resource will then come up for full examination.—Editor

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The Imbalance Of Nature

by James R. Westman, *Department of Environmental Sciences, Rutgers University, New Brunswick, N. J.*

A Fresh Look At The Evidence Which Discredits The Old Theory Of "The Balance of Nature," And Shows The Profound Effect Of Built-In Mechanisms In Animals

Nature, to be commanded, must be obeyed.—Francis Bacon

MANY years ago, someone came up with the theory of "the balance of nature." It was a beautiful theory based upon the known facts of the times and not unmixed with religious overtones. And it was destined to hold man's imagination and belief for generations to come.

Indeed, it became so much a part of his faith that, as conflicting facts were discovered, they were often either popularly disbelieved or ignored. Even today, many people — and yes, some naturalists — cling to the original, outworn, metaphysical concept of "the balance of nature."

The popular, balance of nature concept was — and is — a simple, attractive credo. It says, in effect, that our planet Earth evolved to a stability wherein the various plants and animals reached a delicate state of balance between one another.

This is supposed to be particularly true of the predator-prey relationships among wildlife species. Hawks, owls and foxes, for instance, eat mice; skunks eat the eggs of snapping turtles; big fishes eat smaller fishes, etc., etc. In short, under this old, balance of nature concept, it is believed that the predator animals keep the prey animals in check and thereby prevent the populations of prey animals from becoming very abundant and, possibly, serious pests.

Needless to say, we can still see evidences of this belief in some of our fish and game laws. On the one hand, there are bounties offered on certain predator animals, such as the fox, in the belief that these bounties will control the fox populations which, in turn, are supposedly depleting rabbits, pheasants, etc.

On the other hand, we see laws passed to protect predators so that the "delicate balance" between the predator and prey will not be "upset."

Still another belief under the old, balance of nature concept — and one that we can also see reflected in many fish and game laws — involves the number of breeding adults and the number of young produced and surviving. A popular belief is that the latter is determined by the former in a sort of fixed ratio — again a sort of "balance."

Some Facts of Life

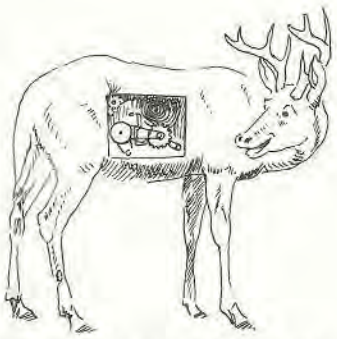
The trouble with this romantic, esthetic concept of a "balance of nature" is simply that it is self-contradictory to begin with, and further, is not in keeping with recent scientific discovery. In the first place, the evolutionary evidence has long included man, the species *Homo sapiens*, as a product of the evolutionary process, together with his unique gift of reflection, imagination and planning (perhaps these are separate gifts, but let's not go into that here!). In short, man is a part and parcel of Nature, whether he likes it or not, just as the dinosaurs who flowered and faded millions of years before him without his help in any way — by gun, net, laws, pesticide, plow or bulldozer.

Will man cover the earth?

The evidence also reveals that *Homo sapiens* itself is in a state of population eruption and can be expected to continue

Humans are not the only creatures vastly affected by hormones, crowding and stress. Here the author reviews some of the research showing how high population triggers biological mechanisms in wildlife and causes marked declines and behavior twists. As a result, he says, we must scrap the old, simple idea of "the balance of nature" and take new directions in conservation. Formerly a Senior Aquatic Biologist (marine) with the New York State Department of Conservation, Dr. Westman is Professor in the Department of Environmental Sciences at Rutgers, and the outdoor columnist of The Courier-News, *Plainfield, N.J. He is author of the book, "Why Fish Bite and Why They Don't," and of numerous articles on conservation. This article is a chapter from a forthcoming volume by him on the wildlife resources of New Jersey.—Editor*

changing the environment on an accelerated scale for many, many years to come as it searches for food, clothing, etc., together with a longer and more abundant life upon Earth. In fact, if the present rate of human increase is not stopped — and soon — man within three centuries hence will need almost to exterminate the animals that compete for his food plants, nearly eliminate the now vital bacteria and fungi in the soil, replace his present food plants with new ones and become a vegetarian except for harvests of fish and other animal life from the seas and inland waters. Spring will indeed become silent — but from the stark necessity (?) for human survival.



We discover built-in mechanisms

In the second place, recent scientific discovery has indicated that far from a delicate balance in predator-prey relationships, there are "built-in" mechanisms for the population control of many forms. Further, that the killing of as much as 70 per cent of an entire wildlife population annually may not only fail to deplete, but actually increase its yield.

Now all this doesn't mean that we should "eat, drink, and be merry for tomorrow we die," nor does it mean that we should go forth and harvest our wildlife resources with abandon. No indeed. But it does mean that the balance of nature concept has had to undergo a severe revision — an agonizing reappraisal, if you will — and that we must recognize this if we are to understand and wisely use the living resources around us.

So let's consider some of the surprising behavior of wildlife populations and some of the dynamics that are involved.

Nature's Vacuums

The old saying that Nature abhors a vacuum holds great truth and significance. The newly-tilled ground becomes quickly blanketed with weeds and grass; the cut-over forest soon erupts in new growth; and the newly-created pond or lake suddenly blooms in a myriad of microscopic plant and animal activity. It is as if death were necessary to promote life.

But let's follow the natural course of events still further. The eruption of weeds and grass is soon followed by an irruption (note the difference in spelling) of small creatures of the land; the new growth of the woodlands promotes a dramatic increase of these and larger creatures; and the newly-created impoundment may soon produce an abundance of fish that surpasses belief.

Some of these events, of course, are well known to most people. The home gardener, for instance, is only too familiar with the ceaseless energy of weeds and grass. His is a constant battle if he is to reap from that which he sows.

The results from the cut-over forest are not so well recognized in this day and age, even though the American Indian used to practice burning, presumably in order to promote new growth and better hunting of game — deer, grouse, rabbits, etc. In fact, the American Indian, far from being the conservationist that romantic stories would portray him to be, was often quite reckless in his use of natural resources. There is an authentic account, for instance, of a coastal ship captain in Colonial times who sailed from Boston to Chesapeake Bay and was never out of sight of forest fires from the Indians' burning.

Finally, almost every school student has examined a drop of water under a microscope, which has come from a container of fertilized water. It literally crawls with tiny animal and plant life and this is but a small edition of the newly-created pond or lake.

Types of Vacuums

So far we have dealt with only certain types of vacuums, or "ecological niches," that consist essentially of physical expansions of suitable habitats for particular plant and animal species. But this space factor can be aided or hindered by other factors such as climatic conditions and the amounts of predation, competition and disease that may be present.

Consider, for instance, the exotic (non-native) species such as the European starling, the Asiatic pheasant, and many species of "imported" insects. All these animals found a natural vacuum and responded by population irruptions. The pheasant was — and still is — greeted with favor, but the starling and many of the insects have become serious pests. In fact, the latter have become a major problem in our agriculture.

Still another type of vacuum is created when a large portion of a wildlife population is killed and when the population is close to — or at — the carrying capacity of its habitat. This seems to be the dynamic that is least understood by anglers, nimrods and many others who are very interested in conservation.

Finally, even ourselves, the human being, the species *Homo sapiens*, has created its own vacuum through knowledge and control of disease, nutrition, etc., and is now in a state of population explosion.

Man, the Creator

By now, the imaginative reader may realize that man, *Homo sapiens*, is perhaps the greatest creator of natural vacuums that the planet Earth has ever witnessed. With his machines, an individual moves 25 tons of earth in ten seconds or lifts an equal weight in the same time. He can fly and transport faster than the speed of sound. And he can create elements and compounds perhaps more readily and quickly than anything that Nature has done before. He has become an active participant in the evolutionary process while a victim of it.

"Cycles" and Strange Substances

Most wildlife populations seem to be governed by the rule that "what goes up must come down." And while this is particularly noticeable in areas where man has been busy creating vacuums, it also takes place in the seas on an even more dramatic scale. In short, when populations undergo eruptions or irruptions, as the case may be, collapses follow — occasionally in such regular fashion that the phenomenon is called a "cycle." Sometimes these collapses are accompanied by mass emigrations (as we shall shortly see), but usually the abundance just disappears.

And what causes these great fluctuations?

Under the old and conventional balance of nature concept it was believed that the predator-prey relation was responsible, or perhaps other factors such as disease and malnutrition. Recent discoveries, however, have revealed not only some telling evidence against this con-

cept, but also some exciting new knowledge concerning the effects of crowding on animal populations.

Evidence on the Land

Study of the effects from the crowding of a species or a population of a species is not new. Yet perhaps the most dramatic and significant early scientific study —and one that conforms with the modern disciplines of the scientific, experimental method — was that of Jacobus Faure in the late '20's. It dealt with the great locust (grasshopper) plagues of Africa, and Faure's research is considered to be a classic of its kind. Here is a brief account of it:

Locust plagues have new meaning

Ancient explanations of the locust plagues of Africa were that Allah occasionally opened a big hole in the Sahara desert and allowed great hordes of locusts (grasshoppers) to visit pestilence on the land as punishment for the sins of the people. And there was some logic in this explanation, because these large, winged grasshoppers were seldom seen except during these visitations and differed greatly from the smaller, highly colored grasshoppers that were commonly present on the land.

Crowding affects the clapper rail

But Jacobus Faure suspected otherwise and decided to perform an experiment. He collected numbers of the local grasshoppers and placed them in cages with plenty of food but in various densities. And soon he began to observe some differences in the behavior of the grasshoppers. In the more densely inhabited cages he noticed that the grasshoppers quickly became very active with a strange sort of excitement. They kept hopping about and soon began to change their appearance. They grew larger and became less brightly colored. And soon, lo and behold, they grew larger wings and became the Frankensteins of the locust plagues!

Mass emigrations of animal populations are, of course, nothing new, and those of the Arctic lemming mouse are perhaps the best known on account of their dramatic nature and frequent occurrence. But those of our own gray squirrel can match any account. There have been occasions in the past, for example, when gray squirrels have made mass emigrations during which they have attempted to swim large rivers such as the Niagara, Hudson and Ohio. Many drowned in these efforts and the shores of the rivers they sought to cross became lined with their bodies.

Many species of birds also dramatically demonstrate their need for space. The familiar spectacle of the male robin fiercely fighting its own image in a basement window or in the hubcap of an automobile is just one example. The abundant clapper rail, or mud hen, of the Jersey salt marshes goes much further: When conditions become too crowded, these cunning gamebirds have been observed to invade neighboring nests and destroy the eggs of the big clutch with their power-packed bills.

Mice and More Mice

The chief food of foxes and of most hawks and owls in eastern United States is mice. In New Jersey, for instance, there are some eight species of mice in addition to the troublesome house mouse, *Mus musculus*, an import from Europe.

But by far the most important species insofar as poundage production is concerned is the field mouse or meadow vole, *Microtus pennsylvanicus*. These large mice with the short tails and inconspicuous ears go through more or less regular

Field mice atop a cycle

fluctuations in abundance — from as little as a dozen or so per acre to perhaps 500 per acre. And they do this so regularly — every three to five years — that the fluctuation is called a "cycle."

Now it doesn't seem to make a particle of difference how many predators are about insofar as this cycle is concerned, although an abundance of predators may serve actually to delay the collapses for a year or two. In fact, these dramatic fluctuations in the abundance of the field mouse often have far more to do with the abundance of predators than vice versa.

Another common species of mouse is the white-footed or deer mouse. This little animal is a creature of both the fields and woods and often enters rural homes. While less prolific than the field mouse, it is still an important member of the "meat factory" and also undergoes fluctuations in abundance.

Varying hare reacts under pressure

A Common Denominator?

Recent, controlled experiments with the crowding of mice have revealed that these animals undergo a form of stress under such conditions, and that this stress

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Deer have population explosions

causes changes in the vital functions of certain glands including the adrenals. Further, that these changes, in turn, affect the functions of other organs such as the liver and spleen. The end result of the crowding may be loss of vitality, impotency, homosexuality or even death.

The effects of crowding may be influenced by other factors. For instance, it has been recently discovered that when the white-footed mouse — a species we mentioned earlier — is crowded under experimental conditions, its reactions are much stronger when mixed with strangers of its own kind than when mixed with familiar ones.

The woodchuck, or groundhog, is another wildlife species that has been found to be affected by crowding. In this case, the fluctuations in abundance seem to be accompanied by the numbers of eggs ovulated by the females and — believe it or not — by the numbers of embryos actually resorbed by the mothers!

An even more dramatic example is afforded by the snowshoe hare, a species that has long been observed to undergo spectacular cycles of abundance and scarcity — from a few animals per several square mile to several hundreds — even thousands — per square mile. Meanwhile, the population spreads out, under the population surge, until it occupies a wide expanse of new areas.

Oyster tugs against plankton

For many years, these dramatic cycles in the snowshoe hare defied satisfactory biological explanation. And when the first evidential symptoms were described, the physiological causes still remained a mystery. It was first called "shock disease," because the rabbits (beg pardon, hares) were observed to go into convulsive spasms and proceed to pass out of this world with almost immediate rigor mortis. But subsequent discoveries have indicated that population stress, and its consequent effect upon vital glandular functions, is responsible.

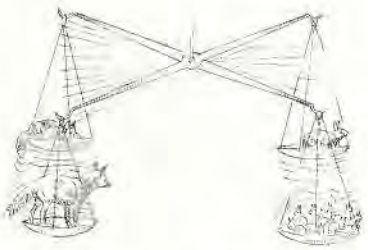
And what of Dr. Faure's grasshoppers? Well, it has also been discovered that the body changes of these insects under crowded conditions is due to a chemical substance, a hormone, that is secreted by glands!

One could go on and on describing the dramatic fluctuations of wildlife populations — those of the cottontail rabbit, the Arctic hare, the ruffed grouse and many others. Perhaps these, too, are involved with physiological effects from crowding. It is a fertile field for research.

Evidence in the Water

The aquatic worlds of life are perhaps the most interesting of those which man studies. For in these worlds there are all sorts of goings on that challenge not only the popular balance of nature concept but man's comprehension itself. Again, take the matter of strange substances.

It has long been known that even the tiny forms of plant life called phytoplankton — which are suspended in the water and which account for its greenish, turbid, appearance in summer — give off chemical substances. Further, that when the concentrations of these substances reach a certain level, they may not only inhibit or kill the populations of plankton that produce them, but sometimes other species of plankton as well.



Predation and reproduction gyrate

The effect of these substances may not end here. In fact, it has been discovered that oysters may refuse to pump water and feed when the concentration of one or more of these substances in the water is too great. And this despite the fact that the substances may be produced by the very plankton that are the normal food for these oysters!

Here again we have an instance of the "prey" (or more accurately "forage" in this case) affecting the predator or "grazer" rather than vice versa.

Fish Enter the Picture

Fish also give off strange substances, and it has been discovered that at least one of these will prevent the species that produces it from spawning when the chemical is sufficiently concentrated.

An example is the common goldfish. When this species becomes too crowded — either by its own kind or by other species — the mature, ripe fish will not spawn unless removed to waters where the chemical substance is either absent or is less concentrated. Just how many other fishes operate in a similar manner is a question for further research.

Eggs by the Million

But perhaps the most phenomenal aspect of fishes is the vast number of eggs that most of them produce and the very small proportions of eggs and young that survive. In the case of the Atlantic mackerel, for instance, it has been determined that the mortality of the eggs and newly-hatched fry usually varies between 99.9996 per cent and 99.9998 per cent. The former represents a bumper crop and the latter a poor one!

Mortality affects the crop

Sometimes the production of young by a marine fish in a single year is so great that this one-year class will dominate the entire population for a decade or more. A classic example of this phenomenon of a dominant-year class is provided by the Norwegian herring: The young born to this species in 1904 were so numerous that they dominated the commercial catches from 1908 to 1921 and "virtually supported the fishery for 15 years."

Another case of the potential productivity of fishes — and one that is much closer to home — involves one of our most important fresh-water game fishes, the largemouth bass. A pond of only a few acres that contains this species, will usually have thousands of baby (young of the year) bass swimming around as late as October or November. Yet only a tiny fraction of one per cent of these young, perhaps a dozen or two will usually survive into their second year of life. It is another case of many being called but few chosen, and the cause of this natural mortality is unknown. Perhaps too many are produced, because recent experiments have suggested that a thinning out of the young may bring about a greater survival.

Perpetual Change

Under a revised, balance of nature concept, there is already much knowledge that can be put to work continually towards a more effective management and use of our wildlife resources. And of all the lessons to be learned from researches into population dynamics, perhaps the most important concern is the tremendous reproductive potential and surge — call it sex, if you will — on the one hand, and the effects of predation on the other. Because under the old balance of nature concept, the former was greatly underestimated, while the latter were grossly overestimated. Further, under the old concept, the effects from environmental changes were not popularly appreciated.

Perhaps it was inevitable, therefore, that insofar as wildlife resources were concerned, thousands of fishing and hunting regulations were imposed, bounty systems were established and hundreds of fish hatcheries and game farms were constructed. And perhaps it is needless to say that only a relatively few of these expenditures have been other than waste except for political purposes or a misguided sense of achievement.

In short, it was not understood that the killing of a portion of a population — sometimes as much as 70 per cent by man alone — could actually increase abundance by creating a natural vacuum. Nor was it understood that changes in environment not only changed the number of species, but also their abundance and the degrees of fluctuation. Nor was it understood that planned and executed changes in environment could bring about vast increases in the abundance of desired forms.

Indeed, even to this day, there are many who choose to ignore these facts of life and insist upon opposing them. It is a losing battle insofar as man is concerned.

The State of New Jersey with its rich natural resources and ever-increasing abundance of people represents a sort of vanguard test in meeting the conservation challenge. And certainly it cannot meet this challenge successfully unless the facts of nature are learned and utilized as they are discovered — however contradictory they may be to previously held concepts or however unpalatable.

The axe, the saw, the plough, the dredging machines and the chemicals — even the gun and fishing devices — have long since been found to be creative tools for greater abundance *if used wisely*. It remains for us to do so in a world of inevitable, perpetual change.

The Black Widow

by Richard C. Kern

She Does Her Best To Become A Widow— But She's Far From Being A Merry One

IT is not commonly known that the black widow, *Latrodectus mactans*, is a well represented species in every state of the nation except Alaska. Until recently, I was one of many who considered this spider a foreigner to the Northeast. Since then, however, I have succeeded in locating many individuals in the drier areas of the meadows not far from Colgate University in Hamilton. But only through study and observation can one come to know the black widow's exciting habits and distinguish between the fact and fiction of its curious nature.

The widows are members of the family *Theridiidae*, the comb-foot spiders. A comb of tough hairs on the last segment of each hind leg aids these spiders in the carding out of silk from the spinnerets during the capture of insects. By the alternating action of the hind legs, the spider is able to completely enshroud its victim with loops of sticky silk. The defenseless creature is then destroyed by the spider's poisonous bite. The web of the comb-foot is an irregular mesh of slightly sticky threads. It does not possess the great symmetry of the orb webs, sheet webs and dome webs of other species, but serves the spider quite well, for the comb-foots are surely a successful group. A common comb-foot, which closely resembles the widows in both body shape and habit, is the world-wide house dweller and creator of most of our bothersome cobwebs, *Theridion tepidariorum*.

The mature black widow is simply, yet strikingly, colored. The cephalothorax and legs are jet black and so is the back of the abdomen except for a brilliant red dot located at the end of the abdomen just above the spinnerets. The underside of the abdomen is also black and possesses the red hourglass marking for which the spider is famous. The males and immature females are much more heavily marked with red dots and white stripes. As the females mature, however, these gradually disappear until the coloration characteristic of adulthood is reached. Males, on the other hand, retain their elaborate pattern throughout life.

Typical of most spiders, the male black widow is many times smaller than his dominant mate. In her mature, yet unpregnated, condition the female measures about one-third of an inch (excluding legs). The male is less than one-sixth of an inch and weighs less than one-tenth as much as the female. In the case of the garden spiders, the female may outweigh her mate by several hundred times. The female black widow undergoes about ten skin molts in the span of about eight months between her newly-hatched and adult stages. It is not until the last molt that her genital pore is revealed to permit fertilization. Males likewise mature

(Continued on page 32)

An example of varied plant inventory: Partridge Run, near Albany

Taking Stock

THE plant cover of your property reflects the conditions of the unique environment within your lot boundaries — such things as the kind of soil, exposure, slope, topographic position, the many facets of local climate, the wildlife which use the vegetation and the previous land use history.

There may be large trees which existed in Civil War times, or trees which have sprung up only since the land was abandoned during the years of the Great Depression. There may be pin cherry, fireweed, Jack pine or pitch pine, which would indicate a fire history — a recent fire in the case of the purple fire weed and one or two decades ago in the case of 20-year-old pitch pine. The presence of orange hawkweed almost invariably indicates that the property was at one time a worn-out farm.

Abundant hop hornbeam usually signifies a wooded area which has been subject to heavy browsing by livestock or deer. A fence row of osage orange, now providing fine cover for quail and rabbits is a testimony to the pre-wire-fence days of American agriculture. There may be species of plants present which are not native to your area, indicating the interest and industry of some former owner. Insectivorous plants, edible plants, plants yielding useful extractives, fruit or other products, rare species or poisonous plants may be present and are worth knowing about. In any stock-taking then, a knowledge of the vegetation is important.

First of all, broad classes can be determined based on the predominant kind of vegetation or lack of it. Such areas can be indicated on a map. Air photos are particularly useful in such delineation, but areas can be mapped on the ground. Forest land, cultivated crops, range or pasture land, areas dominated by brush, marshes, bogs and heath would be the first generalized designations. Non-vegetated areas might include rock exposures, dunes and water areas. A closer look will indicate that these generalized vegetated areas will need to be subdivided into different "stands" based on different ages, different dominant plant species, different vigor or condition, and so forth. Further refinement for stock taking, subsequently calls for the recognition of the individual species and a measure of their abundance.

*This is the second in a series of articles by Professor Hamilton, designed to guide the new rural landowner towards greater returns and satisfaction from his investment. The first article appeared in the June-July, 1966, issue of THE CONSERVATIONIST.

Of Your Rural Property

Part 2—Your Plants And Their Values*

by Lawrence S. Hamilton, *Professor of Conservation, Department of Conservation, Cornell University*

There are approximately 865 kinds of trees native to or naturalized in the United States. Forest trees not only provide lovely scenery and a pleasant environment for picnicking, hiking or riding but may be performing a valuable role in preventing soil erosion. Many species provide food and shelter for different kinds of wildlife. Among the direct forest tree products which have value to man are such items as maple syrup, turpentine, Christmas trees and greens, posts, pulpwood, firewood, logs for lumber and dimension stock, "bolts" for veneer, poles and piling.

While there are a great many tree species, in any one locality the number may be fairly restricted and not too difficult to learn to identify. You may then do your own stock taking. Tree identification guides are often available for your own State or region. The Extension Forester at your State College of Agriculture or Forestry can supply you with such a guide or put you on the track of one. For example, the New York State College of Agriculture at Ithaca publishes a simple, reasonably priced guide entitled, "Know Your Trees," which describes 50 native trees. Nationally, there are many fine books on tree identification such as: The American Forestry Association's *Knowing your Trees*, which treats of 170 of our outstanding trees; *The Tree Identification Book*, by George W. D. Symonds (Barrows and Company); *The Book of Trees*, by William Carey Grimm (Stackpole Company); *How to Know the Trees*, by H. E. Jacques (Wm. Brown Company). A fairly elementary one for beginners is John Kieran's *An Introduction to Trees*, (Hanover House), while an excellent, authoritative work for the advanced is *Textbook of Dendrology*, by William Harlow and Ellwood Harrar (McGraw-Hill). Donald Culross Peattie has authored two very good books, *A Natural History of Western Trees* and *A Natural History of Trees of Eastern and Central North America*, (Houghton Miflin Company).

Once you know the species, you may obtain an idea of the abundance of each kind by counting and even classifying into general sizes. You may even measure the girth of these trees or their diameter. A trip to your local forestry office will bring instructions which should enable you to make such measurements for your own interest.

If there is commercial value in your forest trees and you are interested in an accurate inventory and in a management program, you should obtain the services of a consulting forester. A list of consultants is available from your Extension Forester or local forestry office. If your own reconnaissance reveals possibilities of timber sale and yet a volume not large enough to warrant a consultant forester, the programs of many State forestry agencies provides assistance in marking trees for a harvest and determining the volume marked. Note, these public programs do not provide a total forest inventory or appraisal. In New York State, our Forest Practice Act program provides such technical services through the District Directors of Lands and Forests of the N.Y.S. Conservation Department. A management plan and planting advice is also part of the package.

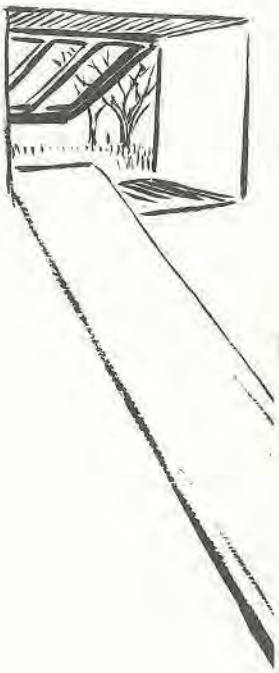
Woody perennial plants of lesser stature, often having multiple stems are designated as shrubs. Woody vines are usually considered as shrubs. Some of the most attractive components of our wild landscape are shrubs. Whoever has seen the flame of staghorn sumac leaves in the autumn, the improbably magnificence of mountain kalmia or azalea in blossom or red springtime stems of red osier dogwood, will not dispute this. Many delicious wild fruits and berries used by man are borne by shrubs. For wildlife, too, shrubs are an extremely important food source — fruit, leaves, stems, roots. Shrubs, being low in stature and multi-stemmed provide cover for many forms of wildlife. These latter values are so well recognized that Federal and state game agencies have instituted programs of encouraging shrub planting to enhance wildlife habitat. The Division of Fish and Game of the N.Y.S. Conservation Department will provide advice on this activity.

The roster of shrub species which may be on your property is probably fairly lengthy. Good books are available to help you recognize most of the common ones without too much difficulty. Among those available are: *The Shrub Identification Book*, by George W. D. Symonds (Barrows and Company), for eastern U. S. and Canada only; *Illustrated Guide to Trees and Shrubs*, by A. H. Graves (Harper and Brothers), for Northeastern U. S.; *A Field Guide to Trees and Shrubs*, by George Petrides (Houghton-Miflin).

In normally forested areas of the country, shrubs will gradually be largely replaced by trees in the absence of any major disturbance. If you desire to maintain certain shrub species because of their aesthetic or wildlife values, you may therefore be required to provide disturbance (such as cutting back invading trees).

There are many other kinds of so-called lesser vegetation including fungi, ferns, mosses, lichens and herbs. Many of the most interesting and unusual members of the plant kingdom appear in the ground vegetation. Here are the beautiful spring wildflowers which transform the forest floor, field sod, hedgerow and swale into colorful carpets. You may have on your property the ghostly Indian pipe, a seed plant without chlorophyll. Your collection will unfailingly include many beautiful, useful or destructive fungi. There may be parasitic plants (including many fungi) which live on other plants, or vines which use other plants for support, plants such as the sun-dew which are insectivorous, lichens which are really two different plants (a fungus and an alga) growing as one. You should certainly become familiar with the identification of the poisonous plants of your region, and take stock to see if they grow on your property. Poison ivy, for instance, can seriously limit areas to certain uses; you may wish to restrict human activity

(Continued on page 32)



An Air Of Tension
Hangs About This Tale Of
A Piratical Trapper
And A Romantic Skunk!

The Adventures Of Terry, (The Trapper,) And Of Jimmy And Susie, (His Wild Girl Friend)

IT all started one day when Jimmy, the skunk, took his girl friend, Susie, for a walk. Now, at the time of this story, Jimmy was living not too far from a village in the Adirondack foothills.

After they had been walking for some time, Susie said, "Jimmy, I'm hungry. Let's go over to Mrs. Jones' house and get some of those delicious grubs that she has in her lawn."

"That sounds like a good idea," agreed Jimmy. "I could do with a snack."

So, over to Mrs. Jones' they went. On the way over, Jimmy got to watching Susie more than he was watching where he was going. (He very often found himself doing this, for Susie was a very pretty skunk.) All of a sudden, everything went black! After a few moments of head shaking and mumbling of not-so-nice-words, Jimmy took a good look around. He didn't see Susie. In fact, he didn't see much of anything. It was awfully dark where he was, wherever that was!

Then he heard Susie: "What in the world are you doing down there, Jimmy?"

"Down where?" asked Jimmy. "And where are you?"

"I'm right up here, and what are you doing in Mrs. Jones' cellar?" puzzled Susie.

Well, you guessed it. Jimmy was so busy looking at Susie that he walked right into Mrs. Jones' open cellar window and fell eight feet straight down!

"Just like a woman," declared Jimmy. "Wants to know what I'm doing here and not a bit concerned whether I got hurt!"

Jimmie and Susie soon discovered the real question was not what Jimmy was doing down there, but how he was going to get back up to Susie. Susie looked all around outside but couldn't discover any way to help. Jimmy looked around inside but he couldn't find any way out either. For a minute Jimmy thought he had the problem solved when he found the cellar stairs but the door was shut at the top. Then Susie, being a girl, sat down and cried and cried and cried.

"How are you ever going to get out of there?" she wailed.

"I don't know," responded Jimmy, "but if you'll stop that idiotic bawling, maybe I could hear myself think!"

That is how the situation stood when Mrs. Jones came home from work. Susie was sniffling outside the cellar window and doing her best to be quiet. Jimmy was sitting in the cellar trying to think of a way to get out. When Susie saw Mrs. Jones, she was afraid that Mrs. Jones was going to be very angry, for if Mrs. Jones objected to their digging grubs in her lawn, how was she going to feel about Jimmy being in her cellar? With this in mind, Susie quickly withdrew to what she considered a safe distance and settled down to watch.

A little while later, Mrs. Jones started to take some things downstairs. When Jimmy saw the door open, he thought Mrs. Jones was going to let him upstairs into the kitchen so he could then go outside through the kitchen door. Being delighted with the prospect of freedom, Jimmy started up the stairs at a dead run. To his surprise, when Mrs. Jones saw him coming, she let out an awful scream and slammed the door right in his face!

"Now I wonder why she did that?" he mumbled. "Humans sure are odd!"

After she had a chance to calm down and reassure herself that Jimmy hadn't added anything tangible to the air of tension, Mrs. Jones did what Jimmy had been doing. She sat down and thought and thought and thought.

"How in the world do I get a skunk out of my house without his declaring his sentiments about my hospitality?" she wondered. As she thought, an idea gradually began to develop. The more she thought, the better she liked the idea. Then she decided. This was the thing to do and, the time to do it was now. Skunks are animals, she reasoned, and animals like skunks are wild animals. The Conservation Department is responsible for all wild animals, so I really don't have a problem at all! The Conservation Department has the problem.

by Charles McNulty,
Conservation Educator,
Regional Office, Warrensburg

Feeling better now, Mrs. Jones went right to the telephone and called the Bureau of Game.

"Come get YOUR skunk out of MY cellar right now!" she told them.

In due time, this message was relayed to Terry, the trapper. Now to Terry, this was an old story. You see, Terry knew how careless skunks were about where they were going and he knew how to get them back where they belonged — or so he thought. All he had to do was borrow a cardboard box and a broom from Mrs. Jones, gently nudge the skunk into the box with the broom, pick up box with skunk, carry them outside (carefully!) and let Mr. Skunk wander off.

Confident that he could liberate Jimmy in short order, Terry stopped at Mrs. Jones' house on his way home that night. After introducing himself to Mrs. Jones and to Jimmy, Terry inspected the situation and asked Mrs. Jones for a broom and a medium-sized cardboard box. Here, Terry ran into trouble. While Mrs. Jones could easily supply a broom, she had no boxes, large, small or medium.

Well, Terry went back downstairs to see what other method might prove workable. Looking around, he discovered that Mrs. Jones kept a very clean cellar. It contained only Jimmy, a furnace and a few old boards. Being rather resourceful, Terry thought, "Why not make a ramp with one of the boards and have Jimmy 'walk the plank'?"

Not seeing why not, Terry set about to accomplish his plan. He carefully set one end of the plank on the cellar floor and the other on the window sill. He made certain the plank was steady so there was no chance of it tipping Jimmy off. With this done, Terry picked up the broom he had borrowed and began to gently prod Jimmy towards the plank. Jimmy looked back at Terry and said to himself, "Just what does this nut think he is doing?" After Terry had prodded Jimmy over to the plank, the idea began to dawn on Jimmy and he began to plod up the plank.

Like a lot of people, Jimmy wasn't too fond of heights. The further he got up the plank, the less he thought of the idea and the slower he wanted to go. Terry, on the other hand, wasn't at all interested in Jimmy's sentiments. He just wanted steady progress from Jimmy. Now, with this difference of opinion and with a lack of adequate communication, the situation gradually deteriorated. Jimmy kept stopping to look back and mumbling, "For crying out loud, don't get so pushy," while Terry kept nudging him along.

This went on until Jimmy was almost to the window. Then it happened. Jimmy stopped to glance back again and Terry nudged. Jimmy took another step to avoid the broom and he missed the plank! Poor Jimmy, down he went for the second time. Terry dropped the broom and dove behind the furnace expecting Jimmy's feelings to be strongly declared at any moment. That was the final straw as far as Jimmy was concerned. This fellow just wasn't helping matters a bit. The thing to do, Jimmy decided, was to get rid of that darn trapper. Then he could take his time and walk up the plank by himself, at his own speed. Having made the decision, Jimmy prepared to give vent to his feelings. He got all set and took aim and, couldn't find his target. Of course, Terry was still behind the furnace wondering just what Mrs. Jones was going to have to say about the Conservation Department's skunk and trapper polluting the air in her house.

After a few moments, Jimmy cooled off and Terry ventured cautiously out from his hiding place. After that experience each understood the other's viewpoint a bit better and Terry had a little more consideration for Jimmy's opinion. With an air of co-operation, they tried it again. It took a little longer than Terry had planned but finally Jimmy was back in the great out of doors and Mrs. Jones was satisfied.

Susie was glad to see Jimmy but she had gotten tired of waiting. She also thought that falling in a cellar window was a rather dumb thing to do and she said so. As they trudged off homeward, Jimmy could be heard to mutter:

"Ahhh, shadupp!"

The Lesser Wilderness—Tug Hill

by H. E. Krueger*

Under The Deepest Snows In The East Lies A Trackless Land With A History Of Characters And Indian Bloodshed

THE lesser of anything is not a very complimentary term, so it is not surprising that few people today have heard of the Lesser Wilderness. The Greater Wilderness is known possibly by a few more. This was the old designation for the Adirondacks — adirondacks, a term of contempt given to the Algonquins of that region. The Algonquins were great hunters, but during periods of game scarcity, they were reduced to eating the cambium of willow trees to ward off starvation. Hence, the name given them by the Oneidas and the Iroquois — Bark Eaters — because they did not grow or store either corn, beans or squash. In the Greater Wilderness, the Iroquois were very eager to keep the Adirondack tribes from over-browsing the winter yards.

The Lesser Wilderness, the Eden of the Iroquois, was re-named Tug Hill by two early settlers, Isaac Perry and a Mr. Buell, who made a journey up the hill west of Turin. It logically can be assumed that there were several other expletives and adjectives preceding the word "Tug" when the two men talked of their trip at the local tavern.

Geographically, the term Tug Hill was substituted for the Lesser Wilderness as the Adirondacks was changed from the Greater Wilderness. This area is bounded by the Black River on the east and north, Rome, Oneida Lake and the Oneida River on the south, and Lake Ontario on the west. On most highway maps, you will notice an area, free of roads, located south of Watertown and in the center of this area, the Hill is 1,750 feet thick and consists of an overburden of soil, shale and limestone. The Hill is not a mountain. It is a plateau and related geologically to the Appalachians and the Catskills, rather than to its neighbor on the east, the Adirondacks.

There are those who will disagree emphatically with this description of the bounds of Tug Hill, but any geographical area is indistinct. For example, where are the Finger Lakes area, Central New York or the Adirondacks? After one reads and understands a little of the history and importance of the region, the name is not

*"Hank" Krueger is a former District Ranger at Lowville.—Ed.

"Where nothing dwelt but beasts of prey
Or men more fierce and wild than they"

Typical fortified Indian village, for protection against roving Algonquins in early Tug Hill

Many of the 19th Century hill farms are now abandoned on Tug Hill

so bad. It could have been Pigtown, Beartown or Gooville, after some of the nearby areas.

Climatically and geologically, this Eden of the Iroquois seems to be an anomaly. While scouring the Adirondacks down to the very ancient granite, the last glacier left this somewhat isolated bit of new mud piled up 2,100 feet high. It left this rise or plateau directly in the path of the west-to-east storms so that cold fronts can pick up all of the moisture from the several Great Lakes and dump it on the Hill. The rainfall average is one-third higher than that for central New York and twice as high as in the Lake George area. On one of the climatological maps of the area, the frost-free growing season is indicated as one hundred and thirty-five days, or four and a half months, but normally snow falls during ten and sometimes eleven months of the year! This is on the central plateau, above the 1,600-foot elevation, and is a region seldom afflicted by drought, or extreme heat.

This central plateau, an area of several hundred square miles, is noted for its extremely heavy snowfall reputedly the heaviest east of the Rocky Mountains, averaging 18 to 20 feet. As the winter progresses, the snow becomes packed and travel by snowshoes is easier than travel on bare ground in summer. Snowshoe rabbits (varying hare) are plentiful. The deeper the snow, the better the feed, as the higher branches become available for browse. It is not unusual to find that twigs and buds have been eaten eight feet from the ground! At times, it seems that the old snow has scarcely melted when the new starts falling.

The high plateau is not exactly the best farm and dairying country even though the soil is fertile; gradually the rugged Irish, German and Polish families have moved away, leaving the farms to revert to brush and the slow ecological progression to forest. The State and one or two large lumber companies are now the principal owners of the high plateau. The C.C.C.'s and regular crews did a manful job of re-covering the land with various trees that have helped the small game, such as hares, partridge and porcupines, to return and prosper. Unfortunately, the trees that were planted, had to be the trees that were available, and only too often, these were unsuited to this site. Forestry for a profit is impossible here. In many areas of the State, merchantable timber can be grown in 70 years, but seedling to sawtimber on the high plateau will take closer to two centuries. Hunting leases and other forms of outdoor recreation must form the raison d'etre.

With all of this snow, skiing would seem to be a primary sport, and it is. Snow Ridge at Turin is not very far from where Buell and Perry tugged their pung up the hill. There may not be quite so much snow in Turin as there is at Highmarket or Sears Pond, but at least one can get there. The prevailing westerly winds blow more snow out of Highmarket and over Snow Ridge than falls normally over the rest of the State. The high plateau and the rest of the Hill combs out about two-thirds of the snow and lets only one-third fall on the Bark Eaters.

History begins with the written word, so the history of this area does not begin until after the advent of Cartier in 1535. Prior to this time, legends and the archeology of the region must hold sway. Archeology seems to be dry and mathematical, squeezing out the flavor of the personality of the people. However, Beauchamp, an archeologist, in his *Iroquois Trail* quotes the legend that the Iroquois sprang from the ground near the head of the south branch of the South Sandy River. Beauchamp concedes that there may be some basis of fact in this legend. This would put the birthplace of the Iroquois about half way between Barnes Corners and Seven-By-Nine in the Town of Pinckney. But before going into this legend, and the reasoning that might concede some basis of truth in it, there should be a background. I am not an archeologist, nor a historian, and I found it very difficult to wade through bone-dry, unimaginative and contentious mathematical reasoning on a subject that

should be completely fascinating to everyone. Not all reading was dull, but, unfortunately, most of the books were old, no longer in print, and available only under the watchful eye of the librarian.

It is ironic, as stated by Thomas R. Henry in his *Wilderness Messiah*, that the Russians are better informed on the true story of Hiawatha than we, who have been spoon-fed Longfellow's completely unrealistic version. *The Bloody Mohawk*, by Doctor Clarke is factual and interesting. The first edition of *Early Trappers of Northern New York*, by Jeptha R. Simms, is a bit tart, but his later editions have been pablumized. Most of these books are historical, concentrating on the wars and events along the Mohawk Valley with only slight reference to Fort Stanwix, and Oswego, that along with the Lake George and Lake Champlain region were the principal avenues of invasion, or around the right flank of Tug Hill, and the left flank of the Greater Wilderness, with considerable infiltration down the Black River Valley.

Eleven thousand years ago, the last glacier melted and man appeared on the shores of Lake Ontario and along the St. Lawrence River, Archeologists and legends agree that these early people had crossed an ancient land bridge from Siberia. Obviously, it was a long and cold trip, so they must have been driven to this extremity. Several ages of culture have left their marks at old villages or campsites. There is ample evidence in the form of walrus ivory artifacts and slate net sinkers found along the shores, that Eskimos or Eskimo-like people were here. The next group may have been mound-builder Indians, or Algonquins who were mound builders. The presence of mound-builder Indians as a distinct people is questioned, because the mounds that were found, (for instance, at Perch Lake) seem to have been of later periods. There were several ages of Algonquin Indians in the region extending along the St. Lawrence and the shores of Lake Ontario and well up on Tug Hill.

The Algonquin artifacts differ from the Iroquoian in that they were of cruder workmanship, especially the missile points, and there were also some differences in their pottery. My point is simple: The pick-and-shovel historians (archeologists) do agree that there were people in this area prior to the 16th Century and that they were somewhat different than the Iroquois. One early group of investigators prior to 1850, found the bones of many skeletons, mostly male, in the Towns of Rutland and Rodman. Indications all point to a military action of some extent, but the amazing thing about it was the presence of several giants and the fact that most of the skeletons had two rows of teeth in each jaw. Laterday archeologists, naturally, had to dispute the report and spoil a good story. They found no giants, and no double-toothed people. The early diggers are dead now and so are easily disputed, but it is agreed that they did find the remains of fortified villages, and certainly they could tell the difference between a large and a small skeleton. A schoolboy could count the number of teeth in a jawbone, and the Iroquois did drive the Bark Eaters from this, their Eden.

In the Town of Rutland where the most of the skeletons were found, there is an escarpment-like formation, and for several hundred feet back from the edge of the precipice, the ground has many crevasses. These crevasses are large and numerous enough to conceal a small army — they were ready-made foxholes. The indications of a battle leads one to think that here, perhaps the Iroquois did as their legend states, "spring from the ground." Perhaps here, they learned the need of organized warfare which made them the most feared nation on the continent, north of Mexico.

According to Nicholas Perrot, their legend states that it all started on the island of Montreal. The Iroquois and the Algonquins were living together along the St. Lawrence River. The Iroquois, if not a subjugated people, were at least viewed in contempt as farmers who grew corn, beans, and squash. The Algonquins were improvident hunters. When game was plentiful, they lived high on the hog. When game was scarce, they lived on track soup and memories. Six Algonquin braves and six Iroquois braves went hunting together on one occasion, and the hunt went sour from the start. After several meatless days, the Iroquois suggested that they hunt alone. They did and were very successful. The disgruntled and nettled Algonquins killed their sleeping competitors during the night and returned with the game. The Iroquois at first asked only punishment for the guilty, and this was denied. A bitter argument that soon followed escalated into a bloody war of extermination.

The Iroquois, outnumbered and disorganized, retreated to the south and west. The Senecas and the Cayugas withdrew to the west along the north shore of Lake Ontario and crossed into their respective areas west of Seneca Lake. The Mohawks withdrew, or advanced southwards down Lakes Champlain and George and settled in the area west of Schoharie Creek. The Oneidas and the Onondagas withdrew south along the south shore of the St. Lawrence River. The Onondagas probably left Lake Ontario and went up the Oswego River, the Oneida River or the Seneca and then to the high grounds near Syracuse. The Oneidas went from the St. Lawrence River near the mouth of the Oswegatchie, where they tarried for a while, before following the general path of the Onondagas, and finally settled on the high ground above the Stockbridge valley. The retreat was not precipitous, nor was it truly a retreat, for in their path they found — what? Did they find the fierce remnants of a tribe of giants with two rows of teeth, or did they find themselves attacked repeatedly by roving bands of Algonquins? They did fear something,

Indian mounds showing above flooded Perch River

Early cemetery of pioneers in the vicinity of Highmarket, as seen in winter moonlight

South Sandy Creek near "birthplace" of the Iroquois Indians

and they were attacked viciously as indicated by the remains of their fortified villages, and the skeletal remains of the losers, found scattered around the western side of the Lesser Wilderness.

The many fortified villages found along the South Sandy Creek, Stony Brook, at Leray, Black River, Rutland and other locations, all were built in the same general pattern. A single, double or triple row of posts were set in the ground in a rough semi-circle enclosing from one to three acres, with the open side facing the steep bank of a stream. The buildings were formed of elm bark over a framework of saplings. Their canoes were also made of the tough elm bark. These were slower in open water, but the famed birch bark canoe would have been of little use in the rocky streams such as the Sandy and the Salmon. A village site was used only for a period of about twenty years or less, until the land wore out and the wood for fires was used.

At the later peak of their power, the entire Five Nations could not muster 10,000 warriors, and during their many years of war with the Algonquins, they had been almost exterminated. They not only fought with the Algonquins, but they were also eliminating their own tribes through blood feuds among themselves. It was at this time that there appeared among them, probably in the 15th or 16th Century, a part-real, and a part-legendary figure, Dekanouida, and his disciple, Hiawatha. Dekanouida was born of a virgin mother, and belonged to a nearly extinct tribe of Eries on the north shore of Lake Ontario. His future was foreordained — he would bring about the destruction of his tribe. He lived to preach peace. His travels took him finally to the home of the Mohawks where he convinced their sachems of the wisdom of uniting with the rest of the Iroquois. He was not gifted with oratory and failed to convince the rest of the many branches of the Iroquois of the need or pattern of confederation. He met Hiawatha, an especially gifted orator in a nation noted for its orators, and convinced him that the solution of his personal problems and grief was to return good for evil. With the zeal of a convert, Hiawatha spread the gospel of the confederation, and the constitution of the Iroquois was adopted by the Five Nations.

The cessation of internicine strife about 1575, permitted the Oneidas and Onondagas to concentrate their fury on the Bark Eaters to the north. In a relatively short time the Lesser Wilderness, its streams teeming with salmon and trout, its woods alive with game, doves and partridge, and its bays and ponds alive with ducks and geese, were the undisputed hunting grounds of the Oneidas, (The People of The Stone) and the Onondagas. War continued, and in 1609, the Oneidas and the Mohawks were raiding freely almost within sight of Montreal. The Oneidas and Onondagas sent parties of warriors around the west side of Tug Hill, and the Mohawks raided north by way of the Lake George and Lake Champlain route. If the young Confederation had been given a few more years, who can say how our history would have been written? The victors might even have set up immigration quotas!

Then in June, 1609, Samuel de Champlain, in league with a war party of Algonquins, pointed his musket, loaded with four balls, at a group of Mohawk and Oneida chiefs on the east shore of the lake that bears his name, and pulled the trigger. The crash of the overcharged musket, and the ensuing barrage from the muskets of his men, slaughtered the Iroquois and gained France an implacable enemy.

Aborogines, barbarians, and savages, perhaps, but not fools were these people of the Lesser Wilderness. They needed better arms, and the Dutch along the outer edges of the Mohawk settlements on the Hudson, would sell. The Iroquois bought, and learned to use the musket effectively. The English replaced the Dutch, and the Iroquois, so few in number, became statesmen of high caliber. For over a century they played the avarice and enmity of the French and English against each other, while conducting at the same time a war of subjugation or extermination against their neighboring tribes, mostly Iroquois, who refused to join the Confederation. They annihilated the powerful Hurons as the French watched impotently, and in horror. The Delawares, the Nanticokes, the Metoaks, and the Manhattans were subjugated and paid tribute.

Ulysses and his Greeks put Troy and its people — men, women and children — to the torch and the sword. The few survivors under Aeneas went on to found Rome where the early Christians and other captives furnished oft-described amusement. The Inquisition titillated the spectators with various sport, fun and games. Alexander the Great, Hannibal, Attila and the Crusaders, in fact, every nation and race, have practiced this antithesis of "love thy neighbor." For this same practice, the people who sprang from the ground of the South Sandy, were branded as savages instead of being classed with the Stoics and Spartans for their realistic acceptance of a warrior's or civilian's destiny.

The scholastic teachings of early American history of several decades ago left one student with a mental picture of the Indian either standing with an upraised tomahawk over some hapless pioneer or dragging in a very dead turkey to a group of fancy dressed Puritans complete with white shirts, knee pants and oxford shoes with buckles! The orations of Lincoln, Washington, and other patriots were rightfully impressed on our teen-aged mentalities. Nothing exists of the heroic poetry of these earliest Americans whose works compared favorably with the sagas and epics of the early Greeks, Romans or Norsemen. There exists the speech given by the ambassadors of the Five Nations when they met with the Governor General of Canada at La Famine at the mouth of the Salmon River. De La Barre's words are long forgotten, and La Famine is practically forgotten, but the words of Garangula when he spoke as the voice of the Five Nations, had historical repercussions when he told De La Barre that so many armed Frenchmen might trample the Tree of Peace, and that they, the Five Nations, were not yet slaves who took orders from either the French or the English. When he threw down the last belt of wampum, De La Barre knew that it would be much more prudent to return to Montreal.

The French were driven from the continent with the help of a few British and William Johnson — a blood relative to many of the Iroquois — who was loved and admired by them. During the Revolution, the Lesser Wilderness again became the frontier, and here for the first time, at Stanwix, was flown the Stars and Stripes. Stanwix never fell, while Oswego changed hands several times. Sir William died at the beginning of the Revolution, and there has been much conjecture as to which side he would have thrown his influence with the Iroquois. His sons and other relations proved not to be as strong as he and as a result, the Iroquois were divided in their loyalties. The People of The Stone, at the request of the Reverend Kirkland, and Chief Skenandoah, chose to go with the Colonists.

The war ended, and with it the Confederation of the Five Nations. As a conquered nation, their lands were confiscated and they were transported or driven out, except for those who accepted the small reservations granted by the Colonists. Perhaps it is well that our textbook historians should emphasize the kindness of Powhatan, and forget the chamber-pot decoration he was given by them.

Then, as now, the world was land hungry, and hungry too, for the freedom of the new land. Alexander Macomb somewhat over-extended his credit by purchasing some four million acres of land, including most of the Lesser Wilderness and lands across the Black River into the land of the Bark Eaters. This huge tract eventually became the property of William Constable.

The sale and exchange of these vast properties, before William Constable acquired title, involved intrigue and shenanigans that are impossible to unravel, and who the villain was is a moot question. Ben Franklin was in France negotiating for funds and recognition during the Revolution. Louis XVI had to observe neutrality as France, for a change, was at

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Shooing Antic, Attic Squirrels

by John L. Renkavinsky, *Senior Wildlife Biologist, N.Y.S. Conservation Department*

SQUIRRELS add a graceful and enjoyable bit of life and color to our surroundings outdoors. However, they are hardly welcome indoors, especially when they start to patter in the attic or venture down the walls.

The Conservation Law is quite liberal about remedies. Section 201, Paragraphs 7 and 8, says that whenever any squirrels are injuring property they may be taken at any time in any manner, by the owners or occupants thereof or by a person authorized in writing by such owner or occupant. No license or permit from the Department is required.

Caution: This section does not supersede local regulations which may prohibit the use of firearms.

Wild squirrels sometimes invade buildings because living quarters on the outside, in the form of den trees, become so overcrowded or reduced through removal that an expanding urban squirrel population, unhindered by such natural checks and balances as predation including hunting, is forced to investigate unusual or even emergency quarters. Once up on your roof, a squirrel may note a developing hole or crack under the eaves which can be easily gnawed wider, thereby giving the curious and often pregnant squirrel easy access to the interior.

Squirrels, along with such other "hollow"-hunting creatures as starlings, woodducks and raccoons occasionally come down chimneys and, if they can squeeze past an open damper, end up unhappily in your living room or cellar. So beware of those overhanging branches and be sure to conduct a maintenance check on all potential openings which must be closed or screened, including attic windows.

The best time to close the openings is after the squirrel has gone out; otherwise it will either gnaw another opening to get out or die trying. Even then, there is some risk involved if by chance mother squirrel is locked out while her young are locked in. Such a predicament could develop from mid-March through late summer.

Squirrels, along with such other unwelcome tenants as raccoons, 'possums and bats, can sometimes be encouraged to leave the premises through judicious use of such smelly obnoxious substances as moth balls or flakes sprinkled liberally in their hideaway. Also, sulfur candles are very effective for attics but should always be placed in a container of water to eliminate any fire hazard. Furthermore, it is best to use them on a warm day so that the downstairs windows can be kept open.

Also, pieces of cloth which have been soaked in one of the recently developed animal repellents, may also keep them away if placed near the access areas. Remember that these materials are effective because they are highly volatile; therefore, they need to be renewed from time to time.

There are two useful types of traps: 1. The recently developed humane Conibear Trap (named after the inventor and not some mysterious bear-like creature), and (2) box or live traps of various designs. Whereas, squirrels caught in a box trap can be transferred unharmed to another area — ideally a large mature wood lot more than ten miles away open to public hunting; animals trapped otherwise will usually be dead or injured and should be destroyed. Traps and repellents can usually be purchased from stores dealing with hardware or farm and garden supplies.

For bait, experience has shown that such easily available items as whole peanuts, peanut butter, corn, or stale bread and/or cake can be most effective. If the foregoing measures fail, you might wish to consider more drastic action, to be used only in the most annoying circumstances.

Such action may include the use of one of the most effective rodent-killers going; namely, one of the anti-coagulants such as warfarin.

Warfarin is readily available as a prepared bait and can be obtained from the same type of store listed for traps. It is a relatively safe poison, since it takes four or more feedings to kill rodents, the group of animals upon which it is primarily effective. Nevertheless, care should be taken to keep it away from children and pets and other animals, since it is dangerous to all warm-blooded animals if eaten in substantial quantities.

The standard prepared mixture, with two tablespoons of chopped nuts added to each pound of prepared bait, is eaten readily by squirrels. If the bait is placed indoors there is some risk that the animals including any mice or rats may die indoors and a decent burial may be hard to negotiate. Usually, animals dying from warfarin seek water outdoors and are occasionally found near bird baths. If the bait is placed outdoors, extra care

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43 Seconds At Van Hoevenberg

by Jarvis H. Baillargeon,
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An Expert Analyzes Bobsleds, The Run At Lake Placid And American Chances Abroad At The 1968 Olympics

THIS January, up at the Lake Placid Bobrun, the starter at the half mile gate will ask: "Got your ticket," [last chance to retreat], "helmet on tight, feet in the stirrups, good hold on the hand straps? Hang on!" And the loudspeaker will say: "A Conservation Department sled is off from the half mile. Clarence Duprey, driving; Bill Darrah, braking. The sled is gaining speed; entering Little S — through; approaching Zig-Zag, zigging, zagging — through; in the long straight above the finish curve—taking the curve; under the bridge and down. Clear the track!"

Reading that paragraph slowly takes about as long as the ride.

The New York State Conservation Department, which operates the Mount Van Hoevenberg run at Lake Placid, carries passengers from the one-half and one mile starting points. They provide professional drivers and brakemen and give three passengers per sled a thrill of a lifetime from the one-half mile. The cost is $1; the time spent is approximately 43 seconds! For those who wish the superthrill, you may ride the mile after you have been a half mile passenger and while these sleds do not approach racing speed, "scary" is a good description.

Fatal accidents are rare, however, and they occur only during competition. Previous to 1966, there were fatalities in 1955 and 1949. Minor accidents do happen occasionally as they do in every hazardous sport. Lack of practice by amateur drivers and changing ice conditions are the two main contributory variables. Conservation Department passenger sleds, which use the run, are braked in the straights and held to safe speeds.

Last February, millions of television viewers in the United States were chilled by the spectacle of a four-man racing bobsled disappearing into the darkness over the top of an icy wall at the world-famous bobsled run at Cortina, Italy. Later that same month, an internationally-known world champion driver smashed into the lip of tricky Zig-Zag curve on the Mount Van Hoevenberg Bobsled Run at Lake Placid. What caused their deaths? Some would say that bobsledding is a very dangerous sport and that a simple error in judgment fostered the fatally tragic accidents. Since many sleds had come down the runs safely before these accidents and many sleds came down the runs safely following these two accidents, certainly to a large extent it is so.

There are many other factors, however, that enter the situation.

It is said that the run at Cortina was developed from a mountain side road down which sleds were run. Gradually the corners were smoothed, the banked curves were added and the result was a track of glare ice with three major curves and many minor ones. The run in Italy is characterized by high-banked curves and narrow straightaways. Errors in judgment in these narrow straightaways preceding the high-banked corners present the driver with the challenge and the thrill of international sled racing.

Solid axle stationary rear truck of the winning Podar sleds

New automotive type front suspension used by author on one-man sled

The bobsled run at Lake Placid, designed by a European for the winter Olympics of 1932, presents a somewhat different situation. This run also has three major curves, the 22-foot-high hairpin Shady Corner Curve, the tricky left-right Zig-Zag Curve and a tight, almost right angle, Finish Curve. Between these major curves are many minor ones which test the driver's skill. The straights at Mount Van Hoevenberg are wide and

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Right, entering "Zig Zag" screens protect track from melting; below left, entering "Shady"; lower right, going into little "S".

(Continued from page 19)

have several inches of snow on the surface. This is also a test of the driver's skill since, in order to make a fast time, he must follow the drive line left by a previous sled and, with the speed involved, the transition from straights to curves is critical.

Speeds on both runs are nearly the same. Sleds develop in excess of 90 miles per hour during racing runs. The fastest run at Lake Placid was driven by Bill Hickey in the winter of 1963. His time on this mile run in a four-man racing sled, with all on their feet running when they crossed the starting line, was 1 minute, 6.94 seconds. Arithmetic would indicate that speeds must reach over 90, with acceleration to match, to produce this time for the measured mile.

With three exceptions, racing sleds, currently in use, are all built at Cortina, Italy, by the Podar Sled Company. All winning sleds in recent years are of this make. The Podar sled can be briefly described as a rigid frame with a solid axle, center-spindled front truck and a solid axle stationary rear truck. It has a metal or fiberglass hood and a metal pan bottom with semi-fitted seats. European drivers generally use a hand grip and cable steering mechanism; most American drivers prefer to have the sled equipped with a steering wheel. Of three non-Podar sleds being raced, one was produced by builder-driver Art Tyler in the early 1950's and the other two were built by General Motors Corporation for the U.S. Air Force in 1962-64.

The Tyler sled used the Italian-centered spindle and steering wheel and had a rocking rear truck which helped to keep all four runners on the ice while making the transition from straightaways to corners. The two new General Motors sleds, designed by Stanley Benham, America's premiere bobsledder, uses the Tyler rear truck but has an improved front suspension. Benham asked for, and General Motors built, an individual runner suspension much like an automotive front steering mechanism. It has a steering gear box, a Pitman arm, tie rods and steering arms. Each side has an abbreviated axle, but no springs were included. Runners on the Podar and on the General Motors are pinned to a longitudinal housing. This housing is mounted on the end of the axle much as a wheel would be. Runner blade sizes are governed by international regulation.

To answer the original question of what caused these two unfortunate accidents: Certainly the lack of a protective lip overhanging the high-banked corners at Cortina contributed to this fatality. A lip there, such as is present at Lake Placid, would have forced the sled to remain in the run. Bumping of this lip occurs fairly frequently at Placid without causing fatal accidents. The death of Zardini at Lake Placid was the result of the sled hanging too long on the wall of Zig Curve, tipping the sled over on its left side. The four-man sled and its team careened through the crossover sliding on the left side of the sled and the shoulders of the riders and moved upward into the overhanging lip of the Zag half of the S curve. Unfortunately, the center of gravity of a loaded sled and its speed causes it to remain on its side until the riders have been dumped off following which the sled usually rights itself and continues alone on down the run.

New Classification?

In an attempt to establish a new classification of bobsleds, I designed a one-man racing sled for use at Lake Placid in 1964. The sled was designed to include the following features: Automotive type, sprung suspension in the front end, individual sprung suspension of rear runners, driver-controlled brakes and a fiberglass body, race car style. Using a short bicycle type stub fork, a coil spring was added between the sleeve housing and the base of the spindle permitting about one inch of movement for the runner. All four forks were equipped the same way with cross tierods anchored to the frame in the rear. The body was designed so that the front bumper was approximately one foot off the ice surface to prevent the sled from "turning turtle."

The sled was first tried by driver Bill Hickey in January, 1964. A very short iceboat-style runner was a part of the original equipment. This did not prove satisfactory as the sled would not follow the drive line in the straightaways. The sled was then equipped with spring steel blade-type runners three feet in length, similar to other racing sleds.

The weight of this one-man sled was approximately 250 pounds as opposed to the 350-pound weight of a two-man sled. It did not prove fast enough to present a challenge to a racing driver. With two people squeezed into the cockpit, additional speed was gained but the body design prevented racing starts. The body has now been converted into a two-man configuration for further testing.

What is Needed

Such is the state of bobsled technology at present. What is needed? First, you must realize that there is no money to be won in sledding and only the challenge attracts individuals to this dangerous sport. The shortness of the racing season and the availability of racing drivers to test the sleds is a major obstacle in designing new equipment. An amateur driver is allowed only six runs per day making it extremely difficult to establish a testing program. Drivers, who are interested in racing, need all the practice they can get and hesitate to lose their touch on unfamiliar sleds. Two of America's best drivers, Larry MacKillip and Bill Hickey, did not race in the winter of 1966 because they did not feel that the equipment available to them was satisfactory. Drivers often purchase their own sled at a cost of $1,500 and up.

What is needed is some interested engineering talent, money and a shop interested in putting together some improved equipment. Perhaps an auto manufacturer or race car builder could be enlisted in putting America back into international competition. Air Force General Perry Hoisington, now retired, was instrumental in involving General Motors Corporation in the design of the two sleds. He and driver-builder Bob Said are attempting to prepare a winning combination for the 1968 Winter Olympics to be held at Grenoble, France. Can a faster and safer sled be designed? Yes, if the correct combination of interest, time and money becomes available.

It seems futile for American sledders to take Italian sleds to France to race on an unfamiliar run with insufficient practice and expect to win (and on their own personal travel funds besides).

How do you become interested? Best take a trip to Lake Placid during January or February and take a ride on the one-half mile passenger sled. When you climb off the sled, whether from happiness or relief, you will have been involved! You may wish to consider a donation to the Olympic Bobsled Committee for the 1968 Olympics and/or a letter indicating what you can contribute in the way of time, talents and funds to get the project of building at least four sleds underway.

Improving Your Land For Wildlife

Johnny Appleseed Led The Way And The Landowner Or Suburbanite Can Follow Him With These Tested Steps

by Arthur W. Holweg,
Supervisor of Game Management,
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JOHNNY APPLESEED is long dead but his philosophy need not be.

Johnny, of course, was the legendary itinerant who is credited with planting the isolated apple trees one finds so frequently on the old roads and pastures of the Northeast. It is said that he had a feeling for the land and the wildlife on it. Thus, as he roamed the land, he carried a sack of apple seeds, slung over his shoulder, from which he dropped a few seeds at spots he judged could use a fruitful tree for man or beast.

In his early time, he believed in doing something about conservation, wherever he might be.

Today there is an equal opportunity for the feeling person to do something about conservation — and a far, far greater need! Johnny Appleseed probably never heard of "habitat improvement," although that was what he was doing. With his same outlook, most rural residents — and even suburbanites — can carry on far more effective improvement of the land for wildlife.

For those who scorn folklore, let us look at the facts and trends of agriculture today, then decide what needs to be done by each of us.

An agricultural worker in America today is feeding a good many people in addition to himself. This is another way of saying that the farm population has been going down steadily while the numbers in villages, towns and cities have been mounting. Pretty soon one farm worker will be feeding more than fifty people who live at a distance. This trend results from many factors, including the efficient use of farm machinery, the consolidation of better farms into larger units, and the retirement of the less productive lands.

Land, which may have been taken out of agriculture, will revert eventually to woodland, if allowed to follow the natural sequence of plant associations. Often an assist by a wildlife manager and forester will either speed up or slow down the reversion of such lands.

Thus, there is a need to salvage, manage and maintain some of these lands in continued productivity, to create some open, grassy areas on the better soils, to keep other areas in a brush stage and to improve or actually create wetland areas. At least such a need exists if we want to encourage wildlife. Areas deficient in cover will be benefited by establishing tree plantations and the forester's efforts will be a boon to the wildlife specialist. The forester also may find that the associated woodlands have been badly mismanaged and should undergo some corrective measures and improvement practices.

Commercial farms and orchards are capable of producing excellent wildlife crops. This is achieved through crop rotations, cover crops, providing stock with water and maintaining high liming and fertilizing standards capable of producing good crops of wildlife. However, mowing machines and the use of other equipment, unrestricted grazing, poorly timed or excessively poisonous spray programs and careless handling of treated grain can hurt wildlife seriously. There are many modifications and techniques that can be used on such active farms to make for better, safer conditions for wildlife. Sound soil conservation measures, as well as good forestry and wildlife management practices on such land will contribute to the beauty of the countryside while increasing the profit and pleasure of the owner and community.

The strip cropping practiced on farm slopes is a good soil conservation measure which provides wildlife benefits, too.

The illustrations which accompany this article necessarily show some artistic license. Only in this way could the broad scope of the practices be shown. Perhaps only one of these measures can be employed on your land, perhaps many. The suburbanite can adapt some of these to his more limited holdings. Let's review the pictured items briefly to discuss some more details and the ends to be accomplished.

Grass and Legume Plantings

The United States as a whole has more than half its land area covered by grassland — good, bad and indifferent. The great Prairies of our continent are where ideal conditions exist for grasses, but with our own State essentially a forested area, grasses with legumes became increasingly important with land clearing. And with all this grass and legumes such as alfalfa, clover and trefoil, why should we be concerned? Again, it is a matter of distribution.

In the wildlife scheme of life, the continuous forests and overgrown lands are decidedly sweetened by the half acre and larger clearings that still persist, to a degree at least, where many settlers and their descendants, long since vanished, had their home sites. Such grassy areas, in many cases, have persisted surprisingly well and can be renovated by some clearing of trees or brush, by use of herbicides to destroy perennial weeds and sprouts and by liming and mowing.

The legumes have a particular value for game species and also for wildlife in general. The honeybee, without whose help the fruit set would be much less, makes from the legumes much of the high quality honey on the market. The nitrogen-fixing legumes, through their ability to grow on eroded sites and depleted soils, help fertilize the grasses and weeds with which they grow and the succulent stems and leaves are important wildlife foods. But before grasses and legumes are seeded, one should have soil samples tested to determine chemical needs. The surface soil, through leaching, probably has dropped well below the desirable level of alkalinity for grasses and legumes. If this is true, the site probably should be plowed with part of the total lime needed applied before plowing and the rest afterward — where 4 to 6 tons per acre are required.

Where soils are run down and in poor tilth, a seeding of silverhull buckwheat made in late June or early July, after applying 200 or 300 pounds of a complete fertilizer, (1-2-1 ratio) will help game food and condition the soil. Such a planting will condition the soil for the less rugged and more demanding legume and grass planting to follow the next year. A good choice for the early spring seeding is birdsfoot trefoil, in combination with timothy, at a rate of 5 pounds of each. If the pH index (of acidity) has been brought up to 6.0, another ton of lime to the acre will help. Birdsfoot trefoil will grow on rather acid soils with low fertility but it will do better on sweeter, more fertile soils. A topsoil inoculant is important.

If better soil is available, six pounds of bluegrass, two pounds of alsike clover and one pound of white clover can be seeded. This combination will supply high quality wildlife forage important for increasing wildlife populations. People living in villages, or even in the suburbs of a city, can point to the abundance of rabbits where bluegrass lawns, shrubbery and an occasional weed patch or undeveloped lot intermingle.

One of the New York State Conservation Department men worked for several years studying surviving grasslands around former homesteads on a game management area. These were growing mainly in Kentucky bluegrass, timothy and redtop, which were persisting in spite of weed, tree or shrub encroachment. His conclusions can be summarized as follows: (1) These good quality grassy areas can be rejuvenated by renewing the overtopping woody and weed plants; (2) stumps and sprouts should be treated after cutting with 2, 4-D and 2, 4, 5-T, or the latter alone, in oil solutions or oil-water emulsions drenching the root crowns; (3) broadcast foliage sprays may be necessary to control taller weeds and tree seedlings; (4) mowing is necessary and this is preferable in August; (5) cleared areas (average size was under one acre) showed increased use as wildlife feeding and resting areas.

(Ralph H. Smith, P-R Proj. W-88-R-9, Job I-B, 8/10/66)

If a heavy clay soil is to be planted, it is desirable to plow the area early and harrow it periodically before planting it to winter wheat or rye in September. This is also a good time to add grass to the seeding, if it is desired. Then the legume can be sown on the established seeding the following spring. On a more normal soil the early spring planting of grass and legumes should have oats added at the rate of ½ bushel to the acre. Plantings on such soils after September 1 should have ½ bushel of rye added. These additions establish quickly and protect the soil and the new seeding.

Mowing of grass-legume areas should be done on a strip basis so that some palatable succulent growth comes along in the late summer and fall. Generally, smaller areas could be mowed every other year but a narrow strip next to cover should be mowed every year for maximum benefits. Larger areas should be worked by alternating mowed and unmowed strips. The following year the treated strip should be rested and the

unmowed strip should be cut. Such strips might be as much as 150 feet wide. Mowing should not be done before the period between July 15 to October 1. Waiting until Labor Day will be a good idea if it is good pheasant and cottontail nesting area.

Crownvetch, usually used with tall or red fescue, can serve in such problem areas as stream banks, sides of gullies and road embankments. The pH index should be brought up to at least 6.0 by applying lime; also, a balanced fertilizer should be applied where soils need it. The high cost of seed has prevented broader use of crownvetch, but considering that a single strong plant per square foot of area is considered to be a very good stand and that one such plant per three square feet can be considered as an adequate stand, its effectiveness is clear. Pennsylvania has put considerable emphasis on this plant and the Soil Conservation Districts in New York are using it increasingly. Inoculation of the seed with a specific inoculant is very important.

Grain Plantings

Grain plots provide food for a great variety of wildlife, and can be particularly valuable for such game birds as the ring-necked pheasant, bobwhite quail, Hungarian partridge, wild turkey, ducks and geese and such game animals as deer, raccoon and squirrels. To justify such plantings, one or more of the kinds of wildlife to be benefited should be present in the area and there should be the likelihood that food during the critical winter period, especially, will otherwise be insufficient. Such plots should be next to areas of good cover such as are afforded by a marshy expanse with a stand of cattails, sedges and shrubs, a shrub hedgerow or a brush-margined wood lot or plantation. Where there is a choice of soils, pick the better ones or take steps to improve the soil productiveness over the years. Try to avoid a spot that will be drifted in excessively when the snow begins to fall. Winter and early spring are times of critical food shortages and the food shouldn't be covered when most needed.

Because the soil is going to be unprotected after plowing and before the crop begins to get established, avoid slopes. If even slight slopes are encountered, row crops should follow the contour. In wildlife plantings, the chemical weed killers should not be used. Maximum production of the grain to be seeded is not as important as in a regular farm operation, because weeds serve as wildlife foods, either in the form of herbage or seeds. A study in Minnesota of 660 pheasants revealed that cultivated grains had been eaten by 73 per cent, weed seeds by 61 per cent, animal matter was found in 39 per cent and fruits in 37 per cent. Many had three or four of the different food classes.

Standing corn has proved to be one of the best game food supplies during the winter. The ears normally are supported above the level of the snow and the food value is high. Field corn should be planted rather than sweet corn because it is superior in the standing ability of the stalk. The general farm practice, which increasingly calls for closer rows and planting at heavier rates, isn't applicable to wildlife plantings. Wider spacing, no chemical weed control and sowing buckwheat and/or a short season soybean between the corn rows just before the second (and last) cultivation, are good wildlife measures. Soybeans, in addition to providing good food, because of its stiffer stalks, should help to support the buckwheat and prevent its lodging.

Oats, barley, buckwheat, millet, sorghum, wheat or rye may be sown, as well as corn and soybeans, each in separate plots, or in mixtures, with such plots left unplanted the second year to permit volunteer stands and weeds to develop. If space permits, a nearby or adjacent plot can be planted during the second year to establish a rotation. Oats are preferred for wild turkey plantings; buckwheat, barley and millet are valuable for waterfowl, especially in plots to be flooded. Grain plantings normally will run in size from an eighth of an acre to an acre, but occasionally several acres can be planted with profit to game. A plot one-eighth acre in size might measure roughly 300 feet in length and 20 feet wide and should be located next to cover. A long, relatively narrow patch, is preferable to one more nearly square.

Cuttings

The axe, the chain saw, the mowers and the chemical brush killers are all valuable tools in preserving variety in wildlife range. Unless a good interspersion of open land, overgrown land and woodland is maintained, numbers and variety of desirable wildlife species will decrease. Food and cover requirements vary from season to season, and year-long needs are met by openings with grasses, clovers and weeds, by grape tangles, by brush piles, by assorted shrubs, hardwood and coniferous trees and — in the case of aquatic fur-bearers — by water and aquatic plants.

Such cuttings as are made may take the form of partial, or complete, elimination of woody growth, at least for the time being. A good example of clear cutting is the procedure practiced by the public utility companies under power lines. The initial clearing is repeated after some years to prevent the woody vegetation from interfering with the utility lines. This practice may be an asset to wildlife, if it occurs in continuously wooded country, since it will provide nutritious food in the form of broad-leaved weeds, grasses and browse. One of the side effects of such cuttings is the production of poles and limb wood which can be piled to make good shelter areas, particularly for rabbits.

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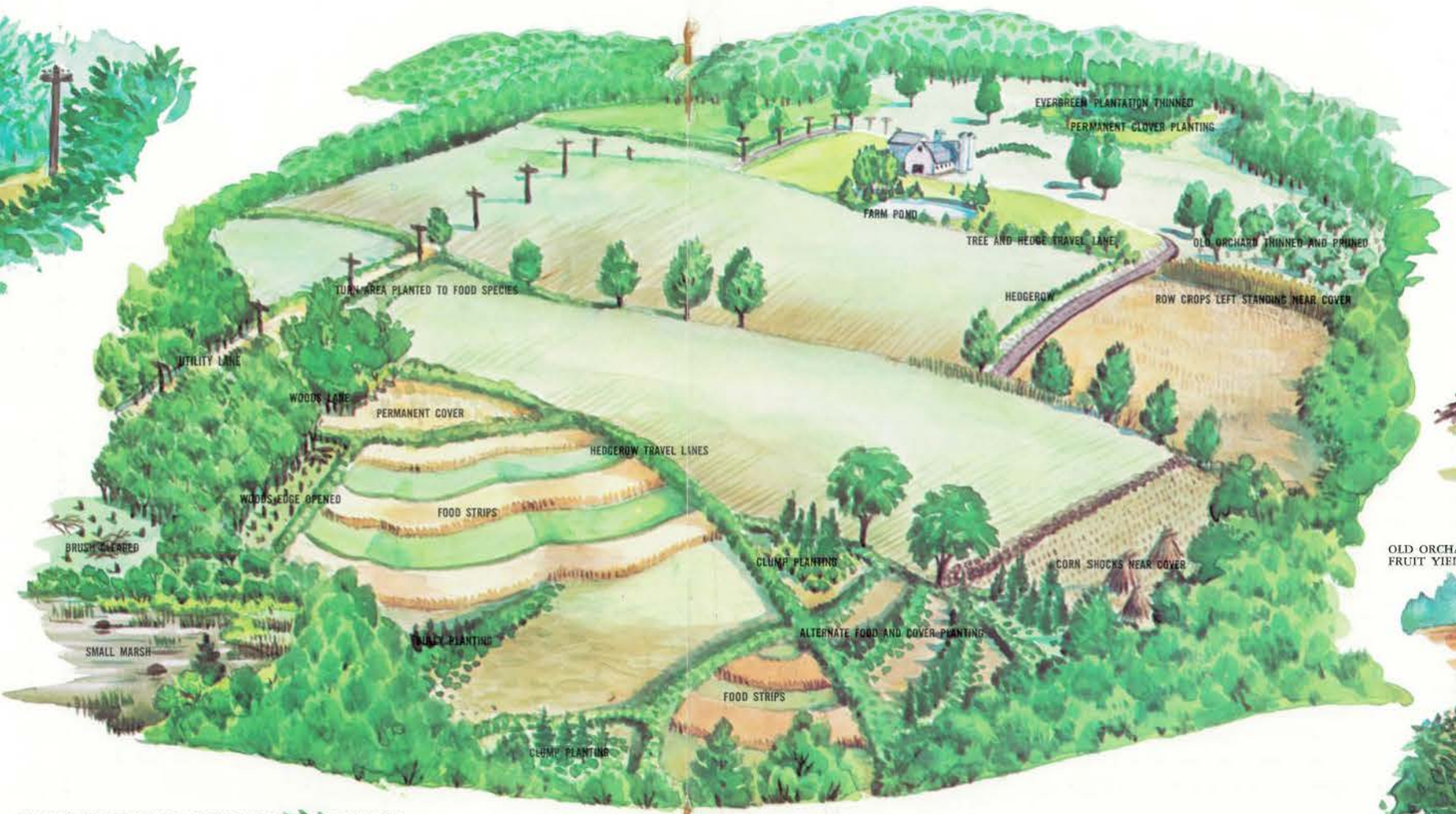
FOOD AND COVER MANAGEMENT FOR WILDLIFE

CLEARED LANES IN WOODS

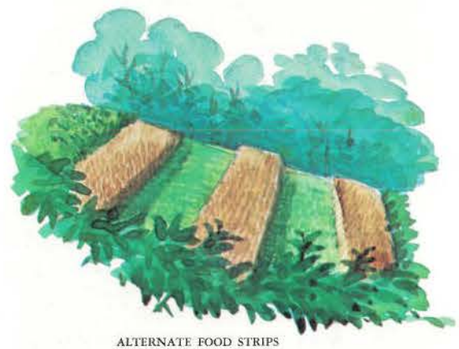
A FEW ROWS OF CROP PLANTS LEFT STANDING NEAR COVER

FOOD PLANTING ALONG UTILITY LINES



A FEW CORN SHOCKS LEFT NEAR COVER

OLD ORCHARDS PARTIALLY THINNED AND PRUNED TO INCREASE FRUIT YIELD. BRUSH PILED FOR SMALL GAME COVER

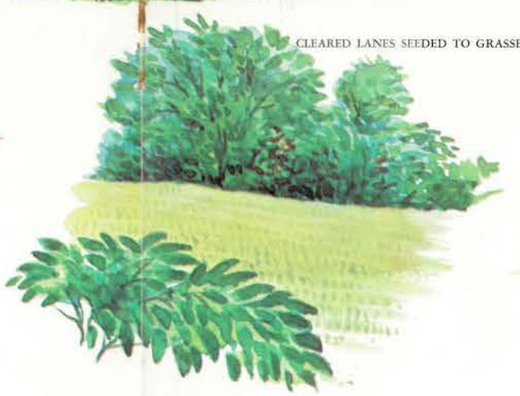


ALTERNATE FOOD STRIPS

PLANTED HEDGEROWS PROVIDE TRAVEL LANES BETWEEN FOOD AND COVER

WOODS EDGE CLEARED. BRUSH COLLECTED IN LARGE PILES

LANES CLEARED IN BRUSH. CUT BRUSH PILED OVER ROLLED WIRE FENCE



CLEARED LANES SEEDED TO GRASSES AND LEGUMES

CLUMP PLANTING NEAR FOOD. EVERGREENS SURROUNDED BY FOOD PLANTS. CLUMP CIRCLED BY MULTIFLORA ROSE HEDGE

(Continued from page 23)

One of the finest foods for wildlife is the apple and rehabilitating an old orchard or a few apple trees is excellent habitat improvement. Clearing brush from around them in late fall or winter and piling it with tree prunings can serve as a source of food and shelter for cottontails and food for deer. If the brush cut includes some sumac, this together with the apple limbs, will make available excellent food for rabbits and deer. A grain plot next to the apples should pay dividends in the increased productiveness of the trees resulting from the liming and fertilizing of the adjacent area.

In any cutting there is always the question whether to eliminate the sprouts that might result from hardwood trees and shrubs by using a chemical brush-killer. Much will depend on the ultimate goal for a given area and the species of plant. Sumac and apple sprouts are preferred foods for rabbits and deer and ordinarily should not be eliminated through herbicidal treatment of the stumps. Inferior browse that will come from ironwood or beech stumps might well be eliminated so they can be replaced by better foods.

A particularly desirable measure, in many locations, is cutting back the margin of a wood land a distance of 30 to 50 feet along a cropped field or pasture. Fruiting species such as various dogwoods, virburnums, apple and thornapple, can be saved from such cutting. Their release from shade and competition for nutrients and water, result in increased fruit and twig production. The fruits and berries are desirable food for grouse, pheasants or song birds and twigs furnish browse for deer. Again, brush piles will provide needed shelter for rabbits. Strip cuttings in the interior of the continuous woodlands accomplish the same thing as the other cuttings — they stimulate sprout growth and improve the habitat.

Planting Shrubs and Trees

There are numerous places on the farm or rural property where trees and shrubs can be planted. Multiple values often can be served in that the appearance of the holdings are improved and the property made more valuable through its increased attractiveness. At the same time, soil and wildlife conservation can be promoted. This is especially true in

an area where gully erosion may have started, as pictured in the illustration.

Once the healing vegetation has taken hold, these gullies can serve as splendid havens for wildlife. After site preparation, the shallow areas can be planted to perennial grasses and legumes, adding shrubs such as silky dogwood, coralberry and multiflora rose planted a few feet apart with the rose outermost. Deeper, more extensive areas will accommodate taller pines and it may be desirable to include black locust, mulberry, jack or Scotch pine, autumn olive, hazelnut and basket willow in the planting.

Other small areas not otherwise used will be improved by making a combination food and cover clump planting, consisting of several evergreens such as Norway spruce, white spruce, white pine or red pine for shelter and a scattering of assorted shrubs which offer fruits and browse over the period from summer through the winter. Such a planting need not be very extensive but, to be most effective, should be at least a quarter of an acre and preferably more in size to offer reasonable security. If there are livestock grazing in the area, fences should prevent them from invading and destroying the food and cover while it is becoming established.

A planted hedgerow of multiflora rose will provide a travel lane, as well as wildlife food for pheasants, cottontails and songbirds. Such a rose hedgerow — or it may be autumn olive or another type of shrub — provides safer conduct from the woods to the stream or to another area of good cover.

The saying that "Nature abhors a vacuum" applies to an absence of hedges which provide concealment and associated shelter. Such a hedgerow planting will remove the vacuum and offer wildlife safe conduct from one area of good cover to another — from woods to a stream or along the bank of a stream where it crosses an open area. Silky dogwood, red osier dogwood and basket willow, all adapted to wet sites, may be used on the down slope sides after some grading, if it is necessary.

Anyone particularly interested in a tree and shrub planting program should get such New York Conservation Department Information Leaflets as: "Some Shrubs and Vines for Wildlife Food and Cover," "How and Where to Plant Shrubs," "How to Plant a Tree" and the Cornell University, College of Agriculture, Conservation Circular on "Wildlife Food and Cover Plants." The Soil Conservation Service also has issued numerous helpful circulars.

Wetlands

Ponds, whether the deeper water areas are suitable for fish or the shallow marshes particularly valuable for waterfowl, can serve as multiple-use facilities. The deeper farm pond (there are thousands of examples throughout the State) serves also as a source of spray water, water for livestock, fire protection and swimming. The shallow marsh pond also may serve some of these purposes but it is more distinctly specialized in the direction of wildlife values. These include use of the area by waterfowl and shorebirds during migrations, breeding season production and hunting opportunity. Indeed, there are few places superior to a wetland area for nature study. Besides waterfowl, muskrats, mink and raccoon all inhabit or frequent marshes. Grouse, and particularly pheasants, are attracted to marshes for water, food and cover. In fact, it is hard to think of a wildlife species not associated with marshlands if it has access to them.

The chances are slim that the landowner will possess a productive natural marsh of several acres, even on fairly large acreages. Invariably, it will have to be developed in order to make an area of adequate size and with provision for water control. Soil conditions and topography will have to be suitable and both of these — if reconnaissance indicates they are satisfactory — will have to be determined by a more detailed survey. The site should have a preponderance of mineral soils and once developed be capable of having a combination of dense, persistent woody cover, open water and emergent aquatic vegetation.

Because of the engineering aspects of surveying and developing water areas, the landowner is usually going to have to get outside help before actual construction is undertaken. Skilled private and governmental assistance has been developed and is available through consulting firms, Soil Conservation Districts or the State Conservation Department. There are numerous references available that the owner interested in water areas can consult and several discussions have appeared in THE CONSERVATIONIST. The most recent article, which is available in reprinted form, is entitled, "An Acre of Marsh is Worth . . . ." An earlier "How To Do It" article, "Farm Ponds in New York," is also available.

Housing and Protection

Such assorted activities as building brush piles, erecting birdhouses and fencing special areas against livestock can all be rewarding in stimulating wildlife production. Brush piles provide good shelter for rabbits and other wildlife if constructed with a little care. They offer cottontails a place of refuge to escape predators at any season and accord them creature comfort during the windy, bitter days of winter. The piles can be built to last for a long time. Two or more tiers of logs or poles eight or ten feet long and several inches in diameter should be used with the poles placed a few inches apart and parallel. The logs making up the upper layer should be at right angles to the logs below. This solid foundation should then be topped to a height of seven or eight feet with branches and twigs. The upper part can be renewed in subsequent years. One of the sketches illustrates a variation of this design by substitution of a roll of discarded heavy wire as a foundation core. Such construction is excellent when weeds and vines interlace such a pile. Numerous variations of the brush pile can be made but the desire for durability is important. Further information can be found in THE CONSERVATIONIST reprint entitled, "Want More Rabbits, Here's How."

Birdhouses can range from the more open platform structure for a robin to the complicated colony house for the purple martin. Most people think of them as merely something for the yard, but wood-duck nesting boxes or those for the bluebird may best be placed at a pond or in a field near a brook. The Conservation Department's Information Leaflet 'titled, "Conservation for the Birds," should be helpful to someone wanting more information or the book, *Birdhouses*, by Paul V. Champion, published by the Bruce Publishing Co.

Fencing can be very important in protecting a marsh area, stream bank, woods or wildlife area when cows or horses, or for that matter, any livestock are grazing in the general area. Trampling, erosion, destruction of browse and unnecessary competition for browse can all be prevented in areas needing protection, by erecting adequate fences. Along streams, this will usually result in a rapid regrowth of desirable shrubs without planting. The same will happen in a hedgerow or marshy area. Shrubs will recover or establish quickly once the browsing and trampling by livestock is halted.

The serious farmer has the equipment and the know how to do many of the jobs that need doing for wildlife, should he elect to do them. Many of his operations already are contributing to the welfare of both the game and non-game birds and animals resident on his place. How about the person who, on the other hand, owns his land mainly for summer and week end use? The chances are that he doesn't own a farm tractor with plows, discs, harrows and the rest. This doesn't always create a problem if a friendly, neighboring farmer is willing to lend a hand. There are equipment rental places, too, ready to serve the fellow who wants to use a rototiller, a hand tractor with cutter bar or a chain saw. For many jobs these are adequate for the small landowner, but there is going to be an increasing problem in getting labor and equipment. Dr. Gustav Swanson, in the August-September issue of this magazine, discussed the challenges to be faced in wildlife management. If it is going to be true, as he states, "by the year 2000, only 6 million acres of the State will be in farm land," that friendly farmer is going to be a good deal farther away and pretty busy managing an efficient farming

(Continued on page 38)

The Management Of Wetlands Wildlife

by Dirck Benson, *Senior Wildlife Biologist, N.Y.S. Conservation Department*

Wildlife Management Series — 7

ACRE for acre, wetlands are our most productive wildlife environment. The gamut of species goes from single-celled animals to familiar vertebrates.

Some species live and die without ranging to the open water or dry ground limits. Others may move a thousand miles or more, only to return the next spring to home grounds. Significant, too, are the daily incursions and excursions. Wetlands provide food and shelter not only for the homebody but the outsider. Often fish find their welfare associated with the marsh. On the upland side, too, many species enter for food and shelter.

Wetlands encompass everything between open water and dry upland. Included are the bulrush pioneers at open water, the cattail marsh and the sedge meadow on the upland edge. The bog is wetland, progressing from quaking sphagnum, bedecked with orchids, pitcher plants and cranberries, to wooded swamp.

In 1609, when Henry Hudson and the Half Moon crew explored the Hudson River, the New York State to be embraced some million acres of wetlands. Spring and fall flights of waterfowl were tremendous. Local production was significant. Less than half that acreage remains and only 200,000 acres of this has good value for ducks. Although we cannot aspire to set back the clock, we can do much with what is left.

So, we want to hold, acquire, preserve and protect wetlands for wildlife. Why? A little digging and many reasons come tumbling out. Wetlands and waterfowl hunting seem pretty synonymous; most marsh preservation and development programs have been sold on this relationship. But, poking around this subject, we find that ducks provide only one-fifth of the community gains. Water impoundment for use and protection, silt basins, cattail cutting, muskrats, mink, raccoons, pheasants in winter, grouse and woodcock, other birds, deer, game fish and frogs, bait fish and insects and last, but not least, recreational and aesthetic use, with human visitors and their monetary contributions. These are all items that make a marsh a community asset.

More Than Half Our Marshes Have Disappeared Since Henry Hudson's Day—An Expert Tells How We Can Keep The Balance Producing Fowl and Fur

The First Step

The first and biggest step in management is to stop wetlands destruction — both macroscopic and microscopic. Obvious to the eye is drainage, dredging and filling for housing, agricultural land, airports, roads, marinas and just dumps. Some wetlands loss may fit into planning where land need exceeds natural value. More often, closer inspection shows that the momentarily shiny "fast" dollar has eclipsed thought of future community welfare. Preservation could mean a community asset; income for those catering to sportsmen and recreationists.

Wetlands are not always destroyed openly. Sometimes a series of steps, really insidious steps, destroy an area before our unseeing eyes. A pond, a marsh along the inlet stream and a place for a few cottages. But then come more people, more cottages. What happens to our marsh? The effects are not immediately apparent. Some things seem trivial — cleaning a channel through the cattails, filling for a dock, cutting the water weeds, that little bit of spilled oil, erosion from cottage diggings and roads; each adds its touch. Yes, cottages have septic tanks but heavy summer usage, guests and all, and there's bound to be seepage to the water. Biologically, the pond fights back but pretty soon it's too much. It becomes a people pond; fewer and coarser aquatic plants, fewer and coarser fish, practically no ducks, herons or other marsh life; just whizzing motors and their associates. Smart wetlands management requires planning, decisions. Which shall be wildlife ponds, which shall be people ponds? Multiple use is fine but only if it is controlled.

Pollution is a Factor

Water pollution — domestic, industrial and agricultural — constantly looms as a hazard to all wetlands. Pollution, streams and fish are commonly associated. Pollutants that kill fish may also flow or ebb into wetlands. Poisons, silt, sludge and associated algae can spell the destruction of wetlands. Seepage and open drainage of pesticides may be disastrous. Loss of some organisms may be enough to disrupt the cycle of life within the marsh. In close-knit environments each species of plant and animal has its place. Upset the chain and that vibrant life of the marsh may disappear.

Wetlands management can be partly accomplished through pollution control. It can also be accomplished by preventing the usurping and remodelling of public marshes for private use. Acquisition and forestalling destruction is another method. Monies from the New York State bond issue for purchasing recreational lands provided funds for wetlands acquisition. While the staff is busy with purchase, there is little time for development. But then there's no harm. Wetlands weather rather nicely out of doors. Just let nature take its course and the results are as good as some management.

A healthy wetland is a vibrant wetland, alive with noises of frogs, birds, insects and sometimes mammals. Weird noises and pretty sounds, raucous calls and soft symphonies demonstrating that the system is in order, that all goes well with the wetland species. Preventive steps have assured this in some wetlands. On other areas "progress" has gone too far, the marsh must be recreated. Where do we begin?

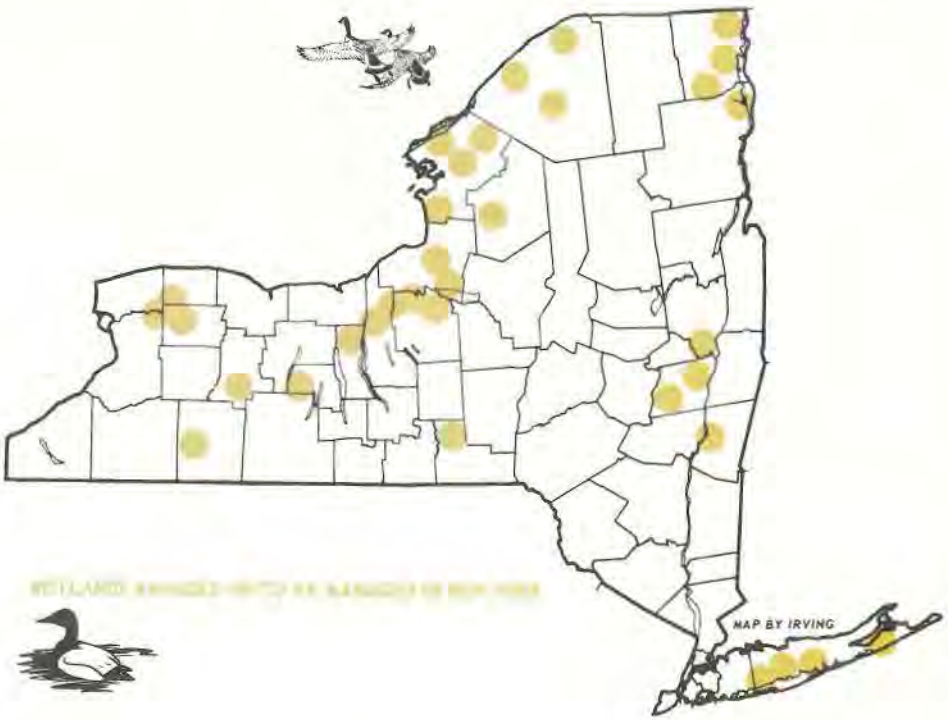
Water Level is Important

An ideal marsh is flooded shallowly — 75 per cent less than two feet deep and some less than a foot. A healthy marsh has emergent and submergent aquatic plants. The emergents, the heart of the marsh for sheltering, feeding and hiding its denizens, thrive best in very shallow water. Even submergents grow luxuriantly and fruit freely in less than 24 inches of water. So, to make the marsh ideal, flood it shallowly.

The water control structure should be designed so that the water level can't be raised easily. Most people think that if some water is good, more is better. In New York's wildlife marsh program the "spillway raiser" has been a problem. Misguided he is, for sure. Higher than planned water levels endanger the dyke and prevent ideal habitat development.

More about water levels: The most productive marshes in North America are the Prairie potholes. Ironically, these marshes occasionally go dry. A real drought in the Prairie Country can nearly knock out duck production for a year. But when water comes back to the potholes, duck populations bounce back. The complicated chemistry of the carbonate and nitrogen cycles is involved. Dry-down of the marsh permits more rapid decay of plant and animal material. This frees nutrients for new generations of plants and animals. Renewed and refreshed, the marsh is again in tune.

Construction must provide for drainage. Management must plan for drawdown every few years. Neither constant flooding nor the annual complete drawdown of flood control reservoirs is desirable. And, as yet, there is no easy solution of adding so much of this chemical and so much of that. The volume required because of buffering effects and loss through spring flushing would be



prohibitive. We are not prepared to practice chemical gardening but the time may come.

Not all ducks have similar needs. If they did, there wouldn't be different species. Some like open marshes, others are content in wooded swamps. The wood duck is happy surface feeding in a sheltered back-water. The black duck may cheerily tip up where waves roll the water at the bulrush edge. The teal may choose to feed where wet-footed sedges meet the meadow. A diversity of cover both in the water and on shore is management's goal. Natural chemistry, water depths and draw-down are about our only sure tools in the marsh. On shore we can control succession a little better. On managed marshes about half the shore line should be kept in meadow. Some ducks prefer meadow nesting to woodland nesting. In addition, the meadow provides seeds, greens and insects — a nice supplement to the marsh menu.

Good Farms mean Good Marshes

Proper site selection for flooding may substitute for chemical gardening. Just like upland farming, productive marshes are located on soils well churned by glaciation and provided with lime. Desirable aquatic plants require lime. Calcium also becomes bound up with decaying plant material, buffering the organic acids. Irons are frequent in New York waters and toxic to plants if too abundant. Excess lime helps to make these irons insoluble.

Anyhow, look for productive wetlands where farming is good. In New York the Lake Plains marshes are more productive than Adirondack sites. Wetlands in the Southern Tier are in between. But don't get the idea for one minute that we should write-off low production areas. Land costs and development problems may be less. For the same money more land can be flooded and total wildlife production becomes equal.

Shall they be large areas or small? Both have their place and opportunity is part of the guide. Large areas attract ducks in migration and have space for hunting and refuge. Intensive management is more economical on large areas. Small areas are important as breeding and rearing grounds. With more edges and more shallow water per unit, the most productive units, acre for acre, are the small marshes. Large units should be dispersed across the State to fit migration needs and sustain sport shooting. Small units are mighty important to production anywhere there is space.

Clear Cut or Not?

Should the area be clear cut prior to flooding or not? Some species persist after flooding, such as willows, providing shelter. But, under constant flooding, trees die, branches fall in the water and, eventually, the trunks. Wood decomposes slowly in water so fallen wood is just litter. Wood litter from drowned hardwood swamps, along with their stumps, may cover 10 to 20 per cent of the bottom — space that if clear could support aquatics. Scattered patches of hard woods may please the herons and wood ducks and add a touch of marsh romance, but not whole woods. Cutting costs must be weighed against the pond character. Rich, limy waters may provide food in abundance regardless of wood litter. In more acid waters wood removal is advisable.

Plants — too many, too few — what should we do? If it is the upland, the problem is simple, just farm for the species desired. Both ducks and geese have a fondness for small grains, corn, and grazing. Meadows make good nesting sites for some species. Aquatic planting is different — we don't like to throw out an arbitrary "No," but we will come close. Generally, when conditions are right in wetlands, desired aquatic plants move in. But planted stock won't do much if conditions are wrong. If we could fit the soil and remove all competition as is done on uplands, the story would be different. So we rarely recommend aquatic plantings.

Geese like an island for nesting

Plant Removal

Plant removal has its place in the wetlands. Bulldozers, draglines, herbicides, fire and blasting can all be put to use. Channels and potholes in otherwise solid stands make for more edges and more animal use. Herbicides in particular are useful for some weeds — water chestnut for example. But herbicides are not a panacea. In the last 15 years there has been much hue and cry about aquatics taking over in waters wanted for swimming and water-skiing. Wholesale spray-

ing has been advocated. The results would just create a vacuum, to be refilled promptly by the same or other undesirables. The European milfoil, whether really a newcomer or not, has recently become quite obvious in some waters. Spraying is not a solution. This milfoil is merely symptomatic of a deeper problem — pollution and unnatural enrichment of the water. The more basic problem must be solved first.

Good housing can be a boon; poor housing a death trap. Mature hardwoods provide natural nesting cavities for wood duck. Some areas are short of holes. Wood duck boxes in proper places and with predator protection mean much. Some years a fifth of our waterfowl harvest is wood ducks. Meadows and woods are natural housing for mallards, blacks, and blue-winged teal. On intensely managed areas with predator control, nest baskets over the water serve mallards and black ducks well. Without predator control they are worse than nothing.

Geese are Different

Geese are different. They are happy to be in the open — perched up so they can see around. Jointly the pair can repel most predators. Nesting islands and nearby loafing spots are a valued nicety in goose management. They assure greater populations.

Stocking — does it pay? The State in the late '30's and early '40's had success with a mallard release program. Birds survived, migrated and returned to breed — they prospered and seemed established. In the late '40's and '50's mallards continued to increase in New York. We think it was a product of stocking, others suggest just an extension of Prairie mallard range. Who is to say now; they are a sporting bird.

Goose colonies — birds that nest, migrate and return — have been established on several management areas. Locally they provide some sport but goose establishment away from management areas and refuges does not seem too hopeful. Possibilities exist for establishing some other waterfowl, but the prospects don't rate high priority. State waterfowl stocking programs must be for establishment, not for the gun.

Wetlands management is both a community task and a specialist's task. When we say community task, we mean just that. Hunting aspects are only a portion of the value of wetlands. The community gains in other ways — in the pocketbook, recreationally and aesthetically. Community-minded organizations should play their part. The community groups can do some things better than the specialist. They can stir the social conscience that fights pollution, that deters the damaging of existent wetlands, and that provides money for acquisition and preservation. Community groups can also give both moral support and physical assistance to the specialist on his development and management tasks.

And a word for the specialist, too. The wetlands manager is a trained biologist, a practical engineer and something of an artist, understanding and sensitive to the needs of wetland wildlife. Basic principles of site selection, construction and development can be put on paper. But beyond that each water unit is different.

"Clambasket" digging a pothole

Here is where the artist's feeling must enter the picture, how to make each area most appealing to wetlands wildlife.

The sad truth is that the middle '50's produced the largest duck flights that we probably shall ever see. New York has not been alone in destroying waterfowl habitat. Both the Prairie States and Provinces have done their share. Wetlands preservation and management in New York is essential if we are to supplement our waterfowl hunting in the future. Presently, we produce nearly a quarter of our duck harvest. The figure could be much higher.

Potholes attract species of duck

The Black Widow

(Continued from page 7)

with their last molt and at this time give up web weaving to search out a receptive female. But the eyes of the male are weak and it is only by his ability to distinguish between web textures that a female is finally located. If the discovered female is not mature and receptive she may treat the male as any other bit of food and thus preclude his mission before it is accomplished. Fortunately, the male is light, nimble and difficult to catch. He often waits out the last stages of his prospective mate's maturity.

It is commonly thought that the female black widow, living up to her name, devours her mate after fertilization. Indeed this is often the case, but not always; nor is it a unique trait in the spider world. The act of fertilization completes the duty of the male spider in the propagation of his species. The female feeling hungry as usual, and holding no particular affection for the male, will either seize him or give him a good chase out of the web. The female has many duties ahead of her. She must lay her eggs, encase them in complex silken sacs and guard them from predators. The male's substance is wasted unless it can be reused by the female — and so is it oftentimes.

Although the female black widow lays hundreds of eggs, only a few individuals ever reach maturity. Many times entire egg cases are destroyed by parasitic flies whose larvae feed voraciously upon the developing eggs. Of the babies that do hatch from the sac, a great many are devoured before they leave the web of the mother, for the main initial source of food for the newly-hatched spiderlings are their own brothers and sisters. The major predators during the later life of the spider consist of birds and certain wasps like the mud-daubers, which gather spiders of all types as food for their larvae.

It is probably true that drop for drop the neurotoxic venom of the black widow is the deadliest borne by any living organism. The effects of a single bite, however, have been greatly exaggerated as the amount of venom given forth is minute. According to Dr. Willis Gertsch of the American Museum of Natural History, available statistics indicate that less than four per cent of all recorded bites have resulted in fatalities. He states that the actual percentage is probably much less, for it is likely that many bites with little repercussion are never reported. The greatest danger of serious illness comes to young children and the very aged. Deaths from among healthy young human individuals are exceedingly rare.

The normal course of symptoms of widow bite are well established. The wound itself is no worse than a pin prick, but intense local pains soon develop, reaching their maximum intensity within a half hour. Local pains persist for several hours, spread and then concentrate in the abdomen and legs. The pain may become violent and is sometimes accompanied by vomiting, nausea, fainting, and/or shock. Complete recovery may be expected within several days, but it is important that the patient be in the hands of a competent physician. The most effective treatment for widow bite is an antivenom which can effectively neutralize the poison in 30 to 60 minutes.

It is difficult to predict where one might expect to find the black widow in our area of the country. It is not likely that so large a spider could find enough food to subsist in a well-sealed house, but she does live near man's dwellings, particularly in tight, well-protected areas that provide an adequate supply of insects. I have found that crevices located under boards and trash left in fields prove the best spots to locate them. This may be accounted for by the fact that the black widow does not build an extensive web and that she will not hesitate to drop by a thread to the nearby ground to catch ground forms that tingle the lower attachment strands of her net. According to Gertsch, widows also commonly stretch their webs under the seats of outdoor privies to take advantage of the abundant supply of flies there. (Indeed this tendency has provided the occasion for many bites.)

The black widow is not aggressive toward man. The violent intrusion of her web, that might be caused by a man picking up boards or trash, would only cause the spider to retreat and sit motionless or clutch her legs together and drop to the ground. Bites are sometimes caused, however, when the spider is accidentally pressed against the body. This may happen if an old garment housing one of the creatures, is put on. The spider, like any other animal, will bite out of self-defense.

Taking Stock Of Your Rural Property

(Continued from page 9)

in such areas or eradicate the plants.

Some of the ground vegetation may be directly useful because of its edible fruit (wild strawberry, for instance), roots (cucumber root), foliage (water cress) or fruiting body (puff-ball fungus). Grasses and some herbs may provide grazing for both wild and domestic animals.

The identification of wildflowers, ferns and other ground vegetation can be an absorbing lifelong hobby. One may learn something about the land from a knowledge of these plants. Many of them have a fairly narrow range of conditions under which they will grow, and if you can recognize a plant, you may get clues to such conditions. Some will grow only where soils are highly acid; some only where there is standing water part of the year; some only where there are substantial amounts of available nitrogen such as after a fire or following fertilization; some only on old logs, stumps or other organic material.

The number of laymen's guides to the identification of this group of plants, is large. Among these are the following: *Field Book of American Wildflowers*, by F. S. Mathews (G. P. Putnam's Sons); *A Field Guide to the Ferns*, by Boughton Cobb (Houghton-Miflin); *The Pocket Guide to the Wildflowers, How to Identify and Enjoy Them*, by Samuel Gottscho (Dodd, Mead); *Field Book of Common Mushrooms*, by William S. Thomas (G. P. Putnam's Sons); *The Lichen Book*, by G. G. Nearing (Nearing); *Guide to Eastern Ferns*, by Edgar T. Wherry (Science Press); *Forest Flora of Canada*, by G. C. Cunningham (Queen's Printer).

Stock-taking with respect to the vegetative components of your property is relatively simple because they don't move. It is primarily a matter of identification and then counting, measuring the individual, or estimating the per cent cover of the species. It is not so easy with the animal component.

(This aspect will be considered in Part 3.)

The Students' Page

Rescue on the Ice

If you or a pal falls through the ice, remember these rescue precautions recommended by The American Red Cross. They are condensed from *Modern ABCs Of Ice Fishing* by Jerry Chiappetta (Stackpole).

1. To reach the victim, never walk to the break. Spread out flat on the ice.

2. Move slowly with a board, branch, ice sled, rope, or some other improvised device to reach the victim. If nothing can be found, several people can form a human chain with each person lying flat.

3. The victim should not try to shed his boots or coat, if it means releasing his grip on solid ice. There is a chance underwater currents may pull him under the solid ice and away from the break.

4. Once the victim is reached, he should help his rescuers by trying to float horizontally and use a flutter or frog kick to assist in pushing himself onto the ice.

5. The victim and his rescuer or rescuers should roll or crawl slowly back toward shore or safe ice many, many yards before attempting to stand. Even then, they should not gang up and concentrate their combined weight in a small area.

6. Back on shore or at a fishing shelter, remove the wet clothing as soon as possible and briskly rub down the victim to speed up circulation. Of course, get him indoors or to a warm fire.—J.E.G.

Refrigerator smoker

Here's how to make a do-it-yourself smoke house: Find a discarded refrigerator, leave the shelves in it and cut an opening through the top as a vent for the smoke. Use a "Hibachi" (grate) on the bottom for a fire box.

Procure some fish, clean and split them, cure with salt or in brine and smoke them in your own back yard. Use hardwood or hardwood sawdust. Some hickory chips will help.

For safety, be sure the door cannot be locked closed.

Rubbish in the sky

If it had ever occurred to them, it surely would have seemed impossible to the early explorers who opened up our country that there ever could be congestion in so vast a land, but today America is overcrowded in many places. To our generation of space explorers, it seems just as unlikely that space could ever become congested, but already we have made a good start towards cluttering it up in the vicinity of the Earth. As of June 13, 1966 there were 1,072 man-made objects in orbit, mostly around the Earth, but with a few going around the sun and moon. Only about 200 of these are payloads; all the others are what has been graphically described as space junk. How long will they stay in orbit? The only quick answer is that most of them will be up there a long, long time. — Dan Snow, *Dir., Ralph Mueller Planetarium & Observatory, Natural Science Mus., Cleveland, Ohio*

Easier rowing

To save wear and tear on hands, place a small, split section of a bicycle tire on the grip of boat oar. This gives you a much more firm and comfortable hold. The tread from a bicycle handle also gives a good grip.

Conservation merit badge

A new, broad-based conservation merit badge has been introduced into the Scouting program.

It fills a long felt need for such a badge that would draw attention to a variety of conservation problems. This was not possible in the requirements of specialty badges. The new badge points up such problems as water pollution control, air pollution control, international problems and co-operation, land-use planning and the need for litter prevention.

Badges in soil and water conservation, forestry and wildlife management will still remain in the program, but the new conservation of natural resources badge will be required of boys advancing to Eagle rank.

Snow flea

The snow flea, *Hypogastrura nivicola* Fitch, is often found in astonishing numbers skipping about on the snow in late winter when there is a thaw. Whenever a few days of mild weather occur, the surface of the snow, often over many acres of woodland, may be found sprinkled thickly with these minute fleas. Hollows and holes in the snow, out of which the insects are unable to throw themselves readily, are often black with the multitudes that have become imprisoned.

The hairs which clothe their bodies enable them to float buoyantly upon the surface of the water without becoming wet. When the snow is melting and producing small rivulets, these snow fleas can be observed, floating in the current, forming continuous strings. In the eddies and still waters they may gather in such numbers as to wholly hide the water.

In the early spring the buckets and troughs of the manufacturer of maple sugar are often thronged with these insects, since they are especially fond of the sweet sap.—E. A. W.

WINTER FISHING.

The Back of the Book

No Smokey Bears

You can't shoot something you can't see. The Air Force in Viet Nam has special teams that blast away tree leaves and other shrubbery beside canals that offer hiding places for the Viet Cong.

The motto of these defoliation teams: "Only you can prevent forests."

Moose River use

During the summer season, from June 1 to September 7, more than 7,800 people entered the Moose River recreation area in Hamilton County. There were 2,302 vehicles and 754 individuals submitted fishing creel census cards to the gatekeeper indicating a total catch of 5,646 trout. Nearly all the fish were brook trout. The average catch rate this season was 1.23 trout per angler hour.

This relatively new area is becoming more popular with campers, hikers, hunters and fishermen. It is "back in" and beautiful country.

Pest case

The National Audubon Society is supporting a law suit brought by a Long Island housewife in an effort to establish that a citizen's constitutional rights may be violated by "the deliberate and wrongheaded pollution of his environment by a damaging chemical pesticide." She has won a temporary injunction in a State Supreme Court against the use of D.D.T. by the Suffolk County Mosquito Control Commission and now the suit is being broadened by complaints against private tree-spraying contractors. She is seeking also to restrain them from using D.D.T. and similar, persistent chlorinated hydrocarbons.

The National Audubon Society, with the approval of its Rachel Carson Council, has pledged Rachel Carson Memorial Funds to pay for the publication of court proceedings in the case.

New recreation directory

A new directory of private organizations providing assistance in outdoor recreation has been compiled by the Bureau of Outdoor Recreation. It is made up largely of names and addresses of national non-profit professional societies and other national organizations which provide publications and other services to individuals and organizations developing outdoor recreation areas.

The new directory is not a complete listing of either sources or types of assistance but it does provide information on assistance available in connection with eighteen of the more popular outdoor activities.

"A Directory of Private Organizations Providing Assistance in Outdoor Recreation," (30 cents) is a companion publication to "Federal Assistance in Outdoor Recreation," (35 cents) which summarizes Federal programs providing assistance to states, their subdivisions, organizations and individuals. Both publications are for sale by the Superintendent of Documents, Government Printing Office, Washington, D. C. 20402.

Rogers Conservation Education Center

The Federal Bureau of Outdoor Recreation has approved a $45,950 grant to the State of New York from the Federal Land and Water Conservation Fund for development of the Rogers Conservation Education Center in Chenango County.

The grant is for development of a conservation education center on a 280-acre tract of State-owned land near Sherburne. The area is ideally comprised of woodlands, open fields, marshes, spring streams, ponds and Chenango River frontage and offers exceptional opportunities for nature study, conservation education, walking and outdoor photography to the 100,000 people in the four-county (Chenango, Madison, Cortland, Otsego) area of central New York. This grant is for 50 per cent of the total cost of the project with the balance coming from State funds.

Bird repellent

A harmless bird repellent is on the market that stops pigeons, starlings, sparrows and other birds from perching on buildings, ledges, signs, cornices and roofs, thus preventing unsightly droppings.

It is applied with a cartridge type caulking gun from 8 oz. caulking tubes, which leaves a ¼ in. high ribbon on natural landing places. Even the widest areas will be forbidding to birds with the application of two or three ribbons, spaced several inches apart.

Polar bear competition

The Boone and Crockett Club, official keeper of North American big-game records, has been commended for its recent decision to eliminate the polar bear from the list of animals eligible for big-game record competition.

The status of the polar bear is listed as "undetermined" by the Federal Committee on Rare and Endangered Fish and Wildlife. The First International Scientific Meeting on the Polar Bear, was held at Fairbanks, Alaska, in 1965, and brought together for the first time the five nations of the world concerned with polar bear.

Light airplanes operating out of villages and towns on the Arctic Ocean are usually employed by American hunters for polar bear. The airplanes operate in pairs to locate a bear and then one airplane lands while the other remains aloft as a safety precaution in case the ice is unsafe. The second airplane is frequently used to herd the bear toward the waiting hunter.

The Boone and Crockett Club's action to remove polar bears from record competition was based in part on the question of fair chase involved in the use of airplanes. The undetermined status of the polar bear population was also instrumental in the Club's decision.

The 1965 harvest of polar bears from Alaska contributed about $450,000 to the State's economy. Three Eskimo villages on the Arctic Coast receive considerable economic benefit as a result of this hunting.

Gourmet catfish

The affluent society is recognizing the catfish and it is appearing on the menus of some of the better restaurants in the South-Central States. Sometimes the name is embellished to barbed trout or Rocky Mountain catfish but no matter what the name, its food quality is unsurpassed.

Probably more catfish are raised annually in the United States than any other fresh-water fish, some 35 million pounds. Fish farmers are devoting more than 20,000 acres to raising catfish; about one-third of the acreage is in the South-Central States. In addition to these acres where catfish are raised intensively, there are thousands more where raising catfish is part of a system of crop rotation; catfish one year, rice the next. After one year's growth, the catfish sells for about 50 cents, whole, at the fish farms or, after dressing and packaging, 90 cents a pound, retail. Men, who have gone on to eating more dignified foods such as lobster and steak, can still remember the catfish of their youth with affection. With a group of friends, a pole, a line and a baited hook, they fished the ponds, lakes, streams and small rivers. The barefoot boy, who stepped on the spine of a reposing catfish, never forgot the experience. The catfish was not the kind of fish to frustrate young anglers and so they often caught a basketful.

The Tom Sawyers of America did not have conflicting feelings about the object of their affection: It was ugly, but it was good eating. They rarely sold catfish. Some men who have not eaten catfish since their youth say unequivocally: "It's the best-tasting fresh-water fish." Most of the catfish ordered in restaurants today are raised in farm ponds.

New recreation areas

Residents of nearly 750 small town and open-country areas have, or soon will have, new and better outdoor recreation opportunities. The U.S. Department of Agriculture credit programs have approved more than $24.5 million in loans to finance large-scale community recreation projects. These included swimming pools, picnic grounds, lakes and small golf courses.

In addition, farm operators received 536 loans for nearly $3.4 million to construct, buy equipment and meet other expenses of developing recreation facilities on their farms. These recreational enterprises include fishing for a fee, boating, picnicking, sports and camping, horseback riding, vacation farms, travel trailer parks, swimming, cabins and cottages, nine-hole golf courses, hunting preserves and pack horse service for big game hunting.

New York was second highest of all states with 48 recreational loans.

Information about the program can be obtained from Farmers' Home Administration county supervisors or from F.H.A., U.S. Department of Agriculture, Washington, D. C. 20250.

American eagle "nest egg"

The case of the vanishing American eagle, a victim of onrushing civilization, has just been bolstered by a "nest egg" of private conservation funds to help preserve this national bird. A $1,000 grant from the Georgia-Pacific Foundation is hopefully a starter fund and is expected to be used by a naturalist-photographer to extend present ecological studies.

The program calls for aerial surveys of eagle nesting areas from which tree-top and cliff-top nests are spotted. The fund also will assist bird counts and additional study of feeding and nesting habits, the data needed to formulate a true conservation program.

January exam for appraiser

In January, 1967, the New York State Department of Civil Service will hold examinations for the position of Chief Forest Appraiser. This position with the State Board of Equalization and Assessment has a salary range of $13,500 to $16,050. Applications must be in before the first week of January, 1967.

The position involves assessment of land and timber values, the development of valuation procedures and the administration of forest appraisal activities. All candidates for the position should have eight years of forest appraisal experience, four of which must be in the administration of a forest appraisal program, and a Bachelor's degree in forestry or forest management or four additional years of forest appraisal experience. The examinations will involve a rating of the candidates' education and experience plus an oral examination to be held in mid-January.

A big red oak

A great red oak tree on a wood lot in the Town of Collins, Erie County, often visited by students of forestry and natural history, has bowed to man's desire for decorative paneling.

One of the largest oaks in Erie, this specimen was nearly 6 feet in diameter at the base and when cut showed some 125 annual rings. The tree was more than 85 feet high, the butt log was 40 feet in length. It was estimated that it would produce 4,000 board feet of veneer.

The buyer had been searching for scarce walnut logs when he heard of the big red oak specimen.

It's unfortunate that unusual specimens such as this cannot be preserved for study and for their beauty. In many cases though, it would mean sacrificing a valuable forest product as such specimens do deteriorate with increasing age.

Conservation achievement awards

"To give proper recognition to those individuals and organizations who make outstanding educational and informational contributions to the conservation of the natural resources of the State of New York—its soils, forests, minerals, waters, and wildlife." So reads the purpose of the Conservation Achievement Awards Program held under the auspices of the N.Y.S. Conservation Council, Inc. and sponsored by the National Wildlife Federation of the Sears-Roebuck Foundation.

Emblems of the awards were presented by Governor Nelson A. Rockefeller at the annual conference of the Council at Jamestown in September.

This year the "Governor's Award" for the New York State Conservationist of the Year went to Paul Schaefer of Schenectady for his many years of dedicated service as "Mr. Forest Preserve" in spearheading public opinion against objectionable changes in the Constitutional protection of the Preserve.

As Conservation Communicator the Buffalo Courier Express newspaper was cited for the tremendous impact it has made in influencing the general public on natural resource conservation and especially on pollution, beautification and firearms problems.

The Wildlife Conservation Award went to the Nassau County Fish and Game Association for its outstanding work in promoting the preservation of the fast dwindling wetlands of Long Island.

Water Conservationist of the Year is Boyd Lyons of the Montgomery County Water Pollution Abatement Committee for his dedicated and successful leadership in the cause of "Clean Waters" for the State and especially the Mohawk.

Homer E. Stennett of the U. S. Soil Conservation Service at Jamestown was honored as Soil Conservationist for his inspirational leadership in promoting outstanding examples of watershed development in the State and in southwestern New York. He has become known as "Mr. Watershed" for the work accomplished on watersheds of that area.

For Conservation Organization the International Paper Company was cited for its outstanding program of management of its woodland holdings to not only promote long range conservation measures but also for the pioneering multiple-use programs which have great public benefits from an outdoor recreational point of view.

As Youth Conservationist the Buffalo Area Council of the Boy Scouts of America received the award for its outstanding work in promoting conservation and natural resource training in its specially designed camping and home programs.

Conservation Educator of the Year was awarded to Albert W. Bromley, Director of the Division of Conservation Education, State Conservation Department for his outstanding leadership, ingenuity and integrity in bringing natural resource education to the people of the State through THE CONSERVATIONIST magazine, educator workshops, conservation education camps and centers and the increased use of all other news media.

Charles E. Baker, District Forest Director for the Conservation Department at Norwich, received the award of Forest Conservationist for his many meritorious accomplishments and energetic leadership in practice and promotion of modern, multiple-use forest management.

Federal aid allocations

Federal aid funds totaling $18,275,000 for fish and wildlife restoration projects became available July 1 for the 50 states, Guam, the Virgin Islands, Puerto Rico.

The money, $3,275,000 greater than a similar distribution last year, is a preliminary apportionment to help states finance Federal aid operations between July 1 and the final apportionment for the year which comes in the fall.

Of the $18,275,000 allocated, $14,675,000 is for wildlife restoration and $3,600,000 is for sport fishery projects.

Fish and wildlife restoration funds come from Federal excise taxes collected from manufacturers, importers and producers of firearms, fishing rods and other types of hunting and fishing equipment. Distribution of the funds is based on the number of paid license holders in a state, and the state area.

New York State was scheduled for $460,520.09 for wildlife and $92,094.47 for fish.

Picture windows and grouse

The population explosion, accompanied by its housing boom, may have a little competition from nature in the form of ruffed grouse exploding through picture windows bordering wood lots. Large expanses of glass reflect large expanses of outdoor scenery and this reflected scenery looks mighty good to a flying grouse bent on getting from thither to yon.

All over the State, the fall breakup of grouse broods into individuals going off into the world to fend for themselves is more than likely to end up with a few isolated broken windows. Here, a grouse was trying to find out what kind of research is now being done at the N.Y.S. Wildlife Research Laboratory at Delmar. Perhaps it didn't know that this State had concluded its grouse life history studies some twenty years ago. It was so determined to get in that it went through two windows — one a 4 x 6-foot storm window and one a 10 x 12-inch pane. Sandra Zeh, a conservation worker at the Lab., looks at the poor grouse. On the other hand, was the grouse interested in research — or was it interested in getting a better look at Sandra?—NICK DRAHOS

Mohawk pollution abatement

By the end of this year, every major polluter along the 150-mile Mohawk River will be under State order to end his pollution within five years. The Health Department has issued stop-pollution orders to 16 major polluters.

Sewage treatment facilities in the Mohawk Valley will approximate $75 million and under the Pure Waters Program, the State will finance $45 million of the cost, leaving $30 million to be financed by the communities involved. Major industrial polluters of the Mohawk River must spend added millions of dollars for industrial waste treatment facilities pursuant to abatement orders.

The first automatic water pollution monitoring device has been placed in the Mohawk River. This monitor is the first of 60 planned for every major waterway throughout the State.

Cranberry and Limekiln Lake campsite expansion

A $47,500 grant from the Federal Land and Water Conservation Fund has been approved to expand the existing Cranberry Lake Public Campsite in St. Lawrence County. This amount is for the first stage of the plan and two subsequent stages are also eligible to receive financial assistance from the Fund. The total amount of Federal aid for the project is expected to be $91,500.

Also $17,702 was approved for development at the Limekiln Lake Public Campsite in the Town of Inlet, Hamilton County. This will allow for completion of the final phase of development at this campsite.

The Federal grants are matched by an equal amount of State money.

Wilderness area studies

More than 57 million acres of National Forest, Park, and Wildlife Refuge lands will be screened for possible addition to the National Wilderness Preservation System between now and the 10-year deadline, 1974. The first deadline under the Wilderness Act comes in September, 1967, when recommendations on approximately one-third of the potential areas must be made.

Information about the National Forest, Park, and Wildlife Refuges up for initial consideration, plus the times and locations of public hearings, is available in quick reference form from The Wilderness Society, 729 15th Street, N. W., Washington, D. C. 20005.

The sportsman's dollar

The American sportsman spends millions of dollars a year to protect and increase wildlife he does not hunt. Sportsmen help pay for the operation of state game departments which are charged by law to care for *all* wildlife, not just the game species, but for the far more numerous non-game varieties of wildlife such as birds that welcome the food and cover developed with license funds.

Even the state conservation officers whose salaries are paid by sportsmen, enforce not only hunting regulations but spend much of their time assisting in wildlife habitat development.

Hunter subsidizing of wildlife comes from license fees, migratory waterfowl stamps, Federal tax on sporting arms and ammunition, direct personal contributions, development of private lands and membership in state and Federal sportsmen's organizations. Here below are some of the additional benefits they provide along with helping their own sport.

State game departments collect nearly $70 million from hunters for licenses, tags and permits and this money is used for land purchase, biological research, wildlife protection, habitat development, conservation education, and caring generally for all wildlife, both hunted and non-game species. Over the years more that $220 million has been distributed to state game agencies for wildlife management through the Federal Pittman-Robertson program, known as the "Federal Aid in Wildlife Restoration Act." This act, passed at the request of hunters as a way of helping all wildlife, places an 11 per cent excise tax on the sales of sporting arms and ammunition.

The latter program has resulted in the purchase and development of more than 2¼ million acres of upland game habitat and nearly one million acres of wetlands for waterfowl. Hunters use these lands for two or three months of the year, but it is open to the public the year around. These areas support more non-hunted species of wildlife than game.

Hunters have spent nearly $80 million for duck stamps since 1934. The money has been used in part: $15 million for nearly 400,000 acres of land; $24 million for refuge upkeep; $11 million for refuge development; and for waterfowl research. The vast national system of refuges is used not only by hunted waterfowl, but for many species of shore and wading birds.

Additionally, more than $12 million has been collected since 1937 by Ducks Unlimited, Inc., a non-profit group of waterfowlers. With money from their own pockets, these conservationists have put more than one million acres under water control and developed another million acres of marshes in Canada for waterfowl nesting. This organization has created more than 5,000 miles of waterfowl breeding shorelines; established more than 700 of their famous "duck factories" (a network of permanent breeding grounds and refuges); restored thousands of acres of resting and feeding areas; and built over 500 dams and other water-control structures. They thus also created favorable habitat for non-hunted wildlife.

Studies show that hunters spend a minimum of $50 million a year developing private lands for game. Thousands of hunters and landowners plant feed and cover.

The hunter may seem a paradox to the non-hunter—spending millions to protect and care for game, only to hunt it in the fall. It's difficult for the general public to understand that the hunter simply takes the annual surplus from nature's bounty. Sportsmen are always concerned with the survival of any species and in the decades since state wildlife agencies were formed, no game species has been threatened with extinction by the hunter — and, many have been saved.

The greatest threats to wildlife today are water pollution, improper use of insecticides, clean farming, urbanization and allied factors which destroy wildlife habitat — not hunters.

The Lesser Wilderness – Tug Hill

(Continued from page 16)

peace with England. French sympathies were with the Colonies. At least, they were against England! To preserve the facade of neutrality, Franklin dealt with Jacques Donatien LeRay de Chaumont, grandfather of Vincent LeRay de Chaumont. Jacques furnished so many supplies for the Conolists that he found himself in financial difficulties. He sent his son, James, to try to recover these debts, debts of which there was no record, and for which there was no money to repay.

It was suggested that Chaumont purchase lands for speculation, since that was a common practice of the times. Among other tracts purchased by De Chaumont was a tract of 350,000 acres on the northern edge of the Lesser Wilderness lying in Lewis, Jefferson, St. Lawrence and Franklin counties.

Let it be sufficient to say that the impoverished new nation was anxious to have the path of invasion settled as a buffer against the very ruffled British of Canada, and the crushed and scattered Indian nation. The few dollars received for this fantastic tract of natural resources was sorely needed for the empty treasury. It was a speculator's dream to buy land at 16 cents an acre and sell it at $1.50 to $4. The history of money as a medium of exchange is difficult to follow, but at about this time a pair of man's shoes cost $1.50. On the other hand, shortly before this, an infant scalp brought $20! Values change with the times.

The development of these huge tracts required surveys and the early survey of these lands involved those only recently vacated by the British and still occupied by hostile Mohawks and Oneidas. In order to convert this raw land to a portable medium, such as money, it needed people, and in order to get people to pay for the land, it had to be surveyed; i.e., located. The land of the Bark Eeaters had many surveyors, some of whom did their work mostly in the back room of an inn, accompanied by the distilled residue of fermented molasses. Mr. Verplanck Colvin established, accurately plotted and described large tracts of the roughest parts of the State. He artistically sketched his work and made very interesting narrative reports. These works can and should be seen in most public libraries.

(This is the first of two parts.)

Shooing Antic, Attic Squirrels

(Continued from page 17)

must be taken to place the bait so that it will be under some sort of cover such as a long narrow box open on both ends to make it unavailable to most other animals and children.

We receive many calls from people who become afraid of a squirrel which becomes so aggressive that it climbs on the back door or jumps on the baby carriage. Invariably, such a squirrel associates food with people and a hungry fearless squirrel, especially a nursing mother, may jump on a person in search of something to eat. Under such circumstances, few people retain the presence of mind to realize that they are not personally under attack. Consequently, they may get scratched or bitten while frantically trying to remove the squirrel.

Improving Your Land for Wildlife

(Continued from page 27)

business. Help in the form of equipment in managing those retired acres will have to come from some place. The Fish and Wildlife Management Practice State Board has been thinking about this problem — which already exists — and will doubtless offer remedies.

Finally, landowner or not, everybody can and should get into wildlife habitat improvement. Actually, often without knowing it, the urbanite, through his tax dollar, contributes to conservation planning and cost sharing of applied conservation measures on private lands. There is no reason why individuals and groups interested in hunting and fishing or conservation generally, cannot stimulate increased emphasis on important wildlife conservation measures in their home counties. There are good sources of information and guidance if you need and want help. The Conservation Department's field offices can offer advice and planning service, as can the Soil Conservation District Committee, the Agricultural Stabilization and Conservation Committee and the Co-operative Extension Service. And any of these agencies will refer you to one of the others which may be in a better position to help solve your needs.

Hudson Riverway Law

The new Hudson Riverway State Law aims to stop further despoilation of the Hudson River. It gives the three jurisdictions involved, Federal, State and local, three years for the development of a compact for a long-range clean-up of the river's waters and its banks.

The real work will come in developing a workable compact and a workable program for the Hudson Riverway. The problems are immense, from the incredible pollution in the Albany-Troy area to the now developing encroachment on the Jersey Palisades. Nevertheless, people have demonstrated that they are sickened by what has happened to the Hudson River and many of their other waters, and they are willing to pay the price to reverse this destruction.

Residents of New York State have recently approved a referendum calling for the expenditure of more than a billion dollars for cleaning up pollution in the waters of New York. New Jersey residents, too, have made it abundantly clear with petitions, letters, protests, and by other means, that they are not satisfied with measures being taken against pollution in their state. They have approved a $60 million bond issue to acquire just such scenic open spaces as border the Hudson River.

National Wildlife Federation

The world's largest conservation organization, the National Wildlife Federation, was organized in 1936 during the first North American Wildlife Conference by the late J. N. ("Ding") Darling as a nationwide citizen's organization to insure the proper use and wise management of all natural resources. The Federation issues more than 500,000 free leaflets and booklets each year in response to more than 35,000 requests for conservation information from youngsters, school teachers, and interested citizens. It publishes an excellent magazine, *National Wildlife* and compiles a directory of conservation agencies of all types. Also, it conducts National Wildlife Week, a nationwide educational campaign through its state affiliates.

Grafted crabs

Fruit persistence and use by wildlife showed continued pressure on the grafted crab apples on the Albany County Partridge Run Game Management Area. There is heavy utilization of the fruits of the smaller fruited varieties by evening grosbeaks and ruffed grouse at the higher elevations.

The persistence, untouched, of the fruits of the European highbush cranberry, in contrast to complete use of all the fruits of the American highbush cranberry, indicates the possibilities of extending the season of availability by the use of several species. European highbush cranberry usually is not touched until March and is finally used up in May.

New Youth Camp

A fifth New York State Division for Youth forestry camp will be constructed on New York State Conservation land in the Town of Annsville in Oneida County. The date for completion is June, 1967.

The camp will be located four miles from the community of Taberg, off route 285, and will accommodate 60 selected boys who have been referred to the facility through the courts or social agencies. The boys will receive needed academic training, remedial instruction, skill development training and intensive group and individual counseling.

They will devote a part of each day to forestry work planned and supervised by the State Conservation Department. Projects will include the improvement of tree plantations by thinning and pruning; construction of access roads for logging; fire protection; recreational use by the general public and work on fish and game projects.

The Youth Camp at Annsville will be the fifth management facility of this kind operated by the Division for Youth. Other camps are located at Rensselaerville in Albany County, Great Valley in Cattaraugus County, Caroline Center in Tompkins County and Masonville in Delaware County.

Rabbit subtraction

The rabbit crop is at its peak a month or more ahead of the hunting season. It's unfortunate the two don't mesh for the cottontails begin the long, downward skid in late summer that will end only with next spring's breeding season. Each day until then — from September to April — rabbits will be on the wane whether or not they are gunned. More than two-thirds of the rabbits alive in spring and summer won't survive until the fall hunting season.

A single study on one, 186-acre area showed an 84 per cent decrease from September 1 to January 1; 284 were on the tract by September 1. A month later, there were about 184. By January 1, only 41 rabbits remained, with the toughest part of the year still ahead.

In late fall, hunters wonder what has happened to rabbits since late summer. Rain, disease, accidents, predators and some things that we don't even know about have happened to them. By the time the hunter gets around to hunting, nature has already cut deep into the rabbit supply. The hunter gives up the cream of the crop for the privilege of hunting in sharp air. He should realize that a lot of rabbit subtraction goes on before he gets there and that wildlife wait only on nature's convenience, not necessarily the hunter's.

New Rockland Lake State Park

The new Rockland Lake State Park, located on the Hudson River between Haverstraw and Nyack, 20 miles from New York City, will receive a $264,390 Federal Land and Water Conservation Fund grant to assist the State of New York in development. The State will match the Federal grant with an equal amount of money.

The new park will cover an area of 1,034 acres and include a 256-acre lake.

It will be contiguous to Nyack Beach State Park (61 acres) and Hook Mountain State Park (661 acres).

The completed project will help meet growing outdoor recreation needs of the New York City area. It has great natural beauty that will be enhanced by opening up vistas and supplementing trees and shrubs with compatible development. Up to 30,000 people are expected to use the park daily during the summer months.

Forestry class

Forestry students from Pack Forest, a part of the State College of Forestry operated by Syracuse University, visited the Conservation Department's Regional Headquarters, at Warrensburg, to learn more of the Conservation Department's role in forest management and about the various jobs available to them when they graduate.

Each year the junior class from the College of Forestry at Syracuse spends part of its summer at Pack Forest applying in the field what they have learned in the classroom.

The Moreau Lake campsite, presently under development, provided a stopping place for lunch and an opportunity for discussion of outdoor recreation facilities on forest land. Next, a visit to the Department's Fortsville Fish Hatchery and a stop at a red pine plantation on the Fort Edward Watershed, ended the day.

Air pollution control

New York's $2½ million Clean Air program will be headed up by Alexander Rihm, Jr., who has served as Executive Secretary of the Board and Director of the Health Department's Bureau of Air Pollution Control Services since 1957. Mr. Rihm was chief of the first water pollution control classification study conducted in New York State and was also responsible for developing the State Health Department's radiological health program in 1962.

Great Lakes' prospects brighten

Prospects for restoring the multi-million-dollar trout fishing industry in the Great Lakes have become increasingly encouraging as the sea lamprey menace is cut.

The U.S. Bureau of Commercial Fisheries carries out the lamprey control program under the guidance of the Great Lakes Fishery Commission. The eel-like creature, which sucks blood from prey with its circular mouth, rasping tongue and sharply piercing teeth, nearly wiped out the lake trout fishing industry. Formerly the industry brought an annual $7½ million return to the fishermen on the upper Great Lakes during peak years in the mid-1940's.

The control program treats the parasite-spawning streams with a chemical substance, called a lampricide. The lampricide was developed after about 6,000 chemicals were tested in five years of experimentation.

The remarkable comeback of the lake trout attests to the success of the control efforts and replanting with hatchery-raised stock. Natural reproduction now is returning and last fall one research vessel made the first catch of natural (not produced in a hatchery) lake trout in Lake Superior since 1959.

Conservation education action

Now there is a practical manual on effective conservation education action, a useful and intensely down-to-earth guidebook of directions, suggestions, recommendations and information on how to transform conservation needs into conservation education action at the national, state, and local levels. It is entitled, "Guidelines to Conservation Education Action." The manual is meant for all who are interested in getting more conservation education into practice — leaders of conservation groups, garden clubs, Scout groups, service organizations, as well as teachers and others concerned.

Chapter titles include: Great Was Our Legacy; The Nation Begins To Move; The Problem in Perspective; A Clarifying Basis for Conservation Education; Motivation, Human Dynamics and Conservation Education; Some Suggested Conservation Education Projects for State-Wide Groups; Some Suggested Conservation Education Projects for Local Groups; and Some Suggested Conservation Education Projects and Guidelines for Individuals.

With 132 pages, illustrated, it is available from the National Audubon Society, Nature Center Division, 1130 Fifth Avenue, New York, N. Y. 10028 at $2.50 in paperback and $5 in hardback.

Firearms and people

Did you know that for centuries, the Swiss Constitution has provided that every mature male be issued a gun by the army reserve? Even though these guns are kept at home, Switzerland has virtually no armed crime.

Man, the endangered species

Unless man follows better conservation methods in practicing his economic affairs, the ultimate victim may well be himself, not natural beauty or birds and fish.

Almost every species can prove essential in current and future research into the mystery of life. Each species is a part of a chain which supports other species. Each has a function to perform and man is a part of the vast web of life and cannot escape the natural consequences of his actions. Population and technological revolutions may make man, himself, an endangered species in many parts of the earth.

The estuaries and marshy shallows, where life began, are being drained and filled to make house lots. They are being polluted by communities and industries too frugal to build effective sewage disposal facilities.

Hillsides, stripped of tree cover; air, ruined by smog; animals, poisoned by indiscriminate use of pesticides are signs pointing straight to a darkened and dangerous future for all living creatures.

"Charlie" Trevor honored

The late Charles N. Trevor, District Forest Ranger, of Rensselaer County, received tribute when Governor Rockefeller recently dedicated a bronze plaque in his honor at the Conservation Department exhibits building at the Schaghticoke fair grounds.

It was through "Charlie's" indefatigable efforts that the fair always had an excellent conservation exhibit, finally culminated by the establishment of permanent natural resource exhibits buildings.

Many of "Charlie's" close friends and working partners were in attendance.

Litterbug research

A blonde, blue-eyed Gowanda high school junior trailed highway litterbugs for a month while researching a term paper on the subject, "Keep America Beautiful."

Judy M. Westlund, 16, who lives near this scenic Cattaraugus County community, picked up litter along a one-mile stretch of the Versailles-Silver Creek Rd. and kept a detailed inventory of rubbish discarded by motorists.

She gathered 263 beer bottles bearing labels of nine brewing companies. There were 34 pop bottles in six varieties. She collected a variety of paper products, metal objects and other odd items including wearing apparel.

Determined to keep both sides of the road clean during the four weeks of research, Judy piled the rubbish at regular intervals and persuaded her father to haul it to a dump. His pick-up truck was nearly filled on some trips.

She was the target of "good-natured jeers and nicknames" from motorists. Some offered her rides when she patrolled the mile on foot. Occasionally she rode her saddle horse, "Shawn,' and collected litter in a saddle bag.

Judy's term paper was required in the driver-education course she took in Gowanda Central School; students were required to choose a subject relating to cars and highways.

Judy concluded that, "If every driver-education student were to clear a mile of road, just think of the tons of litter that would be disposed of. As individuals we can help overcome the problem merely by thinking before littering our highways."

"North Country Sportsman"

Hunting and fishing as types of outdoor recreation play an important part in the economy and use of leisure time in the North Country. So much so, in fact, that Station WWNY-TV, Channel 7, Carthage-Watertown, has been able to present a 30-minute program on prime time devoted specifically to hunting, fishing and related interests. This program entitled, "North Country Sportsman," has successfully survived the various and sundry TV ratings for six years and, on September 22, celebrated its 300th showing.

Much credit for the popularity and longevity of the program must go to Glen Gough, the host and inspiration for each weekly presentation. Glen has been able to integrate with great appeal a series of outdoor films and personal appearances by local sportsmen and Conservation Department personnel, always providing an unbiased approach to use and management of our fish and wildlife resources. Above, pictured with Herb Doig, Region 4 Game Manager on his right, Glen sits informally on his set which in itself portrays the main program theme. Sportsmen and professionals alike owe a debt of gratitude to Glen Gough, a true North Country sportsman. —H. Doig

Pure Waters Program report

The first of a series of semi-monthly progress reports on the New York State Pure Waters Program shows five contracts for construction of local sewage treatment plants at a cost of just under $5.5 million. They are part of 77 applications received to date from local municipalities. The contracts are evidence that the construction phase of the program is rolling less than ten months after the voters approved the Pure Waters Bond issue at the 1965 general election.

The construction grant program is only one phase of the Pure Waters Program as the State also pays for one-third of the cost of operating and maintaining local sewage treatment plants that meet State standards. One hundred ninety-seven communities have been approved for aid totaling nearly $6.5 million and only 36 applications have been disapproved, either because of poor maintenance practices or inadequate treatment facilities.

A total of 32 sewage studies have been completed with another 51 in progress and there are 17 water studies underway. All of these have, or will, receive State aid.

State aid is only one part of the Pure Waters Program; enforcement of the State's laws against water pollution is equally important. During a 12-month period in 1965-66 a total of 149 pollution violators, either municipalities or industrial firms, have been scheduled for hearings on violations. Orders for corrective measures were issued in 111 cases with the rest pending action in the near future.

The Pure Waters Program also provides tax incentives for industry to build new pollution control facilities, establish automated water quality monitoring systems, expand State research in water pollution control methods and eliminate water pollution by State and Federal institutions in the State.

TOMKINS'S LIME-KILNS AND QUARRY.

LETTERS to the editor

Rubberneck succumbs

Gentlemen: While riding the subway this morning I sat next to a gentleman reading THE CONSERVATIONIST.

If there is anything I hate it's to have some rubberneck read my newspaper — much less my magazine — and I found myself in that position by reading your booklet over his shoulder.

When we finished the article, I got your name and address — so to put me back in my backyard, am enclosing my check for $2 with the request you put me on the subscription list for THE CONSERVATIONIST.

Robert P. Brassel, Palisades Park, N. J.

• THE CONSERVATIONIST, *as the official publication of this Department, operates on a pay-as-you-go basis without benefit of advertising revenue. This doesn't leave us a great deal of leeway for promotion so most of the expansion in readership is dependent on word of mouth selling. We've tried all sorts of ideas to stimulate this sort of person-to-person promotion but we have never, until receipt of your letter, thought of planting anyone on the subways to ride back and forth reading the magazine. Apparently we've been missing a good bet.—Editor*

CONSERVATIONIST in Viet Nam

Dear Editor: I'm writing this letter to you to tell how much I enjoyed reading your June-July issue. I'm from Wisconsin but a friend of mine from New York had his dad send the issue over here. It was really nice to read about hunting and fishing again. There was an article about the deer harvest of the '65 hunting season, which came out just in time. My friend from Syracuse, N. Y. was telling me about the number of deer killed in New York each year. So we got into a little controversy comparing Wisconsin to New York. So his dad sent this issue and it answered all of our questions. I won't say who won the controversy but now I'm very interested in receiving more copies from his dad. After we get home we're both planning on doing a little hunting in both states.

My buddy's name is Joe Chimber and he would like me to say how much his dad and he have enjoyed THE CONSERVATIONIST.

I'll close by saying I would like some information on how I could subscribe to THE CONSERVATIONIST.

Robert Lotto, Republic of Viet Nam

"Pickerel" is "walleye"?

Dear Sir: Regarding the August-September issue of THE CONSERVATIONIST and the letter by a reader from Gananoque pertaining to the entries of pickerel from 9 to 11 lbs. in their fishing contest:

First I would like to say that I live on the St. Lawrence River and do a lot of fishing and that I have never caught a pickerel — nor seen one caught — from the St. Lawrence River. This is not to say they do not exist in the river because possibly they do — but I have never seen one.

I have fished in Ontario, Canada and in the areas I fished the local name for the walleye was pickerel. Perhaps this gentleman from Gananoque is confusing the walleye with the pickerel.

However, I am familiar with the eastern chain pickerel — it being a common game fish in Pennsylvania where I lived for many years. The largest one I ever caught was 22 inches and the largest I ever saw caught was 25 inches. *Field and Stream* magazine's world record is 31 inches and of a weight of 9 lbs., 6 oz.

I don't know whether this letter helps eliminate any of the confusion regarding the pickerel or not. I do know that if I ever catch one in the 4-lb. bracket in any of the areas I fish I'll consider it large enough to have mounted and act accordingly.

Robert C. Tunison, Chippewa Bay, N. Y.

Peanut butter for birds

Dear Editor: Now that the winter season is nearly here, our wild birds are returning to the feeders for their food.

I have a question that is very important to me and may be also of interest to your many readers.

I have been told that feeding peanut butter to the birds will kill them. Is this true?

Please print your answer in your next issue, if possible, so we will know what to do. The birds do like it very much, but would certainly not want to give it to them if it is harmful.

Pat Wheeler, Bainbridge

• *I can see no reason why peanut butter would harm birds unless it were put out in such large quantities that it became rancid or moldy.—Editor*

West is Vest, and The twain have met

Gentlemen: In the June-July, 1965 issue (Volume 19, Number 6) of THE CONSERVATIONIST, a column appeared entitled "Man's best friend." You attributed this address (copy enclosed) to the late Senator George West of Kentucky.

Senator Vest's "Tribute to a Dog," (copy enclosed) appears to be the source of your article. Kindly inform me if an error has been made in crediting Senator West of Kentucky instead of Senator Vest of Missouri.

Gerald F. Goldberg, Bronx

• *The printer made a "West" out of a "Vest," but the Senator was from Kentucky, not Missouri. You may be interested in a few details:*

George Graham Vest was born in Frankfort, Ky. in 1830 and lived on the so called "Corner of Celebrities," a city block that has produced nine U.S. senators, six U.S. Congressmen, two U.S. Supreme Court Jus-

tices, two U.S. Cabinet Officers, nine governors, three admirals and seven high-ranking diplomats. Thousands of people each year visit the splendid homes on this famous block in Kentucky's capital.

After moving to Missouri to practice law, Vest became a senator in the Confederacy during the Civil War and later a U.S. senator for 25 years. Famous and respected as he was, however, he achieved immortality for something quite apart from his statesmanship.

In 1870 Senator Vest had a client named Charles Burden whose favorite hound, Old Drum, had been shot by a neighbor, Leonides Hornsby, allegedly for killing sheep. Burden sued Hornsby for damages. Hornsby promptly retained another U.S. Senator for counsel, the renowned Francis M. Cockrell, and the case attracted wide attention.

Senator Cockrell was an extremely competent attorney. He did a superlative job, marshaling his facts before the court into a completely convincing argument to justify the killing of a marauding dog.

Senator Vest didn't refute him. He called no witnesses, cited no precedents and offered no legal argument. Instead he simply stood before the jury and talked quietly for a minute or so about the nature of a dog.

His gentle, moving eulogy faded away into a dead silence. Then a storm of wild applause that no gavel could silence swept the courtroom. Everyone present was visibly affected, many people weeping unashamedly.

Senator Vest won a unanimous verdict and his tribute to man's best friend became a joy and a treasure to dog-lovers of all ages, the world over.—Editor

Stumpjumpers, and others

Dear Editor: Who says camping is a summer pastime? This past week end of Sept. 16, 17, and 18 the Long Island Metropolitan New York chapters of the National Campers' and Hikers' Association held a successful Campvention at Wildwood State Park.

Most families rolled in Thursday and Friday evening and stayed until Sunday evening. There were 12 chapters from the Metropolitan New York and Nassau County area. The 7 chapters that comprised the Suffolk County contingent were the Patchogue Stumpjumpers with a showing of 8 families, the Babylon Quacks with a showing of 10 families, the Sayville Little Flowers with 17 families, the Northport Mallards with 20 families, the Huntington Seagulls with 2 families, the Brentwood Lightning Bugs with 10 families, and the Buzzards of Bohemia with 10 families.

Good weather prevailed and a bonfire and sing-along rally was held Saturday night presided over by District Director Don Lennon of Rego Park (New York).

It was decided at a meeting of the Suffolk County chapters, Sunday afternoon, that a Suffolk County Co-ordinating Committee be formed with two delegates from each chapter to further better camping conditions on Long Island. This committee represents a membership of approximately 400 campers.

It is duly noted that Wildwood State Park on Long Island was picked up by each campsite occupant that belongs to N.C.H.A. and even raked up by many. It seems as though a grassrake is becoming standard camping equipment.

Arlene Carrell, Co-president,
The Buzzards N.C.H.A., Bohemia, N. Y.

Redwoods abroad

Gentlemen: The following may be of interest to your readers who are interested in trees.

I had always understood that the Pacific Coast redwood *Sequoia sempervirens* did not grow anywhere but on the Pacific Coast. About thirty miles back from Southampton, England, we saw a long row of this type of tree on both sides of the road. These trees seem to be 80 to 100 feet tall. They were called Wellington trees, because of their proximity to Wellington College.

Edgar A. B. Spencer, New York City

Hungry water snakes

Gentlemen: We have come to realize that one of the biggest enemies of trout is the water snake. Here is a picture of Dad (who will be 80 in February) holding a large water snake which he caught devouring one of our trout. We have been attempting a stream improvement program which contemplates self-propagation of the trout — and it works — except the water snakes really take a terrific toll.

R. I. Johnson, Buffalo

Man-chasing bat

Gentlemen: Last Sunday evening, my girl friend was visiting her relatives in the Sheepshead Bay or East Flatbush section of Brooklyn. Her cousin was sent for pizza and when he arrived home, a thud was heard on the screen door after it was closed shut.

The thud was caused by a bat which had apparently flown into the door. It was flopping around on the stoop making a screeching noise due, probably, to its being injured when it hit the door. The bat was subsequently killed by repeated blows with a broom administered by my girl friend's uncle.

This is the part of the story that puzzles me. A neighbor later told my girl friend's family that he saw the bat following the young man for some time. The bat flew about four feet over the boy's head and followed him right to the door. It is logical to assume that the bat would have flown right into the house had the door not been closed.

I have never heard of a bat following a person. The only rational explanation I can guess at is that possibly flies were swarming near the boy due to the pizza's aroma. Thus, the bat was following the flies, not the boy.

I wonder if you have records of similar instances and if so, has any explanation been expressed?

I have often seen bats in my neighborhood but they have never followed me or approached me to my knowledge. Will a bat attack a person and if so, is the bite harmful and can it result in rabies?

The boy's family was very upset over the incident since they associate this odd appearance of the bat to a sign of ill omen. Is there any source to the idea that a bat betokens death or bad luck?

Robert Mirtich, Brooklyn

• *This is the first time I've heard or read of a bat following a person. The explanation suggested by Mr. Mirtich quite possibly is the correct one, at least, I can't think of a better one.*

Ordinarily, the insectivorous bats common in the Northeast will not attack humans or other mammals. Rabid bats may attack people, however, and any bite or scratch resulting from contact with a bat should be brought to the attention of a physician immediately.

Bats differ from other mammals in that they sometimes survive infection with rabies. It is not uncommon that a bat which tests positive for rabies may have exhibited no outward symptoms at the time of capture.

Until a few years ago it was believed that rabies could be contracted only through transmission of the virus from the rabid animal to a healthy one, usually through saliva entering a bite wound. However, it has been learned through tests with bats at the Carlsbad Caverns in New Mexico that rabies can be transmitted otherwise, perhaps through the damp air characteristic of caves. — Charles P. Brown, Sr. Wildlife Biologist

Complains of roadside sprays

Dear Editor: Do you have any information about the type of chemical brush killer spray that is used by County Highway Departments as a roadside spray?

I am concerned about the indiscriminate use of this brush killer spray, especially where dairy farm pastures border treated highways. This spray is applied by a tank truck that moves slowly down the highway and sprays the right-of-way (about 15 feet, from edge of pavement to farmer's fenceline). Naturally, since the spray is applied under considerable pressure, (in fact, it looks like a fog rolling along between the highway and fenceline), much spray drifts 100 feet or more into pastures. The spray settles on grass, cows eat the grass — do these chemical residues end up in milk?

Today our Town Highway Superintendent was applying this brush killer spray, (the third application this summer). When I questioned him about the chemical makeup of the spray and possible contamination of milk, he said he didn't know what was in it, but assured me vaguely it was "all right."

But is it all right? I sure don't like the looks of that spray truck spewing chemical spray that drifts over my pastures, and over dairy animals in the pastures.

On one part of the farm a trout stream borders the highway for a half mile or more and, you guessed it, that truck pours spray the whole length of the stream.

This spray is meant to kill brush. How much damage can occur to mature maples and elms that absorb spray through bark and lower foliage?

What about the legal aspects of spray drift? I believe the Town or County has a legal right to spray their right-of-way if they can confine their spray to the right-of-way absolutely. But with the method they use this is next to impossible.

What ever happened to the men with scythes who used to cut brush and weeds along highways? What about these many people on welfare today. Why not put able-bodied men to work to earn their relief money.

Was Rachel Carlson right? Will there some day be a "Silent Spring?"

Richard Triumpho, St. Johnsville

P.S. I might mention that I am a dairy farmer and a district director of the American Dairy Association. I am concerned because for milk there is a zero tolerance for pesticides. I am also a sportsman, and concerned about wildlife.

• *Your letter certainly brings up a very important subject and I am sending to you separately a copy of the report by the New York State Joint Legislative Committee on Natural Resources on Pesticides so that you may read the section on herbicides.*

There are several herbicides and it is impossible to tell which one your County Highway Department may be using. Most of them are non-poisonous to animal life except one containing sodium arsenite, which is a strong poison.

Without being on the spot and knowing all the facts, it appears that the sprayer you speak of in using the broadcast fog is using a method which is not favored by the writer of the article I refer to.

I cannot tell you whether any chemical residues end up in the milk but I certainly cannot see how it would be beneficial to cows. The point is — regardless of the harmlessness of one intake by animals — we know very little about the cumulative buildup over several seasons.

If I am guessing right from your description, the spray is one affecting foliage and will not affect the bark in lower parts of mature trees.

I do know that truck farmers have recovered substantial payment for damage to crops by a railroad whose herbicide spray damaged plantings of melons.

I agree that we miss the men with the scythes, but apparently spraying is cheaper than hiring men to use a scythe.

Of course, the chief damage of such herbicide spraying is the elimination of roadside cover which provided one of the best nesting and breeding places for many kinds of birds and small mammals.

Many county highway superintendents have little knowledge of the technical aspects of spraying, nor of the effects on the ecology bordering highways. Therefore, it would seem a public service for you to let your County Highway Superintendent and your Board of Supervisors know of your objections and give them a little education. This is most effective at the local level and I am sure that if you and several others registered your reaction, it would be heeded.

Your letter is most interesting and important and I hope many other farmers and sportsmen will show similar interest. — The Editor

We still have deer!

Dear Sir: Attached you will find a photo of a buck deer I shot in the Adirondack Mountains last fall. The reason I am sending you this picture is because it is such a beautiful specimen of a buck that I felt the Conservation Department should be aware of what a fine animal came out of New York State. He weighed 205 lbs. on the hoof, was about three years old, and was shot in Franklin County near and between Santa Clara and St. Regis Falls in November of 1965. He was mounted by Tom Delsanto in Warren, Rhode Island who preserved the very beauty of this deer as it was in its original life. I used to live in New York State for 23 years and I like to do my hunting where I feel we have a good conservation program.

Dan Trent, Barrington, Rhode Island

• *Thanks so much for sending in the photograph and your nice letter about the fine buck you shot last fall. Your words of praise for the Department's program are especially welcome because we do get letters saying that we have allowed all the deer in New York to get shot off. This is convincing truth to the contrary. — Editor*

Proper saddle grab

Dear Sir: Refer to the June-July issue of THE CONSERVATIONIST, the article "Pack Trip Tips," by H. Wayne Trimm. It is a splendid story and I agree with it all except his instructions for mounting a horse. I was born and have spent most of my life in Wyoming and Colorado on cattle and sheep ranches. I learned to ride Western style from the many "cowboys" — riders we call them, especially my favorite uncle who was a fine horseman, and rider. What I wish to do is to set Mr. Trimm straight as to how we mount a Western horse, saddled with a "cowboy" or Western saddle. Mr. Trimm's sketch on mounting is correct if one is riding a flat, or English style saddle; to mount you place the left hand on the pummel of the tree and reach over and grasp the rear end of the saddle with the right hand and pull yourself up into place. To follow this system with a stock saddle with a high cantel and horn, on a not quiet horse, would be asking for trouble sooner or later. The proper, and safe way to mount a Western horse (average ranch saddle horse) is as follows:

Take your stand erect at the side of the mount's left shoulder. Most riders then reach up with reins in left hand, and grasp a hold in the horse's mane on the withers or a few inches up the neck; I personally always hold my left rein noticeably tighter than the right rein. Reason is should horse make a jump his head will come to you, rather than straight ahead or off to the right in which event you would lose the control you must have, to have the mount turning to you,

rather than away from you. O.K. so far. Now reach out with your right hand and turn the stirrup opening to you, and immediately place left boot in the stirrup and even sooner reach up with the right hand and grasp the saddle horn. Then pulling to you with the right hand, also often with the left also, you spring up from your right foot, lifting the leg high to clear the high cantel, then pull yourself into the deep seat with both hands. If the horse should have jumped forward meantime, your hold on the horn and also the hair of the mane will put you into the saddle. Of course, you should promptly spear your right boot into the right stirrup. Sit up straight and take a long breath of relief, especially if you happen to have drawn a not too steady a mount. It is very important that you keep the horse's head turned a bit toward you should he make an unexpected quick movement; slight jump in other words: with your hold on the horn and withers you should be able to swing safely into the deep seat of all good stock saddles. To try to mount the same horse as Mr. Trimm illustrates the movement, you would very likely "land-a-cropper" and could be quite seriously shaken up. Of course, I must bear in mind that the horses Mr. Trimm has in mind are gentle, well mannered animals, whereas out here on most ranches you will meet what are gentle mounts to me, but in fact are not safe and gentle as their eastern cousins usually are.

Allyn H. Tedmon, Littleton, Colorado

• *Many thanks for your letter. I agree with most of your observations. I know how horses are usually mounted in the West, having spent a part of my life there. However, I have found that a person not used to springing into the saddle, particularly if that person has short legs, short stirrup straps and a tall horse, can usually do better mounting the way I described. Since many women take these trail rides, I thought it best to gear the article to people of slight build. I know they can swing the leg over the cantle of the Western saddle, as I checked this out before picturing it just to be sure. For taller people and those with more spring in the knees than most develop in fifty weeks a year spent sitting behind an office desk, there is no question that your method is better.*

As you say, most of our Eastern saddle horses are gentle and quiet compared to the more spirited Western horses. Since I was limited in space, I had to select one type of horse and try to remember the amount of riding experience most of our readers have had. I have worked with both types of horses, and I know. In fact, I have just returned from a hunting trip to Wyoming where I at least had a chance to do a bit of Western riding again. Thank you for adding this information to that which was in the article. Your comments help to complete the story.—Wayne Trimm

Another black snowshoe

Dear Sir: Enclosed is a picture of myself and the black snowshoe rabbit I shot on the 20th day of February, 1966, in the Town of Ohio.

I know that black snowshoes are a rarity, so naturally I am quite proud of my fortunate adventure.

Also, I would appreciate any statistical information regarding the black snowshoe.

Incidentally, I had the snowshoe mounted.

Frank Luppino, Ilion

• *Not so rare as you believe. We receive two or three such reports about every winter. As you can probably guess, the only difference between the black and white snowshoe rabbit is the coat color. This is a question of genetics or inheritance wherein the black coat color is the recessive characteristic of this species. Every once in awhile two parents with these characteristics mate and we get the black coat color. So far, we have obtained records from just about every corner of the Adirondacks and from a few locations in the Catskills.—Editor*

Questions road salt

Dear Sirs: As long as I am writing this letter I would like to call to your attention a matter that I believe should be investigated and probably stopped.

The fact is that throughout our State calcium chloride is used to melt ice and snow on the highways. I know that it is the most effective for this purpose but eventually it is scraped up with the ice and snow and dumped in nearby streams or the rivers. It is my belief that this chemical is a hazard if not a poison for fish. Calcium chloride mixed with water seems to soften the water and turn it light yellow. I am sure that it would be distasteful and possibly poisonous to fish.

We have the Fishkill Creek and the Wappingers Creek that are stocked by the State with trout and both receive many truckloads of snow mixed with calcium chloride.

I have seen in the latter part of March after many truckloads of this mixture were dumped in the creek that the fish were swimming close to the surface and seemed to be sucking air above the water.

So I will close and let you think of this that I mention here. If this reaction and process are continued, I see no sense in stocking these streams with trout only to have them die.

L. M. Lucas, Glenham

• *Calcium chloride is so hygroscopic that it could not be stored for use on roads in bulk. It would take up water to form a liquid when exposed to air. It has been applied to roads to hold down dust. Possibly a small amount may be mixed with salt for road application.*

Its minimum toxicity has been given as 555 p.p.m. — a relatively high concentration, though not as high as listed for sodium chloride. It would raise the pH greatly in poorly buffered waters, which in some places would increase toxicity.

I have never heard of any fish kills caused by snow and ice removal and disposal to streams, but I suppose if the stream were small enough, trouble could occur.— G. E. Burdick, Supervising Aquatic Biologist, Bureau of Fish

Camera litter

Gentlemen: I always find your issues interesting and constructive.

Recently my son and youngest grandson and I enjoyed a camping trip to Shenandoah and the Smokeys (Elkmont). During our several hikes we could not but help noticing the litter caused by (so as not to specifically name a "product") innumerable black pieces of paper from "instant cameras."

This surprised us, because these people must appreciate the outdoors otherwise they would not bother to take pictures.

At Lenville Falls and Laurel Falls and many other spots it was a mess.

These litterbugs could easily put a small piece of paper in their pockets.

At the "Bear James" it was even worse.

Let's try and keep all our parks and campsites clean and beautiful.

Daniel L. Muller, Queens Village

Sees civilization "monster"

Dear Editor: Very belatedly, I have read Anthony S. Taormina's report, "Journey Down the Nissequogue," (February-March issue). It is interesting, graphic and very well written. At times the gentleman is eloquent! It seems to me that Mr. Taormina has clearly and forcefully pointed out to us the most important and most dangerous obstacle to conservation; namely, the all-consuming monster called "civilization." Thanks to the author and you for this excellent article.

Malcolm E. Smith,
Falls Church, Virginia

Approves "Closed to motors"

Dear Editor: Your Aug.-Sept., 1966 issue was one of the best. I sincerely hope the concept of "pack it (litter) out" will take hold. Applause and thanks to groups like the Schenectady Chapter of the Adirondack Mountain Club that put their backs where their mouths are, and packed everyone else's litter out!

May I also register a vigorous second to Wayne J. Anderson's plea for a "Closed to Motors" status for the two Weller Ponds. There are not many spots of comparable wilderness left in New York, accessible without portage. As Mr. Anderson says, it only takes one motor to shatter the quiet and spoil the pleasure of those who enjoy a little vestigial peace.

It would be a real feather in the Saranac's cap to have Weller Pond on a "no-motor" basis.

Howell C. Martyn, West Hartford, Conn.

Dying beeches

Dear Sir: I was wondering if you could tell me what is the cause of the large number of beech trees that are dying in this area and if anything can be done about it?

I visited an area of southern Hamilton County today where 80 to 90 per cent of the beech are either dead or dying. About the only beech that seemed immune were small trees and brush. This is really a tragedy, as it means no more beech nuts for years.

I have also noted a high percentage of dying beech in Fen Hill area of Saratoga County. Here in Fulton County we haven't been hit too hard as yet but some trees show signs of dead bark and some died.

Here at home there is a white fungus or scale that attaches itself to the trunks of beech trees and after several years the tree is dead. In Hamilton County I did not notice this white scale but perhaps this is due in part at least to the heavy rains of late washing the trees off. Or possibly there, it is past this cycle.

Ten to fifteen years ago we had a similar problem with balsam trees. This also started as a white scale. In some areas the kill ran as high as 90 per cent. This disease is still prevalent among balsams here.

It leads one to wonder what tree it will attack next.

Robert C. Bleyl, Gloversville

• *The area in southern Hamilton County where you noted that 80 to 90 per cent of the mature beech is either dead or dying is infected with the beech bark disease as well as beech decline.*

The beech bark disease was probably introduced into North America on ornamental beech trees in the early 1920's. A fungus and an insect are involved; the insect is the beech scale which makes minute wounds in the bark allowing the bark-killing fungus Nectria coccinea *var.* faginata *to enter. I am enclosing a leaflet which explains in detail the insect, the fungus, and the control. I would like to point out that chemical control under forest conditions at present is impractical.*

Beech decline is a condition known in the State for at least a decade and was first noted in the Southern Tier Counties. Research on this problem has been conducted by Dr. Rodney De Groot, pathologist, at the

New York State Museum and Science Service. From this work it would appear that this condition is probably related to drought and heavy infestation of the oystershell scale in the crown sections of the tree. There is no practical means of control known for this.

The area you described in Saratoga County is mainly infected with the beech decline. Fulton County has the decline and the beech scale present but not the Nectria *fungus.*

The white fungus or scale you describe in your letter is the beech scale. The scale is present in many areas of the State with no Nectria *present. The scale can be quite heavy on trees some years and then decline.—John H. Risley, Senior Forest Biologist*

Rises from kayak

Dear Sir: I want to bring to your attention a matter of inequity in the law regarding registration of motor boats. I hope many of your readers will join with me in protesting the matter and seeking legislative amendment.

The law provides that any mechanically propelled boat must be registered, and fees are charged proportionate to the length of the boat, rather than according to the weight or the size of the motor. Thus canoes and kayaks, which are really diminutive boats primarily for paddling, are required, if they occasionally use a tiny motor, to pay twice as much as much larger boats with much more powerful motors.

In my own case I have a 19-foot kayak which I paddle or sail most of the time. Perhaps once or twice a year I may attach a 1½ horsepower motor. For this I must pay a registration fee of $6. Motor boats up to 16 feet long may obtain a registration for $3!

Even the balance of the law regarding display of numbers, bells and whistles, lights and anchors is clearly ridiculous when applied to canoes or kayaks, yet this type of boat is not a negligible number of those found throughout the State. It is hard to respect a law which makes no adequate provision for such boats.

I would welcome your comments, as well as those of other readers, on this matter.

V. E. Pilcher, Schenectady

• *Almost every provision of the State Navigation Law that deals with equipment or special requirements is related to a class of vessel and its size. Consequently, when the registration law was passed in 1959, the Legislature chose to take the same approach in establishing a fee system. To my knowledge no other reason was involved.*

The registration system has been adopted primarily for identification of the craft and its owner. All other factors regarding equipment are required for safety reasons alone.

Thank you for letting us know your feelings concerning this matter. — James J. O'Brien, Director, Division of Motor Boats

Orchid for A.D.K.

Dear Dr. Ketchledge: We were pleased to read your article, "Litter on Marcy," in the latest issue of the New York Conservation Department publication, THE CONSERVATIONIST. The Adirondack Mountain Club is to be congratulated for the leadership you are giving to the important work of keeping our back country areas free of litter.

We have similar problems in the back country areas of the National Forests, notably in the Boundary Waters Canoe Area of the Superior National Forest. We are attempting to get acceptance of a pack-in pack-out philosophy on the part of canoe country users. Needed in our problems is the kind of leadership your organization is giving in keeping Adirondack trails clean. Keep up the good work.

George S. James, Regional Forester,
Milwaukee, Wisconsin

For "Week End Wildlife Workers"

Dear Mr. Gavagan: Doctor Swanson's article "Challenges in Wildlife Management" in the August-September issue was thoroughly provocative. I'm sorry such a probing individual is lost to the State of New York.

I am prompted to immediately contribute my response to his distaste of the term "population explosion." Would he buy "population engulfment?"

He speaks eloquently of rapid change and the problems facing experts in the field of wildlife-based recreation as we ponder the dreadful facts of 30 million souls to be accommodated in 1985. If the professionals in wildlife management in the State of New York can take notable pride in their pioneering and dumping of traditions and traditional approaches, perhaps they can consider another untapped source of support which can snowball in its proportions along with the increasing demands of the future.

Why not "Week End Wildlife Workers" as a voluntary movement of civilians organized to contribute their time and muscles to assist professionals in the hundreds of jobs in conservation?

Nationwide, our hospitals have learned that without volunteer help they couldn't operate in serving the public. These volunteers lend their talents in every field but the highest medical skills and perform under training and leadership in the pick and shovel aspects which budgets could never afford.

If public education is the new target area; if biologists must couple psychology and sociology as companions to their major fields of education, why not ask the public to share the problems firsthand and become a work force and a public relations force at the same time.

Under the guidance of the Department of Conservation, with minimal training aids, local officials can organize lovers of the out-of-doors to contribute their time on a planned basis to assist supervisory personnel in all kinds of work which is lagging now for lack of funds and manpower. If uncomplicated levels of achievement (or rank) were to be established such as "Apprentice Conservationist" and "Master Conservationist" this would lend flavor and recognition to the sincere volunteer who only looks for the reward of being helpful in a hobby of his choice. He would gladly purchase the simple jacket and trousers authorized to mark his status while on duty and otherwise be proud to serve where needed.

Be it field or office, sampling for research or driving a truck to remote areas for stocking purposes, communications or carpentry, trailmarking or deputy enforcement assignments, the dedicated outdoorsman will rally to support any organized program which is properly presented and implemented.

Why not try us?

C. N. Sumwalt, Jr., Yonkers

• *This response cannot be any final thought because there are so many considerations involved in your proposal. The formation and use of volunteer groups for any work is always fraught with hazards and the frequent possibility of short tenure. There is certainly need of tapping the widespread idealism and enthusiasm of the non-professional conservationists. But from a governmental standpoint, I have the feeling that this can best be done by the formation of a private group or groups, which then may be co-ordinated with the existing governmental agencies, whether they be State or Federal.*

These few comments are given notwithstanding our excellent experience with our volunteer hunter training corps of some 6,000 persons in the State, but do take into consideration the complexities of supervising that operation.—Editor

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How To Sell Your Wood Lot

by John W. Nellis, *F.P.A. Forester,*
N.Y.S. Conservation Department

HAS anyone ever offered to buy your timber? If so, he probably made a "lump sum" bid for the entire stand, or offered you so much for all trees over 12 or 14 inches in diameter, or possibly he made an offer of so much per thousand board feet cut.

Let's look at this type of selling in terms of a dairy farm. Suppose an uncle's will gives you a dairy farm in the next county. And suppose that, before you can see the herd or its records, someone who has seen them offers you $2,000 for the herd. Would you sell? I doubt it. So why sell your entire woods in an equally blind way? Each year your woods can produce 200-300 board feet of lumber on every acre. This crop can be harvested perpetually if you don't sell the "whole herd," that is, your entire woods.

The same person might offer to buy all the cows over three years old in the herd for $2,000. He would probably get a few that were ready for the slaughterhouse but he would also take many that were in their prime. That's what happens when you sell timber on a diameter limit alone: trees that should be harvested are left and many that are growing well are taken.

Selling your timber for so much per thousand board feet that the buyer takes would be just like accepting an offer of $100 for each cow that the buyer takes. In either case, the buyer would certainly take the cream and leave you the skim.

Well, what's the answer? It's obvious, of course. If the herd and the farm are no good, or never can be developed profitably, you would probably sell. However, you would take over the operation of a good, or potentially good dairy farm. Exactly the same thing can be said of your woods. Certainly, you and the generations that follow you will benefit most from your managing your woods to produce the greatest volume of high quality wood crops.

What steps must you take in order to sell profitable wood crops perpetually? You must know what kind and how much of a crop you will have to sell, and what are your best markets. Start by contacting your Conservation Department Forester, who will provide assistance in the initial management of your woods. This free service has been made possible through the New York State Forest Practice Act, the twentieth anniversary of which is currently being observed.

The Forester's first visit to your property will be concerned primarily with an examination of the woods. During this visit, he will want you to accompany him on a tour of the wood lot, to ascertain your desires and objectives, to learn the property boundaries, and to discuss with you the present condition and the potential of the timber stands. This inspection tour also provides an opportunity for him to acquaint you with the programs and services available to you, and the benefits to be derived by you in availing yourself of them.

In the event that the wood lot is ready for a harvest cut, the Forester can then mark the trees to be cut. In marking, he will consider each tree and make a decision as to whether it is ready for harvest now or should be left as growing stock, to be taken in a future cutting. In making this decision, he uses various criteria such as age, health, vigor, species, quality and density of the stand. He may mark for cutting a 12-inch diameter tree that is competing with other trees of greater potential. On the other hand, he may leave a vigorous 16- to 20-inch tree that shows real promise of future growth. His main objective will be to obtain for the owner the maximum harvest consistent with good forestry practices, leaving the best possible stand of desirable species for future planned harvests.

When the marking has been completed, you will be furnished a volume summary showing the estimated board foot volume, by species, that has been marked. While this is only an estimated volume, based on actual diameter and height measurements, it does constitute a reasonably accurate inventory.

The Forester will also give you a list of the timber buyers in your area and recommend that you invite as many as possible to look at and bid on the marked timber. This is the time for you to state your terms. Remember that you, as the owner, are in the driver's seat and wish to stay there. You will be provided with a sample timber sale contract form, that may be tailored to fit your particular case. The contract should clearly state all the terms of the sale to prevent any misunderstandings, and to give maximum protection to both the buyer and the seller. It is usually advisable to seek the advice and assistance of an attorney in the preparation of the contract.

It will usually be recommended that you sell the timber on a "lump sum" basis. In this way, you have payment in full before the logging begins and are released of any worries as to whether you will receive full value for your timber or only a fraction of its true worth. The lump sum sale is the only method that will give you a truly competitive bid that will allow comparisons.

One final caution! The quality of the logging done in your woods is perhaps directly proportional to the interest you show in it. As the logging progresses, make an effort to visit the job frequently. Get acquainted with the loggers and show by your presence that you are interested in a good job. It will be a rewarding experience for you, particularly if you have had little or no experience in such matters. Your interest will be an incentive to them to be more careful, and the net result will be fewer damaged trees in the remaining stand. This accomplished, you are on the way toward developing and nurturing your next crop.

1. Telephone an F. P. A. forester

2. Examine the lot with a forester

3. Select trees for cutting; mark them

5. Payment before cutting

4. Get a lawyer's contract

6. Keep contact with the loggers

Winter on Tug Hill (See p. 12)