

The New York State

Conservationist

State of New York Conservation Department

October-November 1956



Canada Geese



Bog River—Adirondacks

Courtesy, Bigelow Company

Today's Resources—

Tomorrow's Heritage

1. To encourage the effort to protect and enlarge the State Forest Preserve in the Adirondacks and Catskills;
2. To increase the public campsite facilities of the type which are so popular in the Forest Preserve;
3. To round out the State Park system and provide in addition many more roadside picnic areas;
4. To increase steadily the State timber production forest outside the Adirondack and Catskill Parks;
5. To put proper emphasis on a "little river" watershed program which has flood control as its primary objective, but which has many other benefits as well;
6. To bring about a spirit of co-operation between farmer and sportsman;
7. To step up our water and air pollution abatement program, so vital to health and enjoyment, and to improve our beaches and lakes and the opportunities they afford to our citizens;
8. To encourage tree farms and forest management on private lands throughout the State;
9. To co-operate with conservation and sportsmen's organizations which have for so many years contributed so much to make our State a better place in which to live;
10. To improve steadily the efficiency and effectiveness of the Conservation Department in carrying out this job.

Speaking at Syracuse on September 4 this year, during the course of the State Fair, Governor Harriman restated his conviction that the kind of life we shall have tomorrow depends largely upon the manner in which we conserve and manage our natural resources today.

Referring to conservation, this year's theme for the Fair, the Governor, in the ten-point program set forth above, laid out specific objectives toward accomplishing the job. We believe these objectives are sound; that they merit the support of all the citizens of the State; that they will inspire the best efforts of conservationists and of the Conservation Department.

Best of all, perhaps, these are not visionary, far-off goals but achievements upon which real progress has already been made. Within the last two years approximately 40,000 acres have been added to the Forest Preserve. Work is in progress to provide, by 1965, some 7,000 individual camping sites, doubling the present facilities of our public campsites. The Division of Parks is presently planning one, possibly two, new State parks in the Finger Lakes region, two more in the Taconic region in eastern New York, enlargement of facilities along the Niagara Frontier and major new developments on the St. Lawrence. For State forests, the Department is scheduling acquisition of new lands at the rate of 6,000 acres per year for the next 10 years.

On the small watershed program, the Department is presently co-operating actively on four pilot watersheds and working with planners for four additional programs. Under the Forest Practice Act, assistance is already being provided to more than 5,000 landowner co-operators on nearly one and a half million acres—to mention just a few of the accomplishments.

It's a good beginning. Let's get on with the job.—A. W. BROMLEY.

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OCTOBER-NOVEMBER, 1956



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Conservation in the Empire State

by Sharon J. Mauhs,

Commissioner of Conservation of the State of New York

NO other phase of State government presents a more interesting or a more important challenge than does the conservation of our great natural resources. And no other department in State government, with the possible exception of the Department of Education, has such close contact with such great numbers of people, as does the Conservation Department of the State of New York.

For three quarters of a century New York has pioneered and will continue to pioneer, in the preservation of its forests, its wildlife, its pure waters, its clean air and the scenic splendors of its landscapes and its woodland flowers. Back in 1885, when the West was still little more than a frontier, farsighted men conceived and brought into being, one of the nation's greatest treasures, the New York State Forest Preserve in the Adirondack and Catskill mountains. In so doing they set a pattern for watershed, forest and wildlife protection, which has never been equalled, and they recognized the need of maintaining this pattern and these wilderness regions, to preserve the health and the strength of the State and of the nation, and for the benefit of generations to come. The wisdom of these men who set this pattern becomes clear and apparent, when one reflects upon the decisive voter reaction each time the sanctity of the Forest Preserve is threatened.

One must ponder also when one realizes, that the Conservation Department of the State of New York is responsible for a State-owned area as large as the entire State of Connecticut; that we have the enormous job of seeing to it that our forested areas of fourteen and one-half million acres—no less than four times the combined size of the great Yellowstone and Yosemite National parks—are adequately protected; that our forest tree nurseries and our widely dispersed State forests are among the largest in the nation.

The great strides we are making in the reforestation of submarginal lands, in the techniques of wildlife management and control, in forest management and soil conservation, are recognized throughout the land. Our great system of State parks is not surpassed anywhere. I could give you a long list of the accomplishments in which we in New York have excelled, but to do so

might encourage complacency in the minds of some people, and if I do nothing else as Commissioner of Conservation, I want to prevent the encouragement of complacency on the part of our people in the matter of the importance of the work of this Department. I want to see to it that our people shall always be vigilant and always alert in the struggle to protect these great treasures which belong only to them.

Today we stand on the frontier of a great opportunity to vastly improve our forests, our waters, our soil and our wildlife, throughout the State. The opportunities at hand in all these fields are almost numberless. Take the State Forest Preserve, for example. In these great areas of the Adirondacks and the Catskills, the State land ownership pattern is still of a spotty nature, making the administration of our two and one-half million acres of Forest Preserve very difficult. We want to consolidate these holdings, and all of you know that in these efforts we have the full support of Governor Harriman, with a program of land acquisition which will give us the maximum of value in watershed protection, in the enhancement of our wilderness areas and in the recreational needs of our people. With the program the Governor and I have in mind, the day will be fast approaching, when these great lands of ours, in the control of the people under their Constitution, and administered and protected by this Department, will be unsurpassed anywhere in the world.

Let me urge everyone to read the ten points which Governor Harriman set forth on the occasion of the Annual Governor's Dinner at the New York State Fair this year, which appear on page one of this issue. To my mind, they just about represent the "Ten Commandments" for good conservation in the Empire State.

We therefore call not only for the protection but also for the enlargement of our watershed and wilderness forests in the Adirondacks and Catskills. We call at the same time for an increase in the acreage of our State-owned timber production forests, outside the Adirondack and Catskill parks. We now have more than a half-million acres under intensive management. We should double this acreage as soon as possible, for there are few ventures our State can undertake which will have a more far-

reaching and healthy effect on the economy of our State. The encouragement of tree farms and forest management on our privately-owned woodlands, and the development of flood-control measures on our small watersheds, are equally important in the over-all conservation plan.

Of all the opportunities which present themselves to us, perhaps the one which has had the least attention, is the rehabilitation of our lakes and our streams and our rivers. No state is more wealthy than is New York with its myriad of lakes and ponds, and with its seventy thousand miles of streams, and yet we have allowed these watersheds to become denuded and burned and eroded, to say nothing of their pollution. In some instances the results have been catastrophic, with floods destroying lands and property and eating away rich topsoil and destroying habitations and crops and the abundant life which is possible only along a clean watercourse and a clean shore.

We know the answers to these problems. What we need is the strong and the continued determination of the government of this State to bring these answers into being. It is of great assurance to have a directive from Governor Harriman to breathe new life into such a program.

The abundance of wildlife is of especial interest to all of us. We want to see a well-balanced wildlife population in our forests and fields and waters. The staff and the technicians in the Conservation Department are working tirelessly with Mother Nature to accomplish this most desirable end. They say, and I am sure they are correct, that the answer to abundant and balanced wildlife is not entirely a program of stocking, but also the improvement of habitat. Not enough has been done in this respect.

And one of these answers directs our attention to another problem, and on this one we stand on another frontier, and that is the matter of farmer-sportsmen relations—the interdependency of each upon the other, and the vast good which will come with a happy solution of this problem. With the help of our landowners, our sportsmen, our conservation interests and our Department, I am sure that this problem will be solved.

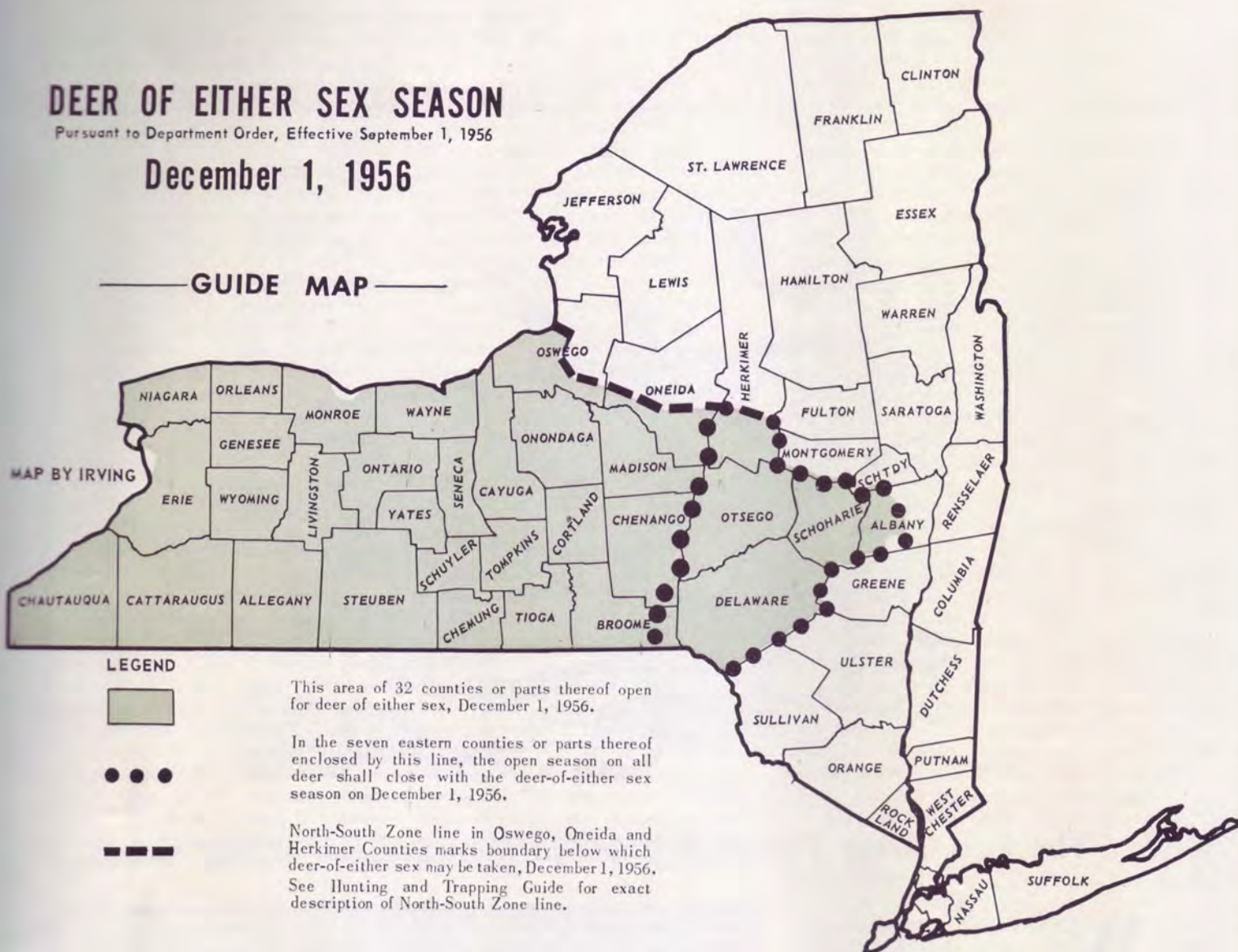
We must continually set ourselves to
(Continued on page 39, column 3)

DEER OF EITHER SEX SEASON

Pursuant to Department Order, Effective September 1, 1956

December 1, 1956

GUIDE MAP



ON August 24 this year, the Conservation Department declared a one-day, deer-of-either-sex season to be held on the first day of December, 1956 in all or parts of 32 counties of the State. This is the largest, uninterrupted tract ever opened to the taking of antlerless deer in New York State. As will be noted from the accompanying map, the season will be in effect all across the State's Southern Zone from the shores of Lake Erie on the west nearly to the Hudson River on the east, and from the Pennsylvania line on the south to Lake Ontario on the north.

All across this wide area, farmers who have and are suffering severe crop damage by deer, foresters and woodland owners who are unable, because of over-browsing by deer to secure forest tree reproduction and the great majority of sportsmen, alert to the need to properly manage the deer herd, will stoutly support this action by the Department. Recent articles in *THE CONSERVATIONIST* ("Too Many Deer," June-July, 1956, and "Winter Kill of Deer 1955-56," August-September, 1956) have clearly defined the problem. It should be added here, though, that this year's deer-of-either-sex season was declared only after thoroughly reviewing the problem with the Farm Bureau, the State Forest Practice Board, the Conservation Council's Big Game Committee and with individual county sportsmen's federations.

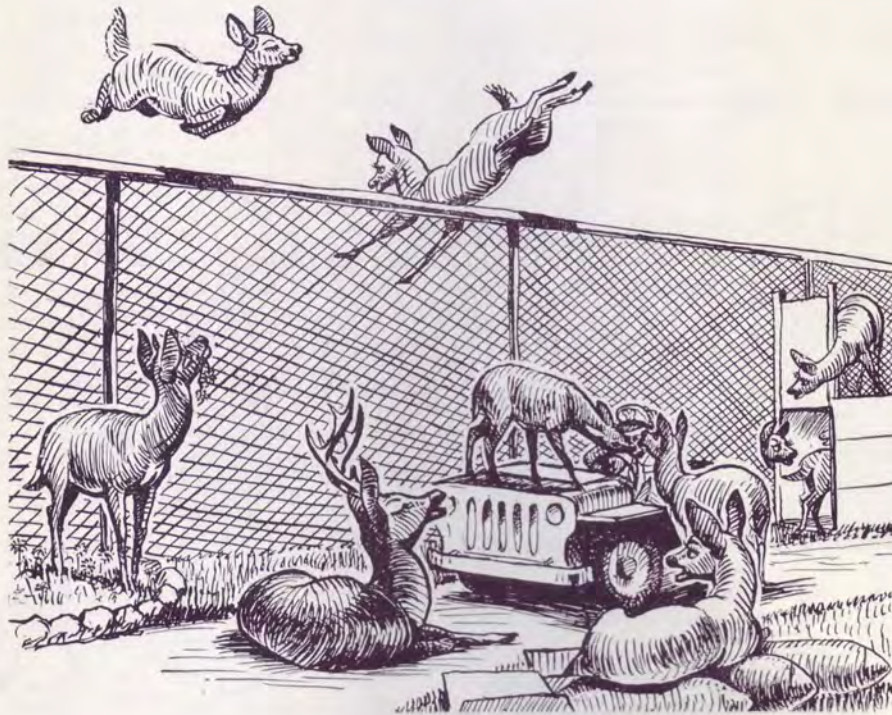
Thus, the final recommendations of the Department's game man-

agement and research staff represented the best interests, not only of the deer herd, but also those of agriculture, forestry and of the sportsmen of the State. And, it should be stressed, the interest of safety. The uniform opening of a hunting season on as widespread a basis as possible is known to ease hunter-pressure build-ups and to prevent season shifts by hunters that occur when smaller groups of counties are opened.

While Department game men are confident that much good will be accomplished as a result of this year's comprehensive deer-of-either-sex season, they recognize that the over-all deer problem in the State has not yet been satisfactorily solved. There are still weak spots in the pattern. In the Catskills, for instance, the Conservation Law specifically prohibits Department action to declare a deer-of-either-sex season to halt agricultural damage and range deterioration with its aftermath of undernourished and starved deer. In the Adirondacks there's still the problem of too many deer and too little available Winter food; and in Suffolk, Nassau and Westchester counties, to name the most difficult in this category, there's the problem of controlling deer in the midst of a dense population of humans.

No, this year's deer season will not solve all the problems, but it's the best effort thus far.

Live-Trapping White-Tail Deer



The U. S. Army Proves a Point in Management of Big Game

WHENEVER and wherever people get together to talk about the deer problem—and in New York that's frequently, and all over the State—someone always comes up with the suggestion: "Why not live-trap the deer and move them out?"

This question is, of course, directed to the Conservation Department and it's most frequently voiced in such densely populated areas as Long Island and Westchester County where hunting, as a really effective measure for herd control, is most difficult to apply.

The live-trapping "solution" however, overlooks several very basic handicaps. It assumes, in the first instance, that deer can readily be live-trapped. True, deer can be trapped and the Department's game technicians have successfully done so on many occasions for research and management purposes. These, though, have been relatively small scale operations but, even so, have required rather elaborate preparations over a period of time.

But the know-how is there, so let's say that deer can successfully be live-

trapped? Next, what's to be done with the deer once they're trapped? This is one for which the proponents have an easy answer—just move them out somewhere else in the State and release them. So right off we hit the second hurdle—finding that "somewhere." The fact is there is no place in New York State that's presently underpopulated with deer—in terms either of the ability of the range to support them or the patience of the agriculturists and landowners to tolerate them. In short, as E. L. Cheatum clearly pointed out in his recent *CONSERVATIONIST* article (June-July, 1956), we have too many deer.

Thus far, in this hypothetical live-trapping operation, we've been pointing out it may be argued, theoretical disadvantages. Supposing, to proceed with the case, we assume these might be overcome; that the problem deer could easily be trapped and then moved to some magically reserved, ideal range acceptable to the landowners, or not already overbrowsed by deer in residence. In such

event, what evidence do we have that this is not, after all, a practical solution?

A few years ago the live-trapping proponents would, at this point in the debate, have had us cornered. We could only have quoted the experience of game men elsewhere in the country, bolstering our arguments with logic. Now, however, thanks to the U. S. Army, we can nail down the case with concrete facts and figures.

Let's see how the Army gets into this picture. The scene of their entry is out in the Finger Lakes country of central New York near the Village of Romulus. Here, in 1942, the Army acquired some 10,000 acres of land and established thereon the Seneca Ordnance Depot. Preparatory to storing munitions and various high-explosives at the Depot, the Army surrounded the place with a seven foot fence—high enough, augmented by patrol, to keep people out of the area of danger but not nearly high enough to keep deer out.

It's probable that a few deer, resident to the area, were fenced in originally.

These, however, were soon joined by deer from the surrounding countryside; deer that quickly recognized the tract as a sanctuary during the hunting seasons on the outside, and hopped nimbly over the fence—in numbers! By 1953 the area began to bulge with deer, interfering with normal operations at the Depot. The population inside the fence was estimated at more than 1,000 deer and the Army turned to the Conservation Department for advice.

Hunting, even of a strictly controlled nature, was out of the question. One misplaced shot, (although a quick solution to their deer problem), would have wiped the Seneca Ordnance Depot, a large area of surrounding country and the Village of Romulus completely off the map. Driving deer through pre-cut gaps in the fence also was discarded. Department game men and Depot personnel agreed that surrounding landowners, already suffering crop damage by deer, would view with some displeasure, the exodus of more than 1,000 additional deer onto their lands.

Finally, it was agreed that here was one situation where live-trapping and transfer of deer might be the most practical solution to the problem. If live-trapping had any merit, this, surely, would be the ideal testing ground. There were lots of deer and, since they had devoured all the preferred browse, most of the medium quality browse and were working on species that only very hungry deer will touch, they should readily enter properly baited

traps. Moreover, the Army had materials for trap construction, men to build them and most important, men to assign to tend the traps, remove the deer and truck them away for release.

So, the project got under way. Conservation Department technicians provided the Army with a pattern of their latest, most effective trap, showed them the "kinks" in construction and trigger assembly, where and how to set the traps and how to handle the deer that were captured.

Thus oriented, the Army during the Winter of 1954-1955 began actual live-trapping operations. Four men were assigned to the job and using 12 traps during 66 days of actual trapping, they captured and moved out a total of 69 deer. Continuing the operation last Winter and favored by better snow coverage that made the trap bait more enticing, they did much better. With four men operating 12 traps a total of 75 trapping days, they captured and transferred 249 deer. The two-year tally is, therefore, 318 deer. 152 of these were males; 166 were females.

Now, this isn't bad as deer trapping operations go, so let's see what sort of a dent the Army had made in its unruly Depot herd. They started out prior to their first season of trapping with an estimated population of approximately 1,000 deer. That first Winter they removed 69. The next Spring (1955) the deer left within the enclosure proudly presented the Army with about 400 fawns. Since herd loss, other than from trapping,

was low, the Army now had somewhere around 1,300 to 1,400 deer—plus x number of newcomers that had jumped over the fence during the interim. Last Winter, as noted above, trapping went better and 249 more deer were carted away to forage elsewhere. Once again though, the survivors, more closely attuned to Nature than to Army dictum, came through with another fawn crop of more than 400 new mouths to feed. At this stage of the game, Maj. Frederick A. Van Doorn, around whose neck the Army has hung this albatross of responsibility to control the herd in the Seneca Depot, figures they have approximately 1,700 deer and the end—short of actual starvation—is not yet in sight!

There's a postscript to this story too—and that's cost. Supposing the Conservation Department had undertaken this job under similar circumstances—how expensive would it have been? The Army kept careful records of its trapping operation and these can be applied, but with one big difference. Unlike the Army, we have no personnel to assign—at Army pay. The Department would have had to hire men at the going rate of \$12 per day to handle the job. The traps cost approximately \$80 each to build and have a use-expectancy of five years. Trucking costs run to about 16 cents per mile and there's additional labor costs to figure there, too. These costs break down, per deer trapped and transferred about as follows:

| | |
|---------------------------------|---------|
| Cost of traps— | |
| \$80 per trap/5 years/13 deer | |
| per trap year | \$1.23 |
| Labor in Trapping— | |
| 1.8 man-days at \$12 per day... | 21.60 |
| Trucking expense— | |
| 200 miles at 16¢ per mile/10 | |
| deer per load | 3.20 |
| Transportation Labor— | |
| 2 man-days at \$12 per day/10 | |
| deer per load | 2.40 |
| Bait cost— | |
| per deer trapped | .50 |
| Cost Per Deer Trapped and | |
| Transferred | \$28.93 |

Thus, had the Department undertaken this job, the bill to move 318 deer would have been \$9,199.74. And for this expenditure we would have, at the end of the two-year campaign, approximately 700 more deer than we started with.

These are handy facts to have on tap the next time someone asks: "Why not live-trap the deer and move them out?"



Jack Tanck, Conservation Department, adjusts trigger assembly on live trap

—A. W. BROMLEY, C. W. SEVERINGHAUS



Debris in a stream impedes the flow of the water and catches more trash. If not removed, water backs up and then floods nearby farmland causing erosion, bank gouging and siltation.

Valuable farmland in the Cherry Plain area lost for many years to come. Will take much time and money to put the land back into shape again for profitable farming.



An improved stretch of the Little Hoosick showing stumps of potential stream blockers which were removed to keep them from falling into and eventually blocking the stream. The less debris, the faster the flow and the less the erosion damage.

Trees removed from the stream are cut up for lumber and firewood. This utilization by landowners cuts the removal costs to the contractors and helps cut heat costs in winter.

The Berlin Central School overlooks this stretch of the Little Hoosick which has been cleared of debris, readying it for bank stabilization.

The Little

IN the Aug.-Sept., '54 issue, Oliver Hyatt, Chairman of the Rensselaer County Soil Conservation District, reported on the establishment, objectives and the participants in the co-operative land management venture called the Little Hoosick Watershed Protection Project, one of four such pilot studies in the State. Their problem was to devise a plan to contain the Little Hoosick River within its banks and to slow down the rate of water drainage into the river and its tributaries from the neighboring hills. This is a brief report on the progress made.

The Project is in its third year of a 5-year plan. In one respect progress has been very slow: The most urgent problem at hand is to get 50 per cent of the landowners signed up as co-operators of the Soil Conservation District.

On the streambank and channel improvement front, a contract for approximately \$8,500 was let to the Wertime Construction Company of Cohoes to cut out the dead trees (and also some live ones) which were potential stream blockers overhanging the Little Hoosick from Cherry Plain to Berlin. This 4.5-mile section has been cleared and the contract completed. This the SCS paid for. Now



A bank pier at the junction of Kronk and Henrottin creeks (the headwaters of the Little Hoosick) keeps the house in the background from being washed away. It was built by the town.

Simple log dams like this one on Kronk creek will be built by local sportsmen groups to develop and improve trout habitat and to better trout fishing.



This is one of thirteen debris collecting basins to be built in the Little Hoosick Valley. This one was built by the people.



Broken highway pavement is very suitable for bank stabilization and stream diversion. Here the river is prevented from running over valuable farmlands by the use of broken highway pavement.



Hoosick Valley Watershed

the SCS will improve the channel and grade the stream banks. Then it will be up to local people to seed the banks, plant willows and fence the cattle out. The Berlin Boy Scouts and the Uncle Sam and Mohican Councils of Boy Scouts will do most of the red-osier willow planting—with stock obtained from a 3-year-old plantation which they established for just this purpose in 1954.

While this is going on, local people hope to put in a number of straight log dams to create better trout habitat and to help restore the Little Hoosick as the cracker-jack trout stream it used to be. So far the Berlin Club and the Rensselaer County Conservation Alliance have donated \$100 and \$500, respectively, for the building of these log dams. Local landowners will be dunned for hemlock logs for the dams, and volunteers will be sought for the labor involved. The Conservation Department will be asked to furnish competent supervision over their construction.

Special attention will be given by the SCS to the 1.2 mile stretch of the Little Hoosick which runs through the Village of Berlin. Here the channel is to be improved and the banks to be rip-rapped with stone, while flow-regulating struc-

tures are to be staggered across the stream to slow down the water and to force it to drop its payload of soil. It is hoped this will save the village a repetition of the damage it suffered in the 1949 flood.

Thirteen debris collecting basins are planned for the entire valley. Of these, four will be put in and paid for by the people. The SCS will put in the other nine. One was put in last Fall in the George Allen Hollow by the people at a cost of \$2,700. Another financed by the people is to go in on the Jones Hollow Brook. The SCS, not to be outdone, plans to build two by contract between Cherry Plain and Berlin on the main Little Hoosick. Later in the year perhaps 2 more will go in on the river. Anyway, if all plans go through, there should be a total of 6 debris basins in the watershed area by the end of the year.

Of the other SCS land conservation measures scheduled in the 5-year plan, the following have been completed: .7 mile of diversion ditching, .1 acre of waterway development, 51 acres of strip cropping, 781 acres of revegetation (pasture improvement, etc.), 142 acres of woodlands fenced from cattle, 1,412 acres of trees planted, and 120 acres of wood-

lands thinned. The U. S. Forest Service has planted over 80,000 evergreens on Class VI and VII land, but since there isn't too much of such treeless land in the area, the local committee hopes the Service will lower its sights and plant trees on Class IV and V lands.

The people of the Little Hoosick Valley—or a good part of them anyway—are hard at it to pull themselves up by their bootstraps, out from under the flood threats which hang over their heads come Spring, come Summer thunder showers, come Winter snows and thaws. Much has already been done, but eventually they hope to come up with a model demonstration area which will be studied and visited by many leaders from other watershed problem areas of New York, Vermont and Massachusetts.

The best part of the whole story is the fact that the local people (or again, a good part of them anyway) have recognized a job to be done, asked for advice and help; and are carrying out their share of the work to resurrect their flood-battered valley. Conservation education is really beginning to pay off in this valley.

—NICK DRAHOS



Conservation and World Population

IT'S later than you think! It's so easy for many of us who are interested in conservation to see the problem primarily in terms of improved hunting and fishing conditions, or perhaps preserving the remaining vestiges of our vanishing wildernesses. When, however, one examines the problem of feeding a world population which is increasing at a phenomenal rate, the conservation of our natural resources becomes somewhat more serious and definitely more urgent.

To better understand what is happening to world population it may be profitable to consider what would happen to a population of, say one hundred rabbits placed upon an island of a thousand acres. We have had enough experience with species-population problems to know that the results could well be represented by the graph in Figure One. Slowly and inevitably the population would increase. As the numbers rose so, inevitably, would the number of breeding pairs, and quickly the rate of increase would rise sharply, as in the center part of the curve. Sooner or later, experience tells us, this population would begin to press upon the food supply and starvation would tend to reduce the total number of rabbits, (indicated in the graph by the first dip). As its numbers were reduced below the carrying capacity of the land the population would again rise beyond the critical limit. That cyclic fluctuation, represented by the wiggly tail of the curve, tells us graphically that Nature is trying to seek a balance. But she rarely achieves one.

All this represents no startling revelation to those interested in conservation. Yet it is amazing how many such people

fail to recognize that the same inevitable laws which operate for rabbits, likewise, with even-handed justice, apply equally well to the species *Homo sapiens*. Some, who accept this principle, at least for the sake of argument, nevertheless see no cause for alarm. Is there cause? Well, as Al. Smith used to say, "Let's look at the record."

Each morning that you sit down for breakfast, 70,000 additional human beings sit down to the world's breakfast table with you—NET GAIN! To visualize this increase, consider that on Monday morning the entire population of Binghamton is suddenly added to the world population. Tuesday morning Elmira's population is added, NET GAIN, mind you. Wednesday we add Mt. Vernon; Thursday, New Rochelle, and Friday, Niagara Falls. On Saturday we accumulate a number of hungry mouths to be fed equal to the population of Troy. Every three months at this rate, we add the equivalent total population of New York City. And they all must eat! This all adds up to an increase in world population of approximately 25 million a year, NET GAIN. During the decade from 1940 to 1950, despite perhaps the greatest slaughter of humans man has ever experienced, world population increased by some 230 million. Two hundred thirty million people is a lot of people. It is equivalent to the entire population of the United States, England, Scotland, Wales, Northern Ireland, Norway, Sweden, Denmark, Holland, and Switzerland combined. This one decade, to put it a little differently, saw a net increase equivalent to 70 per cent of all the people in the



MAP BY IRVING

North Atlantic Treaty Organization. The most recent serious estimates advise us that world population will rise in the next 70 years from its present two and four-tenths billion souls to approximately 5 to 7 billion. Although few biologists will hazard a guess as to our exact position, it seems reasonable to assume that our species is well up on the steep slope of its population curve.

Not only is the population increasing, but the rate of increase is itself increasing. The world may, for convenience sake, be divided into three areas (see world map). The first, which embraces North America, Western Europe, Australia, and New Zealand shows the controlling factor in population growth to be the voluntary birth rate, since the death rate is now approaching an almost irreducible minimum. The second region, where a high birth rate is compensated for by an equally high premature death rate, is represented by most of Asia, South America, and many regions of Africa. Finally, a third area may be defined in which we find a transition from the second to the first type of region. In these areas, such as Eastern Europe and Russia, the application of modern medical and public health measures is rapidly extending the life span. And it has been this increase in life span rather than in birth rate which in the last 50 years has contributed most to the phenomenal rise in population.

India's average net annual increase in human numbers is approximately 5 million, and one shudders to think what can happen there when, and if, modern public health measures are applied. Formosa will, at its present rate of reproduction, double its population in the next 30 years. If you consider Formosa a problem today, just stick around.

In the face of this situation some still find solace by repeating the cliché, "Science will solve the problem." This may be so, but a sober second look is any-

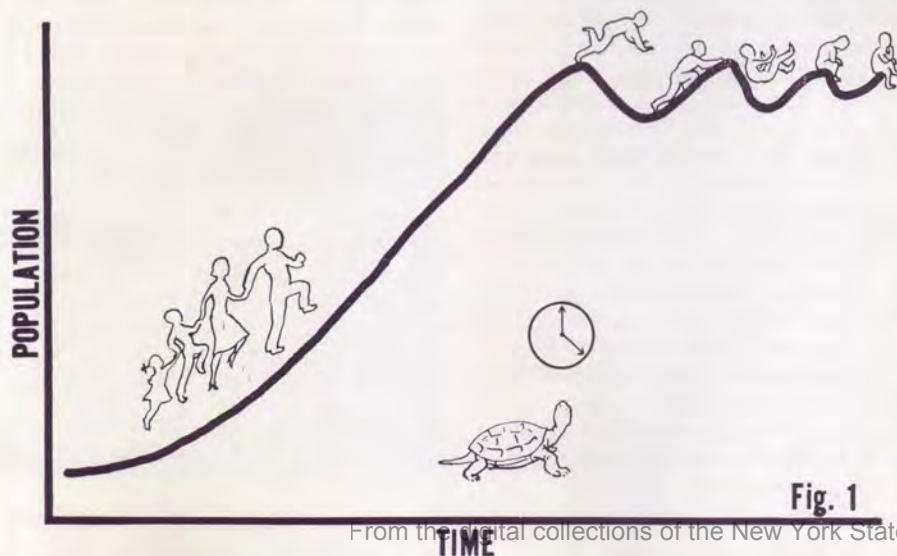


Fig. 1



WORLD POPULATION—Approximate Totals—

FIRST REGION:

| | |
|---------------------------|-------------|
| NORTH AMERICA | 215,000,000 |
| WESTERN EUROPE | 320,000,000 |
| AUSTRALIA AND NEW ZEALAND | 11,000,000 |

SECOND REGION:

| | |
|---------------|---------------|
| ASIA | 1,300,000,000 |
| SOUTH AMERICA | 110,000,000 |
| AFRICA | 200,000,000 |

THIRD REGION:

| | |
|----------------|-------------|
| EASTERN EUROPE | 80,000,000 |
| RUSSIA | 200,000,000 |

TOTAL: 2,436,000,000

thing but reassuring. Indeed, it has been primarily the application of medical science that has aggravated the problem, as, in much the same manner, the tractor and modern plow have complicated the problem of soil conservation. Modern science does not reduce our problems. Like a geni it merely changes them from one form to another.

To be sure, there is much that science can do, both in a positive manner by increasing our food supply, and negatively in terms of developing acceptable and effective methods of limiting family size. However, there remains the question of how long it will take us to educate the body-politic that changes, and some of them drastic ones, will have to be made.

Before examining some of the steps which might be taken it may be worthwhile to critically consider one of the most persistent myths of our time. Many are inclined to feel that if the "real squeeze" does not come for at least 70 years there is no need for them personally to worry, particularly when we seem to be cursed with a surplus of food rather than a shortage. But it is not everywhere thus. For the past 100 years, it is reported by Cressey, a million Asians have starved to death each year. From the present ferment in Asia one would gather that these people, a little weary of this routine, are becoming easy prey to the demagogery of Communism. For families who lost a son in Korea, the problem of the Asians is definitely one of the "here" and "now." For those of us privileged to pay an income tax, the foreign aid and military budget represents a rather current problem. And for those who understand the basic urgency of conservation of natural resources, the time for positive action is overdue.

What can mankind do to effectively increase the food supply above and beyond the wise use of the exhaustible resources we have at hand? It seems evident that

some changes in method are required. The U. S. Department of Agriculture estimates that there are some 4½ billion acres of arable land on the earth's surface—although other agronomists seem to feel that this is an over-generous calculation. Using for the moment the figure of 2.4 acres per person—the land presently required to produce the food and fibre for the average American—it is evident that the 2.4 billion people of the world would require some 5.7 billion acres to provide a standard of living comparable to that which we enjoy. In 70 years, the arable land requirement, on this basis, will be approximately 15 billion acres which, of course, are not going to be available. To be sure we can and will reclaim some lands, but this, on the scale required, will involve some fantastic expenditures of money which probably will have to be made by central governments. The Dutch, the Israeli, ourselves and others have done some most interesting pioneer work in this field.

Through careful plant and animal breeding it seems reasonable to expect that new and improved food plants and domestic animals will be produced. In the process, however, we may have to agree that such inefficiently produced foods as T-bone steaks and pork chops may have to be abandoned. There seems to be promise in the domestication of the microscopic. That is, using microscopic plants, such as algae, which may be grown in the shallow seas, to produce much of our fats and proteins. By the application of improved methods we could feed a world population of several more billion, but not an infinite number. This inescapable conclusion suggests, as an eventuality, some form of population control, and that probably of a compulsory nature. This is not a happy prospect, but nevertheless a highly probable one.

Of course, through the application of scientific measures we can increase food

supply and control population rise. But the really difficult problem is that of recognizing that it must be done and of accepting the fact that it will involve many difficult and painful decisions. It seems patent that, in the areas of land reclamation, in the farming of the shallow seas, and in population control, the power and activity of central government, indeed even world government, will be enlarged and extended.

One may feel reasonably sure that such a development will be bitterly opposed at each step along the way. It is becoming increasingly clear that the production and support of the scientific personnel, requisite to the solution of many of the problems involved, will have to be arranged for. Today in America we are fighting a losing battle in the education of scientific personnel just to keep our industrial machinery going. And perhaps most difficult of all is the education of the peoples of the world that these things must be done. For many millions the problem does not exist at all, hence they are hardly ready to search seriously for the most effective methods of solution.

While some authors view with dismay the on-coming hordes of the future, at least from our national point of view there seems to be a more optimistic approach. Each year there are 25 million more potential customers for American goods, and 25 million more potential converts to democracy. The positive approach seems to be to recognize and accept the problem as an inevitable phenomenon which is happening to *Homo sapiens*, and to give serious thought to the techniques and methods for the management of our natural resources in a wise and effective manner.

—GEORGE PITLUGA,
Professor of Science,
State University of New York



The Rise and Fall of a Duck Marsh

A GOOD waterfowl marsh is only a temporary stage in Nature's process of draining and filling open water areas and gradually converting them to forest land. This is accomplished through the deepening of the outlet channel by erosion thus lowering the water level; filling by the deposition of silt, and the accumulation of decaying plant material from the marsh itself. Fortunately for the ducks this, normally, is a slow process and a marsh may remain a productive habitat for waterfowl for hundreds or thousands of years. In some instances, however, people have, in their own lifetimes, actually observed the rapid deterioration of some of our marshes. Outwardly these favorite marshes may still appear marsh-like, but that spark of vibrant vitality seems to have slipped away leaving only an area of dull and stagnant water and vegetation. The factors involved are many and varied and only partly understood. Man, however, is probably largely responsible for the rapid changes which have taken place. The following notes on the history of Long Pond, a western New York marsh, may not be entirely typical of the revolutions that occur in aquatic habitats as a result of man's activities, but many of the same things have occurred elsewhere in the State.

The Long Pond in question (there are at least 35 ponds of that name in New

York) is located in Monroe County only a few miles west of the mouth of the Genesee River and is separated from Lake Ontario by only a narrow barrier beach. No one knows exactly when Long Pond came into existence. At one time, many thousands of years ago, when the glacial lake Iroquois had as its shores the height of land which is now Ridge Road (Route 104), "Long Pond" was merely a spot on the lake bottom under perhaps 200 feet of water. When that glacial lake had receded to the approximate shoreline we now know for Lake Ontario, the pond was still merely an inlet from the lake fed by Northrup and Black creeks which join forces only a mile up-stream from the marsh. Probably the area had already become a haunt of waterfowl for the situation must have been nearly ideal. The bottom was composed of a sand and clay silt and the incoming stream should have provided a steady supply of clear water. Probably only small amounts of silt were deposited annually which could readily be assimilated into the bottom soil. We imagine that the small watershed was well wooded and probably rarely, if ever, produced scouring flood waters. Since the shoreline of Lake Ontario has a northeast exposure at this point, waves from the prevailing westerly winds would not have greatly disturbed the inlet and probably only the occasional northeaster disrupted its bayou-like serenity. This

same wave action, however, was constantly depositing sand near the entrance to the inlet and the "pond to be" was in the making. Buck and Round ponds immediately to the east and Cranberry Pond to the west were formed about the same time and in the same manner.

When Long Pond was first known to white men, its sides and upper end were fringed with extensive beds of cattail. At the Lake Ontario end round-stemmed bulrush was the dominant emergent species. All around the edges were to be found an assortment of other species including pickerel weed, arrow arum, arrow leaf and even a scattering of wild rice. The open water was resplendent at times with patches of water lilies, primarily white but with a mingling also of spatterdock and the small yellow waterlily. Among the submerged aquatics a whole gamut of species were to be found. Where wind action and current kept the water circulating, wild celery and white stemmed pondweed grew in profusion. Sago pondweed was common and various other pondweeds along with coontail, marestalk, bladderwort and others each found their own niche. Fishing was excellent with smallmouth bass and northern pike as the top game species. Panfish also abounded and with the clear water one could readily watch the perch and sunfish swim by. The only rub on fishing was spotting the weed-clear spots for casting. In the

Fall the ducks flocked in by the hundreds and occasionally by the thousands.

Since a marsh is only a stage in the evolution of a water unit, the decline of a marsh begins as soon as the marsh is formed. What we are concerned with is when this more rapid deterioration began. Probably the first step was when the white man's axe began to touch the forest in the watershed. Doubtless this was gradual and it was many years before the headwaters were cleared enough to show any serious effect. The more rapid runoff of water was probably taken by Long Pond in its stride and the increased amount of silt assimilated for this was a resilient area. Perhaps these changes even served as a stimulant at first disrupting the conservative serenity of the community. But the continued attacks were more than even this supple society of plants and animals could take. The scouring effects of Spring freshets coming with more vehemence each year rooted out some old established beds of aquatics and even tore loose sizeable chunks of emergent marsh mats and set them afloat. The increased amount of sedimentation was too much for the more delicate rooted aquatics which were unable to push their way up through the new layers of silt. At first this didn't bother the ducks for Long Pond was still a good food source with plenty to spare, but in time the reduction of seeds, tubers and small animal life began to make the area less attractive.

With the clearing and start of agriculture in the watershed came houses and people and a new factor in the waters of the pond. This new factor was the increased amount of organic material carried in the water, derived in part from domestic sewage and in part from other sources around the farms—milk wastes, slaughter washings and kindred things. At first we can imagine that this provided good fertilizer for the pond and helped provide a luxuriant plankton growth of both plants and animals. But a good thing can be carried too far and before too many years had passed the amount of organic additions to the pond had greatly increased. Cottages grew up around the pond—first along the barrier beach and later along the sides with privies draining directly into the water. A dump was created near the inlet end and the seepage from this added to the load. The advent of modern farming and the use of commercial fertilizers provided even more organic richness. The growth of the free-floating algae with its associated animal life now was fairly dense and let only a minimum amount of light penetrate to the rooted plants of the open water. At first only the more sensitive species (but also the best seed and tuber producers) were shaded out but also the

abundance of some of the others was reduced.

While these factors were at work two other problems entered the picture—one that further upset the shallow open water; the other made its influence felt in the marsh proper. In the first instance carp became introduced into Long Pond and apparently they found the area attractive. At least this species multiplied and fed assiduously throughout the open water areas. Now one can hardly directly accuse the carp of ruining the rooted aquatic food beds but certainly their feeding habits added to the problems of an already upset community. Roily or turbid water is no help when light is already at a premium nor does it help already hard pressed seedlings to be pushed around when they are just trying to get their feet in the ground. While the open water community was attempting

ducks, came some of the direct works of man. The barrier beach was too narrow for cottages, boathouses, roads and trolley tracks, so fill-dirt was brought by the wagon load and later by the truck load to widen the beach and fill the marsh on the inshore side. Piers for boats were built and channels through the fringe marshes were cut to facilitate docking. Next came motorboats, oil cans and the garbage and trash the cottagers found easier to dump in the water than to carry to the established refuse area. Finally adding insult to injury two roads were built—one by widening the barrier beach so a main highway could be built right behind the boathouses, the other three quarters of the way up the pond. This latter road was so located as to essentially separate the open water portion of the pond from the marsh so that they were no longer one community.



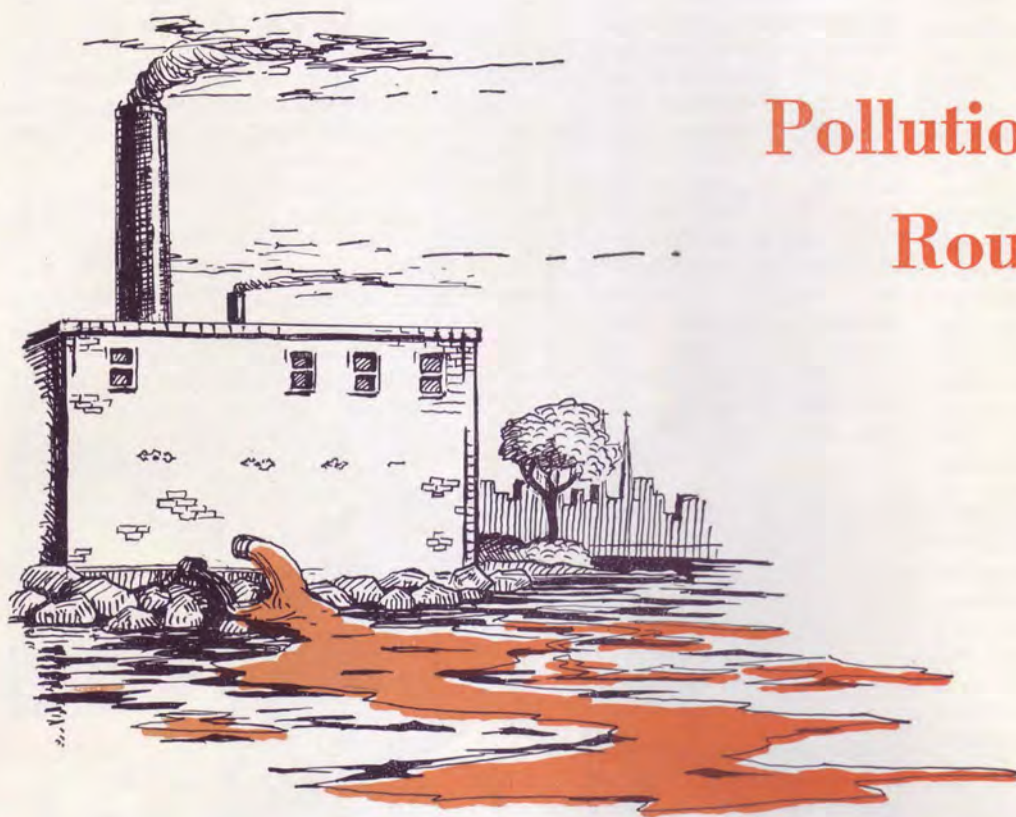
to cope with this problem the marsh proper was suffering another blow. Muskrats in too great abundance can ruin a marsh, but too few create another problem. Long Pond was too heavily trapped and cattails, mingled with others of the more aggressive marsh species, got ahead of the muskrats. Normally a well balanced marsh has many secluded nooks, potholes and trails maintained by the muskrats that provide for a break in the solid cover and greater diversity of both plant and animal life. Without these openings the marsh had much less value to the waterfowl.

Concurrently with these indirect activities of man that were steadily reducing the carrying capacity of Long Pond for

So what is left? From a duck's viewpoint here are some 300 acres of shallow open water which no longer supports enough healthy plant life to afford a decent meal; and then another area of nearly 100 acres of too dense cattails, cluttered with trash, that is isolated from good open water—hardly a good place to raise a family of noble lineage.

And what of humans? Can it be that this oil-slicked, silted, muddy water depository for garbage, tin cans and pollution is a more pleasing place to live and play than the marsh that once—with clear waters and abundant vegetation—supported waterfowl, fur-bearers and game fish?

—DIRCK BENSON,
Game Research Investigator



Pollution Round-Up

IN 1949 the Legislature passed a water pollution control law which has been discussed in detail in past issues of *THE CONSERVATIONIST*, (J-J, '51; O-N, '53; O-N, '55). This law (Article VI of the Public Health Law) contains in Section 100 a Declaration of Policy which reads as follows: "*It is declared to be the public policy of the State of New York to maintain reasonable standards of purity of the waters of the State consistent with public health and public enjoyment thereof, the propagation and protection of fish and wildlife, including birds, mammals and other terrestrial and aquatic life, and the industrial development of the State, and to that end require the use of all known available and reasonable methods to prevent and control the pollution of the waters of the State of New York.*"

To carry out the provisions of this law a Water Pollution Control Board was established which consists of the heads of the Departments of Health, Conservation, Public Works, Agriculture and Markets, and Commerce.

In October of 1950 this Board adopted rules and classifications and standards of

quality and purity for waters of New York State. These constitute the system by means of which the 70,000 miles of streams and 3,500,000 acres of inland waters of New York State will eventually be classified and assigned quality standards according to their best usage in the public interest.

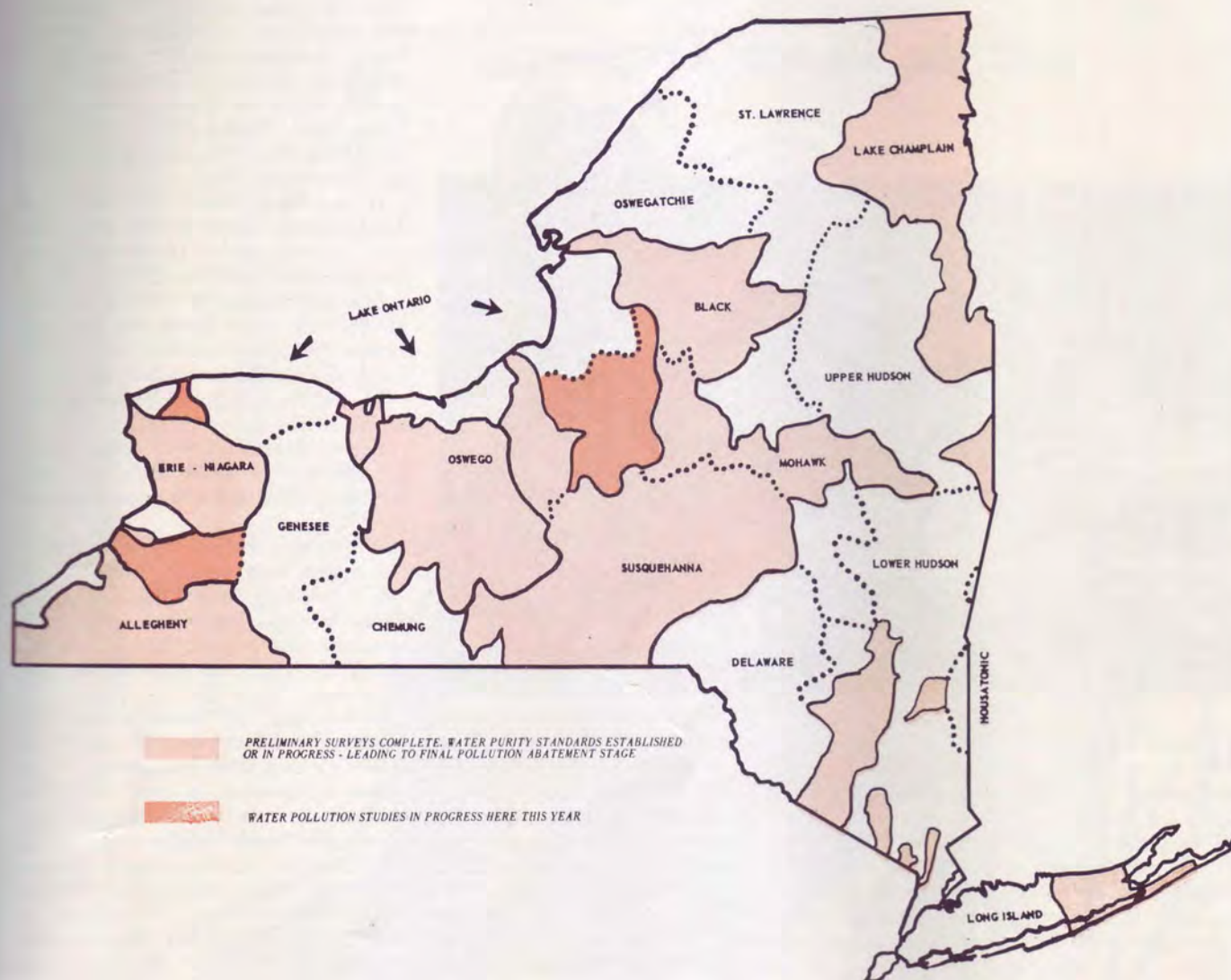
In general, surface waters are placed in one of seven classes. The first five of these fresh water classes are appropriate to the purposes of encouraging the growth and reproduction of fish and other aquatic life. The two lowest classes do not consider fish life. It can be seen that when this law was formulated, protection of fish life was a major consideration.

Since the time of passage of this law, general funds have been made available to the Health Department for use by the Water Pollution Control Board and to the Conservation Department. These funds provide the necessary facilities and personnel to make specific studies leading to classification. The accompanying map defines the approximately 22,500 square miles out of a total of some 47,654 square miles of New York State that is now in some stage of this pollution abate-

ment program.

Appropriations of funds to the Conservation Department are used to staff and maintain a base laboratory at Rome, known as the Rome Pollution Laboratory, and a mobile laboratory for field survey work. The personnel assigned to this work are an Aquatic Biologist and an Analytical Chemist with a temporary chemist for Summer work. General supervision originates from a Senior Aquatic Biologist in Albany.

At the Rome laboratory research is conducted to determine the amounts of various substances that can be admitted to waters without harm to fish life. The unit has been operating since 1950 and to date has carried on research on oxygen requirements of trout and smallmouth bass, toxicity of rotenone to perch and other species, recovery of cyanide from fish tissue, toxicity of cyanide to various species of fish and other studies on toxicity of copper and cement. All of these experiments are conducted at different water temperatures, in waters of different chemical composition or under various conditions of dissolved oxygen because it is known that the toxicity of many sub-



stances varies greatly under these different conditions. These tests are conducted in constant temperature baths under very exacting conditions so that the results can be applied to natural waters on a practical basis.

The second responsibility of this unit is actual field studies of pollution which may affect fish life. Each year certain areas are designated by the Water Pollution Control Board to be surveyed prior to the actual classification. During the Summer a mobile field laboratory joins the Field Survey Staff of the Health Department in making a survey of the present effects of pollution to fish and other aquatic life. This study is both chemical and biological in nature.

The chemical analysis consists of routine determinations of alkalinity, dissolved

oxygen and carbon dioxide, acidity (pH) and oxygen demand. Other special studies are made to determine the effects of cyanide, chromium, copper, ammonia, chlorine, or solid materials.

The biological data collected includes numbers and species of fish present, aquatic insects, other fauna and aquatic plants that are found in the waters. These biological observations reveal the actual effects of pollution on the aquatic life. In addition to the above, certain physical characteristics of the stream are noted also, including width, depth, current, turbidity, type of bottom, rate of flow, air and water temperatures plus any other general observations to secure as nearly complete a picture as possible at each survey station. An attempt is made to schedule sampling so that the most ad-

verse conditions are observed. All of this information is then used in the final classification of the waters surveyed.

During this past Summer three separate watersheds were surveyed: (1) Cattaraugus Creek and tributaries in Erie, Cattaraugus and Wyoming counties; (2) the Eighteenmile Creek system in Niagara county; and (3) the Oswego River drainage from Three Rivers eastward to Rome.

With the completion of field work this year, nearly half the State's area will have been covered in this intensive and systematic survey. It's a massive job, and a slow one, but as and when completed it will provide information essential to administering a really effective pollution control program.

—HOWARD J. DEAN, *Aquatic Biologist*

Lightning and the Beech Tree



RECENTLY, Bernie E. Hayes of Wells-ville, sent us a letter about the beech tree asking: Does it ever get struck by lightning? He referred to a discussion of this subject in the pages of the *Rural New Yorker*, and through the courtesy of their Field Editor, James Bodurtha, we were supplied with clippings from several issues, giving readers' viewpoints, pro and con.

One thing that most of the correspondents agreed upon was that the beech was fairly immune to lightning stroke though they disagreed as to the reasons for its being so. However, two cases were cited, one from Ohio, and one from St. Lawrence County, N.Y. where farmers had lost cattle that were standing under beech trees when lightning struck.

It is a tradition of long standing among woodsmen and farm people both here and in some parts of Europe, that beech is a safe tree to stand under in a thunderstorm, and it is said that this belief was entertained also by the American Indians. The same thing is borne out to a considerable degree by the experience of professional foresters and arborists. In his "Trees of the Eastern United States and Canada" (Whittlesey House, 1942), Dr. William M. Harlow says: "It has been frequently said that beech trees are never struck by lightning; the author will much appreciate hearing from anyone to the contrary." A personal letter from a

pathologist on the staff of one of the leading tree research laboratories in the county expresses this view: "Having asked a dozen men with a total experience among the trees in excess of two centuries, I finally found one who claims to have seen an American beech that had been struck by lightning. Since this man is probably the best observer of the lot, it is my opinion that beech trees *can* be and *have been struck by lightning*. Of course, the broad spherical form of the tree with its great abundance of surface roots probably makes it a poor candidate for a lightning stroke, particularly in the climax forest where associated hemlock trees make much better natural lightning rods." From the vice president of another nationally known tree expert company we received a communication with stated: "Personally, I have never seen a beech that was struck by lightning, nor do I know of anyone who has seen a beech that was hit, but apparently there is little reason to believe that they are immune." In the same letter, some anonymous information from the Company files, summed up the case this way:

(1) Trees most likely to be struck are those growing: (a) In a dominant position in the forest, either by reason of its height or the configuration of the ground; (b) in the open, along avenues or on the border of a wood; (c) where the soil is moist; (d) in loam or sandy soils (i.e. as against clay, calcareous soils).

(2) Tap-rooted trees are more susceptible than those with shallow roots.

A survey made by the National Shade Tree Conference among a selected group of arborists and published in the proceedings of that body in 1946, produced some interesting data on tree species most frequently struck by lightning: Oak, 31%; Elm, 18%; Poplar, 11%; Tuliptree, 7%; Pine, 6%; Ash, 5%; Maple, 4%; all other species, 18%.

(It was stated further that the British Thunderstorm Survey in 1934 listed oak, elm, ash and poplar as the only trees struck in substantial numbers.)

Conclusions of the Survey: No evidence of immunity was found for any one species (yet it is a fact that the list of 30 kinds of trees did *not* include beech).

Most of the strikes occurred on isolated or tall trees.

Several instances were reported where given trees were struck more than once (lightning *does* strike twice in the same place).

A properly installed lightning protection system in a tree, is approximately 100% insurance against lightning injury to the tree so protected, but this is no assurance that nearby trees of approximately the same size or taller will not be struck.

In Volume IV of "Schlich's Manual of Forestry," published in 1895 and now a collector's item, there is an account of the effects of lightning on trees which has evidently not been improved upon greatly, since more modern authors usually go back to Schlich for their sources of information, or to the works of the German authors whom he cites. The consensus of these investigators is, that oaks and other deep-rooted species are the most liable to be struck, by reason of their roots forming better conductors to the moist sub-soil. Only one author puts beech in the susceptible class, the other using beech as the standard (frequency 1) above which other more susceptible species are ranked.

Scientific evidence as to why beech is hardly ever struck by lightning is meagre and some of it is conflicting. Whether it be the shape of the tree, the smooth bark (which becomes quickly moistened by the rain, and is thus said by some to afford an easy path to the ground for electrical current without damage to the tree), its fatty content, or what-not, the beech may be considered as nearly lightning-proof as any tree species, but we still stick by the admonition in a piece on beech which appeared in THE CONSERVATIONIST back in October-November, 1946: "If you must get under a tree in a thunderstorm, pick a beech. Better still, don't get under a tree."

—E. W. LITTLEFIELD,
Superintendent of Forest Management

Mahopac Lake



Location

South Central Putnam County

General

Public access is limited but boats available at two liverys. Ample tourist accommodations available in area.

Physical Features

Area: 560 acres
Elevation: 659 feet

Maximum depth: 62 feet
Bottom: Rock, muck, sand

History

A natural lake located in region steeped in tradition dating from the Revolutionary times. This area was a Tory stronghold during that period. Many beautiful old estate houses situated along the shores. Rapidly being developed into a community of small private homes.

Chemical Characteristics

pH: Alkaline
Oxygen: Poor in Summer below 40 feet

Fish

Smallmouth bass, largemouth bass, yellow perch, white perch, sunfish; common chain pickerel, bullhead catfish, minnows—fairly common.

—CECIL E. HEACOX,
Dist. Fisheries Manager

Water

Water

Everywhere . . .

But—

by Senator Wheeler Milmoë,
Chairman, Joint Legislative Committee on Natural Resources

WESTERNERS from arid states who visit New York for the first time almost always express amazement at our apparent abundance of water. They gaze in wonderment at our green fields, hills and forests—and look with envy at our big river systems, our Finger Lakes, our Great Lakes, and our thousands of smaller waters.

They are equally amazed to find that in the midst of this apparent plenty we have communities which are short of water; industries which have serious water problems; and fruit and vegetable farms which cannot get water for supplemental irrigation purposes, though they may be within shouting distance of lakes and waterways.

One such visitor from California, where they think nothing of transporting water hundreds of miles, was moved to remark: "If we had your water, it wouldn't take us ten years to surpass New York in population and industry—just as we already have in agriculture."

Even though we take this statement with a grain of salt—we must admit that here in the so-called "humid East" we have been much less enterprising in the development and conservation of our water resources than have our western neighbors.

It does not take an expert economist to see that the recent tremendous growth and expansion in the Pacific Northwest, Southwest and elsewhere was made possible by huge water resource developments.

The reason for this great difference between the Western and Eastern approach to water resources has of course

been "necessity." Right from the beginning water has been a life and death matter in arid states. First, it was life or death for the pioneer explorer, miner, trapper, and rancher. Now it is a question of survival for communities—states and regions. Water fights still go on, except that today, blazing six guns have been replaced by batteries of lawyers—as in the present legal battle between Arizona and California for water from the Colorado River.

In contrast, here in the East we have been "getting by" much easier. But a growing population and scientific and industrial developments are rapidly changing that picture. In a few years the scramble for more water, which has already started on a nation-wide basis, will become more and more intense here. We will need more and more water for growing communities, expanding industry, intensified agriculture and for outdoor recreation. We are already finding—just as the westerners have found—that adequate water and future progress are inseparable.

Our State, along with the other Eastern States, also finds itself up against a major legal problem involving the right to use even the water presently available—incredible as that may seem. This comes about because we still do not have statutes which spell out water rights. We still are working under the old Common Law Doctrine of Riparian Rights. Farmers, for example, have found it almost impossible to establish a definite legal right to use a certain amount of water for irrigation purposes—even from streams crossing their farms.

It was an awareness of water problems

to come, as well as specific water problems already with us, that caused our Joint Legislative Committee on Natural Resources, over a year ago, to undertake some long-range legislative studies of our water resources.

At the outset, the Committee wisely decided to make its studies on a broad and comprehensive basis. After all, the problems of our communities, industries, farmers and recreationists are inter-related.

To this end we appointed a special advisory committee on water resources with representatives from agriculture, industry, municipalities, conservation organizations, and the various public and private agencies which have an interest or responsibility in this field.

In consultation with these advisors, we decided that our first task was to make a careful inventory of our water needs in all these fields, and during the past year we have had subcommittees of our advisors, which we call task forces, working on this inventory job.

While it is not yet complete, it is going to give us, for the first time, a real picture of our future needs. Already we know that it will show, as of 1965, and even more so by 1975, that our mounting demands for water for all purposes will sharply exceed the amounts which have been presently developed for use.

I think it is highly significant that industry, for example, is itself keenly aware of the stake it has in providing the proper quality and quantity of water which will be needed to meet its expanding needs in the future. The co-operation which we are receiving from hundreds of industries throughout our State,

both large and small, in furnishing data for our survey of industrial water needs, present and future, is most encouraging to the Committee. When completed, this appraisal of industrial water needs will be priceless in all our future planning.

Turning to domestic needs for a moment, our task force found that a comparison made between the years 1888 and 1952 showed that the per capita demand for water increased far more rapidly in small communities than it did in the larger ones. For example, the consumption in communities with a population of less than 5,000 increased 2.94 times faster than the population, whereas in cities of over 50,000, consumption increased 1.19 times the rate for the population. Today the average domestic consumer now requires about 50 gallons per capita per day and this figure is likely to increase in the years ahead.

They discovered too that metering is an effective control on water consumption with the per capita consumption in unmetered communities standing 60 per cent above metered communities.

In very rough average terms we not only have a 50 gallon per capita requirement for domestic needs but industrial and other community uses require another 110 gallons per day per capita—or roughly twice the average domestic requirement.

With respect to the needs of agriculture, we have a double-barrelled study underway. Our Committee has a task force working on the over-all needs of agriculture and we have a new Temporary Commission on Irrigation, headed by Senator Frank E. Van Lare of Rochester, which is making a special study of irrigation problems. The work of both groups is closely integrated.

We are finding that supplemental irrigation is a rapidly growing farm practice. Already over 70,000 acres are being so irrigated and the irrigated acreage has been doubling about every five years. Irrigation with water from agricultural wells is very extensive on Long Island. In upstate New York, many enterprising farmers have started to irrigate in areas where water is readily and cheaply available—primarily from surface sources.

We are finding too, from direct farmer testimony, that supplemental irrigation is very much of a paying proposition on favorable sites. Even in a wet year, there may be dry periods of 2-4 weeks during which it is essential that natural moisture be supplemented by irrigation if proper plant growth and a good crop is to be assured. In the case of a dry year or a prolonged drought irrigation means the difference between a good crop and



no crop at all. Even if used only occasionally, it is, in the minds of many farmers, a necessary form of "crop insurance."

While the use of well water for irrigation presents few, if any, legal problems, the right to use water from surface streams or other natural bodies of water, is so complicated by legal "ifs," "ands" and "buts" that many farmers have thrown up their hands, with a plea to the Legislature to do something about better water rights legislation.

As previously noted, these legal problems are not peculiar to our State. We share them with all the other Eastern States, where only the Common Law prevails. It was for this reason that last Summer, through our Committee on Interstate Co-operation, we invited representatives of the 10 Northeastern States to join with us in New York City for a discussion of just such water problems.

It was apparent from this meeting, which was attended by a great many state legislators, officials and others, that water problems are currently of great concern throughout the entire Northeast. It was also apparent that the answers to these problems are not going to be easy to find. Moreover while the states can help each other through the exchange of information and ideas, apparently specific legislation and specific solutions will have to be developed in order to make sure that they fit the existing legal framework of each state. By unanimous action all those present agreed that they should meet again next year for a further exchange of ideas in this fast moving field.

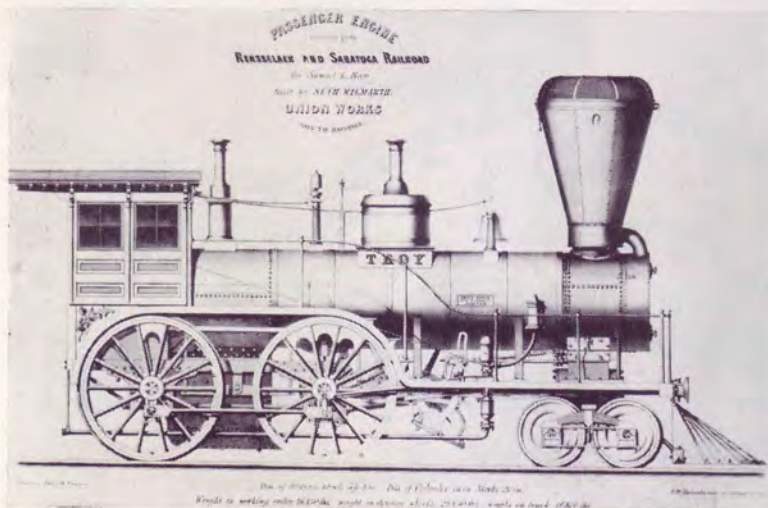
Although it will be seen from the fore-

going that our legislative study of water resources is only well launched, the general outline of our problem has already begun to emerge. First, in respect to water supplies for the future, it is clear that we have enough potential water resources to provide for all our future reasonable needs. The problem is one of developing these potential resources so that they shall be available for use when and where needed. This in turn, is going to call for a great deal of wise, long-range planning with the full collaboration and co-operation of all parties at interest.

The second part of the problem is one of developing suitable water rights legislation which will properly safeguard our water resources and yet at the same time make possible their wise use.

On behalf of the Committee I would like to express our appreciation for this opportunity to bring these water resource problems to the attention of your conservation-minded readers. I also take this opportunity to publicly thank our dedicated group of advisors and all those from the Departments of Conservation, Health, Commerce and other State agencies who are giving us such material assistance in pursuing these studies.

We feel strongly that the future progress of our State and all its sub-divisions will depend to a large extent on how promptly and efficiently we all combine efforts to solve our present and future water problems. That is why we believe these studies offer an unusual opportunity for rewarding teamwork between those who represent all kinds of State, local and private interests. And that is why our Committee cordially invites public participation in these basic water resource studies.



Passenger engine, Rensselaer & Saratoga R. R.



Marion River Carry Line train, 1911

Iron Horses



Early train on line along Hudson River near North Creek

TODAY the people who live in the Adirondacks and the thousands upon thousands who year around flock to this greatest of New York's playgrounds take for granted the highways, the motorcars, the busses and the trains that bring them into this vast land of forest and lakes.

It was not always thus! Many an "old-timer" can remember the days when mountain transportation boiled down to boats and buckboards; when "roads" were better described as trails and wood-burning locomotives were a new-fangled, noisy and generally ill-thought of invasion of this northern "frontier."

The first railroad in the State was chartered in 1826. The first primitive train ran in 1831 from Albany to Schenectady. By 1845 there were only 700 miles of railway in operation (the mileage of all rail routes today is over 7,500, ranging from one to four sets of tracks). Yet in 1845 several schemes for Adirondack lines were evident. Earliest goes back to 1834 when the Manheim and Salisbury Railroad was incorporated; in 1837 it became the Mohawk and St. Lawrence Railroad and Navigation Company, its purpose to build a road from the Erie Canal at Little Falls to the St. Lawrence. From Little Falls this line was to have

run northeasterly along East Canada Creek to the west shore of Piseco Lake, then northerly to the south end of Raquette Lake. The idea died on paper.

In 1838 two routes were suggested for a railway from Ogdensburg to Lake Champlain. A southern route from Port Kent would have passed through the northeastern corner of the woods; the other would have run to Plattsburg. The project was dormant until 1845 when the northern route was chosen and a road built from Ogdensburg to Malone.

A combination railroad and water route through the heart of the mountains from near Port Kent to Boonville in Oneida County was authorized in 1846 but never materialized. The vast resources of the North Country, however, continued to attract the venturesome and these lines managed to inject their iron tentacles into its depths and maintain a hold:

WHITEHALL AND PLATTSBURG RAILROAD—First road to come near the "blue line" from the north and play an important part in starting people to cross it. A spur of only 20 miles from Plattsburg to Point of Rocks or Au Sable Station. In operation in 1868; extended in 1874 to Au Sable Forks but never beyond.

ADIRONDACK RAILROAD—Second road to come near the "line" and first from the south. Incorporated in 1848 as the Sacketts Harbor and Saratoga Railroad. One of its prime objects was to connect with the Adirondack Iron Works. Failure of this, historians believe, was an important cause in final abandonment of the Works. Hoped to serve a million population in the Central Adirondacks. One route would follow Sacandaga Valley and pass south of Piseco Lake into the Black River Valley and to Lake Ontario. An alternate route would strike the Hudson Valley at Jesup's Landing, branch off the southern end of Raquette Lake, follow either the Beaver or Moose River to the Black River Valley. Start was made on this latter northern route but only 30 miles of right-of-way were graded before financial trouble developed and operations were suspended. In 1857 the name changed to Lake Ontario and Hudson River Railroad Company. The Civil War interrupted. The Adirondack Company came into being in 1863. Finally, 60 miles of track resulted from Saratoga to North Creek. In 1883 the name changed for the last time to Adirondack Railway Company. The Delaware and Hudson bought it out in 1889.



Raquette Pond, Raquette River near Village of Tupper Lake, showing lumberyard spurs to feed main line

Oct. 20, 1881. Special placed at disposal of Seneca Ray Stoddard, famous as "photographer of the Adirondacks"



in the Adirondacks

An Account of the Early Railroads



Adirondack Railway, 1865; first line into the Adirondacks from the south

CHATEAUGAY RAILROAD—First to cross the "line" and run in the mountains, from Plattsburg to Saranac Lake, in 1887. Originated in 1878 with a line from Lake Champlain to Dannemora Prison which was leased by the Chateaugay Railroad and extended from Lyon Mountain to Loon Lake and finally, in 1887, to Saranac Lake. The D&H bought the Chateaugay in 1903 and broad-gauged it. In 1893 the Saranac and Lake Placid Railroad was built to operate the ten miles between, this a narrow-gauge line with a third rail so broad-gauged cars arriving at Saranac Lake could go on to Lake Placid. The D&H also took over this line in 1903.

NEW YORK AND OTTAWA RAILROAD—Second and next to pass over the "blue line" and penetrate the mountains. Built in patches by a lumber speculator named John Hurd. Entirely in Franklin County winding down its western side, crossing the "line" 10 miles below Santa Clara. Developed: 1882, St. Regis Falls to Moira; 20 miles south of St. Regis Falls, first to Santa Clara, then to Brandon (1886); 22 miles farther south to near Tupper Lake, this last link in 1889 making 60 miles. Known commonly as "Hurd's Road." With too many speculative schemes afoot and competition from Webb's Road (see below), Hurd's Road soon collapsed and was sold to a private syndicate in 1895 and extended to Ottawa with through service in 1900. Earlier completion to Ottawa was delayed by spectacular collapse of a million dollar bridge in 1889 over the St. Lawrence at Cornwall. The New York Central took it over in 1906 at a foreclosure sale.

ADIRONDACK AND ST. LAWRENCE RAILROAD—First and only to run through the Adirondacks. Brain child of Dr. W. Seward Webb who visualized a route connecting with existing roads at Herkimer and Malone to tap the whole length of the mountains and open a new route from New York to Montreal. After New York Central people turned Webb down, he began the roadbed in 1890, completed the upper end from Malone to Lake Clear and a spur to Saranac Lake in 1892. Utilized were also the Mohawk Valley and Northern, and the Mohawk and Adirondack railways, pushed

north to meet his A&St.L. coming south from Malone. Southern end connecting with Herkimer completed later. Bought narrow-gauge Herkimer, Newport and Poland Railway and broad-gauged it to Hinckley. Consolidated all companies in 1892 into Mohawk and Malone Railway. Canadian company organized by Webb made connection between Montreal and Malone and line became Adirondack and St. Lawrence. Central bought out Webb in 1893, since has operated A&St.L. as its Adirondack Division. Central later bought spur from Fulton Chain Station to Old Forge.

RAQUETTE LAKE RAILROAD—Built in 1900 by few wealthy men from Carter to lake near Brown's Tract Inlet. Had wealthiest board of directors in country including J. Pierpont Morgan, W. Seward Webb, Collis P. Huntington, Chauncey M. Depew, Wm. C. Whitney, Harry Payne Whitney, Wm. West Durant. Attributed to Huntington (founder of Southern Pacific) who had to sit uncomfortably on a nail keg all the way from Old Forge to Fourth Lake by steamer, and also to Mrs. Huntington who felt that if her husband could build roads from New Orleans to San Francisco, he could build this short line to the lake.

MARION RIVER CARRY LINE—Built 1889-1900. Shortest (1,300 yards) standard gauge railroad in the world. Of interest in connection with plans for this line was thought of utilizing a sleeping car from New York to a car float to be towed from Raquette Lake to the Carry and over the Carry Line to float down Utowana, Eagle and Blue Mountain lakes. This was abandoned as too risky for expensive equipment although freight cars made such trips.

NORTH CREEK-TAHAWUS—The Adirondack R. R. finally did get beyond North Creek—a 30-mile single track to Tahawus—built during the last war to open the titanium resources of the Adirondacks. The D&H now operates it.

FULTON CHAIN RAILROAD—Short line built in 1897 from New York Central's Fulton Chain Station to Old Forge. This and Raquette Lake Railway were both branches of the New York Central.

There were other schemes and surveys; if all had materialized the woods would have been marked up and down and across with rights-of-way and ribbons of steel. But the lines mentioned—now dominated by the Central and D&H systems—have and continue to contribute their share in the development of that vast land of forest and lakes.

—ROLAND B. MILLER

THE First Lady alighted from the "Columbine" in San Francisco enroute to the Republican Convention wearing fox furs. Could this event slow the stampede of disuse of Reynard's coat? Will American women get on the bandwagon and copy Mamie Eisenhower? These questions and many others must have flashed through the minds of men of the fur industry, wildlife administrators, biologists and sportsmen alike who viewed the telecast. We can allow ourselves just a twinge of guarded hope that such may be the case.

No ornament has been more successful than luxurious furs for adorning women. Why, then, has their use been partially shelved? Researchers in the College of Home Economics at Cornell University have some answers. Reduction in fur garment usage, they think, is re-



The coat on the left is mink, luxurious and expensive; that on the right a moderately priced, synthetic pile fabric

The Future

lated to our mode of life. Modern conveyances permit us to carry our climate, which is well-heated, with us. In other words, we seldom subject ourselves, as did our grandmothers in an open sleigh, to the rigors of Winter. Accordingly, garments as warm as fur coats are now less of a necessity. These researchers can also point to evidence which shows that the trend in Winter wear is toward fabrics that are light in weight and reasonably warm; are easily cared for and which can be discarded and replaced after two or three years of wear without too serious a drain on the family purse. Fur garments meet few, if any, of these requirements.

Yet there is general resistance to change, for furs have long been a hall mark of affluence. In new products, however, the garment industry has perpetuated the "look of furs" in conformance with the pattern of change stressed so strongly by researchers in textiles at Cornell.

Currently, ersatz furs only approximate the natural. But, these synthetic pile fabrics are a recent innovation. When we consider the success of the fur industry in converting rabbit fur into "beaver" or "mink", we do not have to strain our thinking to realize that these same businessmen or their counterparts will soon evolve a fabric of synthetic fibers that will compete with our most desirable furs—at least in appearance.

The extent of the depression in fur usage is suggested by information fur-

nished by the raw-fur buyers of upper New York State at the close of the trapping season this last Spring. These men indicated that they purchased less than half as many raw furs last season as they did in 1946. They also noted that red and gray foxes, skunk and opossum pelts had little or no market value. Beaver and muskrat pelt prices have continued downward while only mink and raccoon commanded a reasonably favorable market. The crystal ball of each buyer who answered our queries foretold a gloomy future for the raw-fur business. Some of their comments are pertinent. A buyer who handled in excess of \$200,000 worth of raw furs annually concluded: "The outlook is very poor on all furs." Another stated: "I believe that if I covered the same area as in 1946, my business for the year (1956) wouldn't be 20 per cent of that in 1946." An old gentleman from Central New York wrote: "I have been a trapper and fur buyer all my life and have never seen wild fur in such poor demand as now." Again, "I see a very gloomy future for wild caught furs," this from one of the most experienced and respected men buying raw furs in this State.

What additional evidence have we on the decline in fur usage? Silver fox farms no longer are a part of the landscape. Red foxes which in 1927 and 1928 were worth \$25 or more now bring 50 cents or less. Gray foxes aren't worth skinning. Fisher pelts, which in the early Thirties brought as much as \$175 each, now sell

for a fraction of that amount. Skunk furs which found a ready market in France before the war are no longer sought by the farm-boy trapper. We were advised by a buyer of one of the nation's leading fur houses that opossum pelts could not be processed at a profit even though they were given to the processor.

To the general public, but particularly to the sportsman, to the game administrator and to the biologist this is not a "so what" proposition. It is of vital concern to all. When mechanical horsepower replaced the oat-burning variety, horse breeders shut and bolted the doors of their stables. When changes in our mode of living or way of thinking reduce the value of furs to the point that trappers can no longer afford to assist in population control, biologists must assume the responsibility. At present, however, biologists do not have the knowledge to close the doors on the reproduction of wild fur-bearers. Cases in point are the rabbits in Australia, the muskrat in Europe, and currently the foxes not only in New York State, but also over much of the eastern half of the United States.

Fur-bearers, as a group, are uniquely equipped to be troublesome when their numbers are too high. Beavers with their propensity for damming streams can cause much inconvenience and damage not only to private property but also to the public as well. Muskrats in the normal construction of their burrow homes may indirectly cause the erosion of earthen dams. Raccoons, foxes, weasels,



Muskrat, too, is closely matched by a textile product. The real thing is on the left; the synthetic on the right

in Furs

skunks and opossums may seriously influence the production of agricultural crops. And sportsmen look on the land predators, which in general are fur-bearers, with a jaundiced eye. Herein we do not propose to discuss the merits or demerits of predators. We wish merely to point out that their feeding habits may run counter to the wishes of sportsmen and thus represent a problem to the wildlife administrator.

Nor can we hide from the inescapable possibility that over-populations of wild animals may become diseased. These diseases may be transmitted to man or to his livestock. Of these we are currently conscious of rabies—a plague that might be controlled by population management of the animals which spread it. These problems are related directly or indirectly to diminishing fur use.

The growing public apathy to fur garments is only one of the ills to beset the fur industry. As still another deterrent we certainly cannot ignore the luxury tax on fur. Food and furs are equally a product of the land, but the men of our government who levy such taxes would not think of burdening other agricultural crops in like fashion. Yet the food we consume, in excess of that actually needed, must be considered as luxury consumption. If one is taxed as a luxury, so also should the other. Removal of the tax would probably represent only a "shot in the arm" for the fur industry but even this would be all to the good.

But even though the tax on furs were

removed, we should not be lulled into thinking that furs would again assume a prominent place in industry. However, the removal of the tax should stimulate fur sales, at least temporarily and with more favorable prices for raw furs, trappers could be expected to assist in the regulation of wild, fur-bearing animal numbers.

A positive approach to this problem is possible through research. We need a fundamental understanding of animal behavior, knowledge of detailed life history and a more complete appreciation of both the internal and external environments of the animals whose numbers need management. Further, as an immediate and practical objective, we need to know if furs can be used for quality products other than garments.

Advances in technology are almost certain to implement new industries while imposing hardships on others. Just as the automobile did much to replace the horse and buggy, so may our push-button way of life and new products of our research laboratories herald the decline of the fur industry. This is a sobering and saddening possibility. No one who has been even remotely associated with furs can but dread the day when such luxuries may only be a memory in the thoughts of man.

—ARTHUR H. COOK,
Game Research Investigator

Thanks go to Louis Mayer of Dey Bros., Syracuse, for their co-operation in securing these pictures.

Muskalonge for Waneta and Lamoka lakes

The second planting of muskalonge fingerlings was recently made in Waneta and Lamoka lakes, Schuyler County, as part of an experimental project carried on by the Conservation Department's Western Fisheries District. Both fry and fingerling muskalonge were stocked in these lakes in 1955 and 1956, while in 1954, the first year of stocking these waters, fry only were released.

All of the fingerling muskies have been marked by the removal of a fin to permit fisheries biologists to determine the relative success of fry vs. fingerling stocking. The fingerlings stocked in August, 1955 averaged about 9 inches in length and were marked by the removal of the left ventral (belly) fin. This year the fingerlings averaged 6 inches and were marked by the removal of the right pectoral (shoulder) fin.



Muskie fingerlings ready to go

Survivors of the muskie fry stocked in 1954 may reach the legal length of 24 inches next year.

Fishermen are urged to carefully check fish taken thru the ice next Winter in Waneta and Lamoka lakes to be sure that they do not have a muskalonge. This species could be confused with the chain pickerel. However, pickerel have characteristic chain-like markings on the sides, and the gill cover and cheek are both entirely covered with scales while muskalonge have dark bars on the sides, and the lower portion of the cheek and gill cover lacks scales.

If this experiment is successful a highly prized game fish will be added to the central New York area. In addition, the panfish populations of these lakes should benefit from the necessary predator control which the muskalonge may give; thus insuring better size and rate of growth.—U. B. STONE, *District Fisheries Manager*

Primary Waterfowl of New York

Black Duck

The black is the principal duck in New York, both in point of breeding abundance and in importance to the gunner. It is closely related to the mallard and occasionally hybridizes with that species. Being very secretive in its habits during the breeding season, as well as extremely wary during the hunting season, its numbers have stood up well against hunting pressure and the inroads of civilization. It must be admitted, however, that its breeding habitat in the hinterland of Canada has not been nearly so severely damaged as has that for many species.

The blacky is a large duck, weighing usually between two and a quarter and three and a quarter pounds (we have yet to weigh a four-pound black, but it is possible). Except for a somewhat lighter-colored head, the black duck is uniformly dark—noticeably darker than the female mallard. It's flashing white, under-wing feathers are its best field mark when flushed.

Its feeding habits are similar to the mallard, but along the coast in Winter its food is largely animal matter such as snails, clams and small aquatic crustacea.



The black duck's breeding range extends from coastal North Carolina northward to about North latitude 57° in Labrador and Quebec, westward to the edge of the Prairies, thence southeastward into the Appalachians. It breeds in all sections of New York, laying 9 or 10 eggs in April. The five to six young begin flying in late July. The black winters here in New York too, chiefly along the Long Island coast and on the larger, open lakes and rivers.

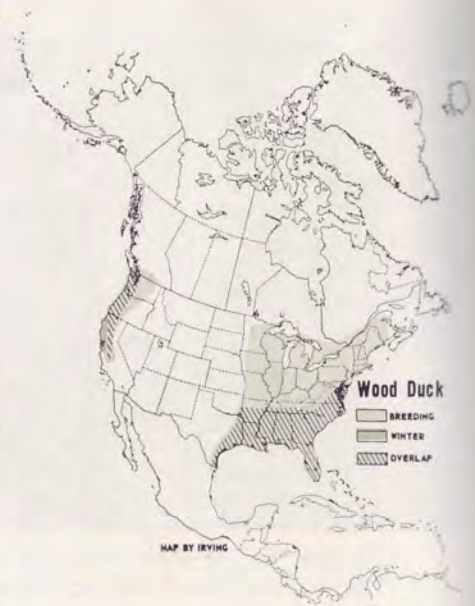
In recent years the controversy concerning the so-called red-legged and common races of black ducks has apparently been decided in favor of one species, which is variable in size, coloration, time of migration and wariness—all most easily explained by differences in age, sex and moult of the specimens concerned.

Management of this bird in New York has included the construction of hundreds of small marshes, on which the black has been a primary breeder and migrant; the banding of about 30,000 birds to provide data on migration routes, breeding grounds and hunting pressures (so far 4,500 returns); and the aerial census that has told us when the greatest numbers migrate through New York and where they are—to provide the most equitable open season allowable under Fish and Wildlife Service regulations.

Wood Duck

There's no reason to believe that waterfowl ever pay much attention, except perhaps within their own species, to how beautiful they are. Besides, any contest of that nature would be quite pointless since the wood duck—universally held to have no equal for handsome plumage—would win, "wings-down."

Fortunately for us, the woody breeds generally throughout New York State—though it is not so abundant on Long Island and in the Adirondacks. Not so fortunately for us, it is one of the earliest Fall migrants, often heading for the southerly wintering grounds before the hunting season has hardly gotten underway. Those that tarry, though, are taken in numbers for, besides being an excellent table bird, they are prized as speci-



mens for mounting and by fly-tiers for "flank feathers that can't be duplicated." Moreover, they're an extremely trusting bird and appear to favor easy hunting pot-holes and swamps—all good reasons for the one-a-day bag limit.

The woody is the only dabbling duck that nests in trees as a rule, utilizing natural hollows or holes excavated by woodpeckers. It prefers sites over or close to water but if cavities are scarce it may set up housekeeping as much as one-half mile from water. The wood duck lays from eight to 14 white, roundish eggs which hatch in from 24 to 30 days. The young leave the nest by jumping and fluttering down to earth—or water—not carried down by mother woody as one time thought. Adults average one and one-quarter to one and three-quarter pounds in weight.

The woody's tree-nesting habit has distinct advantages when it comes to ground predators, but trees aren't handicaps to all predators and raccoons and opossums take their toll.

The dependence of wood duck on suitable tree nesting sites was demonstrated, to their disadvantage, by the land hurricane of 1950 which destroyed such trees in wholesale lots throughout eastern New York and western New England. There was a marked decline in wood duck numbers in successive seasons and it has been only within the past two years that they've recovered. A part of this recovery can certainly be attributed to the efforts of Department game men, sportsmen's groups, Boy Scouts and others who have constructed and erected wood duck nest boxes in suitable habitat. (The Department has specifications for these providing assurance of maximum occupancy and minimum predation.)

Records of wood ducks banded in New York have been reported most frequently

from the Piedmont section of Alabama, Georgia and the Carolinas; rarely from southern coastal areas.

In the management field, in addition to the nest box program, the Department has contributed most through construction of small marshes and continuing surveys—important in recommending proper season dates and length and safe bag limits.

Mallard

The mallard is a cosmopolitan, at least in the Northern Hemisphere. Common to all flyways in North America, it is, without question, the most important of all species of wild waterfowl. Not only is the mallard the most abundant wild duck in the world, but in addition the basic stock for many of our domestic varieties.



On this Continent the mallard is much more abundant throughout the western two-thirds of Canada and the United States, though, in recent years, it has become much more abundant in the eastern states. Though this may be attributed, primarily, to natural extension of its range, the mallard may have been helped here in the East by creation of marsh habitat and by stocking.

Just about the same size as the black duck—to which it is closely related—the mallard is a fine sporting and table bird. Its feeding habits—aquatic or semi-aquatic vegetation including pond weeds, smartweeds, bur-reeds, grasses, bulrushes and sedges augmented during the hunting season by nocturnal forays on grain fields—hold the key to the mallard's excellence of flavor.

While perhaps not quite so wary as the black (it is also easier to propagate in captivity), it does take a well-camouflaged blind and natural-looking set of

decoys to assure a full bag of "green-heads" after the season has opened. There is a somewhat greater-than-expected mortality on released mallards the first Fall following liberation, but apparently they learn fast so that in later years there are fewer recoveries by hunting than from their totally-wild cousins.

The small marshes constructed in New York (over 700 to date) have been as attractive to the mallard as they have to the black and woody, and they have produced an annual average of about one and a half broods of all species per marsh. In some sections of the State, principally in the western portion and along the St. Lawrence, mallards have appropriated these man-made breeding areas at a greater rate than any other ducks.

Although some mallards winter here, the peak of the Fall migration through the State occurs from October 20 to November 15 and in Spring during March and early April.

Other activities concerning the mallard in New York have involved the release of over 20,000 adults and ducklings; a study of their survival as related to strain or origin; the banding of more than 9,000 wild birds, and, of course, the aerial census, brood surveys and hunter harvest studies—all of which have led to better waterfowl management.

Scaup

Few species of waterfowl masquerade under so many aliases as the scaup, bluebill, broadbill or blackhead—to name a few. Further confusing the issue, there are two varieties—the lesser and the greater scaup, both of which are frequently confused with the red-head and the ring-neck.



The greater scaup, breeding chiefly in Alaska and northwestern Canada, is a somewhat larger bird than the lesser species which breeds from the Northwest Territories southward through the mountain and prairie country into Nebraska. Just recently aerial surveys have located a breeding population of scaup along the Quebec-Labrador border. It has not been identified as to species, but is probably the greater scaup.

Although scaup, a diving duck of the open bays and lakes, rates high among the seasonal waterfowl bag, comparatively little is known of its habits that can be applied to better management of the species. Accordingly, the U. S. Fish and Wildlife Service and a number of states, including New York, have undertaken large-scale banding programs in recent years to get a better "line" on this and other species of diving ducks. Already an interesting scattering of band records of scaup live-trapped in New York have been received from the Prairie Provinces.

Last Fall three greater scaup banded during the Summer of 1955 in extreme northwestern Alaska (Selawik) were shot in Great South Bay near Bay Shore. And other states, including Florida, along the Atlantic Coast are banding large numbers. A number of these, mostly lessers, have been color-marked in Florida for sight records during northward migration.

Until two years ago, most people separating the species did so by means of the greenish (greater) or purplish (lesser) heads, longer white wing-stripe (greater), smaller size, one and three-quarters to two pounds (lesser), and more vermiculations or worm-shaped markings on the shoulder and side feathers of the lesser. Nowadays all waterfowl technicians use a "bill gauge" developed by Fish and Wildlife Service biologists who found that the nail on the upper bill of the greater scaup is never less than 6.7 mm in width while that of the lesser is smaller than this. Other criteria are used now only for interesting comparisons to see how accurate they are.

Both lesser and greater scaup are "raft" ducks and sporting birds of the first order when shot over pass or decoys. But good scaup shooting doesn't usually begin unless there is cold, blustery weather to make them fly. They may not be top table birds, especially the greater—since their food is large animals—but birds from the inland lakes, when properly prepared, rank as excellent eating.

We believe that at present we are "under-harvesting" the greater scaup—at least in relation to the hunting provided by other less abundant waterfowl species. The studies now underway should provide information on this point.



Lesser Scaup



Mallard



Black Duck



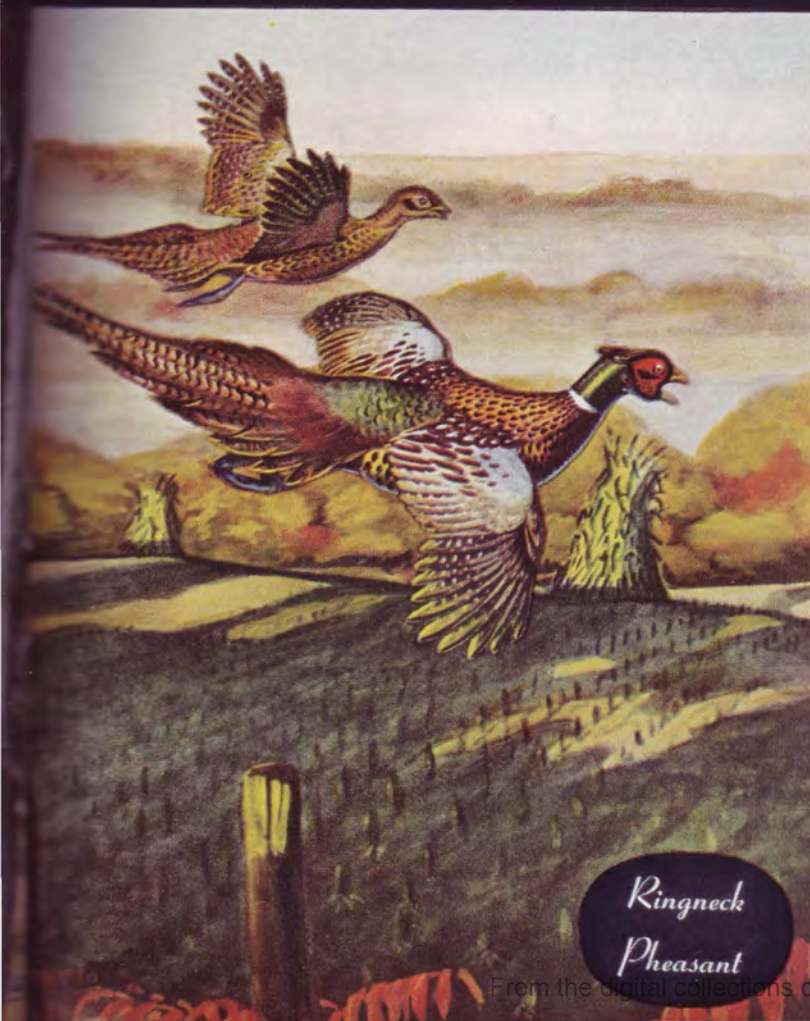
Wood Duck



Ruffed Grouse



*Hungarian
Partridge*



*Ringneck
Pheasant*



Woodcock

Upland Game Birds of New York

Hungarian Partridge

During the period 1927-1932, the Conservation Department released nearly 28,000 Hungarian partridges in New York State. It was hoped that these fine game birds would "take hold" and supplement our grouse and pheasant shooting, especially in areas where neither of the latter two species was plentiful.

Almost without exception, however, the "Huns" disappeared soon after release. The only really successful liberations were in an area along the St. Lawrence River in Jefferson, St. Lawrence, and Franklin counties. Apparently, this was the only part of the State where the complex of land use, climate and wildlife and human populations was to the birds' liking. At any rate, they increased slowly and even made successful recoveries fol-



lowing severe losses during the Winter ice storms of 1942-43 and 1946-47. There has been an annual open season in this area since 1952.

These birds are mid-way in size between pheasants and bob-whites, weighing an average of 13 ounces. Like the quail, they occur in coveys. They nest on the ground, usually in grass or weeds. The hen lays her clutch of about 14 or 15 eggs, beginning in early May, and the chicks hatch following an incubation period of 24 days. The life history of the Hungarian partridge has as yet not been thoroughly investigated in New York, but information from other states indicates that nest and brood losses may run about 30 per cent, and that only six or seven chicks from a brood survive until the hunting season.

Like the pheasants, "Huns" feed primarily on small grains, corn, and weed seeds supplemented during the Spring by green vegetation. The chicks subsist largely on insects.

Hungarian partridges have fared best in this country in the open farmlands from Minnesota westward through the Dakotas, in the irrigated croplands of the northwest and in the Prairie Provinces of Canada. Our St. Lawrence Valley range seems to offer ample food and cover, and the dry weather characteristic of the nesting and brood seasons is thought to be one of the keys to the birds' success in the region.

There are a few small, isolated populations of Hungarian partridges elsewhere in the State which have persisted since the original introductions (see range map). These are being studied in an effort to learn what factors may be preventing their increase. If we are successful in solving this problem, it is possible that we may some day enjoy more widespread open seasons on "Huns."

Ruffed Grouse

The ruffed grouse, or partridge, is generally considered to be without peer among our upland game birds. Certainly it is difficult to imagine finer sport than hunting grouse with a good dog on a hazy day in late October. The sudden, thunderous take-off and twisting flight never fail to quicken the pulse. If you have sufficient presence of mind to swing your gun and enough skill (or luck) to drop the bird, you'll never again be satisfied with lesser sport.



Ruffed grouse are found throughout New York State in suitable habitat. This may be a farmer's woodlot or the forests of the Catskills or Adirondacks. In extensive woodland they are most frequently encountered near old logging roads or the edges of clearings, except when stormy weather or roosting time causes them to seek heavier cover, usually conifers. Mixed growth with frequent openings is far superior to unbroken forest as grouse habitat.

The abandonment of thousands of acres of hill-farms in New York may have created a king-size headache for sociologists and economists, but it also created some of the best ruffed grouse range in the Northeast.

The chicks are insect eaters, while the adults eat buds, seeds, leaves, insects, and wild fruit in season. Beechnuts and thornapples are favorites.

"Drumming," a performance peculiar to the male ruffed grouse, is most frequently heard during the courtship period beginning in late March or early April.

The muffled, ventriloquial sounds, intended to attract hen grouse, are produced by a series of forward wingbeats against the air—not against the breast, as believed by some of the earlier naturalists.

During late April the hen lays a clutch of about 11 eggs in a depression in the leaves, usually in the woods and more often than not at the base of a tree or stump. Often, the nests are so cleverly concealed that it's possible to walk by within a few feet without ever seeing them. The incubation period is approximately 24 days, and the eggs hatch about the first of June. When full grown, ruffed grouse weigh approximately one pound, six ounces for the male and one pound, four ounces for the female.

Grouse have been successfully reared in captivity, but this has proven highly impractical. Thus we must depend entirely on natural production. However, in spite of the continued increase in the number of hunters, the grouse appear to be able to hold their own without undue assistance in the form of abbreviated or closed seasons.

If you want to lend a helping hand to your local partridge population, leave those thornapple trees in the fence corner by the woods. Clear away the brush around wild apple trees and prune the trees a bit. You might try, also, grafting hardy and persistent apple-bearing stock on some of the presently poor producing scrub apple trees in your favorite coverts, and planting clumps of conifers where Winter cover is deficient.

Ring-Necked Pheasant

The ring-neck pheasant is an Asiatic bird which reached New York by way of England. The original stock was the English black-neck, scollard, but our present day pheasants more nearly resemble the Chinese ring-neck. Adult birds will average three and three-quarters to four pounds for cocks and three and one-quarter for the hens.

The birds thrived particularly well in the rich farm country of the Lake Plains, along the southern shore on Lake Ontario, following introductions made during the last two decades of the 19th

Century and open seasons in portions of that area date from 1908.

As a consequence, a brisk demand developed for additional stocking and the first State game farm was established at Sherburne in 1909. By the early 1920's pheasants were well established in most of their present range in the State.

Ring-necks increased in numbers in New York until about 1928. During the next 15 years abundance fluctuated—up some years, down in others. Then, in 1943, there was a severe drop in pheasant numbers followed by several years of scarcity. An upward trend began in 1947 and has continued, in general, to the present time.

Pheasants are game birds of open farmland, particularly of the fertile, grain- and mixed-farming country. Our best range lies in a wide belt from Buffalo to Syracuse, in the Mohawk and Hudson valleys, along Lake Erie, and in portions of the northern Finger Lakes country.

The nests are located in hayfields, weeds, brushy cover, hedgerows and similar locations. The clutch usually consists of 12 eggs, which require about 23 days for incubation. The first nests are started in late April, and the peak of hatching occurs in mid-June. Of the 12 potential chicks from the average nest, one or two usually fail to hatch. Inclement weather, accidents, and predators further reduce the brood so that only four to six chicks survive until the hunting season.

Until recent years management was based almost entirely on protection (which meant relatively short seasons on cock birds only), and on stocking with game farm pheasants. Currently, the Department is engaged in a habitat improvement program aimed toward improving food and cover for game, including pheasants. Perhaps the most significant advance in management is the trend toward discontinuance of stocking on poor range, and primary reliance on natural production on good range.

Woodcock

Although popularly considered as an upland gamebird, the woodcock actually is a shorebird closely related to the Wilson snipe or jack snipe. Woodcock are migratory, with their chief breeding range in southeastern Canada and the northeastern United States. The wintering grounds are in the southern states, from Virginia to Texas, with the greatest concentration in Louisiana.

Woodcock arrive in New York during late March and early April. The hens nest soon after arrival, and the four eggs are incubated for a period of 21 days. The hatching date normally falls between



April 20 and June 1, with the peak of hatching occurring about the first week in May. When full-grown, Timberdoodles weigh approximately six plus ounces for the male and seven and half ounces for the female.

These birds nest in practically every county in New York State, with distribution and abundance being determined by the location and amount of food and suitable cover. The nest is a depression in dead leaves or grass, and may be found in mixed-growth woodland, brushy fields, or in open alder runs. In all seasons the Timberdoodles require an ample supply of earthworms and soft, moist ground in which to probe for their favorite food. In October the hunters look for woodcock in alder cover, in open sapling stands of aspen and birch, on hillsides beneath the hawthorns, or other places where experience has taught them that the flights drop in for food and rest on the southward migration.

Perhaps the most interesting thing about woodcock, aside from the sporting and eating value, is the springtime courtship performance of the male. From the time he arrives from the South until about June 1 the cock puts on this show daily at dusk and at dawn, and occasionally during the night, weather permitting. The period of greatest activity is roughly from April 15 to May 15. The cock selects a small clearing, usually not far from the female's nest or his own daytime resting cover. After arriving at the singing ground he walks about in an uneasy manner and gives out with a series of loud, insect-like noises not unlike muffled "Bronx cheers." These are spaced a few seconds apart, and are best described as *peents*. After a brief session of *peenting* the cock takes off and spirals upward perhaps 200 feet, making a whistling sound with his wings. Descending almost at once in zig-zag swoops, he really sings—a bubbling and ecstatic vocal rendition. The entire ritual takes but a few minutes and may be repeated 10 or 12 times before the evening's performance ends. The object of the performance, of course, is to attract the female to the singing ground, where mating takes place.



THE relationship of New Yorkers to bears can be broken down into several categories. The great majority has never seen a bear and knows of their existence only through such remote evidence as a snapshot of Aunt Mary tossing a sandwich to bruin during her trip with Uncle Harry through Yellowstone National Park. A considerably smaller group has actually seen bears at fairly close range—through the bars at the zoo. Still fewer have seen bears in New York—in the wild; some of them at uncomfortably close range around the Conservation Department's central Adirondack public campsites. And finally, from 200 to 300 sportsmen each year succeed not only in seeing bear in the wild during the hunting season, but in bringing them to bag.

These last two situations are of direct concern to the Conservation Department. We need to know a great deal more about the black bear in New York to properly manage the species as our biggest of big game animals, and, secondly, something had to be done to separate the bears from the people at the public campsites—before the bears "separated" some of the people.

The something began this Summer—a live-trapping and transfer program conducted as a co-operative Federal Aid project with a team of student biologists* from Cornell's Department of Conservation, supervised by C. W. Severinghaus of the State Conservation Department, as a part of New York's Big Game Investigation Program.

Patterning their operations from similar programs conducted by the National Park Service and by states such as Maine, Michigan and Virginia, the biologists moved into the central Adirondack area between Inlet and Tupper Lake with sections of 8' x 3' of steel culvert mounted on two-wheeled trailers. The culvert sections are closed at one end with welded and ventilated ¼-inch steel plates. The other ends are moveable, guillotine-action-like steel doors which drop when the triggers are pulled. The steel culvert traps are permanently mounted on 2-wheel trailers, much like a car-boat trailer (see photos). Four such traps were used—one early in the season and three more during the last month of trapping. Traps were set, baited with small pieces of smoked bacon leading up dirt ramps into the traps. Suspended inside at the sealed ends of the traps were one-pound chunks of bacon tied to rod-like triggers. Usually at night Mr. Bear entered the picture, finding and eating the bacon tidbits outside, leading him into the trap much like a chicken pecking at a line of corn leading into a chicken coop. When the bear, once in-

side the culvert trap, found and yanked the triggered bacon the suspended trap door clanged shut behind him.

The trapped bears, it was found, were most philosophical about their plight. They settled down quietly and calmly to see what would happen next. The following morning, the "next" happened. The trailer-trap was hitched to a truck and pulled to a release area where ether was pumped into the culvert until bruin was sound asleep. (It took about 1¼ pounds of ether in an atomized spray and 10 to 15 minutes to put the bear in dreamland.) Then the trap door was lifted, the bear was dragged out and his feet tied together so he could be hauled up and weighed. Once weighed, the feet were untied and the following measurements were taken: Total length, head length, tail length, hind foot length and length and width of one fore and one hind paw. Teeth were examined, measured and compared with known-age specimens to determine the approximate age. Next, both ears were tagged and the anal temperature taken. Then the condition of the animal and its pelt were checked. If the bear started to recover during any of this procedure, a bucket containing a swab of ether-soaked cotton was quickly slipped over its head to prolong its sleep. Finally, the bear was allowed to recover and to retreat groggily into the woods.

In all, 59 individual black bear were trapped plus one re-trap. Fifty-four were ear-tagged and released. The smallest bears taken were three cubs that averaged 21 pounds. The largest was a 391-pound male. The sex ratio of the total catch figured out to 17 females to 83 males per hundred bear. (See chart for complete data.)

SEX, WEIGHT, AGE DATA ON 54 LIVE BLACK BEARS

| Age | Males | Av. Wt. | Females | Av. Wt. |
|----------|-------|----------|---------|----------|
| Cubs | 2 | 21 lbs. | 1 | 21 lbs. |
| 1½ yrs. | 4 | 98 lbs. | 2 | 132 lbs. |
| 2½ yrs. | 16 | 178 lbs. | 1 | 129 lbs. |
| 4½ yrs. | 15 | 293 lbs. | 2 | 203 lbs. |
| 4½+ yrs. | 7 | 346 lbs. | 4 | 226 lbs. |

The success of this program will depend largely upon the co-operation of New York's big game hunters this Fall and in succeeding years in reporting the taking of these tagged bear. To encourage such co-operation a \$25 reward will be paid to those who send in the ear tags and the skulls of marked bear taken—together with information on time and place of kill—to Game Research Center, N.Y.S. Conservation Department, Delmar.

—HUGH BLACK, NICK DRAHOS

*Hugh Black, Dave Mech, Howard Erickson and Fred Knowlton.

A Bear by



Trapped bears are put to sleep with an ether spray; usually takes 10 to 15 minutes, about two pounds of ether to send bruin off to dreamland.



Teeth are checked as indication of age

the Tail



Live-traps are trailer-mounted culvert sections.

Bears like this one are an attraction and a menace to tourists.



Tip of nose to end of tail—one of measurements taken by bear-trapping biologists



Trussed-up bear is weighed using block and tackle; tree-rigged scale

Trapped bears were ear-tagged for future identification. \$25 reward for tag returns.



An ear-tagged, she bear "sleeps it off" at the release site. Research team trapped and transferred 59 bears from danger areas.

Tackapausha Nature

Nassau County makes a notable contribution



A small lake on the preserve area

PRESERVATION of the natural drainage valley of Seaford Creek, known in Colonial days as Arrasquag Creek, Nassau County, Long Island, has been so successfully carried out that it has acquired a wide reputation for efficiency in the conservation of one of our most valuable natural resources—water. Moreover, as a side product, it has been skillfully operated as a Nature Preserve of popular educational appeal.

This project, known as the Tackapausha Preserve, was planned, developed and operated by the Nassau County Department of Public Works, under the direction of Commissioner John C. Guibert. It comprises an 80-acre strip of land two miles long varying from 300 to 500 feet in width. It contains Seaford Creek, from its northerly source at Jerusalem Avenue, to Merrick Road (State Route 27-A) on the south. Here it empties into tidewater in a salt marsh reaching to South Oyster Bay, a mile distant. Sunrise Highway (State Route 27) and the Long Island Railroad bisect the tract and one local street (Clarke Street) crosses its northerly section. This valley Preserve separates the rapidly growing unincorporated communities of Seaford and Massapequa, and is bordered by residential areas on the east and west.

The primary objective in planning and starting this project in the 1930's was the control of storm drainage, prevention of

pollution, conservation of ground water, and preservation of about 65 acres of native woodland and marshy areas. Nassau County at that time was wisely starting long range planning for maintenance of ground water levels and establishment of recreational parks.

Recently, 15 more acres were added to the north end of the Preserve for expanded storm drainage due to extensive home developments nearby. Investigation had shown that it would be cheaper for the County to acquire this swampy area for storm water overflow than to widen the creek and construct a paved ditch all the way to tidewater. It had been found also that the flat swampy areas along Seaford Creek acted as collection basins for excess rainfall, slowing down the creek current as the spongy swamplands absorbed the runoff and raised the ground water level.

Nature preserve an outgrowth

The surface area of the 80-acre tract has been gradually developed since 1938 at small expense into a Long Island Natural History Preserve for public education and recreation. It was named for Tackapausha, Sachem of the five western Long Island Indian tribes, who negotiated the sale of the tract comprising the original Town of Hempstead to the English settlers in 1644.

During early surveys of the project it was discovered that there existed in the



Section of trail thru white birch, second growth



Museum Building, Sunrise Highway

Preserve

by Meade C. Dobson

to preservation of natural resources



oak, blueberries, sweet fern and viburnums

We have been informed that Suffolk County, not to be outdone by neighboring Nassau, recently approved the acquisition of a 123-acre site south of the Peconic River at Riverhead for the development of its own nature preserve. The area is situated adjacent to lands already acquired for the county's new administrative buildings site.

The preserve area includes oak and pine woodlands, a section of white cedar swamp and an abandoned cranberry bog—presently an extremely popular gathering place for a variety of birds.

The new preserve area has long been the goal of a number of civic organizations including garden clubs and conservation groups. Its development will undoubtedly be actively supported by these groups and by conservationists throughout the county.

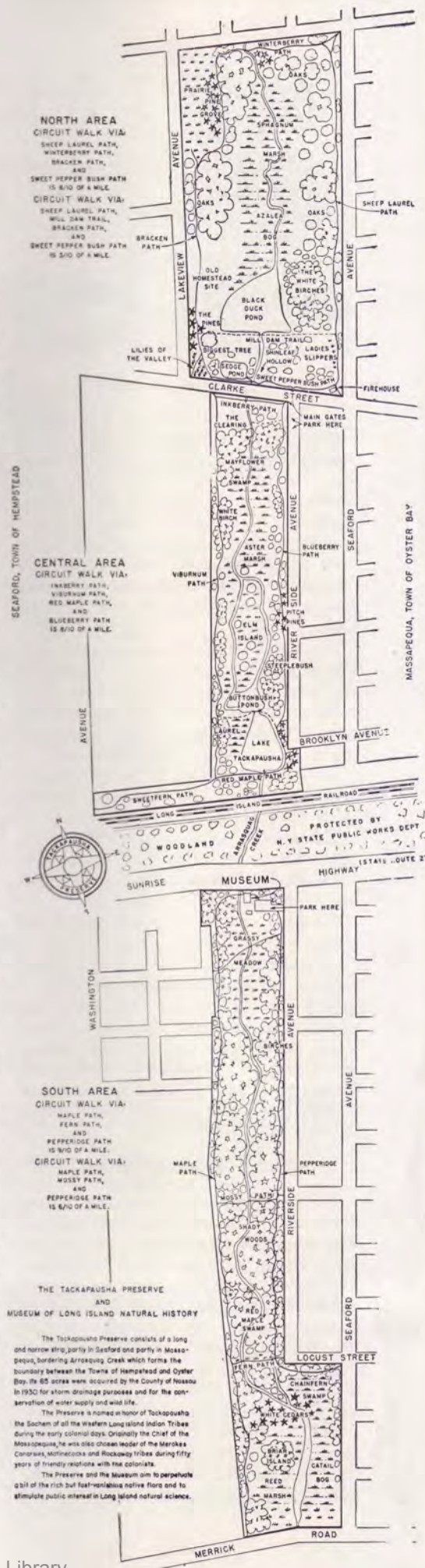
area an unusual variety of plant life, including several plants unknown elsewhere on Long Island. In addition to plants found there, 1,500 varieties of plants from other parts of Long Island have been introduced in settings of natural of habitat, many being tagged with common and botanical names. Five and a half miles of nature trails are provided for visitors so that the natural woodland growth cannot be disturbed, and a particularly interesting feature is the Native Tree Walk along which the 68 native tree species of Long Island are being planted. Aquatic plants and animals thrive in two small Preserve "lakes" developed for that purpose.

At the main entrance on Sunrise Highway east of Washington Avenue, Seaford, is the Trailside Museum and Administration Building, attended daily by naturalists. It contains a natural history library, scientific collections and public exhibits. Permanent and temporarily loaned displays of Long Island wildlife are professionally exhibited. These displays include Long Island bird life, nests, mounted specimens and eggs; marine life shells, crustaceans, seaweeds; Indian relics, fossils and minerals; insects; living wild flowers and ferns; tree section exhibits; herbarium; collection of some Long Island animal skins; salt and fresh water aquaria and a terrarium; photo and painting shows. In a separate building behind the Museum, a zoo of native small animals is maintained.

School, Scout, garden club and other groups are invited to arrange guided tours. These nature walks acquaint Long Islanders with their native plant and animal life, and naturalist-beginners spend much time in the Museum workrooms at preserving, mounting and arranging specimens, drawing, painting and writing.

During 1955 there were 70,000 visitors at Tackapausha Preserve—all receiving direct and personal education regarding the need for conservation of ground water, plant and animal life, and the vital necessity for the preservation of our diminishing natural resources.

Inquiries and correspondence should be directed to the Nassau County Department of Public Works, Old Court House, Mineola, Long Island, New York, attention of George P. Peters, Deputy Commissioner in charge of Nassau County Parks.





Pepacton statistics

In THE CONSERVATIONIST for August-September, 1956, John R. Greeley, Chief Aquatic Biologist for the Conservation Department, presented a most comprehensive review of the status of the lamprey in New York's waters. Among the illustrations for Dr. Greeley's article was a view at the spillway of the City of New York's new Pepacton Reservoir just above Downsville on the East Branch Delaware River.

Space did not permit, at that time, publishing some very impressive statistics on the new reservoir as submitted by Cecil E. Heacock, District Fisheries Manager for the Conservation Department. We're still impressed, though, so here they are:

"Dam at Downsville, E. Br. Del. River: 2,450 feet long; 204 feet high. Rolled earth construction with concrete core.

"Maximum depth of water: Approx. 180 feet.

"Watershed area above dam: 372 square miles.

"Surface area of impoundment: 5,700 acres.

"Storage capacity: 147 billion gallons; will yield 375 million gallons per day."

Note: By special agreement with Conservation Department, the City of New York will provide for minimum release below dam of 12 M.G.D. for period April 8 through October 31, and not less than 4 M.G.D. for the period November 1 through April 7.

Forest pests in review

As the gypsy moth trapping season draws to a close, it is apparent that infestation exists even farther west in New York State than previously estimated. The most westerly recoveries to date come from the Township of Albion in Oswego County, the Township of DeRuyter in Madison County and the Township of Fenton in Broome County. If the resistant growth areas of the Adirondack and Catskill mountains were to be considered as infested, then it is a fact, that approximately two-thirds of the overall land area of this State is presently infested by the gypsy moth.

the back of the book

Recent reports from the older infested areas in eastern New York in Warren, Essex, Washington, Saratoga, Rensselaer, Columbia and Dutchess counties indicate that moth populations there are increasing at an alarming rate and may be sufficient by 1957 to cause considerable defoliation unless sprayed early in that year before the caterpillars have the opportunity to feed on the foliage.

Other current-season control operations that were accomplished so as to prevent damage from outbreak populations of forest insect pests are as follows:

1. Spraying of 2,150 acres of woodland in Rensselaer County to control the saddled prominent caterpillar. We predicted a year ago that this pest might require treatment in 1956.

2. Spraying of 50 acres of island territory in Lake George to control a devastating attack by the orange-striped oak worm.

3. Co-operative spraying by this Bureau and the U. S. Forest Service for the control of the red pine sawfly on 1,185 acres of State-owned forest plantation in St. Lawrence County.—C. J. Yors, Supt., Bureau of Forest Pest Control

Washington and Texas deer

Studies conducted by State of Washington biologists have shown that, in order to maintain a proper deer production level, harvests must be allowed that will keep populations within the carrying capacities of the range, thereby insuring a nutritionally healthy deer herd. Fawn tagging work in the Spring of 1950 showed the average fawn weight at 8.3 pounds. Following deer-of-either-sex seasons the average fawn weight jumped to 9.7 pounds in 1951 and 10.3 in 1952. This indicated that the either-sex harvests for those years definitely improved the habitat and indirectly the condition of the deer herds.

Meanwhile, game men in Texas live trapped, marked conspicuously and released 102 deer. Since then they've been checking to see how far they roamed. To date the maximum movement noted has been within a circle approximately one mile in diameter.



A nest full of young sparrow hawks in the siding of an old barn in Columbia County eagerly await catering service. At the time these pictures were taken, mother sparrow hawk was providing them with a straight diet of grasshoppers.



Oneida launching sites

Focal point this year of the Conservation Department's program to acquire and develop public boat launching sites is Oneida Lake. One site at Godfrey Point off Route 49 on Oneida's north shore, approximately two miles east of Cleveland, is already in use. Here, two launching ramps are available along a 150-foot log dock frontage. The entire site affords 400 feet of frontage and is serviced by a gravel access road and a parking area large enough to accommodate 30 cars and boat trailers.

A second launching site is nearing completion at Shackleton Point on the south shore of the lake. Situated on Briggs Bay, one mile east of Bridgeport off Route 31, this site will be similar to the Godfrey Point area in size and facilities. It is being constructed in co-operation with Cornell on property recently acquired by the University.

A third site scheduled for construction this season is located two miles east of Central Square on the north shore's Three Mile Bay. This property, previously acquired by the Conservation Department for a game management area, will be developed as a beach launching site. Shore frontage will be dredged but no docks are planned here.

These three launching sites are expected to see heavy use by fishermen and trailer-boatmen on this increasingly popular lake. Moreover, the construction and observations of use of the launching sites will be a valuable guide to the Department in future acquisition and development of lake-access sites on other waters of the State.

New York's wetlands

Wetlands, the most productive habitat for wildlife that exists, is disappearing from New York at an alarming rate. Recent surveys carried out in the State by the River Basin Office of the Federal Fish and Wildlife Service, show that we're losing more than 20,000 acres of wetlands each year through drainage, filling and urban and industrial development.

Aware of the inroads upon wetland habitats, the Conservation Department has and will continue to stress the creation of small marsh areas under the Federal Aid Program as well as acquisition of larger desirable marsh areas.

Water chestnut

In 1949 an amendment to the Conservation Law made it unlawful to plant, transport, transplant or traffic in plants of the water chestnut or the seeds or nuts thereof. Federal legislation is now being considered which, if enacted, will make it unlawful to transport in interstate commerce water chestnut and certain other nuisance aquatic plants.



"Fishical" therapy

If you're physically run down, mentally disturbed or recuperating from a long illness—want to know what to do? Go fishing. That's a time-honored prescription and it works just as well in this modern era of miracle drugs as it ever did.

For evidence we point to an experiment now in its eleventh year at the Conservation Department's fish hatchery at Caledonia. Back in 1946 someone came up with the idea of setting aside a short stretch of Spring Creek on the hatchery grounds for use of disabled veterans from the nearby Batavia Veterans' Hospital.* Howard Russ, then and now the hatchery Foreman, was given the job of making necessary arrangements.

He looked for help and it was there—ready and willing. Local sporting goods dealers furnish fishing tackle, members of the Genesee County sportsmen's group instruct the veterans in fly tying and fly and bait casting and Batavia merchants annually offer prizes for the best fish taken.

This year, as in the past, veteran groups are periodically being transported from their Batavia hospital and, as usual, they are catching fish. Split up in parties of seven, they observe a two-fish-per-man limit. Group catches average 10 to 12 trout ranging in size from ten inches to some over three pounds.

Then comes the finale—their trout are cooked for them and served with all the trimmings right on the grounds by the local American Legion Auxiliary.

No one—least of all the hospitalized veterans—have questioned the success of

this co-operative experiment, and there's convincing evidence too, of its therapeutic value. In the program's first year one wheelchair patient was able to walk without assistance at the end of the season. In fact, so marked have the benefits been that the Veterans' Administration rates it as their top recreational project, and the late Dr. Woodruff, former manager at the Batavia Veterans' Hospital stated many times that this project did more for his patients than all the medicine he could give them in years.

** In the last four years the Batavia Veterans' Hospital has been handling T.B. patients. The fishing program has been continued, however, for these patients.*

Wildlife and flood protection

Recently several individuals and local agencies in western New York got together and came up with a dual purpose conservation project.

On the Martin Shields farm near Randolph, in Cattaraugus County, personnel of the Division of Fish and Game of the Conservation Department located and surveyed a wildlife marsh site on the upper reaches of Battle Creek. To speed up the proposed project three landowners donated property rights, labor and construction material. On the basis of the survey, the U.S. Soil Conservation Service designed the structure and supervised the construction. The Town Highway Department raised a road and installed a special culvert. Organized sportsmen put up \$200 and other financing came from the County Agriculture Stabilization Committee.

The result of this co-operation and combined effort is a permanent 25-acre marsh—an ideal habitat for many forms of wildlife.



The Shields' marsh

At the same time the impoundment functions as a check rein on part of the Battle Creek flood waters. It can hold 6" of runoff from its 600-acre watershed and discharge it as a moderate steady flow thereby making downstream Randolph a safer place to live during the rainy season.

Sportsmen's Workshop

On June 21, seventy-four sportsmen from as far distant as Long Island and the Lake Champlain Region, gathered at Camp 5 in Allegany State Park for the sixth annual session of the Sportsmen's Conservation Workshop. From this base, the group participated in two and one-half days of field trips and discussions highlighting important conservation activities and problems in southwestern New York. The delegation, comprised of leaders among organized sportsmen from community, county, and State levels, represented nineteen counties and was the largest ever to attend this event.



Sportsmen observe utilization of low quality hardwoods at Norton's Mill, Great Valley

As customary, the Workshop was sponsored by the N. Y. S. Conservation Council and conducted by Cornell's Department of Conservation. Local State Conservation Department and Soil Conservation Service technicians gave Gus Swanson and his Cornell staff a big hand with the instruction. Conservation Department Game Manager Dick Hyde and "Hop" Whitmore of the Cattaraugus Federation of Sportsmen's Clubs, performed yeoman service in making local arrangements.

The Workshop program seeks to aid these lay leaders in understanding currently important problems in wildlife management, forestry, and soil and water conservation, and to equip them to think and act objectively on these issues in their role as leaders.

Management of the Chautauqua Lake muskalonge was featured the first day when the group toured the Conservation Department's new muskie rearing station at Prendergast Point. There, Foreman Ray Norton demonstrated hatching and rearing techniques, and District Fisheries Manager Udell Stone reviewed the management of this productive fishery. Later in the day, at Barcelona on Lake Erie, the commercial fishing operations of Harry C. Monroe were inspected, and Bill Bentley, Aquatic Biologist, sum-

marized the status of this industry on Lake Erie.

On Saturday, visiting the unique saw mill of C. B. Norton Sons, Great Valley, the sportsmen looked in on an operation contributing to the solution of one of the State's foremost forestry problems—the economical use of low quality hardwoods. Other field trips featured deer and turkey management in the Park, and local stream improvement work.

Evening discussions centered on the gas and oil resources of the region, and the management of the Allegany National Forest in Pennsylvania. Trout fishing in the Park, numerous "bull sessions," and a chicken barbeque prepared by Cornell chefs, rounded out the weekend program.

Lake Erie fisheries conference

New York State was host to the Lake Erie Fish Management Committee this year. The 1956 Lake Erie conference was held at the State Office Building in Buffalo on June 6th and 7th. Representatives from the Canadian and United States federal governments, the Province of Ontario, and the States of Michigan, Ohio, Pennsylvania and New York attended. Several universities interested in Lake Erie fisheries research were also represented.

An innovation at this year's conference was the attendance of members of organized sportsmen's groups and the commercial fishing industry from around the Lake. The new participants were a welcome addition and 1957 plans call for inviting these groups again.

The Committee continued its efforts to co-ordinate and improve fisheries management and research efforts for Lake Erie. Dr. Moffett, U. S. Fish & Wildlife Service, gave a report on progress, achieved to date under the new Great Lakes Treaty. He also stated, as Acting Executive Secretary of the Great Lakes Fishery Commission, that the Commission urged the continuation of the Lake Erie Fish Management Committee as an aid and assistance to the International Treaty program.

The U. S. Fish & Wildlife Service presented a progress report on their program to find new and better uses for presently under-utilized fish species of Lake Erie. This effort has already added to the markets available to the commercial fishermen for economical utilization of rough fish and processing scraps. By finding profitable outlets for these previously unwanted species it is hoped to open new sources of revenue for the commercial fishery. This should encourage commercial fishermen to fish for and reduce rough fish populations thereby benefiting the sport species by reducing

their competitors. Thus, all interests should reap the reward of this program.

Plans were begun for a creel census of all Lake Erie sport fisheries. A commercial fisheries reporting system is already well established. The addition of a sport fishing census will finally give the much desired complete catch figures for the most productive body of water in North America.



Flying martin house

Flying problems are nothing new to John Schempp who, as a pilot for the Conservation Department, specializes in low-level aerial surveys for the Division of Fish and Game. This Spring, though, he met up with a new one—martins!

Early in June a colony of these birds at Round Lake where Schempp moors the craft, spotted the 'plane and decided it would make just a dandy place to build nests. So, using the air scoops as entry to the cowlings, in they moved with bits of vegetation from the lake shore, twigs, weed stalks, bark, wood chips, match sticks, beach pebbles and other appealing miscellany for their fine new home.

Schempp, who takes a dim view of flying with martin nests on the cylinder heads, began a month-long nest-clearing chore before each flight and the martins, just as determined, and, according to John, in evil humor, impatiently awaited each return of their elusive home to rebuild,

More about the "Big Tree"

On page 42 of the June-July issue of *THE CONSERVATIONIST* we published a letter from Ernest J. Searle inquiring about the existence of a California Big Tree (Giant Sequoia), in New York, along with our answer, which though it contained the best information we could give, off-the-cuff, did not really tell the whole story.

Further research, stimulated by another letter from Mr. Searle, enclosing a tear-sheet from a recent issue of *True* magazine, led to several disclosures:

(1) There are no Big Trees growing at either Bayard Cutting Arboretum or in the Rochester Parks.

(2) The tree referred to in the *True* article was, no doubt, the specimen growing on the Childs Frick Pinetum at Roslyn, on Long Island, shown on page 37 of "The Trees of Long Island," by George H. Peters, and published by the Long Island Horticultural Society in 1952.* This may be the one living Big Tree in the State, since the only other one of record, which was planted at Aurora, on the east side of Cayuga Lake, about 1868, died following the severe Winter of 1933-34. Several years after it died, the tree was measured by Dr. W. C. Muenschner and found to be 65 feet tall with a trunk diameter of 33 inches taken at 4½ feet from the ground.

(3) Two California Big Trees, planted 35-40 years ago, are growing at Cold Spring, L. I., at the gateway to the Industrial Home for the Blind. Mr. Peter J. Salmon, Executive Director, states in a letter that "both are still there and in excellent condition. While these gates are not on the property of The Industrial Home for the Blind, they are part of the Jennings Estate which still holds some property in the area on which the trees stand.

(4) We are also in receipt of a letter postmarked Flushing, N. Y. and signed "City Slicker" which advises us to "look along Northern Boulevard—beside Flushing High School—have been told these are Giant Sequoias—stand about 70 or 80 feet high and still growing."

Further information on these specimens or any other Sequoias in New York, is solicited.

(5) A small number of Big Trees was planted experimentally by the Conservation Department in 1939, but the seedlings, though they did all right in the nursery, failed to survive the first Sum-

mer in the field, showing that Summer heat in an exposed location may be just as damaging as Winter cold.

Another question raised by Mr. Searle was with regard to the botanical nomenclature, about which there is a certain amount of confusion, or at least, disagreement among the experts. *True* used the name *Sequoiadendron gigantea*, (*giganteum*, correctly, Ed.) which, to be sure, has been accepted by at least one of the highest authorities, Rehder's "Manual of Cultivated Trees and Shrubs," (2nd ed., 1940, Macmillan Co.); on the other hand, "Standardized Plant Names," published in 1942, and the U. S. Forest Service "Check List," 1953, which is the foresters', "bible" so far as tree names are concerned, both insist that the older generic name, *Sequoia* should be retained. Thus, the layman is faced with the familiar dilemma of deciding which expert or experts to believe. Personally we like the old name better, mainly because we're allergic to monkeying with tree names, once they've become established in general usage.—E. W. LITTLEFIELD, *Supt. of Forest Management*

* See review of this publication in *THE CONSERVATIONIST*—April-May, 1953.

Fishing vs baseball

The *Fisherman* magazine for September takes a sharp look at a couple of our national pastimes—baseball and fishing—and comes up with an interesting observation, to wit: From 2½ to 3½ times more people in Milwaukee and in Los Angeles prefer fishing to baseball. These figures were not from the air but the result of reader-interest polls run by large daily papers in these two communities.

It's recognized, of course, that there's room for both; that baseball, except for 18 plus players, bat boys and umpires, is a spectator sport, while fishing is just about 100 per cent participating.

So what? So take a look at the sports section of your daily paper, says *Fisherman*, and see what you see—page after page devoted to every aspect of baseball news, but if you're lucky, maybe one little column about fishing, the outdoors or conservation in general.

Such lop-sidedness, in view of the above noted reader-interest polls is odd, opines *Fisherman*. From it they deduce that fishermen are suckers for not demanding a better deal. And suckers, they add, because they permit a hundred other abuses to exist—including pollution of our streams, rivers, lakes and even the sea; exploitation of public fishing lands and others; election of legislators who

never give a thought to anti-pollution laws or to keeping public lands intact, and for just plain ignoring the program recommendations of their state conservation agencies.

Muskie heaven

Chautauqua Lake is having a banner year, producing another great catch of its famous "tiger" muskalonge. New record numbers of this much sought prize were brought in during the first six weeks of the 1956 season. Mr. "Vic" Norton, Bemus Point livery owner, reported the biggest early season landings in his "over 40" years' experience.

This Lake has been averaging about 7,000 legal (30" or over) muskies for a number of years. With about 13,000 acres of lake surface this figures to over one legal muskalonge for each two acres of water. The average size of the legal catch is about ten pounds. Seven thousand fish averaging ten pounds multiplies out to 70,000 pounds or *thirty-five tons*. Without doubt, this is the world's greatest muskalonge lake.

With a break in weather and the usual required "fishermen's luck" the Fall fishing which is ordinarily tops of the season, should put the cap on another great year at Chautauqua. New York State can again be proud of producing outstanding fishing within the borders of the nation's most populous state.

Fatal tangle



Tangle "tails"

Another tragic tale—or in this case—tails came to light here in Albany when Asa H. Smith, District Game Manager, answered a call from a lady who reported "some kind of animals crying in distress under her back porch."

Investigation disclosed the reason for the distress—a mother grey squirrel and her family of four young ones, their tails inter-twined and snarled in so tight a braid that they could not escape, were huddled in a corner beneath the porch. Three of the young ones were already dead when found; the others near death.



The Basswood tree

When the Red Man was monarch of all he surveyed in what is now the Empire State, the basswood tree or American linden had a strange role to play.

From its wood, the Iroquois Indian medicine men carved their grotesque "false faces"—masks that were used in ceremonial dances, to celebrate the approach of Spring.

Not every warrior could be a medicine man, though. To qualify, you had to get a case of "mask sickness," by dreaming about a false face that was ugly enough to scare you half to death!

Then, as soon as you woke up from this nightmare, you were supposed to go out and look for the nearest basswood tree, and carve your own ceremonial mask right on the living sapwood. Later, the mask would be split off from the trunk and hollowed out.

This was one of the more spectacular uses to which the basswood was put by the Indians but not the only one. The long, tough fibers of the inner bark were made into thread, with which the Indians stitched up their mats of cattail leaves.

When these fibers were braided together, they made a rope that the Red Men considered far superior to ours. And when the inner bark was pounded to shreds, you'd get something that was a little like today's surgical cotton, which the Indians used as a bandage.

So in Indian times, whether you wanted to make a ceremonial mask, sew a stitch in time, make a rope or bandage a cut, the basswood tree always came to the rescue.

Of course, in those days, the basswood grew strictly in the wild. These forest trees were quite a bit taller than the specimens of today that are under cultivation as lawn trees or along our city streets, but even so, the "domesticated" basswood is big enough to suit most people.

Big enough, and exceedingly attractive—especially in late Spring or early Summer, when the heart-shaped leaves provide a dark green background for the lacy, pale yellow blossoms.

The annual "flower show" put on by the basswood only lasts about three

weeks, but it's worth going out of your way to see—and smell. The fragrant perfume is sometimes wafted as much as a mile away, and in the words of one naturalist, is "more piercing . . . than orange blossoms."

Just ask the bees. They ought to know. When the basswood is in bloom, bees from the countryside will fly to it in droves, and knock themselves out to get the sweet-smelling nectar. There'll be so many bees on the tree, all buzzing at once, that it might even sound as if the tree is mumbling to itself.

The honey made from basswood nectar is called "basswood honey." It's white, and considered to be of very high quality.

The timber, as you might suspect, is extremely soft. Otherwise, I think it's safe to say that the Indians wouldn't have been carving their masks from this wood, so many years ago.

But as the forestry experts of the New York State Conservation Department point out, the basswood still has a number of commercial uses.

If you have Venetian blinds in your home, they may be made of basswood—along with the yardstick in your sewing room, the window sashes and picture frames, the sides of your bureau drawers, and some of Junior's toys.

Shipping boxes and crates are often made of basswood, too, as well as musical instrument parts and the backs of picture puzzles. Some of it goes into the manufacture of excelsior and paper pump.

It's a long time from the days of Iroquois Indian masks to Venetian blinds and shipping crates or picture puzzles, but the basswood tree has probably watched the years go by with the complacency of a man who is so versatile, he knows he can always make a living—regardless of the age he lives in.

We can be quite sure that 100 years from now, the basswood tree, or American linden, will still be in business as one of our New York State trees. Its wood will be just right, perhaps, for making some very small—but essential—parts of those rockets that may be roaring to the moon.—ROSEMARY CLARKE, *Radio Bureau, N. Y. S. Dept. Commerce*

Pribilof seals

The fur-seal herd of the Pribilof Islands now numbers about one and a half million animals—according to the latest census taken by the U. S. Fish and Wildlife Service which manages the herd under the terms of an International Convention.

Back in 1910 the herd was reduced to about 132,000 seals but now affords a safe harvest of more than 65,000 pelts annually.

They'll wear a yellow ribbon

This Fall, the well dressed brant will wear a yellow necktie and aluminum "spats," according to biologists of Cornell University and the Canadian Wildlife Service.

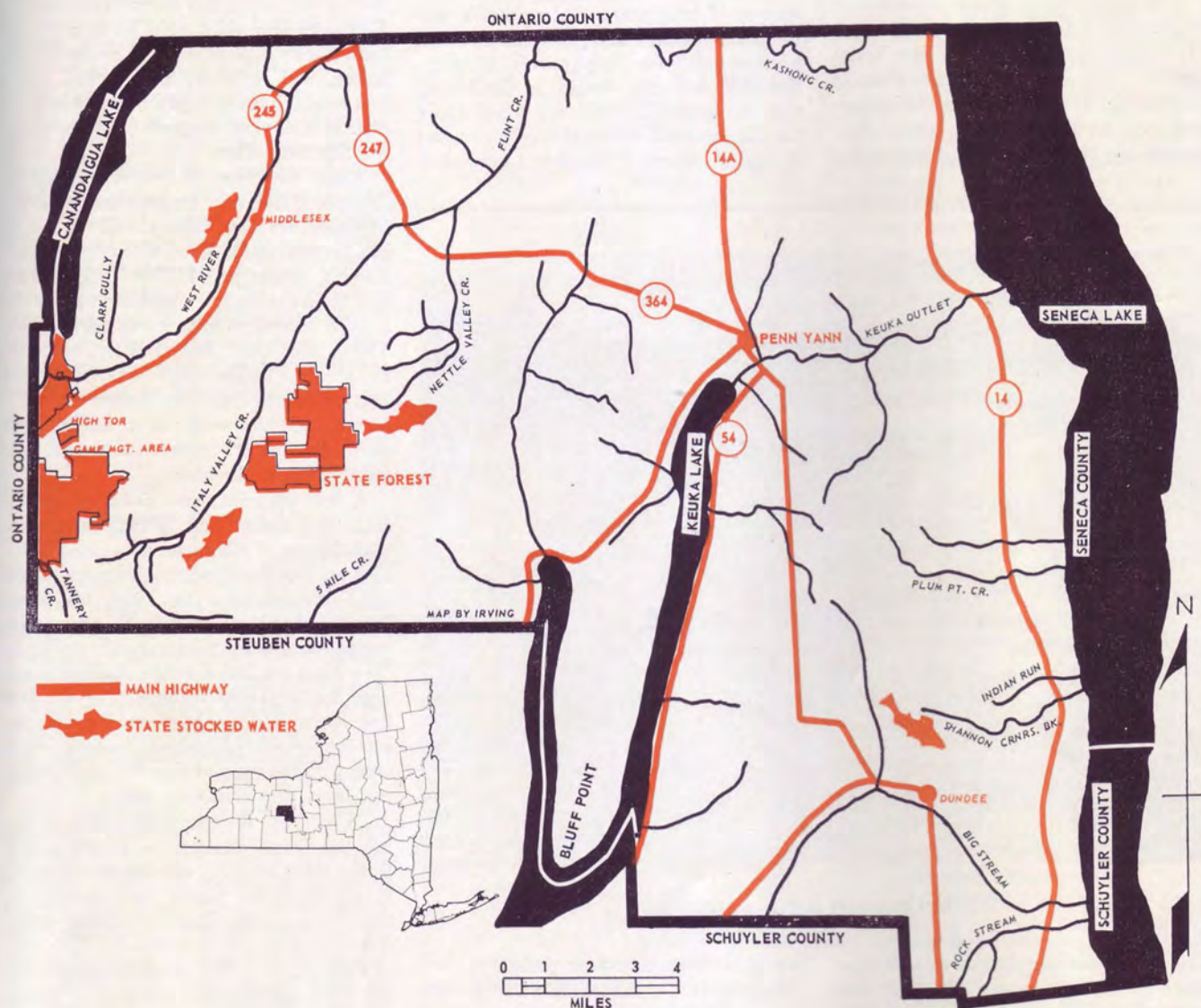
This "haberdashery," the biologists report, represents the first successful, large scale effort to mark American brant at their nesting grounds on the Canadian tundra. The yellow "neckties" are four-inch strips of yellow plastic, fastened around the brants' necks by slipproof falconer knots. The aluminum "spats" are the familiar leg bands, long used in studies of this nature.

A total of 1,500 brant were marked by the biologist teams this past Summer—all of the birds with leg bands and several hundred with the yellow neckties that are reported to be visible up to one mile, with binoculars. The banding was done on Southhampton Island of Canada's Hudson Bay country.

There's a lot not known about the migratory behavior of this species of waterfowl and sportsmen lucky enough to bag one of these marked birds (assuming they're not too amazed to shoot) will help a lot by reporting the band number, place and date taken to Thomas W. Barry, Conservation Department, Cornell University, Ithaca. The biologists would also appreciate sight records of the neck-tied brant, number seen, where and when.



Yates County



N.Y.S. Conservation Department Offices

District Forester
District Game Manager
District Fisheries Manager
District Game Protector

5 E. Steuben St., Bath
 618 Exchange National Bank Bldg., Olean
 2130 Scottsville Rd., Scottsville
 2130 Scottsville Rd., Scottsville

Farm Service Offices

Yates Co. Soil Conservation District
County Agricultural Agent

214 Liberty St., Penn Yan
 214 Liberty St., Penn Yan

—ROY IRVING

Quiz states on deer management

In order to compile a national record on deer herd management problems and the steps taken to offset them, the Associated Sportsmen of California sent a detailed questionnaire to each State. The ASC requested the information so that it could determine a course of action to recommend in California.

Thirty-two states (including New York) reported that they permit the shooting of buck and doe deer as a herd management tool. Of the five states where deer-of-either-sex are not being harvested,

four states do not think the practice is detrimental to the deer population and the fifth gave no opinion.

On the issue where sportsmen might expect the greatest controversy—the hunting of deer-of-either-sex—the States showed overwhelming accord. Other than Texas, which gave no opinion, all others replying to the question agreed that the harvest of both sexes of deer was a useful and necessary big game management practice. It was emphasized, however, that this authority should be flexible so that the game Departments could apply the management technique at times and in regions where it was found necessary.

A Wild turkey shoot?

For generations, most New Yorkers have been buying (or winning) their Thanksgiving turkeys. Next year, a few lucky, sharp-shooting, residents may be able to go out and get their own. Prospects are now bright for the first New York turkey season in over a century. Before we start a run on turkey calls and Kentucky long rifles we'd better add that such a season, if authorized by the Legislature, will be short and limited. The first trial season will probably be held in one of the most rugged counties along the Southern Tier.

About the time the hot war ended in Europe, a few wild turkeys started drifting over the line from the Keystone to the Empire State. Even without a turkey-tallying border patrol, New York hunters and Department game men soon got word of this invasion and it sounded good. This meant that, just possibly, some of the old-time turkey range of the State had now recovered from the timber scalping, burns and hilltop farming attempts to once again be attractive to wild gobblers, once native to the area.

A few impatient and visionary sportsmen, and some Game Management men with the same characteristics, took their idea to the front office. Why not do a little transplanting to build up these bands of hardy pioneers? No other state would part with wild-trapped stock, so New York worked a swap: Mallard duck eggs for semi-wild turkeys. For the last five years we have been rearing and releasing several hundred turkeys each year with the eggs or day-old poults coming from Pennsylvania's stock.

To date, the Department's turkey stocking has been restricted to selected sites in the counties along our southern border. Many of these plants are starting to take." A recent issue of *Conservation News* reported on a school bus that had to stop while a flock of 40 birds crossed the road. While this flock was larger than most, we are finding more and more with numbers up to 20. These flocks usually include a few old hens and toms still carrying their tell-tale leg bands. Most encouraging, though, is that most of the birds in these flocks are unbanded young—proof that our stocked birds have gone forth and multiplied.

By the Fall of '55, some of the early-stocked areas carried as many turkeys per square mile as are found in neighboring states that hold regular seasons. Our first thought was to trap these surplus birds for stocking elsewhere but so far we haven't worked out a practical method. Since game cannot be stockpiled—use it or lose it—good management calls for at least a trial season—if



Water chestnut battle continues

In its continuing battle against the spreading scourge—water chestnut—the Conservation Department is this year trying out a new weapon—the air boat.

This contrivance, as the pictures indicate, is not the air-driven, sea sled affair that's used to scoot through the Florida Everglades, but a regular stock aluminum boat with an air prop mounted on the transom.

Though no speed records are set, the contrivance serves the purpose very effectively; permitting the operators to push through the dense water chestnut without the delay and clogging that results with use of the standard outboard motor.

The section under treatment here is a backwater area along the Mohawk River. As in previous years, 2-4D is sprayed on the emergent leaves. Effective control is secured only through repeated sprayings

over a three- to four-year period.

In addition to whittling away at the focal infestations in the Mohawk and Hudson rivers, the water chestnut control crew makes flying trips to any new area of growth that is reported. Quick action at the periphery of the water chestnut area of infestation is most important in bringing it under control before it has a chance to become well established.

This year the project, which is financed as a Federal Aid co-operative under the D-J program, has nipped new outbreaks of the water chestnut in Keuka Lake at Branchport and in the old canal waters at Geneva. Currently the crew is operating in Lake Champlain, in co-operation with a similar control unit employed by the State of Vermont.

good natural production continues. To this end, research men of the Department are still adding up their observations to learn how the 1956 production is holding up. They rely also on reports from many interested observers who live in what we are starting to call turkey range. And believe us, they do range! During the Fall and Winter, many flocks travel so widely on their feeding rounds that they may not pass through an area more frequently than every two or three weeks.

The picture is complicated just a bit more by private individuals, mostly outside the Southern Tier, who have quietly purchased turkey stock and made their own releases. Probably some readers have spotted flocks, broods or nests of turkeys that Department men know nothing about. We would like to hear about these. Accurate, first-hand information is needed for the best management of this brand new resource. Can you give us a hand?—CHARLES MASON, *Game Research Investigator*

Where does the wild goose go?

To find out, biologists of the New York State Conservation Department, in co-operation with other state and federal contemporaries, have for years been live-trapping these wary birds and releasing them with aluminum bands on their legs.

A lot of information has been gathered in this way and frequently new pieces of the puzzle appear to help complete the picture.

Two such pieces dropped in recently involving wild geese live-trapped this last Spring at the Department's Oak Orchard Game Management Area in western New York. Of some 500 geese tagged there, two returns have been received from the Hudson Bay-James Bay area in Canada. One was reported by Fr. Stanislas Goulet, O.M.I., Fort George, James Bay via Moosonee, Ontario. This goose, which was banded at Oak Orchard on April 20, 1956, was taken at James Bay by an unknown Indian on May 17, 1956.

The second record was submitted through Mr. T. A. Mark, a representative of the Hudson Bay Company at Factory River, Quebec. Goose No. 2 was also taken by an Indian, this one known—a Mr. Billy Hatawapeneskum. The goose was banded at Oak Orchard on May 5, 1956 and shot on May 23 by Mr. Billy five miles south of Factory River, Quebec.

The Indians, incidentally, are permitted to take any species of game anytime, but only as needed for food.



Attention all rabbit hunters

During the past year nearly 2,500 cottontail rabbit bones were collected for age data in the study aimed at learning how the "cycle" operates. This total, from the three Counties of Albany, Columbia and Rensselaer, was about 2½ times larger than the previous year's record—thereby furnishing much more reliable information than secured in any previous year.

Specimen bones were submitted from October through May with sufficient records from each month to reveal the changes in age ratios. From these changes it is possible to determine the age composition of a rabbit population and the pattern of reproductive success or failure that produced it. For instance, last hunting season in Albany County, adult breeders made up 25.8 per cent of the total rabbit population, while young of the year made up 74.2 per cent. A break down of the data pertaining to the juveniles showed that 2.8 per cent were born in April, 12.6 per cent in May, 18.7 per cent in June, 16.2 per cent in July, 11.1 per cent in August, and 12.8 per cent in September.

The above figures pertain only to rabbits which managed to survive into the hunting season. In addition, information was gathered regarding the reproductive potential of the rabbit—such as earliest breeding dates, size of litters, frequency of litters, effects of weather on the vulnerability of sexes to gunning, and other information important to the proper management of this valuable game resource.

Several years' data, with comparisons to hunting season rabbit abundance, are needed to complete the study. Accordingly, we again are asking all rabbit hunters (in Albany, Columbia, and Rensselaer counties only) to co-operate by sending in one humerus (upper front leg bone below the shoulder blade) from each rabbit shot. Especially needed are co-oper-

ators for the collection of bones from road-killed rabbits from March through May (after the hunting season has ended) and particularly in Columbia and Rensselaer counties. If you wish to co-operate in this study please contact the Wildlife Research Laboratory, Delmar, and a supply of postage-paid envelopes will be sent to you. Past co-operators need not write in as a supply of envelopes will be sent to them automatically.—JOSEPH DELL, *Game Research Investigator*

The Kiwi

The Kiwi, a native of and the national emblem of New Zealand, was first described by British scientists in 1813. There's a very good possibility, however, that they knew about the Kiwi before that time, but withheld publication of their observation in the certainty they would be held as either drunk or mentally deranged.

And no wonder! No more fantastic creature ever marched over the evolutionary horizon—a bird without a tail, (a distant relative of the ostrich, the emu and the cassowary), with wings, incapable of lifting the bird in flight, hidden beneath silky feathers that look like hair, and with nostrils at the tip of its long curved beak.

Nor are the bird's habits any more plausible than its appearance. It is active only at night, addicted to burrowing in the earth like a ground-hog and it lays an outside egg equal to a quarter of its own weight.

Chances are that even today few would believe in the Kiwi if it weren't for the popularity of shoe polish.

Conservation in the Empire State (Continued from page 2)

the task of protecting and enlarging the State Forest Preserve in the Adirondacks and Catskills, as enunciated in Article XIV, Section 1 of the Constitution, and to the promotion of the other points upon which Governor Harriman has told us to set our sights. Here we have a program for this Department which must engage us in the days to come.

Finally, it is my earnest wish that the personnel of the Conservation Department will know of and understand my interest in them, from the Division and the Bureau heads to the solitary forest fire observer on the most remote mountain top, or the ranger walking the lonely mountain trail, or the biologist's helper gathering data in the field. I want them all to know of the importance in which I hold their work, and the dignity of it, for they are helping to shape a brighter tomorrow for ourselves and for posterity.



Letters to The Editor

Hunter training

Dear Editor: The letter from Mr. Paul J. Manny that appeared early this year in THE CONSERVATIONIST expresses a reaction from young ex-servicemen to the Junior Hunter Training course that we encountered rather frequently when I was active in this work at Owego. It is true that Mr. Manny was not applying for his first New York State hunting license when he was told that he must have an "N.R.A. certificate," but his comment was the usual one: "Certainly any serviceman has had a lot more training in handling firearms than what you can get from a few hours of instruction from the N.R.A."

Mr. Manny does not know or may have forgotten that in our condensed, literally distilled course of a few hours we give much more instruction than that in handling firearms. We do give instruction in safe gun-handling, branching out from the two basic rules: Always keep the muzzle pointed in a safe direction, whether the gun is loaded or empty, and always be responsible for the place where shot or bullet finally comes to rest.

But there's much more. We explain the why of game laws, the necessity of good farmer-hunter relations and of good hunter-to-hunter contacts, and, as best we can, that almost undefinable thing, sportsmanship. And we point out to them the fact we have proved to ourselves, that hunting can be a happy relaxation, thrilling though it is at times, instead of a frantic competition! I don't think these matters are G.I. issue.

Dr. Henry M. Stebbins, Winchester, Va.

• *We are sorry to lose Dr. Stebbins as a hunter training instructor and as a citizen of New York.*—Editor

Long Island deer

Dear Sir: About a month ago the Long Island Daily Press had an article concerning the many deer near Brookhaven, L. I. and their problems.

We have seen deer and wondered what could be done for them. If your Department isn't the right contact where should we write?

In the above mentioned article they speak of the confusion of the deer with the jet planes, their hunger and tragedies with attacks by dogs and accidents. It seems they have become a menace. Can't we give them some kind of protection? They have been driven from their homes by building developments.

Mrs. Joseph P. Weidner, Valley Stream

• *You can be sure that the Department is well aware of this situation and that considerable thought and effort has been undertaken to try and solve the difficulty.*

Of course, when any wildlife species—and this goes particularly for deer—gets into conflict with civilization there is bound to be problems for both (the people and the deer). On Long Island this conflict is probably more severe than in any other section of the State with the possible exception of Westchester County. One of the greatest difficulties involves the damage that deer do to truck garden and other farm crops in this intensively farmed area. To solve this, the Department has granted emergency authority to specific farmers to shoot deer that are doing damage to their crops, but even that does not solve the problem.

We have also seriously considered live-trapping the deer to transfer them to other areas of the State. This, however, is an expensive operation and there is no assurance that we could live-trap enough deer to make any dent in the population.

Elsewhere in the State when deer become too abundant for their own welfare or where they're in conflict with agricultural or other interests, the hunting season can normally be adjusted to bring the herd under control. On Long Island, however, such a season has not thus far been thought feasible because of the density of the human population. There is, however, one way of securing some adjustment and that is through

establishment of an archery season. This doesn't present the hazards to humans that a gunning season would; it's been proven to be a very humane way of taking deer and, when properly organized, actually offers some hope of deer herd control.

We hope the foregoing will give you some idea of the problem that we are working with on this Long Island deer herd and again we want to thank you for passing along your observations.—Editor

Deer feeding

Dear Sir: I just read an article in the June-July issue "A Tragedy." I think some of this could be overcome by using our State and country road crews and also some railroad section crews in areas like Malone to Utica to feed or place feed where they see signs of deer in late snows. Even if we save a few it's worth a try.

Raise the price of the deer tag to half pay for it. I am a deer hunter who loves to hunt. I like to see deer roaming around. I just like to be out in wide open spaces. From where I live I drive on Sunday to Clove Valley back of Pawling and sit in car and watch the deer roam around.

Harry O. Dale, Brewster

• *We appreciate your letter of July 21, and suggestions you have made relative to co-operation of road crews and railroad section crews in providing supplemental food for deer during times of emergency.*

I am sure, however, since you apparently have carefully read Dr. Cheatum's article in the June-July issue of THE CONSERVATIONIST on "Too Many Deer", as well as Pieter Fosburgh's editorial "A Tragedy", that you will appreciate the real solution involves a better thought out deer management policy inclusive of controlled antlerless seasons wherever and whenever the need exists to bring the herd within limitations of its food supply. No amount of supplemental feeding will solve the problem nor get to the basic reasons for its existence.

—Editor

Antler growth of deer

Dear Sir: I have read with some interest Mr. Hewitt M. Shafer's letter in your April-May copy regarding the growth of deer antlers and completely disagree with the theory that the growth of large antlers is connected with the presence of wolves or coyotes.

I think it is a generally acknowledged fact that large antlers are mainly dependent on the quantity of calcium present in the soil.

For several years, I administered hunting and fishing on a large area in Canada where wolves were present. The western side of this area always produced bucks with very small antlers whereas the eastern side produced heavy heads. The explanation was that the western section was situated on a sand flat whereas the eastern section consisted of Grenville limestone.

In the Baltic Sea, there are islands consisting entirely of white chalk and the population of roedeer is famous for its very large antlers. In contrast, the deer population living on the moors of the western part of Jutland where the sub-soil is nothing but washed out sand is known for its very poor development of antlers.

The need of calcium in building up deer antlers is clearly shown by the habit of some deer to chew on old shed antlers.

J. L. Jorgensen, Three Rivers

**I wish to advise that you are perfectly correct in the assumption that quality of food is of primary importance in determining the extent of the annual growth of deer antlers. Age also is of importance, as you probably well know.*

Experimental work done by Pennsylvania has shown that both the quality and quantity of protein and calcium intake is of real importance in annual production of antlers and I believe most workers who have explored this subject seriously are acquainted with certain European findings on this matter.—E. L. Cheatum, Chief, Bureau of Game

Well, well—

Dear Editor: My first reaction to your editorial, NOW IT'S OUR TURN, was Ouch!! Curiosity then took hold. I turned to your first counter attack quiz to see what your so-called department of deranged minds had to offer. Next reaction? Go ahead snicker, you guessed it. Help!!! Fortunately your staff remembered its job was conservation and restored my peace of mind and included the answers. Therefore I conclude:—

Your magazine is well-filled
Your staff is well-willed
Your subscribers well-tilled
Those are great riches.

Oh yes, one question if I may? Did Clayt Seagers ever do an article on the weasel? Couldn't find any material on this little fellow in my back issues. Thank you.

Mrs. Adele Brown, Elmhurst

• On the weasel, yes, way back—a drawing entitled "The Killing Machine," CONSERVATIONIST, Feb.-Mar., '47.—Editor

Tattooed butterflies

Gentlemen: In the 5th grade I read a science book called "How and Why Experiments." I read that you had no way of banding butterflies, because the slightest weight would weigh them down. However, I think that if you take a rubber stamp and ink, you could stamp a number on a wing. I think this would not weigh too much.

Martin Hellman, New York

• A most ingenious idea! A picture of a sailor tattooed on a butterfly's wing would be a switch.—Editor



Three-legged deer

Dear Sir: This deer was taken on the last day of the buck-doe season at the foot of Hemlock Lake. The stump was badly decomposed and much of the meat was unfit for use. I'd say that he had been on three legs for at least a week. I doubt if this buck would have made it through the Winter. What do you think?

There was a very heavy take of deer in the swamp at the foot of Hemlock Lake on the last day. In my party of five, we took four does and the buck. Yet this Winter, I noticed a large herd wintering there. Maybe we should have another "buck or doe day" this year.

Keep up the wonderful work in your magazine. I am sending a gift subscription to an address in North Dakota. The recipient is a high school biology and conservation teacher. When I visited him last Spring I inadvertently left a copy in my car and he remarked on the beauty and aptness of the contents. Maybe his class will enjoy "conservation in the Empire State."

Don Fioretti, Livonia

Carbon tetrachloride

Dear Sir: I noted a very serious mistake in your June-July edition, an error that should be corrected to protect your readers. On page 22 in recommending carbon tetrachloride as being "not dangerous" you are making a very common mistake. Carbon tetrachloride is extremely toxic. To quote from the U. S. Navy Safety Precautions, "Carbon tetrachloride is now allowed in Navy installations only on a very limited basis and used under careful supervision because of its insidiously toxic quality. WARNING—1. Keep away from heat and open flame. 2. Do not take internally or breathe the vapors. 3. Avoid contact with the skin. 4. Use only with adequate ventilation."

It is even too dangerous to use as type-writer cleaner, the ships were told by instruction to dispose of all stocks on hand and they were but small bottles. The above warning about heat and flame is to prevent the formation of the strangulating gas generated.

I hope you can use this for I hate to think of children using such dangerous material.

Frank C. Hyne, USNS, Pvt., N. Y. City

Dear Sir: In the June-July issue, page 22 under "Collecting" you state that carbon tetrachloride (dry cleaning fluid, etc. . . . they are not dangerous to the collector, etc.)."

I have a distinct recollection of having read recently (though I cannot recollect where, otherwise I would have sent you the article) that the above is extremely dangerous. That it attacks the kidneys and can cause death.

While, of course, I could be mistaken, you, with your research connections could easily find out if such is the case. If I am correct then the danger should be brought to the attention of your readers.

Bernard Berman, Brooklyn

• You are correct that carbon tetrachloride is dangerous and so there is need for an explanation. We called the author of the article and asked him to explain. He did.

Compared to cyanide and other standard insect killing materials, carbon tetrachloride is relatively safe. The liquid would be very dangerous to drink and the fumes would be dangerous to inhale in any great quantity. However, the few drops necessary to make an efficient insect killing jar is much less than the amount used in the cleaning of garments. Since the killing jar is seldom used in a tightly closed area, then the statement that it, carbon tetrachloride, is a safe killing agent still holds.

My own boys are interested in insect collecting and I make up the killing jar with two or three drops of "Carbena" on some cotton and place a piece of perforated cardboard over it. This allows for the gradual circulation of fumes in the jar and keeps the insects dry. This quantity lasts from two days to a week, depending on how active the boys are in their collecting.

We appreciate your concern and are glad you raised the question.—Wayne Trimm

Small game seasons

Gentlemen: I have just read the "Small Game Regulations" for this Fall, in Mortimer Norton's column in the *Utica Observer Dispatch* (a plug). I want to congratulate those who had a hand in changing the regulations. It is a step in the right direction, I think.

I for one, and I know others that feel the same way, prefer to have the seasons of the various small game open on the same day everywhere in the State. (Long Island excepted because of the fact that it is so completely separated from the rest of the State that it should have its own regulations.) So, now all we have to work for is to eliminate that small section called the Lake Plains area.

I think that the single opening date statewide has far more advantages than disadvantages. And that goes for both small game and large game too. I know that the farmers' harvest is one of the biggest reasons for the different areas and seasons. But seasons always have, and always will vary from year to year, and NO ONE can predict in advance when a given area will have their harvest completed. So, we only defeat ourselves when we have different opening dates for different areas of the State, because: (1) Every year there are more and more people who can afford to hunt, and therefore do go hunt.

(2) Every year there are more and more autos, and more and better roads, therefore it is very easy to travel 100 or even 200 miles for a day or two of hunting.

(3) It seems that almost every hunter knows that more than 50% of the season total take is taken on opening day. (And I personally think that it is at least 70%.)

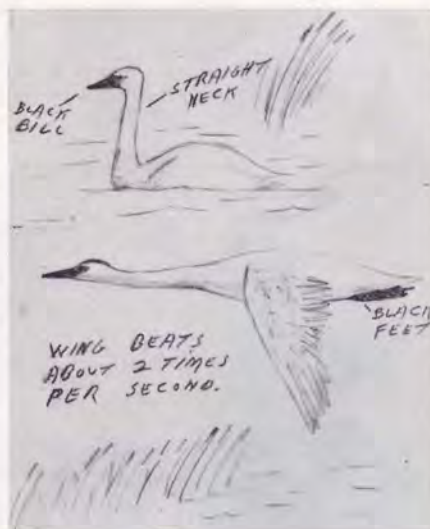
Therefore, with different opening dates in different areas there are far too many hunters in any given area. So with a single opening date the number of hunters per acre will be much smaller and the average farmer is bound to have less damage done to his crops, fences, etc.

Now, don't get the idea that I am sticking up for those kind of people, because I'm not. I am just recognizing the facts that there are both sportsmen and spoilers. Anyone who would trample down a man's crops, cut his fences or shoot his livestock should have their licenses, guns and privileges taken away from them on the spot. I could say a lot more on this, but won't.

So, in closing I raise my voice in urging a single opening date for small game, and a single opening date for big game throughout the entire State. The closing dates could vary for different areas if need be. With regards to deer, I think it should open later in the Fall anyway. (Less forest fire hazards, and better chance of some snow on the ground.)

Chester A. Martin, Utica

• *We, too, think we're on the right track. There are some disadvantages, of course, but equalization of early season hunting pressure is an important argument in favor of uniform opening dates.*—Editor



Whistling swan

Dear Sir: One morning last Spring while I was tending muskrat traps on the outlet of Lake Pleasant (Hamilton Co.), I sighted what I believe was a rare whistling swan. I approached within 50 feet of the bird as it sat in the water. It then flew past me, affording an excellent view. The bird had a wing span of about 5½', was snow-white except for the feet and the bill, which were shiny black. The head and neck also had a slight tinge of brown to them. I am enclosing a rough sketch of the bird to help you identify it. I believe this is a very rare bird in the U. S. and especially in our State.

Don Leadley, Speculator

• *Your identification of the bird as a whistling swan is probably correct. The slight shading of brown on the head and neck is fairly common in these birds. The young have a greyish tone to the plumage. This species was at one time very rare but with continued protection it has made an excellent come-back; too good in the opinion of some duck hunters who claim that a flock of swans can destroy feeding areas that would otherwise be used by the dabbling ducks. With their longer necks the swans can reach to a much greater depth than can the dabblers. The whistling swan is fairly common during migration in the western part of the State and along the coast. However, a whistling swan at Pleasant Lake is unusual.*—Wayne Trimm

Solution

Dear Editor: According to the various articles which I have read, we have both a dog problem and a deer problem in N. Y. State. I have an idea which will solve both problems simultaneously.

The dog has become the sacred animal of the United States, certainly on a par with the sacred cow of India. We are running out of dog food, they have eaten up the wild horses of the West, whales are getting scarce, in some communities dogs are eating people. So let's take all protection off deer and can them up for dog food.

Two tough problems easily solved.

Frank S. Banovic, Johnstown

The old hunter

Dear Editor: I enclose a copy of a French Canadian Patois Poem I wrote today which will amuse our club members at our next January annual meeting and it occurred to me that you might be able to use it in one of your CONSERVATIONIST issues.

In my younger days I did a lot of big game hunting in the Far North and became fascinated with the French Canadian "Habitants" and over the years have written a lot of these "jingles" for the amusement of my family and friends.

Now in my eighty-fifth year, I haven't missed spending a part of each year in the Adirondacks since 1884.

I have been much interested and greatly impressed by the fine constructive program the Conservation Department has carried on over the years and all of our club members, most of them residents of New York and New Jersey, are equally enthusiastic over the work of your Commission and also are subscribers to your outstanding publication, THE CONSERVATIONIST.

De Huntin Season

*"On de Fall de buck deer start hees pawin
An lookin aroun for de doe
Don pay her no mind on de Summer
But com de Fall tam, dats different, you know!"*

*"So wen de Summer she be passin
An de leaves dey mos of dem fall
De Hunter man get out de ole musket
And mek check on hees powder an ball."*

*"As de days dey is gettin dem shorter
An de groun she is white wid de frost
De Hunter man buy heem de license
Don care what be de cost."*

*"Den off to beeg woods go de hunter
Where de spruce an de balsam tree grow
He know where deres ridges and swamp lund
Mebbe dere he see buck chasin de doe."*

*"Hees red coat she sure am de warm one
Keep de freeze from achin hees bones
As he sit on de ridge watchin runway
Hopin doe done cum her alone."*

*"We weesh dat he get heem de beeg wan
Wid ten points on de top of hees head
Mebbe only a spike horn hees seein
An downs wid a dose of hees led."*

*"Mebbe don get heem no buck on hees huntin
Mus wait till cum nudder year
But hees happy for be in de wildwood
Where deres wil life to see an to hear."*

*"Deres quilly peegs, coons an de muskrats
An de patridge dat derum on de log
Also ducks dats flyin an quackin
An swimmin around on de bog."*

*"So pack up de duffle bag queekly
Wen de water pail freeze on de night
Drive de jalopy North to beeg forest
An dere you'll get pleasure all right."*

E. Ray Speare, Boston, Mass.

• *We like your spirit—and your poem. We think you will like the back cover, this issue.*—Editor

Rustic lodge

Dear Editor: In the April-May issue, page 42, Marian Corey requests information about pictures of her grandfather's famous Rustic Lodge on Upper Saranac Lake.

I cannot provide a photograph, but a very fine etching, entitled "A Lodge in the Wilderness," can be found in Benson J. Lossing's book, "The Hudson, from The Wilderness to The Sea."

Late in the Summer of 1859 Mr. Lossing made a "pilgrimage," following the course of the Hudson from Mt. Marcy (or Tahawus) to New York City. And his book is generously illustrated with his own etchings. The early chapters are a gold mine of information for the Adirondack historian. Incidentally, Mrs. Lossing, who accompanied her husband on this trip, was the third woman to climb Marcy.

En route from Lower Saranac Lake to the Raquette River, Lossing's party "just before sunset reached the lodge of (Jesse) Corey, a hunter and guide well known in all that region. It stood near the gravelly shore of a beautiful bay with a large island in its bosom, heavily wooded with evergreens. It was Saturday evening, and here, in this rude house of logs, where we had been pleasantly received by a modest and genteel young woman, we resolved to spend the Sabbath. Nor did we regret our resolution. We found good wilderness accommodations; and at midnight the hunter came with his dogs from a long tramp in the woods, bringing a fresh-killed deer upon his shoulders."

Warder H. Cadbury, Cambridge, Mass.

More on Rustic lodge

Gentlemen: A recent issue mentioned old Rustic Lodge located at one time on the Southern end of Saranac Lake and dating back to 1850.

At the turn of the Century, Rustic was owned and operated by Charles Wardner and was one of the most desirable woody camps in the Adirondacks. It was in the days before automobiles and motor boats and the old road went around by the lake. It was an all Summer's vacation for New York and Philadelphia families. Guides were of the old type: Such men as Arlo Flagg, Freeman, Reeves, Jones, Dukett, Woods, and a marvelous patriarch Ellsworth Petty.

Twenty-pound lake trout were common. Golf was played on a nine-hole course run by Wm. Paca.

On a Sunday the Upper Lake would be dotted with guide-boats going over to Chapel Island maybe to hear Dr. Henry Van Dyke, a run of perhaps a mile and a half. The colorful parasols amidships, the pluto-crater in the stern and the guide in the bow doing the work was a sight to remember.

Oil lamps, water from the spring, meals of mountain lamb, roast beef, beef steak, lake or brook trout and plenty of fresh vegetables from the garden besides home-made bread and pastry by Lois the cook gives one a picture of what Rustic was like in 1900.

The charm of the place was greatly en-

hanced by the hospitality of Mr. and Mrs. Charles Wardner, their daughter Mallie and their son William.

Ina Wycherley Williams, Buffalo

Campsite courtesy

Dear Mr. Fisk: I wish to thank you for returning my son's wallet, received a week ago. Although there was no money in it when he lost it, the wallet itself and the papers in it meant much to him, especially his Boy Scout scorecard, for he is at Boy Scout camp this week.

The week we were in your State was our first experience with New York State parks, and we were very much impressed with them. We particularly praise the camping facilities which are offered. The experience of having a lost wallet so promptly returned, of course, only more deeply impresses us. Thank you again.

Mrs. Edward Novak, Chicopee Falls, Mass.



More on the big load

Dear Sirs: While reading your June-July CONSERVATIONIST I came on to the picture on page 46 of North Country logging. That photo was taken about 50 years ago in the Town of Fine in St. Lawrence County on Skate Creek. The man on the left is the late Milo Woodcock and the one on the right is the late William Woodcock which was the lumbering firm of Woodcock Bros. of Edwards. The man driving is Bert Benson, who was still living in Vermont a few years ago. That load was hauled on the last day of hauling that Winter. Many old timers will recognize that photo because Woodcock Bros. had that made into calendars to advertise their business. They operated an extensive lumbering business in and around Edwards and in Klock, Canada, up until about 1915.

Robert McFerran, Edwards

Non-resident fishing

Gentlemen: Please answer the following: I am over 68 years old, lived in N. Y. State since 1907. I am a citizen, I own a home in Queens and one here, I own other property in New York State for which I pay thousands of dollars of taxes. I also pay a N. Y. State income tax. Due to my health I have to spend the winters in Florida. In order to be entitled to homestead execution on my home there I have to be a registered voter there and must use a Florida license for my car. I pay no direct taxes there at all. Yet I have a free fresh water fishing license in the State of Florida for the rest of my life due to my age.

Am I entitled to a resident fishing license in New York State?

J. Pliskin, Lake Luzerne

• *The Fish and Game Law of the State of New York provides that a person has to be a citizen-resident of New York State for more than six months, immediately preceding the date of application for a citizen-resident license to hunt or fish.*

Since you, as a registered voter in the State of Florida, are a legal resident of that state, you would not be entitled to a Citizen-Resident license in the State of New York, regardless of whether or not you own property in New York State. Therefore, in order to angle for fish in New York State, you will have to procure a Citizen Non-resident Fishing License.—R. J. Vickers, Asst. Supt., Law Enforcement

Annual reports

Gentlemen: By chance I read a Forest, Fish & Game Commission report book dated 1909. I found it of such interest, I just had to write and ask if such a report is published today, and if so, how can I acquire one.

Walter Hunt, Uniondale

• *We do, indeed, publish annual reports still and they are available upon order to this office at \$1.00 per copy. The most recent year now available is the 1955 annual report.*

These reports are helpful to anyone interested in finding out exactly what various divisions and bureaus of the Department are doing, but we must admit that they are not so "folksy" as the old Forest, Fish and Game Commission Reports. Then it seemed the authors had a great deal more time to sit down and write detailed and interesting accounts, whereas today, reports are boiled down and factual, without too many author's flourishes or expeditions.—Editor

Crayfish

Gentlemen: I have just completed reading your article on crayfish in the June-July issue of THE CONSERVATIONIST. Can you tell me where I might procure more detailed data on the propagation of this bait?

Lester L. Wescott, Salamanca

• *Yes. Write to the author, John Forney, Department of Conservation, Cornell University, Ithaca, N. Y.—Editor*



Lake George salmon

Gentlemen: Enclosed are some scale samples and a picture, although not a good one, of a salmon, I believe.

I caught this fish on July 16 while trolling about two miles south of Rogers Rock on Lake George. It struck a "Miller" spoon and fought hard but did not take to the air or struggle much when I got it near the boat, as most salmon are reputed to do.

It is the only salmon I have ever caught and naturally I was thrilled. I hope your salmon stocking program shows continued progress and that the enclosed information is of value to you.

The fish was 22 inches long and weighed just under three pounds.

Jim Woods, Rochester

• *Thanks for the salmon scale and photo. The scales indicate this was a 1954 yearling plant (large size) which migrated from stream to Lake George that same year, hence, has had two and a fraction growing seasons in the lake. It was mature last Fall (scales show a "spawning mark").*

We have had a number of reports of salmon taken this Summer in Lake George, which is encouraging. Of course salmon fishing is best early in the Spring but, as you have demonstrated, they can be caught later, even though scattered over a large area and more difficult to locate.—John R. Greeley, Chief Aquatic Biologist

The bends

Dear Sirs: Recently I was fishing in relatively deep waters (30-40 feet). Among other things we pulled up several large bergalls which, when thrown back, died and floated around in the water on their side. I was wondering if this was because they had the bends from pulling them up too fast.

David Sonneborn, Scarsdale

• *Could be. Fish, like humans, may suffer from too rapid pressure changes.—Ed.*

In appreciation

Dear Editor: I would like to bring to your attention and the attention of my fellow readers the outstanding endurance and patience of several of our Forest Rangers and Game Protectors.

You are probably aware of the fateful drowning of my brother Allen Stewart and his fishing partner Bill Wilder in West Canada Lake on May 31, 1956. Since that date, and here I wish to mention their names, Homer Preston, Piscico; Jim Axtel, Old Forge; Halsey Page, Speculator; Wilson Wagner, Higgins Bay; Jim Lawrence, West Canada Lake; Ed Broland, Speculator; and Jim Farrell, Indian Lake have faithfully and courageously worked to help find and recover the bodies of Allen and Bill. At this point I must sing my praises of Homer Preston, more than a Game Protector, a true friend who has spent many days of his personal time in this ten- or twelve-week period that we have been dragging and skin diving for the bodies. He also provided trout which he had caught for us when we were hungry.

Again, I wish to express the sincere thanks of the families and friends of Allen Stewart and Bill Wilder for the co-operation of the Conservation Department and its fine men.

Our mission is not yet complete, as Allen Stewart has not yet been recovered, but we hope the Conservation Department will bear with us a little while longer until Allen's body can too be placed in its proper resting place.

Robert D. Perkins, Troy

• *We appreciate your thoughtfulness in thanking publicly, the several Forest Rangers and Game Protectors who have done everything possible to assist in connection with the tragic loss of your brother Allen Stewart and Bill Wilder this Spring in West Canada Lake.—Editor*

Cabin chinking

Dear Editor: Somewhere in your organization or among your readers must be a man who knows the ideal material for chinking logs on a log cabin.

I am building a log cabin in Vermont (sorry it couldn't be New York) and have searched all literature and asked everyone who might know but to no avail. Your own Department has some nicely chinked jobs as I remember so help a poor fellow out will you? Please send me the formula and any literature you may have available.

To the first guy who helps me goes an invitation to hunt in some of the best deer country this side of the Adirondacks. I have found to my sorrow that log cabin building is a lost art, but boy am I learning!

Certainly enjoy every issue of THE CONSERVATIONIST. Keep up the good work. I'll try hard to chase a few deer and bear in your direction.

Ed. Thomas, Agawam, Mass.

• *From "Log Cabin" which appeared in the December-January, 1951-52 CONSERVATIONIST: "Calk opening between logs with oakum or*

plastic stuff. If cracks are large, chink with small round poles before calking or nail on narrow strips of metal lath and cement."

Thank you for the kind things you have said about THE CONSERVATIONIST but if you want to stay in our good graces please do not chase any deer and bear from Vermont into New York. We have plenty at the present time.—Editor

No. 4-G 3297

Dear Sir: Enclosed please find tag No. 4-G 3297 on Steelhead (rainbow), out of Skaneateles Lake, caught July 26, 1956 at 8:30 p.m., hot and cloudy. Length 19", weight 2¾ lbs., girth 11"; stomach contents 35 to 40 small fry minnows, appear to be bass or rock bass.

Caught on X4-P.S. Flat fish Great Lakes 6½' Spinning Rod, Zepko model 33 Reel, 300' off shore, moderate trolling speed with 6 lb. Test Line 100 to 150 feet out.

Joseph G. Hercsa, Syracuse

• *Thanks to co-operative fishermen, the Conservation Department each year receives hundreds of reports of tagged, fin-clipped or otherwise marked, experimentally stocked fish. It's generally known by fishermen that they are helping themselves when they take time to report the capture of these fish—for it's one of the principal ways fisheries biologists have of learning whether their efforts are paying off in creating better fishing.*

Seldom, however, does an angler report the taking of a tagged fish so meticulously as Hercsa has recorded rainbow No. 4-G 3297.

The Department's fishery biologists offer his report as exhibit "A" in accuracy and detail.—Editor

Snakes and buntings

Dear Sirs: I wonder if you could give me some information and name of two snakes which I recently saw on two different trips this Summer on the new road from Stillwater to Big Moose. These snakes were bright green in color and about 14 inches in length.

I'd also like some information on some birds which I saw. These birds are blue with a little black marking on wings and I also believe some black on tail. They are the size of a goldfinch and fly stiff winged similar to a meadow lark. They are definitely not a blue-bird.

Wm. F. Strife, Marcy

• *The snakes described in your letter are probably the smooth green snake (Opheodrys vernalis). These are fairly common all over the State but because of their color are often difficult to see. The June-July, 1955 issue of THE CONSERVATIONIST has some colored pictures of the snakes of New York that may help you identify the two you saw.*

The small blue colored bird sounds like a male Indigo bunting in the transition between immature and adult plumage.—Wayne Trimm

Remember When?—Part 1

Dear Sir: I was very much interested in the article on quail by Ralph H. Smith that appeared in THE CONSERVATIONIST.

While my old home is at Peekskill, N. Y. I live here in Charleston, S. C. most of the time, only going back for a few months in the Summer, but I am still very interested in conservation problems up there.

Since 1898 I have kept an accurate game and fish record of game and fish taken, and in looking over my book find that the year 1914 was the last when I killed any quail to mention up there.

When I started keeping a record and could shoot on the wing we had a fair number of quail in both Westchester and Putnam counties, and they were fine big birds. Sale of game was legal, and the price \$4.00 a dozen in the market, with partridge and woodcock \$1.25 a pair.

After a time our native quail seemed to get scarcer, so some of the men who went South for shooting starting bringing back crates of the Southern birds that they liberated in the Spring, and it got so that if one asked a shooter if he had any luck, he would often say, "killed some Southern birds, but none of our big natives."

Whether stocking will be a success except for the birds that are liberated that season is a question. They certainly will not live except in a section where there are big farms that will provide food. In the days when we had quail they were almost always found near a buckwheat or cornfield in November, and in severe Winter weather often came into the barn yard.

Quail shooting in New York State was a much more interesting sort than the southern variety, as one almost always picked up latelighting woodcock, and partridge as well. In looking over my game book I happened to notice this entry of 1901. "Shot all day with John and Charlie, killed 9 quail, 5 woodcock and 4 partridges." I wish I could go back, and live those days over again, even if we had to drive a horse instead of riding in a closed car, and shoot a hammer gun with black powder. Incidentally the first game birds I ever shot on the wing was with a 22 gauge muzzle loader.

George D. Canfield, Charleston, S. C.

Remember When?—Part 2

Gentlemen: I began to fish when I was about six years old, on the south branch of the Raritan. One day, while fishing for "sunnies" I tied into a bass that weighed 2 pounds. Without even unhooking it, I ran the mile and a half to our house to show the monster to my mother. I am now sixty-three years of age and I believe I would be as excited over a good fish now as I was those many years ago. All this is preliminary to saying how very much I enjoyed the issue of THE CONSERVATIONIST which contained so much wonderful stuff on fly fishing.

What memories were brought back by the people and things you so casually mention. Leonard—I bought my first Leonard rod on time, believe it or not. The fine Mills

people let me pay \$5.00 per month for the rod, which is still in splendid shape. I have two lovely Thomas rods too.

No matter what you said about Louis Rhead, his book was a delight. I believe he tied the most life-like flies I ever saw—but I never caught a decent fish on any of them.

The article by Mr. Collins was most interesting. However, I belong to "flies is bugs" gang and am too old to change. There is a good deal of support to be found in Mr. E. Hewitt's dicta on fly selection for the "bugs" school. It seems to me that size and presentation are more important in taking trout than the coloring and shape of the artificial.

Clayt Seagears' historical notes on trout are most interesting. Roy Steenrod visits his son Bob down here each year and it was fascinating to sit and listen to him tell about Theodore Gordon. By the way, Roy Steenrod gave me my first subscription to THE CONSERVATIONIST.

H. J. Wright, R. Adm. U.S.N. (Ret.)
Norfolk, Va.

Baby animals

My Dear Sirs: Because of my interests, children come with many questions. One of the most frequent is how to take care of baby birds that have fallen from the nest.

I have many nature books, but I have no reference book for this. If there is such a book, I hope you will tell me about it.

I hope too you will devote an issue of your good magazine to this subject.

Mary B. Anderson, Kings Park

• One reference that may be of value is "The Book of Wild Pets," by Clifford B. Moore, published in 1954.

However, song birds are protected by Federal and State laws. It is illegal to possess such species, besides which it's usually an act of misguided kindness to adopt them. Ordinarily, the parent birds are nearby and will care for the young ones if given opportunity. Their chances for survival are usually better if left alone.—Editor

Welcome help

Dear Sirs: I found a dead pheasant struck by a car. I read the tag and did as it told, I give the following information: The tag number is 6-14276. My name is John M. Coyne. I am 11½ years old.

If I can help the Department please let me know. Also, would you please send me knowledge about the Department?

John M. Coyne, Clay

• This is to acknowledge and thank you for your recent letter, reporting on the banded pheasant found near your home.

According to our records, band No. 6-14276 was placed on a young cock pheasant released in Onondaga County during July, 1956. This bird had been raised at the Brownville State Game Farm.

In your letter, you asked how you could help the Conservation Department—you have already done an important job. Band returns such as yours are needed to tell us what happens to many pheasants between the time of release and the hunting season.

Your second question is a little harder, since your Conservation Department covers resources from water power to waterfowl. Why not try us on a few questions on the parts of Conservation work that interest you most?—Charles Mason, Game Research Investigator



Thirty years ago

Thirty years ago the Conservation Department took a major step forward—it outfitted the District Forest Rangers in their first uniforms. Here they are on that proud day in 1926 gathered about Commissioner Alexander MacDonald, (bow tie, third from right) and his staff on the Capitol steps in Albany.

Bear country

Dear Sir: For the past seven years I've hunted deer in your State, and have been lucky, but in those seven years I've never seen a bear, I saw tracks in the snow and some other signs, but no bear. I read your article, "Beaver Trapper's Diary," and it sounds like it might be good country for bear. Could you let me know how I can get to Gooseneck Lake and what kind of hunting is around there, and my chances of seeing some bear.

Ford Heines, Hackettstown, N. J.

• *Gooseneck Lake is on lands controlled by the Adirondack League Club and is not open to the public. They have quite a few members and some of these members bring in guests. These guests are the only non-members that are allowed hunting privileges on any of the League Club property.*

However, there are several places in the Adirondacks on State land open to the public that afford much better bear hunting.

One section where I've seen lots of bear sign is around Newcomb. I've trapped coyotes in this section for several years and always have bears spring traps and see tracks (lots of them) every day.

Just south and east of Newcomb around Chenney Pond is open to public hunting and probably is as good a place to get a bear as anywhere in the State.

Around the vicinity of Whiteface Mt. is another place where bear are thick. Have seen lots of tracks in this section, particularly on the north and northwest sides. There are some sand roads there that almost always show bear tracks.

There is some good bear country in the Catskills. There are bears around Big Hollow near Maple Crest. You will find that most of the beech trees in this section are marked by bear and quite a few are taken there almost every year.

The west side of High Peak near East Windham is good bear country too.

All of the places mentioned are easy to get to, but there are places back in that have lots of bear too. One of these is the Cold River section north and east of Long Lake. This is not so easy to get to but chances of getting a bear there are good.—Ed. Maunton

Backbone

Dear Sir: I would like equal time to reply to Fred Crane's stupid out of context quotation that appeared in the June-July CONSERVATIONIST about trespassing laws. Like it or not, they are on the books! Letters like his only stiffen the farmer's backbone and undo the excellent exhortations in THE CONSERVATIONIST and elsewhere to "Behave yourselves at all times."

Denis J. Duhig, Valhalla

Information please

Dear Sir: Will you please send me all the information on the Universe that you have? Thank you.

Ruth Henry, Walkill

• *We sent all we had.—Editor*



Another big white pine

Dear Sir: Here is the picture you asked for. The bush should be trimmed out around this tree. The size of the trunk cannot be appreciated until one is close to it. It is not very tall because it has taken tremendous beatings. Limbs as large as any ordinary pine tree have been broken off and some of the more recent ones lie there on the ground. Please see if the Syracuse College of Forestry can't give this the attention which it merits.

Trunk circumference is 14 feet, 2 inches. Located in western boundary of Herkimer County on the east bank of West Canada Creek, it can be seen by looking upstream from the bridge spanning the first crossing of West Canada from Trenton toward Poland.

Jesse H. Dildine, Geneva

Thanks in reverse

Gentlemen: I have just returned from the privilege of visiting your wonderful Conservation Camp at Raquette Lake where myself and fellow NRA Instructor Carlton Kenyon held class and I wish to express my appreciation for the opportunity to visit your camp.

I enjoyed reading your article "Longshore Treasure" in the April-May CONSERVATIONIST and have re-read it upon my return. It is a very accurate writing. Your wonderful staff of directors, councilors, caretakers and kitchen staff make everyone feel right at home and offers the youngster a wonderful opportunity to grasp many of the fine facets of becoming conservation-minded as well as sportsmen.

Many of the other instructors of the Broome Co. Sportsmen's Assoc. have likewise had the privilege of visiting this camp and we all agree the trip is very well worthwhile and we will continue to do so if needed.

Jack Trusler, Endicott

• *We certainly appreciate your very kind letter expressing your approval of the Department's Conservation Camp at Raquette Lake and the combined efforts of the camp*

staff to make you and the other instructors welcome.

This is as it should be, but we think the shoe is on the other foot—that it's we who should express our appreciation for the time which you and the other instructors are contributing to make these conservation camps a success.

It's always nice to get a letter such as yours and we thank you again for your consideration.—Editor

"Bootstraps"

Dear Sir: Your article on Bootstraps Farm has certainly given my friends and myself a great deal of inspiration and hope along the lines of conservation of old abandoned farm lands.

I would like to purchase a farm, such as "Bootstraps," within a radius of 150 miles from New York City. I am limited to \$1,000 full purchase price. I am also one interested in contributing, in my own small way, towards conserving our natural resources.

Keep up your wonderful work on conservation; you are doing an inspiring job.

D. R. Span, Brooklyn

• *Hardly a day goes by that the mailman doesn't present us with new evidence that Clayt Seagears' articles on Bootstraps Farm are being read with, as you indicate, "a great deal of inspiration and hope along the lines of conservation of old abandoned farm lands."*

So far, most of the letter-writers, as in your case, go on to inquire how they too can purchase a rundown farm and do something about putting the land back into productive and enjoyable use. That is one question, however, on which we have no specific formula other than to assure people that there's literally thousands and thousands of such acreage available in the peripheral Adirondack counties, in the Catskills and throughout the central and southern tier counties of the State. Recognizing, however, that all kinds of people will have all kinds of objectives in the sort of old farms they are looking for, we can only suggest a general formula on how to proceed.

According to this formula, we would look around the section of the State that is generally appealing to us and we'd specifically locate (on a map) the sites of various, obviously abandoned farms that rate high in this appeal interest. If we were to look for any specific characteristic of these old farms as indicative of good possibilities for bringing it to life it would be swale or swampy areas that would lend themselves to the development of wildlife marshes or ponds. Almost all such lands will benefit from reforestation and that, together with the development of water areas should be the basis for a rewarding conservation program.

Having spotted one or more such likely looking abandoned farm areas the next major step is to check at the County Treasurer's office to determine whether the property in question is listed for tax sale. You could then proceed from there.—Editor

A. T. Shorey

Dear Editor: On May 11th I wrote to you asking you to publish a letter in THE CONSERVATIONIST. I asked readers for help in locating a "Guide to Adirondack Trails, Northeastern Section." Will you please discard my earlier letter. I have received a copy from the Lake Placid Librarian on inter-library loan and I have received a second copy from Mr. A. T. Shorey who has given me permission to use it on our trip. Am I correct in thinking Mr. Shorey was once a member of the staff of your magazine? Seems to me his name appeared signed to an article last fall. I have had some correspondence with Mr. Shorey and am prepared to state he has been of wonderful assistance in the kindest, most patient manner possible. If our trip is a success he is the person we can thank.

Rose Zwickl, Long Branch, N. J.

• *He is the same A. T. Shorey. Though retired from the Conservation Department, he's still going strong.*—Editor

Fishing the Pepacton

Gentlemen: Noted with interest "Back of the Book" mention of Pepacton Reservoir and accompanying photos of brown trout. Having spent many pleasant hours on this stretch of the Delaware before flooding the development as to size of fish is particularly interesting.

Perhaps you can advise me if there are any special regulations governing fishing on this body of water. Can a canoe be used? Outboard motor? Is it under the jurisdiction of N. Y. City water supply agency?

Is information available in the form of a list of Adirondack lakes in which Salmon have been stocked over a period of years? Are any of these lakes producing fishing of a consistent nature which would put them in a class with the well known Maine salmon lakes?

Your publication is in my opinion excellent and does a wonderful job of presenting a well rounded view of the entire conservation picture.

Wm. Taylor, Alendale, N. J.

• *The following is the situation at Pepacton Reservoir: It is still under the jurisdiction of the New York City Board of Water Supply. The Board permits shore fishing only. At some undetermined time in the future Pepacton will be turned over to the New York City Department of Water Supply, Gas and Electricity at which time the general rules governing fishing and boating will be put into effect plus any special regulations applying particularly to Pepacton Reservoir.*

As to salmon, we have not attempted to put out a full list of waters stocked with salmon for the reason that the initial stocking is experimental. In many instances only a few salmon are available for experiment and even if results are good a period of several years of further stocking is needed to build up much fishing.

An article in the June-July, 1956 CONSERVATIONIST gives some details as to waters stocked. As to your question about lakes

which have consistent salmon fishing, I would say that Lake George and Schroon Lake are producing well in that during the Spring many anglers go after salmon and are successful. A few anglers are taking them throughout the Summer.—J. R. Greeley, Chief Aquatic Biologist

More on Cheney gun

Dear Sir: The article entitled "A. N. Cheney and his Gun" by William H. Hill, foreword which appeared in the August-September 1955 issue of THE CONSERVATIONIST was of particular interest to me.

The description of the firearm and picture of same fits almost perfectly a gun which I have owned for several years. The only differences between the two pieces are in overall length, the length of barrel and the diameter. These are 19", 13" and 15/16" respectively as compared to 20 1/2", 16" and 1" for the Cheney gun. There are no markings on this gun to identify the maker.

The previous owner of this antique was my great uncle, Orson P. Morse, one of the early and prominent land surveyors in the Adirondack area. He resided at Minerva, N. Y. from 1820 to the time of his death in 1907. Other guns owned by him were several of the muzzle-loading type.

William E. Hill, Amsterdam

Boating regulations

Dear Sir: Can you give me a solution to a boating problem on the State Barge Canal? One day last Summer, I tied my 14-foot run-a-bout at the so-called "low dock" at Sylvan Beach, under the State bridge. We were sitting in the boat when one of the speedboats, which operate from this place of personal gain; i.e. one half hour speedboat rides on Oneida Lake, forced us out of there at the risk of being rammed. We were told to "move, or else."

Our boat is licensed and carried all accessories and papers necessary on navigable waters in New York and Canadian provinces. If we were in the wrong, okay. But if we do have a right to tie up there—not for extended periods of time, but just to run over to a restaurant or to return to our car for some reason—we would appreciate knowing. You know the saying, "We pay our taxes..."

As the season for boating is upon us again, thank God—we would be grateful for a definite answer. Keep up the good work in your magazine.

N. Donald McPherson, Clinton

• *While your problem is in the jurisdiction of the Department of Public Works, we endeavored to get the answer for you through that Department.*

We were informed that it is permissible for you to tie up for 24 hours provided you leave a standby aboard so as to move your craft out should there be any danger from larger boats coming through. This tie-up period can be extended to 48 hours but beyond that, the tower should be consulted. It looks as though you were bluffed out of your docking by the speedboat operator.

The New York State Navigation Law, published in booklet form, is available from the

N. Y. Dept. of Public Works, Div. of Operation and Maintenance.—Editor

Boats and State lands

Dear Sir: I would like to know about row boats on State ponds and lakes. Is there a law that you cannot lock your boat or anybody use it without your consent and give up when they get done with it? Please send me information regarding this problem or any ruling you people might have. Thank you.

Emory L. King, Fort Edward

• *Boats are considered personal property and there is no rule or law regarding their safekeeping. Whether or not an owner wants to lock his boat is entirely his business. It is only during the past ten years that people have locked their boats as a general rule. Prior to that, woods courtesy usually prevailed—a boat was considered private property and was not to be disturbed unless an emergency arose. Then it was returned in good condition and the owner notified if possible.*

There are two general regulations in effect concerning boats on Forest Preserve lands. No houseboats shall be anchored or moored to any State land or State land under water. No boat of any kind shall be tied up or otherwise fastened to any State dock so as to prevent free access to such structure. It is also a Department policy not to permit storage of private property on State land.—Editor

Anchor in the tree

Dear Sir: In regards to "Letters to the Editor" section in your June-July, 1956 issue, you have a letter and photos of logging anchors from Mr. Ernest W. Blue, of Poland, N. Y. and I wish to mention that my mother wrote me that my father, Mr. Ernest T. Darvoe of Trenton Falls, N. Y. said he put the anchor up in the tree and took snapshots of it and his friend "Chet." Probably several years ago.

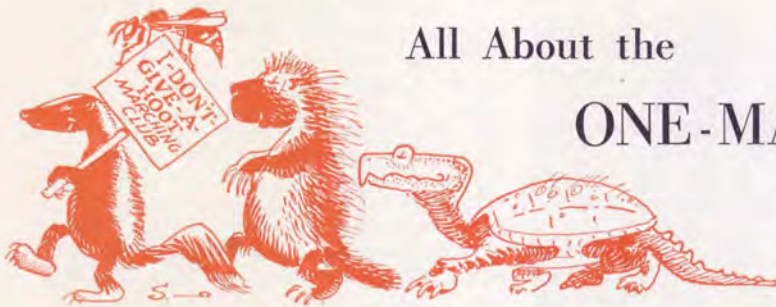
My father has hunted and fished in the West Canada area for many years and on one occasion in 1954 I accompanied him deer hunting and bagged a doe, and spike-horn buck, both within a half mile of Truman Haskell's camp on the West Canada Creek where we were staying.

My husband and I enjoy every issue of THE CONSERVATIONIST magazine. It is a worthwhile magazine no matter what state you live in.

Emma D. MacAllister, Aberdeen, Md.

Credits

First cover, 4, 8, 10, 11, 12, 14, 17, 24, 25, 32, 36, 39, H. Wayne Trimm; 2d cover, Bigelow Company; 3, 9, 13, 15, 22, 23, 26, 27, 37, Roy Irving; 5, 6, 7, 28, 29, Nick Drahos; 18, 19, The Old Print Shop, Harold K. Hochschild, Seneca Ray Stoddard; 20, 21, Doug Payne, Louis Mayer; 21, Bill Bentley; 28, Dave Allen; 30, 31, Meade C. Dobson; 33, Morris Otis, Howard Russ, S. C. S.; 34, Harlan B. Brumsted, John Schempp; 35, Jos. Dell; 38, Bob Harrington, 48, 3d cover, Clayt Seagears; 4th cover, Hy S. Watson.



All About the ONE-MAN SMOG

THIS piece purports to provide some useless information on that well-known one-man smog often called Pugh A. Skunk who, as you know, is a person of exceedingly powerful rank among all mammals.

Pugh is the highest member of the Weasel Family. He has received great recognition as a top contributor to the National Society of American Highway Scrapers. He long has been recognized as founder of the International Foundation for the Widest Possible Dissemination of Healthy Personal Habits and on him has been conferred the honorary degree of B. R. (before radio), undoubtedly because he has been on the air so long.

Recognition of Pugh's activities in behalf of agricultural economics through rodent eradication gained considerable impetus around 1946 when Dr. E. Lawrence Palmer, subsequent author of the "Fieldbook of Natural History" and then Professor of Nature and Science Education at Cornell University, sent him a Christmas card labelled "Merry Ex-Mouse."

When I was a small boy, I used to keep a lot of assorted natural history (and other) notes in a series of loose-leaf books. I still have some of them.

Lacking some juicy material on the skunk for this piece, I dug out one of those old notebooks (1916) and, sure enough, filed under "S" I found a whole mess of stuff on our hero—as well as the 446 Ocean Avenue, Brooklyn, address of Miss Anita Stewart who some may remember as a constituent—as noted elsewhere in the notebook—of Mary Pickford (355 Riverside Drive), Norma Talmadge (318 E. 48th St.), Pearl White (25 W. 45th St.), and Theda Bara (130 W. 46th St.). Ah me!

Anyway, among the several pages of juvenile scrawl, plus price lists dealing with this beast, I found that in 1916 skunk farming apparently was at its peak. More breeders handled them than any other kind of furbearer and they quoted prices of \$30 per pair, my book says. Incidentally, skunk fur hit its price peak in 1923 at around \$6 and soon thereafter it no longer was profitable to farm them.

Regarding the peculiar ability of our pal, Pugh, this is what, with evident labor, I had written:

"The skunk musk is best smelt on damp nights. Its tail is carried generally arched over its back. When its tail is down, it is unable to eject its musk due to the confinement of certain mussels which are used when emitting its odor. The spray can be thrown with remarkable marksmanship for several feet and is olive green in color. This musk is found in two muscular sacks, one on each side of its vent. Skunk farming is a fine paying proposition and good results may be had if the skunks are properly taken care of. Ha, ha. . . They are stupid animals and are easily caught in traps. I have caught them within ten feet of our back door in a steel No. 1 Victor trap set in a stone pen and bated with venison. . ."

How well I remember that particular skunk. And I'll bet my Mother does, too. But I'm a little leery about the proper identification of the bait. That was in Sullivan County in 1916. Today, hunters take more deer in Sullivan than any other county but then they were so rare that even a sight record was newsworthy for the Monticello and Liberty papers.

Although the account of how a skunk does it is reasonably accurate, it doesn't tell all. The scent glands or sacs, each not much larger than a pea, are wrapped in a layer of special "squeezing muscles." Each is then connected by a short duct which leads into the anal tract. The duct openings are internal—until the skunk stiffly erects its tail. This action pushes the tract outward like bubble gum and the twin duct openings are pointed at the victim like a double-barrelled shotgun. Each barrel can be fired at will, singly or in salvo.

The musk, jet propelled in droplets which may carry as much as 10 feet, disintegrates in the air like spray from a DDT bomb. Chemically, skunk musk is called *n*-butyl mercaptan, a compound which includes plenty of sulphur and plenty of persistence. Tomato juice and ammonia are said to be reasonably effective in banishing the odor of direct hits but the old-fashioned way to clear it

from clothing was to immerse the garments in a running brook for two weeks. This treatment was very effective, I remember, for it normally resulted in the complete ruination of the garment anyway.

Because all critters (with the possible exception of the great horned owl) seem to fear the nauseating and temporarily blinding effects of skunk-musk bullseyes, Pugh is the perennial president of the I-Don't-Give-a-Hoot Marching Society which has as fellow members such characters as the porcupine, rattlesnake, snapping turtle, baldfaced hornet and a few other small-size citizens considered too hot to handle. Pugh feels he has the right of way and he hasn't yet learned that automobiles don't care either.

He waddles on the soles of his hind feet instead of his toes. His front feet have long, curved claws used to dig thousands of little two-inch pits in every soft-dirt meadow—probably for the grubs and other bugs he loves. In grasshopper and cricket time he normally eats little else—unless he trips over it.

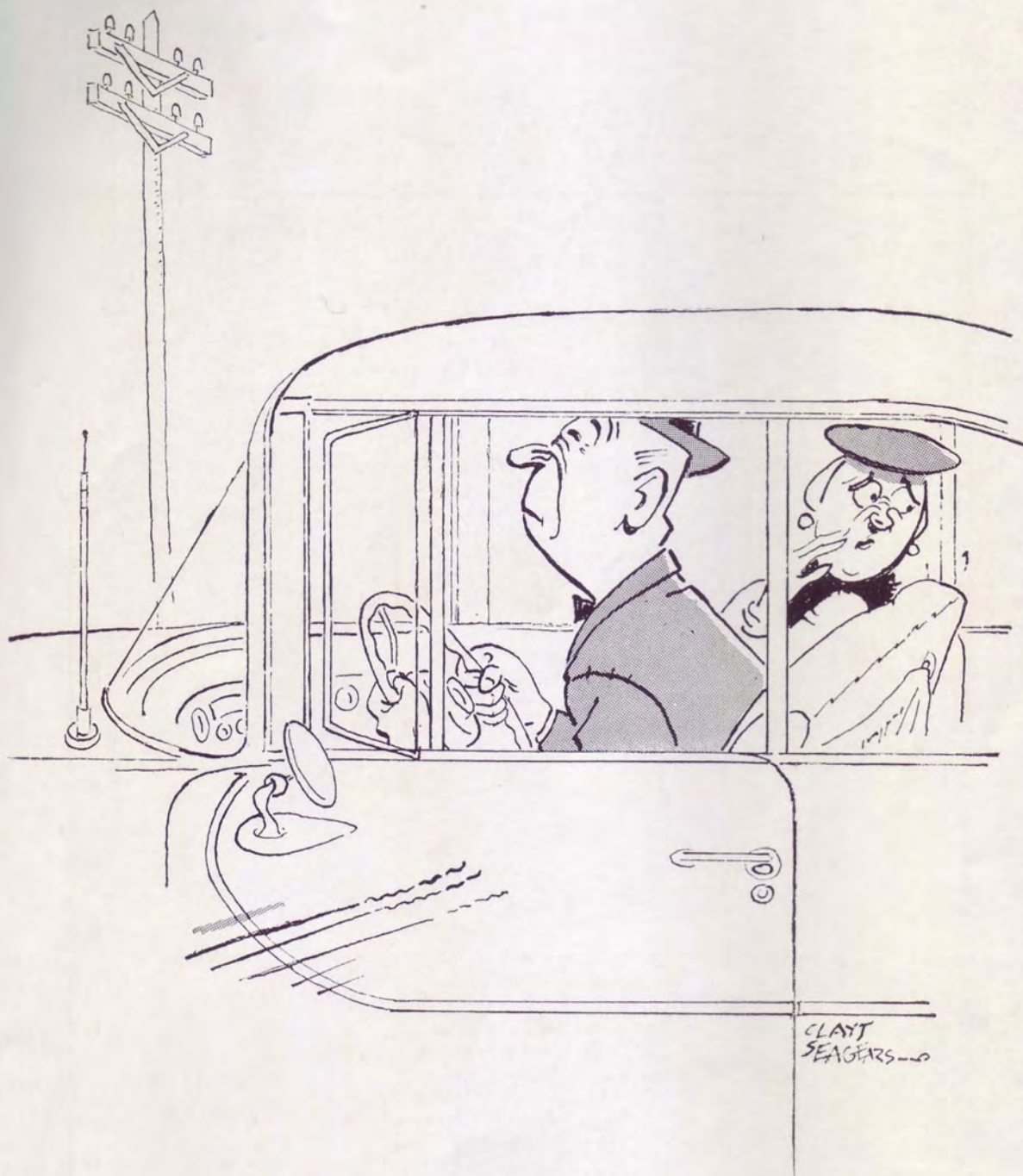
Annoyed skunks stamp their front feet with jarring impact. They can scream like a Banshee, too. And, except for first-year family groups, they fight each other like blue blazes. Put a couple together in a pen and, often as not, you get overnight murder. But tamed when very young and, of course, descended, they sometimes make good house-broken pets. In New York they can be kept only under permit when obtained from a licensed dealer. When old, they usually become nasty, over-fat and lose their tail feathers.

Skunk fur, now mostly exported, is of comparatively little value. But, so what—as cutworm crunchers, grub guzzlers and mouse masticators, they probably are without peer among the larger mammals. In fact, the first legislation to protect the skunk in New York was passed at the behest of hop growers who found the skunk's appetite for the devastating hop grub sometimes meant crop success or failure.

Skunks are known by many names. In the early days when the Animal Kingdom was being organized into Families, the skunks' ancestors believed themselves related to the Cat Family—probably because of their admiration for the also-smelly Civet Cat of Africa. But when they tried to climb the Cat Family's tree a terrible stink resulted. All the branches of the Cat Family promptly dropped from the tree. And a tree without branches is a pole.

Although this is not generally known in the best biological circles, that's the origin of the skunk's other name—polecat.

—CLAYT SEAGEARS



Modern Nature Study

Life History of a Skunk



The Old Hunter

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