The New York State

Conservationist

April-May 1958

State of New York Conservation Department

Spring

A dietician will tell you that the physical well-being of an individual is measured in the balance of nutrition. Balance is equally important in the conservation of our natural resources. If we preserve and enrich our soils, if we manage our forests and woodlots to productive maturity, assuring proper succession, if we safeguard the purity of our waters and plan wisely for future needs, if we recognize the recreational and aesthetic values of our wildlife resources and manage them with long-range intelligence, not short-term sentiment—if we do all these things in balance we shall be practicing conservation in the best sense of the word. We shall, moreover, assure for ourselves the kind of environment vital to our individual and social well-being and essential to the survival of our civilization.

We believe thoroughly in this philosophy of balance in conservation. It has been our watchword through the years in gathering material for the pages of THE CONSERVATIONIST. If this is sermonizing, please don't be alarmed. We're not going to remain for long perched on this philosophical plateau. Rather, we're preparing to climb down, as gracefully as possible, to admit that this April-May issue of THE CONSERVATIONIST is *unbalanced* —and purposefully so—in honor of Spring.

From the facing cover where a fawn peers out through flowers and grasses, to the back cover where Canada geese drop down through a misty, April rain to search for greens on a water-sodden field, you'll find us talking mostly of water and marshes and fish and fishing —all things of the springtime.

It was never a better theme. As we go to press with this issue, New Yorkers are struggling out from yet another avalanchal snow storm; the latest in a seeming never-ending series that has made the long, weary Winter of 1957-58 a record breaker, piling up 50 to 60 inches of snow, with drifts much deeper in many sections of the State, bringing death to some, severe hardship to many and taking its toll of wildlife, particularly deer, unable to move in search of food or to escape ravaging packs of dogs.

But the sun is reaching ever higher, willows are yellow along the river and streams have broken out in noisy chorus. Even the "rusty-hinge" song of the redwings sounds good.

Spring is here!—Editor

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APRIL-MAY, 1958

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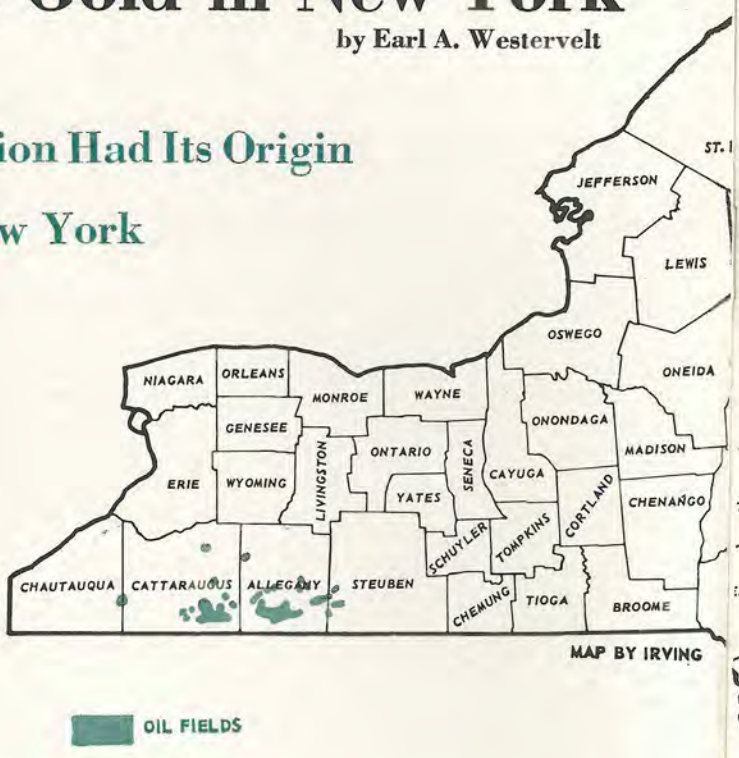
Black Gold in New York

by Earl A. Westervelt

Much of Our Strength as a Nation Had Its Origin In a Bubbling Spring in Western New York



MANY a traveler, driving along Route 17 through Allegany and Cattaraugus counties, in southwestern New York, has been fascinated by the veritable maze of mechanical pumps clustered about the countryside. They are in the front yards of homes, on the shoulder of the main highway, in front of a village store or post office, in a church yard—they seem to be everywhere.

If one stops where many pumps are concentrated, a web work of steel rods can be seen running through the fields—some near the ground—others balanced atop long poles or crossing roads on overhead slings; the whole operation accompanied by a creaking of metal and a swaying of supports. The landscape, itself, seems to be in motion. In the background, from little metal houses, comes the dull thud of the natural gas-fired engines that move the rods and actuate the pumps on a group of wells. The odor of oil is everywhere. It is a symphony of metalic sounds in a picturesque setting of hills, forests and fields. It's the song of crude oil, so important to this age of mechanization.

These fascinating machines are pumping—day and night—the highest grade crude oil in America. It is the paraffin base crude petroleum of top value in the production of fine lubricating oils.

The history and development of crude oil in New York State has all the romance of the "boom and bust" gold rushes of California and Alaska; in fact, it is often referred to as "black gold." Most New Yorkers are unaware that the discovery of the crude oil resource, in this country, had its very beginning in this remote corner of our State. It was to be the introduction to the machine age. A Franciscan missionary, Father de la Roche d'Allion, recorded the first discovery of oil in the United States in 1627 near Cuba, N.Y. The Seneca Oil Spring (now an historical site) was discovered by the Indians long before recorded history and it was the Indians who led the missionary to the legendary site. They valued the oil highly, using it for curatives and as a paint base to decorate their bodies and implements. During early Colonial times, the white settlers collected the oil, known as Seneca Oil because of its location in the lands of the Seneca Indian Nation, and used it in early medications.

After the first discovery of oil at Cuba, other springs or seepages were found, some with both natural gas and crude oil. Certain of these springs, when ignited accidentally or intentionally, became "flaming springs" and were a source of legend to the Indian and white settlers alike. Several of these springs are in existence and still active to this day.

Early in the 1800's enterprising individuals dug pits or used primitive drills to collect the oil in small quantities at shallow depths. The product, unrefined, found a ready market for medications, lubricants and for fuel. By 1865 better methods of drilling had been developed and the first commercially successful well in New York was brought in at 1,060 feet near Limestone in Cattaraugus County. This well produced 200 barrels a day for a short period until water seepage ruined it. But it marked the beginning of serious efforts to develop the new resource and by 1878 there were 250 producing wells in Cattaraugus County. Soon after, exploration and drilling began at a feverish pace in Allegany County and the adjoining Commonwealth of Pennsylvania.

As research and industry found ever increasing uses for oil and its by-products, more intensive explorations were made until the oil pools of southwestern New York were pretty well outlined (see map). The oil fields boomed and sleepy little farm hamlets became small cities in a matter of a few months. The Village of Richburg in Allegany County is a good example. That hamlet expanded from some 180 persons to nearly 7,000 in less than a year when big producing wells were brought in. Its population dropped nearly as fast a few months after, when a strike in another section led the people away on the search for quick fortunes in "black gold."

When production from the early wells began to fall off, an intensive search was made for new methods to retrieve the oil still left in the oil-bearing sands. And that search is continuing today. Probably the greatest factor in bringing the wells back into secondary production was the accidental discovery that water flooding of the sands could force the oil to points where secondary recovery could be accomplished economically. In the early 1900's an operator pulled a casing from a well allowing ground water to flow into the well. To his surprise, recovery in nearby oil wells increased. It didn't take operators long to discover this trick and they secretly pulled or fractured casings in wells of low production to increase the flow in adjacent wells. Within a short time this technique had been improved to a point where oil wells were drilled in a planned pattern ad-

Early Indians visualized spirits in flames of Seneca Oil Spring

Monument at Seneca Oil Spring Reservation near Cuba, N. Y.

Oil pumps along Route 17 near Allentown, N. Y.

jacent to drilled water wells. Water was then forced down to the oil-bearing sands under substantial pressure pushing the oil ahead of it to the recovery wells. Separation of the oil and water after it was pumped was simply a matter of flotation. Presently, newer methods of secondary recovery are being tried. One is the introduction of liquid carbon dioxide to the oil sands.

The use of explosives (nitro glycerin) for "bringing in" wells after drilling has been an integral part of production progress. The manufacture, transportation and use of this powerful but touchy explosive and the "shooters" who handle it make an exciting story.

Crude oil as it is recovered is usually a dark green color, or golden green, when held against the sunlight, but it may vary from almost black to light yellow according to where it is found. The most accepted theory of its origin is that components were made up of microscopic marine and marsh life deposited in prehistoric times. As these deposits were covered by overlying earth burdens, periodic crumpling of the earth's surface forced and forged the components into crude oil and into the "pockets" or "pools" of oil-bearing sands.

After the oil is pumped from the ground it may be stored in tanks near the well for collection or, more generally, a series of wells are connected by pipelines running to major storage centers. From here it goes to the refinery by pipeline, railroad tank car or tank truck where it is broken down into various grades of lubricating oil, gasoline, heating oil and various by-products.

The production of oil in New York State from 1878 to 1919 has been calculated at 64 millions of barrels. The highest production year was in 1882 when an estimated 6¾ million barrels of oil was recovered. Since 1919 production has fluctuated considerably, dropping as low in some year as ¾ millions of barrels. The average production in recent years, though, has held at about 3½ millions of barrels.

Geologists have estimated New York's known oil lands at a little over 95,000 acres, mostly in Cattaraugus and Allegany counties. As for crude oil reserves and life of the fields, opinions differ. The best calculations (1952) gave a reserve of somewhat over 64 millions of barrels with an estimated field life of 16 to 24 years under present recovery methods. These predictions cannot, of course, account for possible new production in deeper stratas as yet not completely explored.

Natural Gas

Natural gas is often associated with oil field operations. Most everyone has seen pictures, at least of the gushing oil wells of Oklahoma and Texas where natural gas pressure forces the crude oil to the surface. Natural gas resources in New York are considerably more widespread than is crude oil. Recovery operations are less obvious to the traveler too, unless he happens on a drilling rig in operation, a pipeline crew or one of the pumping stations that maintains pressure along the pipelines. Once the well is drilled in, it is connected to a main pipeline and there is no complicated pumping apparatus to attract attention.

Again New York can claim a first. Natural gas seepages from springs were first recorded in this country by explorers and missionaries, just south of the Village

A new well being drilled, background

An operating well in silhouette

Electrically driven well near Allentown, N. Y.

Oil pump with activating rod and water separation tank

A pump in shopping center, Allentown

Oil is where you find it; sometimes in the door yard

Pumping station on State Forest area. Natural gas from West Virginia, Texas and Oklahoma is pumped into ground here for storage and later distribution

Oil storage collection point

Sinclair oil refinery, Wellsville

of Canandaigua. It was described in early accounts as "a spring that took fire and burned like brandy when lighted with a torch."

The first natural gas well was drilled near the Village of Fredonia on Canadaway Creek, Chautauqua County, in 1821. A useable supply of gas was found at a depth of 70 feet and a crude gasometer and lead pipeline brought the new element to an inn in Fredonia for lighting purposes. Shortly after, this village became the first in this country to be lighted with natural gas. The interest in use of the new resource for light and heat soon brought improved techniques for recovery in commerical quantities and spurred exploration for new fields. The major gas fields have been mapped, but surveys are continuing with good possibilities that new fields may be discovered at depths as yet not completely explored. Even at this writing plans are under consideration for offshore drilling operations in Lake Erie.

As with oil, natural gas recovery is often in tremendous volume when wells are first brought in, with initial production in some wells as high as 50 million cubic feet per day. But in all too many cases the pressure drops sharply after a short period; often to unuseable proportions for commercial use. This feature made speculation in the commercial use of natural gas from New York fields a risky proposition in the early years of development. By the time pipelines were laid, at considerable expense, to consumer areas the production of a well, or group of wells, might fall to the point where supply could not meet the demand. One such ill-fated line, established at considerable cost, was a log pipeline 24 miles in length to carry gas from a well near West Bloomfield in Ontario County to the City of Rochester. Clear white pine logs were imported from Canada for this line and drilled, "pipe-wise," with 8-inch holes. The log pipes were connected by iron rings and the joints wrapped with woolen blankets (secured from Civil War surpluses) soaked in tar. The line did deliver gas to Rochester for a short period but the quantity and quality were poor and the enterprise failed with tremendous financial losses to investors.

In some sections plants were established for extracting gasoline from natural gas with an average production of 2 to 2½ gallons per 1,000 cubic feet of gas, depending on the quality. Some of these plants in Allegany County produced sufficient quantities to pipe it to railroad tank car loading points. But undependable natural gas supplies and competition of the western United States oil and gas producing fields soon made this operation uneconomical.

The natural gas reserves of New York have been calculated at 63 billion cubic feet (1952) but there seems to be a fair chance that further exploration may substantially increase this estimate. Supplies of natural gas to the consumer have been augmented by the establishment of pipelines bringing gas from fields in West Virginia, Texas and Oklahoma. Here, the non-producing wells in New York are serving a good purpose. The out-of-state gas is piped to these wells and forced, under pressure, to the original underground storage areas. The gas forces the underground water from the original gas bearing sands. The resultant water pressure acts to force the gas back to the surface and into the pipelines when it is needed during the critical Winter heating period. Several such wells on State-owned (Conservation Department) lands are used for this purpose with the State receiving rentals and royalties for use of the underground storage areas.

At the present time a Legislative Committee is studying the crude oil and natural gas problems and potential in New York for more adequate conservation and wise use of these important resources. It is important, too, for already industry is considering the use of abandoned oil and gas wells as a possibility for disposing of industrial wastes that can no longer be discharged into streams, rivers and lakes. It is not difficult to appreciate that pollution from such underground disposal could, in itself, become a serious factor—especially with radio-active materials—if not carefully controlled.

The search for crude oil and natural gas resources has grown from its early and primitive beginning in Western New York until it now extends to the far corners of the earth. When Indians and the Franciscan missionary "uncorked the bottle" at Seneca Oil Spring, they released a genie—a trickle of oil that has swelled to a river of "black gold," and fired and lubricated the machinery of our industrial might.

Boats and Boating

on New York's Inland Waters

by Roy Irving,
Conservation Educator

Whether you own a dinghy or a yacht, New York's vast network of lakes, rivers and canals offers unparalleled opportunity for fun afloat. This article points the way and lists the "rules of the road."—Editor

SUBJECT only to the type of craft you own, leisure time available, your financial status and your inclinations, the opportunities for pleasure motor boating on the inland waterways of New York State are practically unlimited. Add to these the cruising possibilities offered by Canada, our good friend and neighbor to the north, and the opportunities become even more numerous and inviting.

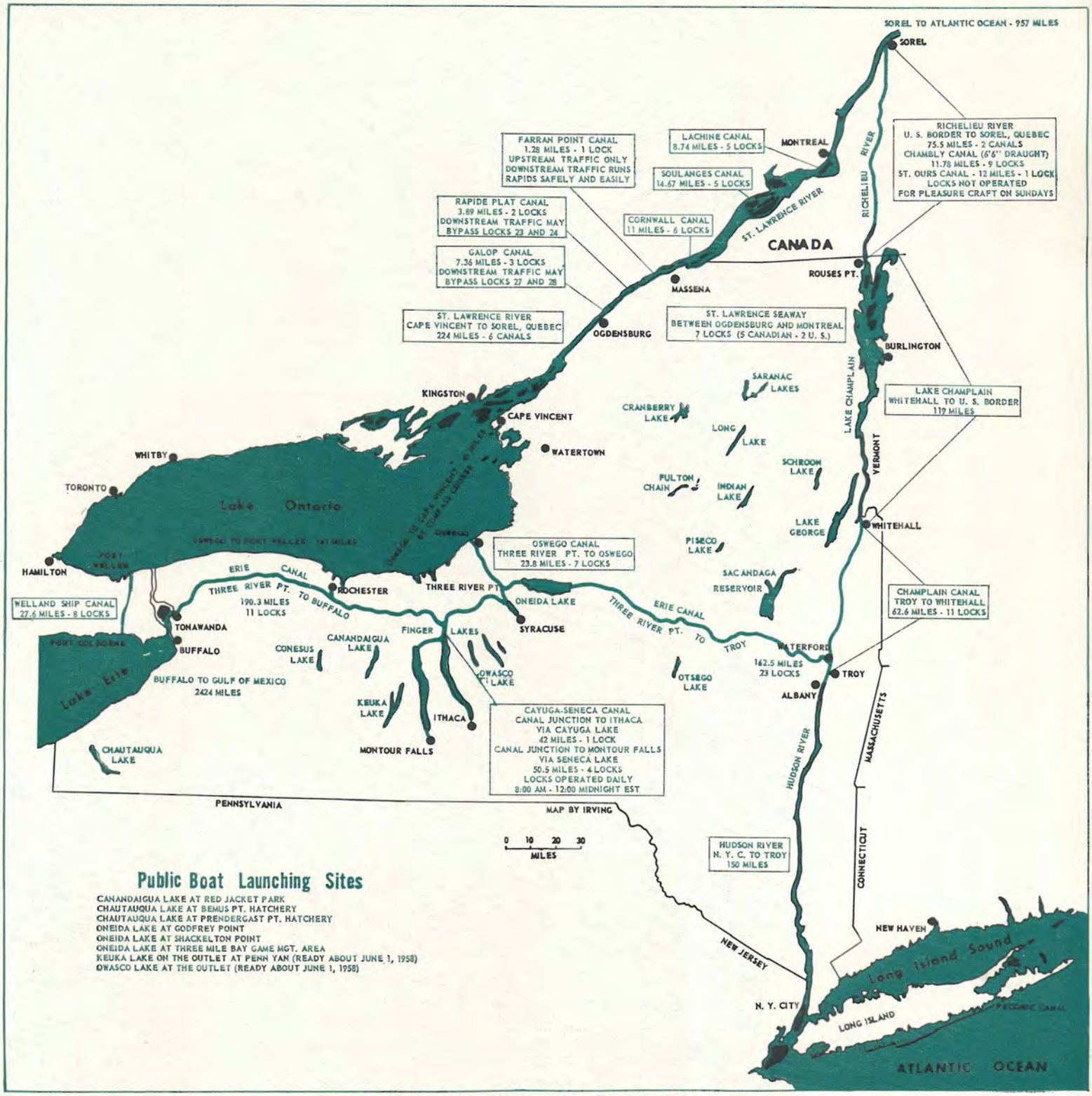
From the 16-foot outboard to the luxury yacht—for a single day or several weeks—from a few bucks to a small fortune—there are all kinds of boats and boating junkets. You can load your 16-footer on the trailer, stow the family in the car, take off for one of the many large lakes with which we have been blessed in New York State, enjoy a few hours on the water and be back home the same day, or launch your boat somewhere on the canal system, pay your respects to Montreal and return and never have to take your boat out of the water from start to finish of your trip.

Most of us are well aware of the big problem of boating safety which confronts us today, created by a fantastic increase in the number of power pleasure boats in the last few years and their use on small bodies of water—too small, in all too many instances, for the size and power of boats being operated on them. It is not the intent of this article to tackle this problem. Rather, it is our intent to publicize the boating opportunities offered on the larger lakes and connected inland waterways of New York with the thought that some boating enthusiasts may be encouraged to give them a try, thereby reducing to some extent the boating pressure on our smaller lakes. Or perhaps with the knowledge that such exciting possibilities exist, some boating enthusiasts already weary of steering in circles, dodging other boats and playing tag with water skiers, will welcome the opportunity to travel in one direction for a change and see something different every mile of the way.

Statistics never make interesting reading but do serve a purpose in briefly pointing up the magnitude of subject or problem. Herewith we take the liberty of citing a few to show the present status of motor boat recreation, sometimes referred to as the nation's top family sport. More than seven million pleasure craft were in use in the United States during 1957 of

At public campsite, Turtle Is., Lake George

Cruiser navigating Barge Canal, Mohawk River



Cruising guide to New York's inland waterways

which 756,000 were inboards. Thirty-five million persons participated in their use and spent almost $2 billion at the retail level in the process. In addition, manufacturers estimate that 500,000 customers are expected to buy new boats in 1958. With boat designs and inboard improvements keeping pace all the way, the outboard motor now ranges from the 1-cylinder, 1.7 H.P. to the 6-cylinder 70 H.P. job, with a small diesel outboard now assuming a place on the market. Where does New York State stand in this national picture? During 1957 there were almost 500,000 outboards alone in use, highest for any state in the country.

Obviously, with such a fleet in operation, regulations and common sense safety requirements are necessary. So, before you are tempted to load up and take off on any of the trips pictured on the accompanying map—or anywhere else, for that matter—we urge you to take stock of yourself and your equipment to make sure that you are operating safely and legally. Nothing spoils an automobile trip more than an accident or a traffic ticket. Motor boating is no different.

To get you started on your trip properly we are merely going to summarize the present basic regulations for legal operation of mechanically propelled pleasure craft in New York State and,

for your convenience, cite some references with their sources, which can't help but make your boating trips more enjoyable and trouble free. For most of this information we turned to the New York State Department of Public Works which is charged with the responsibility of the State Navigation Law and the State Canal System. To proceed in an orderly fashion we shall break the information down into two sections: (1) N.Y.S. regulations for power boat operation and (2) use of the State Canal System.

Boat Registration

Every mechanically propelled outboard vessel over 16 feet in length and all inboard motor vessels operating in *Federal* waters must be registered with the U.S. Coast Guard. Any such vessel registered with the Coast Guard and displaying its number must conform to the Coast Guard operating and equipment requirements which generally are more stringent than those of the State. Coast Guard information may be obtained from the U.S. Coast Guard, Federal Building, Albany, N.Y. Vessels registered with the Coast Guard are *not* required to be registered with the State.

Mechanically propelled vessels not required to be registered with the U.S. Coast Guard must be registered with the N.Y.S. Department of Public Works in accordance with the N.Y.S. Navigation Law as follows: Any mechanically propelled pleasure vessel, regardless of length, which includes all boats with inboard or outboard motors, and rowboats and canoes when equipped with outboard motors if operated on the "navigable waters of the State" must be registered. "Navigable waters of the State" means all lakes, rivers, streams, and waters within the boundaries of the State and not privately owned which are navigable in fact or upon which vessels are operated, except tidewaters lying south of the parallel of the forty-first degree of north latitude (roughly Hastings-on-Hudson) and on Long Island Sound in the Marine District. However, legislation is expected which will amend this definition to include tidewaters south of Hastings-on-Hudson and Long Island Sound.

Transient boats which are on New York waters less than ten days in a calendar year are not required to be registered. Mechanically propelled pleasure vessels owned and primarily berthed without the State may be temporarily registered without fee for periods of not to exceed thirty days.

As most of us come under the rule and not the exceptions, here's how to go about getting your boat registered by the State: Applications for registration may be obtained from the N.Y.S. Department of Public Works, 256 Washington Ave., Albany, N.Y. This application somewhat resembles that for automobile registration. Upon completion of the application, return it to the Department of Public Works with the registration fee of $1. Upon receipt of the completed application and fee you will be issued a certificate of registration stating the number assigned to your vessel. This number shall be painted or attached on each side of the bow with figures and letters at least three inches in height. Annual registration is not required. Only upon change of ownership must a new application for registration be filed.

Boiled down this means, with a certain few exceptions, that any mechanically propelled pleasure vessel berthed and operated within the State must be registered either with the U.S. Coast Guard or the State. Most of us will come under the provisions of the N.Y.S. Navigation Law for registration.

Pilot Rules

Every operator should have a copy of and be familiar with the Pilot Rules. These deal primarily with the procedure and signals to be used upon encountering other vessels.

Equipment

Every mechanically propelled vessel must carry certain equipment. These include at least one approved life preserver for each person on board, whistle, anchor and cable, fire extinguisher (except for outboards), and certain lights. Specific equipment requirements vary with size of vessels which are classified from Class 1 to Class 5, depending on length.

Speed

No vessel shall be operated within 100 feet of the shore, a dock, pier, raft, float or anchored vessel at a speed exceeding 5 MPH.

These are the present basic requirements for the legal operation of pleasure craft. Complete detailed information is available free of charge from the N.Y.S. Department of Public Works. This information includes such items as a copy of the N.Y.S. Navigation Law which, incidentally, is concerned mostly with the operation of commercial craft; a condensed N.Y.S. Navigation Law designed for the use of pleasure boaters and a copy of the Pilot Rules and equipment requirements. Make sure that you are well informed and legally equipped this boating season.

The Joint Legislative Committee on Motor Boats at present is introducing legislation to cope with the increased use of our inland waterways. Therefore, changes may be expected in the present Navigation Law. This proposed legislation includes an education program for minors operating pleasure boats.

State Canal System

Assuming that you are properly registered and equipped for normal operation, let's see what additional requirements have to be met so that the best advantage can be taken of the opportunities offered by New York State's canal system.

With the original Erie Canal officially opened by the then Governor, DeWitt Clinton, on October 26, 1825 and the entire State canal system made toll-free by 1903 legislation, we now have free waterway communication between Lakes Erie and Ontario on the west and the Hudson River and Lake Champlain on the east. Every year more and more pleasure boaters are becoming aware of this as evidenced by 100 per cent increase in the issuance of navigation permits in the past five years.

In order to pass through any or all locks on the State canal system, except the Federal lock at Troy, a pleasure boat permit is required. Application can be made to the Superintendent of Operation and Maintenance, N.Y.S. Department of Public Works, 256 Washington Avenue, Albany, N.Y.; to any District Engineer's or Section Superintendent's office; or to the office of the first lock through which passage is desired. There is no charge for this permit but, to avoid delay, boat operators are urged to apply well in advance but not before April or May for the following season. Application information must include the boat owner's name and address, name and registration number of boat, the type of boat and its length, beam, draft and height above water line.

The maximum size of boats permitted to use the canals is: Length, 300 feet; beam, 43½ feet; height out of water, 15 feet. The minimum depth of the canal is 12 feet so most of us have no worries on this score.

Speed limits are not to exceed 6 MPH in improved canal channels and not to exceed 10 MPH in canalized rivers and lakes. Speed regulations are rigidly enforced and may cause you considerable delay and embarrassment at the next lock and possible revocation of your permit. You aren't checked by radar but the time of your passage through each lock is a matter of record and usually 'phoned ahead to the next one. Average lockage time is 20 minutes and pleasure boats are usually allowed through at any time, with preference given to commercial craft. In the interest of efficiency, small craft are often requested to go through in groups.

Under direction of the lock operator each boat operator is responsible for the handling of his craft during lockage. This

involves the use of extra lines which must be carried in addition to normal equipment. Two mooring lines, each at least 60 feet long, should be part of your equipment plus a supply of fenders to protect your boat and others from abrasion. The use of automobile tires as fenders while in the locks is not permitted. The navigation season on the canal north of Troy is from April 15 to December 7, depending upon weather conditions.

If you are planning to navigate all or any part of the State canal system you can not afford to be without the official map showing the canals and waterways of New York State. The reverse side of this map includes a general description of the canal system as well as clearance and navigation data and route descriptions. You'll want to get this in advance of your trip to help with your planning and it's available free of charge by writing the N.Y.S. Department of Public Works. And if you want complete detailed data concerning use of the canal system, a pamphlet, "Rules and Regulations Governing Navigation and use of the N.Y.S. Canal System," is available free of charge also.

Let's summarize just what is available to boat operators by writing or contacting the Superintendent of Operation and Maintenance, Bureau of Canals, N.Y.S. Department of Public Works, 256 Washington Ave., Albany, N.Y.:

1. Applications for boat registrations.
2. Pilot Rules, including equipment requirements.
3. Condensed N.Y.S. Navigation Law.
4. Canal pleasure boat permit.
5. Official map of canals and waterways.

Federal Lock at Troy

This lock and dam on the Hudson River was built and is maintained and operated by the Corps of Engineers, U.S. Army. It is toll free and no permit is required to use it. Pleasure boats are locked through only on the end of each hour. However, whenever a lockage is made for commercial traffic other craft may pass through at the same time, if there is room. This lock is capable of accommodating any size vessel that can navigate the State canal system. Recently, because of increased use by pleasure craft, a public address system has been installed by means of which the lock operator issues instructions to boat operators.

For those who plan to use this facility a very nice pamphlet, "Your Key to the Lock," has been prepared by the Army Engineers. It gives complete, illustrated, easy to read instructions for navigating the lock and is available free of charge from the Albany Sub-office, New York District, Corps of Engineers, Federal Bldg., Albany 1, N.Y. It is also expected to be available at the lock and at some marinas and boating centers.

Locking through the canal near Savannah, N. Y.

Canals of Canada

One of the boat trips that we feel has particular appeal for an extended vacation involves the use of some of the canals of Canada. This trip could begin, for example, at Albany, thence north on the Hudson through the Federal lock at Troy and on to Waterford—the entrance to the Erie Canal; thence west via this canal, through Oneida Lake to the Oswego Canal and Lake Ontario; thence northeast via Lake Ontario to the St. Lawrence River and the beautiful Thousand Island region; thence on down the St. Lawrence past Montreal to Sorel, the entrance to the Richelieu River canals; thence south via the St. Ours Canal, Richelieu River and Chambly Canal to Lake Champlain (here a word of caution—the Chambly Canal has a normal draught of 6′6″, the only limiting navigation factor along the entire route); thence south via Lake Champlain, either on the New York or Vermont side, to the Champlain Canal at Whitehall; thence south via the Champlain Canal to the Hudson River and back to Albany.

In order to use the canals of Canada either an Annual Let Pass or Trip Let Pass is required. This serves the same purpose in Canada as the N.Y.S. pleasure boat permit does in New York. Up to three Let Passes per season for the same boat can be issued without charge, after which a fee of $10 is charged. For one trip per season through the canals apparently there is no charge. The only exception is the Welland Ship Canal connecting Lakes Erie and Ontario. Here a $25 fee is charged for linesmen, which applies to any vessel entering the locks. However, when practical, two or more separately owned craft can be tied together for lockage for the one $25 fee divided between the boat owners concerned.

A Trip Let Pass, good for one passage one way or one way and return, may be obtained from the statistical officer, lockmaster or bridgemaster at the entrance to the first lock encountered.

Canadian Customs Regulations are in effect just as in automobile travel. Boatmen must report promptly to the Canadian Customs Office nearest their point of entry into Canada and customs clearance papers must be shown to any superintendent or lockmaster when required. Likewise, a reverse procedure is necessary to re-enter the United States.

While navigating the canals of Canada, a copy of "Canal Regulations" must be on board. This can be obtained from Canal Services, Department of Transport, Hunter Bldg., Ottawa, Canada.

The Saranac Locks

This waterway makes a nice trip for those with smaller boats. It includes three dams and three locks, one being located between Upper Saranac and Middle Saranac, one east of the outlet of Middle Saranac and one on the Saranac River between Second Pond and Oseetah Lake.

Each lock is 30 feet long, 15 feet wide and 10 to 15 feet deep. They are maintained by the State of New York, manually controlled by State employees and are operated only during the Summer months.

The St. Lawrence Seaway

The St. Lawrence Seaway will provide a new system of canals with seven large locks between Montreal and Ogdensburg. Four of the new locks will be constructed by Canada near Montreal, two will be built by the United States in the International Rapids Section near Massena and another Canadian lock will be constructed at Iroquois, Ontario. The upper U.S. lock will be known as the

"What will we try now, Pop?"

Eisenhower Lock and the lower as the Grass River Lock. These locks will be able to handle vessels up to 700 feet long, 75 foot beam and 25 foot draft. No problem here for pleasure boaters.

At the time we went to press, information was not yet available regarding permits, fees or regulations pertaining to their use by pleasure craft.

Inquiries concerning the U.S. portion of the Seaway may be addressed to St. Lawrence Seaway Development Corporation, P.O. Box 213, Massena, N.Y.

Inquiries concerning the Canadian portion of the Seaway may be addressed to the Secretary, St. Lawrence Seaway Authority, No. 2 Bldg., Ottawa, Ontario, Canada.

Cruising Guide Book

This magazine does not accept advertising but there's no rule against giving something good a plug if we feel it is to the advantage of our readers and the public in general. The publication, "Cruising Guide Book for the N.Y. State Barge Canal System and Connecting Navigable Canadian Lakes, Rivers and Waterways," is available from the Tri-City Yacht Club, 146 Sheridan Ave., Albany, N.Y. for a price of $1.

This attractive 52-page booklet is just loaded in orderly fashion with invaluable information for users of the New York and Canadian canal systems. It breaks down each major canal section for point-to-point navigation, giving mileages between places and physical features along the way, and indicates by a system of letters, the availability of fuel and oil, engine repairs, water, provisions, anchorage and docking at each point. Compiled from data obtained by veteran canal users, it contains information it would take a pleasure boater years to accumulate the hard way.

Other Navigation Aids

In addition to the raft of material we have already mentioned, other navigation aids and guides are available.

For those who plan to cruise the Great Lakes, Lake Champlain, St. Lawrence River and the New York canal system with the larger size boats, U.S. Lake Survey navigation charts are practically a necessity. These can be purchased by mail at nominal cost from the U.S. Lake Survey, Corps of Engineers, 630 Federal Bldg., Detroit 26, Michigan. A catalog of these charts quoting prices can be obtained by writing the same address. "The Great Lakes Pilot," a publication containing detailed descriptions of the Great Lakes and connecting waters, can also be purchased from the U.S. Lake Survey.

Charts of the Hudson River below Troy, and of all U.S. coastal waters, are published by the U.S. Coast and Geodetic Survey, Washington 25, D.C.

Cruising guides are also furnished by the Waterways Service of various oil companies such as Texas, Gulf Oil, Socony Vacuum, etc. These are usually in the form of nicely illustrated color maps, similar to highway maps, and can be a big help in planning your trips.

While not a navigation aid, the booklet "New York State Vacationlands," published by the N.Y. State Department of Commerce is an excellent guide for places of interest to see and visit along the way. It is available free of charge by writing the N.Y. State Department of Commerce, 112 State St., Albany 7, N.Y.

Public Boat Launching Sites

Frankly, the recent expansion of our inland mosquito fleet of trailer-borne outboards and car-tops has taken most of us by surprise. These outboards certainly have a place on the inland waterways along with the larger carriage trade but the majority of operators (probably also fishermen) will settle for a day or weekend on some of the larger lakes and rivers if they can conveniently get their rigs in and out of the water. As a matter of fact, most prefer to skip around the State with the family automobile to try new waters and fishing spots.

In an attempt to meet the challenge, a program of development of public boat launching sites has been launched by the Conservation Department. Although still in its infancy, progress is being made. The Bureau of Fish has already acquired and developed several sites, primarily for the use of fishermen but the boating public in general is welcomed. Ready for business and free of charge here they are to date:

Canandaigua Lake at Red Jacket Park.

Chautauqua Lake at Bemus Pt. and Prendergast Pt. Fish Hatcheries.

Keuka Lake on the outlet at Penn Yann (ready about June 1, 1958).

Oneida Lake at Godfrey Pt., Shackleton Pt. and Three Mile Bay Game Management Area.

Owasco Lake at the outlet (ready about June 1, 1958).

In addition it is possible to launch boats at most of the public campsites. Facilities, developed to some extent, are available at: Rollins Pond, Crown Point Reservation on Lake Champlain, Meacham Lake, Moffit Beach on Sacandaga Lake, Lewey Lake, Eighth Lake, Little Sand Point on Piseco Lake, Northampton Beach on Sacandaga Reservoir, Eagle Point on Schroon Lake, Fish Creek Ponds, Golden Beach at Raquette Lake, Forked Lake and at Lake George Beach State Park.

It is possible to launch boats also at the following campsites but developed facilities are not available: Paradox Lake, Caroga Campsite on East Caroga Lake, Lake Durant, Rogers Rock on Lake George, Cranberry Lake, Eel Weir Campsite on Oswegatchie River, Poplar Point and Point Comfort on Piseco Lake, Lake Eaton and at North Lake.

Our State Parks offer other possibilities, particularly where located on the larger bodies of water such as the Hudson River, Finger Lakes, St. Lawrence River and the Great Lakes. Boat launching facilities are limited at present except, in some instances, for a few loads of gravel to help prevent cars from becoming stuck.

Recreation Circular 3, "Adirondack Campsites" and Recreation Circular 4, "Catskill Campsites," and a brochure of New York State Parks are available free of charge by writing the Division of Conservation Education, N.Y.S. Conservation Department, Albany, N.Y.

Happy Boating!

Boat Launching Sites —A Progress Report

by Maurice Otis, *Supervisor, Stream Improvement*

NEW York State has more power boats than any state in the country according to a national survey recently conducted by the Socony Mobil Oil Company.

Of an estimated 7 million power boats in the country our State leads the nation with approximately 571,000 powered, pleasure craft. Of this ever increasing number of power boats, it is estimated that New York State has about 490,000 outboard motor boats at the present—and the number is growing rapidly. Last year alone, the survey revealed a national increase in outboard boats of approximately 14 per cent. This increase was twice as great as the increase in automobiles during the same period.

It has been estimated by the Outboard Boating Club of America that "over 35 million people in this country have taken to the waterways for family fun and recreation." Further estimates show that inland fishing waters in the United States are in excess of 48 million acres, and coastal waters available to salt water cruising and fishing, are comprised of approximately 11½ million acres.

These waters are usually considered to be public but unfortunately most of them are bounded by private land which forms a barrier between the fisherman and boater and their heritage—their right to fish and navigate these waters.

Recognizing the responsibility that the State has to assure public access roads and launching areas to the sportsmen and boaters, the Conservation Department's Division of Fish and Game undertook the task of securing such sites on strategic fishing and boating waters for the growing boating public of today and the generations of sportsmen of tomorrow.

Prices of waterfront properties have increased from modest levels 20 years ago to rates that are comparable now to those for choice housing or industrial sites—and a continued upward trend seems inevitable as desirable shore points and bayside properties are snapped up by eager buyers.

Although acquisition and development costs are at an all-time high, it seems clear that we must vigorously pursue and secure launching sites today to the full limit of our financial ability if we are to meet tomorrow's increased demands for access to major fishable waters.

Before actual acquisition, the Division of Fish and Game considers the price of choice lake shore property together with the estimated cost for development of any particular area. A further guiding factor for the eventual acquisition and development of a launching site is the assurance that the area will provide the sportsmen with adequate access facilities adjacent to the larger bodies of good fishing waters in the State.

At the present time the Division of Fish and Game has eight boat launching sites which are available or will be available for public use by June 1st this year. The first site developed under this project was on Canandaigua Lake at the City of Canandaigua in 1955. (See article by Roy Irving in this issue of THE CONSERVATIONIST for the name and location of this and other boat launching sites).

The primary interest of the Fish and Game Division is to secure and provide public access to relatively large lakes or rivers where boat launching problems are obvious or will become critical within a few years. Emphasis is placed on the acquisition of areas where there are no existing State lands available for development by the Division of Lands and Forests or the Division of Parks.

Department's boat launching ramp, Canandaigua Lake; Sucker Brook inlet

The second line of endeavor in securing these sites is to encourage local fish and game clubs or county federations to promote and stimulate interest in launching sites and work with local town, county or city officials to develop areas within their jurisdiction—either in cooperation with the Conservation Department or as an independent operation.

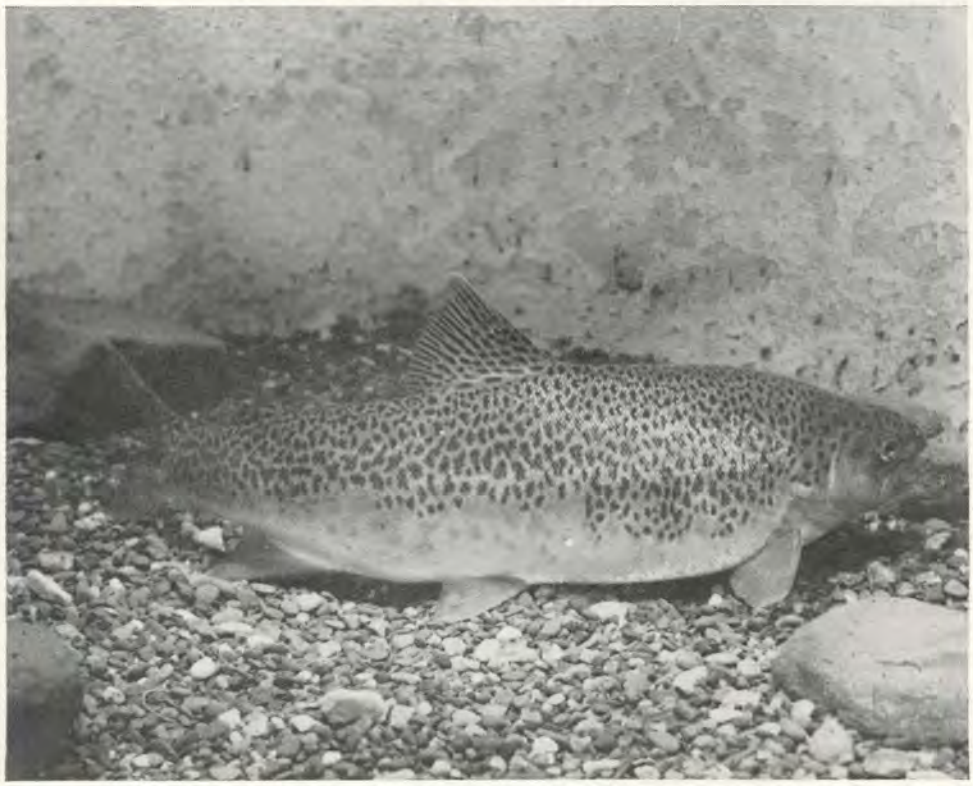
An independent venture by municipalities would not be limited to a parking and launching area, but could also be expanded to include sales, service and repair facilities, boat lockers, Winter storage buildings, boat slips for permanent docking, a snack bar, etc. Such facilities would not only provide a source of revenue, but would increase also the recreational attractiveness, property value and income for local merchants. Such a venture would also benefit the community inducing more people to live nearby because of the recreational facilities and general area attractiveness.

The requirements for a good boat launching area are actually very few. The turning radius of a car and boat trailer varies from about 45 to 80 feet thus making a site with 100 feet of frontage or more a minimum requirement. The planned launching area should shore off rather rapidly to water of at least two feet in depth for ample small boat and motor draft. Naturally, not all areas have this feature and dredging for ample draft and navigation to deeper waters may be necessary. Another important requisite is the assurance of adequate parking space for cars and trailers. A site, in general, should consist of at least one acre of land excluding any possible access road necessary on the larger bodies of water. This size will provide parking facilities for approximately 40 cars and boat trailers with no backing up of a rig except at the point of launching.

Additional features such as a harbor protected from prevailing winds, proximity to a paved road and the best fishing grounds, possibilities for Winter operation as a parking area for ice fishermen, and certain aesthetic qualities to fit into the local surroundings are all considered. These latter features, although important, are unobtainable in many areas.

Nearly every outdoor enthusiast today has the urge to be the skipper of his own boat whether it be borrowed, rented or purchased. To these transient fishermen and boaters your Conservation Department extends the invitation to come on out; the open waters of New York State provide an unparalleled opportunity for healthful, outdoor recreation, and at the same time the launching sites furnish access to fishing opportunities heretofore hard to get to.

Brownbow—brown trout X rainbow trout cross



Left Over Hybrids

IT is a common complaint of cooks that there are too many leftovers. Unlike cooks, editors seem to like to have something to throw into tomorrow's pot and when more photographs of hybrid trout were supplied by courtesy of the Pennsylvania Fish Commission than could be printed in the December-January issue ("Selective Breeding of Trout") our Editor began to think of all the reasons why the subject of trout breeding was so important as to require a second article. But we will admit that after all hash can be at least nutritious. The subject of hybrid trout, even warmed over, has much meat left in it.

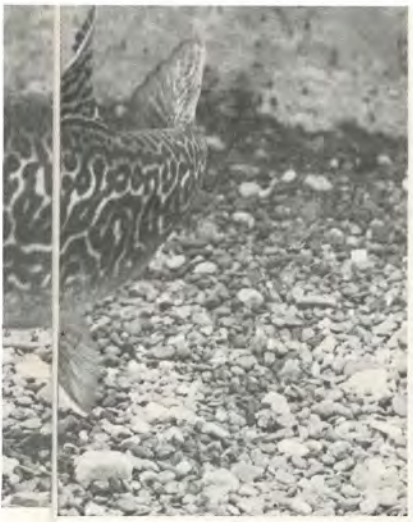
A hybrid is a cross-breed resulting from the breeding of a male of one race, variety, species, genus, etc. with the female of another. As everyone knows, hybridization between two forms of life that are not closely related just is not possible. For example, a cross between a dog and a cat has never been made although it is possible to cross a dog with a wolf, or two species of the cat tribe (as lion and tiger). It is also generally known that hybrids between very closely related forms are likely to be fertile. Dogs are closely related to wolves and it is not surprising that the cross is a fertile hybrid. A large number of hybrids between less closely-related parent types are sterile. It should be mentioned that hybrids may show various special traits including "hybrid vigor" which may result in their surpassing either parent in capacity to grow.

Considered from the usual standpoint of fish management, a sterile hybrid between two species of *Salmonidae* (trout and salmon family) would have to possess many desirable qualities in order to represent an improvement over any of our familiar trout or salmon species. These, at least potentially, can breed and increase. In some environments, however, field studies show that reproduction may be poor. In such environments the use of sterile hybrids might be practical provided these hybrids have desirable features such as rapid growth rate, exceptional game qualities, are easy to rear, etc.

While some hybrids of this sterile or "mule" type, including the "sambo" (salmon X rainbow trout), do at least have rather intriguing names they do not seem likely to revolutionize fish culture. Often these crosses show poor egg viability or are exceptionally wild and hard to raise. Others warrant further study to test all possible favorable qualities. As to this, tests in actual angling waters would take time, especially since longevity and growth qualities throughout the entire life span should be tested. The prospect of catching unusual fish may appeal to many anglers and if there is sufficient demand for "sambrowns" (salmon X brown trout) or "tiger trout" (brook X brown trout) these hybrids could be made available.

Considering fertile hybrids between species, these are fewer in number but considerably more promising. The "splake" (hybrid between brook trout and lake trout) is perhaps the best known hybrid of this type and much work with it is in progress in several states and Canadian provinces. Although the name "splake," from speckled (brook) and lake, is novel and appealing the hybrid is actually an old one for Seth Green at Caledonia as early as 1880 demonstrated that male brook trout and female lake trout (then called salmon trout) could be crossed and soon thereafter produced back-crosses with brook trout that were one-quarter blood lake trout and three-quarter blood brook trout. Early fish culturists were ahead of their time and the work of thorough testing of the possibilities in the "splake" hybrid remained virtually untouched until recent years.

Fish culturists like the "splake" because it is easy to raise and grows fast. Anglers seem to like this fish also and are not apt to let work with it drop again. Bearing in mind the possibilities of using this hybrid to produce an entirely new type of fish by back-crossing, much time will be required to explore this interesting hybrid at all thoroughly.



Tiger trout—
brown trout X brook trout

Three-way cross—
splake (brook X lake)
X rainbow trout

Splake—
(brook X lake trout)
from Adirondack pond

by John R. Greeley,
Chief Aquatic Biologist

Experimental stocking is in progress in New York and elsewhere. Back-crosses between splake and brook trout are being studied at the Bellefonte Research Station of the Penn. Fish Commission.

A similar hybrid between the American brook trout and European charr has been favorably reported on by a study published by the Swedish Institute for Freshwater Research (Drottningholm). Other fertile trout hybrids between species are known and merit further study.

A word of caution may be timely, however. Because of possible natural crossing of fertilized hybrids with the wild stocks of trout, experiments with fertile hybrids should be carried on only under close control. Natural hybridization can be detrimental as has been proven in many western streams where the introduced rainbow trout has interbred with the native cutthroat trout. In New York splake are being kept out of waters where natural stocks of brook trout or lake trout are successfully spawning.

Although perhaps not as striking at first glance as other hybrids, cross-breeds between distinct strains of a single species are gaining increasing recognition for their possibilities as a means for providing better fishing. Biologists consider the potentialities of such cross-breeding to be even more important than the potentialities of any of the other types of hybrids mentioned above. Strains, or "blood lines" are not always conspicuous differences but the potentialities of passing favorable characteristics down to the progeny are very great. Mere appearances can be misleading, as any livetock breeder knows, one animal may be worth thousands of dollars while another which may look quite like it but lack comparable breeding potentialities is worth but little. Incidentally, experimental breeding of trout requires a method for identifying individual fish, and at the Bellefonte Research Station a technique of branding trout has been developed. (See photo.)

A good example of the possibilities in developing new and improved trout by crossing between strains is illustrated from an abstract in "1956 Transactions of the American Fisheries Society" (article by Lawrence R. Donaldson, Donald D. Hansler and Terry N. Buckridge): "Two races of coastal cutthroat trout *(Salmo clarkii)* were hybridized and the resultant first generation hybrids were compared with the two parent races. In both laboratory and field studies the hybrids showed evidence of hybrid vigor. The catch of sports fishermen, during two seasons at Echo Lake, Washington, where both parent and hybrid trout were planted, was composed of three to six times as many fish of the hybrid stocks as of the parent race."

Fish culture of the past, motivated mostly by demands for more and more quantity production, has not as yet been able to carry on the precise breeding work needed to thoroughly explore the large field which hybridization offers. The requirements of the product concerned must also be considered and where trout are liberated in the wild environment it is usually difficult to evaluate all desirable qualities. Highly artificial, special breeding has time and again proved desirable under conditions of close husbandry in innumerable special strains of vegetables, flowers or livestock but the management of trout waters has not reached a comparable scale of husbandry. The best trout therefore is to be judged mainly on its field performance in stream or lake. Good qualities under domestication may or may not be of practical value.

It is clear that the environments vary widely. Much remains to be learned about the comparative abilities to survive and grow under all sorts of difficult conditions before a clear decision can be made as to what type of trout might be best for each of these conditions. Many environments have changed greatly through deforestation, introduction of competitive species and other changes of civilization. Maybe, for some of these situations changing likewise the type of trout stocked is a sensible plan for the future improvement of angling.

Red Salmon—The Fish and Its Habits

by C. W. Greene, *Chief, Bureau of Fish*

A NEW and easy way to reach the moon would be to construct a path there, using as building blocks some of the words written about salmon. End to end or side by side they would surely extend to luna and back.

One of the five tremendously interesting and valuable Pacific salmon which has attracted this ocean of ink is *Oncorhynchus nerka*, the sockeye, red, or blueback salmon. This fish has other names like sakkegh salmon, Frasier River salmon and Krasnaya ryba (Russian for red fish). In its landlocked form it is known also as kokanee, red salmon, little redfish, walla, yank or Kennerley's salmon and is commonly given the subspecific name of *Oncorhynchus nerka kennerli*. The present additional drop in the ocean of salmon ink is designed to give readers general familiarity with the red salmon and to describe its present status in New York waters. This introduction will, perhaps, help to avoid embarrassment when your first one is boated.

Members of this genus are, normally, anadromous in habit. In other words, they spawn in fresh water streams but migrate to the sea for the major part of their growth. Their ability to ascend turbulent, obstacle-strewn rivers for great distances during their spawning migrations and their instinct for returning to the stream in which they were hatched have long been recognized as marvels of animal behavior. One of the natural spawning areas of the red salmon, for example, is located in the Salmon River of Idaho (Columbia Watershed) more than 1,000 miles from the sea.

Characteristics and habits of the Pacific salmon are generally similar but with important variations in detail. Facts of life of the red salmon may be summarized as follows:

Range and Distribution

Red salmon range the North American and Asiatic waters of the North Pacific, including streams favorable for spawning, from the Columbia River north to Bering Strait and south in Asiatic waters to Japan. Natural landlocked populations are known in at least 15 lakes of Alaska, British Columbia, Idaho, Washington and Oregon. At least six states have introduced red salmon or kokanee into one or more inland lakes with some success.

Lake Luzerne—a red salmon water

Red Salmon Stocking—1950-1957

Water	*County*	*Years Stocked*
Oquaga*	Broome	1953, 1954, 1955, 1956, 1957
Bigsby Pond (Schroon)***	Essex	1950, 1951
Chapel Pond***	Essex	1950, 1951, 1954, 1955
Little Green Pond*	Franklin	1950, 1954, 1955, 1956
Loon Lake***	Franklin	1950
Long Pond*	Franklin	1952, 1955, 1956
Lake Clear*	Franklin	1952, 1953
Blue Mt. Lake***	Hamilton	1954
Piseco Lake***	Hamilton	1954
Big Moose Lake**	Herkimer	1950
Green Lake*	Onondaga	1950, 1953, 1954, 1955, 1956
Arnold Lake***	Otsego	1953
Brant Lake**	Warren	1950, 1951, 1953
Lake Luzerne*	Warren	1951, 1952, 1953, 1954, 1955, 1956, 1957
Fourth Lake***	Warren	1956
Hedges Lake**	Washington	1953, 1954, 1955
Crystal Lake*	Rensselaer	1953, 1957
Tackawasick Lake***	Rensselaer	1957
Warners***	Albany	1953

* Stocking known to be successful.
** Stocking unsuccessful.
*** Stocking success poor or uncertain.

Life History

Ascending from the sea into rivers for spawning, the spawning season is usually in October and November but may be much earlier depending upon latitude and other variable conditions. The beginning time of spawning runs is even more variable, from March to July. Eggs hatch in Spring of the following year and the young usually spend one year but may spend two in a fresh-water lake before descending to the ocean. These fish normally mature in from four to five years from the date of egg deposition but occasionally mature at three years (especially in the southern part of their range) and may not mature until their seventh year, or even later (in the northern part of their range). All adult red salmon, like all members of this genus, die after one spawning.

At Green Lake (Fayetteville, Onondaga County) these salmon appear to mature invariably at the end of three years. The pictures are of salmon netted in the Fall of 1952 and reared from eggs taken in the Fall of 1949. In Lake Luzerne information available to date indicates that these salmon may mature in either three or four years.

Habits

With occasional exceptions, red salmon select for spawning purposes streams with lakes in their courses or at their headwaters. Spawning may occur in the lakes, their inlets our outlets. Clean gravel bottoms are required as spawning sites and spring water or spring seepage is reported to be essential also.

Spawning habits are essentially similar to those of brook, brown and rainbow trout.

The red salmon is a plankton eater throughout life, commonly moving and feeding in schools. It prefers cold water in lakes, moving from the shallows as the water warms in late Spring and usually frequenting the vicinity of the thermocline or deeper areas during the Summer.

Size at Maturity

Among the Pacific salmon, the red salmon is next to smallest, only the pink salmon being smaller. Maximum size of the red is about twelve pounds, with an average of about six pounds.

Commonly, in landlocked fresh waters red salmon or kokanee mature at the small size of ten to twelve inches. This may vary greatly, however, as indicated by pictures of Green Lake fish accompanying this article.

Values

Commercially, the value of the red salmon pack has consistently exceeded that of any other Pacific salmon. Pink salmon are taken in greater quantity but have a considerably lower market value. The king or chinook salmon generally exceeds the red in pound for pound value but is far less abundant. Due to the red's plankton diet its flesh is oil rich and consistently redder than that of other salmon, factors lending high nutritional and sales values.

The fresh-water, landlocked populations are valued both for sports fishing and as forage for other trout as well as for their table qualities par excellence.

Identification

The greenish blue back and silvery appearance will usually serve to separate these salmon from trout. In addition, if confirmation is needed, anal fin rays are 13 or more (vs. seldom more than 11 in brook, brown, rainbow or lake trout); gill-rakers are long, slender and numerous (30 to 40; in trout less than 20). Body and fins of red salmon are unspotted except shortly before maturity when black spots form on the back and tail fin.

Certain of the habits of the red salmon are clearly of significance to the fish manager and the fisherman concerned with landlocked populations of this fish. Selection by this species of rivers with lakes in the watershed and the attendant habit of the young to spend one or more years in these lakes apparently favored and led to establishment of naturally landlocked populations. This suggests a greater adaptability of this species to establishment in fresh water, landlocked situations than is held by other Pacific species. Further, since the lakes naturally inhabited by red salmon are cold, often glacier-fed, it appears that lakes physically and chemically suitable for trout will be most favorable for successful stocking.

The significance to fishermen of the facts that these fish are plankton eaters, that they move and feed in schools and that they prefer cold water should not have to be spelled out in detail. These fish may be found feeding almost anywhere, but usually in the open water, and, during the warm months, in or below the thermocline. Success should be good once a school is located—and provided problems of lure and tackle have been solved. For tips in this department, we refer you to the accompanying article by Ely Jelliffe.

Few anglers have been successful in taking red salmon in New York waters, even from those where the fish are known to be numerous. Logically, and according to reports, this lack of success is caused primarily by lack of fishing effort. To fishermen in other states, at least in Washington, Oregon and Idaho, catching red salmon presents no great problem; we're sure that New York fishermen are as fish-wise as any, so, Q.E.D., the very limited take is due to lack of a good college try.

Our information on how they catch landlocked reds or kokanee in western lakes is not very detailed, but for what it is worth, here it is. They use two methods: Trolling with blade-type spinners with worm baited hooks, and still fishing using worms or single salmon eggs. Flies are said to be ineffective unless accompanied by "attractors." Fly larvae or white grubs are successful bait.

At Lake Pend Orille, Idaho, kokanee are taken successfully in commercial quantities by angling. It is of interest that there only fish in their fourth (maturing) year are caught. Maximum size of these fish is about ten to twelve inches, so possibly in earlier years they are too small to take the type of lure or hook used. This same limitation may apply, to some extent, in New York.

Attempts to establish and maintain red salmon in suitable New York lakes are distinctly in the experimental stage. Opposite is a complete list of the ponds and lakes of the State where red salmon stocking has been attempted, with the year or years of stocking given in each case. Stocking has been successful, to at least a fair degree, in seven waters, unsuccessful in three and of poor or questionable success in the remainder. In some of these waters, netting to check results has not been possible and conclusions as to success uncertain.

Lakes physically and chemically suitable for trout but containing comparatively unproductive warm-water fish populations have been given primary preference for trial stocking with this species. Continuation has been dependent both upon evidence of success and availability of stock.

Until 1957 red salmon stock was obtained by exchange from the State of Montana. In 1952 and '53 attempts were made to take spawn for hatching from the Green Lake (Fayetteville) salmon population with little success. In 1957, however, 68,000 eggs were obtained at Lake Luzerne and it is confidently expected that hatchery requirements for this species can be met in future from this or other New York sources.

The most promising aspect of the work with red salmon so far is that its plankton feeding, wide ranging habit apparently permits it to compete successfully with perch and other warm-water fish. The most discouraging (and surprising) aspect is failure of fishermen to harvest these fish adequately in lakes where they are maintained.

The Red Salmon—How To Catch Him

by Ely Jelliffe

I'VE been catching fish for fun and food for 54 years—ever since I was four years of age, if what my family has always told me is true. But it wasn't until August, 1956, that I caught my first fish that offered a real challenge.

Some friends had asked me to visit them while they were camping on Little Green Pond, just southwest of the old Saranac Lake railroad station. They were out after big brookies in various ponds reclaimed by the Conservation Department and other special spots in the vicinity; lakers in other waters and the big yellow jack perch in Little Green Pond, itself. When I arrived one afternoon in the middle of their week's camping trip, they weren't too happy about the fishing. They had taken a few small brookies, no lakers and only seven- to nine-inch, little perch from Little Green Pond itself. However, they showed me two, 12½-inch, silvery fish that they had caught in Little Green on a Pete Higgins spoon. They looked like undersize (15" is the law) landlocked salmon but without the well-defined black spots. The only reason they had kept them was that the fish had torn their mouths while being netted and although carefully released had soon died and were later picked up floating belly up. Now the fun for me began! What were these two fish? Later that evening at Pete Higgins' store in Saranac Lake, I learned that they were sockeye or red salmon. I learned, also, something about the red salmon stocking program that the New York State Conservation Department had been engaged in since 1950. It just goes to show how unobservant some of us are, for even though I had been a long-time subscriber to THE CONSERVATIONIST I had completely missed the articles written about the Pacific Ocean salmon known as the sockeye, kokanee, red salmon, red fish or just "silver."

So back to Green Pond for a real go at these beautiful silvery fish. The following two days we hooked and lost many of these jumping, battling fools but actually landed six. But most important to me, by far, was that everyone agreed after tasting the red salmon, hot out of the skillet, that this particular fish could easily be rated as North America's number one eating, fresh-water fish.

Across country flew the '55 "Merc" convertible with two samples for my wife, Del, who was impatiently waiting in our log cabin at Hulett's Landing on Lake George. I say impatiently for I had called her earlier from Higgins' store and passed on the astounding news. She had mumbled something about hurrying home. Anyway, we poured through our old copies of THE CONSERVATIONIST and discovered that Lake Luzerne—a mere 45 odd miles from Hulett's and practically in our backyard—had red salmon and that a certain gentleman, Hamilton H. St. John, a resident of Lake Luzerne, had solved the secret of catching these toothsome little battlers.

The following week Del and I went over and visited Mr. St. John and spent a very pleasant hour while he explained his theories and methods of catching the red salmon. He showed us the lure he had been using—a Sebago spinner with a fairly large plastic rudder ahead. He explained that he trolled this rig about 150 feet behind the boat and that the rudder was necessary to prevent snarling of the heavy (20-pound test) monofilament line which he used. He stressed also that the sockeye has a very tender mouth; was difficult to hook and land and that one needed great patience and perserverance to successfully hook and boat these fish.

Armed with this information we rigged our regular 20-pound silk trolling lines with Sebago spinners and trolled Lake Luzerne for eight hours early in September—nary a fish, not even a strike. We used a variety of other attractors ahead of the hooks baited with small pieces of night crawlers; the same as I had used when I had caught them earlier in Little Green Pond. As early evening approached, that first day at Lake Luzerne, there were many salmon jumping and rolling all around us. I quickly changed my lure and started casting wet flies, then dry flies. Nothing worked and we went home skunked—but determined to try again.

The following week found us back at Lake Luzerne, wild-eyed and really hungry for fish this time. While having coffee at Bill Crown's boat livery, we were told of a couple of State Troopers who had caught a dozen salmon the preceding week using "hopping worms." Now, what did Bill mean by "hopping worms?" Possibly manure worms. So, not having any of these, we tried small pieces of garden worms because of their small size rather than the larger night crawlers. Again, four hours, no fish and no bites; so back to Bill's for more coffee and information. This time Bill told us that "Rusty," the barber in Luzerne, did pretty well with the salmon. So, the barber shop was my next stop. "Rusty" suggested that I use some weight ahead of the wobbler and recommended a trolling area that he had found quite productive. So back out on the lake! The next four hours was just more of the same but all of a sudden my rod started bouncing and slowly but surely, jumping and twisting most of the way, we brought in and netted our first Lake Luzerne red salmon. It was only 8½ inches long, but, gosh, what a thrill! We finally hooked four more and landed three of them. Two were 10½ inches and the other two 8½ inches. They wern't in the 12½-inch class of the Little Green Pond salmon but we were happy. Thus ended our 1956 campaign against the no-size limit, no-creel limit, no-closed season red salmon.

Last Season's Success

The 1957 season was good to us. We started fishing the Saturday before Decoration Day when Bill Crown put his dozen or more boats in the water. By that time, Ham. St. John and others who kept their own boats on Luzerne had already landed more than 100 red salmon. On our first trip we boated six in six hours of fishing. This time Del and I were using the "red wigglers" which Bill had imported from the South, and they did "hop." This worm is nothing but a commercially grown, manure worm which can be found at most bait suppliers. However, it seems to be what the red salmon want. I suspect there is some connection here with the fact that this species is a plankton feeder. Even though he has a beautifully shaped head, good sized brook trout mouth and jaws (although slightly on the thin side from one cheek to the other) and despite the fact that he has teeth on his tongue and lower lip he does not appear to eat other fish and all the various foods which the trout, perch and sunfish families thrive on. Each and every red salmon that we have caught has had nothing more substantial in his small abbreviated stomach cavity than a small amount of jelly-like substance. Why, then, does he snap so savagely at the little worm being trolled behind the spinner? Possibly the red wiggler or manure worm has a peculiar and distinctive odor which attracts them. Or perhaps the bit of red worm resembles some kind of plant life which they like. Once when we "hung-up" on some weeds near shore we found some thin reed-like weeds that could very possibly bear some resemblance to the red

Red salmon in breeding color

A hook-jawed male from Green Lake

worm. At any rate, the little worm seems to be an important part of the "must" equipment for red salmon fishing.

By June 1st of '57, fishing two rods (on four separate trips) we had boated 33 salmon in 24½ hours of fishing—almost 1½ fish per hour. With this average, Del and I were beginning to think that we had solved some of the secrets of how to catch this king of all fresh-water eating fish.

Then, before we could prove our own convictions, we fell prey to fishermen's affliction—we had to take time out for the frustrating business of making a living. Except for one, 4½-hour troll on June 30, when we boated six red salmon, it wasn't until July 20 that we really returned to the Luzerne campaign. The return didn't start out on an encouraging note. We were met by dockside word that they weren't biting "too hot," "too many outboards," "lake working," etc. However, as charter members of the "Society of Simpletons and Saps Who Fish Exclusively for Sockeye Salmon," this didn't stop us any longer than it took to pile our gear into the boat and shove off. But if all the gloomy news had no other effect, it did give us a clue. If they weren't hitting near the surface, as earlier, than maybe we should try for them deeper. So we changed our tactics. We shortened our lines to 50 and 75 feet. This, at a slow trolling rate, dropped our lures to about 15 and 25 feet. And lo and behold, there they were! We caught ten in 5½ hours. The next day, using the same system, we got 12 in 6 hours, but we found them in an entirely different area of the lake. The following Wednesday, fishing with a friend, we took seven in 4 hours. On Saturday, July 25th, Del and I fished from 10 a.m. until 2 p.m. and took five, only to be driven to shore by a severe thunderstorm. We were back on the lake by 3 p.m. and then the fun really began. From 3 p.m. until 7 p.m. we landed 18 more bringing our total for the day to 25 for 8 hours of fishing. To say that we were elated is an understatement, we were just short of being smug. We were sure now that we had the problem licked — and our scores *were* convincing: August 1—three in 3 and ½ hours. August 3 — five in 4 hours, August 6—three in 3 hours, August 10—five in 8½ hours and August 17—(our most sensational catch) 34 in 10 hours of fishing. Four more trips, between August 20 and August 31 netted us 1, 16, 3 and 7 sockeyes in trolling times ranging from 2½ to 8 hours per trip. All during the Spring and Summer months it seemed that first we had to find the right area—on the surface, just below, medium or really deep—then hit that area hard. We also found that for us there was practically no action at all before 10 a.m. or after 7 p.m.

So we thought we knew how to catch the sockeye salmon. But then came the letdown—September 1—one in 5½ hours, September 7—three in 4 hours, September 8—four in 7 hours, September 14—0 in 7½ hours. On Saturday, September 21, we made our last attack for the year. We fished 7 hours and took only two fish; one 10½-inch and one 11-inch.

Now, let's sit back a moment and see where we're at. As mentioned earlier, ever since late August, 1956, when I was first introduced, at Little Green Pond, to this silvery wizard of the salmon family, Del and I have been obsessed with the challenge of taking them successfully by hook and line. We fished for red salmon at every opportunity. We scrounged and pried out every scrap of information we could find about "red" and his habits and salted it away for use. Finally, by trial and error and just plain persistence, we began to score with fair consistency; we were successful, most of the time, in outwitting the red salmon. We were winning the contest and, by rights, the thrill should have been wearing thin. Not so! The more effective we became in puncturing "reds'" "hard-to-get" reputation the more enamoured we grew of this little trickster's antics and fighting heart—and the better he tasted. So we kept right on fishing for red salmon.

Such undivided attention over so long a time should have produced some answers. We think it has, although we are the first to admit there's much more to learn about catching the sockeye salmon. Moreover, we believe that what we have learned, for whatever it may be worth, should be on the record. Maybe this can be construed as selfishness, but we're confident that fishermen, once they get the hang of taking this fish, will not for a moment let the Conservation Depart-

ment forget their red salmon stocking program; may encourage the Department to expand their efforts to stock other waters where their fisheries biologists believe "red" may thrive. And that's all right with us! So here are the tricks and the techniques we've learned thus far:

Tackle and Tricks

First, a word about rods, and here we think it's smart to let the fish call the shot. The red salmon, as we've noted, is no easy-going slow poke. They do a quick burn as soon as they find there's something sharp hidden in that fragment of red worm. And once on the hook, you're connected to a leaping, twisting acrobat in miniature. Further enhancing "red's" chances of escape is the fact that he has a very fragile mouth and he doesn't mind trading the angler a piece of his lip in exchange for his freedom. Your best weapon is a light rod with a nice soft action. An old fly rod is just the thing—the older and limberer, the better.

On such a rod we mount a Penn Monofil 27 M F star drag reel loaded with either 8- or 10-pound test monofilament line. We have found such a line can be handled in trolling without any kinking difficulties; even without recourse to a rudder ahead of the lure.

Rigging the Sebago

On the business end of the line goes our old standby—the Segabo spinner. There may be other attractors that are as effective as the Sebago in fishing for the red salmon but, if so, we haven't found them. Color, too, appears to be an important factor. We found, for instance, that the "gold" outfished the "silver" Sebago consistently, regardless of whether the day was bright and sunny or dark and cloudy.

Attaching the spinner rig, we found it most convenient to tie in a 2-inch loop in the monafilament line a foot or so ahead of the lure. This permits slipping bell-sinkers of various weights on and off with little time and trouble so that various trolling depths can be tried until the "feeding level" of the red salmon is determined. Now, for the trailing end of the Sebago, snap on a 6- to 7-inch length of 6-pound test monafilament on which should be three hooks, equally spaced—a terminal hook plus two others up the lead (see figure 1).

Hooks are important. Just any old thing won't do. They should be of best quality, new, sharp and the right size. We have had very satisfactory results with the Mustad hook (O. Mustad & Son, Oslow, Norway). Among those handling Mustad hooks in this area is the Horrocks-Ibbotsen Company, Utica. To order, specify Qual. 9037-C-hollow point, Mustad Crystal Hooks, forged T. D. tapered eye, bronzed short-shank, fine wire. They are available in a good range of sizes (from No. 1 through No. 20) of which we have found sizes 6 and 8 best for fishing red salmon. The Sebago spinner pictured (figure 1) is rigged with No. 6 Mustad hooks of the design described above.

Sebago spinner rigged for red salmon

Mustads are preferred hooks; actual sizes, #s 8, 6 & 4

As already noted, the small red manure worms (or "hopping worms" as they are dubbed around Lake Luzerne) have proved, for us, to be the most effective bait. And don't spear them with the hook, leaving the ends to dangle, nor wrap them up in a "gob." Rather, thread these little red wigglers on the hook. Sometimes "red" seems to prefer the bait when only the head of the worm is threaded on, the balance clipped off short. At other times, they will hit better when the end of the worm is left free to wiggle and twist. Try it one way, if it works, stick with it; if not, switch to the other system.

Trolling

Now about the trolling, and here we have the hardest factor to describe. Primarily, it's a trial and error method to determine at what level the fish are working and in what area of the lake. After some experience you will be able to make some pretty good guesses but it will still be necessary to work from the surface—with no weight—to progressive depths with different bell sinkers, combined with some variation in line length and trolling speed. Just one bite and you're in! That's the area, that's the depth and you're o.k. on line length and trolling speed. Stay with it and work it hard. Trolling speed, we emphasize, is important; particularly, maintenance of the *same* speed at all times. This, of course, isn't the easiest thing to accomplish against the puffy winds common to Adirondack lakes.

Rod Tip

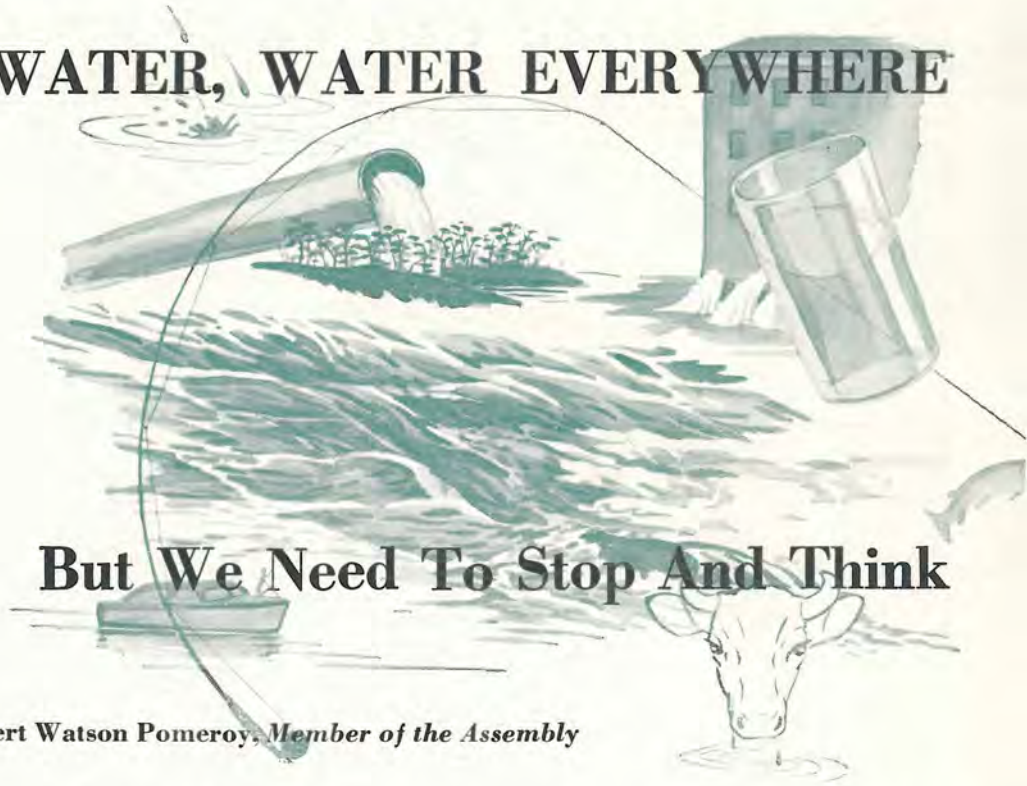
And watch your rod tip. That tell-tale zig-zig-zig telegraphs that all's well. The slightest variation in the rhythm will indicate that you have picked up a bit of grass, a water-logged twig or leaf that must be removed.

And Finally

And when you finally connect with a red salmon—but why say more! You will know that you're dealing with dynamite in a small package, and, believe us, the fuse is short. Just remember, 'though, that you never have "red" until he is in the net and the net is in the boat.

AUTHOR'S NOTE: The red salmon, when properly handled, is absolutely delicious. Don't jeopardize this rare treat. Scale the fish as soon as possible and keep them in a cool container until prepared for the table or freeze locker.

WATER, WATER EVERYWHERE



But We Need To Stop And Think

by Robert Watson Pomeroy, *Member of the Assembly*

Who owns the water in our streams and lakes? Who may draw from our subsurface water reserves for irrigation or industrial use?

In the accompanying article, Assemblyman Robert Watson Pomeroy, member of the Joint Legislative Committee on Natural Resources, unravels the complex legal status of water utilization and outlines legislative thinking in this vital field of water conservation.—Editor

WATER has variously been called a solvent, a catalyst, a mineral and a host of other names, but regardless of the name by which it is called, it is one of nature's essential resources.

In New York State the amount of water available over the years has not varied greatly. The hydrological cycle which restores water from the ocean to the land by rains and snows continues to give us an overall generous supply. But the amount used has changed. Water demands from our cities and factories and farms has increased to the point where at certain times in certain places there is an acute shortage. This, in turn, has shown the need for a comprehensive study of the situation and the laws pertaining to it so that we may make the wisest possible use of this essential resource. No longer can water be considered unlimited in terms of our present and future needs.

In recent years the State Legislature has become keenly aware of the growing demands for water and the need for planning for the future to cope with them. It has set up various bodies to make much needed studies in this field. As a member of one of these bodies—the Joint Legislative Committee on Natural Resources—I will attempt here to give a brief picture of what studies of the water laws of the State have revealed. As a Legislator who is not a lawyer my approach must admittedly be non-legal, but perhaps that is more "the language" of the average conservationist, whom I want to help to a clearer understanding. In the end all laws or changes in our laws must be understood and acceptable to the people as a whole.

When we speak of law, we mean not only statutes passed by legislatures but also customs or policies which are recognized and enforced by judicial decisions. In fact, common law, which is the basis of so much of our law, is sometimes defined as "the unwritten law that receives its binding force from immemorial usage and universal reception." So, many of our water rights laws which also have their inception in common law are just old, accepted customs about who can do what with water.

There are two basic systems for the determination and protection of water rights among our states. The first of these is the old, common law doctrine of riparian rights, the essence of which is the common ownership by all riparian landowners (owners of land abutting on streams or lakes) of equal rights in the use of the water—the right to have the water flow by their property undiminished in quantity and unchanged in quality—but for use only on their property. This is the doctrine which was developed as part of the common law of England and other countries where there was always a plentiful amount of water. It is this doctrine that has been adopted throughout our eastern states and still prevails in all but one of the 31 states east of the Mississippi River.

The second doctrine is the one of prior appropriation—first come, first served—which originated in the Mid-Ninteenth Century in our western states, where water was scarce. In that undeveloped country the old riparian laws were disregarded and an entirely new set of laws took their place. The miners of the gold rush days took water where they found it and used it where they needed it to wash out the gold in the sand they were working. The doctrine allows anyone who taps a source of water to make beneficial use of it wherever he chooses, regardless of whether the land on which it is used is riparian—adjacent to the stream—or not.

Here in New York, the riparian doctrine prevails in perhaps as pure a form as in any state. But in addition to this old common law concept there are also other kinds or sources of law affecting water rights: State Constitution, acts of the Legislature, administrative regulations and interstate compacts with hundreds of court decisions to implement and interpret them all.

In the Constitution there are numerous provisions related directly or indirectly to water resources. It states that "The use of property for drainage of swamp or

agricultural lands is declared to be a public use" and makes definite provision for the effectuation of this policy. It states, further, that the canals shall remain the property of the State and under its management and control forever. The Barge Canal, originally intended solely for navigation, is becoming increasingly important for irrigation—one of the incidental purposes to which it may be put. But most important, it says in Article I, Sec. 6, of the State Constitution that "no person shall be deprived of property without due process of law" and in Article I, Sec. 7, that "private property shall not be taken for public use without just compensation." Water rights are property rights, and these provisions protect the people of New York against arbitrary interference by anyone else and even by the State in their enjoyment of their property rights in water.

Among the acts of the Legislature governing water rights are those setting up a Water Power and Control Commission under the Conservation Law and a Water Pollution Control Board under the Public Health Law. These administrative agencies issue regulations having the force of law within the limits set forth in the respective acts.

State Water Commission

A State Water Commission was created in 1905. Its successor, the Water Power and Control Commission, has as its most important functions:

1. The allocation of water to public water supplies, which, of course, have priority over all other water needs in New York State.

2. It may establish river regulating districts, which, in turn may construct dams and operate storage reservoirs. It has established the Black River Regulating District, which has constructed three reservoirs, and the Hudson River Regulating District with the Sacandaga Reservoir.

3. It may assist in the surveying and planning of the drainage of low-lying and swamp lands through a procedure which enables individual landowners to drain their lands or through the creation of drainage improvement districts, of which there are five at present.

4. It has the responsibility for issuing licenses for the development and use of waterpower sites in which the State has proprietary rights and interests.

5. And on Long Island, where a special geological condition of natural underground water storage exists, the Commission has control over all wells which are over 45 gallons per minute in capacity and which are not used for agricultural purposes. In this special situation the Commission enforces a conservation of the ground water supply by seeing that wherever possible and when the water used is uncontaminated in its use it is returned to the natural underground reservoir from which it was pumped.

Water pollution has been a State concern for a long time with many of the acute problems in this matter which we now face originating before the turn of the century. Some control over pollution affecting public water supplies and natural waterways was made possible by laws dating back to 1903. Laws against pollution affecting fish life were initiated in 1913.

Water Pollution Control Act

In 1949 the Legislature—by unanimous vote—passed the Water Pollution Control Act (Article 12 of the Public Health Law) which established procedures to be followed in controlling and abating water pollution and created the Water Pollution Control Board. The act establishes a public policy which includes the maintenance of reasonable standards of purity for the waters of the State consistent with the interests of public health, public enjoyment of waters, protection and propagation of fish and wildlife and the industrial development of the State.

Recognizing that no single standard of quality and purity is applicable to all waters of the State, it requires the Board to make appropriate classifications. The Board has consequently developed a system which provides for seven classes of fresh surface waters according to what appears to be the most beneficial use ranging from AA (water fit for drinking with minimum treatment) to F (water suitable only for waste disposal). It has also provided for four classes for tidal salt waters and two classes for ground waters.

Prevention of new pollution is the first announced purpose of the law. To accomplish this the approval of the Board must be obtained before *any* new or modified systems for the discharge of polluting substances into natural waterways may be constructed or put into operation. This requirement applies regardless of whether or not the receiving waters have been classified.

The second announced purpose of the law is the abatement of existing pollution. Specific programs may be developed on a watershed or drainage basin basis with no limitations imposed on the size of such basins. However, before the Board has legal authority to require abatement of pollution under any program it must first take the required steps to classify the waters. Abatement plans may have to be made on a long range basis due to the economic or other factors involved in each particular case.

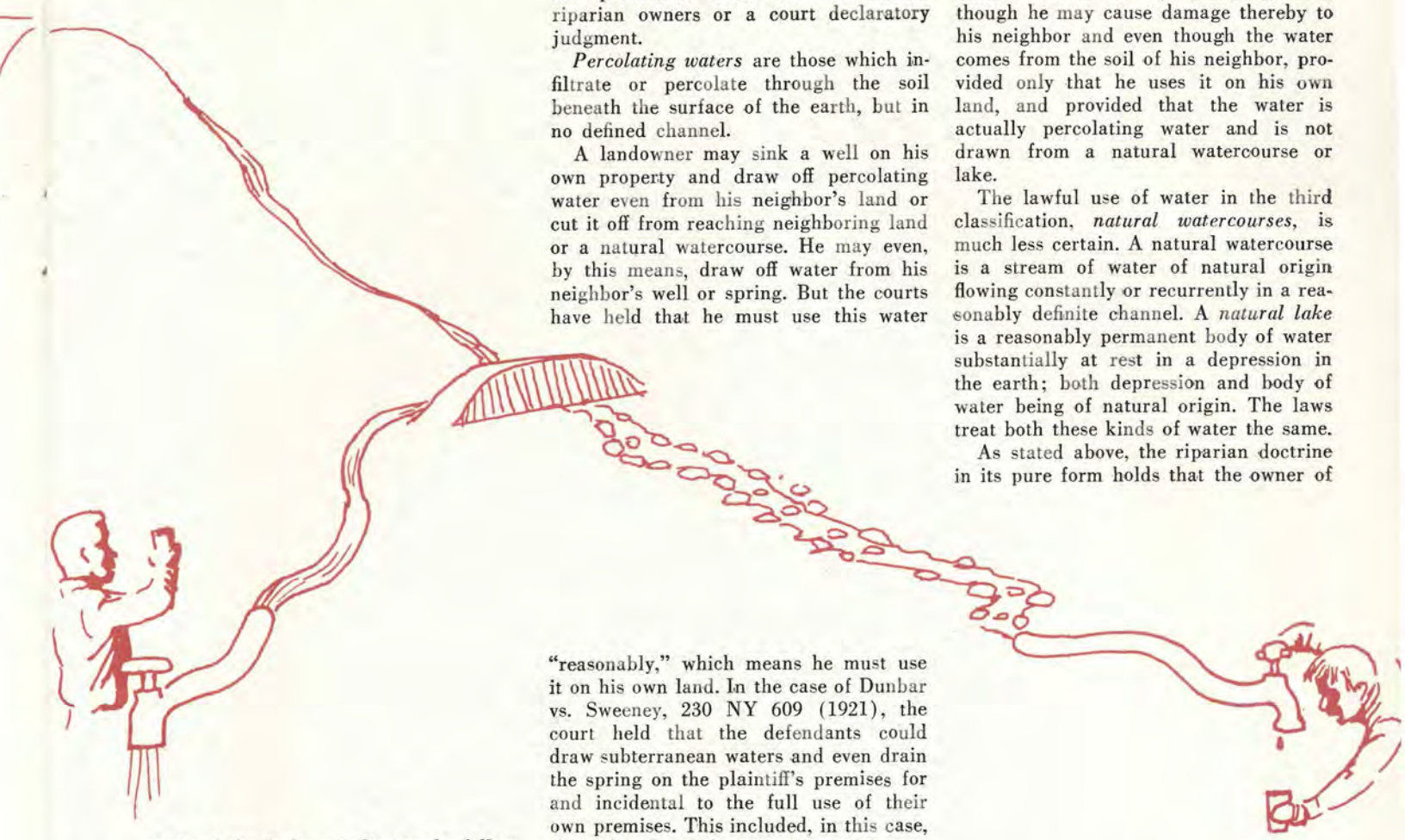
A miscellaneous water program which became a concern of the Legislature was the creation of a State Spa at Saratoga. The springs of this famous Spa, originally privately owned and exploited, were all but exhausted by the beginning of this century, when public demand arose for their preservation. The Legislature responded by passing an anti-pumping law in 1908 and the next year designated Saratoga Springs a State reservation and provided for the public acquisition of the properties. The State has been in the business of operating a mineral springs spa ever since, and in 1930 even declared the development of the State Reservation there to be a part of the State's public health policy.

Also, interstate compacts have been made with adjacent states governing both the apportionment and pollution of interstate waters.

Thus, in New York State an attempt has been made to legislate remedies for our water problems and, with the exception of pollution which is now being gradually ameliorated, our water needs have until recently been reasonably well taken care of. But now the increase in demands for water is creating problems which are becoming of pressing importance.

We have enough water with our rainfall and our rivers and lakes but under our riparian rights doctrine no one knows for sure how much he can use. We aren't storing up all the excess water which it might be economically feasible to store, and much water which presently could and should be used beneficially goes to waste. We have the water but we don't always have it when and where we need it. So let's take a closer look at who can do what with water under our riparian doctrine and other laws and what we are trying to do in the Legislature to improve the situation.

William H. Farnham, former Dean of the Cornell University Law School, under assignment of the Joint Legislative Committee on Natural Resources, made a search of all references to water in the State statutes and court decisions and the findings were published in the 1953 report of that committee. Though the findings pertain particularly to the legal status of the use of water for irrigation, they have also a general application. A



study of the findings indicates the following:

Under decisions involving water rights the courts have recognized these classes of water: (1) Surface waters, (2) percolating waters, and (3) natural watercourses and lakes.

Surface waters are those formed from rain, springs or melting snows, which lie or flow on the surface of the earth, but which do not form part of a natural watercourse or lake. This includes water in a marsh or held in partial suspension in the earth. There seems to be no reason to doubt that a landowner, if he traps such waters or drains them off before they reach a natural watercourse, has an absolute right to use them as and wherever he may please. He may do this even though by so doing he prevents the water from reaching a natural watercourse, as it formerly did, and thereby occasions injury to other proprietors in the stream. He cannot, however, injure his neighbor by its discharge.

With regard to the use of farm ponds for irrigation, which is becoming increasingly important, it would seem clear that the water may be so used if it has not first reached a natural watercourse. If there is any doubt about this the landowner would be well advised to get written permission from the downstream riparian owners or a court declaratory judgment.

Percolating waters are those which infiltrate or percolate through the soil beneath the surface of the earth, but in no defined channel.

A landowner may sink a well on his own property and draw off percolating water even from his neighbor's land or cut it off from reaching neighboring land or a natural watercourse. He may even, by this means, draw off water from his neighbor's well or spring. But the courts have held that he must use this water "reasonably," which means he must use it on his own land. In the case of Dunbar vs. Sweeney, 230 NY 609 (1921), the court held that the defendants could draw subterranean waters and even drain the spring on the plaintiff's premises for and incidental to the full use of their own premises. This included, in this case, the right to use the water for refrigerating purposes in their storage plant and for the manufacture of ice to refrigerate cars used in shipment and delivery of the products from their plant, but they could not manufacture ice for sale.

The use of percolating water for irrigation is as clearly legal as is the use of surface water.

Though a landowner may consume the water which percolates through his soil he may not discharge it to the injury of others. A landowner cannot sink a well which drains water from a natural watercourse either on or below the surface of the land nor from the surface water of his neighbor's stream and pond, and use it according to the laws for percolating waters. Such water would fall under the classification of natural watercourse water. And a landowner cannot continue to pollute his neighbor's percolating water once such pollution has been discovered.

Just to point out that there is always a chance for confusion, the diversion of a small brook has been treated in at least one case in accordance with the laws pertaining to percolating waters.

The law for percolating water appears to be: A landowner may take and use all such water as he can get by reliance on natural forces or by pumping, even though he may cause damage thereby to his neighbor and even though the water comes from the soil of his neighbor, provided only that he uses it on his own land, and provided that the water is actually percolating water and is not drawn from a natural watercourse or lake.

The lawful use of water in the third classification, *natural watercourses*, is much less certain. A natural watercourse is a stream of water of natural origin flowing constantly or recurrently in a reasonably definite channel. A *natural lake* is a reasonably permanent body of water substantially at rest in a depression in the earth; both depression and body of water being of natural origin. The laws treat both these kinds of water the same.

As stated above, the riparian doctrine in its pure form holds that the owner of riparian land has the right to have the stream flow past his land undiminished in quantity and unchanged in quality. A strict application of this rule would render the water useless except to the ultimate downstream riparian owner but such a strict interpretation is not applied anywhere in the country today. New York courts have again inserted the rule of reason and do permit at least a limited use. Accordingly, a riparian owner on a stream may lawfully take water for his use, provided his withdrawals do not materially diminish the flow of the stream; and do not interfere with the use being made of the stream by any other riparian proprietor; and would not interfere with any use which might be made of the stream by other riparian proprietors in the future. So, in the case of natural watercourses the question of how far an owner may go in using water is very unsettled. This is particularly so as regards irrigation as it often implies material diminution in flow or water level, with possible consequent harm to a lower riparian owner. Though a riparian owner may make reasonable use of a natural watercourse, as one typical court opinion states: "What is reasonable depends on

such a variety of circumstances that no hard and fast rule can be laid down. The question is always one of degree." In any use each riparian owner would be entitled to a like share.

In New York State, with the exception of Long Island which depends almost entirely upon percolating water, the major sources of supply for all large users are the natural watercourses and, as can be seen from the above study of Dean Farnham's report, the laws affecting this classification are badly in need of clarification.

A farmer who wants to irrigate or any other large potential user must know how much water he can legally take from a natural watercourse before investing in expensive equipment or building a plant. Finding out by court action would be a very slow and expensive process. The question arises, therefore, as to whether some fair and efficient means can be devised for determining how the water of a natural stream or lake should be divided which would be cheaper and quicker than resort to the regular courts.

Remember that the rights of all riparian owners to an equal use of the water at all times are rights which have been accepted as fair and just for centuries. When riparian land has been purchased the buyer has relied on these rights. And when non-riparian land has been purchased the buyer has not expected water rights in any natural watercourse. Furthermore, remember that water rights are property rights and as such are carefully protected by the State Constitution.

Nevertheless, property rights are not absolutely inviolate. The State does exercise the power of eminent domain, the power to seize property for a public use upon payment of just compensation to the owner. Also, conservation in the sense of wise use demands that we shall not allow a valuable resource to go to waste with no benefits accruing to anyone. Water has lost its value to the riparian owner once it has flowed past his land.

Under the riparian doctrine there are three prohibitions against the use of water in a natural watercourse by a riparian owner which are frequently mentioned as warranting study and possible modification:

1. A riparian owner shall not take water for use on other non-riparian land nor for use on any land outside the watershed.

2. A riparian owner shall not use more than his reasonable share of the stream, even though he makes good his overdraft by pouring into the stream water obtained from another source.

3. A riparian owner shall not impound stream water in a reservoir during the wet seasons when the stream is furnishing more water than is needed—with a view to letting it flow down the stream for his exclusive use during the dry seasons.

These prohibitions exist even though the other riparian owners may not use or want their shares.

The water rights problems and laws are continuing to receive attention by the Legislature. Years ago, the Joint Legislative Committee on Interstate Co-operation began looking into the problems of water pollution and water resources as an interstate problem. In 1951, the Joint Legislative Committee on Natural Resources was created and began studying these problems and the facts and laws concerning them. In 1952, it assigned to Professor Farnham the task of researching the legality of current irrigation practices, as mentioned above. With water rights law in this State stemming from all the different sources and from hundreds of court cases, this research was badly needed.

Water Resources Legislation

In 1955, a Temporary State Commission on Irrigation was created to study particularly that phase of the water resources problem. I am happy to be able to say that this committee and the Joint Legislative Committee on Natural Resources have co-operated fully. In the 1957 session of the Legislature, last January-March, a legislative drafting subcommittee comprised of members of both parent committees submitted three bills dealing with certain water resource problems. One of these, which is now law, allows the State to co-operate with the Federal government and set up in conjunction with it small watershed protection districts for the purpose of flood control, and wherever feasible, irrigation as a supplementary purpose. Where such districts are created by a county for flood control purposes they have the power of eminent domain. Where, as an adjunct to flood control, water is desired for irrigation, such districts would have the power to sell it. They may provide also for use of the water for recreational purposes. However, there are a limited number of areas in the State where the terrain would make this physically practicable and where the benefit to the farmers from irrigation would make the cost of the additional irrigation project economically justifiable. Nevertheless, there are literally hundreds of small watersheds throughout the State where a protection program under this new law would have many soil and water conservation benefits.

The other two bills were introduced for study purposes only. There was no intent that they be enacted into law immediately; rather they were to serve to stimulate interest and guide future legislative action. One of them would have authorized county irrigation districts. The other would have authorized the Water Power and Control Commission to allocate water for irrigation purposes in the same manner it allocates water for municipal purposes.

A new joint legislative, drafting subcommittee is as of this writing attempting to draft—again for study purposes—legislation to establish a statewide water resources planning and development agency—either by creating a new water resources planning and development board or by giving new responsibilities to some existing agency.

The members of the sub-committee appear well agreed that the State of New York should declare comprehensive planning for the protection, conservation and development of its water resources to be a public policy and in the interest of the public health, welfare and prosperity of the people of the State. Also, they are in general agreement that water resource planning on a watershed basis is desirable and that particular consideration should be given to the impounding and retention of flood waters for distribution and use when our water supplies need to be augmented. It is important to note that the subcommittee recognizes, as a fundamental concept, that all valid existing rights and remedies should be preserved.

This pattern of passing legislation for study purposes and setting up study agencies may seem like a slow approach to what I have termed a pressing problem. It must be recognized, however, that the doctrine of riparian rights has been in force in this State for a long time and we cannot be too careful in the preparation of water resource legislation affecting it. The water resources of our State represent the lifeblood of our communities, farms and industries and make possible priceless outdoor recreational opportunities for millions of our people. It follows that the proper development and wise use of these resources will have a major

(Continued on page 36)

Marsh Waders of New York

by Dirck Benson, *Game Research Investigator*

DUCKS are not the only creatures which make a marsh a fascinating habitat to explore. Perhaps it's the memory of the crazy laugh that came out of the cattails and made you fear someone had escaped from the asylum that has stirred your interest. Or maybe it was that warm day, while resting on an old log, you noted a gawky, long-legged, long-necked bird pecking and pulling on a kinky dead stick. Then to your surprise the heron flew away to feed her family with a watersnake firmly grasped near the head and tail but otherwise still squirming. Yet again, it could have been your curiosity was aroused by the silent way in which the turtles slipped off their sunning logs and the startled "goink" and watery "thlug" as a big frog took off for safer quarters. Anyhow, once exposed to the mysteries of the plentiful life of a marsh, it is bound to remain high on the scale of interest for wildlife enthusiasts.

The waders are one of the groups of birds which lend excitement and enchantment to water habitats. To understand them better we need to know something of the cattail marsh association which is their living room, dining room and kitchen—but not always their bedroom.

The Cattail Marsh

The term "cattail marsh association" is used rather loosely to embrace all those groups of plants that help to form the consecutive stages from open water to woodland. And each small community of plants is spelling its own doom as its waste and used parts are added to the pond bottom, creating an environment favorable to the next stage of succession. The vanguard of the invading forces are the rooted, submerged pondweeds which are followed by waterlilies with their floating leaves. Various algae join their cohorts and in more sheltered waters are assisted by the free-floating duckweeds. The next step, as the plant world takes over, brings bulrushes and other emergent species that can withstand wind and wave action. Amid their sheltering stalks and accumulating residue, cattails, the most important plant of the marsh, find a protected niche. Toward shore as the bottom grows firmer, the cattails give way to sedges and grasses. Gradually these are joined by shrubs and small trees. This is the cattail marsh association.

Living in this specialized world which ranges from open water to land are a wealth of animal forms. Starting with the simple protozoans and fresh water sponges up the scale to the crustaceans, mollusks and insects, the marsh provides a tasty invertebrate food supply to sate the appetite of many vertebrates. And the vertebrates are there in profusion as fish, frogs, turtles, snakes, birds and mammals find the cattail marsh ideal for shelter, homes, loafing grounds and food aplenty for all—including the assorted waders.

The Wading Birds

The term "waders" really includes several family groups of mostly long-legged birds that make themselves at home in water areas. The best known and most important in New York is the family *Ardeidae* which includes the herons and bitterns. Another family represented in Wayne Trimm's centerspread painting is that of the ibises and spoonbills, the *Threskiornithidae*—a rather forbidding name at first glance but fun to roll off your tongue to amaze your friends. Lest one become confused, herons and egrets are neither storks nor cranes 'though often so miscalled. The storks of European chimneys belong to the family *Ciconiidae* along with the more southern Wood Ibis which occasionally wanders to New York. The cranes, 'though superficially resembling herons, belong to the family *Gruidae*. They are more closely related to the rails, gallinules and coots.

The family of herons, egrets and bitterns is worldwide in distribution but most frequent in the tropical regions. Altogether the group includes about 100 species with some 12 kinds occurring in this country. Family characteristics include bare lores (the facial area in front and below the eye), toes four—three in front, one behind at the same level, slightly or not at all webbed and middle toe with comb-like process; bill, straight and sharply pointed; wings, rounded with flight slow and seemingly labored; neck, folded in flight. The plumage is soft and loose; often with long feathers on the crown, back and upper breast.

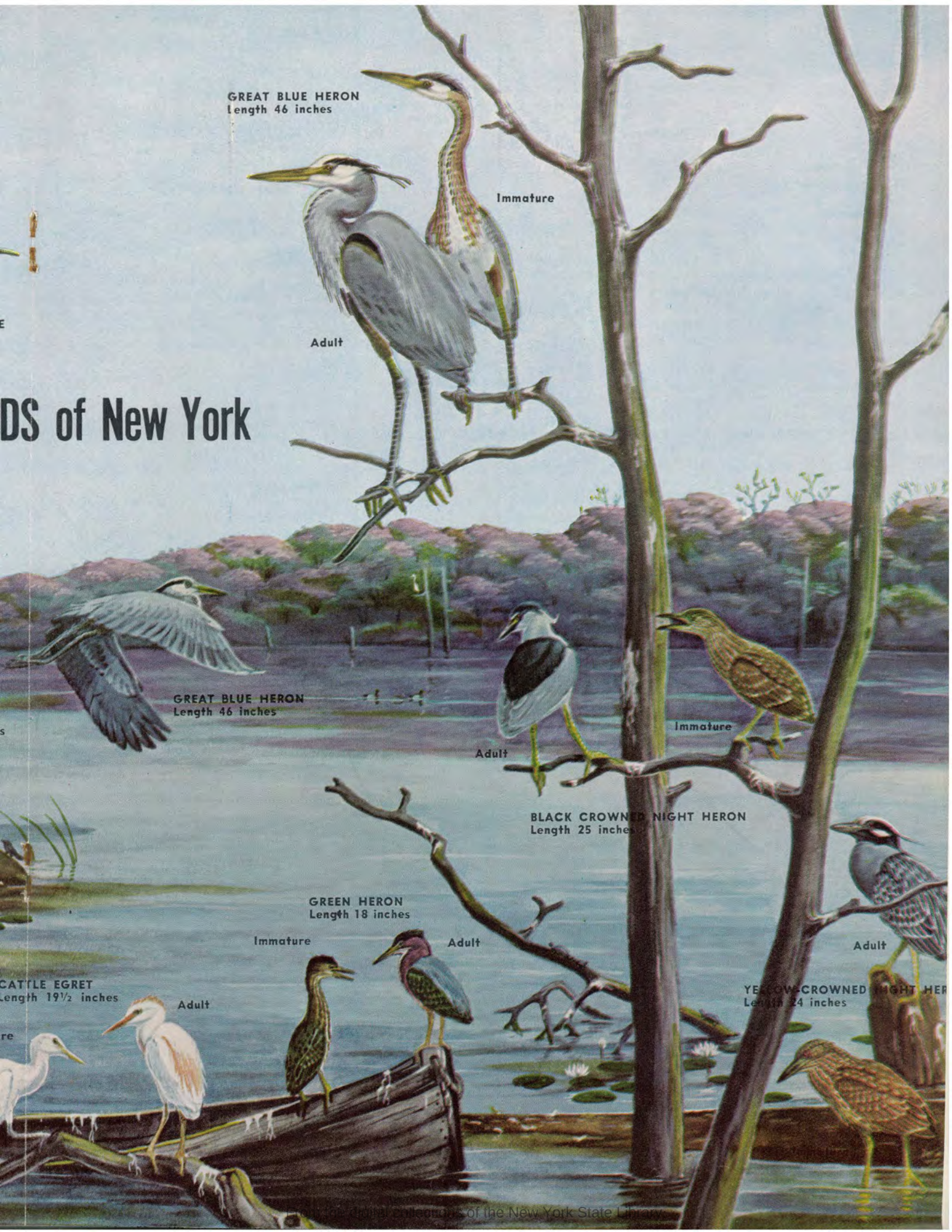
One could likewise list similar assorted characteristics for the ibises and spoonbills, a group that includes upward of 40 species around the tropical world with five ranging into North America. But better still, go out to your local marsh, study your herons, egrets and bitterns. And keep your eye peeled for the ibises and cranes, which are only occasional visitors; differing from the other "herons" because of their habit of flying with their necks outstretched.

Do not look there, however, for nests of either the Great Blue Heron or the Black-crowned Night Heron. Both are colonial nesters, the former selecting a large wooded swamp, sometimes with upwards to several hundred pairs using it. Some large trees may hold five or six bulky nests. The Black-crowned Night Heron is a woodland nester also, but frequently chooses upland sites far from water. One colony near Naples (New York) was atop a high windswept ridge in second growth hardwoods three miles from the nearest feeding grounds. Both travel long distances to feed (the Night Heron normally at dusk) and find much of their food in the wetter parts of the cattail marsh. Fish, frogs and snakes are their main fare but an occasional mouse adds variety to their diet. Much maligned by fishermen for their activities around hatcheries and trout streams, the Great Blue Heron and others of its kinfolk probably serve a beneficial purpose around over-populated warm-water fisheries.

The Green Heron, American Bittern and Least Bittern are more strictly species of the cattail marsh. The Green Heron, 'though it nests in the alder and willow fringe of the marsh, ranges the whole marsh in search of frogs, minnows and crayfish. The two bitterns are cattail lovers, with the larger American Bittern building a platform of dead cattails for a nest. The Least Bittern usually finds an elevated point, sometimes a bush, and works together some cattail leaves in to a form that almost looks like a nest. Both species, when standing in the marsh, often assume erect position with bill raised relying on protective coloration to avoid detection by foe and food alike. The American Bittern shuns the more open water areas and hunts the cattails, sedge-meadow and, in season, the upland fields for frogs, occasional mice and grasshoppers. The Least Bittern sticks closer to the cattails, rarely flying or wading but walking from stalk to stalk. Its bill of fare is largely insects and smaller aquatic animals. Often listed as an infrequent bird, the industrious "marsher" can usually locate it by really poking into the cattails.

The "songs" of our waders are interesting but not musical. The Great Blue Heron utters at best a low croak which may be prolonged into a series of squawks when startled. Youngsters in the nest maintain incessant bark-like croaks. The Black-crowned Night Heron issues

(Continued on page 26)



(Continued from page 23)

a low "quark," heard usually at dusk when it is on the way to the feeding grounds. The Green Heron is heard most often giving a scared, scolding "skeow," but the patient "marsher" may hear a variety of "clucks" and choking "gulps" during the mating season. The Least Bittern has a rather mellow "coo-coo-coo" during the breeding season which is often overlooked in the confusion of marsh noises. Most unusual is the Spring "song" of the American Bittern—at a distance only the final part of the call is heard and then is likened to the sound of a stake or pile driver. At closer range there is bill-clicking followed by "pump-er-lunk" which may well be compared with the sound of an old-fashioned pump. When startled and flushed it gives a rapid "kok-kok" not unlike the croak of its near relatives.

Applied to many members of the family, and not inappropriately either, are the nicknames "Chalkline" and "Shagpoke" and even more earthy variations. If you wonder why, go and explore a marsh this year and watch the waders as they take flight.

Great Blue Heron
(*Ardea herodias*)

Length 42″ to 52″; wingspread 68″ to 74″; weight 6 to 8 pounds. Tallest bird in New York. Eggs 3 to 6—pale, greenish blue, 2½″ long. Young remain in nest about 4 weeks. Nests throughout State. Arrives late March; leaves late November; winters south to Panama.

Egret
(*Casmerodius albus*)

Length 36″ to 42″; wingspread 53″ to 56″. Breeds in southern states, south to Patagonia. Wanders north to New York as early as May but most frequent in Summer months. Has been observed throughout State. Has *yellow bill*, black legs and feet.

Snowy Egret
(*Egretta thula*)

Length 20″ to 27″; wingspread 36″ to 41″. Breeds in southern states, south to Argentina. Wanders north like the American Egret but less frequently. Has black bill, black legs and *yellow feet*.

Cattle Egret
(*Bubulcus ibis*)

About the size of Snowy Egret. Native of tropical and subtropical Old World but wanders widely after breeding season in temperate regions. First observed in South America about 1930, in several Eastern States in 1952. Arrival apparently unassisted by man in both instances. Now established and breeds in Florida. This is the egret that travels with native cattle and wild herds of grass-eaters. Prefers grasshoppers and other insects though some small minnows and tadpoles are eaten. Recently seen in New York State.

Little Blue Heron
(*Florida caerulea*)

Length 20″ to 29″; wingspread 36″ to 42″. Breeds in southern states, south to Central America. Wanders north in Summer but less widely than the American and Snowy. Legs dull greenish, bill bluish tipped with black serve to separate the immatures from the Egret and Snowy Egret.

Eastern Green Heron
(*Butorides virescens*)

Length 15″ to 22″; wingspread 24″ to 26″. Eggs 3 to 6, pale dull blue. 1½″ long. Arrives in mid-April; leaves in mid-October; winters in Florida and southward.

Black-crowned Night Heron
(*Nycticorax nycticorax*)

Length 23″ to 26″; wingspread 43″ to 46″. Eggs 3 to 6, pale dull blue, 2″ long. Arrives late April; leaves late October; winters in Southern States.

Yellow-crowned Night Heron
(*Nyctanassa violacea*)

Length 22″ to 27″; wingspread 44″ to 46″. Breeds in Southern States and accidentally both as a wanderer and breeder in New York.

American Bittern
(*Botaurus lentiginosus*)

Length 23″ to 34″; wingspread 32″ to 45″. Eggs 3 to 5, pale olive-buff, 2″ long. Arrives late March; leaves early November; winters south to Panama.

Least Bittern
(*Ixobrychus exilis*)

Length 11″ to 14″; wingspread 18″. Eggs 3 to 6, pale bluish white, 1¼″ long. Arrives early May; leaves mid-October; winters from Georgia to West Indies.

Glossy Ibis
(*Plegadis falcinellus*)

Length 22″ to 25″; wingspread 36″. Native of tropical regions, occasional Summer visitor. Look for decurved bill, outstretched neck, quick wing beats alternated with a glide.

Sandhill Crane
Grus canadensis

Length 40″ to 48″; wingspread 80″. Breeds in Michigan and Wisconsin northward into Prairie Provinces. Winters in Louisiana and California and into Mexico. Resident in Florida. Ranged into New York during migration in Colonial times, prior to reduction of breeding population and range, but last record in 1885 at Brockport.

Report on Douglas Fir

by R. Milton Hick,
District Forester

A Douglas fir plantation that is unique is one established on Schoharie State Forest No. 11 near the Village of Summit. Consisting of 7.9 acres, this area was planted in the Spring of 1940 using a 6x6 spacing. No attention was given this planting until Christmas trees were harvested in 1954. Since that time, some trees have been harvested each year with nearly 500 sold in 1957. According to sales records a total of 1,255 trees have been harvested during the four-year period at a gross income of $4,096.63. Average tree price on the stump was $3.26 and the income per acre was $518.56. Here is an excellent example of how a few acres (in this case 7.9) can earn in 17 years an amount of money that actually liquidated the land cost of 1,000 acres in this forest.

That this forest plantation is unique is attested to by the fact that other Douglas fir plantings in the District have returned very little income to the State. Generally they are on poor sites, and since Douglas fir is very particular as to site, tree survivals have not been too good. This particular planting was made at an elevation of 2,450 feet on well drained soil, with suitable air-drainage so that the trees were never affected with frost damage.

Most of the trees cut on this area were shipped to the Metropolitan area; and on at least one occasion, were used in the United Nations building for the holiday season.

While this plantation returned a high income, it should be no criteria that all Douglas fir plantings can do likewise. Douglas fir is a tree that is very specific as to site; it is affected by late Spring frosts; and it is subject to a needle-cast disease which seriously affects its use as a Christmas tree. This latter disease was found in the aforementioned plantation in 1952 and for that reason it was decided to harvest as many trees as possible for the Christmas tree trade. While we had no way of knowing what the demand for this species would be, this 7.9 acres has probably returned more income in short-term Christmas trees than if it were allowed to grow to maturity in 80-100 years.

At the end of this year's cutting it was our conclusion that it was finished in so far as any further Christmas tree harvest was concerned, but one dealer who took 400 of these trees remarked that he'd be back next year for another 300 to 400 trees.

Mechanics of Water Conservation

by Norman J. Curtis, Ph.D.,

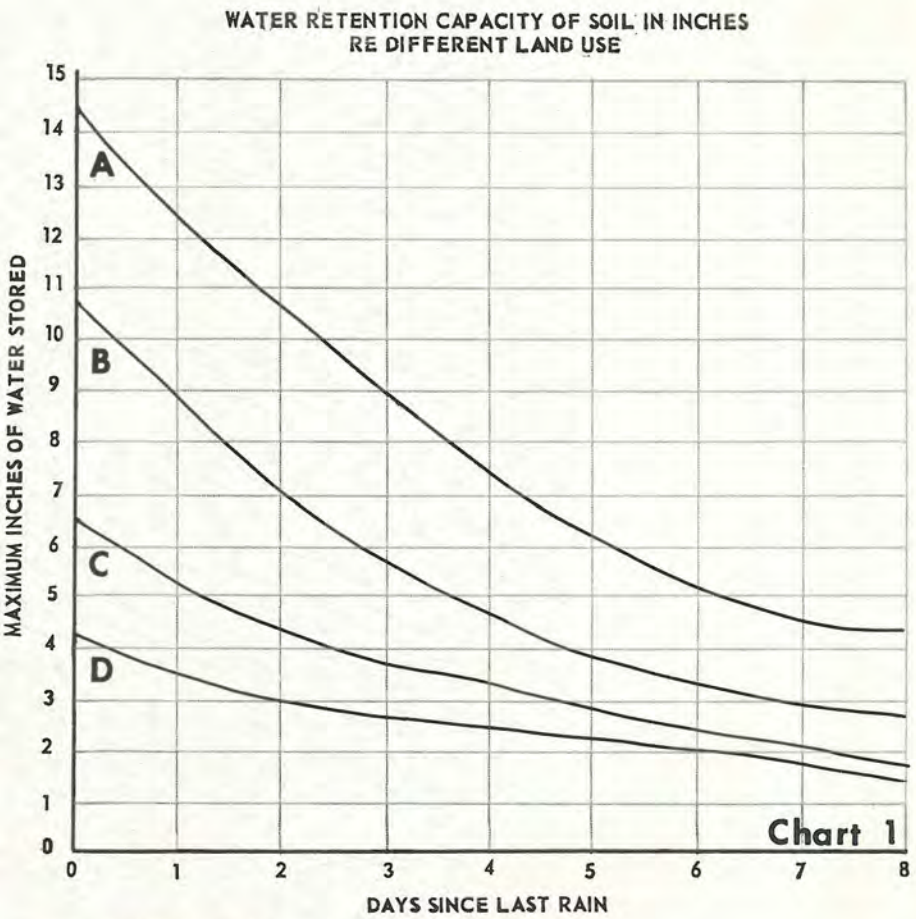
Cobleskill Agricultural and Technical Institute

LOW water in many streams and the drying up of wells and springs are common in many parts of the State during the Summer and Fall months. The lack of sufficient water may restrict the number and kinds of wild game and fishing may be adversely affected. With the advent of modern conveniences and a higher birth rate, more water is being used by the city and farm people alike. Thus, water conservation is presently of vital concern to the people of New York; it is certain to become even more so.

As you motor through the State or as you walk along the streams and through the countryside, you can see large areas of previously farmed land in the process of being reforested. Much of it is through natural succession but thousands of acres have been planted to trees by the State and by private landowners. Since forests are thought to conserve water and thus replenish the underground water storage areas and increase stream flow during Summer and Fall, the casual observer may assume that all is well. Few really understand the mechanics of water conservation. Actually, there is much more to water storage and water conservation than meets the eye. Water, in the first instance, must enter the soil. Secondly, there must be adequate storage space in the soil for it in order that it may be slowly released to the streams. Water entering the soil is spoken of as *infiltration*, while the amount of water which the soil will retain with its capacity for slow release downward by pull of gravity is called *water retention* or *water storage capacity*.

When water enters a sandy or gravelly soil there is little if any storage capacity. In such soils, lacking water conserving capacity, rainfall passing through the soil will reach adjacent streams about one hour after the water running over the surface of the soil has reached the streams. This can be demonstrated by pouring a bucket of water on a pile of sand or gravel. You will see that water will reach the bottom of the pile by infiltration just about as quickly as it will run down the surface of the pile. Almost none of the water will stay in the sand or gravel. On clay soils or on muck or other organic soils, water entering by infiltration is retained and stored for a longer period of time in rather large amounts. It is then slowly discharged into the subsoil, thence into the underground water storage to be fed into streams at a more or less uniform rate. While sandy soils may store only 10 to 15 per cent of their weight of water, clays will store 50 to 70 per cent of their weight in water. Muck, or the well rotted mass of plant and animal remains called humus, will retain from 100 to 200 per cent of its own weight in water. On flood control studies in which the author participated, it was found that for each one inch of humus depth, eight-tenths (0.8) inch of water would be retained for as long as two days after a heavy rain, with a slow release into the subsoil and into other underground storage areas. See chart 1 as an illustration of storage and movement of water into underground storage area by seepage. Soil water retention or storage can be greatly increased by adding to the amount of humus in the soil in any area.

Soils have eroded to some extent in all cultivated farm land areas of New York. The greatest loss from erosion is in the clay and humus content of soils. This is easily observable during high stream flow periods. Such losses have reduced the water storage capacity of much of the land area in New York State. The cost of replacing clay into soils from which it has eroded is prohibitive but the humus content of most soils can be increased. This can be accomplished within varying periods of time in both croplands and woodlands by good management, and at little or no cost to anyone. Records indicate that as late as 1900, stream flow was at a more uniform rate during Summer and Fall months

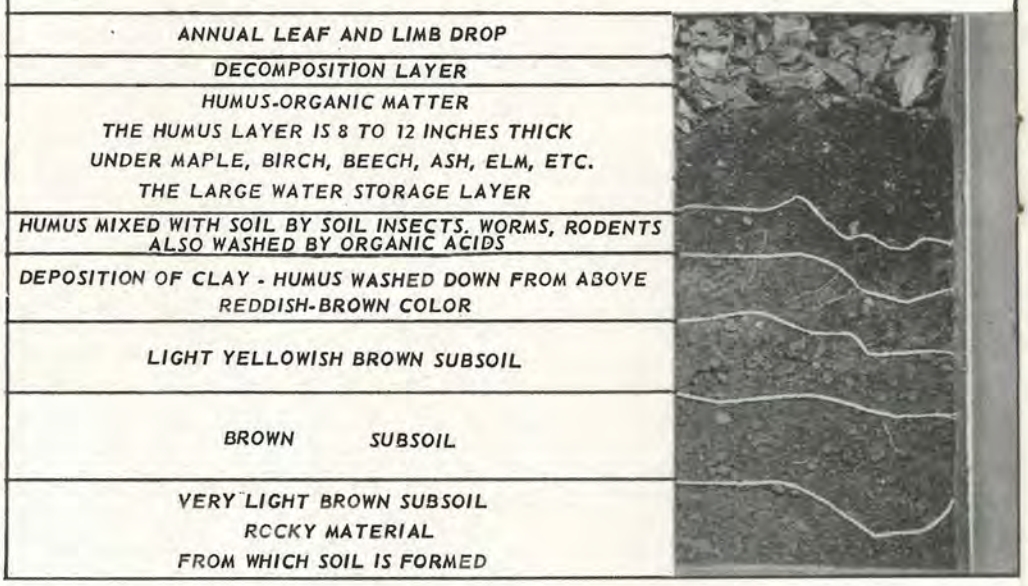


than at the present time. This can be attributed to the greater amount of water-retaining humus in uneroded woods soils and in all cropland soils. Dry wells and springs were not as common then as now. Since that time, many thousands of acres of former farm lands have been and are reverting to woodlands or have been reforested. Many other areas which are now covered with brush, shrubs and wild grasses were in croplands by 1900 or earlier. If all that was necessary to prevent streams from drying up during the Summer and Fall was to reforest the land, then the streams should be flowing better now than during this former period. This, however, is not true.

Originally the soils found in New York State during the Colonial days contained 8 to 10 inches depth of humus (see photo 1). This soil profile or cross section was found on a farm in Schoharie County beneath a stand of hard maple, birch and beech whose average age was about 150 years. The original woodland soil was estimated to have had over 137,000 pounds of humus per acre while the original grassland soils of the Mid-west contained about 136,000 pounds per acre, well mixed throughout the top 12 to 24 inches.

The amount or depth of the humus layer in woodlands is determined by the tree species composition and by the age of the stand, together with the manner in which the woodland has been managed. Likewise on the crop and pasture lands, the amount of humus will depend on the management of the soil. Photo 2 shows the contrast between the woodland soil found by our ancestors when they first moved into the State and that of an adjacent, formerly cultivated area. Now in poor pasture, it is slowly being reforested naturally. The white lines in the photograph, marking off corresponding layers of soil, show how this pasture soil has lost its humus and some of its mineral soil by erosion. Plowing the soil has mixed several layers commonly found in woodland soils and hence is labelled "the plowed zone." In current soil analysis, many soils of low fertility are found to contain 20,000 to 30,000 pounds of humus per acre, while some high yielding farm soils may contain 60,000 to 80,000 pounds per acre. The original soil of the Colonial period contained as much as 137,000 pounds of humus per acre. Since one pound of humus may store as much as two pounds of water, the loss of soil humus through erosion greatly reduces water storage capacity, with consequent reduction of water seepage into underground wells and springs for year around stream flow. However, how long will it be before the pasture soil, on the right in photo 2 will change into soil shown on the left to retain water like the soils of the Colonial days? This will depend on the use and the management of this land.

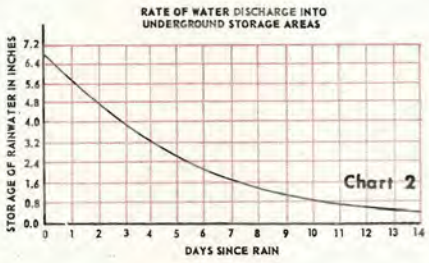
SOIL PROFILE - CROSS SECTION
(ORIGINAL SOIL)
WELL DRAINED AREA OF CLAY AND LOAM SOILS

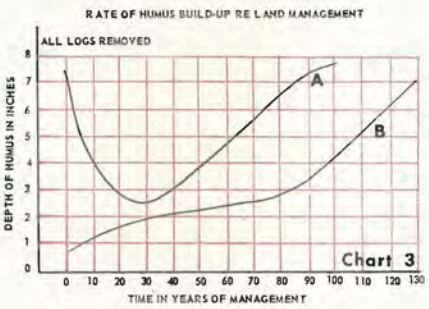


As can be seen from chart 1, the management or use of the land is the all important factor in water storage. Since each one inch depth of humus (or its weight in farm soils) will store 0.8 inch of rainfall, the modest depth of humus of 6 inches would store 4.8 inches of water for two days after a rain. Chart 2 shows the rate of discharge over a 14-day period of the water so retained into underground water storage areas. Additional rain during this 14-day period would, of course, prolong this discharge into springs and streams.

If the eroded pasture soil found in photo 2—humus approximately 0.8 inch in depth now—could be planted at the present time to white pine and if you could visit the area after 90 years of growth, you would find a buildup of some 3.5 inches of humus. This is graphically shown in chart 3, obtained by studying varying ages of trees reseeded on old pastured areas. This same curve of humus buildup was noted for pastured areas of hardwoods.

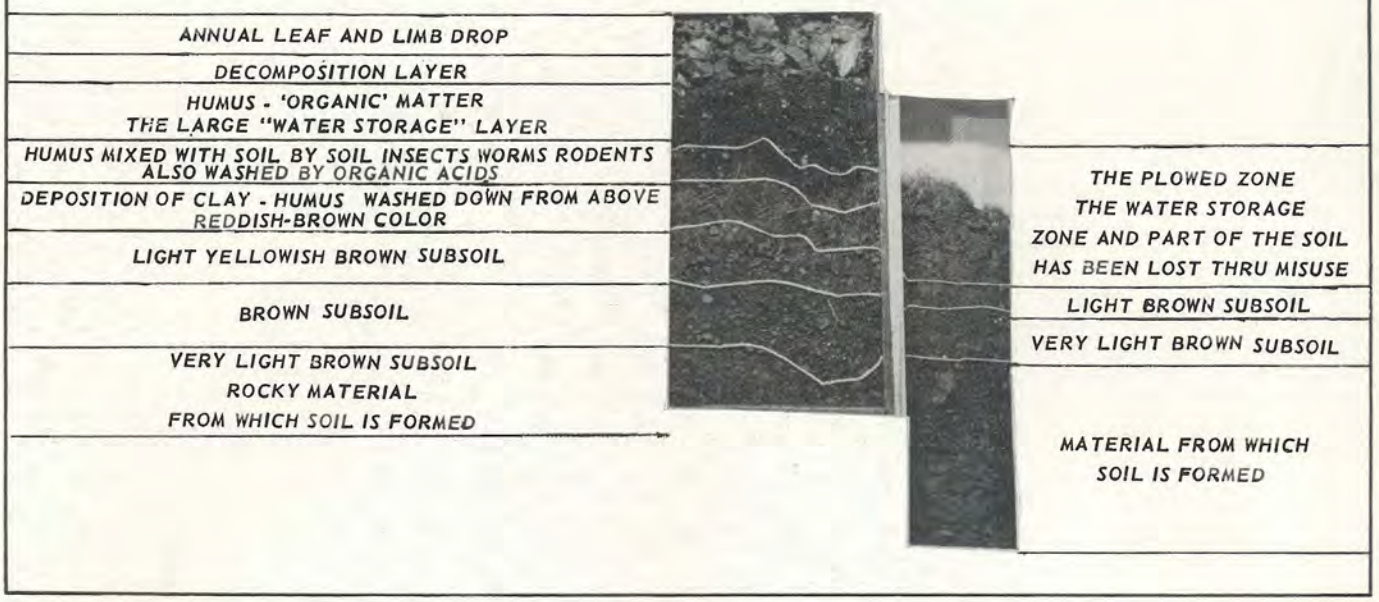
Pasturing the woods with livestock not only destroys the humus but also compacts the mineral soil beneath. This reduces water holding capacity of the soil and it takes many years to regain its original storage capacity. Soil compaction on cropland with the increasing use of heavy farm equipment is reducing the soil water holding capacity and accelerating runoff of rainfall. Travelling as little as possible over the cropland with heavy equipment, and using equipment with dual wheels with oversized tires or wide track will aid in preventing the loss of water storage capacity on cropland. Livestock should not be allowed to graze woodlands or reforested areas.

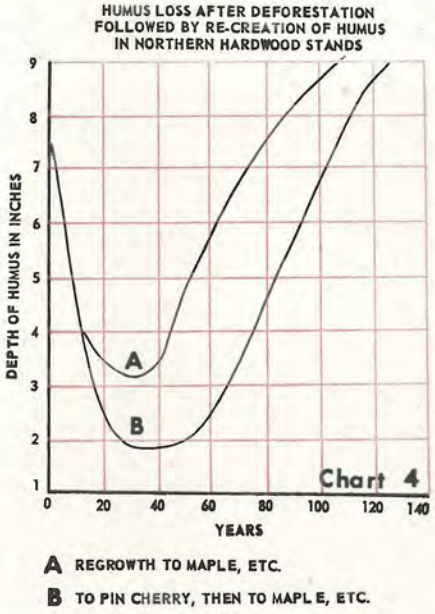




The humus underlying an 80-year-old, undisturbed stand of hardwood trees could retain 10.5 inches of rain water for two days and slowly move it into underground storage. However, this same woodlot area, had it been pastured would retain but 4.3 inches of water (see chart 1). If these old trees in the undisturbed

COLONIAL WOODLAND SOIL (LEFT) - CONTRASTED TO ADJACENT CULTIVATED AREA





woodlot were cut and all timber removed, the humus depth would decline rapidly for about 30 years even if new trees grew in the area (see chart 4). Thereafter, it would take another 50 years to increase humus depth to that of the former woods before logging, even if the area is reforested to hardwood. Moreover, if it grows first into pin cherry and popple or brush it will take 30 additional years to regain the original humus depth. Since one inch of depth of humus will store 0.8 inch of rainfall, you will see that complete removal of all logs from an area, with subsequent loss of humus, drastically reduces its water storage capacity. The leaves falling each year from a stand of young hardwood trees are forming humus, but the rate of new humus being formed does not equal the annual rate of destruction of the humus by the soil-microorganisms. Therefore it is desirable to have selective cutting of the hardwoods, in order to maintain the humus.

At the present time, streamflow is being reduced as the result of clear cutting of woodland during the 1920's; while the clear cutting of woodlands in the 1940's will not be reducing stream flow severely until the years of 1960 to 1970. By that time, however, the woodland, clear cut in the 1920's, if reforested will begin, through humus build-up, to accumulate water storage capacity, resulting in a more uniform stream flow throughout the year.

Flash flood damage

Burning of the woodland totally destroys the humus, thus allowing a large part of the rainfall to either run off rapidly or to penetrate too quickly through the soil so as to reach flood flow rapidly. The destruction of soil humus reduces water storage capacity, thus lowering water movement into springs, wells and streams during the Summer and Fall. Instead, the water that would have been retained by adequate humus cover, runs off or filters through the soil rapidly, resulting in flash floods and heavy stream flow during the Spring.

Grazing of hardwoods by livestock or by dense concentrations of deer slows down regrowth and reduces soil water storage by soil compaction. Each conservationist should remove his livestock from all woodland areas and should not clear cut his timber lands. By preserving the humus that is present in our woods of today and by building it up, the springs, wells and streams will flow at a more uniform rate throughout the year.

Low fertility cropland, idle land or poor pasture lands—all having low water storage capacity—should be reforested as soon as possible. Even then it will take 80 years or more to recover large water storage capacity on the area, with consequent flow of water throughout the season.

Hunting Accidents—1957

WITH a hunting license sale of 1,077,825 in 1957 — (61,268 more licenses than the previous year) — hunting accidents dropped in New York State to 125 from 143 in '56. The most gratifying statistic is the ratio of accidents to number of licenses issued. This is the best hunter-accident ratio for any year since hunter safety records have been kept.

We're proud of this safety record and of the men and women who helped bring it about—the Hunter Training Instructors who serve without compensation. Some 2,000 of them trained a reported 26,655 new hunters last year (actually the number trained is higher by nearly 10,000, as some instructors, like us, are slow on reporting). More than 120,000 minors have received this training course in hunter safety since 1953.

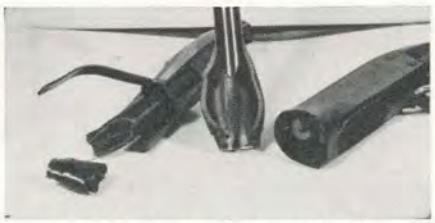
We appreciate their efforts and want to take this opportunity to thank them for a job well done. We only wish more of the public would appreciate their work and give them a hand now and then. They would appreciate help, especially just before the hunting season when only one or two instructors in a community are beseiged by a hundred or so youngsters. They feel pretty limp at the end of each four-hour-plus session.

We are certain we can improve on our 1957 record if each hunter will remember that he alone is the most dangerous part of a gun and that shooting accidents do not just happen—they are *caused.*

—BRYAN E. BURGIN,
Asst. Dist. Game Protector

Hunting Accident Summary

Year	*Fatal*	*Non-Fatal*	*Total*	*Licenses Sold*	*Accident to License Ratio*
1952	14	106	120	833,580	1 : 7363
1953	7	105	112	903,646	1 : 8068
1954	10	110	120	938,716	1 : 7823
1955	12	118	130	972,399	1 : 7480
1956	11	132	143	1,016,557	1 : 7209
1957	12	113	125	1,077,825	1 : 8624



Barrel obstruction caused this

Manner of Accidents

How injured	*1955*	*1956*	*1957*
Self inflicted	37	39	39
Shot by companion	78	93	73
Unknown	15	11	13
Totals	130	143	125

Accidents re Game Pursued

Game hunted	*1955*	*1956*	*1957*
Big Game	37	21	12
Small game	42	84	53
Others & unknown	51	38	60
Totals	130	143	125

Causes of Accidents

Causes	*1955*	*1956*	*1957*
In line of fire	43	58	18
Carelessness	23	25	45
Ricocheting	20	19	6
Mistaken for game	13	6	2
Loading or unloading gun	6	7	0
Others & unknown	25	28	54
Totals	130	143	125

Governor Harriman visits hunter training class at Erie Co. Fair

Federal Fish Stocking

by Dr. C. W. Greene
Chief, Bureau of Fish

Cecil E. Heacox
District Fisheries Manager

HERE is good news for every fisherman in New York State: A new arrangement for combining and co-ordinating the fish production of Federal hatcheries in the State with the production of New York's hatcheries has recently been worked out between the U. S. Fish and Wildlife service and the Conservation Department.

This is not only good news but is also a significant milestone in fisheries conservation history. The new system has taken a long time to develop. Looking back over 30 years, it is not surprising to find that many sportsmen, even 'though active in their club's fish distribution activities, are not aware of the great changes which have taken place since the days the Conservation Department used the "application system."

The application system was a comparatively casual arrangement in which it was up to interested sportsmen and others to initiate fish stocking. Clubs and individuals submitted applications directly to the Conservation Department. The applications, handled conscientiously but routinely, were filled pretty much on a "first come, first served" basis. In the 1920's, however, serious attention began to be given to uniformity of species in individual waters and to numerical allocations according to the size and quality of waters.

But, for the most part, applications were processed automatically and the only real consistency resulted from the sustained interest of individual applicants. Even such consistency suffered from a normal but constant temptation, encouraged by opportunity, to try something new and different.

The disadvantages and abuses of such a system were many:

1. Fish were often stocked in unsuitable waters.
2. Unsuitable species were often stocked.
3. Stocking was sometimes actively harmful instead of beneficial. (N.B. — Only recently through New York's reclamation program has a beginning been made toward recovering a part of the thousands of acres of trout waters lost or impaired because of such stocking.)
4. Through the duplication of applications, the distribution of fish was inefficient and inequitable; some waters were often stocked several times during a season yet others, equally deserving, would be overlooked—sometimes for several years.
5. Hatchery production was dictated largely by the requests of applicants and thus, was based on the desires and whims of thousands of individuals, some not even fishermen.
6. Application stocking was poor economy when costs were compared with benefits to the fishing public; millions of fish and thousands of dollars and man-hours were wasted.
7. Stocking was considered an end in itself and not a part of a planned management program.

Increasing dissatisfaction with the application system led both sportsmen and the Conservation Department to seek a more realistic and business-like basis for the distribution and stocking of fish form State hatcheries.

The answer to the problem was the Biological Survey, which, from 1926 through 1939, made a scientific study of all the State's principal waters. Part of the job of the Survey—perhaps the most important part—was to formulate a fish stocking policy for each water studied.

This stocking policy was based on two fundamental considerations: (1) Species suitability and (2) carrying capacity. For trout, the stocking policy recommended definite numbers of trout per mile of stream and for lakes and ponds allotments according to size and suitability.

In the early 1940's, a system of allocating hatchery fish according to data obtained from the field studies of the Biological Survey was instituted. This is the system, which with refinements, is in effect at present. About the same time, sportsmen and their organizations began to take a more active part in distribution activities. As sportsmen became better acquainted with the new system, more familiar with waters in their area and as survey techniques were improved, the distribution and stocking of hatchery fish gave increasing satisfaction to fishermen and the Conservation Department.

There remained, however, the problem of handling the fish produced by Federal hatcheries. For years, these had been distributed in response to applications from private individuals. There was a need to develop one comprehensive stocking program which would co-ordinate the distribution of all fish in New York's public waters regardless of their origin.

Fortunately, as far as New York State was concerned, there was a growing liaison and spirit of co-operation between the U.S. Fish and Wildlife Service and the Conservation Department. The Service asked the Conservation Department to review all New York State applications. Aware of the Biological Surveys, the Service requested the Department to use the same care in reviewing Federal applications as it would use in allocating fish from its own hatcheries.

Accordingly, Federal applications were cleared through the Department's five district fisheries offices. In checking these applications, the district offices could spot applications which requested unsuitable species and much damage to good fishing waters was prevented. In situations where the Department was stocking at or close to 100 per cent of the Survey recommendation, the district offices rejected applications to prevent overstocking. As the Department's postwar program got rolling, more and more waters were stocked at the 100 per cent level and the number of rejections increased greatly. This soon created as much of a problem for Federal authorities as the allocation of fish had before.

Again, representatives of the Service and the Conservation Department went into a huddle. A series of conferences were held for the specific purpose of determining how to use the fish propagated in Federal hatcheries within New York State in the most efficient and equitable way possible.

Lengthy discussions finally resulted in a memorandum of agreement between the U.S. Fish and Wildlife Service and the New York State Conservation Department. In accordance with this agreement, trout produced by Federal hatcheries in New York will be combined with production of State hatcheries; the total output to be pro-rated against total stocking requirements of New York State waters. Under the terms of the agreement, New York State's fishing public is assured each year a sizable number of trout from the Federal hatcheries located within the State. Last year, the Federal output amounted to about 285,000 brook, brown and rainbow trout.

(Continued on page 38)

the back of the book

A mouth full

Mrs. Martha Earl, Blooming Grove, (New York) is one of the many, many people who add enjoyment to their lives, feeding and watching our native birds. Like so many, too, Mrs. Earl combines bird watching with photography. Last Spring, with a catbird nesting in a forsythia bush just outside the window, Mrs. Earl had the stage all set to snap a picture of the catbird feeding its young. She placed the camera on the window sill, set the focus and was ready to "snap" when the bird returned to the nest with "young-un groceries." What mother catbird returned with (see picture) so amazed Mrs. Earl, she nearly forgot to take the picture.

Treetoads may be rather heavy fare for young catbirds, but you would never think so from their actions.

Timber operations help wildlife

Calvin Bobseine, timber operator in the Town of Otto, Cattaraugus County, reports that deer browsed extensively on hardwood tops left from his logging operations during February. Heavy, wind-driven snow covered much of the browse ordinarily available.

This operation covers 500 acres of woodlands protected from grazing and managed to produce sustained harvests of timber crops. The results: Good woodland management and a dividend for wildlife.—H. W. Bobseine, *Game Research Investigator*

Hydro-electric duck

George Noble, live-trapping ducks for banding purposes in Chautauqua County, was setting his traps at Dunkirk harbor on February 12, near the outlet pipe coming from the Niagara Mohawk Power Company Steam Plant. The 24″-pipe discharges at water level and was flowing about two-thirds full. As he finished baiting the traps, a canvasback duck swam out of the pipe, between his legs and out into the harbor. The duck apparently had been feeding on small fish that had run up into the pipe.—H. W. Bobseine, *Game Research Investigator*

The red fox

Why does the fox have a bushy tail? Is he really as smart as most people say? Does he get any fun out of life? These are far from earth-shaking questions, we'll grant you, but we think you'll find the answers interesting. Here are a few facts, and a few fancies, too, about that colorful and highly controversial character of the wild, Mr. Reynard himself, the red fox:

To begin with, what is a fox? You'll hear him called everything from the king of game animals, to a low-down sneaking varmint, depending on whether it's a fox hunter talking, or a farmer who's trying to raise some chickens. Zoologically speaking, the fox is nothing more than a little wild dog. He belongs to the same animal family as collies and beagles, coyotes and wolves.

As a rule, the full-grown fox weighs between 8 and 12 pounds—little more than a good-sized house cat. Occasionally, one may tip the scales at 15 pounds but that's unusual. The stories going around about foxes weighing 20 or even 30 pounds—well, they're just plain stories, period! But like other tall tales, including the one about the fish that got away, they're bound to be believed by some folks.

From a distance, the red fox looks as if he's wearing black boots, and his coat seems a golden-red color. But if you can get up close enough, you'll see exquisite autumn tints of orange, shading into a reddish brown that looks almost pink in some lights.

Mr. Reynard's tail is bushy and tipped with white. In fact, that's how you can tell a red fox from a coyote, in case there's any doubt in your mind. Just look for the white tip on the end of his tail. Besides being decorative, the tail is a mighty handy appendage for the fox to have around. When he's fighting another fox, he uses his tail as a shield. In the Winter, it becomes a blanket. The fox often prefers to sleep out of doors in the wintertime. To keep his nose and pads from being frostbitten, he simply curls up in a ball and wraps his tail around himself. The colder the climate where the fox lives, the bigger his tail!

Even 'though the fox is related to the dog, his bark isn't quite the same. The female, or vixen, has a voice that sounds more like a yapping scream than a bark. The male gives a yelp, that ends on a gurgling note. Foxes can also screech, and you haven't lived until you've heard this. Their screech has been described as probably the most sinister and unearthly animal sound in all of North America!

In the Spring, foxes get romantic, just like everybody else. That's when they set up housekeeping.

Their home is usually a big hole in the ground, that's called an "earth" or a den. And to show how smart he is, the fox tries to find a hole that's already been dug by some other animal—a woodchuck or rabbit, for instance. Then, he enlarges and remodels to suit his taste.

The pups are born in March or April, with an average of five to a family. For a week or so after they're born, poor father isn't allowed to set a foot inside the den. But he doesn't seem to mind, and goes on with his regular job of bringing home the bacon.

Foxes, incidentally, are omnivorous. They'll eat rabbits, mice, rats, moles, woodchucks, squirrels, grasshoppers, fish, fruit, berries, birds, tomatoes and just about anything else they can get their paws on.

To the chagrin of many a farmer, poultry seems to be another favorite dish of Mr. Reynard and his family. Fruit farmers, 'though, like to have the fox around to help control the mice. That's why some people like the fox, and some people don't. It all depends on your point of view.

But even his worst enemies have a lot of respect for the fox and his never-ending ingenuity. Of all our wild animals, he seems the most ready to learn from experience. His ability to escape from captivity is almost phenomenal. His tactics in hunting are incredibly varied, according to the kind of meal he's after. And the way he learns to distinguish the latest devices used by trappers can be downright disconcerting.

As for his cunning, ask any fox hunter. People still "ride to the hounds" in New York State, you know, and the fox is as famous as he ever was for outrunning, out-tricking many a smarty-pants dog.

Foxes have been credited with doing all sorts of things. Some are said to have made friends with caribou and skunks. Another story has it that the fox devises his own shopping bag, after a successful hunt, by putting some of his loot under the wing of a woodcock or hen, and carrying the hen home! But who knows if the story is true? Some people say that foxes have their own hotels—extra-large dens, with a "permanent staff," as it were—where visiting friends or in-laws can stay for a spell. Again, we don't really know.

We do know that foxes often bury surplus food—that they occasionally play in the moonlight—that they are sometimes carriers of rabies, especially when they're too numerous—and they're probably here to stay, whether some folks like it or not.

In states where a bounty is paid on foxes—such as Pennsylvania, Michigan and Indiana—the fox population stays about the same, regardless.

A sly, ingenious, handsome fellow, the red fox seems destined to remain a symbol of the wild—and one of our most colorful New York State animals.—ROSEMARY CLARKE, *Radio Bureau, N.Y.S. Dept. of Commerce*

Rabies and wildlife

This past year, 1957, shows the lowest incidence of rabies in wildlife and domestic animals since it first became a menace in New York State. A total of 212 cases was reported as compared to over 1,000 in both 1946 and 1950. Twenty-one counties reported cases, the majority being in Delaware (44), Schoharie (32), Montgomery (30), Otsego (25), Schenectady (17), and Albany (17). Animals affected, in case reports, were: Cattle, 110; fox, 49; dog, 13; cat, 26, and other, 4.

During the year, Conservation Department and county trappers took 3,500 foxes in specifically assigned areas to prevent further spread of the disease.

Next case, please

Game Protector Paul J. Benoit of Loon Lake has two trappers in his territory who are always trying to out-do each other to gain the reputation of being the best beaver trapper in the area. The following excerpts from Protector Benoit's routine report of an incident last Spring between these two trappers proves that a Game Protector must possess greater wisdom that can be found readily in the law book.

"Mr. 'A' called me on the 'phone and wanted to know if I could come right down to his camp—he said it was important. I left at once and when I arrived, found 'A' and Mr. 'B' having a heated argument over the ownership of a beaver. 'A' told me that he and 'B' had caught the same beaver. 'B's' trap was on a forefoot and 'A's' was on a hindfoot. I suggested a peaceful settlement by tossing a coin, or, by sharing equally the proceeds from the sale of the beaver skin. Neither 'A' nor 'B' would agree.

"It was clear that 'B' was first to visit the traps involved but did not remove the beaver because he did not want to violate the law by taking fur from another's trap. When 'A' arrived, he removed the beaver from both traps and left a note for 'B' to stop at his camp to settle the matter. This is where the argument started.

"When no peaceful means to a settlement could be arrived at, it was decided that all three of us should visit the place where the beaver was trapped. The traps had been set about four feet apart and it was impossible to determine which trap had caught the beaver first. At this point 'B' requested that I arrest 'A' for removing the beaver from his trap. 'A' countered by requesting that I arrest 'B' for not having removed the captive animal when he first visited the trap.

"At this time I suggested that if an agreement was not reached and one trap moved—the same situation might arise tomorrow. After due consideration 'B' admitted that 'A's' trap had been placed there first but he had advised 'A' that he was going to trap that pond that very day. Knowing this, 'A' had arrived unusually early and set his trap; therefore, he ('B') would not remove his trap. 'A' said he was first and he would not move his trap.

"We returned to 'A's' camp and upon request of both trappers, I took possession of the beaver until things cooled off. There was no question in either 'A's' or 'B's' mind that the Department must give a ruling so that proper credit could be given for catching the beaver.

"While wondering what Solomon would do under these circumstances, 'A' called at the house and reported that he had agreed with 'B' to sell the pelt and share the proceeds.

"This must have been done because now there is friendliness again between 'A' and 'B' on their trap lines."

State lands and hunters

Each year more and more hunters use the State Forest and Game Management Areas. Game Managers and Foresters in southwestern New York made a careful check of this use on the antlerless deer day (Dec. 3) of the 1957 deer season. They came up with some interesting observations.

First, a complete car count and check on number of hunters per car was made on several areas to determine the average number of hunters per car. This was determined to be 2.8 hunters per car. Next, a total of 24,844 acres of State lands was checked completely and 635 cars observed with 1,787 hunters, for an average of 13.9 acres per hunter.

If we project these results for the total area of State Forests (565,796 acres) and Game Management lands (102,130 acres) we find that approximately 48,043 hunters used these lands on this single day.

This, of course, does not include hunter-use of the several millions of acres in the Forest Preserve.

Donald R. Brockway

We're pretty sure that very few of New York's 500,000 trout fishermen ever heard of "Don" Brockway, yet for some 18 years, until his death January 19 this year, he had devoted his life, as an Aquatic Biologist for the Conservation Department, to improving their chances of success.

Assigned to the Cortland Research Station, "Don" collaborated in pioneering studies in fish nutrition and in the development of pelleted foods for fish hatchery use. His research findings on the metabolism of trout have had practical application in the rearing of fish in hatchery troughs and ponds and in the design of shipping tanks, etc.

A graduate of Hamilton College, where he majored in biology and zoology, "Don" continued with two years of post-graduate work in pre-medical at the University of Alabama.

New York's trout fishermen have lost a good friend and we in the Conservation Department have lost not only a friend but a key man on the team.

Trout fishing at Camp Drum

Soldiers going to Camp Drum (near Watertown in Jefferson County) for Summer training, would do well to slip a trout rod into their duffle before leaving home.

In 1957, Camp Drum officers enlisted the assistance of the nearby Watertown District Fisheries Office of the State Conservation Department along with that of the Federal Fish and Wildlife Service in an effort to make better fishing on the Military Reservation. This was to be part of a recreational program being developed for the thousands of military personnel who move into the area each Summer for special training.

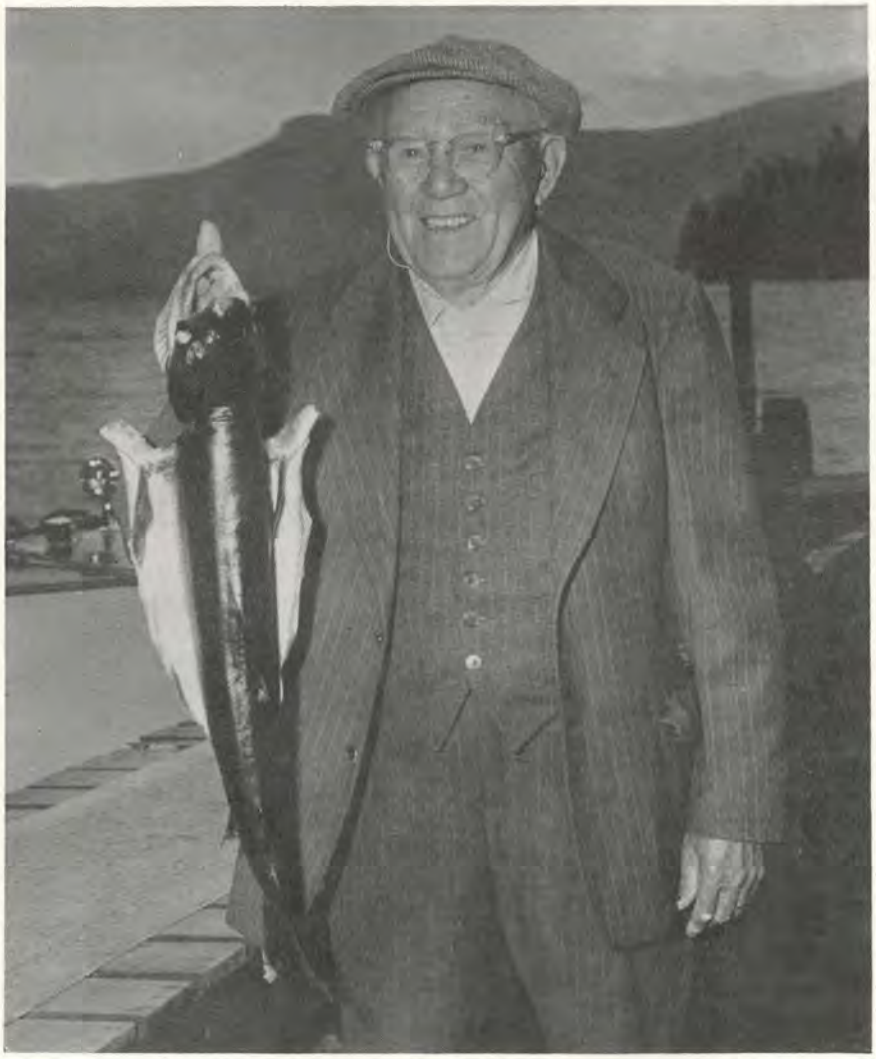
In considering various possibilities for improving fishing it was found that 30-acre Remington Pond, which was already being developed for swimming and boating on the Reservation, was apparently suitable trout water except for the large numbers of "weed" species then present. To remedy this condition, personnel from the Camp and the State Fisheries Office combined their efforts and poisoned the pond with rotenone in the Fall of the year. This got rid of the unwanted fish. A month later, after the pond had "cleared up," the Federal Hatchery at Cortland provided 3,000 legal-sized brook trout for restocking the pond. Additional trout will be provided as needed by the Fish and Wildlife Service to maintain high quality fishing.

Civilians, as well as the military, stand to profit from this co-operative project inasmuch as public fishing is to be permitted during the first month of the trout season each year, before the Summer training period begins. This will be a bonanza to Jefferson County anglers, who have previously lacked for pond fishing for trout in their area.—D. PASKO, *District Fisheries Manager*

Rose hips

Anyone want 10,000 pounds of "rose hips"? An English chemical firm uses this amount of the berry-like fruit of the wild rose. What for? It seems that during World War II the shortage of citrus fruits and their Vitamin C content, required that other sources be found. The rose hips had it, so thousands of pounds were collected and converted into a vitamin-rich "Rose Hip Syrup." Collection and manufacture continues.

Multiflora rose, now grown widely in this country for wildlife food and cover, stock-proof fence and general soil saver, produces tremendous quantities of rose-hips. Even 'though we don't use them for "rose hip syrup," we know they are an excellent wildlife food during the cold hungry months of Winter.



"A most happy fellow"

We don't as a rule, think much of pictures of "Joe" with his limit catch or "Hank" with his big buck but this one of Charles S. Steurer, Sr., Tarrytown, with an 8¼-pound lake trout which he caught the last day of the season, 1957, in Lake George, we couldn't resist. Not because of the fish, 'though it's a good one; simply because the expression on angler Steurer's face makes us feel good—sort of wraps up the whole philosophy of fishing.

Mr. Steurer, incidentally, was 90 years old when this picture was taken. As one of New York's senior citizens he fishes "on the house" with a free fishing license.

Pesticides

The Assistant Secretary of the Interior for Fish and Wildlife in Washington has recently emphasized the need for a comprehensive study of the effect of the use of pesticides on the valuable resources represented by wildlife. He pointed out that last year one-sixth of the United States cultivated land—about 65 million acres—and more than 3 million acres of forests has been treated with 3,000 million pounds of pesticides. He added that it was unquestionably necessary to protect vegetation against pests but the consequences to wildlife of the programs being carried out have not yet been adequately studied. It was essential that investigations should be conducted both in the laboratories and in the field in conjunction with the Forest Service.

In the United States criticism continues to be aimed at the use of insecticides to which the press, rightly or wrongly, attributes the responsibility for the poisoning of foodstuffs, causing harm particularly to children. Their use is even blamed for the increase in liver complaints which rose in 1957 to third place in the table of communicable diseases of the U.S. Health Department.

If the woodchuck can do —so can you

Each year New York State landowners and taxpayers collectively "ante-up" $1 million or somewhat more for the privilege of planting forest trees on former farm land. The reasons are various: Soil Bank, of course, Christmas tree fever, timber prospects, wildlife improvement, scenery, sentiment and old-fashioned conviction. But planting is only the beginning. Later on the trees have to be thinned and otherwise cared for if planting is to pay off. Sometimes they get bugs or diseases or become unhappy with their environment.

Anyway, whenever the entomologists and pathologists "pass the buck," we get a lot of questions about soil conditions, as well as about soil tests in advance of planting. It turns out, though, that with red pine, still the third most popular species, no soil test can beat the report of an experienced woodchuck. Unfortunately, we have been unable to get our soil test people and the animal husbandry department together on a standardized woodchuck for general distribution. The best we can do now is present our results as a sort of a do-it-yourself kit with each user supplying his own woodchuck.

Select your woodchuck with care. Occasionally, inexperienced youngsters or ignorant shiftless-type woodchucks take chances on den sites. Your ordinary conservative woodchuck, however, is mighty fussy about having a dry basement most of the year. In soil survey terms he sticks close to the *well* and *excessively drained*, and the better grades of *moderately drained soils*. These are also the only locations where red pine has a long life expectancy and a good chance of reaching saw log size. (Always provided that surface pH is 6.0 or below.)

Both woodchucks and trees may mislead you at first, so double check before you write any letters to our editor. Small knolls and hedgerow terraces are high-grade residential sites for woodchucks but also may be the only well drained spots in the vicinity. Moral: One woodchuck den doesn't make a well drained hillside. On the other hand, red pine in its first stages of youthful exuberance is likely to grow reasonably well on somewhat poorly drained (imperfectly drained) soils for a time, only to fold up after 15 to 35 years as root troubles appear. This is rather discouraging to all but people from very long-lived families.

In summary: Plant or cherish red pine only in well drained situations (excessively to moderately well drained soils). Locate these as instructed or, if all else fails, make use of maps and field inspections with shovel or auger. Planting site selection is complicated but if the woodchuck can do it, so can you.—DR. EARL L. STONE, *Dept. of Agronomy, Cornell University*

Open House—1958

During the week, May 4 to May 10, 1958, Conservation Department facilities, throughout the State, will join with all other State departments in observing this year's "Open House."

"Open House" was initiated last year by order of Governor Harriman to encourage and provide a special opportunity for people of the State of New York to see and learn, first hand, what their State government provides in services and recreational opportunities.

May will be just the beginning of what we expect will be another record-breaking year for this Department in providing outdoor recreational opportunity for millions of New Yorkers. We invite you to look in on us—anywhere in the State, anytime—and particularly during "Open House" week to learn more of what your Conservation Department is doing for you.

In Albany, Governor Harriman will dedicate the Conservation Department's new central headquarters on the State campus site. The Department is proud of its new headquarters—the first in some twenty odd years.

How to regain your sanity

The Tennessee Game and Fish Commission has an admirable policy to encourage and assist with construction of ponds and lakes on the grounds of various government institutions. In addition, patients at state mental hospitals are permitted to fish without charge in commission-operated state fishing lakes.

Recreational fishing is highly valued, for example, by state hospital administrators for therapeutic treatment in some types of mental illnesses. In addition, fishing provides healthful recreation, helps build morale, and even furnishes occasional welcome variety at the dinner table at various institutions.

Here is the latest score in ponds constructed under this enlightened and commendable program, in terms of number of ponds at various kinds of institutions: Mental institutions, 3; reform schools, 1 and 1 planned; penal farms, over 50 acres in ponds; orphans' homes (private) 2; youth clubs, 1; city lakes, 2; county farms, 2.

Editor's Note: T.B. patients and patients at certain veterans' hospitals have been afforded similar opportunities here in New York. See Back of Book item, "Fishical Therapy," CONSERVATIONIST *for Oct.-Nov., 1956.*

Tranquilizers for the birds

A recent article published in the "Proceedings of the Cornell Nutrition Conference for Feed Manufacturers—Oct. 30-Nov. 1, 1957," by Dr. Olliver Hewitt of the Cornell Department of Conservation and Richard Reynolds of the N.Y.S. Conservation Department, provides interesting information on the experimental use of tranquilizing drugs in the propagation of pheasants.

Game bird breeders are continually beset with problems of fighting, feather-picking and cannibalism among their high strung charges. Many and various methods have been used to reduce the debilitating and often fatal effects of these habits.

The researchers found that use of tranquilizing drugs in carefully prescribed quantities mixed with the food ration resulted in a definite reduction in the feather-picking and fighting habits of pheasants reared in close confinement.

Winter clams

This is a picture of Lance Van Popering catching hard shell clams through the ice in Great South Bay during February, 1958. There may be tougher ways of making a living but admittedly Lance is not just out on the ice for his constitutional.

First an axe is used to cut holes in the ice. Then a device known as a clam tong is dropped into the hole and if a man is lucky he may catch a few clams. Since frozen clams have no sale value, somehow he must prevent loss by quickly transferring his catch to burlap bags or paper-lined containers. When this picture was taken he had caught only about one-half peck of clams.

If you are of the "outdoor" type and are content to make a living the hard way, try clamming through the ice. As can be seen in the picture there is very little competition.—ALFRED TUCKER, *Bureau of Marine Fisheries*

Water, Water Everywhere

(Continued from page 22)

effect on the future of our State. In considering legislation, opportunity must be afforded for public hearings and discussions. Such a process is time consuming but it is the democratic way and an added assurance that we shall legislate wisely—not just for today or tomorrow but for generations to come. With a burgeoning population and the incredible technological developments which are unfolding with such great speed, the water requirements of future generations will be much greater than ours are now.

Hungarian partridge

Winter covey counts on Hungarian partridge in New York's Ontario-St. Lawrence region during the current season has surpassed totals over the last five-year period. Covey counts are taken weekly from December through February on a 75-square mile check area in Jefferson County. The average covey size is larger than for 1955-1956 and the total number of birds is in excess of the highest year figure available (1953-1954). The birds, as a result of blizzard conditions in mid-February, were concentrated in large numbers on major and secondary roads, where snowplows cutting the road berms provided exposed grasses.

The birds' Winter food requirements are essentially herbaceous material such as grasses and legumes, normally available to them under snow covered fields. These birds have little difficulty, if icing conditions do not prevail, in going down through the snow for this material. Small grains, essential to many ground feeding birds, are not essential to the "Huns" during the Winter. —JOHN E. WILSON, *District Game Manager*

Feeding station

Roger Manning, working on the farm of Carl Lange in the Town of Mansfield, Cattaraugus County, stepped into the nearly empty silo to throw out silage for the cattle and interrupted a cock pheasant at dinner. As Roger stepped back from the door, the pheasant did a rocket-like vertical take off up the 30 foot shaft and disappeared out an opening at the top. Roger wonders now, if he entered the silo by the same route.—W. BOBSEINE, *Game Research Investigator*

The smallest

The dusky shrew, found over much of North America, is the smallest mammal in the world.

Deer Take In New York—1957

Adirondacks

Counties	*Antlered Bucks*	*Antlerless Deer*	*Total Take*
Clinton	156	111	267
Essex	931	316	1,247
Franklin	1,666	554	2,220
Fulton (N)	152	45	197
Fulton (S)	28	5	33
Hamilton	1,794	503	2,297
Herkimer (N)	971	244	1,215
Herkimer (S)	52	29	81
Jefferson	106	45	151
Lewis	702	212	914
Oneida (N)	288	94	382
Oneida (S)	84	42	126
Oswego (N)	197	79	276
Oswego (S)	64	35	99
St. Lawrence	2,401	662	3,063
Saratoga (N)	165	57	222
Saratoga (S)	22	16	38
Warren	451	152	603
Washington (N)	208	52	260
Washington (S)	295	215	510
Adirondack Totals	10,733	3,468	14,201*

*Includes 75 deer taken by archers.

Catskills

Albany	383	429	812
Columbia	1,496	1,259	2,755
Delaware	2,665	1,961	4,626
Dutchess	1,591	1,341	2,932
Greene	1,224	1,174	2,398
Orange	1,150	752	1,902
Otsego	1,190	1,491	2,681
Putnam	699	265	964
Rensselaer	382	270	652
Rockland	401	256	657
Schenectady	75	27	102
Schoharie	783	924	1,707
Sullivan	3,166	1,546	4,712
Ulster	2,089	698	2,787
Westchester	37	124	161
Catskill Totals	17,331	12,517	29,848*

*Includes 654 deer taken by archers.

Central and Western

Counties	*Antlered Bucks*	*Antlerless Deer*	*Total Take*
Allegany	1,173	1,739	2,912
Broome	725	504	1,229
Cattaraugus	1,212	1,642	2,854
Cayuga	156	172	328
Chautauqua	1,096	1,388	2,484
Chemung	490	454	944
Chenango	1,001	1,315	2,316
Cortland	317	363	680
Erie	381	400	781
Genesee	222	216	438
Livingston	403	512	915
Madison	341	351	692
Monroe	106	88	194
Niagara	75	20	95
Onondaga	129	121	250
Ontario	511	944	1,455

Orleans	116	128	244
Schuyler	422	515	937
Seneca	794	147	941
Steuben	1,644	1,885	3,529
Tioga	718	739	1,457
Tompkins	500	675	1,175
Wayne	123	85	208
Wyoming	347	496	843
Yates	301	426	727
Central & Western Totals	13,303	15,325	28,628*
State-wide totals	41,367	31,310	72,677**

*Includes 470 deer taken by archers.

**Includes 1,199 deer taken by archers.

Tree rings

Every one of our native trees keeps its own diary of climatic changes or other events that affect its growth. Each year a page is added which faithfully records whether that was a lean year or a fat one. Each year, beneath the bark, the tree adds a layer of wood to its trunk which becomes that much larger in diameter. When conditions are ideal, the layer is thick. When there is a severe drouth, or a plague of insects that destroy most of its leaves in early Summer, or some other trouble, the layer will be thin. If the tree is cut down with a saw, these layers appear on the stump as a series of concentric rings called annual rings or tree rings.

Chicago's Museum of Science and Industry displays a section of the trunk of a California redwood cut in 1933. It is about 9 feet in diameter and has 1,384 rings. That tree started to grow only 549 years after the birth of Christ. In contrast, there was a wind-twisted stunted pine, stubbornly clinging to a rock ledge near the timber line on a mountain, that was barely 3 feet high and 4 inches in diameter but had 255 annual rings.

If you examine the stump of an oak or a walnut cut while it was alive and sound, you will see at the center a small core of pith formed when the tree was a sapling. Then comes a cylinder of dark dense wood—the heartwood—with annual rings which are often very narrow near the core because as a youngster it grew in the shade of older trees and did not get enough light. Surrounding that is a collar of lighter-colored wood—the sapwood—with a smaller number of rings. Beyond that and just inside the rough outer bark is a spongy layer of inner bark—the phloem.

But you will not see, because it is so very thin, the most vital part of all. Between the sapwood and the inner bark there is a single layer of living cells—the cambium—which has the magical property of producing, each year, a layer of sapwood on the inside and a layer of inner bark on the outside. The wood formed each Spring consists of light-colored, thin-walled cells. Toward the end of the growing season, the cells formed are smaller and have darker thicker walls. The springwood and summerwood form that year's ring and their difference in color distinguishes it from the similar one a year older.

In slow-growing trees, with dense fine-grained wood, such as an oak, the annual rings are generally much narrower than those of fast-growing species such as the sycamore and poplars. Further, in any tree, the thickness of each ring is affected, for good or bad, by one or more factors: The precipitation of rain and snow; the amount of sunlight it gets; the fertility of the soil and whether it is aerated or badly compacted; temperatures; the length of the growing season; fires; insect infestations and diseases. In a tree, it is the sapwood that conducts water and dissolved nutrients, taken from the soil by the roots, up through the trunk and branches to the leaves. The food, mostly sugars, manufactured by the leaves is carried down to the trunk and roots by the sieve-like inner bark or phloem. As the tree grows, the older rings of sapwood are gradually filled with a hard substance, called lignin, and become heartwood. In many species, such as the oaks, walnuts and sugar maple, the heartwood contains other substances that cause it to be darker, tougher and more durable than the sapwood. In others, such as the sycamore, there is very little difference between the two. —From *Nature Bulletin*, Forest Preserve Dist., Cook County, Ill.

Baby talk

Baby cottontail rabbits, born nearly naked, are fur-covered in seven days; their eyes open in six to nine and they squeal in 10 days. Their first ventures from the nest occur at 12 days and they leave permanently a few days later.

Dog shoots dog

A story from the Pennsylvania Game Department goes thusly:

"When two hunting parties met near Friedens and their rabbit dogs started to fight, the owner of one of the beagles laid his gun on the ground while he separated the battlers. In the scuffle his hound jumped on the trigger of the gun, discharging it and killing the other dog."

This sort of thing happens all too frequently with careless hunters but you would think a dog would be too smart to do a thing like that.

The Nation's lumber production

Sawmills in the Nation produced 37½ billion board feet of lumber during 1956; enough to build about 4 million three-bedroom homes, according to the National Lumber Manufacturers' Association.

About a third of that year's lumber production actually went into home construction. Softwood production, mainstay of home building, totaled 30 billion board feet. Hardwood production of 7½ billion board feet remained stable with the strong demand for hardwood used in furniture manufacture.

Pigweed and Indians

George Agogino, Syracuse University archaeologist, has almost certain proof that pigweed or amaranth seeds are the oldest known wild grain used for food in North America.

Mr. Agogino discovered the 100 tiny seeds at an ancient Indian campsite 75 miles west of Albuquerque, N.M. He said a report from the University of Michigan set the age of the seeds at 6,800 years.

Grinding stones found near the pigweed seeds led Mr. Agogino to believe that the early Plains Indians of the San Jose Valley used the seeds for food.

Hundred-dollar pheasant

Next time you are out driving and see a pheasant along the road ponder this one: At Deep River, Conn., a motorist who killed a pheasant was fined $50 after a state trooper said he saw the youth swerve his car to the left side of the highway to hit the bird. Next he was fined $15 for failure to drive on the right side of the road.

Then the Conservation Department got into the act and the motorist was fined $10 for hunting out of season, $10 for using a motor vehicle in hunting and $15 for hunting on Sunday.

Federal Fish Stocking

(Continued from page 31)

Because Service hatcheries are located in central New York and to avoid unnecessary handling, transfers and long hauls, Federal men using Federal equipment will take care of the stocking (according to Conservation Department recommendations) of all brook, brown and rainbow trout in waters open to public fishing in Cortland, Onondaga and Tompkins counties. Farm pond applications will, however, continue to be processed on an individual application basis as formerly. In situations which call for species not propagated by the Federal hatcheries, as for example, lake trout, the Conservation Department will continue to stock as usual.

It should be made clear that New York waters will receive the same amount of fish from Federal hatcheries as they would have under the application system. The essential difference is that the trout for public waters are now to be pooled with the trout from State hatcheries and pro-rated on a statewide basis, thus integrating handling and distribution processes.

Finally, it has been agreed that Service and Department representatives will, each year, review the terms of the agreement to keep it up to date and tailor-made to the facts of conservation life.

White 'chuck

By now, members of the groundhog tribe, lean and hungry from Winter fasting, are popping out of pasture and hedgerow burrows all across the State in search of new green-groceries. Fortunately—from a life-expectancy point of view—few are as conspicuous as this nearly white 'chuck pictured near Taborton by Floyd Dobert, May 31, 1957.

Seeds

A viable seed is one capable of germinating and producing a new plant. The question of how long seeds can remain dormant and retain their viability—still be able to sprout—has interested botanists, naturalists, foresters and gardeners for many years but there is much more to be learned about it. A great deal of misinformation has been given to the public, such as fanciful yarns about wheat sprouting after its discovery in ancient Egyptian tombs. The maximum viability of wheat is about 30 years, usually far less.

Actually, many seeds are notoriously short-lived. Those of willows and poplars must lodge in a favorable spot and germinate within a few days after ripening or they will not germinate at all. Nurserymen say also that cottonwood, silver maple and American elm seeds should be planted within two weeks after ripening, and their ability to germinate decreases rapidly. Ash seed may be stored until the following Spring if stored under proper conditions of temperature and moisture.

The Garden Dictionary lists corn, dandelion, onion and parsnip seeds as having an average viability of two years. Beet, carrot, lettuce, squash, turnip and watermelon seeds remain viable for an average of 5 or 6 years but under ideal conditions may exceed 10 years. Cucumber and endive seeds are good for 10 years at least.

Hickory nuts and black walnuts remain viable after two years or more in storage and should be planted shallowly. (Squirrels do a good job at this). Their germination depends not only upon the moisture and warm sunshine in Spring but is benefited also by freezing. That seems to be true also of other plants. Layers of such seeds are placed between alternate layers of sand in an open pit, to "stratify." Exposure to the rain, snow and freezing during Winter causes them to germinate more readily when planted in Spring.

As one might expect, seeds with hard coats tend to be long-lived. Lotus seeds collected from ancient lake beds in Manchuria have been established, by the Carbon 14 method, as being from 830 to 1,250 years old. After thinning the shells with a file, they were planted. Some sprouted and a few produced flowers.

It has been demonstrated that under ideal conditions of temperature and humidity other kinds of seeds may remain viable after lying dormant for a long, long time. During the air raids of 1940, the Natural History Museum in London was badly damaged. Due to heat from fire and water used to put it out, a number of seeds—stored there in drawers—germinated, including some from a silk tree which had been collected in China in 1793.

In 1879, at Michigan State College, a lot of seeds were buried 20 inches below ground in uncorked bottles. Fifty years later, they were taken up and what kinds of seeds germinated? Mostly weeds. — *Nature Bulletin*, Forest Preserve District, Cook County, Ill.

Are hunters smarter than deer?

Most of us who hunt deer surmise that we are not. Now there's proof.

Michigan wildlife experts selected 47 acres of typical hard wood forest and conifer swamp at the Casino Wildlife Experiment Station and erected an eleven-foot fence around it. Then, they put in 39 deer. After things had settled down, six veteran hunters entered the enclosure, knowing before hand there were 7 bucks, 14 does and 18 fawns inside the fence.

The results for that year: It took them four days (15½ man-days of hunting) before they even saw their first buck. It took the six men four days to kill two bucks.

On the 18 days the area was hunted in four years, an average of seven hunters spent an average of five hours within the enclosure. This was designed to match closely the hunting pressure on the outside during the regular deer season. The herd, during these years, varied from 26 to 39 animals, and averaged 34 at the start of each annual hunt. On buck-only hunts, hunters saw almost one deer an hour, but only one buck in more than 10 hours. They spotted numbers equal to one-fourth of the deer present, but only one out of 10 bucks. During any-deer hunts, they saw only 17 per cent of the deer known to be present and only 3 per cent of the bucks present. Fourteen hours were required to shoot "any deer" and 51 hours to shoot a buck.

Are deer smarter than hunters? It seems so—even when they are hemmed in by a fence!

Way of the world

"Big fleas have little fleas upon their backs to bite 'em; while little fleas have lesser fleas and so *ad infinitum*."

This quoted bit of rhyme describes Nature's complexities effectively. Each insect has many enemies, some of which are other insects. As an example, the white-marked tussock moth, which feeds on the leaves of many trees, is attacked by at least 21 other insects. These parasites are in turn attacked by 14 other insects called hyper-parasites; while at least two parasites of the hyper-parasites are known.

Pollution control progress

An accurate appraisal of water pollution problems in New York State, and of the steps which have been taken to solve them is contained in a recently published report, "Eight Years of Water Pollution Control Progress in New York State," available from the N.Y.S. Department of Health.

The report offers a record of accomplishments by the Water Pollution Control Board including comprehensive pollution abatement programs for 22 drainage basins with a total of 17,620 miles, representing 35 per cent of the total area of the State. Also, 35 drainage basins with a total area of 25,340 square miles, representing 51 per cent of the total area of the State have been surveyed as the first step toward proper classification of waters. The report shows that during the past three years, pollution abatement works constructed in upstate New York totaled $63,270,240.

Water pollution control involves many complex water use and legal involvements and the Board is to be commended for its progress. Every step forward means more clean water for human consumption, industrial use and the ever-increasing water recreation demands.

Kapok life jackets

With the tremendous increase in boats and boating, the problems of water safety become more and more important.

Life jackets of kapok have been standard equipment on commercial and pleasure boats for nearly three decades. Recently, experimental work carried out by a Dane, Helge Juul, Director of the Danish Ships Inspection Service, tends to show that the kapok life jacket is far from safe.

According to Juul, when a kapok jacket is immersed in water mixed with gasoline or oil—and this is usually the case after a boat catastrophe—it will become water logged and sink in a matter of seconds. As a consequence of Juul's findings, the Danish government has banned the use of kapok life preserving equipment.

Kapok comes from a tropical tree. The floss from the ripened seeds is light, fluffy, resilient and resistant to water and decay—but it is covered with a wax-like substance which an oil product will attack and destroy.

If you are using kapok jackets, better keep them away from gasoline and oil.

Help thy neighbor

Red-breasted mergansers sometimes set up a feeding co-operative by forming a long line abreast and driving a school of fish into shallow water where they are easier to catch.

A "moving" story

"While cutting brush along a new telephone line which the Forest Rangers of this District were building near Old Forge last June, Rangers Bill Marleau of Big Moose and Fred Rickard of Ohio found a song bird on its nest in a small tree directly in the path of the telephone line to be. What to do? By some maneuvering, on hands and knees, and with one man steadying the little tree while the other gently sawed it off, they "pulled the prop" from under mama bird and her nest of young ones, apparently without mama ever knowing—or caring. Then one Ranger found a likely looking spot for the tree a few yards away while the other slowly and carefully edged the tree, plus bird to the spot. The move was successful. The little tree was securely anchored in place, without Mrs. Bird even leaving the nest. — M. T. DEWAN, *District Ranger*

Fisher

This year (1957-58), trappers harvested 428 fisher—the highest take since seasons were first declared by the Conservation Department in 1949.

The following table shows the trend in fisher harvest and trapping interest over a nine-year period.

Season	*Fisher Taken*	*No. of Trappers*
1957-58	428	244
1956-57	186	123
1955-56	230	150
1954-55	170	111
1953-54	172	106
1952-53	(pelts not tagged)	
1951-52	194	122
1950-51	52	36
1949-50	113	68

Seasons have been progressively lengthened from an October 25-November 27 season in 1949-50 to an October 25-January 31 season in 1957-58.

The open trapping area has been progressively increased also, from eight northern Adirondack counties in 1949-50 to the whole northern zone in 1957-58. Bag limits have remained at three per trapper throughout.

The Desmond arboretum

New York State Senator and Mrs. Thomas C. Desmond have announced that the arboretum at their home about two miles north of Newburgh, will be open to the public without charge from now on during the hours from 10 a.m. to 4 p.m. on all week days. No advance notice of visits is necessary. The arboretum now includes about 5,000 trees (some, a hundred or more years old), shrubs and woody vines, of nearly 900 different species.

Hydraulic clammer

A number of years ago a hydraulic dredge was devised in the State of Maryland which was very effective in harvesting soft shell clams. With a few innovations this same type dredge is now being experimented with in the harvest of hard shell clams in the waters of Great South Bay, Long Island. It operates by use of jet pipes through which flows powerful streams of water; literally rooting the clams out of the bottom. They are then caught in a hopper device which places everything in its path on a wire mesh conveyor belt. The picture shows all kinds of shells, as well as hard shell clams proceeding up a conveyor and then dropping on another short conveyor from which the hard shell clams are sorted.

Although still being used experimentally in comparatively shoal water, there is a distinct possibility that this device may revolutionize the more conventional dredges in the harvest of shellfish on privately-owned and leased-land—ALFRED TUCKER, *Bureau of Marine Fisheries*

High flyers

New Mexico Department of Fish and Game biologists were making an aerial reconnaissance and while flying at 8,500 feet, they sighted 23 Canada geese flying at 9,000 feet. They said this was the highest they had ever seen geese flying and wondered how the birds were holding out for oxygen.

Letters to The Editor

"Tame deer"

Dear Editor: A few months ago my father acquired four deer from a friend, a buck, a does and two fawns. Dad has a licensed game farm permit and keeps pheasants and deer as an attraction for customers of his restaurant. The buck and doe are both five years old and they spent their entire lives in captivity. Both are extremely tame, they eat out of your hand and come when called. We keep the deer in a fenced in lot of about one acre.

With the approach of Winter Dad decided to fix up a hay feeder in the Winter feeding shed. Knowing that mating season was approaching and that at this time the buck could not be trusted, we decided to nail some boards across the front of the shed to keep the deer out while we worked inside. I had just finished nailing the boards on when the buck appeared. He walked up to the boards and started slashing with his antlers until he made kindling out of the boards. Dad had thoughtfully brought a pitch fork with him and as the buck charged he tried to hold him off with the fork. The buck knocked the fork to one side and struck Dad in the mid-section. He carried Dad about 14 feet backward on his antlers and knocked him into the side of the shed. Dad lay on the ground up against the shed and the buck stood over him with one antler against the shed and the other partly against the ground and partly against Dad's body. I ran to the buck and grabbed him by the antlers and tried to pull him away from Dad. I stand six feet tall and weigh 200 pounds but I could not budge the deer one bit. I hollered for help, hoping that someone would come with a club or a gun, but no one heard me. Then I remembered the hammer which I still held in my hand when the buck had first attacked. Dad had said, "Hang on to the hammer, you may need it." I started hitting the deer on the forehead between the eyes and all over his face trying to drive him off. Nothing fazed him. I beat the back of his head until he bled but still he just kept straining against Dad and the shed. Finally I struck as hard as I could right on his eyeball. He jumped back and trotted off to the far end of the lot. Dad and I ran to the gate and got outside the fence.

A trip to the local doctor showed Dad suffered some terrible bruises but no serious injuries.

The buck is now recuperating from his beating with a severe head cut and possible loss of his right eye.

This is an excellent example of what a so-called tame animal can do. It is my firm belief that no form of wildlife can ever be fully tamed or fully trusted. This deer, that had been a tame and gentle pet all his life, had turned into a raging beast in one split second. Let the person that would bring one of these animals to his home first stop and reflect upon what one bite or slash or kick could do. We should all remember that God's creatures belong in the wilds where their own laws take care of them. Let's leave them there and there will be fewer accidents caused by the "tame animals."

Ronald A. Schenne, West Falls

• *Each Spring we plead with people, should they find young wildlife in forest or field,* TO LEAVE IT THERE. *We have cautioned particularly against picking up fawn deer, pointing out that not only is it against the law, but that such deer, when grown, can not be trusted. We deplore your father's experience, but we welcome your letter. The message is much more convincing — first hand.—Editor*

Politics and pollution

Dear Sir: Undoubtedly one of the most horrible examples of water pollution in the State of New York is to be found in the Hudson River. From Troy southward sewerage from cities and towns has been dumped into it for generations. It used to be the custom of these municipalities to pump up these contaminated waters for their residents. Although several sources put in pure water systems from inland sources, some still follow the ancient method. All are subject to the State's sewerage disposal requirements, and nearly all are opposed to cleaning the river.

In one river city where the opposition is most violent, candidates for various offices at the last election were asked beforehand to express their opinions on the construction of disposal plants. All but one were against. Here are some of their reasons: The mayor seeking re-election, said the New York Water Control Board for sewerage disposal "is an encroachement on home rule." Another candidate said "the Hudson River is a Federal body of water controlled by the Federal Government." Still another proclaimed that "the State's mandate for sewerage control is unrealistic." Only one candidate (and he was later defeated) had the backbone to state that "ridding the Hudson River of pollution caused by cities and villages discharging their sewerage into it will create healthier and cleaner conditions and is a worthwhile project."

Let us hope that the time will be hastened when this barbaric practice will be ended and our river water will become clear, pure and teeming with fish.

Arthur C. Mack, Hudson

• *We differ with you on only one point. Barbarians have never been accused of polluting their waterways; that was left for "civilized man."—Editor*

Ah, Siamba

Dear Sir: I was particularly interested in the opening line of Clayt. Seagears' Siamba song. (CONSERVATIONIST, Dec.-Jan., 1957-58).

I worked many years for the Long Lines Department of the American Tel. & Tel. Company and they, as you may know, have also a very active safety organization. As I and my men were in Outside Plant Eng'g. and exposed to all accidents subject to working in the field, I only wish the opening line of your song had been available for use in answering some unanswerable questions. Too late! I have been retired.

P. E. Tubman, Franklin, Mass.

"Owah Tan aa-Siam."

• *We make frequent use of it here.—Editor*

Screech owl's screech

Dear Sirs: I am a subscriber to your magazine and think it is interesting. I am 12 years old.

I am writing to ask you a couple of questions and tell you a true story.

Our next door neighbor is a farmer and has a big barn. One day when I was at my next door neighbor's barn we discovered a screech owl in the barn. We tried to distract its attention but the owl didn't move. Maybe the reason why it didn't move or seem afraid was that it had never seen a human person before.

Do screech owls screech because they feel like it or because of a reason?

John Tornow, Stanley

• *We would bet that screech owls screech because they feel like screeching—and we think that's a good enough reason.—Editor*

Boat launching sites

Gentlemen: A matter which I feel has been sadly neglected in this State of ours is the provisions for launching a boat at our many lakes and campsites. Certainly there are many, many small boat owners who would appreciate some consideration in this direction.

At the campsite on Lake Champlain at Crown Point, gravel has been drawn in in an attempt to make a ramp and it is a simple matter to back a trailer in the water, but try and get out. I have been stuck there twice, the only times I have used it.

Wouldn't it be a simple matter to lay logs or discarded railroad ties covered with a few inches of gravel on which a car and trailer would have a good footing? It doesn't seem that the cost of a ramp of this type would be very great. I dare say that by using timbers less fill would be required. Of course if the ramps were made of black top or concrete that would be ideal, however, I feel the timbers would be satisfactory, certainly much less expensive. I for one would welcome some activity along this line.

Really enjoy your magazine and read it cover to cover.

Carleton O. Tripp, Little Falls

• *See article and map, this issue, on boat launching sites.—Editor*

Testimonial

Dear Sir: Although time has elapsed since my son attended the DeBruce camp for conservation the thrill of viewing his energetic outlook after completing this one week is still with us. His school marks have improved and he is wide awake and alert. And his general outlook is just wonderful. I attribute this to one outdoor week of conservation living and environment. A healthy outdoor boy.

The knowledge that he has devoured sometimes amazes my wife and I. As from time to time through general outdoor discussions we then realize what he has learned.

It would be beneficial to everyone if this was on a larger scale. Our only regret is that there isn't a more prolonged and advanced arrangement.

However, we can't thank you enough for making all this possible.

Eric F. Noeldecken,
Huntington Station

• *We've thought we were on the right trail, but must admit we hadn't counted on so many benefits.—Editor.*

Fox vs. porcupine

Dear Sir: Two weeks ago while in the woods near Cairo in Greene County we came across the carcass of a red fox. It bore no visible signs of violence except that its muzzle was full of porcupine quills. Would you have any theory as to its death?

Edgar Debono, New York City

• *Very probable that it starved; unable to hunt and feed because of the quills.—Editor*

Deer "bites" dog

Dear Editor: All things change at times. I have worked as a Game Protector for several years in Onondaga County. We have had deer in this area since about 1932 and I have answered and worked on scores of complaints of dogs chasing deer. Then, on the morning of February 7, 1958, I received a 'phone call from a farmer in Otisco Valley that reversed the pattern. He complained of a deer chasing his dog!

I went to Otisco Valley and there was about 14 inches of snow on the ground. It was the day the big storm started. A deer came down to the road off the west hill, either started by dogs or moving because of the coming storm. The farmer has a Dalmatian dog named "Charlie." "Charlie" saw the deer on the road and ran up to him. The deer faced the dog and tried to stomp him. "Charlie" became scared and took off for home. The deer, trying to stomp him all the way, chased "Charlie" up on the front porch. He came within three feet of the steps and the farmer had to come out and chase the deer away. I tracked him down the road and he walked off in the woods in the valley.

"Charlie" is really a scared dog and I don't believe he will be interested in deer any more.

F. E. Fancett, Syracuse

Working on the railroad

Dear Editor: I offer the enclosed photograph taken by Cecil Barrett, State trapper, as evidence that nothing can discourage beaver, once they make up their mind to move in and set up housekeeping.

Beaver built this house on the railroad track between Sheds and New Woodstock, Madison County. Undeterred by the fact that trains regularly ran through the "east wing," the beaver continued to enlarge their castle. The railroad, fearing the beaver would take over completely, finally requested that we remove the house and induce the beaver to set up on a new site.

A. S. Taormina, District Game Manager

Muskrat migration

Dear Sir: Within the past two years, we have observed unusual mass migrations of muskrats here at our Refuge.

As I recall the first episode about two years ago, it was during or shortly after a snow storm followed by a warm wave. At that time the 'rats came out of the lake heading for the highway where they crawled upon, and over the snowbanks left by the roadscraper—and there they curled up and died.

Now again, this year on the night of Feb. 8th, there was another migration over the same route, but ending this time at a haystack in our barnyard. The distance covered on both migrations was practically the same —about a half mile.

At the edge of the haystack seven or eight 'rats lay on their bellies—dead, with no evidence of any struggle. Apparently there was no effort to get under the stack and all of them lay within a few feet of each other.

At the time of the first migration the lake was two feet higher than it is now because of the beaver dam at the outlet, but with the beaver trapped out the lake has assumed its normal level and is constant.

This body of water has no inlet and only a small outlet. There is and always has been a sizable number of 'rats here, and with the heavy growth of marshgrass all along the shores and cattail swamps at either end, it apparently isn't because of any food shortage.

Because of the drifting snow at the time, a close inspection of their trail and of the lake told us nothing.

One question about this riddle was why did they pick a night just prior to a warm wave for their first migration and sub-zero temperatures for the second? Could it be disease in one form or another? Was there a preponderance of one sex?

Could it have been a premonition of impending doom because of the nearness of another trapping season (although we make every effort to see no trapping is done)?

Was there any disturbance about the lake by otters that often come in, or possibly an influx of mink as someitmes happens? These are possible clues but mostly guesses.

Can you shed any further light upon this strange, but interesting, phenomenon?

Willet Randall, Ark Wildlife Refuge,
North Creek

• *Your reference to the mass overland movement of muskrats during the Winter is indeed interesting. We have noted extensive overland journeys during both the Spring and Fall, but except for isolated cases of a single muskrat, we have not noted Winter "wanderings."*

In your letter you mentioned that food shortages could not be the cause for these muskrats to brave the rigors of Winter weather as it was abundant "all along the shores and cattail swamps at either end." You mentioned vegetation that grows on dry soil or in shallow water. Would it not be possible, as we have frequently observed, that the soil was frozen around the parts of the plants the muskrats needed to sustain them? To me, this would be a distinct possibility and one which would be easily checked.

In general, wild animals that are well fed and furnished with adequate shelter move little except during the breeding period and in the Fall when there is a general "shuffling" of the population. Muskrats are ill-equipped for Winter travel and unless subjected to extreme stress, will seldom do so.—A. W. Cook, Game Research Investigator

Saber-toothed deer

Dear Sir: Thank you for your letter of January 28 in reply to my communication to the Department of May 22, 1953. I judge that your belated interest in my photograph of the first specimen of the saber-toothed deer, *Odocoileus sabredentalis* (Hic.) Hox, taken in the Adirondacks, is occasioned either by the controversy which now rages among scientists over the correct classification of this new "deer" or perchance you are receiving disquieting reports of hair-raising encounters with this ferocious beast from remote Adirondack communities. It certainly is high time that the public, and more especially sportsmen who venture into the wilderness area, should be informed about this new danger. I shall be glad to provide you with a thumb-nail sketch of the situation as I know it.

It is strange that the controversy among scientists over the saber-toothed deer should concern only its proper classification in the animal kingdom and not its origin or its survival. One school of thought maintains that it cannot possibly be placed in the deer family because all members of this family are herbivorous while the new specimen is obviously carnivorous.

The other school of thought retains the new species, not only in the deer family, but in the genus *Odocoileus* to which the parent white-tailed deer, *O. virginianus borealis* Mil., of the Adirondacks belongs. They point out that geneticists have finally determined that only a single group of genes controlling the structure of the second sets of pre-molar teeth underwent mutation to give rise to the new species. It is inconceivable to this school that such a small morphological change, however drastic the resultant physiological changes, is sufficient to remove the new species from the deer family and place it among such radically different morphological types as lions, wolves, leopards, jaguars and the extinct saber-toothed tiger after which the new species is named.

In view of this controversy, it is surprising that agreement among scientists is general over the origin of this species and over the reason that the appearance of canine teeth and the carnivorous habit in a deer had survival value in the Adirondacks.

It is widely recognized that since the dawn of life on this planet, cosmic rays, ultraviolet rays and other forms of natural radioactivity have slowly but continuously induced mutations (abrupt alterations of heredity) in all forms of life. These alterations in heredity during millions of years have given rise to the vast array of plant and animal forms which occupy the earth today. It is also well established that this process can be enormously speeded up by bombarding reproductive cells with high intensities of X-rays, ultraviolet rays and electrons emitted by radioisotopes, in fact the antibiotics industry is based largely on our ability to change the heredity of microorganisms so as to produce these chemicals in high yield. To make a long story short, radioactive fall-out today apparently has greatly accelerated the normally slow evolution of new species and the saber-toothed deer is one of the first byproducts of the Atomic Age to be recognized.

Now, scientists also know that changes in the genes controlling the teeth of mammals occur with greater than average frequency. Hence, the appearance of canine teeth in place of pre-molars is not surprising. Furthermore, of all wild animals on the American scene, the white-tailed deer possesses the hereditary flexibility which enables it to rock and roll with every environmental punch. It survived the last glacial epoch which spelled out the death knell of a great host of American mammals including the hairy-mammoth, the great bison, several forms of three- and five-toed horses and the saber-toothed tiger after which, as I mentioned above, the new deer species has been named. The scientists and geneticists of our Atomic Age agree accordingly that mutational changes were most apt to appear on the gentically versatile white-tailed deer and that these mutations would most likely effect the deer's teeth.

Survival of the new mutant species is usually quite a different story. The great majority of such mutations are deleterious because they leave the new species less capable of competing with long established species in a given environment. In the case of the saber-toothed deer, however, the sudden development of the carnivorous habit has had unusual survival value in the Adirondack environment. As a result of insufficient harvest, almost everywhere in that locality the normal herbivorous deer are crowded together during severe Winters into long and seriously over grazed deer-yards where plant food is almost non-existent. Under these crowded, starvation conditions they are easy targets of disease and predation. What more ideal situation could exist for survival of a mutant deer turned carnivorous? He is, as it were, "a wolf in sheep's clothing" mingling freely under crowded conditions with his unsuspecting herbivorous cousins. In the cold of a Wintry night, he viciously rips open the throat of a feeble doe which, all unsuspecting, is leaning against him for warmth, and then he leisurely chews her to bits. While the deer as we know them starve, the new carnivorous deer wax fat! Yes, scientists agree that so long as sportsmen allow the vast majority of deer born into the Adirondacks to starve rather than to be harvested by hunting, conditions will continue to be ideal for the multiplication of the new saber-toothed deer.

Finally, I should perhaps mention that scientists ominously point out that once these new predatory deer have reduced their herbivorous cousins to near extinction, they will seek out other sources of food. One can only speculate that the many letters received by editors castigating the deer hunter as an unsportsmanlike slaughterer of our loveliest form of forest life may soon dwindle. In their place, there may appear glowing praises of the brave and steel-nerved sportsman who ventures alone into the wilderness of the Adirondacks, there to match his skill and destiny with the terrible scourge and hunter of men (especially tender women and children) the dreaded saber-toothed deer.

A. B. Hatch, Peterboro

• *Fortunately, accelerated radioactivity has produced in humans, particularly sportsmen, a compensating mutation which may assure their survival in future engagements with this monster—a permanent tongue in cheek —Editor.*

Entrée

Dear Editor: At our annual conservation exhibit at the Chenango County Fair in Norwich last year we had on display an aluminum engine head found in the woods near Hadley, N. Y. As can be seen, it has been very much chewed up by porcupines.

Most people think of porcupines as wood chewers. I thought that this might be of some interest for the back of THE CONSERVATIONIST.

C. E. Baker, District Forester

Bryozoans

Dear Sir: We have a camp on the south shore of West Canada Lake in Fulton County. Two years ago last October we took up the dock for the Winter. At that time the dock was supported by horses made from 2 x 4's. Attached to and surrounding a leg and brace of one of the horses was a large mass of gelatine like substance, light gray in color and full of tiny black specks. It was larger than my thigh and am curious to know its origin.

E. C. Wells, Johnstown

• *An aggregation of super-protozoans called bryozoans.—Editor*

Side hill clinchers

Dear Sir: Some strange things have apparently been happening on Whiteface Mountain for a good many years, right up to the present time.

It must have been about 20 years ago that my friend, George, and I decided one weekend to climb Whiteface. We went to the head of Lake Placid and took the trail we had so often taken.

I would not be writing you about this experience on this trip and a subsequent one, if I had not read your article entitled, "The Great White Stag of Whiteface Mountain." After reading that most plausible story I decided that I can now tell you mine.

On this original trip, many years ago, we camped the first night about half a mile up the trail. It was nearly dark when we made camp, and all we paid attention to was that we were located at the base of a big knoll where there was a small brook that supplied some good drinking water.

During the night we heard some peculiar noises which we could not identify and to which we did not pay much attention. They could have been screech owls.

In the morning when I was out getting some wood, I noticed what appeared to be a deer runway. Looking at this more carefully, I noticed that where the animals had jumped over logs fallen across the runway, that they made a depression on only one side of the log. On a deer runway it would be on both sides. This intrigued me. George had also gone out for wood a few rods further up the knoll had found a runway and had made the same observation. We both agreed that the animals travelled only in one direction.

We discussed this as we climbed the mountain the next day and on the way down to our camp where we were going to spend another night I decided I was going to find out what kind of animals were living on this knoll. George agreed that we do this so after dark we each took positions near these runways. The sides of the knoll were quite steep. We both had flashlights.

Before long I heard something coming. The first thing I saw, without the aid of the flashlight, was a red and also a green spot, presumably two eyes. I then turned on the flashlight and saw a most peculiar animal. When I was very young in the Adirondacks I had heard about *side hill clinchers* but never expected I would see one. In case you do not know what they are, let me explain. They have a body like a panther but legs like a deer. But the legs on one side are longer than the legs on the other side. They can therefore travel only on the sides of hills and only in one direction. Their ears are floppy like those of a hound.

The next morning I suggested that the critters might be sleeping and that possibly we could get near enough to them to have a good look. We went to the lower runway first and finally found one animal sleeping soundly. We got within twenty feet of it. To our surprise one ear was tagged with a metal tag. We got out our binoculars and saw that the tag read "clockwise." His legs must have been short on the right side. We finally found one on the upper runway and repeated our experience, except that tag read "counter-clockwise." This also made sense, his legs were shorter on the left side.

I still hesitated till now to tell our experiences to anyone. But this Fall I read a news item to the effect that the Conservation Department had tagged the ears of a 605-pound bear near Tupper Lake. And then I read your article on "The Great White Stag of Whiteface Mountain." Probably there has not been an article on tagging the ears of *side hill clinchers* and probably there won't be. But don't you think people should know about these things?

Watson G. Harding,
Wykoff, N. J.

• *Indeed they should! This may be the answer to the saber-tooth deer (see this issue). They may die of dizziness chasing side hill clinchers around the mountain.—Editor*

Junior hunters

Dear Editor: For the period of time during which the Hunter Safety Program has been in effect in New York State, I have served as a Safety Instructor.

With the assistance of another Instructor, 22 boys were given approximately five hours of instruction, this week. Of this class, all but six boys were 14 years of age. Twenty-one of this class were successful and were given certificates of competence.

I am fully aware of the necessity of starting safety training, and also in the handling of guns at an early age, and feel that the Hunter Safety Program has done wonders in reducing the accident record. In spite of this fact, I cannot agree with the regulation which allows boys to have a hunting license at age 14. Regardless of how carefully I try to instruct, test and examine these boys, I am not confident that, even though they can give satisfactory answers and demonstrate satisfactory gun handling practices, they have enough maturity and judgment to safely handle firearms in the field.

It is a well-known fact that parents are grossly negligent in requiring the boys to be accompanied by a mature hunter when in the field.

Here is one considered vote for raising the age limit from 14 to 15 or even 16.

Richard A. Chauncey,
Cato-Meridian
Central School, Cato

• *I think you have the weight of evidence on your side in feeling that 14 years is, generally speaking, not enough to instill a sufficient sense of responsibility, care, thoughtfulness, etc. in a boy to send him afield as a hunter. Of course, a large share of the thinking or philosophy behind the hunter training program is dedicated toward that end and I am sure that in many instances—probably in your own experience, you have found individual boys of 14 that thought and behaved with a greater degree of maturity than their cohorts a year or more older. Then too, it seems to me there is another side of the picture; to wit, that is about the age when boys, if they have any inclination at all to go hunting, really get the itch and one way or another, they go. I think you will agree that it is better for them to go with some training than with none at all.*

Then too, as you pointed out, some responsibility under the law rests with the parent or guardian who must accompany or arrange for a qualified adult to accompany a minor in the field. The hunter training program is a start and a darn good one thanks to the unselfish efforts of those like yourself who are devoting their time and experience to such instruction, but it isn't considered to be the whole job. The 14- and 15-year-olds certainly deserve conscientious follow-ups in the field, as is contemplated under the law. —Editor

Edibility of deer

Dear Sir: If a deer is shot, but not found until two or three days later, what are the chances of the meat being in edible condition? How can one tell if the meat is in edible condition?

J. J. O'Gorman, Teaneck, N. J.

• *I note that you say "edibility" and not "palatability"—there is a big difference. The crux of the matter depends entirely upon where the animal was hit, the air temperature and the amount of bloat. If the animal was hit anywhere other than the abdominal cavity and the average daily temperature was in the vicinity of 35 degrees with night temperatures below the freezing mark, chances would be very good that the meat would be all right. I would not hesitate to take the meat home with me if there was no bloat or very little of it.*

In the final analysis, bloat is the main consideration. If the odor of bloat permeates the meat, it is useless to take the meat home. It might be edible, but probably unpalatable. —Nick Drahos, Sr. Conservation Educator

Chuckle

Dear Sir: Here is something that should give the sportsmen as well as the Game Warden a chuckle.

Ed. Richter, Northville

THE GAME WARDEN'S LAMENT

by Gil. Russel Bracket

If the game warden asks to see your license—
he's insulting.
If he takes your word for having one—
he's corrupt.
If he arrests a violator—
he's showing how rough he can be.
If he gives the culprit another chance—
he's showing favoritism.
If he labors day and night to enforce the law—he's a tyrant.
If he relaxes at all—
he's a shirker and a crook.
If he talks fish and game conservation—
he's maudlin.
If he keeps quiet—
he's not interested in his work.
If he accepts suggestions—
he's incompetent.
If he acts like a gentleman—
he's too easy.
If he acts firm—
he's unfair and a rascal.

Big elm

Dear Editor: I am mailing you separately a photograph of the largest tree I have ever seen anywhere in the Northeast and here is a clipping taken from your predecessor *The Observer* published by the Conservation Commission and dated May 1, 1925, in which I outlined its history back to 1803. "The account of the large black walnut tree cut years ago on Long Island that appeared in the last *Observer* leads me to mention a large tree in this section. When my great-great grandfather cleared up a farm in the north end of the Town of Deerfield, Oneida County, in 1803, he left an enormous elm of the original forest for the reason that it was too big to cut. When the highway was laid out it happened to be so located that this tree stood just at the edge of the right-of-way, and I presume this contributed toward its preservation for the reason that it did not interfere with the cultivation of the land. I presume that the tree was hollow even at that time, for I have often heard my grandfather, who was born in 1822, speak of playing in the hollow when a child. When Horatio Seymour was Governor of the State he happened to be driving by this tree, and noting its size, took both reins out of the harness, tied them together, and they barely reached around the trunk. I do not know at what point he took the measurement, but the circumference today at breast height is 25 feet. Although the tree died in 1916, the trunk is still standing." Years ago I entered this tree in a contest sponsored by either the Cornell College of Forestry or the State Department of Agriculture and, although it was the largest tree reported, it was disqualified because it was dead. The prize was awarded to a living elm near Gowanda, N. Y.

Ernest W. Blue, Poland

• *The official (live) big elm is 24'7" in circumference, 160' in height and has a crown spread 147'. It is located in Tennessee.—Roy Irving*

Tilapia

Dear Sir: On our farm in Stephentown Center we have a marsh lake fed by the Stony Brook. The lake is about 20 acres in size. Dace, bullheads and some trout are to be found.

We would like to stock this lake with *Tilapia*—the fish used so successfully in Siam, etc. as a food fish. This fish is grown in rice paddies and is "harvested" after the rice is brought in. The U.N. was responsible for introducing it into that part of the world.

We would like to know if this fish would survive in these surroundings. Temperature drops as low as –25 degrees F. in the wintertime.

We would also like to know how to obtain some *Tilapia* if they could endure in these surroundings.

Albert Philip Cohen, New York

• *The food fish known as* Tilapia *is a very small, largely vegetarian type of fish which has been successful under intensive pond fish culture in some parts of the world where there is a need to make every acre of fish pond produce a maximum poundage of food. It is not a game fish and cannot be effectively harvested by hook and line and is adapted to a tropical climate.*

All in all, it appears extremely doubtful that Tilapia *would be worth trying in your pond. In view of considerable damage resulting from introduced species of fish in this country and others, it is desirable to be cautious about trying introduced species. They are likely to escape and may multiply to the detriment of desirable native fish in other waters.*

From the description of your lake, which is supporting some trout, it would seem that management for trout is probably the best plan for fish management. If bullheads and other fish are not too numerous, perhaps you would get good results from trout stocking.—John R. Greeley, Chief Aquatic Biologist

Sambo

Dear Sir: Once again, I would like to illustrate why farmers post their lands.

For the past five years I have owned a black, muscovy duck, named Sambo, which has had free range on the head of Canandaigua Lake (Woodville). He was my pet, but everyone, resident, renters and folks just passing, have fed and enjoyed him. We all saved scraps and some bought grains for him. I kept wheat for his regular daily diet.

On December 24, 1957, my neighbor called reporting that Sambo had been shot by a "hunter." This "hunter" came to the head of Canandaigua Lake nearly every morning during the last two weeks of duck season, and had, I am sure, seen Sambo at numerous times. But, since his luck must have been unusually bad, he decided to have duck at any cost. As Sambo approached, very clumsily and slowly, our "hunter" sneaked along shore until he obtained a good shooting position, and fired several times. Apparently he missed, because Sambo then came to shore, in his friendly, curious manner, to investigate this disturbance. As he waddled up on shore, our "hunter" let loose another barrage, which did the trick.

Just what did he think he was shooting? Some rare cross between a goose and swan? Or a goose? Or what? I am sure this duck was so full of frogs, snakes, dead minnows, and heaven knows what, that he wasn't fit to eat. His age alone would have made him pretty tough. I hope he couldn't even cut the gravy with a butcher knife, and better yet I hope he had to throw away the kettle in which he was cooked.

This all goes to show that farmers are surely justified in posting their property. My investment in Sambo was negligible compared with a farmer's cow. I'm sure a lot of these "accidents" where livestock are shot are no more accidental than this case. Mistaken identity may happen very rarely, but I would be willing to bet the majority of these fellows hope to get away with a free meal. I hope I am right in imagining that this fellow's free meal was fishy and tough.

This is not the story of how I imagine this occurred, since my neighbor actually observed this as it happened. He has an excellent view of the lake, but it takes several minutes for him to get down to the water, thus he could not prevent it.

Robert B. Sage, Naples

• *There is only one additional sad note to add. It is true that such acts have brought about additional posting but it is equally true that those hunters who, in general, observe posting and do not trespass are the kind of law abiding people whom the land owners would not mind having on their land. While the thugs, irresponsibles or what have you (the kind that killed Sambo) are also the kind that will ignore trespass prohibition notices whenever they think they can get away with it.—Editor*

Public campsites

Dear Editor: I got a chuckle from Mr. Walker's letter (October-November, page 45) regarding the "poor people." But give the wealthy women credit, did you ever see a place more like a tenement than Fish Creek? You can't even walk between the tents without tripping. I get more privacy in my 50-foot lot than in some campsites.

Can't we do something to get our new campsites laid out with some space between tents?

I couldn't have a good time at Fish Creek. Give me more space like at Meacham, or better still, in Vermont. Take a look at Coolidge State Forest in Vermont. There's a campsite!! Yours for better camping.

R. G. Talpey, New Jersey

• *The Department is expanding existing campsites and developing new ones as fast as money and manpower will permit.—Editor*

Helping hand

Dear Editor: On March 25, 1957 our organization, then called the OSIA Lodge #321, Fish and Game Club, (now the Indian Hills Fish and Game Club) gave a dinner for junior high schools boys in acknowledgement of their efforts in class conservation projects at school and to acquaint them with the conservation camps operated by the New York State Conservation Department.

In the knowledge that last year's dinner was a success, we held another on February 24th of this year. We feel certain that you will be interested in hearing that this year's response was even more gratifying. Teachers and students have both indicated interest in the camp program. More inquiries were received as to organizations who might sponsor boys and the method by which selection is made.

We can only hope that more organizations will make camp scholarships available to these boys who have indicated their willingness to learn.

Once again we would like to express our sincere gratitude to Asa H. Smith, District Game Manager, at the Wildlife Research Laboratory, Delmar, New York, who drove in from snowed-in Berne, New York, to act as principal speaker.

E. B. D'Alessandro, Schenectady

• *Efforts such as this are a major assist in operating our conservation camp program successfully.—Editor*

Crime can kill you

Dear Editor: In July of 1957, I discovered a purple grackle hanging from a limb high up in an oak tree near Lake Kanawauke, Bear Mt. Upon climbing the tree, I found a piece of nylon fishing line entwined around the grackle's neck. Very close by was a robin's nest. Apparently, the grackle had been trying to steal either the eggs or the young robins from the nest. Closer inspection of the nest disclosed other pieces of nylon fishing line. Apparently, the robins had gathered the fishing line from the shores of nearby Lake Kanawauke when building the nest.

Gerard C. Hollahan,
Asst. Dist. Game Protector, New City

A brew

Dear Editor: In the recent article, "Poison Ivy and Wildlife," by Richard Headstrom, I was attracted to the following lines: "But I doubt that nature created anything without some purpose in mind; as for the poison ivy it may surprise you to learn that it has considerable value as a food plant for our wildlife," etc.

"A study on Materia Medica," by N. M. Choudbari, M. D. is interesting for a further purpose for mankind:

Poison Ivy or *Rhus radican* differs from *Rhus toxicondendron* in that it is by comparison—dwarfish. Other names for *Rhus toxicondendron* being mercury vine, poison ash, poison oak and poison vine. The plant is very poisonous and should be handled carefully.

In Homoeopathic practice, when the above have been prepared as a remedy, it holds such an important place that it is known as a "polychrist." It affects the fibrous tissues and is adopted to persons of rheumatic diathesis.

In preparation, the fresh leaves are collected after sunset on a cloudy day from shady places and chopped and pounded and then mixed with alcohol in proportion of 1 to 2 and then filtered and strained. The tincture contains rhoitanic acid and toxicodendric acid; two poisonous volatile principles.

In conclusion, nature has given not only plant life for food, but a wonderful remedy for mankind.

Henry C. Waters, Marblehead, Mass.

Unwanted tenants

Dear Sir: For the past several years I have built numerous birdhouses and placed them in trees about the house in an attempt to encourage birds to nest. Usually about the time a bird begins to build a nest, the squirrels decide to take over the place. In their attempts to get inside the birdhouse, they gnaw about the entrance hole and even make their own entrance, consequently the bird leaves and the house is ruined.

I do not wish to destroy the squirrels since they too give us a great deal of enjoyment. However, I would appreciate any suggestions you might have as to how to keep them from playing havoc with the birdhouses. Perhaps you know of some repellant with which the wood can be treated. Any suggestion will be appreciated.

Frederick Menninghaus, Callicoon

• *Your problem with squirrels and birdhouses is not a new one. As far as I know there is no good repellant that would do the job of keeping the squirrels away and not the birds. But there are some things that you can do to help.*

First of all, put the birdhouse on a pole far enough from trees and shrubs so a squirrel can't climb down to it or jump to it. Secondly, place a wide metal collar around the post angled downward to prevent the squirrels from climbing to the house. A metal post will help too. Cutting the edge of the collar to form points will further discourage the critters.—Wayne Trimm, Conservation Educator

Head work

Dear Sir: As I was working around outside one day last year, I noticed a hairy woodpecker with a small hickory nut in its bill. The thought immediately flashed through my mind: "What does he want of that nut?" I knew that his bill would not be strong enough to crush it.

Prior to this, I had always thought because of the method by which the woodpecker obtains his food that his brain must be quite solid, or at least well bruised. I've changed my mind.

The woodpecker flew up on the side of a large American elm, the bark of which is thick and deeply fissured. He moved down the trunk until he found a v notch that suited him, then with a few well placed taps, had his nut in a natural vise. He then proceeded to drill a small hole in the nut and extract the worm that was feeding on the undeveloped meat inside.

R. A. Clarke, Crown Point Reservation

Club rules

Dear Sir: I was hunting deer on Triple Hill's Hunting Club, Inc. this season. I paid for my permit to hunt there but we were told that we would not be allowed to shoot a doe on doe day. We upheld these laws, but what I would like to know, can they supersede any law that is made by the State?

George Meserole, Merrick

• *The Triple Hill's Hunting Club, Inc., to which you referred in your recent note, does not have the authority to abrogate or amend any State law or official Department regulations pertaining to season, bag limit or manner of taking any legal species of game, bird or animal. Of course the membership of such a club may decide, as a matter of club policy, to limit themselves in one manner or another with reference to the provisions of the Conservation Law but such a decision would simply be a policy matter or an act of mutual agreement, etc. and would not have any legal basis. In other words, they can ask but they cannot demand nor enforce as a matter of law variations of the law itself. Of course, as a permittee, and simply as a matter of courtesy, you would not have much alternative except to go along with their wishes.—Editor*

Ornaments

Dear Sir: The enclosed branch is loaded with green worms which have evidently developed from small black eggs. I gave my neighbor a Scotch pine Christmas tree, cut on December 22, and he kept it in the house for 30 days. He noticed these worms on the 30th day.

What are they? What effect will they have on the remaining Scotch pine in the plantation? Are any protective or preventive measures recommended?

Any help you can give me will be appreciated.

Trees were planted in 1953 in Oneida County, Town of Floyd.

W. H. Rawlings, Rome

• *The insects were identified by John A. Wilcox, Curator, State Museum as being European pine sawflies,* Neodiprion sertifer. *This sawfly deposits eggs in slits cut in the needle during September and October and hatch out of doors early in May.*

Several small outbreaks of it have occurred in Herkimer and Oneida counties recently. This insect has caused considerable trouble in plantations and ornamental plantings of red pine in Westchester and Rockland counties. It has been found in Connecticut, New Jersey, Ohio, Michigan, Wisconsin and the southern part of Canada.

Eggs of pine sawflies are often hatched in the laboratory during the Winter for experimental purposes. However, this is the first time to my knowledge that eggs of the pine sawfly have hatched on a Christmas tree kept inside the house.—William E. Smith, Forest Pest Control Foreman

Insight

Earlier this year, Earl Holm, Superintendent of Game Farms for the Conservation Department, received a letter from R. S. ("Dick") Reynolds, Foreman of the Department's Ithaca Game Farm. We "swiped" that letter to publish here, with two objectives in mind: First, we think our readers will be interested in the insight the letter provides to the day-to-day happenings (including the meeting of emergencies) that occur in just one small phase of the Department's services to the public. Secondly, we believe Reynold's letter explains quite clearly why we consider it a privilege to work in this field of conservation where so many of our associates are dedicated to the old fashoined philosophy of doing a job well —and so few to the more popular avocation of figuring out how to get more and more for less and less. Read Reynold's letter, You'll see what we mean.—Editor

Dear Earl: In past years, we have been graced with many kind remarks on the appearance and operation of the Ithaca Game Farm. We have always felt that such success reflected the extreme interest and diligence of all the employees.

On Friday afternoon, January 24, 1958, I succumbed to a severe cold and was directed to bed by our physician. From that vantage point I was well able to observe the faithfulness and obligation that my fellow workers assumed in the orbit of successful revolution of our game farm. Many notations have been made that game farming goes on twenty-four hours per day, three hundred sixty-five days each year. This is little realized by those who can not observe how weather, predation, mechanical difficulties, public utility interruptions and livestock behavior or misbehavior play such prime importance in the production of thousands of head of stock and maintenance of the thousands of dollars worth of State-owned property.

Shortly after the theoretical quitting time Friday night, one of the many emergency situations appeared to be building up. Rain and freezing snow continued to fall and our men, who should have "been off to Old Forge on the snow train," started 'phoning in to see if the situation called for their attention. Assistant Foreman Ganoung checked periodically throughout the night and on Saturday, Maurice Mix came in to record data on a feed repellant experiment that was under way. Travel conditions continued to worsen and Assistant Foreman Stillwell drove in 18 miles to help clear the service roads and carry out the duties on the chore line. After dark on Saturday night, the wet snow began sticking to our two-acre, wire-covered holding yard. About midnight, Norman Hatch, who lives 16 miles from the farm, drove in with his two sons and along with Mr. Ganoung proceeded to knock the snow from the yard to save it from collapsing. Carol Ganoung didn't go to bed throughout the night. He and Maurice Mix again beat the snow off the covered yard before daybreak.

As I say, this is only one of the many, many times in the last twenty years when my faithful fellow employees; colleagues in Dick Minnick, Art Cook and John Whalen; friends and neighbors as well as my own family have turned in to sustain the Ithaca Game Farm and make it an institution of which we are proud to be a part.

I guess anyone who takes a reading on their stock from that vantage point, upstairs in the sick bay, will find it pretty hard to put a value on the services of their devoted co-workers, friends, neighbors and relatives, and can only record a hearty thank you to one and all.

Dick Reynolds, Foreman,
Ithaca Game Farm

Multiple purpose pond

Dear Editor: During a recent 48-D marsh inspection trip we ran into a situation which proves that a wildlife pond can have real dollars and cents community value, as well as being valuable to the owner and attractive to wildlife.

The wildlife pond in this case is the 17.7-acre Linehan-Filkins pond just south of Port Byron in Cayuga County.

One night early this Summer, Mr. D. J. Linehan was awakened by the fire alarm. Being a volunteer fireman, Mr. Linehan got up and rushed off to the scene of the fire. It proved to be a serious barn fire just downstream from Mr. Linehan's pond. Seeing that the house was threatened and that the water supply would not hold out, Mr. Linehan hurried back to his pond and removed two 6-inch boards from the control structure. This allowed a good supply of water to flow downstream. Firemen caught the water by plugging a culvert and creating a pool at the culvert. From this they were able to pump water directly on the fire. By doing this the firemen were able to save the house.

In all, the pond was lowered about three inches, or a total of over 1,500,000 gallons of water. At the time of our marsh inspection in August, the pond was almost up to normal level again.

John A. Weeks, Lake Placid

And now Mother

Dear Sir: Your article and picture of the boy that caught the lake trout with his nose, in February-March, '58 issue is very interesting. Enclosed find picture of lad and fish, and Mrs. Morse, (Mother).

Complete story is in Arch Merrill's "Slim Fingers Beckon," Page 129.

R. F. Stanton, Watertown

• *This may turn into something yet. There's something about a Mother that adds authenticity; particularly in the wearing apparel of that day.—Editor*

Fisherman

Dear Sir: I am a fisherman and amateur ichthyologist who fishes 12 months a year and keeps records of all the fish I catch. This year I caught a record 1,121 fish of 30 species. Of these, 27 species were caught within four miles of my home here in Mamaroneck. In the past six years I have caught 44 species of fish. Of those, 41 species were caught within a five-mile radius of my house. I live only 22 miles from New York City so that gives you an idea of how many fish can be caught in the Metropolitan Area.

The best catch I made this year was on July 25, the day before my fifteenth birthday. It was a 39-inch, 6-lb., 2-oz. dogfish. I caught it on a bloodworm with 12-lb. test line on my spinning rod. Find a picture of us enclosed.

Bruce L. Dudley, Mamaroneck

Shrike at work?

Dear Sir: On January 3, a friend of mine and I were walking through a swamp. I noticed a medium-sized bird hanging in some prickers. At first it looked as though it were alive. But as I got closer, I saw that it was dead. It was a brown and white bird which I thought was a woodcock because of the very long slim beak. Then I remembered that woodcocks like the woods and fields. Then it came into my head that it was a snipe although I am not sure which. I would like to know which bird it was, what it was doing in New York (which is out of its range) and why it couldn't get off the pricker bush. It had apparently died from freezing while caught.

I am thirteen years old and enjoy your magazine very much.

Robert Auerbach, Rye

• *The bird you described does sound like a Wilson's snipe which is found in New York. Was the pricker you mentioned a thorn or a burdock type of plant? If it was a thorn I would suspect the work of a shrike which impales its prey on such. However, I have also seen several species of birds caught in teasel and other similar plants.—Wayne Trimm*

More about Boleti

Dear Sir: Regarding the letter (December-January, 1957-58) from Neri concerning the edible qualities of the *Boleti*, I believe several notes are in order.

1. The susceptibility of people to the gastro-intestinal type of poisoning found in some species of *Boletus*, appears to vary greatly. Some individuals become violently ill after eating species generally held to be mildly poisonous. It would therefore appear that the mycophagist (mushroom-eater) should use caution in eating questionable or unwholesome mushrooms.

2. Species of *Boletus* other than *satnus* exhibit changing colors when wounded. These colors range from yellow-brown to greenish blue. At least six species of *Boletus* show the latter color. Among these, three (*B. alveolatus*, *B. bicolor*, and *B. vermiculosus*) are edible, while one (*B. chrysenteroun*) is questionable, and two (*B. luridus* and *B. miniato-olivaceus var. sensibilis* are unwholesome and poisonous. Due to these characteristics, it would seem that identification of *Boleti* on color change alone, is highly questionable.

3. *Boleti* are relatively easy to separate from other genera providing one knows what to look for. The beginner, however, might easily become confused with some species of Polyporous or Fistulina, although these are rather tough. All mushrooms other than *Boleti* do not have gills (grooves). Witness the polypores (pores) and the Hydnaceae (teeth), as well as puffballs, coral, jelly, cup, bird's-nest, saddle, carrian fungi, etc.

Mr. Neri and my father would get along excellently, regarding the superior qualities of the Italian dried mushrooms. My "sniffer" is apparently not quite so discerning.

As Mr. Nari says, it is indeed unfortunate that more people do not harvest this source of gastronomical delight, though caution and an experienced mycologist (or field guide) should travel afield with the beginner.

Gordon C. DeAngelo, Oran

• *I'll still stick with the "pasture pink" variety.—Editor*

Catskill turkey

Dear Editor: While reading my Dec., '57-Jan., '58 issue of THE CONSERVATIONIST the article on page 35, "Keeping Up With The Turkeys," caught my eye.

I live in Westchester, but spend considerable time in the Catskills and Adirondacks. As a member of the American Forestry Association, these areas provide a full and interesting background for study and recreation.

While going on the auto road between Peekamoose and W. Shokan, Ulster County, (about half way), I spotted a wild turkey, one of the few I have ever seen. I stopped the car and the turkey just stood there and looked around and finally slowly walked into the brush off the road. This was last Spring (late April, 1957). I hope this information can be of some use to you. Oh! Yes, moss and greens along the stream banks in this area were quite heavy, I noticed.

William J. Moran, Ardsley

• *Your recent letter, reporting your late April observation of a single turkey between Peekamoose and W. Shokan is most appreciated.*

Last year marked our first turkey releases in Ulster County when a number of groups were liberated on April 12. The release site nearest the spot where you observed this bird was about three miles away, due south over the mountain. We try to pick release sites that appear to meet all requirements for turkey range but many birds still move quite a distance before settling down.

We have just completed a round-up, by questionnaire, of turkey reports from Department field men and other interested individuals in all of the regions of the State where turkeys have been stocked. These reports indicated that at least eight of the 49 hen turkeys released in Ulster County had been successful in rearing broods. Looks good.—Charles Mason, Game Research Investigator

Nature's remedy

Dear Editor: This photo, taken by Protector Schulhoff, Dutchess County, shows a deer leg which has an unusual history. The deer belonging to the leg was examined by one of our technicians in an Ulster County freezer locker last Fall after the deer season. Apparently the deer had fractured its leg during the preceding year. The bone healed outside of the skin and when taken during the 1956 season the deer was reportedly using all four legs.

Warren McKeon,
Asst. Game Res. Investigator

Credits

First cover, pages 19, 20, 21, 24, 25, fourth cover, H. Wayne Trimm; second cover, Wm. Vandivert; 2, 7, 27, Roy Irving; 3, 4, 5, Earl A. Westervelt; 6, 8, 10, Commerce Department; 11, Maurice Otis; 12, Penn. Fish Commission; 13, Penn Fish Com., R. C. Zilliox; 14, Nick Drahos; 17, A. C. Petty; 18, Earl McGuirk; 28, Norman J. Curtis, Irving; 29, Curtis, Irving, P. W. Fosburgh; 30, Olean Times Herald, Sheff Studio, Hamburg; 34, Daniel Berry, Irvington; 35, 39, Al. Tucker; 38, Floyd Dobert, Taberton; third cover, Clayt Seagears.

Canoe Craft

THE most romantic and picturesque of all popular floating craft in America unquestionably is the canoe—that fickle feather of the wind and silent prober of still places. Stubborn, unpredictable and often frustrating in unskilled hands, this capricious child of wilderness waters becomes alive, efficient and joyously responsive to the knowing blade.

Except in areas where the canoe is still a major means of mobility, the art of operating paddle-craft is, we sadly suppose, losing ground. Not that canoes themselves are decreasing numerically in the public's steady surge into the widely opened spaces, but for every thousand canoes there may be only a dozen paddlers who can run a straight course without interrupting the rhythmic dip of the blade to steer the blame thing back on line.

There are even less who, as solitary paddlers, can drive an empty canoe where they want to in the wind. And there are fewer than that who can pack a canoe with water-perishable food and gear and take it far from supply lines on a long white-water trip with the probability of several sinkings and even bustings without undue worry.

There are those, of course, who always will embark on such trips without proper preparation and skills — and still not worry. May such carefree souls come out the other end in one piece—or at least in pieces fit for reassembly.

And, boys and girls, the voice of experience speaks. For we have come out the other end and many times in pieces which could be assembled. The trouble is that the fit still remains, among our friends, a substeantial question of reasonable doubt.

The experienced, skilled canoe man puts great dependence on the safety of his craft. He has tamed its temperament by never taxing its limitations. He knows how to occupy it and how to motivate it. He knows the safest course under conditions existing or potential and he never takes a chance. He can't afford to.

Those who use canoes the most—the guides, trappers and other woodsmen of the Canadian bush—seldom know how to swim!

Once in a while, a good canoe man *does* take a chance. Like Chimp-Chest MacDougall, alias Peachy-Face.

Peachy, an untamed and insatiably independent character, quit lake trout fishing long enough one Summer day to enter an Adirondack guides' contest, based on decathlon-type wilderness skills.

He did well. He was second to Moose Marceau, the leader, up to the last event—the Adirondack Special—in which each contestant could demonstrate some individual skill, the nature of which he kept secret until the last minute.

Moose birled a log while taking his pants off. Naturally he got a big hand.

Finally came our hero's turn. Head Judge Pedersen took from his pocket the official sealed envelope in which Peachy's act was revealed, tore it open, adjusted his glasses and bellowed through his megaphone:

"Mr. Colin MacDougall says he will demonstrate how to best load a canoe."

Instantly Peachy appeared around the bend and shot his little 12-foot craft into a chute of fast water. Reclining on a blanket and some boughs up front was his load—the Judge's daughter. She wore a white bathing suit and was pretty as a frosted spruce at sunrise.

The crowd was loud with cheering laughter.

Then Peachy deliberately upset the canoe, came up expertly under the giggling girl and waded ashore with her on his shoulders.

"Yuh load it," he shouted, "so's when yuh upset, yuh don't lose nothing valuable."

Literally, there's a special twist to the art of canoe paddling.

When the average paddler in the stern pulls his blade through the water, the canoe moves ahead. But it also turns more or less sharply according to the amount of beef on the stroke. So the paddler holds the blade in the water like a rudder long enough to steer back on a straight course. Thus the stroke pattern usually is something like—paddle, paddle, paddle, steer, paddle, paddle, s-t-e-e-r.

That ain't the way to do it. A stern paddler, alone or not, should rarely, if ever, have to stop stroking to steer. This is done, rhythmically, *unhesitatingly* with each stroke. It makes paddling easier, straighter, faster, safer.

The paddler reaches ahead with the blade, dips it at right angles to the canoe and starts pulling it through the water as normal. But—and here's where the trick comes in—the *withdrawal* is accomplished with a quick little clockwise twist of the blade, sharp enough to catch the water and shove it sideways from the canoe. The movement should be just strong enough to counteract the turn of the bow and it should be accomplished while the lower end of the paddle stem is still close to the canoe . Do this. Stand up and swing your arms as though paddling. Keep swinging in rhythm. Your bottom fist (the one that holds the paddle just above the blade) goes just a little bit behind you. Now, just as it gets even with your side, quickly twist the wrist inward (so that the *near* edge of the blade would turn to the rear) and follow through the next few inches (six or so) of the *normal* paddling motion with a slight *outward and upward* thrust. Don't change your orignal rhythm *at all*. Try it with a broom.

You're in business. Also you probably looked pretty silly.

If alone in a canoe in the wind, always sit or kneel sufficiently forward to bring the whole bow down into the water, thus neutralizing its wind desistance.

A bow-heavy canoe can't be steered properly. If the bow paddler is much heavier than the man in the stern, he should move back enough to trim up the craft.

When a canoe with a single paddler is heavily packed, the bow keel should show above water. A foot would be about right.

A non-swimmer never should go—or be taken—by canoe in drownable water without an adequate life preserver *attached*. Handy life preservers in canoes make sense anyway. So do extra paddles, especially when lashed by a string so they're always available. A sudden squall and a lost paddle are bad company.

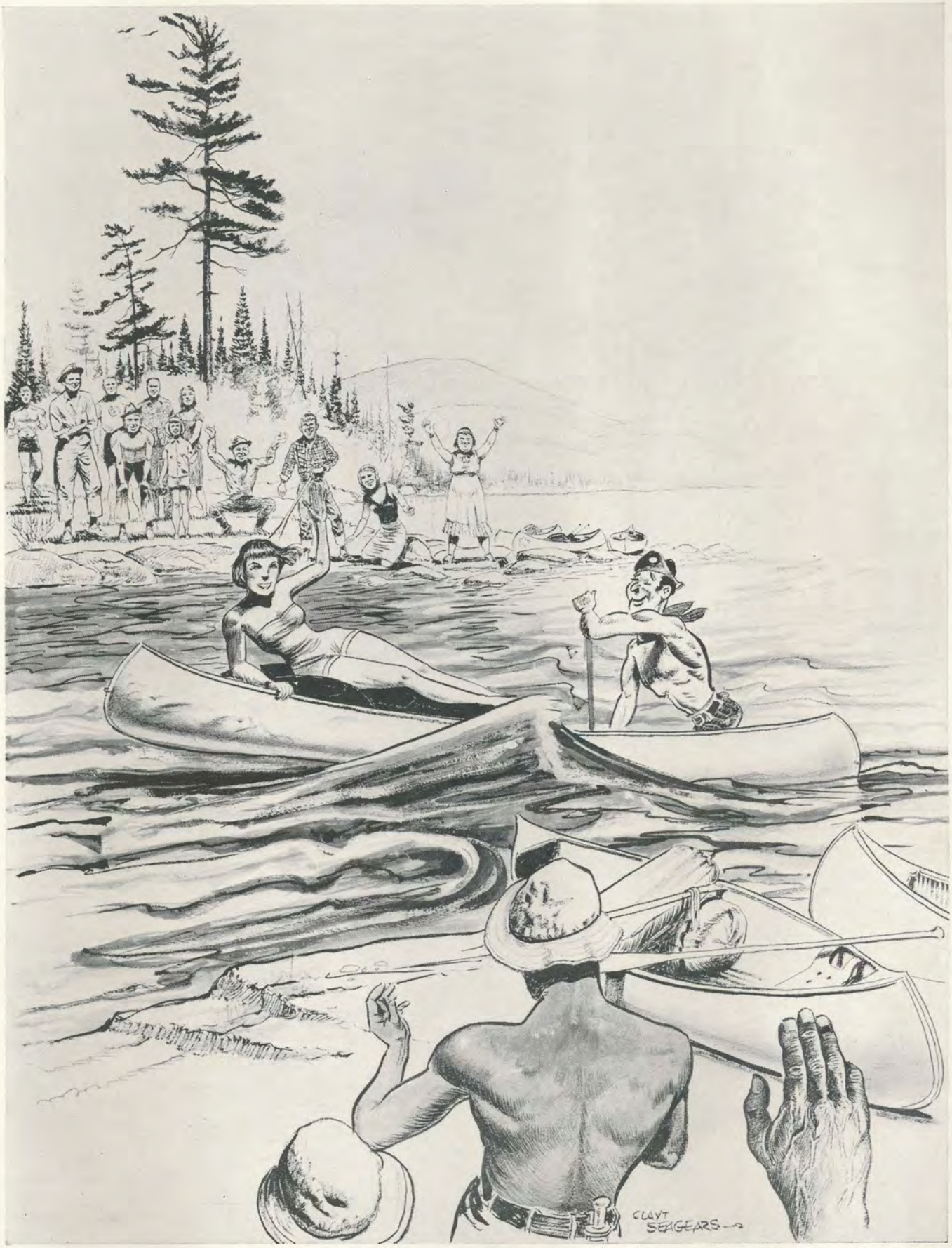
Most canoes available today won't sink—or aren't supposed to. Make certain. Even if it floats, so what—if the wind blows it away from the person in the water. That happened to us once, two miles from shore on a big Northern Quebec lake. We were stupid, then lucky. Now in wide water, we're always attached to the thing with a rope. Under such conditions we also make pretty sure that the outfit won't go straight down.

On a long canoe camping trip it makes sense to pack all perishables in waterproof bags within waterproof bags, so that the stuff absolutely won't get wet if submerged. This is *extremely* hard to do. If you don't believe this, try it with a loaf of bread. And really sink it, so there's typical water pressure.

Here's a wrinkle that'll help. Bag the stuff so that you *think* it's waterproof. Then, when packing the canoe, *don't* lash it in tight. Give it leeway of a few feet of rope. Then if the canoe *should* go under, the stuff will float free—high and dry.

Oh, yes, Peachy MacDougall won the contest. Also the girl. Quite a card was Peachy. He used to say he put his stock in the water and came out with watered stock. Like the man said—she owned a string of wishing wells.

—CLAYT SEAGEARS



Chimp-chest MacDougall wins the Adirondack Guides' contest by demonstrating the best way to load a canoe