June 1996 $3.50

NEW YORK STATE

CONSERVATIONIST

Golden Anniversary

WOOD THRUSH
Hylocichla mustelina (Gmelin)

HERMIT THRUSH
Hylocichla guttata pallasi (Cabanis)

GRAY-CHEEKED THRUSH
Hylocichla alicicae alicicae (Baird)

VEERY
Hylocichla fuscescens fuscescens (Stephens)

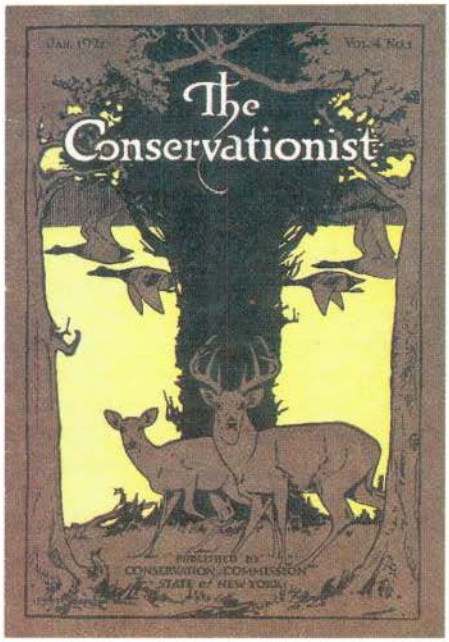
OLIVE-BACKED THRUSH
Hylocichla ustulata swainsoni (Tschudi)

All ⅔ nat. size

Reprinted from The New York State Conservationist, June 1966

NEW YORK STATE
CONSERVATIONIST

Volume 50, Number 6 June 1996



The Conservationist name first appeared on a periodical published from 1917 through 1921 by the former New York State Conservation Commission, one of the predecessors of DEC. The title was revived in August 1946, but the numbering began anew. It is that Golden Anniversary we celebrate with this issue.

As much as possible, we have tried to present these articles as they first appeared. Keep in mind these are pieces of history and reflect the facts and circumstances of the times when they were written. Some things may have changed — telephone numbers or bag limits for game, for example. Consult current sources for updated information. — RWG, Editor

Front and back covers: *Cover of Covers 1946-1990*
Inside front cover: *Thrushes* by Louis Agassiz Fuertes, Courtesy of NYS Museum (June 1966)
Inside back cover: *Sap Run* by Manville B. Wakefield (February 1972)

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Our Golden Anniversary
50 Years of *The Conservationist*

by Joan A. Taylor

In August of 1946, Clayt Seagears, the director of conservation education, realized a dream with the first issue of *The New York State Conservationist*. "It's your magazine," wrote editor Bob Bush in his first Conservationist editorial.

The first issue was a complete sell-out and 9,000 letters poured into the mailroom. People could buy a subscription---six issues for one dollar a year. Readers were encouraged to submit opinions, gripes, or ordinary questions to a popular feature called "What's Bitin' Ya?" The flood of mail continued.

In 1947, Pieter W. (Pete) Fosburgh became editor and served through 1956. He was the author of many articles and books on nature, including *The Natural Thing*, a collection of essays on the Adirondacks and the Berkshires. Fosburgh wrote, "A larger proportion of the people of this state have a better grasp of what conservation really means and greater willingness to get out and do something about it."

Raising the price of the magazine in 1955 caused 30,000 subscribers to renew at the old rate. One man renewed for 50 years. Fosburgh heralded this as confidence in *The Conservationist* but said he didn't expect to be around for the subscriber's next renewal.

When Albert W. Bromley became editor in 1956, the magazine had 70,000 subscribers. Bromley's lifelong interest in conservation was nurtured in his student days at Cornell University when he took part in a famous study at Connecticut Hill, a large game refuge near Ithaca. Bringing his vast knowledge of wildlife to his editorials, he stressed that to achieve a balance meant keeping and protecting what we have.

By the time James E. Gavagan became editor in 1962, Rachel Carson's environmental book *Silent Spring* had become a symbol of enlightened conservation organizations. In 1970, when the Conservation Department became the New York State Department of Environmental Conservation, Gavagan was in the forefront of the "new conservation" that emerged from the former "put-and-take conservation."

Alvin S. Fick took over as editor in 1971 with a background in printing and photography. To mark the 25th anniversary of the magazine, he wrote "The answers to the problems of environment, success in the search of quality of life, the wise use of resources, the preservation of the worthwhile — all will elude us if we do not proceed from a base of understanding. Education is the cornerstone of our concern for the environment."

Robert F. Hall, a newspaperman, publisher and ardent naturalist, brought a fresh look to *The Conservationist* when he became editor in 1972. According to his son Anthony, not long after Hall became editor, he purchased an old hill farm in the Champlain Valley where he built a cabin intended to be a studio. Walking toward the cabin from the farmhouse, he pondered questions that absorbed him. Why does the witch hazel bloom in autumn? Why have the robins departed from us so early, while the phoebe is still here? Attempts to answer these and other questions became the essays he later collected for a book, *North Country Almanac*.

John J. DuPont, the longest-tenured editor, led the magazine from 1977 through 1992. He used his talents as a historian, teacher, writer and voracious reader to make *The Conservationist* truly representative for all its subscribers. In his own words, he speaks of his years of service: "Before the formation of the Department of Environmental Conservation in 1970, I am sure that most of our readers were outdoors-oriented people—hunters, fishermen, conservation educators. The magazine has continued to meet their needs with articles on hunting, fishing and wildlife management. But as DEC expanded its role...we included articles in specific environmental problems..." During this period, *Conservationist* circulation rose to well over 100,000.

Joan A. Taylor, the assistant editor of *The Conservationist*, has served this magazine for 29 years. This Golden Anniversary Edition is dedicated to her, our loyal readers and the countless others who have supported and contributed to this magazine over the past 50 years.

— R.W. Groneman, Editor

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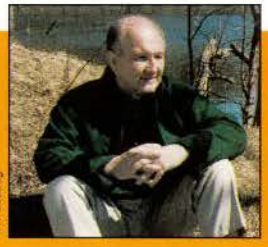
N. Satterly

Dear New Yorker:

I'm pleased to see that this Golden Anniversary Edition of The New York State Conservationist includes a profile of Theodore Roosevelt. A portrait of New York's 33rd Governor and this nation's 26th President is displayed prominently in my Capitol office. It serves to remind me of his selfless commitment to public service. It also reminds me of Teddy Roosevelt's singular role as one of America's preeminent conservationists. He loved nature and the outdoors. He would have loved The Conservationist.

For 50 years the magazine has entertained and informed its readers with articles and artwork that celebrate New York's natural and cultural resources. This collector's edition contains reprints of articles that reflect the evolution of our society from mere users of the land to conservationists and environmentalists. From Roosevelt and others we have come to learn that through wise stewardship we can both enjoy the bounty of the land and ensure its productivity for future generations. It is a legacy and lesson we can pass on to our children.

George E. Pataki
Governor



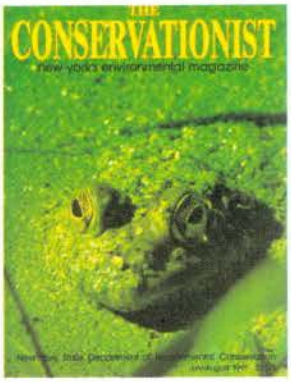
W. Haley

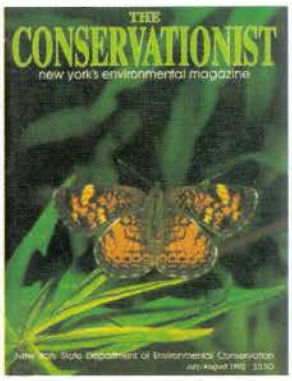
Dear Reader:

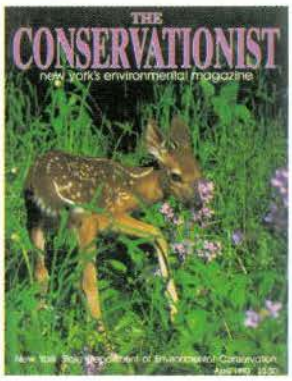
It's appropriate that this historic, 50th Anniversary Edition of The New York State Conservationist features a Wayne Trimm centerspread. As a naturalist and biology teacher, I recall using Trimm centerspreads as teaching guides, matching my own observations with the plants and animals in the detailed paintings. As an educator, I frequently brought Wayne Trimm artwork into the classroom to share with others his passion for nature.

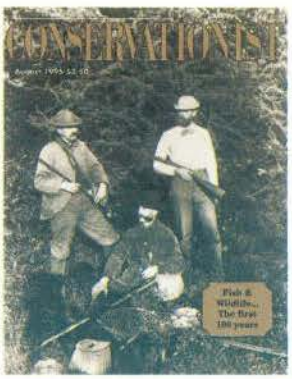
Wayne Trimm served The Conservationist as an artist and art director for almost 40 years before his retirement in 1991. His career typifies what the magazine is all about. Trained as a biologist, forester and wildlife manager, Trimm is a self-taught artist from a family of artists. His boundless curiosity included interest in hunting, fishing, birdwatching, nature studies, photography, science and education. In this nostalgic edition you will find articles and features on those topics, much as they first appeared over the past 50 years. "The Best of The Conservationist" is drawn from the archives of the magazine. I hope it brings back fond memories for you. It already has for me.

Michael D. Zagata
Commissioner









The Lawless Years

by Donald Wharton

Adirondack wildlife was hard-pressed. Indiscriminate hunting and trapping caused its near elimination during the latter part of the 19th century.

On reaching the First Stillwater the guides listened to last instructions and started for the hills to put out the dogs, and the rest of the party each made for his respective station, some walking, some in boats. Louie, with two others, took a boat to a good place near the head of the stillwater. At about 11 o'clock they heard the hounds at a distance followed by several shots, but the baying continued for over an hour. The dogs seemed to be driving the deer right toward them when, splash, and a deer jumped into the water near where Byron Cool was seated. He shot several times but the deer merely shook its head and kept swimming for the other shore. Later all the hunters gathered at the log lean-to at the foot of the stillwater and all had the same to report. The deer, with 20 good men shooting at them had been safe. That day the cream of the hunters of the southern woods went back to Jocks Lake without meat.

THE scene described that fall day on the West Canada Creek's Swanson Stillwater by Harvey Dunham in *French Louie* was typical of Adirondack deer hunting a century ago. But the results of the day's hunt were not typical of the times in that the hunters returned to camp that night without venison.

The late 1800's were dark times for Adirondack wildlife. It was an era of living off the land and exploitation of natural resources, and the wildlife was inexorably tied to those activities. The woodsmen hunted for their food and trapped furbearers for income. The lumber camps and hotels that thrived in the mountains at this time looked to the deer herd for fresh meat. Laws were few and game protectors even scarcer. It was also a period when hunting and fishing for sport were growing in popularity. The resources were under tremendous pressure from all sides.

Ready for big game. A market hunter and his dog. Hounding was the most common method of hunting game.

Photos courtesy Adirondack Museum

The whitetail's predicament was typical of many other species of Adirondack wildlife. Valued for its meat, hide and the sport that it provided, it was pursued year-round by any method that hunters could devise. By 1890 deer had become very scarce in the Adirondacks and practically nonexistent in the rest of the state. For the most part they were limited to a few interior areas of the Adirondacks. Their numbers had become so sparse that it is said that the natives of Speculator and Indian Lake went as far as Indian Clearing in the Moose River Plains to get meat for their families.

Far and away the two most common methods for taking deer during this era were floating and hounding as practiced by French Louie, the West Canada Lakes woodsman, and his associates on the West Canada Creek. Early records show that these two practices accounted for fully 80 percent of the whitetails taken, leaving only 20 percent to be harvested as we know deer hunting today.

Hounding was probably the most common practice since floating relied upon the deer's habit of going to water for edible water plants that are available only during the summer. It depended for its success on the deer's instinct to head for water in order to shake the trailing hounds from its scent. The hunters usually positioned themselves on nearby rivers or lakes with the intent of intercepting the deer

"Hound and Hunter" by Winslow Homer. This watercolor depicts a hunter "floating" a deer.

National Gallery of Art, Washington; Gift of Ruth K. Henschel.

and getting a clear shot when he entered the water. Though the method was obviously very deadly the deer sometimes evaded the hunters with tricks of their own. A couple of years ago I saw a deer on the Upper Hudson that was being trailed by a dog or a coyote jump into the river, do an about face onto his back trail for a few yards and then take a tremendous leap at right angles to it, throwing the pursuer.

Floating was more romantic, usually being done late at night from a boat equipped with a reflector lantern. The idea was that the feeding deer would be blinded and confused, and sometimes even attracted to the light. In its confused state the hunter could guide his boat up to the deer for an easy shot.

As effective as it was, floating had its drawbacks. It is said that for each deer that was bagged several more were lost, even when mortally hit. Some escaped into nearby swamps but others, because the deer's summer hair does not possess the floatation properties of fall hair, simply sank into the water out of sight.

The harvest had become so effective that eventually there came a time when guides, hunters and conservationists realized that the slaughter could not continue indefinitely without eliminating the deer herd entirely. Charles Fenton of Number Four, Lewis County told a reporter for the *Utica Herald*, "The number of deer reported as killed by hounding last fall, 280, may appear large but it is below the true figure if anything. This portion of the woods was filled with hunters and dogs during the hounding season, and the deer have been nearly exterminated. Guides and others in this vicinity are now opposed to hounding."

The same Byron Cool that hunted that day on the Swanson Stillwater with French Louie told the same reporter, "The game season of 1893 seems to give satisfaction to both the sportsmen and guides, but it is a fact that many deer were killed out of season last year. What we must have is better protection."

Sportsmen's magazines echoed a similar concern for the dwindling deer herd. An editorial in *Forest and Stream* said, " In certain districts of the Adirondacks the depredations of the lumber camps on the deer supply are continuous, extensive and serious. The crews are fed on venison taken in closed season by French Canadian employees of the camps. The number of deer destroyed is very large." Deer attracted to the fresh cuttings and the easy going provided by horse and sled trails through the deep snow were easy targets for the camp-hired hunters.

The stage was set for a change and by this time the need for conservation measures was well recognized. There still remained, however, a strong market hunting and hotel lobby in Albany that continued to resist new

(Above) "Jacking Deer" by A. F. Tait. This is still the most common illegal method of hunting deer. (Below) Lumber camps and hotels looked to the deer herd for fresh meat.

laws restricting the harvest of deer. The laws did come with the first bag limit (three deer) established in 1886. In the same year "crusting," or taking deer mired in deep snow, was prohibited. In 1895 the open season was shortened to August 16 to October 31 and the sale of venison during the closed season outlawed. Hounding and jacking were stopped in 1897 and night hunting in 1904. The sale of venison was made illegal in 1911, the "bucks only" law passed in 1912, and in 1919 the one deer bag limit enacted.

Of course even the best laws are quite meaningless without enforcement and the task faced by the first Game Protectors in 1880 was a monumental one. Lacking adequate numbers, communication, and mobility their progress was slow. Taking deer in the Adirondacks had been a way of life that was not about to change overnight. Oliver Whitman, the renowned

guide from the West River country near Wells, had a saying that, "When the New York State Legislature wrote the game laws, for some reason, they left Hamilton County out." When French Louie was brought to trial in Lake Pleasant for possessing illegal venison one of those sitting on the jury was none other than Oliver Whitman. When Louie was acquitted by the jury it was clear that Whitman's fellow jurors shared his theories regarding the game laws of Hamilton County.

Being the prolific animals that they are it did not take too many years for the Adirondack deer population to build up once again. The new laws combined with an improved law enforcement division had given the deer the break they needed. The herd expanded from the Adirondacks and other locations to the point where there are an estimated 650,000 deer in the state today. It is interesting that in 1900 there were only 500,000 whitetails in the entire country.

The problems that beset the whitetails also faced the biggest of our deer, the moose, and by the 1860's they had been eliminated from the Adirondack Mountains. That moose were fairly common in those days is well-documented. Surveyor Bing Wright wrote in his notes while surveying the Adjatis Tract in 1794 that "moose and bear are plentiful but deer are very scarce." The number of Moose Mountains, Moose Islands and Moose Creeks on U.S.G.S. topographic sheets also testifies to the widespread former range of the big animal. Moose are generally regarded as equal to or better in eating quality than deer and consequently were much sought after as food. Numerous attempts were made to restock the Adirondacks with moose but all met with eventual failure.

Hunting, however, is just one of the reasons usually given for the decline of the moose. Moose brain disease, caused by a parasitic worm associated with, but not fatal to, the whitetail deer is also speculated as a factor in the decline of the moose. As the deer herd grew following logging and the elimination of predators, moose more often contracted the parasite with the result that mortality increased. On the other hand, the Maine moose herd has tripled to 20,000 animals in the last 15 years in spite of a good deer population.

Those were also difficult times for furbearers. Beaver pelts were wanted during the colonial days for hats and with fur trading centers established at Albany and Montreal the flat-tailed furbearer's days were numbered. Once again, practically any method was used in their capture, and they were particularly susceptible due to their habit of establishing fixed colonies. Especially destructive was the practice of draining the beaver's pond and shooting it when it came out of its lodge to repair the dam. It is believed that by the 1830's there were about 300 beaver left in the state and by 1895 the only remaining animals were located in Township 20, Franklin County.

Relief for the beaver came in 1895 when the New York State Legislature prohibited trapping and the disturbance of beaver lodges and dams. In the early 1900's numerous beaver were transplanted into the Adirondacks from Yellowstone Park and Canada. (See "The Beaver," by Daniel Decker, THE CONSERVATIONIST, Nov.-Dec. 1980) Unlike most species of wildlife, the beaver actually benefitted from the fires and heavy logging of the period. Vast stands of poplar and white birch, favorite beaver foods, developed in the burns and cutovers. Beaver are now common throughout the Adirondacks and most of New York State today.

The fisher and his smaller relative, the pine marten, survived the fur traders until nearly 1900. Escalating fur prices put them on the wanted list at that time. Both species were susceptible to trapping as practiced then and their numbers dwindled steadily. In visiting their traps woodsmen in those days were more interested in beating a prowling predator to the frozen carcass of a trapped furbearer than for any humanitarian reason. Long traplines covered on snowshoe meant that set locations might be visited only once every 2 weeks or so.

When fisher declined to the point where trapping was no longer worthwhile, trailing the valuable females in the snow was the method usually adopted. Once the animal ran into a hollow tree or rocky crevice it could be smoked out for a shot from the hunter's trail gun. A dozen prime fisher pelts at this time could mean as much to the hunter as an entire year's work in the woods or on the farm. Knowing this, it is not difficult to understand the early woodsman's determination on the trail, even if it meant spending a minus 30° night in the woods, huddled beside a snapping campfire.

Fisher and marten were eventually reduced to very small numbers in the remotest Adirondack locations. But, benefitting from closed seasons and low fur prices in the mid 1900's both animals have made strong comebacks. Fisher are common throughout the Adirondacks and biologists have determined that marten now occupy more than 2000 square miles of their former range.

Timber wolves and panthers, while valuable for their pelts, were extirpated from their Adirondack range largely due to the bounties placed on their heads. The thinking of the settlers was that these two species were hazards to their livestock and even to their personal safety, and should be eliminated. There was also a bounty on black bears for awhile. The counties originated the bounty system, but, in 1871 the state entered the picture paying $30 for wolves and $20 for panthers. Between 1871 and 1897, when the two species were for all practical purposes eliminated, the state paid bounties on 107 panthers and 98 wolves.

What the Indians had known for centuries regarding their wildlife resources it took the white settlers their own period of trial and error to learn for themselves. The critically low populations of deer, beaver and other species in the late 1800's had brought people to the realization that wildlife was not unlimited. The conservation movement that followed is largely responsible for the wildlife we enjoy today.

Donald Wharton is a graduate of NYS College of Environmental Science and Forestry with 12 years of forestry experience in the Adirondacks and Oregon. He has previously published articles in *Adirondack Life* and the *New York-Pennsylvania Collector*. He also served with the 1st Marines in Viet Nam in 1966.

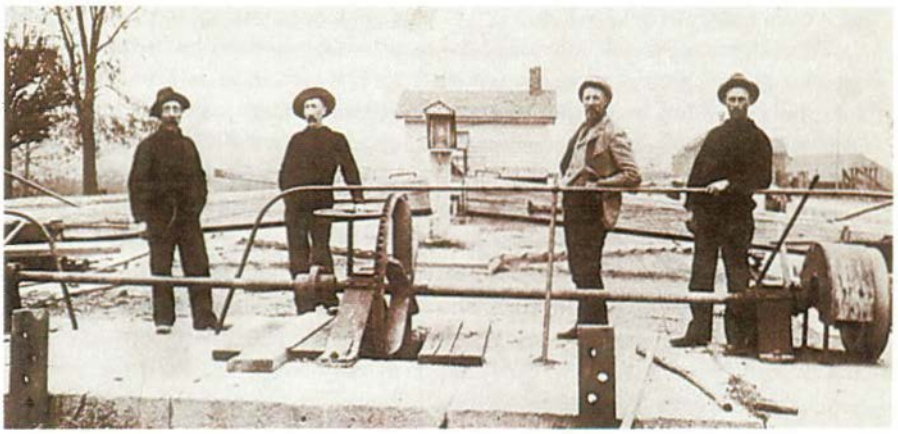
A boatman's family plays with pet

Building The Erie Canal

The Successful Completion Of The Canal Owed Much To "A Brace Of Country Lawyers" And Tiny Animals Of 300 Million Years Ago

by Albert C. Jensen,
Asst. Chief, Marine Fisheries, N.Y.S. Conservation Dept.

(Photos courtesy of N.Y.S. Council on the Arts celebration for the Erie Canal Sesquicentennial: July 1 - Labor Day)



Locktenders at Upper Macedon

Bert Riley and his ship carpenters at boatyard in Buffalo

THIS year New York State celebrates the 150th anniversary of the start of what at the time was one of the most ambitious projects attempted by the newly-formed nation of the United States. In 1817, the first spadeful of soil was turned to begin construction of the Erie Canal.

The beginning was so auspicious that the ceremony was held on July 4, the nation's birthday. Eight years later, the canal was completed and the event celebrated in a picturesque ceremony. On November 4, 1825, Gov. DeWitt Clinton made the passage on the canal from Buffalo to New York City and celebrated the "marriage of the waters" by pouring a container of Lake Erie water into New York Bay.

The Erie Canal had been conceived in necessity. The Revolutionary War had been over only a very few years when the new nation was forced to find relief for its growing pains by expanding westward. But the journey then, across the nebulous line of the western frontier, was long, tedious and very expensive — until the canal was built. When it was completed, the canal quickly became the principal route for migrants from the East and agricultural products from the West.

In the early 1800's the nation was gripped in a passion for canals patterned after the successful man-made waterways of Europe. The most ambitious and lofty plan was for the "Grand Canal of the East," as its admirers called it.

A cross-state survey of the proposed canal route had been carried out by James Geddes and Benjamin Wright in 1811. The two were not professional engineers but "a brace of country lawyers with a compass and a spirit level," in the words of an anti-canal newspaper. Their survey was more than adequate, however, and it established a spot near Rome as the best starting place.

The opposition jeered the project and called it "The Ditch" or "Clinton's Folly" (after DeWitt Clinton," the canal's sponsor and Governor of New York State). The project was backbreaking work with pick, shovel and wheelbarrow, but the laborers on the job pitched in with the enthusiasm of zealots.

Rocks had to be drilled by hand and blown out of the soil with black powder. The powerful equipment that would easily do such a job today was not known

and special tools had to be developed. Root-cutting plows and earth-moving scoops pulled by horses and ingenious horse-powered machines for pulling tree stumps, were among the devices that were designed to assist the hand laborers.

For some strange reason the complex engineering plans did not include any directions for procuring hydraulic cement, soon needed to build the locks, aqueducts and the towpath side of the canal waterway. Hydraulic cement — cement capable of setting to rock hardness under water — was well known for such purposes in European canal construction.

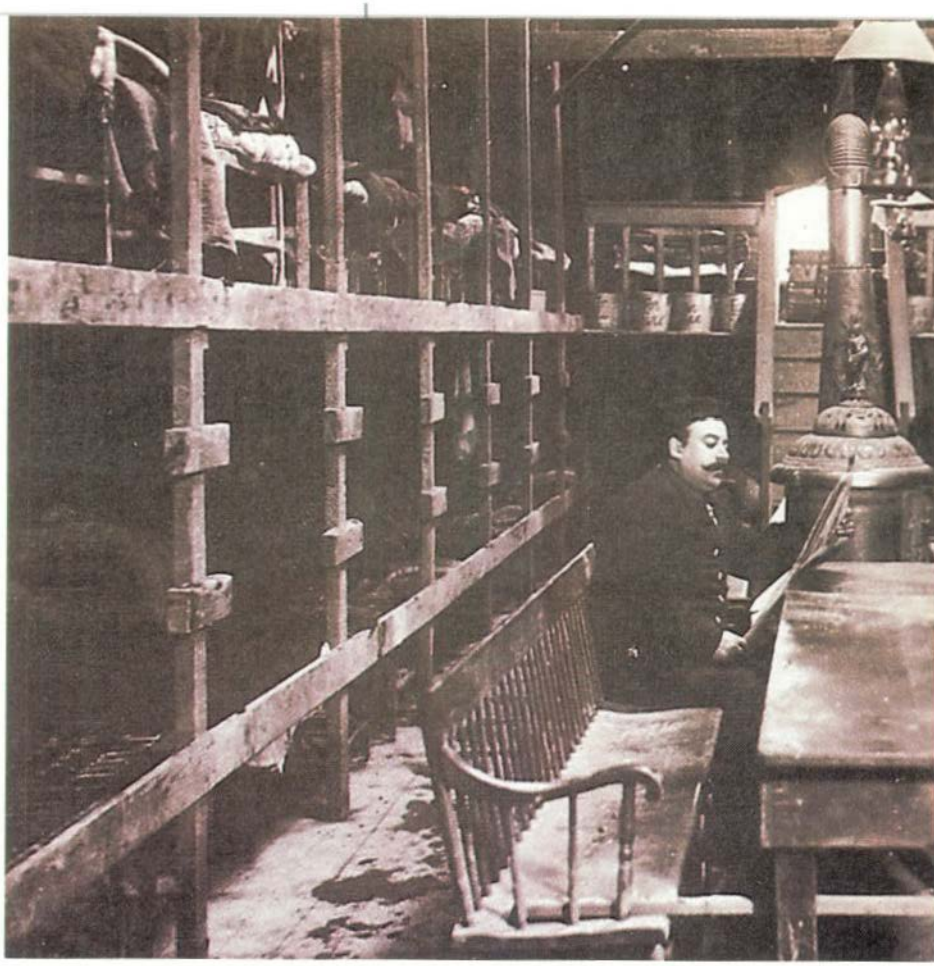
A contract was let with the firm of Harris and Livingston, of Sullivan, N.Y., to supply the lime. The company quarried the native limestone that abounds in central New York State, burned a large kiln of it and began delivery of the finished product to the construction site.

The product they delivered was quite different from the lime most of the construction workers were used to handling. Joshua Clark, in 1849, wrote, "The purchasers, upon trial, found that it would not slack; all were greatly surprised who heard of the facts and wondered at the singularity."

Canvass White, an engineer with more than an ordinary amount of curiosity, arranged an examination of the mysterious lime. Dr. John Barto, who was described by a writer of the period as "a scientific gentleman from Herkimer County," conducted the experiment to determine what the new substance might be.

For a reason not made clear, the second phase of the experiment took place in a barroom. With several witnesses, Dr. Barto took a quantity of the lime, mixed it with damp sand and rolled it into a ball. The ball was then placed in a bucket of water and left for the night. By morning it had set and was solid enough to be rolled across the floor. It was then that Dr. Barto addressed the group of spectators: "Gentlemen, I pronounce this to be superior cement, certainly equal to the Roman of Puteoli or Dutch Tarras."

The qualities of this new-found hydraulic cement and the rock from which it had been made intrigued Canvass White. If a domestic supply of suitable limestone could be found so near the canal — this, he thought, would require looking into.



Dormitory of Italian workers on canal boat

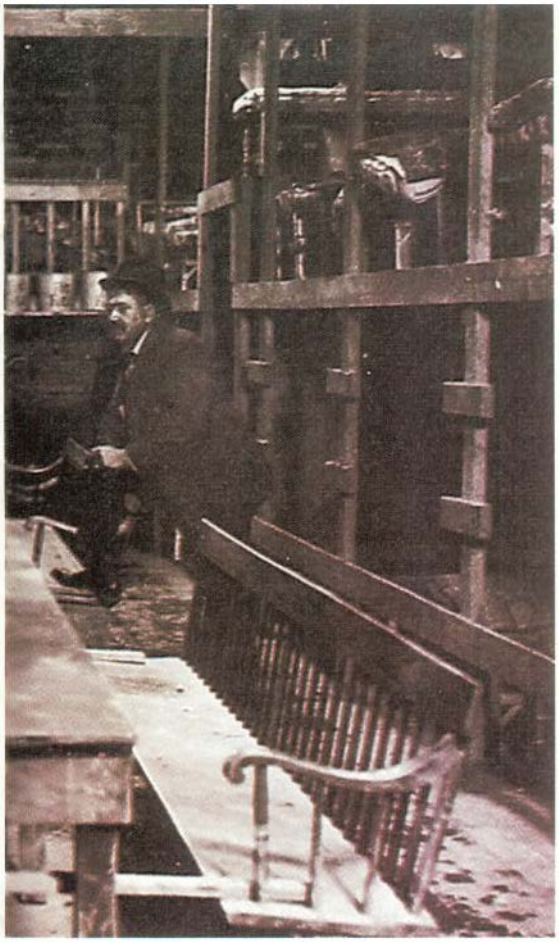
The limestone beds Canvass White studied had begun to form about 300 million years ago, when a warm, shallow sea covered most of the eastern United States. The sea swarmed with primitive fishes, corals and shelled invertebrates, and as the animals died their shells and other calcareous remains accumulated on the ocean floor in layers hundreds of feet thick. In time, the weight of the overlying sediments compacted and consolidated the bottom deposits, thus forming limestone.

Some of the limestone had been quarried by settlers in the area about the year 1800 and was used to build homes, stores and schools. Some rock had been pulverized and used by local farmers to top-dress their fields.

There is little definite information about the exact methods of cement manufacture in the early 1800's. It was probably made, however, by the process then in use in other parts of the world, by which the broken limestone was decomposed with heat in a "dome" kiln.

It wasn't until some 20 or 30 years later that a new type of kiln —the shaft kiln — was developed. This was a chimney-like affair that was charged with fuel and limestone from the top and fired from below. After the initial firing, the process was continuous. Lime was withdrawn from the bottom of the shaft kiln while additional fuel and limestone were added through the opening in the top. This process greatly increased the output of cement. Ruins of some of the old shaft kilns may still be seen near the limestone quarries in Jamesville. By the time the canal was completed, at least 500,000 bushels of cement had been made and used in the construction of the locks and other stonework.

A total of 72 locks were built to achieve a lift of 500 feet between the Hudson River and Lake Erie. Each lock was 12 feet wide and 90 feet long and the average lock lift was about seven feet. The side walls were constructed of locally cut limestone blocks joined with hydrau-



lie cement. At each end of the lock was a set of double wooden gates; these were opened and closed by hand.

Operation of the locks was a relatively simple but time consuming task that had to be repeated in each lock for each boat. A boat moving upstream entered a lock through its lower gates while the upper gates remained closed to hold back the water above. Once the boat was in, the lower gates were closed and small sluice gates were opened in the upper gates to allow the water to run in and fill the lock to the level of the upstream part of the canal. Then the upper gates were opened wide and the boat continued on its journey to Lake Erie.

Because of the steady flow of traffic on the canal, as soon as a boat moving upstream left a dock, a downstream boat was usually waiting its turn to enter the lock at once. The upper gates were closed behind it and the lock was drained through the sluice gates of the lower gates to bring the boat down to the level of the downstream part of the canal.

The canal waterway was wide enough for boats to pass but it was not wide enough for them to turn around. Special basins, called wide-waters, were constructed at intervals to provide turning places. The main stream of the canal was only four feet deep, 28 feet wide at the bottom and 40 feet wide at the water surface. The towpath side was lined with stone to bring the towpath as close to the waterway as possible; the opposite side was merely a sloping earth bank.

Canal boats were pulled by horses or mules walking the towpaths that ran along the banks. Line boats, for freight, and ordinary passenger boats moved at a mile and a half an hour and tied up at night. Passengers would spend the night in one of the numerous hostels or taverns that sprang up along the route. De luxe packet boats moved night and day; food and rather spartan lodgings were furnished the passengers, who paid a premium for the privilege of a faster journey. The finest boats were modeled after the English packets that Canvass White had sketched on his trip to Britain.

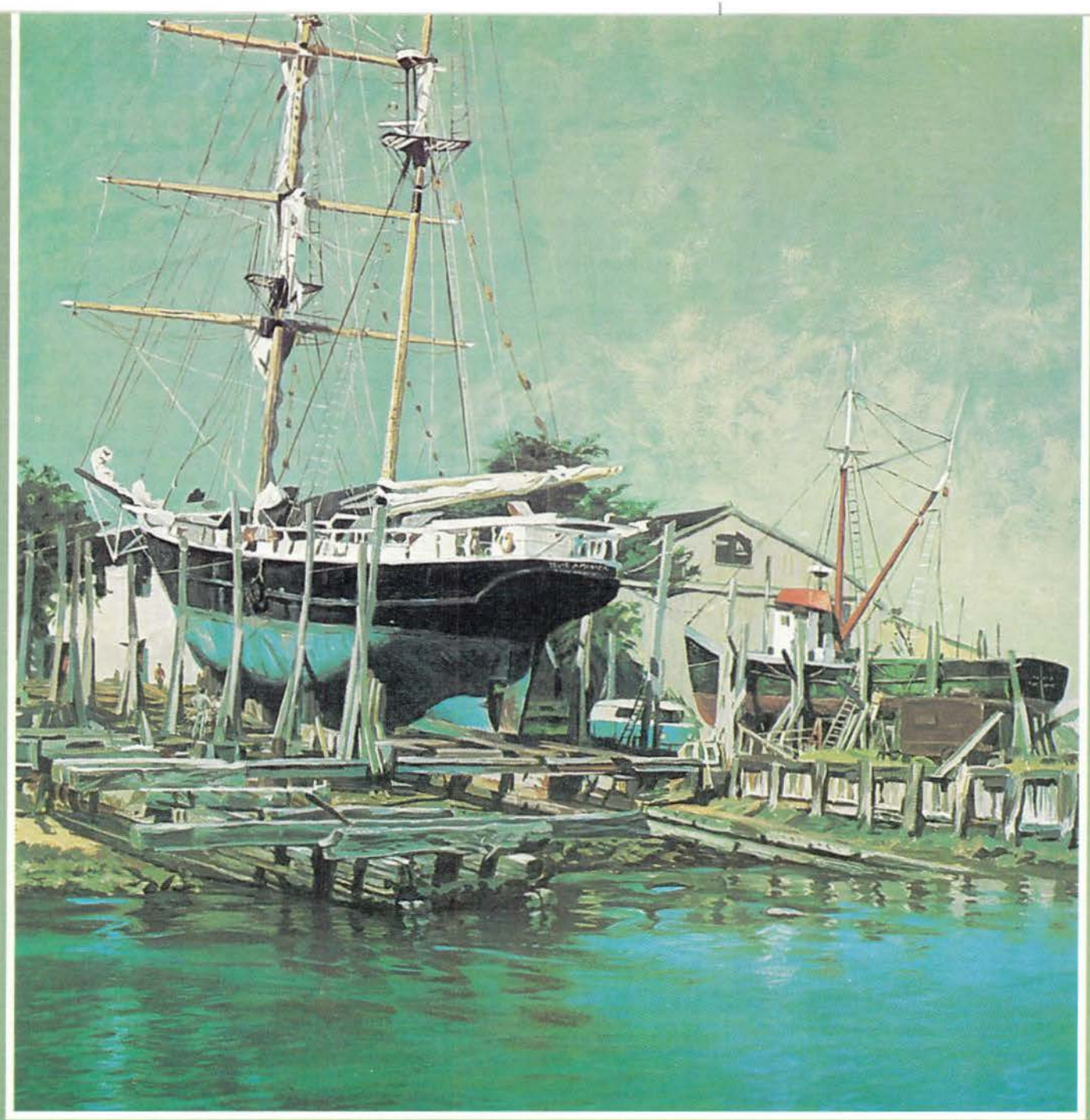
The middle section of the canal — from Rome to Utica — was completed on July 4, 1820. As a section was completed, it was put into operation so that the canal was making a profit some time before the entire waterway was finished. But, as of 1820 very little work had been done on the western section — from the Cayuga marshes to Lake Erie — and almost none of the eastern section — from Rome to the Hudson River.

By 1825, however, "The Ditch" was completed and the packet boats began to ply the canal in the start of what was to become one of the most fruitful periods in the history of New York State. Everything that DeWitt Clinton hoped for in the canal was destined to come true. It cost $8 million to construct but it cut freight rates between Albany and Buffalo by 85 per cent. Produce and merchandise that used to spend a month in transit now moved from New York City to Buffalo in ten days. In the first year of operation, the canal, and its connection to Lake Champlain, earned New York State more than a half million dollars in tolls. Long after the railroads were built the Erie was still making money and did not reach the peak of its tonnage until 1880. Its most triumphant creation, however, was modern New York City, which otherwise might have been another seaport.

Although the New York State Barge Canal has taken over the function and much of the waterway of the old Erie Canal, parts of the original canal, its locks and walls, still stand. They are proof of the strength and durability of the cement that joined the great stone blocks and engineering skill.

The success of the canal was not bounded by the revenues returned to the State of New York or the profits reaped by the merchants and bankers of the City of New York. Much of its success can be measured by the part "The Ditch" played in the opening of the West. Tremendous cargoes of buffalo hides and bones for fertilizer traveled eastward from the terminal at Buffalo. On the return trip, the packets carried throngs of pioneers who were beginning the first leg of their long, arduous journey to the unsettled plains.

The canal fulfilled all of DeWitt Clinton's dreams, except perhaps one. Clinton was an avid amateur naturalist and he had written of his hopes for the profitable sale of ripe mandrake (or mayapple) fruits in the markets of New York City after the opening of the Erie Canal. The fruits were gathered in the woods of upper and central New York and used in homemade preserves. Clinton saw the canal as a way of moving them rapidly to market, but this was one dream of his that did not come true.



Young American—Greenport boatyard

A Long Island Coastal Portfolio

Paintings by Ed Kenney

Our decision to do a coastal issue coincided with staff artist Ed Kenney's annual vacation trip to the beaches and ports of eastern Long Island.

"I manage to get down to the Island at least once a year," says Kenney, "preferably in late spring or early fall when things are quiet and most of the tourists have not yet come or have gone home for the year. Life is a little more leisurely then, and I can go my way without fighting the crowds.

"I love the sea—have ever since I was a kid—and I usually spend a lot of my time taking pictures of the beach and surf, particularly off Montauk. I like to watch the surf fisherman casting for stripers. The routine is the same but I never get tired of it. I also like visiting the boatyards and docks in some of the old towns like Greenport and Shinnecock. There I can see the cabin cruisers and charter boats coming and going or listen to the fisherman talking as they go about their business.

"Some day, if I am lucky, I would like to retire to the Island. There is enough beauty in that place to last me a lifetime." — Editor

The Flung Spray—A familiar scene at Montauk Pt.

Beachcombing—a quiet afternoon at the Montauk bluffs

The Warning—Montauk lighthouse casts eerie light out of fog

Off Montouk Pt.—Here I feel the presence of a much greater power and come closer to my beliefs.

Theodore Roosevelt, Conservationist

Understanding man's dependence on nature, he moved the nation firmly toward wiser management of its environment

by Sandy Marvinney

TEDDY Roosevelt — speak softly and carry a big stick, trust busting, rough riding, big game hunting President. More dimly do our high school history book memories recall Roosevelt the conservationist and guardian of the nation's resources. Even more dimly, if at all, do we remember Roosevelt the naturalist, the highly respected authority on animal and bird life who often interrupted White House meetings to rush to the window to identify a bird singing on the lawn.

Yet it is the naturalist Roosevelt which defines the man as well as any other facet of his versatile character, and from the perspective of the environmental consciousness of the 70's his efforts in the field of conservation are perhaps the greatest legacy of his presidency.

Roosevelt was one of a handful of farsighted men who strove to awaken the country to the consequences of unchecked destruction of the nation's forests, land and resources at a time when the average American thought little about such problems and cared less. Roosevelt was a conservationist not because it would win him any votes, but because it was rooted in his nature and his active perception of the world about him.

The Roosevelt who cherished the hidden spirit of the wilderness came to his love of nature in early youth, exploring the woods and fields on excursions to the country from his New York City home, on family vacations in the Adirondacks, and later on along the shores of Long Island when the family moved to Oyster Bay.

At the age of nine Theodore founded the "Roosevelt Natural History Museum," a collection of bird nests, animal skulls, insects, shells and minerals collected on his outdoor adventures. He read precociously all the natural history works he could get his hands on and kept voluminous diaries on his field experiences, recording detailed observations on bird and animal life.

Roosevelt was a self-taught naturalist, epitomizing the sentiments of his friend of later life, naturalist/author John Burroughs who wrote that "To absorb a thing is better than to learn it, and we absorb what we enjoy . . . the way of knowledge of nature is the way of love and enjoyment, and is more surely found in the open air than in the schoolroom or laboratory."

He entered Harvard in the fall of 1876 intent on becoming a natural scientist in the tradition of Audubon. Upon finding that the way of scientific knowledge at Harvard was through the microscope and laboratory, Roosevelt's ambitions cooled. He found no academic outlet for his enthusiasm for field study and when his interests were eventually drawn to political economy he decided to make politics his career.

Nevertheless, Roosevelt still found time for scientific pursuits and in 1877 he and a Harvard friend published a small leaflet entitled "The Summer Birds of the Adirondack Mountains in Franklin County, N. Y." — his first contribution to zoological literature.

During his college years Roosevelt frequently vacationed in Maine where two experienced northwoods guides took the young naturalist under their wing and greatly expanded his experience and knowledge of hunting, trapping, camping and survival in the wilds. Roosevelt soon outgrew his scrawny, illness plagued youth and acquired the strength and indomitable energy that characterized all his ventures.

In 1881 Roosevelt won election to the New York State Assembly, embarking upon his political career. The following year he made his first trip west to the Dakotas where he bought a ranch. Captivated by the open spaces and fast disappearing traces of wildness, Roosevelt spent the next ten years dividing his time between East and West, exploring the Dakotas and the Rocky Mountain states.

During this period he authored two books, "Hunting Trips of a Ranchman" and "The Wilderness Hunter," which received favorable reviews. According to C. Hart Merriam, Chief of the U.S. Biological Survey, Roosevelt was an authority on the life histories of big game animals and was regarded as one of the outstanding field naturalists of his day. He has been described as "the first and last President of the United States to have a biological sense of proportions — to know the importance of everything from forests to birds, from hybridization to plant introduction."

At the time Roosevelt moved into prominence in national politics conservation was a practically unknown word and the federal government had taken only a few halting steps in its direction. The myth that America was a land of inexhaustible natural wealth died hard and until the latter part of the nineteenth century there was little concern that the country would run out of its vast timber supply, fertile soils and seemingly unbounded mineral resources. Land was there for all who wanted it and the government seemed devoted to helping private citizens exploit these resources without restriction.

Resource preservation was almost exclusively the concern of a few scientists

". . . But there are no words that can tell the hidden spirit of the wilderness, that can reveal its mystery, its melancholy, and its charm. There is delight in the hardy life of the open, in long rifle in hand, in the thrill of the fight with dangerous game. Apart from this, yet mingled with it, is the strong attraction of the silent places, of the large tropic moons, and the splendor of the new stars; where the wanderer sees the awful glory of sunrise and sunset in the wide waste spaces of the earth, unworn of man, and changed only by the slow change of the ages through everlasting time."

THEODORE ROOSEVELT,
March 15, 1910

and recently established specialized organizations such as the American Forestry Association and the Audubon Society. One such group, the Boone and Crockett Club, was founded in 1888 by Roosevelt and several other dedicated sportsmen who were concerned about preserving big game species and their habitat. Roosevelt served as president of the club from 1888 to 1894 and under his leadership it became one of the most effective conservation organizations of its day.

The first federal initiative in resource preservation occurred in 1872 with the establishment of Yellowstone National Park, just ahead of a threatened invasion of homesteaders. Rapid depletion of America's forests provided the impetus for broader federal programs. By the end of the nineteenth century an estimated half of the original forest cover of nearly one billion acres had been lost and in 1891 Congress finally enacted a far reaching law authorizing the President to withdraw land from the public domain to create forest reserves under the jurisdiction of the Interior Department.

The movement for forest preservation in New York was well established but nonetheless foundering in bureaucratic inefficiency when Roosevelt became Governor in 1898. Although he served for only two years before becoming Vice

President in 1900, Roosevelt devoted considerable attention to conservation problems. "All that I strove for in the nation in connection with conservation was foreshadowed by what I strove to obtain for New York State when I was Governor," he wrote in his autobiography.

Land in the Catskills and Adirondacks had been set aside as forest preserve in 1886 under jurisdiction of a forest commission which proved weak in the administration of its duties. Timber interests maintained a free hand and widespread lumber stealing was carried on in utter contempt for the law. The 1883 prohibition against sale of State forest lands was freely circumvented and within 10 years 100,000 acres had been lost from the preserves.

By 1894 public confidence in the forest commission reached an all time low arousing strong sentiments for constitutional provisions to safeguard the forests. In that year the Legislature enacted Section 7 Article II of the Constitution — the "forever wild" clause forbidding the sale or lease of any forest preserve land and the sale, removal or destruction of timber.

The five man Fisheries, Game and Forest Commission, a haven for political favoritism, presented the greatest obstacle to efficient management of the preserves. Roosevelt made it clear he wanted to replace the board with a single commissioner to improve administration and inhibit political influences. Although he was unable to impress the merits of this plan on the Republican machine, he did succeed in replacing the five commissioners with competent men of his own choosing who gave the activities of the commission closer scrutiny. In 1900 it was renamed the Forest, Fish and Game Commission in a reordering of priorities and plans were drawn up to improve the management of the preserves.

During his term as Governor Roosevelt sought the advice of Gifford Pinchot, head of the Bureau of Forestry in the Department of Agriculture who later became one of Roosevelt's most trusted presidential advisors. Pinchot was not exceedingly popular among New York conservationists as he favored "conservative lumbering" in the forest preserves and considered the forever wild clause an unprogressive step away from scientific management of the forests.

Pinchot's arguments impressed Roosevelt and he drew upon them for his annual message to the Legislature in 1900. He called attention to the urgent need for scientific study and management of the preserves although emphasizing that until lumbering was carried out along these principles "we cannot afford to suffer it at all in the State forests. Unrestrained greed means the ruin of the great woods and the drying up of the sources of the rivers."

In this same message Roosevelt stressed the importance of controlling forest fires, increasing the number of trained and qualified game wardens and the need for sound administration of the game laws. True to his ornithological interests he called for the protection of ordinary birds, especially song birds, urging the adoption of a law to prohibit use of skins and feathers in the manufacture of wearing apparel.

During his governorship Roosevelt also expressed concern over the growing pollution of the State's waterways many of which had become "little more than open sewers." In 1899 he issued an order prohibiting the discharge of untreated sewage, domestic waste or manufacturing refuse into Saratoga Lake or its tributaries, citing it as a nuisance which interfered with the fullest enjoyment of property rights of landowners along the lake.

The waters of Saratoga emptied into Fish Creek which flowed into the Hudson River, the source of drinking water for many communities. Roosevelt foresightedly commented that the pollution of the Hudson presented "one of the most perplexing and serious problems affecting the life and health of the people of the State." He ordered the villages of Saratoga Springs and Ballston Spa to install sewage treatment works and ordered the tanneries and pulp mills in the area to render their wastes innocuous before discharging them into the waters.

Sewage treatment was in its infancy in New York in the 1890's and it is unlikely that the Governor's order, probably one of the first of its kind in the State, aroused the offending parties to action. Nevertheless, it did point the finger at a problem that was to receive increasing attention in later years.

Roosevelt was vacationing in the Adirondacks near Mt. Marcy when McKinley died of an assassin's bullet on September 14, 1901. Plunging into the responsibilities of the Presidency, Roosevelt saw as one of his most important tasks the development of coherent policies to safeguard the nation's resources.

Roosevelt found in government service a number of far-sighted men such as Pinchot, John Wesley Powell of the U.S. Geological Survey, and Frederick H. Newell of the Reclamation Service who had also identified a need for vigorous federal programs. In Roosevelt they discovered a President who enthusiastically supported their ideas and lent the full power of his office to the implementation of strong conservation measures.

First turning his attention to the reclamation of arid western lands, Roosevelt firmly backed Senator Francis Newland's bill for the development of federal projects to irrigate public lands. The bill was signed into law in June 1902 and by the

With John Burroughs in Yellowstone Park, 1903
— Courtesy American Museum of Natural History

end of Roosevelt's Presidency in 1909 reclamation was an unqualified success with 30 federal projects completed and over 3,000,000 acres of land under irrigation.

In his first message to Congress Roosevelt stressed the urgency of bringing some rational order to the administration of the forest reserves. The Bureau of Forestry in the Agriculture Department employed all the trained foresters in the government service but had no jurisdiction over the forests, while a division of the General Land Office in the Interior Department administered the reserves without foresters.

By 1905 Roosevelt succeeded in transferring jurisdiction over forest lands from the Interior Department to the newly organized U.S. Forest Service headed by Pinchot. During his administration Roosevelt added 150,000,000 acres of timberland to the reserves, tripling the amount set aside by his predecessors. This did not occur without bitter opposition from western lumber and development interests, but an extensive public education program conducted by the Forest Service fostered widespread support for the forest reserve concept as a means of increasing and sustaining the nation's timber resources for the welfare of all the people.

Roosevelt also set aside for federal protection thousands of acres of public land valuable for its mineral wealth or potential for water power development. He exercised particular foresight in creating the first federal wildlife refuge at Pelican Island, Florida to protect egrets threatened with extinction by hunters. By 1909 Roosevelt had established an additional 50 refuges, forming the basis for a federal wildlife protection program that today includes several hundred sanctuaries encompassing millions of acres of land across the country.

In addition Roosevelt added five new parks to the national park system and under the National Monuments Act of 1906 set aside 16 acres of unique natural or historic value including California's Muir Woods, Wyoming's Devils Tower, Arizona's Petrified Forest and the Grand Canyon.

A contemporary cartoon of TR as conservationist
— Courtesy American Museum of Natural History

Towards the end of his second term Roosevelt focused his attention on the development of a comprehensive conservation program on a national scale. The Inland Waterways Commission which Roosevelt had established in 1907 suggested calling a conference on all aspects of conservation and he enthusiastically seized upon the idea.

The conference, held in Washington in May 1908, was attended by the Governors of all the states, members of Congress, the Cabinet, the Supreme Court and nationally prominent conservationists and scientists. The first meeting of its kind, it gave considerable momentum and prestige to the conservation effort, turning it into a full fledged movement.

Delivering the opening address, Roosevelt called the reckless depletion of natural resources "the weightiest problem before the nation," and urged the participants to join together in a common effort to coordinate a conservation plan.

As an outgrowth of the conference conservation commissions were created in 36 states and a National Conservation Commission was set up to inventory the nation's water, mineral, land and forest resources. The conference stimulated such great interest that Roosevelt convened a North American Conference in February 1909 attended by delegates from the U.S., Canada and Mexico. From this meeting came the far reaching statement that natural resources are not confined by national boundaries and no nation acting alone can adequately conserve them.

In retrospect, Theodore Roosevelt is a classic example of a man of unique talents and perception coinciding with the demands of a particular time and place in history. With his understanding of man's dependence on the natural environment and his potential for destroying or protecting that environment, Roosevelt quickly grasped the problems at hand, sought far reaching answers and gave the nation a firm shove in the direction of wiser management of its natural heritage.

Although Roosevelt did not originate the concept of conservation he became one of its strongest advocates, and with the authority of the Presidency behind him he perhaps contributed more to the "spreading of the faith" than any other individual of his generation. Today's resurgence of environmental awareness traces a few roots to the foundation of concern laid by early eco-activists in the tradition of Teddy Roosevelt.

Robert Bateman-

by Wayne Trimm

CANADIAN wildlife artist, Robert Bateman, knows how to capture a mood, atmosphere and details in his paintings and holds them together with interesting design and composition. Working in acrylics, oils or alkyds Bateman creates outstanding paintings that are being bought by wildlife enthusiasts and art collectors all over the world. In a relatively short span of time he has moved from a position of a school teacher who painted as an extra activity to being recognized as one of the world's foremost painters who happens to use wildlife as his subjects.

From a very early age Bateman was interested in nature and wildlife and, as a junior naturalist at the Royal Ontario Museum, learned how to prepare small mammal skins. Since that time he has collected specimens from many parts of the world that are now housed in major natural science museums in several countries. This early work with small mammals brought him close to nature and he learned to love the outdoors and the beauty of its many moods which he attempted to capture in sketch and paint. As a teenager he worked with a bird census in Ontario's Algonquin Park observing, recording and sketching. The early fifties found him in the field again, this time mapping iron ore in Ungava. In 1957 he traveled over much of the world with a friend in a Landrover and in 1963 a two-year exchange teaching program to Nigeria gave him his first view of Africa. While there he continued his field painting and sketching.

For Bateman, recognition did not come early in his art career. For twenty years he taught geography and art at Burlington-Toronto high schools as he gradually perfected his own art skills and art perception. His study and work made him aware of the paintings of Charles Burchfield, Van Gogh, Cezanne, Gauguin and other abstract and impressionist painters with their strong use of abstract design and light.

By this time he had developed into an active abstract painter himself who found inspiration for his designs in nature. His paintings reflect an increased awareness of positive and negative shapes, light and color. In 1972 he traveled with a research team to the Amazon Basin where he continued to observe and sketch. Almost all of the top artists that deal with nature do a lot of "location" sketching.

In 1975, at the invitation of a British art gallery, he took a year and a half off from teaching to prepare for an international one-man show in London. Using his sense of design, his sensitivity of the moods of nature and his knowledge of wildlife he assembled a remarkable series of paintings. The show attracted great attention and was an overwhelming success. Since that time he has been able to devote full time as a professional wildlife artist, his art income giving him the freedom to paint and travel, both of which he enjoys tremendously. For example, in 1978 he was a safari leader in Kenya and an art lecturer to the Antarctic on the M.S. *Lindblad Explorer*.

His shows now often sell out before they open to the public and a few of his paintings are now available as limited edition prints. When hung in shows with the works of other artists, his paintings often attract the most attention. This is no accident. Bateman uses light in a masterful way to capture the proper mood and atmosphere of the moment pictured, whether it is the searing heat of the African plain, the cool interior of a northern forest or the chilling cold of an Arctic snowstorm. In his way he is a psychologist with a paint brush, manipulating people's emotions. Recently he was commissioned by the Canadian government to design a series of wildlife postage stamps, proper recognition for his talents.

All of this finished art is painted at his personally designed studio-home at Milton, Ontario, near Burlington where he lives with his artist-wife Birgit and their two sons. The house is interesting in that from almost every angle, inside and out, the visitor is presented with a view of abstract design of line and color and texture. The studio, on the top floor, has large windows overlooking a hillside of trees and fields, that drops away from the house. Inside the studio Bateman works in a world of sound. By his side a tape deck plays his preferred mood music, often classical guitar. A phone, also next to his working area, is frequently busy as he talks to friends from all over the world while he continues to work on sketches or paintings. Behind him, mounted in such a way as to reflect the painting area, is a mirror. By studying a reversed image of the picture Bateman often picks up details he might have otherwise missed.

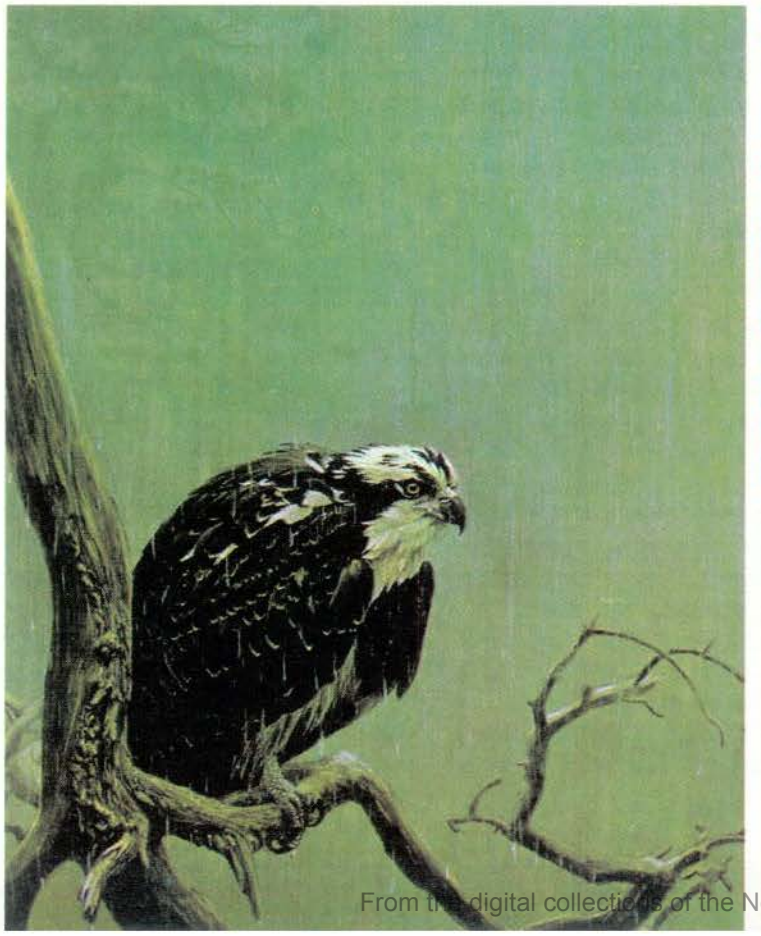
Like most wildlife artists, he works from a combination of sketches, specimens, and photographs, but unlike some other artists, his finished paintings are greater than the sum of the parts. They take on a quality of light and mood that makes his work breathe with life. Maybe it is the compatible atmosphere of the taped music, of the pleasant domestic sounds of a happy family or the self assurance of a young man who loves his work and knows and loves the subjects he paints. But whatever it is, Robert Bateman is an extraordinary artist and a warm and friendly human being who is making a reputation for himself and for wildlife painting in general. It is with pleasure we feature a few of his paintings.

Quiet retreat (great horned owl)

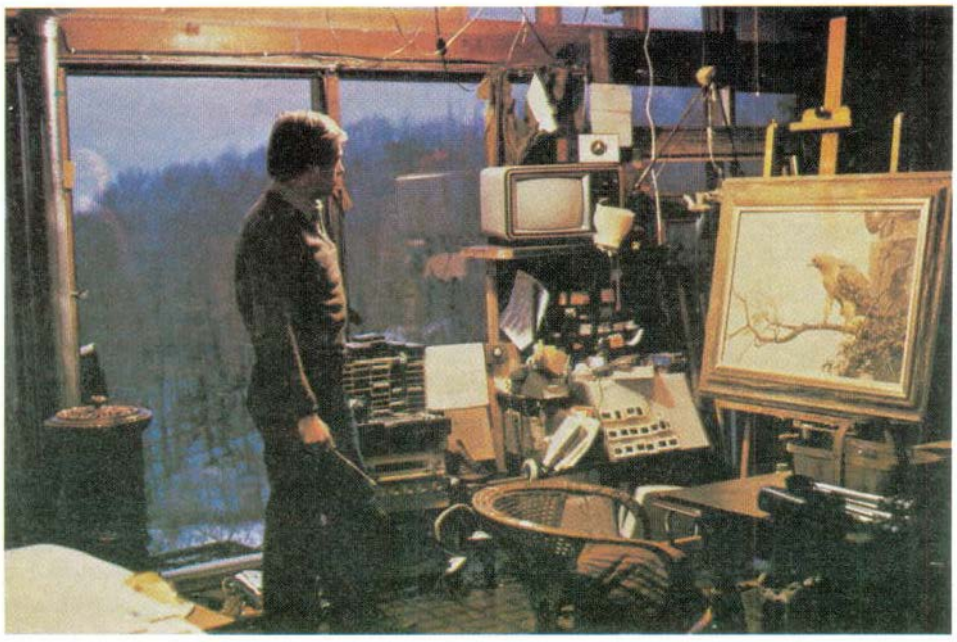
Poor flying weather (osprey)

Top: White ghost (varying hare)

Bottom: Winter hunter (rough-legged hawk)



Waiting (great blue heron)



Robert Bateman, in his studio, working on a painting of a red-tailed hawk. He is a member of the Society of Animal Artists.

A Summer Meadow

by Frank Knight

Painting by Wayne Trimm

Red-banded leafhoppers are common on many meadow plants.

Gerard Lemmo

WANDER into a summer meadow near your home. Inhale the mixed fragrance of the grass and wild flowers on the breeze that wafts across the surface like waves on the sea. Watch a butterfly flit in apparent aimlessness from flower to flower while the more purposeful bees buzz monotonously about their pollen and nectar-gathering business. You would be hard pressed to imagine a more tranquil scene than this pastoral interlude. Right? On the contrary, inches beneath the placid green surface lies a dense, dark jungle where in any given moment a garter snake is swallowing an earthworm, a praying mantid is tearing the head off a grasshopper, and a shrew makes an endless meal of every little animal in its path. So much blood and gore to the acre that a Tarzan story would seem tame by comparison. But what makes a meadow really exciting is our inextricable associations with the meadows we manage — from our origins on the African plains several million years ago to the monocultured wheat and cornfields of America's heartland which feed millions of people today.

Grasslands originally covered about 42 percent of the world's land surface — now largely under cultivation. The world's grasslands are characterized by low rainfall (10 to 30 inches per year), high evaporation, periodic severe drought, and rolling-to-flat terrain. In New York State where rainfall exceeds 30 inches annually, upland meadows persist only where grazing, periodic mowing, or fires prevent the invasion of woody growth. Meadowland

is shrinking in New York. The state is now 61 percent forested with more than a million acres having completed their return from abandoned pastures to forest land in just the past 15 years.

A Salad to Hide In

LET us begin with a closer look at what makes up a natural meadow and how it works. We can envision our meadow as a large live-in salad in which the inhabitants work at not being eaten. Our salad bowl is the soil made fertile by the constant recycling of nutrients from the plants eaten by animals above to the organisms of decay beneath the surface. As in all ecosystems, the meadow is dependent on an outside source of energy — from the sun — which is transformed to sugar energy in every blade of grass and forb (broad-leaved herb).

In a forest the layers — herb, shrub, understory, and canopy — are distinct and obvious. But walking through a waist-high meadow, we can scarcely see our knees let alone discern the plant layers that hide them. Certainly the most obvious plants are the grasses — tough, resilient, no nonsense work plants unlike the much less numerous fragile looking, showy broad-leaved beauties that decorate the meadow. Grass can be trampled and laid upon by the grazers that browse it to the ground, and come right back for more, relying on its quick regenerative powers and huge numbers to thrive. Unlike the broad-leaved forbs, grass grows from its joints at the bottom of the plant. Thus it possesses an ability to grow back after grazing and to right itself quickly after being flattened by feet or wind. Tough tubular stems enable tall prairie grass, weedy phragmites, and cultivated corn to grow 12 or more feet tall. Grasses are either sod formers, like Kentucky bluegrass, developing a solid mat over the ground, or bunch grasses — orchard grass, for example — with spaces between occupied by forbs.

Broad-leaved herbs grow from the extension of their tops and do not compete well when heavily grazed. Unless a lateral bud can resume the upward growth, a new shoot must start again at the base of the plant, where less space and light exist. In order to ensure their survival nature makes many of these broad-leaved plants unpalatable. Queen Anne's lace, most of the mints, pepperweed, and tansy all taste terrible to most grazers. Teasel, thistle, and mulleins possess spines or matted hair to avoid the hungry, while milkweed is filled with a bitter rubbery sap.

Who Eats Whom?

IN this fertile shadeless environment, every square inch of soil could be covered by plants. But in the relentless competition for the available space and light and moisture among the plants, and the constant grazing of herbivores, the vegetation potential is never fully reached. When we think of grazers, the large and obvious deer, woodchuck, and rabbit first come to mind. A good rule in nature, however, is that the larger the animal (or plant) the fewer of them there are. Even if we add the far more numerous meadow mice, we are still considering only a tiny fraction of the herbivorous community. Crickets, leaf hoppers, grasshoppers, caterpillars, and aphids are only a few of the many thousands of kinds of insects at work on the leaves and stems in the typical meadow. Insects are the meadow's real grazers.

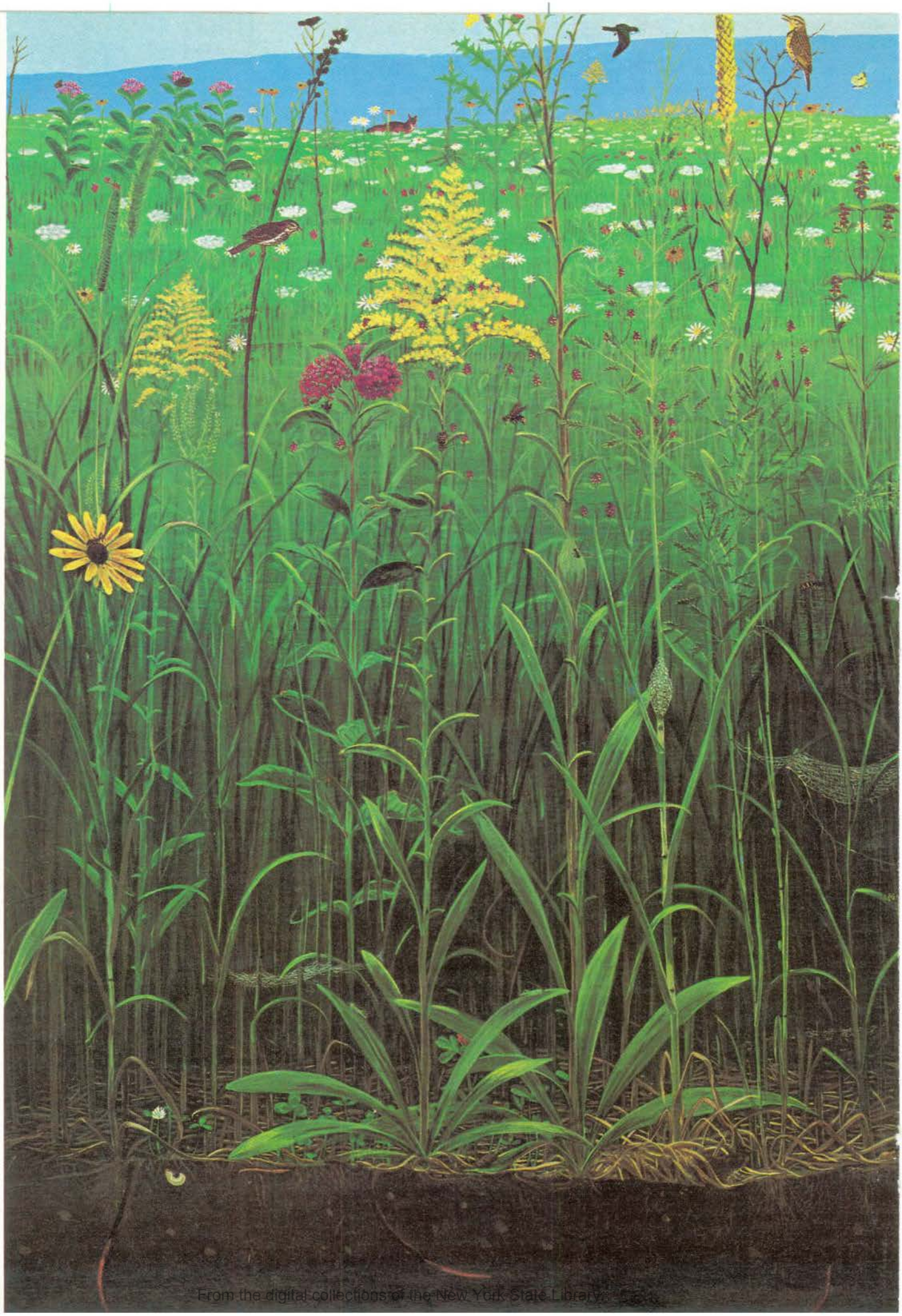
The plants have an unwitting ally in their struggle for survival in the predaceous animals in the meadow community. Their food and energy also comes from plants in the food chain — from plant to plant eater to animal eater, but the carnivores help keep the plant supply far in excess of the herbivores' chewing. Hawks and foxes are among the most familiar predators. Although we seldom think of it as such, a tree swallow swooping midair on a midge, or a meadowlark tearing apart a grasshopper is as predaceous as the more obvious eating habits of assassin bug, jumping spider, or ambush bug.

Life and Death Among the Roots

THE lowest layer in a grassland is perpetually hidden from our view — the roots. Half or more of the grass are roots which extend downward five feet or more for often scarce water. During the winter when the above ground parts die, almost all the plants are roots. Roots store food reserves and provide minerals as well as water to parts above. But life here is no more

Frank Knight

Steeplebush, common in old fields.

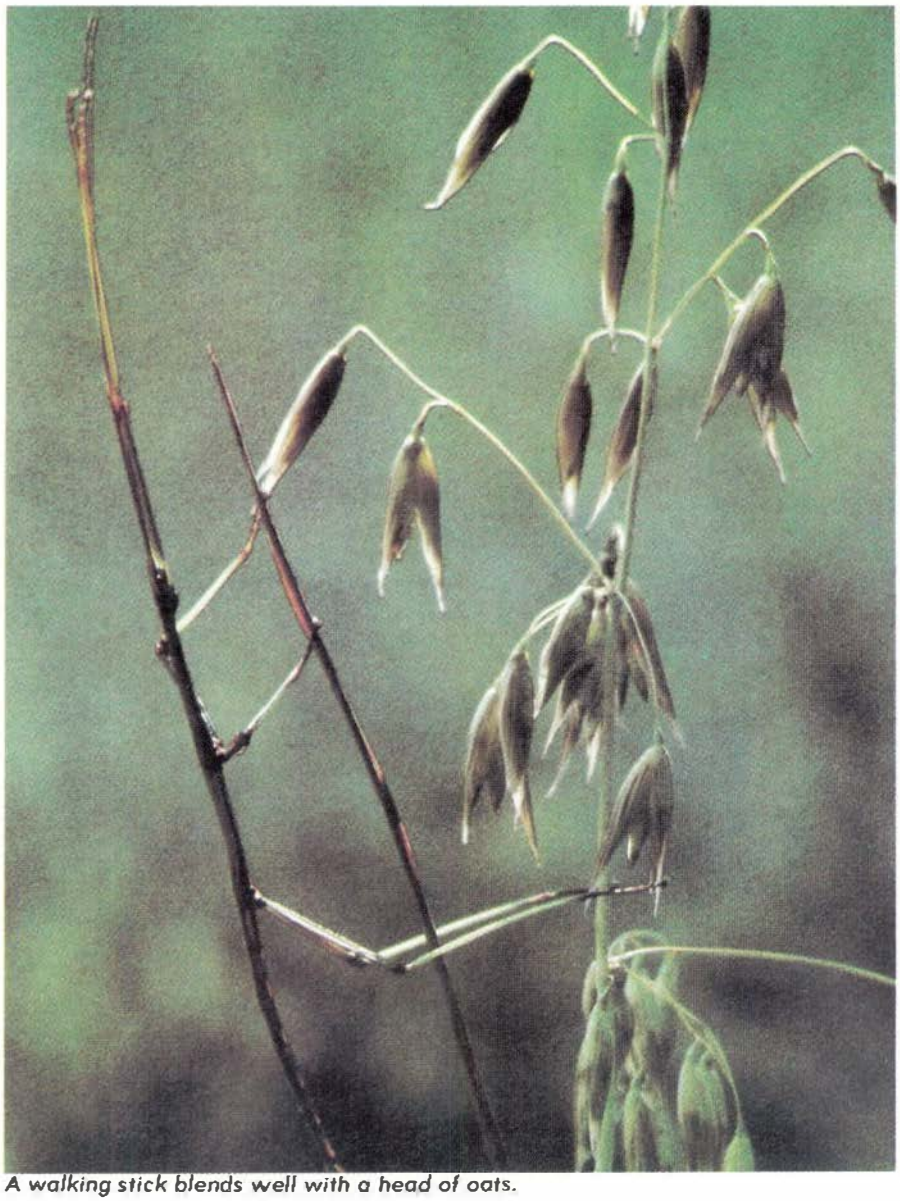


tranquil than aboveground. The main energy source below ground, unlike the living plant material above, is dead plant and animal matter and feces. These are broken down by bacteria, fungus, and protozoans. While parasitic nematodes and root-feeding insects consume living plants, far more significant are the fresh litter (or detritus) feeders such as the earthworms, pot worms and millipedes. They ingest large quantities of organic matter, mixing, aerating and enriching the soil as they do so, and digest out some of the bacteria, fungus, protozoa, and other tiny invertebrates. The most abundant soil creatures are the eight-legged mites and springtail insects which thrive on the microscopic fungi they separate out from the plant litter they eat. Spiders, insects, mites, and nematodes are the most common predators. A few kinds of soil fungi have evolved from plant litter consumers to predators — turning the tables on the tiny fungi-eating soil animals. Nematode-trapping Hyphomycetes act like flypaper. Most unusual is a rabbit-snare type of trap in which a nematode passing through a ring of fungi cells triggers in one-tenth of a second the inflation of ring cells constricting and holding the nematode until the fungus can penetrate and digest its body.

How Much Mulch?

DOWN on our hands and knees we can see the ground layer in the meadow characterized by reduced windflow and decreasing light-intensity as the grasses grow taller. Ground hugging and low-growing plants like the mosses, wild strawberries, cinquefoils, violets, and dandelions do their most active growing and reproducing before they are left behind by the tall-growing grasses and forbs. The white and red clovers are especially important low growers in the meadow since these legumes enrich the soil below with the nitrogen-fixing bacteria nodules on their roots.

Mulch is by far the most important component of the ground layer — dead and decaying leaves and stems. In a natural grassland, three or four years pass before mulch completely decays. In the meantime, just as in our gardens, mulch helps retain soil moisture by promoting infiltration rather than runoff and by reducing evaporation. An accumulation of mulch is important to the maintenance of a healthy grassland. Since mowing, grazing, and fires reduce mulch, overexploitation can result in deterioration to weeds.



Frank Knight

A walking stick blends well with a head of oats.

The herb layer in a meadow is the one most apparent to us. Besides the already mentioned low-growing layer most visible in the spring, the middle layer of shorter grasses and such forbs as wild mustard, black-eyed Susan, and daisy fleabane is next established. Finally by fall, the tallest grasses, goldenrods and asters overtop the middle layer.

Nature's Three Realms

Geographer Yi-Fu Tuan suggests that we should be concerned with three realms of nature: our thoughts and feelings about nature; what nature is — the science of nature; and our behavior in and use of nature. Summer meadows beckon our escape from civilization where we can just simply care about and enjoy nature's first realm. We need summer meadows to stimulate our curiosity about how the world works — nature's second realm. Knowing how a meadow works will help us in nature's third realm — becoming better stewards of our croplands — managed meadows that feed us all.

Frank Knight is director of DEC's Stony Kill Farm Environmental Education Center in Wappingers Falls. A graduate of NYS College of Agriculture at Cornell, Mr. Knight has been an environmental educator since 1962.

1. Assassin bug
2. Black-eyed Susan
3. Timothy
4. Foxtail millet
5. Peppergrass
6. Green snake
7. White clover
8. Junebug beetle grub
9. Song sparrow
10. Milkweed
11. Longhorned grasshopper
12. Red fox
13. Ambush bug
14. Milkweed beetle
15. Long-horned goldenrod beetle
16. Ladybird beetle
17. Red-bonded leathopper
18. Treehopper
19. Tree swallow
20. Bull thistle
21. Goldenrod
22. Crab spider
23. White-faced hornet
24. Goldenrod gall
25. Brome grass
26. Spittlebug bubbles
27. Meadow vole
28. Junebug
29. Mullien
30. Meadowlark
31. Cabbage butterfly
32. Heal-all
33. Kentucky bluegrass
34. Yellowjacket
35. Web of tunnel weaver spider
36. Root of Queen Anne's lace or wild carrot
37. Field mushroom
38. Gorter snake
39. Cricket
40. Queen Anne's lace
41. Praying montid
42. Spittlebug (adult)
43. Walking stick
44. Red-tailed hawk
45. Woodchuck
46. Monarch butterfly
47. Rush
48. Teasel
49. Wheat grass
50. Sow bug
51. Carpenter ants
52. Short-tailed shrew with worm
53. Red clover
54. Bobolink
55. Marsh hawk (mole)
56. Field sparrow
57. Tansy
58. Aphids
59. Moth in milkweed trap
60. Springtails
61. Crow
62. Monarch caterpillar
63. Soopwort
64. Honey bee
65. Daisy
66. Horsefly
67. Jumping spider
68. Shaggy mane mushroom
69. Cutworm larva
70. Wild strawberries
71. Earthworm
72. Hyphae of fungus
73. Herb regeneration
74. Buffalo treehopper
75. Millipede
76. Cottontail rabbit
77. Nitrogen fixing nodules on roots of clover
78. Rove beetle
79. Centipede
80. Web of spider mite

THE BIG BUCK and the LITTLE BUCK With a Story in Between

PORTRAITS of the remains of two New York State buck deer appear on the opposite page. The heads are actual but the cartridges and the much-chewed deer browse in the old sugar bowl are merely symbolic.

One buck was very large and the other was little, as you can see. What you can't see is that both deer died at precisely the *same* age—4½ years! The teeth of these two animals told that story to the Conservation Department's deer research unit in whose huge collection of significant physical material the skulls of both bucks now repose.

The big buck bears the New York State record set of antlers. This deer was killed in 1939 by an experienced hunter named Roosevelt Luckey. He shot it at 100 yards, running, with a 12-gauge rifled slug not far from the garage he operates at Hume in Allegany County. It weighed 194 pounds dressed—which gives it a probable live weight of 233. So it was big all around.

The animal lived in part of a western New York woods a mile wide, seven miles long and surrounded by wheat, corn and bean fields. The woods, like much western New York deer range, then grew sufficient adequate-quality winter browse for the growing healthy herd it housed.

So much for the big buck.

The skull of the little one with its scraggly 9-inch antlers was picked up with a dozen others one spring when snow melted in the Joe Indian Pond area of the northern Adirondacks. These deer had starved.

The little buck lived in the roadless wilderness northeast of Cranberry Lake. Not many hunters have the incentive or the physical means to go into such country and, like thousands of square miles in the Adirondacks (and now parts of the Catskills), there are too many deer for the available *winter* food.

You'll note that winter is emphasized—for you must understand that in summer, deer live all over the house. But in winter on their northern range they vacate the bedrooms and the kitchen and back up to the living room stove (usually a thick stand of conifers—like spruce—in a protected spot). And they stay right there. The deeper the snow, the closer they stick. Now after a time the pickings get scarce since adult deer require an average five pounds of good browse daily. If they can't get it they grow weak then die. So a deer's house is only as good as its winter range.

Under present conditions of over-population, the first severe winter could kill 20,000 deer in the Adirondacks, maybe more! Even a reasonably mild winter killed that little band at Joe Indian Pond.

Between these extremes lies a story that everybody should know. Parts of this story are nightmare fodder.

The white-tailed deer has grown to be the most valuable large wild animal the world has ever known. It is by far the nation's most abundant such animal with heaviest populations in Michigan, Wisconsin, Minnesota, New York, Pennsylvania, Maine and Texas. In New York, historians a century ago estimated the herd at less than 5,000 head, most all in the Adirondacks. Today it's around a half-million. In 1920 only 17 counties had enough deer to warrant open hunting seasons. Today there are 54.

A decade ago motorists were thrilled to see the new signs "WARNING—DEER CROSSING." Today, thousands of these signs make required highway reading, and not without cause. In 1942, a total of 762 deer were *reported* killed by cars on New York's highways, often with grave damage both to vehicle and occupants. Now the hazard has doubled. In fact it no longer is safe because of deer to drive at legal speed through many areas, especially at night.

The farmer often suffers heavy crop loss from the increase and spread of this wild herd. In many regions it actually no longer is practical to set out, for example, a new apple orchard or enter into the wide-scale production of cauliflower or Brussels sprouts. Few and far between is the western New York bean field which does not show the tracks of feeding deer. The only *wholly* effective means thus far devised to prevent crop damage without destroying the cause is the economically prohibitive 12-foot deer-proof fence.

Nor does the agricultural crop suffer alone. As has been pointed out, too many deer starve themselves by ruining the wild food crop on their natural range. Millions of acres through America no longer can support many deer, simply because the size of the herd was not reduced to the capacity of the range in time.

Rising farm crop damage and range damage and highway danger are by no means the only mighty problems posed by deer.

Each autumn, a vast U. S. army of more than 8,000,000 deer hunters now marches and counter-marches across the land. Its discipline mainly must be self-discipline. It marches mostly over private land and it concentrates along the roads and not too far from coffee. New Yorks' share of the army has mushroomed from 68,880 in 1932 to an anticipated 450,000 in 1955! On this State's charted 30,000 square miles of deer range that's 15 hunters per square mile even if they were evenly distributed—which unfortunately *they are not.*

The army continues to grow. In 1930 only 15 deer licenses were issued in New York to every 100 small game licenses. In 1954 about 85 deer licenses were issued per 100. In 1953 a total of 21,247 *new* hunters under 21 were instructed under New York's firearms safety training law.

In 1955, surveys show that deer hunters will produce about $56,000,000 worth of business in New York State alone (THE CONSERVATIONIST, Oct.-Nov., 1949). Much of this business will be given to rural communities, particularly in resort areas where it will represent the greatest lift to local economy between Labor Day and warm weather.

Full impact by the deer hunter on the total economy (including his own recreation) and on the negative state-of-mind of the landowner, mostly over whose property the army marches, is not measurable. But the problem of maintaining one and alleviating the other obviously is a nightmare. For it means the maintenance of the deer population at the precisely proper level in any given area.

This hugely complex job is possible only when much of the general public ceases to insist upon a sentimental appraisal of deer and looks upon *all* deer—males or females, young or old—as a crop which *must* be harvested like any other crop when, where and to the necessary extent.

And who alone can say when, where and how much? It's the little band of men whose life work is to probe into every angle of the deer—physical and economic.

New York happens to be blessed with such men. The productive data they have collected over the years of often pioneering research is almost beyond belief. It is to them that this little piece is dedicated—for they alone can ease the mighty nightmare of the deer. On them we must depend to tell correctly and productively the story of the big buck and the little buck and plot the course of what goes on between.

—CLAYT SEAGEARS

Boiling Pond and a Hermit

Fishing the Adirondacks in the 1930's

by Vincent Engels

WHEN fishing Boiling Pond, we stayed at the old logging dam on Cold River. Our host there was a pleasant man of the woods named Noah J. Rondeau, later to become widely known as the "hermit of the Adirondacks." Webster defines a hermit as "a person who retires from society and lives in solitude, especially from religious motives; recluse; anchorite." Mr. Rondeau was clearly a recluse, but although he was reading "The Western Christian Messenger" when I first came upon him, he was no more a hermit of the devotional type than Natty Bumppo or Henry David Thoreau. He lived in the woods because he loved nature and detested the towns, and particularly the presence in the towns of people who might set limits to his independence — mayors, sheriffs and the administrators of the fish and game laws. At four points in the woods marking the minimal limits of what he considered his domain he had carved on the logs and painted on the rocks this notice —

"Earl A. Vosburgh is an American Theif.
"Ray J. Burgomaster is an American Liar
"(Signed) N. J. Rondeau."

The same proclamation had been affixed to his cabin door.

Poor Messrs. Vosburgh and Burgomaster were game protectors. The first had been observed lifting a muskrat from one of Rondeau's traps. The fact that it was out of season and Mr. Vosburgh was acting in the line of duty cut no ice. The muskrat was not his, so he had to be a thief, and an American theif, at that. Mr. Burgomaster's offense was that he had hauled the deerslayer into court for killing without a license. How this made him a liar was not explained. Perhaps he had exaggerated the evidence, in Mr. Rondeau's opinion. And it was true he had gone far beyond his accustomed rounds in tracking down Mr. Rondeau, displaying a zeal that might better have been employed in collaring the market hunters that were known to operate out of Tupper Lake. Another time, should he trespass upon the hermitage, Mr. Rondeau would be ready for him. Daily he practiced with the bow and arrow, his target the outline of a warden's hat. The bow had been covered with narrow strips of beaver hide that had been wound on without tanning and then allowed to dry and shrink in place. It had a pull of about 75 pounds. The arrow heads had been hacked and filed by Rondeau himself from the blade of a crosscut saw.

We were invited to practice with him. I could not pull the bow more than about half way myself, although taller, heavier and years younger than Mr. Rondeau. Ed Wallace who was brawny as a fullback, could pull it full length, but his shots were very wild. Rondeau pulled it with ease sending arrow after arrow into the hat or close beside it. He said his sweetest dream was of creasing the top of the Burgomaster's hat with an arrow that would thereupon slam quivering into a tree.

He was called a hermit, but he enjoyed company. We had brought with us a new lightweight tent, complete with sewed in ground cloth and mosquito netting, and large enough for three men, intending to set it up on the grassy flat beside the dam. Protocol suggested that we first pay our respects to Mr. Rondeau, whose camp was on the high ground above and ask his permission. "But of course," he said, "go right ahead." However he had a better idea. There were two log cabins in the yard, all that remained of a once large logging camp. The cabin he now occupied had been the camp office. The other, that he called his winter cabin, had been the sleeping quarters of the camp boss. Years ago lumber barons had slept in it on their visits to the camp. We must move into this other cabin. He assured us it was weather tight, and we believed him. Its logs would have withstood cannon. One could not find such mammoth logs anywhere today.

We said politely, and we hoped not too hurriedly, that we could not think of it. We had hauled our tent a long way, eleven miles from the foot of the lake by way of Shattuck Clearing, and said that so of course we had to use it. What we really had in mind was what would happen to us when all was dark and the mosquitoes came out from the crevices in those log walls, and from beneath the broken stools and benches piled in the corners, and from behind the rags of clothing hanging from pegs on the walls. We had left our blood in abandoned camps and lean-tos before this when forced by a thunderstorm to take shelter and that was one reason we now packed a tent. Besides the weather was warm and still, and the tiny windows and one narrow door of the cabin did not promise much in the way of ventilation. Ventilation was the very thing they had been constructed to prevent. At 30° below zero, no matter how tightly you build your cabin, you have more ventilation than you can use.

The yard had been described to us as a pig pen, but that was far from the truth. It was more life a wolf's den, for it was hard and dry, and the bones and skulls of innumerable small animals and fishes lay scattered about, with bits of hide and hair around which gathered the hornets and blue bottle flies. At the side of the yard four or five tall poles had been brought together tepee fashion and chained at the top, and from the center of this arrangement hung several chains with hooks, one of which now held a large iron kettle. At sundown that evening, and for the several evenings of our

Cold River 1934 Left to right: Ed Wallace, N. J. Rondeau, J. A. Emery

stay, we were to have a trout chowder from that kettle seasoned with saffron like the bouillabaisse of the Marseilles fishing boats and just as good.

We said no, no thanks, we would use the tent, and thought that had settled it. Bop and Ed Wallace went off to try Boiling Pond. I stayed behind for my feet were in no shape to travel another mile that day. I was wearing a pair of new boots and my heels had been blistered and worn raw on the pine needle trails, slippery from weeks of warm dry weather. Mr. Rondeau said it was a shame I had come so far only to sit around the camp, why didn't I try the stillwater above the dam, there were some big squaretails under the spirea. He used to keep a boat there, but it had disappeared one day; he thought perhaps some hikers may have taken it upriver as a lark, and left it there. He would go look for it now but he had some work to do.

So why didn't I try my luck from the bank for an hour or two. I said it was too hot and bright and perhaps too late in the year to fish stillwater; the river looked dead to me. "Yes," he said, "it does. But you know sometimes the unexpected happens. Then we call it luck. Why don't you give your luck a run?"

His smile was so encouraging, his sympathy for me so unaffected, I felt ashamed of myself and said, "Of course, you're right. I'll put my rod together." He had me take off my boots and brought me a pair of moccasins, oiled and worn until they were the color of the ground, soft as butter on the feet. I crossed the dam as ordered and fished from the other bank, so that I could cast toward the spirea where the good fish lay. Soon Mr. Rondeau came by carrying an axe and a tarpaulin. I heard him chopping away on the hill behind me, and then he was back, walking slowly and bent over with an enormous load of balsam on his back. "Hard times," he called to me with a smile. I watched him labor up the steep bank toward the cabins, and knew that mosquitoes or no mosquitoes, we could not sleep in our lovely new tent this night.

I fished until the sky was red behind the hump of Seward Mountain. Several times a cloud of minnows went skittering over the water, and I was encouraged, thinking a trout must be beneath them. But then I realized it was my bucktail that frightened them, darting out from the other bank as I retrieved.

Mr. Rondeau was pulling carrots from his garden when I returned. He had half a bucket of small potatoes, too, no bigger than hickory nuts, from the vines that I saw competing with the weeds and brush. My luck was bad, he said, but at least I had given it a try. The red gods would think well of me for that. Now we would make a stew for we would all be mighty hungry men by dark.

Bop and Ed came back about then with eight or nine trout, including a fifteen incher that Rondeau seized and held up by the tail as he did an Indian dance around the fire. Their luck, he said, was great. He was looking more like a character from James Fenimore Cooper every minute, the fire glinting red on his pointed features, and casting his shadow enormously on the mist rising from the river.

In the morning he anointed my blisters with a salve made of bear fat and mashed wintergreen. He assured me it would heal. There were two doctors from New York City who come up to fish with him every spring, and he had given it to them too when they showed up with bruises and blisters. They said it would probably not work in New York but was just great up here. "Medicine must be like fishing, eh?" he said. "Some skill, a little faith and a lot of luck. Luck is the important thing. Of course I don't know about medicine, but there are no fixed rules that are any good in fishing. Like the French language there are only exceptions."

Ed went off to scout some small ponds that Mr. Rondeau had told us about, while Bop and I fished Boiling Pond. It looked as quiet and dead as the stillwater except for the leeches that investigated the raft, and the trout that swirled around the fly. We brought back nothing but big fish that day, 14 to 17 inches long, and Mr. Rondeau said our luck was unbelievable.

I used to hear from him in the winter, usually around New Year's Day. He would write that he had been 342 days in the woods since his last trip to town. He had seen a young bear crossing Cold River below the dam in October. There were lots of beech nuts this fall, which would be good for the deer. He had killed five partridge with the bow and arrow, knocking them off the tree one at a time. One would fall and the others would sit there, preferring not to risk a flight that might take them into greater danger. He was expecting the two doctors from New York around the end of May. Probably they would make him shave his beard again, but that was the only change they would allow him to make. Particularly they did not want any cleaning up around the camp — cleanup was what they were trying to get away from, two weeks in the year. "I will oblige them in this respect, as they are true Mohawks at heart, and my good friends." And he would close by inviting us to return to the old dam and catch the big fish under the spirea. Below his signature would be a sketch of the dam and the big trout poised in the stillwater.

A hunter, a free spirit, and, despite the fierce plans to terrify Mr. Burgomaster, a very gentle man.

Spring Sketchbook -- a "Blush"

Even the gray Dogwood stems become brighter.

Spring is a time of soft greens of new leaves yet when I was reviewing my field sketches I was fascinated by the abundance of warm colors in spring plants and animals.

Here is a sampling redrawn for this page.

The color of the Alder catkins nearly matches that of the spring peeper calling nearby.

The Violet has a warm colored center.

Maple flowers glow like tiny jewels.

The spring sun seems reflected in the gold of Dandelions.

I know spring has arrived when the Lilac buds behind the house start to swell. The green of these leaves and buds has a warm yellow tone.

The new Larch needles are a delicate pale green between the red buds.

Dainty Gaywings or Fringed Polygala brighten the woodlands in May and early June.

Wild Lily-of-the-valley, with its four-pointed white flowers and dark shiny heart-shaped leaves, lacks the warm colors.

The evergreen Trailing arbutus, a member of the heath family growing low in the woodlands, often starts flowering in March or early April.

Wild Ginger flowers are a very rich red and grow close to the woodland soil.

Courtesy TSCRC

The Stone Sentinels of New York's State Capitol

Photos by Don Canavan (unless otherwise noted)

by Constance J. Carroll

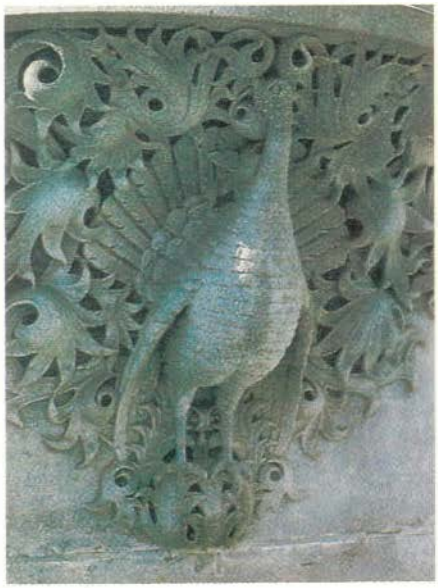
PERCHED on a hill above Albany's Capitol Park are two regal birds of prey. A bald eagle and a great horned owl act as sentinels at the New York State Capitol's grand staircase and *porte cochere*. In addition to the birds of prey, a bison, a pine marten, a raccoon and a wild turkey watchfully guard the capitol's eastern approach.

In the 1890's Isaac Perry, the architect who completed the capitol, hired John Francis Brines, a noted stone sculptor and carver from Westerly, Rhode Island, to design and oversee the stonecarving on the eastern approach to the capitol. Construction of the capitol began in 1867 and took 32 years to complete. Perry, the last of five architects involved in the building's design and construction, finished the capitol's granite exterior and monumental eastern approach.

Perry selected Brines as stonecarving foreman because he recognized the quality of the craftsman's work. Brines had worked in the granite quarries of Westerly as a child and as an adult he had developed great skills in stone carving. He had received national recognition when he was com-

Isaac Perry, architect of the New York State Capitol, (center) is flanked on his left by John Brines, foreman of the capitol's eastern approach. (facing page) One of the two bald eagles at the base of the capitol's grand staircase

The great horned owl
In selecting his subjects Brines wanted to leave a permanent record of some of the birds and animals common to New York.



The wild turkey and the pine marten were either non-existent or scarce in New York.

missioned to carve the Gettysburg Monument.

Brines chose to decorate the eastern approach's ceremonial entrance, sometimes referred to as the hunters' staircase, with mammals and birds of New York State. It is said that Brines preferred to use live models for his animal representations. For one such model he was known to have searched the Albany Pine Bush area looking for a wild turkey. He was unsuccessful and eventually had to use a domesticated bird for his model.

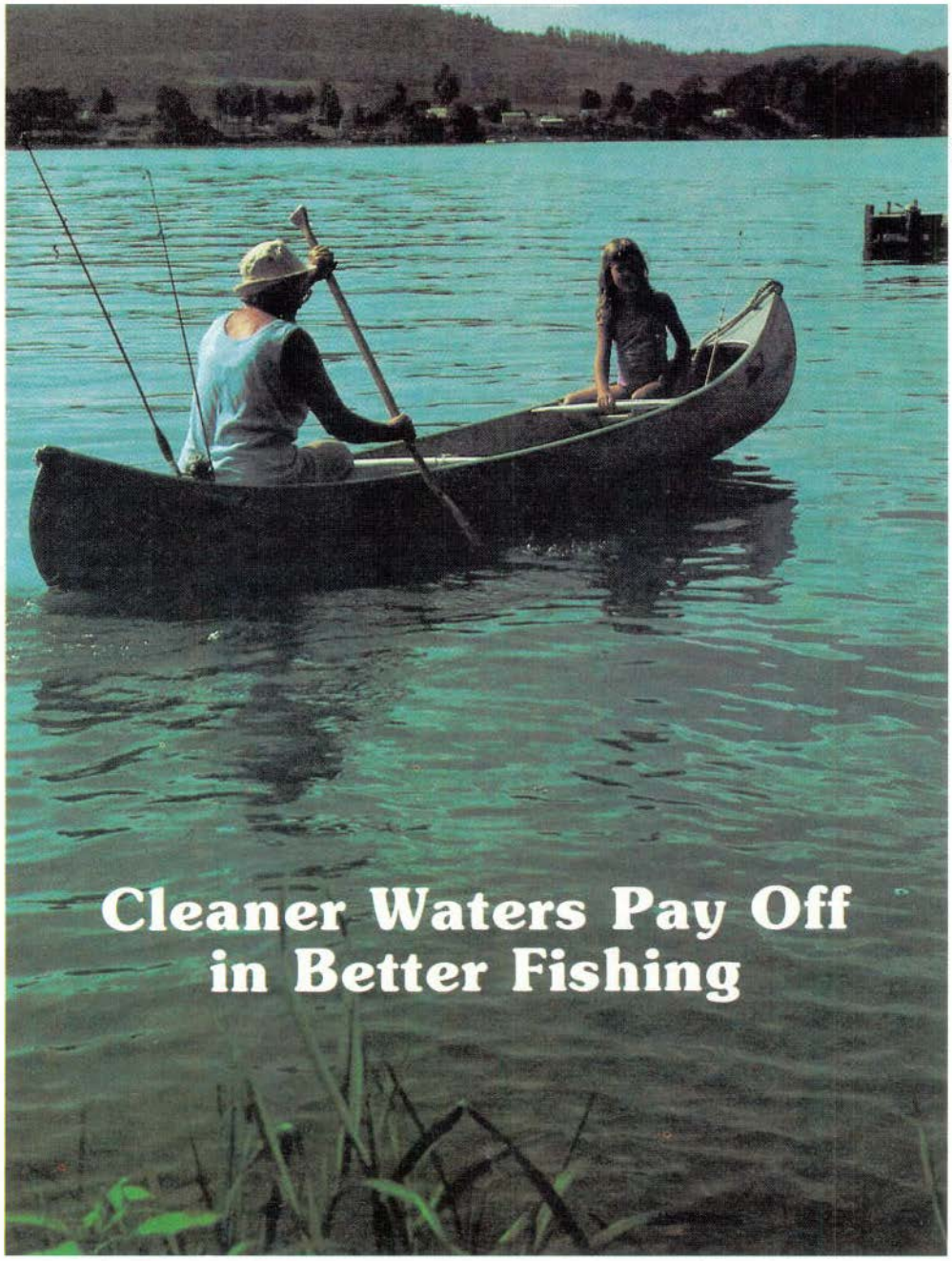
When one of Brines' assistants, William G. Van Zant, was asked why the stone sculptor chose the animals, he was supposed to have replied, "We sought to leave a permanent record of some of the animals and birds common to the earlier period of the country and this state."

The bison is a prime example. Its proud granite head symbolizes the herds that were once prevalent in New York State before the arrival of the colonists. Despite some vandalism and weathering, which in some ways has made these animal sculptures an "endangered species," these stone sentinels have survived while many of their natural counterparts have come very near extinction.

The other carved animals — the raccoon surrounded by oak leaves, the pine marten nestled in the pine boughs, the turkey and the birds of prey — are a tribute to the fine craftsmanship of the anonymous stonecarves who painstakingly carved every feather on the birds and every hair on the animal's pelts.

For more information about stonecarving in the New York State Capitol contact the Temporary State Commission on the Restoration of the Capitol at Alfred E. Smith Office Building, P.O. Box 7016, Albany, NY 12225 (518) 473-0341.

Constance J. Carroll is a research associate for the Temporary State Commission on the Restoration of the Capitol. She holds degrees from Middlebury College and SUNY (Albany).

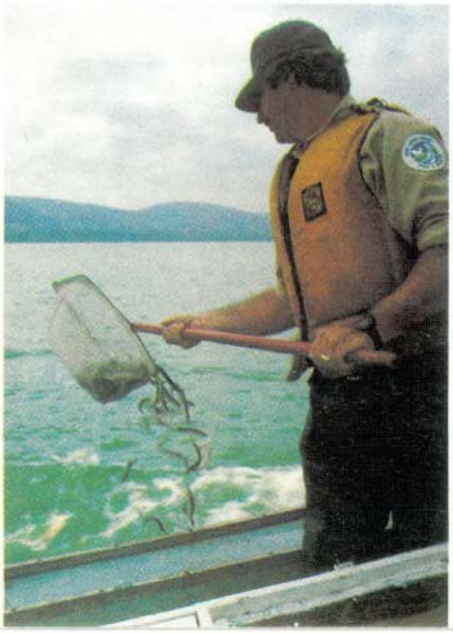


E. Stegemann

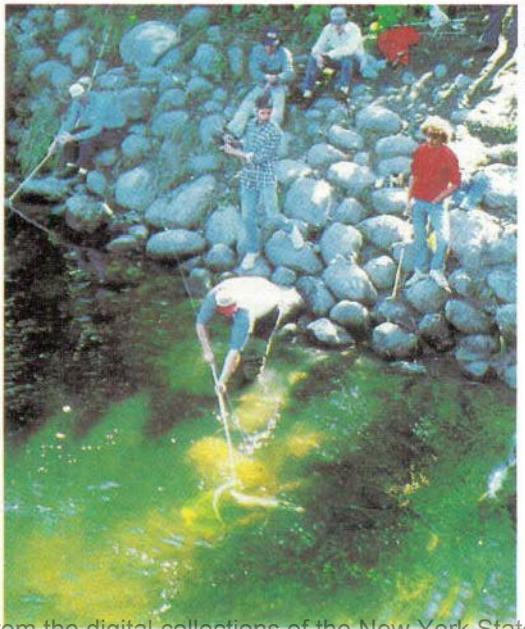
Cleaner Waters Pay Off in Better Fishing

Sophie Hopper introduces her granddaughter Suzanne to the art of fishing on Canadarago Lake.

DEC fisheries technician Jerry Frane stocks Canadarago Lake with six-inch hybrid tiger muskellunge.



Cleaner waters have enabled DEC to stock salmon and trout in many Great Lakes tributaries, providing excellent spring and fall fishing.



E. Stegemann

by Libby Smith and Eileen Stegemann

BEFORE the hillsides were cleared, when the air was pure, the lakes and streams of New York were crystalline waters, teeming with fish. The earliest explorers marveled at four-foot lake trout and gar pike more than five feet long, fish not only larger but more numerous than any modern day fisherman is likely to see. The rivers ran cool and clear through dark, silent woods. In the lakes, trout could easily be seen through 30 feet of transparent water.

By the second century after European settlement, New York's lakes and rivers were becoming turbid, silted and fouled. Cities and industries dumped their raw wastes into the waters, under the assumption that the streamflow would cleanse it all. With early industries lining their banks, even small streams suffered.

Although the state had done limited studies of pollution as early as 1911, no one really knew how degraded our waters were until 1939, when the (then) Conservation Department completed a biological survey of New York's lakes, rivers and streams. The 13-year survey, conducted to assess fish populations, also provided the first systematic documentation of water pollution in the state, citing case after case where streams were "practically open sewers." In many streams, fish were virtually wiped out, and the fish-eating great blue heron, osprey and otter left in search of cleaner waters.

Since the abundant waters were not able to wash away their wastes, New Yorkers made up their minds that wastewaters had to be treated, a solution that was going to cost money. Although government had occasionally funded pollution control from the 1920's on, major grants for cities, towns and villages to build wastewater treatment were not made until the 1960's and 1970's. Since then, more than $9 billion in federal, state and local money has been spent on building and upgrading municipal sewer systems and treatment plants in New York State; the state's contribution to date is $1.2 billion, much of it derived from environmental bonds.

Since 1973, the State Pollutant Discharge Elimination System (SPDES) permits have set specific limits on discharges

Photos by:
Libby Smith unless otherwise noted.

to surface and groundwater, requiring the best available treatment approaches for toxic pollutants. Private industries, too, have invested heavily to reduce waste discharges to meet state and federal water quality requirements. Today, more than 95 percent of New York State's industries meet their SPDES permit conditions.

Cleaner Water—Not Only For Fish

The SPDES program and grants for wastewater treatment facilities are key factors in a demonstrable improvement of waters throughout the state. For some of New York's waters, as soon as water quality improved, desirable species moved in and reestablished breeding populations. But in other cases, even after water quality improved, extensive fishery management, including stocking, was needed to restore a balanced aquatic ecosystem and abundant gamefish.

Better fishing is just one visible and enjoyable outcome of this improvement. Cleaner waters provide a myriad of other uses, including swimming, boating and drinking.

Of the many possible examples of successful restoration of both water quality and fisheries, the following stories have been selected to represent improved conditions in New York State's waters.

Lake Erie Tributaries

As recently as 30 years ago, Lake Erie's tributary streams were severely polluted. A century of industrial and sewage discharges filled the waters with foul smelling algae and industrial wastes, and left dead fish littering the stream banks. In Cattaraugus, Canadaway and Chautauqua creeks, water quality was so degraded that gamefish could no longer survive. Today, however, thousands of anglers fish these streams each year.

The recovery of Cattaraugus Creek, which once supported only a few desirable fish species, is perhaps the most dramatic among New York's Lake Erie tributaries. Wastes from two factories severely polluted a 15-mile stretch from the Village of Gowanda to Lake Erie. A 1928 biological survey report described the results:

> Above [the glue and tannery] plants—many freshwater forms abound. A few hundred yards further downstream, after the effluents have entered, all freshwater forms have disappeared, six inches of fibrous sludge cover[s] the bottom just above the power dam and a mat-like growth of fungus covers the stones in the riffles . . . . In the pools, sludge is found, blue-green algae abound and none but the more tolerant fish life is present. Not only is 12 miles of what might be a valuable bass stream destroyed, but the sludge deposits extend out into Lake Erie, causing a clogging of the fishing nets.

When one industry ceased operation and the other installed wastewater treatment, the water improved greatly. DEC now stocks the creek with chinook and coho salmon and steelhead trout, providing excellent fall and spring fishing. The Village of Gowanda even hosts a successful fishing derby each year.

On Canadaway and Chautauqua Creeks, as well, fishing has come alive with cleaner waters. Municipal sewage discharges and food processing wastes depleted oxygen levels, nearly wiping out fish life. New wastewater treatment facilities removed the organic wastes, dissolved oxygen levels rose and DEC began to stock trout and salmon. Today, both creeks are considered among the best fishing streams in the Lake Erie watershed, with large runs of coho and chinook salmon and steelhead trout drawing thousands of anglers each year. In addition, these now clean waters provide important spawning grounds for smallmouth bass.

Skaneateles Creek: From Fishless To Prize Trout Stream

Skaneateles Creek carries the outflow from Skaneateles Lake in Onondaga County to the Seneca River. Although the lake is one of only two in the state classified AA (clean enough to drink without treatment), as recently as 1970 the creek could not even meet standards for Class D, in which fish can survive hut not reproduce.

With the Erie Canal close by and the water power potential of a 475-foot drop over its 13 miles, Skaneateles Creek was a natural for early industry. Powered by water wheels, mills along the creek turned out woolen goods, nuts and bolts, chairs and bedsteads, machined goods, grain flours, shingles, paper, shoes and cheese.

For a hundred years, these factories poured organic and highly alkaline wastes directly into the creek. The 1928 biological survey called the creek "one of the severest examples of industrial pollution . . . [its] pools clogged with filthy, gas-evolving sludge, and varying in color from beet red to gray to black." Dissolved oxygen levels (page 14) were as low as 1.4 parts per million (ppm), well below the survival level for most aquatic life. From Willow Glen to Skaneateles Falls, the survey characterized the water as "extremely bad—no freshwater forms found." To complicate the problem, the City of Syracuse made heavy withdrawals of lake water for drinking, severely reducing the flow that might have diluted some of the wastes in the creek.

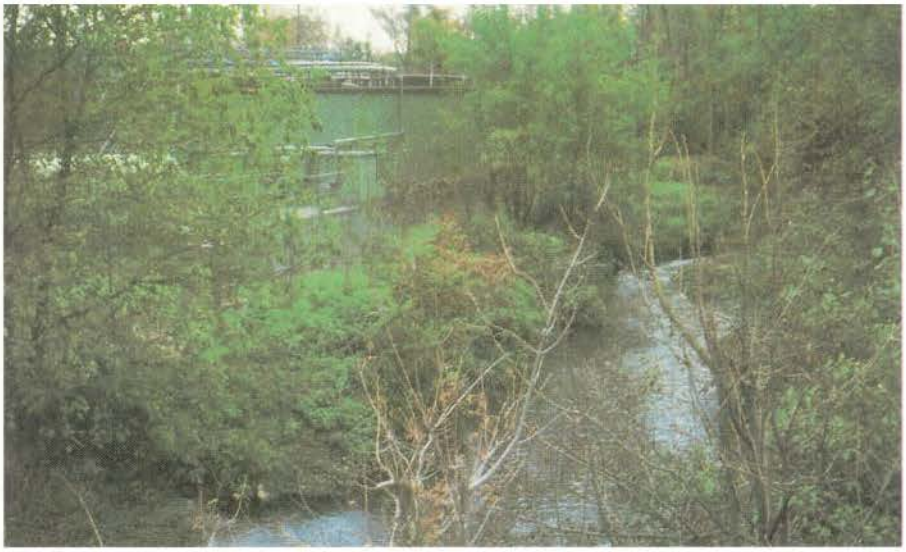
As bad as conditions were in 1928, they were even worse 20 years later. New industries added new wastes to the creek. Releases from a chemical company manufacturing industrial cleaning compounds occasionally raised alkalinity in the stream from a normal pH reading of around seven to 11 or higher, as corrosive as lye. Two massive fish kills during the 1950's showed how lethal the discharges were.

Environmental conservation officer Bill Hasenjager remembers a dramatic episode from 1969 when he sank a wire basket of minnows into the creek and started his stopwatch: "Sixty seconds—that is all it took," he recalls. "Those minnows curled up and died in 60 seconds, that water was so polluted. Nothing could live in it."

Shortly thereafter, the state and local departments of health and the (then) Conservation Department succeeded in forcing the chemical company to comply with water quality standards. Wastewater treatment reduced but did not eliminate the harmful discharges.

As the chemical pollutants receded, it became apparent that the pollution in Skaneateles Creek was really a complex of several problems. Municipal sewage and inadequately treated dairy wastes from a cheese factory were still depleting dissolved oxygen, so that lethal lows occurred nearly every day. It was no wonder the fish could not yet survive.

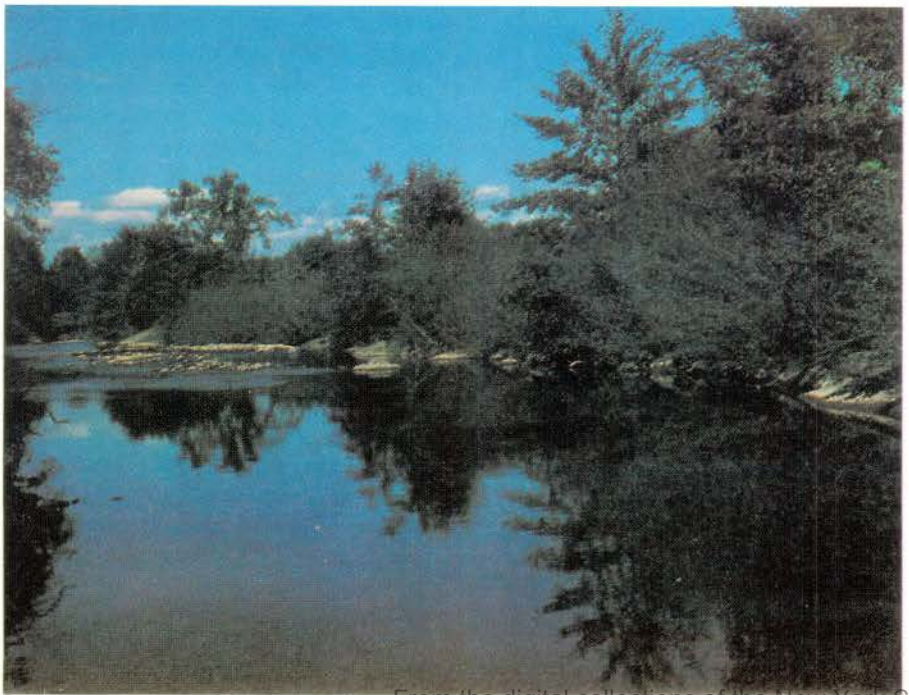
Local citizens and staff from state agencies sought to have the stream reclassified from D to C, a condition clean enough to allow fish to reproduce. With the new classification came stricter standards for discharges and requirements for improved



Blending into the woodlands on the edge of Skaneateles Creek, large tanks treat dairy wastes from a cheese processing plant at Skaneateles Junction.

Morton's woolen mill at Mottville, one of 140 19th century factories on Skaneateles Creek, is now only a pile of foundation stones, a reminder of past uses.

Willows planted by members of the Mohawk Valley Chapter of Trout Unlimited have grown big enough to shade a quiet stretch of the lower Sauquoit Creek.



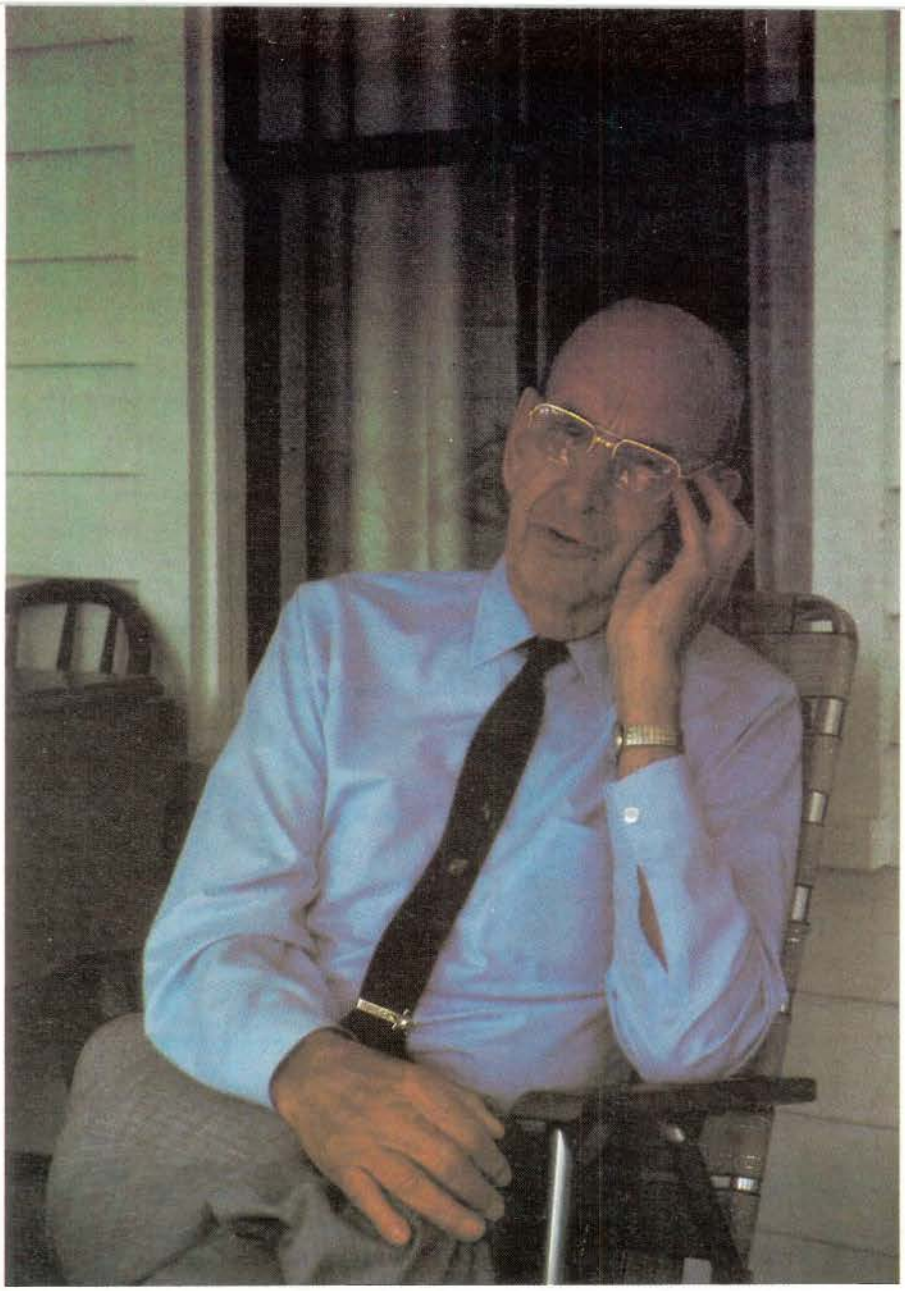
wastewater treatment. To meet the new standards, the cheese processor built new treatment tanks, and, with the help of state and federal construction grants, the Village of Skaneateles has installed a new wastewater plant that treats more than a half million gallons of sewage a day. About the same time, the chemical company moved from the area. The stream has recovered sufficiently for successful annual stocking of thousands of trout fingerlings.

Few people have as yet discovered that the Skaneateles Creek is now a prime trout stream—one of the best-kept secrets in central New York, according to local anglers. Not only has the water quality recovered, but its cool flow is assured because the City of Syracuse must keep at least six million gallons a day pouring from the lake into its outlet. Stocked for the past decade by the Onondaga County Hatchery at Carpenter's Brook, the creek abounds in trout—browns, rainbows and brookies. Mike Kelly, a journalist and ardent fisherman, uses spinners, dry flies and live bait to fish all 13 miles of the stream. He has caught stocked brown trout up to 21 inches and reports finding naturally spawned fingerlings in the creek's upper reaches. Ironically, some of today's most productive pools for fishing are near the very factories which once almost killed Skaneateles Creek.

The Sauquoit—Cleaned Up and Redesigned

Like the Skaneateles, Sauquoit Creek in Oneida County was heavily used by factories and cities for waste disposal. Unlike some heavily used streams, however, just cleaning up the Sauquoit's pollution was not enough to restore a high quality fishery. Habitat management played a key role in the recovery of angling in the Sauquoit.

Over its 17-mile course, the Sauquoit Creek drops 1,014 vertical feet, five and a half times the height of Niagara Falls. In the century after settlement, 140 mills and factories sprang up along the creek to exploit the water power. These industries used the Sauquoit's water for processing, then added their own wastes and sent the water downstream to the next user. Acid wastes from tanneries blended with pulp sludge from paper mills, dyes, bleach and cotton fibers from textile mills, mash and wash water from distill-



Charles A. "Lon" Seymour recalls more than 70 years of fishing the Sauquoit Creek near his home in Tompkins Crossing.

Sean Kelly fishes the lively waters of Skaneateles Creek, one of the most successful stream restoration projects in the state.

J.M. Kelly

eries. Milk and cheese processing plants drained their vats into the creek every night, coloring the water white for three or four miles. Sawmills added wood residues, foundries discharged acids from processing baths and paint factories contributed wastewaters in many colors. Raw and partially treated sewage from the homes and towns along the creek added the final insult.

Charles A. "Lon" Seymour has lived next to the Sauquoit at Tompkins Crossing in the Town of Paris since 1915. He remembers that when he began fishing in the 1920's, the stream yielded mostly undesirable fish, even though most of the early factories had gone out of business. Other wastes continued to flow into the creek as population and commerce spread south from Utica. Public concern about the creek's poor water quality coincided with a move in the 1960's and 1970's to toughen state water quality standards. To meet the stricter standards, municipalities and the remaining industries installed wastewater treatment systems.

The cleaner waters made local sportsmen like Lon Seymour think that with a little encouragement, gamefish could be brought back to the Sauquoit. In 1971, area residents formed the Sauquoit Fish and Game Club and set out to improve trout habitat in the creek. As the group's first project, Seymour and other members built 20 log pool diggers, which use the streamflow to wash away gravel and form the deep pools where trout spawn and where they can survive during low water periods. Ten years later, the Mohawk Valley Chapter of Trout Unlimited planted 60,000 willows and pines along sections of the lower Sauquoit to stabilize the banks and shade the water; they also built several stream deflectors to control erosion and enhance fish habitat.

Cleaner water and habitat improvement have enabled the Sauquoit to recover enough to support good populations of native brook and brown trout in the upper reaches. DEC successfully stocks brown trout in the seven miles above New York Mills, near Utica. Lon Seymour's fishing is better than ever.

Canadarago Lake—Pollution Control and Fishery Management

Described a century ago as one of the most beautiful of New York's lakes,

Canadarago abounded with smallmouth bass, herring, shad, panfish and even trout and salmon that made their way up from the Susquehanna and its tributaries. By the late 1800's the Village of Richfield Springs, just north of the lake, had developed into a full-fledged resort. Continuing the resort tradition into the 20th century, cottages, motels and trailer parks were built around the lake to take advantage of the fine swimming, boating and fishing.

But this thriving recreational development had its negative side. Too often, lakeside residences lacked septic systems, or had systems that were too small or poorly designed. The Village of Richfield Springs discharged raw or inadequately treated wastewaters into Ocquionis Creek, which empties into Canadarago Lake. Sophie Hopper, a long time lakeside resident and avid angler, recalls paddling up Ocquionis Creek and turning back because of the horrible condition of the stream. "There were floating solids and it smelled like an open sewer. You could see foam and wastes on the lake shore."

Nutrient overload from this massive input of organic wastes was aggravated by fertilizer runoff from surrounding farmlands. By the mid 1960's, algal blooms, stunted fish and frequent fishkills signalled to local citizens that once-productive Canadarago Lake was moving too fast along the natural course toward eutrophication. "We had to go down and rake up the dead fish every morning in front of the cottage so the stink didn't get too bad," recalls Sophie.

In response to this visible deterioration, cottage owners and residents formed the Canadarago Lake Improvement Association. When association members conducted dye tests on lakeside septic systems, large numbers of faulty systems leaked the tell-tale marker into the lake. The majority of owners repaired or upgraded their systems.

However, the most important event in the turnaround of Canadarago Lake occurred in 1973, when the Village of Richfield Springs opened a new wastewater treatment plant. The system was one of the first designed to remove a large percentage of phosphorus, the leading cause of Canadarago's eutrophication. Almost at once, water quality improved dramatically. Dense algal blooms disappeared and light penetration into the now clear water allowed submerged weedbeds to expand.

The clean, shallow lake with its newly abundant weedbeds was now excellent habitat for warmwater fish, prompting DEC to begin aggressive management of the fishery. Initially, the department stocked walleye and tiger muskellunge to feed on the overabundant and stunted panfish. Gradually the lake's fish population became more balanced, with fewer panfish and no slow-growing or stunted individuals. Now a naturally-reproducing walleye population has been established, and DEC no longer needs to stock that species—further testimony to the lake's improvement.

Today Canadarago Lake provides excellent fishing for a variety of species including walleye, tiger musky, largemouth bass, smallmouth bass and panfish. Yellow perch that previously averaged seven inches are 10 inches and very popular with anglers. Tiger muskies attain their legal size of 30 inches within three years and make prized trophies.

Sophie Hopper, who generally fishes for panfish, admits that every once in a while she brings a heavy pole and larger bait, just in case one of those 25-pound muskies decides to give her some fun. "They are not very friendly looking, but the steaks are good, baked with some parsley, onion and butter," she notes. Even when nothing is biting, she says she will sit out there in her canoe for hours enjoying the lake and anticipating that any minute, things are going to get interesting. It seems a restored lake is its own reward.

The Job Is Not Yet Done

Success stories like these are happening all over New York, handsome dividends from our investment in cleaner water and fishery management. Some of the benefits are measurable in economic terms—a million anglers and their families flock to the shores of New York's waters yearly. Each angler needs equipment, food and lodging, creating a total direct and indirect economic impact of more than $3 billion each year.

And the improvement continues. Nearly all of the surface waters presently classed as D will be upgraded at least to Class C (clean enough for fish reproduction) by 1988. Residues of DDT, a pesticide which contaminated entire food chains as recently as 1970, have declined markedly in New York freshwater fish, a result of a ban instituted in 1971.

But despite the successes, it is not realistic to expect that clean conditions will be maintained in the Skaneateles or the Sauquoit creeks, or any other water body which receives heavy use—unless the users remain conscious of the need for constant monitoring, sampling and testing, along with the best technological treatment available. And this means that anglers and swimmers, dischargers and communities that drink from lakes and streams must accept and support the continuing costs of meeting water quality standards.

We will also have to develop new approaches for water-related problems which cannot be solved by wastewater treatment alone. For instance, industrial chemicals from long-past discharges are still found in some of New York's lake and river sediments. Unlike DDT, these substances have environmental longevity counted in hundreds, rather than tens, of years. PCB, mirex, heavy metals and other persistent chemicals find their way into aquatic life and fish-eating predators, cycling continually through the ecosystem. As a result, the state Department of Health advises limiting consumption of fish from New York waters. Unless the contaminated sediments can be removed or treated—and no way presently exists to accomplish this—fish and other aquatic creatures will continue, for the foreseeable future, to be contaminated by these persistent and toxic materials.

But the first and most important steps have been taken. New York's communities and industries have made the investment and the long term commitment to keep water clean. There is great satisfaction in seeing fish not only surviving, but thriving where gross pollution reigned so recently. Our recovered waters are proof that it is possible to undo some of the damage we have caused, and that such efforts are noble and necessary. The progress we have made should inspire us to continue the work that must be done.

Libby Smith is a writer and editor in DEC's publications bureau where most of her work is with the division of water. **Eileen C. Stegemann** is an environmental education assistant associated with DEC's bureau of fisheries and office of public affairs. Both authors are graduates of the SUNY College of Environmental Science and Forestry.

Some things once gone, can never return again.

Of Vanishing Birds and Dogs — and Neckties

by Russell M. Cera

Illustrations by Terri Gragg

WHEN I was a small boy I learned to love hunting. I suspect, however, that my affinity with it came even before. I fantasized about it and lived in its omnipresence. As I grew older the sport was changing, and I had a recurring bad dream. I constantly harbored the fear that one day it would be no more; that one day I would go afield to hunt and I would search and search to try to find the birds that were no longer there.

A few days ago, I ultimately gave in to my German shorthair's incessantly nudging muzzle and pleading eyes and took him for a run. It was against my better judgment, for he is far too old. His back quarters are painfully gripped by arthritis, and his vision is weak. He is not unlike all of us, I guess, in that he refuses to recognize the end. The spirit of the hunt is in his heart and mind; his body has little to do with it.

For several days I had endured his barking and whimpering, waiting for the inclement weather to subside. As soon as it did, I grabbed his belled collar, and he was an ecstatic pup again. Seeing him that way reminded me of how special he was. He did things that were difficult to understand — like carrying to bed a tattered cloth we called his blanket. He would take it to me and I would have to cover him with it before he would go to sleep. He was also in the habit of gathering favorite toys as some dogs will, but his most unique idiosyncracy was with the belled collar. I had trained him with it and put it on him only when we hunted. I used it so that I would know where he was in heavy brush, but mostly, I confess, it was for me. Whenever I would hear the dancing bells stop jingling my pulse would quicken in anticipation of a point. For him, though, the belled collar meant hunting, and whenever I was home during the cooler seasons he would take it off its hook and sit, ears perked and amber eyes fixed on my every move with that collar draped from his jowls.

Because of his age, I was reluctant to put him in rough terrain. Remembering a spot not so distant from my home where I had actually trained him as a pup, I decided to give it a try. It was the place where, at five months of age, he had made his first point. Passing by there once I noted that the county had sold portions of the land to developers and that some clearing had been done, but I did not know to what extent. I had seen bulldozers and dump trucks stalking there, poised as if to do their evil, but I gave those ma-

chines only a desultory thought. It appeared there still remained acreage enough for birds to survive and for a dog to run. So, my quivering old friend and I piled into my station wagon to see about old times and perhaps to have some fun.

My heart sank as we arrived. I knew immediately that my judgment of how much land clearing had been done was wrong. I felt sorry for my dog. Although some game could remain in those isolated patches of cover still standing, he would be hard-pressed to find it. Ghastly gray foundations spanned acreage that, at one time, was an immense field of wispy grasses and milkweed interspersed with tangles of honeysuckle, patches of blackberry and Queen Anne's lace, colored by splashes of bittersweet and dashes of goldenrod. Then, bobwhite and ringnecks reigned, not workmen. Now, contractors rule, and game birds are the exception, trying to survive on meager fringes where small bands of cover give refuge to a stalwart few.

How difficult it is now to see this place as it used to be. Once, quail were counted by the covey. Pheasants would flush in bevies and the number of points the dog made in a day were too numerous to recall. But that was a dozen years ago. Where the raucous squawk of the cock pheasant once unsettled the composure, now the drone of engines shatters one's nerves. The din of man had arrived and I should have gone. I would have gone too, but my dog's whimpering got to me, and I let him run.

As I watched the old dog try feebly to find those familiar scents, my mind wandered back four decades to when I was a youth. Those memories, though fond and treasured, are rarely explored because they are of delights forever irretrievable. More sadly, those memories are of things, times and places my sons and their sons will never know.

I daydreamed of a huntsman — a gentleman huntsman in a necktie. He was my father, and he kindled in me the hunting fever I thought would never subside. He was the very spirit of the sport I love so much and so much loved to share with my dog.

In the 1940's, I was growing up in a rural area where deer, small game and birds — especially the birds — abounded. This, along with the fact that nearly every adult I knew hunted and fished, was partially responsible for my romance with the outdoors. Becoming of age to go afield myself in the 1950's only cast in stone what my father had molded in me by his example and his tales. And as I reminisced, I could in my mind's eye see that old, stained, corduroy hunting coat he wore. Nor can I ever forget the tie. My father wore a necktie to go hunting. He was a magnificent huntsman in a necktie. No one wears a necktie to go hunting, but he, I thought, was in vogue. It fit the image of a gentleman sportsman who dressed in deference to his sport.

My father is gone now. Those days and times are gone now. How I yearn for that old time. At home I still have some sepia photos of him and his hunting friends displaying abundant game. As a child I would look at those pictures over and over, fascinated by the proud, unsmiling gentlemen hunters who wore necktics when hunting the birds.

The place where my father hunted and taught me to hunt is changed now. I am changed now too, but that spirit of the hunt I derived from him is not gone. To this day my youngest sons greet my return from the field with all of the enthusiasm and questions I once had, and I am thankful, No one could cherish more the prizes I bring home — especially the gaudy cock pheasants. The boys remind me of myself greeting my father.

Somewhere within my daydreaming and the watching of that aged German shorthair, my melancholy gave way momentarily. I became glad for my dog, content to know he had lived the life he had during that particular time. And what times they were! Together we were out at every chance. I remember his first whimpering efforts to tag along. I recall early that first awkward point he made and can vividly see its contrast to the classic ones he had made in his prime.

As I watched that unstinting shorthair labor along, my thoughts drifted again to those years when we had first teamed up to hunt those game filled fields. As I stood and saw him check to see if I were near, I recalled how difficult the last few seasons were for both of us. Once, the landscape was a haven glorious for him and me. We would take our limit of native cock pheasants many times within a season, and have quail and woodcock to fill any void.

Now the soybean, corn and rye fields have vanished. Yellow flagged excavation markers and builder's stakes ominously portend the condominiums. Now homes and shopping malls are springing up so fast that the land is now transformed — unhuntable.

Some time ago a friend who owns a perky female of the same breed proposed we mate the two dogs. We gave the plan a try, but it was fruitless. I was hoping to get a pup which would carry on my dog's tradition. Now I am glad none was forthcoming. The heartbreak of watching my dog search those game-barren places has convinced me. My having an animal with the inbred desire to hunt and nowhere to do so would be abhorrent to me. So I will be content with what we have had in those innumerable hours afield, countless hunts and myriad birds.

As I looked for the dog I realized that these times and places are lost forever. And so as I strained against the extraneous noises of civilization to hear if the waltz of the bells had stopped, I made a decision I never dreamed I would make. It seemed so remote from my every pleasure, but necessary to preserve those perceptions we all must keep. Now I knew I did not want to hunt any more. At least not for birds and certainly not without that great dog. I will continue my deer hunting and take the archery seasons more seriously, but I know I do not want to walk another field without him.

From within my throat, a tear-barring lump arose as I called shakily: "Atta boy Spark, go get 'em old guy! Go get 'em!"

I knew full well my urging would serve only to make him try harder, though the last thing he needed was to exert more effort. But, what the hell, he was having fun, and had I not tended him as I always have, he may have thought I was disappointed in his work. I could not stand that, so I would make the tremulous call again, and again he would course and check the wind to find the birds that were no longer there.

Russell M. Cera works as a reading specialist in the Massapequa school system. A native of New Jersey, Mr. Cera attended Upsala College and has done graduate work at Hofstra University. He lives in West Islip. This is his first contribution to THE CONSERVATIONIST.

Letters

Frog Charmer

"With extended baton like the leader of a choral group, Pliny Jewell holds 17 big, fat, wild bullfrogs at attention," wrote Clayt Seagears, one of the founders of *The Conservationist*, when this photo first appeared in the magazine in February 1960. Seagears related that photo had languished for years in his family's file of curiosities and he reckoned it dated from about 1912. Seagears confessed he knew little about the man and his offbeat avocation of holding bullfrogs in thrall with a live mouse at the end of a stick.

In a flurry of letters that followed, readers provided a wealth of information. Pliny Jewell Jr. of Boston wrote that his great-grandfather "did many extraordinary things with animals, including the fact that not only did the frogs come when he rang a bell, but the grackles from the neighborhood flew down and lit at his feet to be fed. I believe the goldfish also came to the edge of the pond."

Newton C. Brainard of Hartford, Conn., recounted: "Pliny Jewell was a well-known citizen of Hartford. He was the son of Marshall Jewell who was chairman of the Republican National Committee, ambassador to Russia and was twice elected governor of Connecticut. Charles K. Oaks of Hartford related the story of a young girl who "sold [Pliny] live mice for ten cents apiece to feed those frogs. Back at that time, that was a pretty expensive diet for a bullfrog."

George H. Town of Utica cited a newspaper clipping from the *Utica Saturday Globe* of April 29, 1893: "When the little company is all assembled, Mr. Jewell takes a live mouse from the box in which he has provided about 25 of the little animals, fastens the mouse's tail to the split end of the stick and dangles [it] in the air. Instantly some frog leaps ... and proceeds leisurely to enjoy his meal. ... This operation is repeated until all are satisfied. The frogs leap for a dead mouse but will ... refuse to eat it...."

Not to be outdone, A.T. Shorey of Albany offered up his own frog fable: "... A Schroon Lake friend of mine, on the prowl for bass bait at the outlet of Crane Pond, saw a snake with a frog in its mouth. He grabbed the snake and extracted the frog. Then, to cheer up the snake for its lost meal, he pulled out his flask and poured a shot of red-eye down its throat. An hour later he felt something rubbing against his leg. He looked down and there was the snake holding up another frog..."

On the following pages are excerpts from Letters to the Editor over the years — some amusing, some informative, most entertaining.

R.W. Groneman, Editor

The Bell Tolls

While the problems of conservation in Georgia vary to some extent from those of New York, we find many that are similar. My husband bemoans the fact that your contributors are not in magazines of larger circulation and I sometimes wonder if I am infringing on some taxpayer for the State of New York by receiving so much entertainment and instruction for so small a cost. Both of us consider the matter of conservation one of national importance, for when the bell tolls for the geese in Canada, it tolls for those in Georgia also.

Mrs. Alfred R. Whitney,
February 1950 Macon, Georgia

Answer To Burdocks

In reading your article about burdocks, I remembered a farm which we owned in Chenango County. There was an old orchard overgrown with weeds, especially burdocks. My husband fenced it in and turned in an old sow, mother of our porkers, and she dug every burdock root out and cleaned the

Ready, Aim, Adjust Collar, Fire

From time to time I have found some old pictures. I ran across these in the Catskills and thought your readers would be interested. How do you like the length of the barrel in one shot? These boys were really formal; one hunter has a stiff collar, tie, etc. in addition to his powder horn.

Dr. Thomas W. Palmer
October 1950 Tuckahoe

orchard. Swine are partial to burdock roots.

Gertrude Sheley
February 1974 Brownville

Lost and Found

Read Your article on "Lost Hunters" and have a sure-fire way to get found. Walk downhill, never up. Find a brook and follow it downstream, not up. You are bound to find a camp or a farm soon. A gully will do in a pinch.

Dr. Karl A. Parshall
June 1950 Brooklyn

Thanks, Mac

You ask in your last issue, "How are we doing after four years?" Damn good Mac, damn good.

For my money, conservation education is the most important and valuable part of the work the department is doing. And an interesting magazine is probably one of the best ways there is to educate sportsmen in conservation.

As for the opposition you have received, I've met and talked to some of the people who cuss the department and consider *The Conservationist* a waste of time. You can't satisfy them no how, so why bother?

Pvt. Collin A. Niver
October 1950 Sajaporo, Japan

Medicinal Herbs

While fishing along the Susquehanna River above Oneonta, I had gathered a handful of dog fennel to send to my sister who had an attack of malaria. I met a farmhand who told me this tale:

"Down near Oneonta I found a veterinarian standing over a sick horse. The horse had a bad case of colic and the vet despaired of its life. I went to the river flats, dug some skunk cabbage root and, after securing some alcohol and a pounder, I macerated the root and returned to the stable. The vet poured some of the concoction down the horse's throat. In a few minutes the horse staggered to his feet, let out a series of gaseous burps and went over to his stall and started feeding. The horse recovered."

A fellow fisherman told me he keeps a piece of skunk cabbage root in his pantry and takes a dose when he has painter's colic.

Nature is the greatest laboratory on earth and I have not been under a doctor's care in 30 years, though approaching my 78th milestone.

Archie C. (Bobcat) Ranney
December 1949 Baker's Mills

Pigs Is Pigs, But —

I know that down south, hogs will kill and eat rattlesnakes. Now on my property near Port Jervis, we have rattlesnakes and black bears. Will the bears kill and eat rattlesnakes? After all, a hog and a bear is just about the same thing.

Robert E. Kleinstuber
December 1948 Suffern

The black bear eats both animal and vegetable food. Seton, the best authority we could find, sums up the bear's diet thusly: berries, fruits, nuts and vegetables with insects as a variant; also flesh, carrion and fish when he can get them. Nowhere can we find that the bear's diet includes rattlesnakes. New York bears will resent your grouping them with hogs. They assert their distinction by killing hogs from time to time.

— Editor

Summit Traffic Jam

There are so many nice places, so many pleasant mountain sum-

mits below four thousand feet, bald peaks and spectacular views; and yet, the maniac desire to climb "The 46" in as little time as possible has removed the very solitude and challenge from the climbs that we strove to enjoy.

The problem is a paradox; we complain of overcrowding while we constitute it.

Somehow we must, each one of us, develop a desire to spread out and climb for personal goals, to backpack to places that are less often used. It would be self-defeating if I attempted to list any such areas; people would follow it and reinstitute the same old problem. We must make our own lists.

H. W. Stockman
October 1972 Whitesboro

Tall Tale

Reading your article on "The Adirondack Lie" [by Barnett Fowler] reminded me of being in a Tug Hill lumber camp and a fellow by the name of Billie Word Coster (the bear hunter) telling about the 'coon tree he saw in the woods on a bear hunting trip. He said a 'coon would go up the tree into a hole, but there were so many 'coons in the tree he'd push one out of the bottom, and they would make the rounds. There was a seam the full length of the tree, and the tree was so full of 'coons that every time they breathed the seam would open and close.

Elwyn C. Recor
February 1949 Osceola

You win.

— Editor

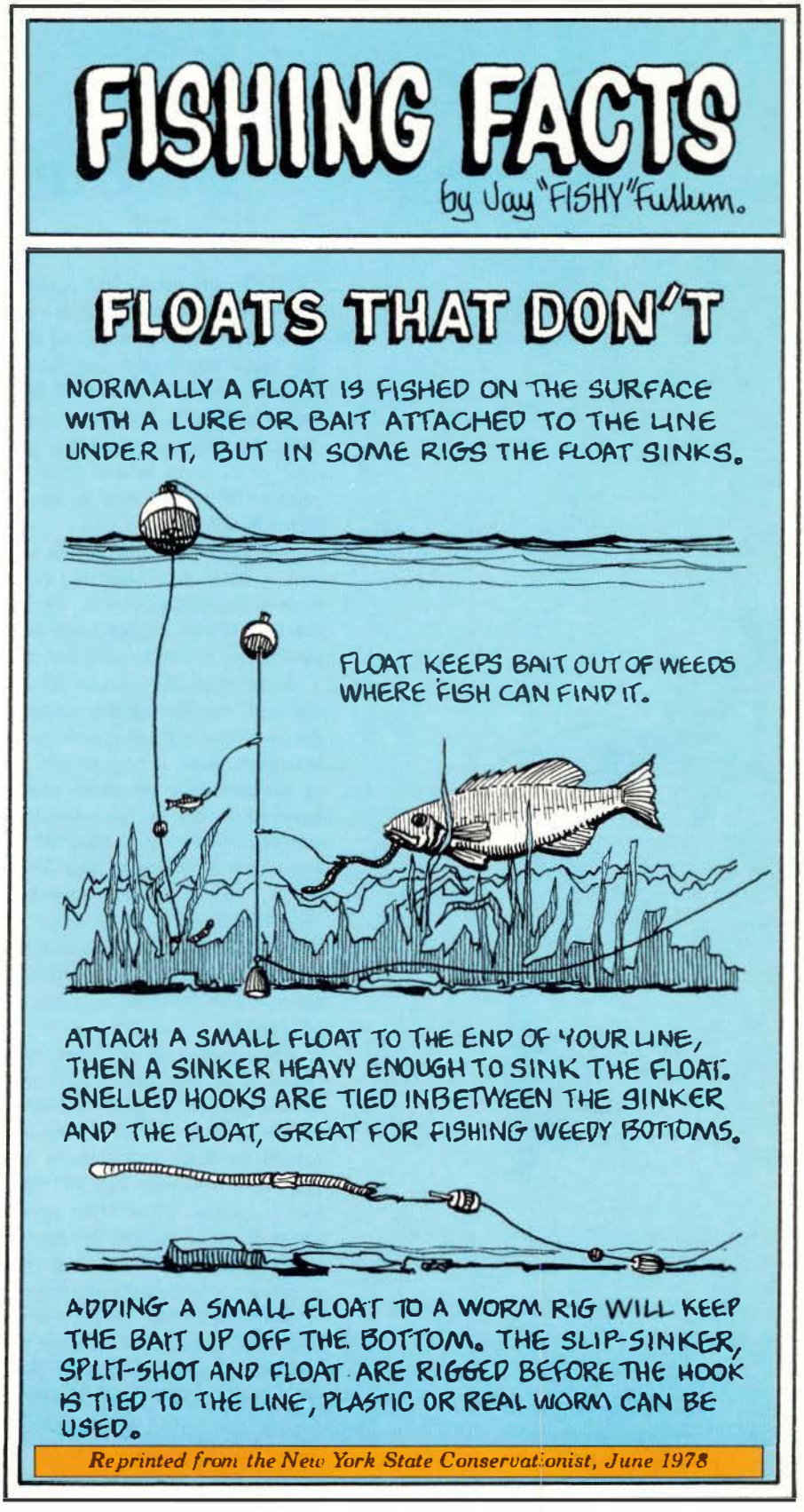
Thought for Today

You still smell.

Leonard S. Gross
October 1949 New York

This essay, here published in its entirety, accompanied one dollar for renewal of subscription.

—Editor

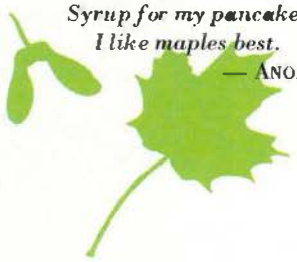


Write Here

We welcome letters from our readers. Please send them directly to The Conservationist, Editorial Office, 50 Wolf Road, Room 548, Albany, N.Y. 12233-5051. Because of space limitations, letters may be subjected to editing.

How To Do It Series:

Heat for my parlor;
Shade for summer rest;
Syrup for my pancakes —
I like maples best.
— ANONYMOUS



Sugaring Off

by Randolph E. Kerr

THAT unknown but prolific bard, Anonymous, expresses the sentiments of many of us in his doggerel about trees. The sugar maple (*Acer saccharum*), often referred to as the Queen of the Adirondack Hardwoods, is the State tree of New York and rightly so. It is the most abundant of all trees in our State and often reaches 80 to 100 feet in height under forest conditions.

Although found in nearly every state east of the Great Plains, the sugar maple is most important here in the Northeast, not only to the lumber trade but for the production of maple products as well.

Many a thrifty farmer has turned a dollar or two during the spring sugaring season providing extra cash to pay off a mortgage, send a boy or girl to school or perhaps help purchase some needed equipment. To do so requires first a well-cared for "bush" plus the necessary equipment including a sugar house, evaporator, gathering tubs, buckets, and — very important — unlimited ambition. Even after his initial investment, the operator may be faced with deep snow or a short season resulting in a less than normal yield.

The amount of sap that can be obtained from the tree is directly related to the amount of live crown, with approximately 40 to 50 gallons of sap required to make 1 gallon of syrup (43 gallons of 2 percent sap will yield 1 gallon of syrup). Most trees will produce about 10 or 12 gallons of sap during the season which, when boiled down, will produce about 1 quart of syrup.

Maple trees will produce flows of sap any time from late fall after they have lost their leaves until well into spring each time a period of freezing is followed by a period of thawing. Establishing a date when sugar maples should be tapped is not easy. However, most trees will require tapping by mid-March or even earlier in the southern counties of the State.

Boring the tap hole is a simple matter. Using a 7/16- or ½-inch wood bit, drill a hole in the trunk 3 inches deep 2 or 3 feet above the ground. Old timers preferred to place the tap hole on the south side of the tree yet data recently obtained has shown that this has little effect on yield. Holes drilled during successive years must be placed 6 to 8 inches from the previous tap hole in a diagonal direction.

Make sure the tap hole is free from chips, then drive the sap spout or "spile" into the hole thereby providing a means of conveying the sap to the bucket. Caution should be used in driving the spout not to split the bark which will result in leakage. The object is to have the tapered spout fit snugly yet go easy with the hammer. Hang the bucket (or other container), place a cover to keep out the rain which often occurs during the sugar season, and you're in business.

Once a volume of sap has been accumulated, it is gathered for boiling to remove excess water through evaporation until the proper consistency is reached. For the "do-it-yourselfer" this can be accomplished on the kitchen stove. However, it is preferable to build a small arch to permit outdoor boiling if possible. (Boiling sap in the kitchen can have disastrous results on the wallpaper!)

The best and simplest way to determine where sap has been evaporated to standard density syrup is by its boiling point. Using any thermometer with a range of temperature up to 225°F, first establish the boiling point of water on the day and at the place where the syrup is being made. The boiling temperature of standard density syrup is then found by adding 7°F to the temperature of boiling water as indicated above.

Cleanliness is a must and the sooner the sap is evaporated after it has been obtained from the tree and the faster the evaporation process, the lighter in color and the higher the quality of the syrup. Filtration is necessary to free the syrup of suspended matter (sugar sand). Several layers of cheesecloth, outing flannel etc. will do the job as will modern wool felt filters, with filtration always taking place while the syrup is hot.

Come spring — why not use a little Yankee ingenuity and try your hand at producing, even on a small scale, one of the few crops that is truly American.