NEW JERSEY Outdoors

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Winter 1993

Rediscover New Jersey's Famous Firsts • Find the Hidden Clues in Plant Identification
Know What's in Your Drinking Water • Attract Birds to Your Back Yard
Put the Environment at the Top of Your Holiday List

ACRYLIC PAINTING BY ROBERT GOETZL

A light snow begins to fall at dusk in this painting by Robert Goetzl of Lyndhurst, Bergen County.

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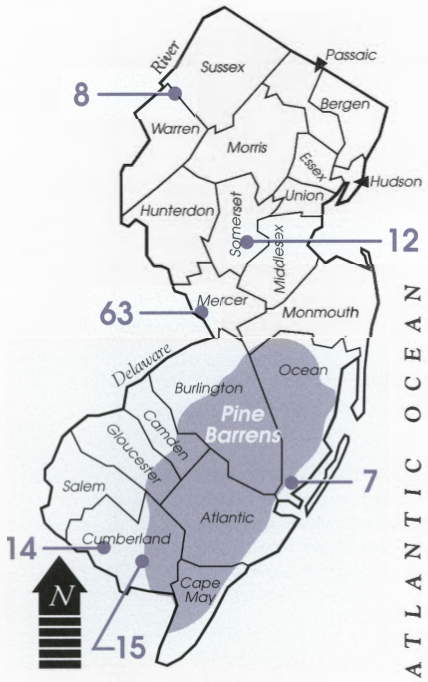

Departments

Covers

Front: Waves crash against the beach at Point Pleasant on a winter's day. *Photo by Herb Segars*
Back: *Photo by Tom Till*

Features

Winter brings a quiet beauty to New Jersey landscapes, such as here along Route 46 near Belvidere, Warren County. For more photos, see pages 32 through 37.

JAMES M. STAPLES

Editorials

Jim Florio
Governor

Let's Raise a Glass to the New Year

With winter upon us and a new year about to begin, I'd like to share some good news with all New Jerseyans. In 1993, New Jersey will enforce strict new federal laws to test and protect the quality of the water that we drink.

For years, New Jersey has had more stringent drinking water standards than required by federal law. The result has been a significant decrease in the percentage of New Jersey water supplies with contamination above our own strict levels. Now the federal government has enacted additional mandatory public tap water testing, and New Jersey's standards of purity will be even stricter.

Under the direction of the Department of Environmental Protection and Energy, we have created strong enforcement and regulatory programs. They are designed to protect both our river and aquifer drinking water sources and the resulting tap water that we drink. The new federal water quality standards will encourage a closer working relationship between our state and federal agencies on water quality issues. In 1993, water systems will be tested for an increased number of chemicals and will be required to meet additional evaluations on how well-protected their source waters are. We will maintain high-quality programs to test for an even wider range of pollutants.

Pure drinking water is essential to good health and especially important for New Jersey's children. When you turn your tap to pour a glass of water, we want you to know that you are drinking the best. This winter, we're taking an important step forward to protect the quality of our water and the health of future generations. And that's a great way to ring in the new year.

Scott Weiner
Commissioner

Education Key to Environmental Efforts

If future generations are to meet tomorrow's crucial environmental challenges, we must plant and nurture the seeds of lifelong environmental responsibility in young people today. That is why we have established the second New Jersey Commission on Environmental Education. This commission is developing a statewide plan for increasing public understanding of the impact each of us has on the environment. It will provide a blueprint for making environmental protection a part of our daily lives, in the classroom, on the job and in the marketplace. Ultimately, the commission's work will help instill environmental understanding and values that will translate into improved environmental protection in the years to come.

The commission's 26 members represent 21 professional fields and five state agencies. In addition to the Department of Environmental Protection and Energy, these include the Environmental Prosecutor's Office from the Department of Law and Public Safety, and the departments of Education, Health and Higher Education. Louis Iozzi, professor in the Department of Natural Resources at Cook College, Rutgers University, is chairing the commission, which now is surveying the status of environmental education across the nation.

I have asked the commission to submit its report, "Environmental Education in New Jersey — A Plan of Action," to Governor Jim Florio by Earth Day, April 22, 1993. I look forward to working with the commission to develop an action plan that will help all New Jerseyans learn about the choices we can make every day to improve the environment and the quality of life for generations to come.

Members of the educational community and concerned citizens are welcome to comment on the education plan at our public hearings scheduled for January. For more information, please write to the Environmental Education Program, Office of Communications, Department of Environmental Protection and Energy, CN 402, Trenton, N.J. 08625-0402, or call (609) 777-4322.

State of New Jersey
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Governor

Department of Environmental Protection and Energy
Scott Weiner
Commissioner

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New Jersey Outdoors
Winter 1993, Vol. 20, No.1

This publication is dedicated to promoting and encouraging the wise management and conservation of our natural, cultural and recreational resources by fostering a greater appreciation of those resources, and providing our residents with the information necessary to help the Department protect, preserve and enhance them.

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Mailbox

Expand Recycling

I am interested to know why recycling is unavailable or not required by law at certain places. I live in a cooperative complex with over 100 units and there is no recycling. The board members will not undertake to do it voluntarily. Additionally, I have learned that certain restaurants do not recycle. Please advise me why recycling is not required across the board and whom I may contact to change this policy.

Susan L. Victoria
Tenafly

Sandra L. Huber, chief of the Office of Communications in DEPE's Division of Solid Waste Management, responds:

The New Jersey Mandatory Source Separation and Recycling Act of 1987 mandated municipalities adopt ordinances requiring all residents and commercial establishments to separate designated recyclable materials from their trash. The state's overall recycling program has been very successful. New Jersey currently recycles 50 percent of its total waste stream, well on its way to achieving its goal of 60 percent by 1995. Some municipalities, however, have been slow to enforce the recycling ordinances as they apply to multi-family developments. Multi-family units often contract for garbage collection separate from single-family residences and therefore require the establishment of a separate system for collection. Municipalities have historically placed a greater emphasis on increasing the participation rates of single-family dwellings. Subsequently, recycling programs in multi-family units have not developed as quickly as in single-family developments.

The Department of Environmental Protection and Energy recognizes the challenges municipalities face in establishing effective recycling programs in multi-family units and is poised to launch a statewide public information and education campaign specifically aimed at expanding recycling in these places.

Restaurants that are not source separating recyclables should be reported to your municipal recycling coordinator for investigation. It should be noted, however, that a restaurant may be exempted from the source separation requirement of the local ordinance if it can provide documentation that its contracted waste collector will separate and market the recyclables prior to disposal.

I urge you to contact your local recycling coordinator for more information regarding the program in your municipality.

Missing an Issue?

Back issues of **New Jersey Outdoors**, when available, may be obtained at a discounted price of $3. To order copies, call 1 (800) 645-0038.

Praise for Ranger

On Saturday, September 12, I had the pleasure of visiting Island Beach State Park. To tell you I was favorably impressed with the entire facility would indeed be an understatement of some magnitude. There were three of us in our party and we had praise for everything we saw; to our delight, several red fox made their presence known, and that in itself was sheer delight.

Upon our return to Haddonfield, we stopped for dinner and I opened my purse, only to find I'd lost my wallet. We immediately called the police and were informed that the park administration building was closed, and were told to call back the next morning. Quite naturally, I spent a very dispirited night after such a lovely day. When I called back the next day, I was told that my wallet had been found by Ranger Joe Przygocki and that he had locked the wallet in his locker for the night. We promptly made a return trip to the park.

Ranger Joe returned my wallet and informed me it had been found by another visitor to the facility. The woman simply turned the wallet over to the ranger and was on her way. Ranger Przygocki would not accept any type of reward for his deed, and I felt the need to tell someone about his kindness. We certainly enjoyed meeting him and were delighted with all the bits of information he afforded us about Island Beach State Park. It was fulfilling to realize there are still so many honest people among us.

As we left the park and the beach for the second day in a row, we were all even more impressed with the exceptional facility New Jersey has to offer. We all left feeling great pride in our home state and sincere warm feelings for Ranger Joe.

Not as a mere afterthought, many thanks to the lady who found my wallet and saw that it reached the proper authorities.

Dolores Goldthorp
Haddonfield

New Jersey Outdoors welcomes letters to the editor. Please include your name, address and daytime telephone number. Our address is NJO, NJDEPE, CN 402, Trenton 08625-0402. We reserve the right to edit letters for length and clarity.

More Therapy Programs

I want to commend you on the fine article on horticultural therapy in the Fall 1992 issue. It is truly a worthwhile therapy that helps many people lead more satisfying lives.

I would like to make you and your many readers aware of two other horticultural therapy programs that are ongoing in the state. Morris County Park Commission runs a therapy program at the Frelinghuysen Arboretum. The Rehabilitation Institute of Morristown Memorial Hospital, through the Therapeutic Recreation Department, has had raised garden beds since 1989 and now offers adaptive vegetable gardening for patients who wish to continue their hobby at home after discharge.

Robert Rizzie
Certified recreation specialist
Morristown Memorial Hospital

Toll-Free Number

New Jersey Outdoors has a toll-free number for subscription information. The number to call is: **1 (800) 645-0038.**

Take Stock During Winter Doldrums

PHOTO BY AUTHOR

Bagworm bags look a little like pine cones and often are missed when searching for pests. This one is on a blue spruce.

As lazy drifts of snow collect along the curb like puffs of cottony poplar seeds, inveterate gardeners dream of warmer weather and the first signs of snowdrops. Winter is upon us. The last tomatoes are being harvested from the upside-down plants in the stairwell, late November fertilizer has prepared the lawn for spring growth and the newly planted evergreens have received their anti-desiccant spray to protect them through the cold, unpredicatable days of winter.

But now what? Well, for New Jersey gardeners who aren't content to gaze forlornly out the window, there's still plenty to do.

Check Out the Landscape

Taking stock of the landscape in a leisurely manner is possible now. Residents can check which plants are overgrown and need to be pruned or replaced, which are inappropriate for their location because of size or improper growth conditions, or which are pest-infested. When standing across the street looking at your entire landscaping, you may be surprised to note that the cute little arborvitae is now covering the whole dining room window, that the junipers are being shaded out by the maple tree, that the rhododendron has more stems than leaves, or that several of the sycamore branches are draped on your roof.

A new landscape plan can be drafted. There are many plants available that are pest-resistant, low-maintenance or water-conserving to replace problem shrubs, trees and herbaceous materials.

When selecting new plants for your yard, bear in mind that the plants most likely to be infested or to have problems include arborvitae, azalea, rhododendron, white-bark birch, boxwood, flowering dogwood, crab apple, holly, juniper, pine, hemlock and cherry. (How many of these are in your yard?) Instead of using these plants exclusively, add some lesser-known, but extremely attractive ornamentals that are less likely to need spraying, including the Kentucky coffee tree (*Gymnocladus dioicus*), red-veined enkianthus (*Enkianthus campanulatus*) and sourwood (*Oxydendrum arboreum*). A pest-resistant fact sheet and information on other environmentally responsible and useful plants are available from the Rutgers Cooperation Extension office in your county or at the library.

Gone — or going — are the days of the perfectly manicured shrub-and-tree-only designs. Include in your design annual and perennial flower borders that not only are aesthetically pleasing, but also attract beneficial insects that feed on pollen and nectar and parasitize pest insects.

Use this season to look for pests or eggs that escaped notice earlier and can be hand-picked or pruned on the spot. Some pests can be sprayed with dormant oil in early spring, a control that smothers overwintering pests and eggs, but does not harm beneficial insects. Winter identification of pests and planning for relatively safe controls can prevent or reduce the later need for "the big guns," such as chemical pesticides.

Add a Compost Bin — or Two

Recycling has been in the news almost daily, and more New Jersey residents are heeding the call of prudent Americans of the past: "Use it up, wear it out, make it do or do without." Even in winter, one way we can use up the trash of yesterday and turn it into a usable product is by composting. Those piles of autumn leaves and yard trimmings, plus fruit and vegetable scraps, coffee grounds and egg shells, can be put to good use to produce compost to enrich future and present gardens.

Composting is not particularly complicated or new. Nature has been recycling trees, dead insects, leaves, rodent bodies and other organic leftovers for thousands of years. Anyone who has ever walked through the woods

and has scuffed away the surface layer of pine needles and fallen leaves has seen the dark, crumbly organic layer that continually nurtures woodland plants without any help from man.

We can simply collect recyclable organics in a pile and let nature take care of them, but a bin can make the process neater. Compost bins can be built from lumber, wire fencing, snow fencing, cinder block or just about any material the creative gardener has on hand, or it can be purchased ready-made. The length, width and height can range from 3 feet all around to 5 feet around. These containers can be placed in an area that drains well and has partial shade or some protection from the drying sun and winds. Given

A compost bin can be built from just about any material the creative gardener has on hand, or it can be purchased ready-made.

moisture, oxygen and time, materials to be composted will be broken down by microscopic bacteria and fungi to form a rich black humus that is an ideal soil conditioner.

Construct the bins so that air can circulate in the pile. Wire sides, spaces between slats or holes in cinder block will allow air movement. Placing small branches or stems at the base of the pile will let air in from the bottom and allow the pile to drain. Any size organic matter eventually will decompose under the right conditions, but the smaller the particles, the faster the decomposition. Nitrogen is necessary to break down carbon, so incorporating "green," or high-nitrogen, materials such as grass clippings, weeds and kitchen scraps will help break down "brown," or high-carbon, materials such as fallen leaves, wood chips and shredded paper. Mixing these materials by equal weights will create the best environment for decomposition, but is not absolutely essential. Keep the pile as moist as a wrung-out sponge, turn it every two weeks or so to keep it aerated and soon you'll have compost.

Although all organic materials will decompose, do not put meat products, grease, dairy products, used cat litter, weed seed heads or diseased plants (especially tomato) in the compost bin. This will reduce animal visits to the bin and prevent reinfestation of the garden in the future.

Building two, or even three bins next to each other provides one for fresh green and brown matter, one for

The **Do's** and **Don'ts** of a Compost Pile

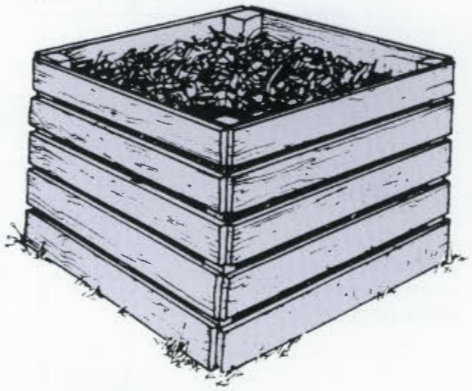
Do compost these items:

Aquatic weeds
Bread
Coffee grounds
Eggshells
Evergreen needles
Fruit
Fruit peels and rinds
Garden weeds and trimmings
Grass clippings
Leaves
Paper
Sawdust
Seaweed
Straw
Sod
Tea leaves
Vegetables
Wood ash
Wood chips

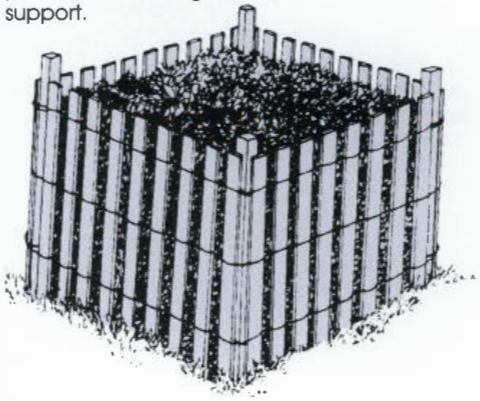
Don't compost these items:

Butter
Bones
Cat manure
Cheese
Chicken
Dog manure
Fish scraps
Lard
Weed seeds
Diseased plants
(especially tomato)
Mayonnaise
Meat
Milk
Oils
Peanut butter
Salad dressing
Sour cream
Vegetable oil

A compost holding unit can be built inexpensively by using wooden pallets.



A snow-fence compost bin works best with four posts pounded into the ground for support.



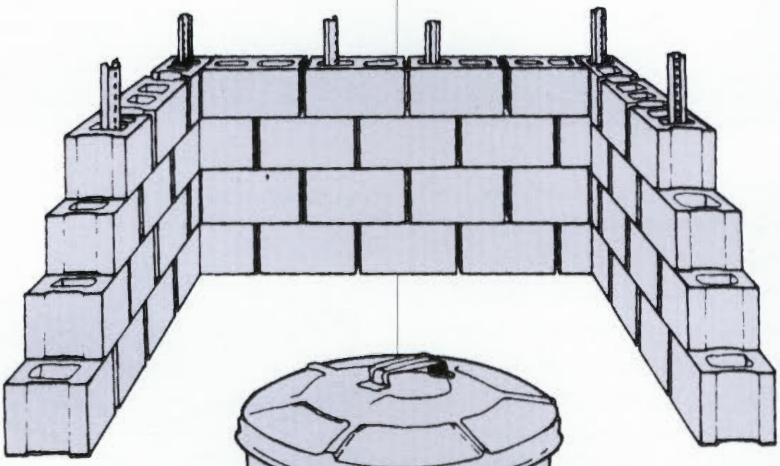
partially decomposed materials and possibly a third for finished compost. A larger amount of composting matter can be aerated easily by shoveling it into the next bin over.

Learn More on the Subject

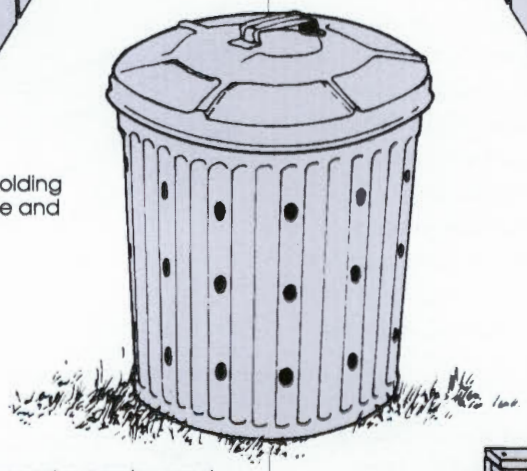
New Jersey's gardeners can spend much of the winter improving their gardening skills and knowledge. Courses are offered throughout the season in many colleges, universities and high school continuing education programs. To find out what is offered in your county, call or write your local community college or board of education, requesting their catalog of credit and non-credit classes. Some counties have or are planning Master Gardener programs, in cooperation with Rutgers Cooperative Extension.

Snowy, blustery days can be spent browsing in new and used bookstores, in catalogs and magazines, and in libraries for additional information and ideas. Enthusiasts can also visit arboretums, botanical gardens and flower shows to learn and for a winter pick-me-up.

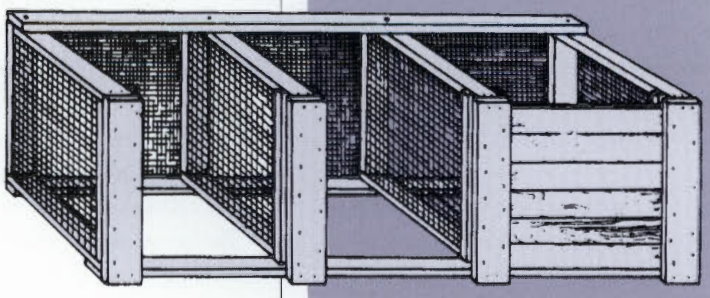
By Barbara J. Bromley, a horticultural consultant from Hamilton



A concrete-block holding unit is sturdy, durable and easily accessible.



A garbage-can composter can be used for food or garden waste. The waste does, however, need to be turned.



A three-bin turning unit of wood and wire can be used to compost large amounts of yard, garden and kitchen waste in a short time.

ILLUSTRATIONS REPRINTED WITH PERMISSION FROM "COMPOSTING TO REDUCE THE WASTE STREAM" BY THE NORTHEAST REGIONAL AGRICULTURAL ENGINEERING SERVICE

Some Final Tips

If there is still time left, here are some other activities:

- ❑ Buy cool-loving flowering house plants, such as primrose, cineraria and cyclamen, for a splash of winter color. Take one to a friend or shut-in.
- ❑ Clean and sharpen tools and equipment so they will be ready to use in the spring.
- ❑ Collect catalogs and place orders early.
- ❑ Put those forgotten spring flowering bulbs in the refrigerator until the soil thaws sufficiently to plant them. (Even bulbs planted as late as March will be happier in the ground than in your garage.)
- ❑ Avoid the spring rush. Have your soil tested now.
- ❑ After the ground freezes, mulch strawberries, bulbs and perennials with salt hay or evergreen branches. This helps protect the plants from frost heaving and premature growth during a mid-winter thaw.
- ❑ Feed the birds and supply fresh water for them. Many will continue to frequent your yard during the growing season to feast on insect pests and slugs.

Estuaries Provide Critical Habitats

Estuary systems in New Jersey are important habitats for a variety of fish species, according to the findings of a team of researchers from the Rutgers University Institute of Marine and Coastal Sciences.

The marine biologists, working from the institute's Marine Field Station in Tuckerton, embarked on a study in 1988 to determine which habitats are important for which species, and the degree of importance of these habitats to the fish populations.

Such a dearth of information was "really quite surprising since some estimates indicate that two-thirds of the fishes that we harvest either in commercial or recreational fisheries may be estuarine dependent," says Dr. Ken Able, director of the field station.

After feeding on plankton in the ocean, young fish often settle in estuaries — where saltwater from the ocean meets freshwater draining from the land. The estuaries seem to offer protection from predation and foster growth of these young fish.

Summer flounder larvae, which enter the estuary in winter, have some of the fastest growth rates for the species — two millimeters per day, or more than an inch every two weeks.

Able says the summer flounder, or fluke, grow up in extremely productive salt marsh creek systems, where there is a plentiful amount of food. The juveniles move in and out of the creek with the tides to feed.

"When we began the study, the general belief was that important nurseries for summer flounder were further to the south, in North Carolina and Chesapeake Bay," says Able. "We've shown unequivocally that summer flounder do use New Jersey estuaries as nurseries and they do grow extremely fast here."

The researchers also have found that black sea bass use estuaries, but settle offshore, where they seek protection in accumulations of surf clam shells.

For tautog, or blackfish, sea lettuce is an important habitat. There, they are most abundant and have the fastest growth rates, according to the study's findings.

Able and his co-workers sample in a variety of ways, using weirs and beam trawls and tagging juvenile fishes to keep track of the habitats they use and their movements. The station has a running sea water laboratory that also allows the researchers to hold fishes for further study. They collect many of their subjects at night.

"The location of the Marine Field Station has had a lot to do with our progress to date," says Able. "We are immediately accessible to all the habitats we want to study."

By focusing the study in the Mullica River-Great Bay Estuary, the institute is using one of the cleanest estuaries in the region as a baseline for its work.

"We consider this to be the least disturbed estuary in the Boston to Washington (D.C.) corridor," says Able. The researchers currently are seeking additional funding to expand the study to more stressed systems, such as in the Hudson and Raritan estuaries.

"By comparing similar habitats in stressed and unstressed estuaries, we can begin to get some understanding of habitat quality for many economically important species," says Able.

The study has been funded by research grants from a number of organizations, including New Jersey Sea Grant, the state Department of Environmental Protection and Energy, and the Fisheries and Aquaculture Technology Exchange Center. Currently, researchers are seeking additional funding through private foundations, Able says.

Already, the study has provided insight into what controls the abundance of some of the species most popular for harvesting, whether commercially or recreationally, Able says.

It also has supported beliefs long held by marine researchers that the more development along the coast, the more threatened many of these species are.

"Everybody in the United States seems to want to live on the coast. There's a lot of pressure to expand development there," says Able. "With summer flounder, we've shown if you eliminate a salt marsh creek, you eliminate a summer flounder nursery. You do enough of that and you won't have summer flounder. We now have unequivocal evidence these creeks are critical habitats."

By Dory Devlin, a reporter for the Star-Ledger of Newark

A micro-tag is applied to a juvenile black sea bass for studies of fish movements in estuaries.

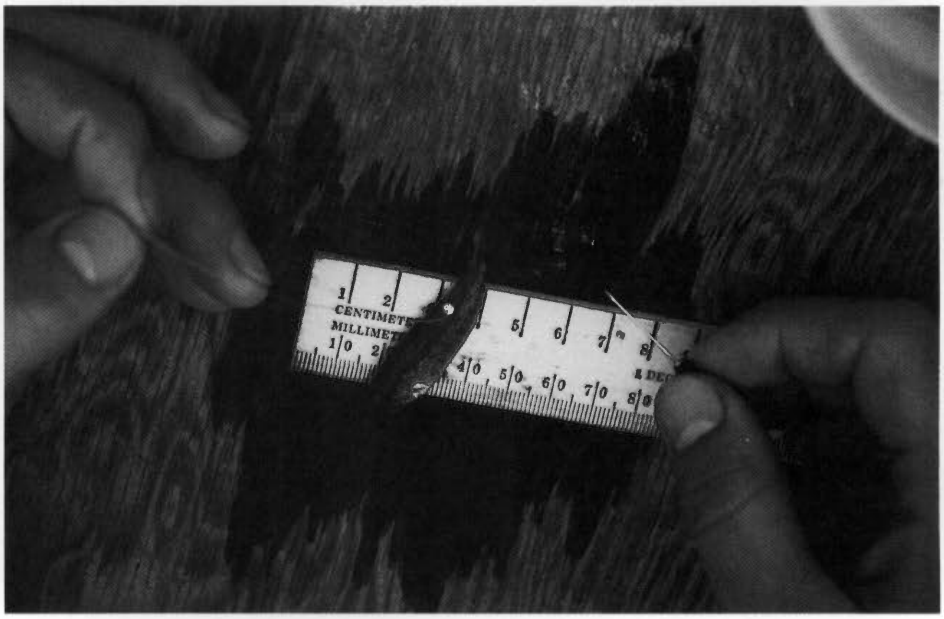


PHOTO BY AUTHOR

On the Trail of Donkeys

The scrunch of metal-rimmed wheels on gravel, the creak of a leather harness, the squeak of a dry wheel bearing, the clop-clop of horses' hooves as they haul the load — all seem to emanate from the shadow of the woods road as we trudge along Donkey Hollow Trail, once known as Donkey Hollow Road.

Donkey Hollow Trail — the name conjures up visions of the Old West, but reality situates the old road in New Jersey's western Warren and Sussex counties.

Headed toward Millbrook, the wagon might be carrying hides, farm produce, lumber, railroad ties, hand-woven rugs, wool, leather or sundry other items gathered or created in the sparsely settled area bordering the road, which runs in a northerly direction from the now-reconstructed village of Millbrook.

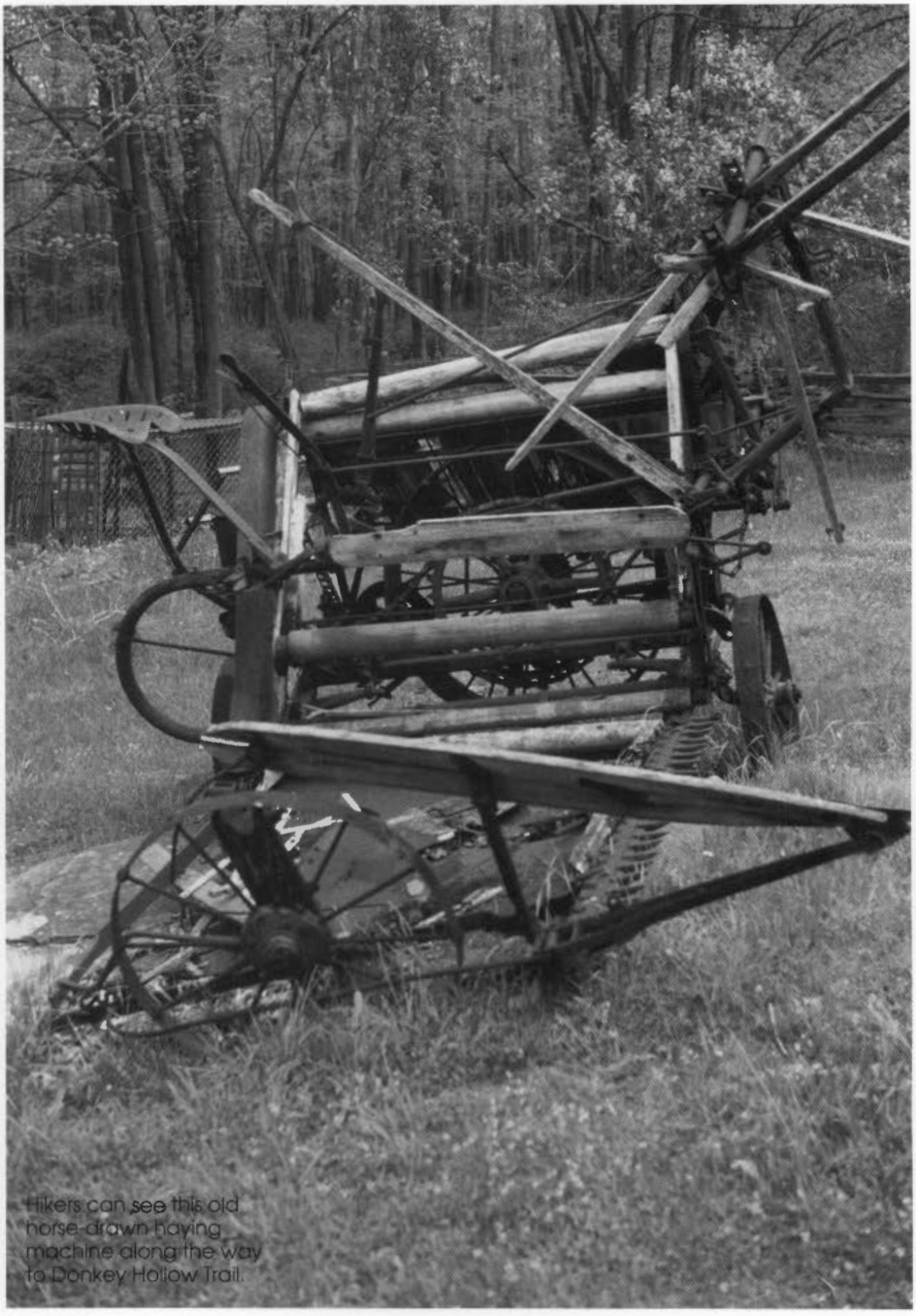
Established by a scattering of settlers during the first quarter of the 1800s, Millbrook became the hub of business and social life in the little valley, and by the 1860s, featured a gristmill, a hotel, a blacksmith shop, a merchant, a shoemaker and a distiller, plus peripheral home industries such as weaving, rug braiding and other cottage industries. The automobile and the supermarket still were waiting in the wings.

At Millbrook, Donkey Hollow Trail splits from the Old Mine Road, which veers northwest on its way to Flatbrookville, beyond a steep mountain. The trail starts a few hundred yards north of the village and intersects Stillwater-Flatbrookville Road about two miles north of the village.

We have just left the village and started to hike along the time-worn dirt road as it follows Campen's Brook upstream. Perhaps we will discover some old homestead sites along the way. On the outskirts of the village, stonework between the brook and the trail seems to indicate some sort of water containment, possibly for the gristmill that was built in 1832. On the far side of the brook there still stands an abutment, part of the structure, while on the near side, the stones have been strewn about by high waters of the ensuing years.

Van Campen's Brook, the ultimate in clarity, has been designated by the state as a Wild Trout Stream in recent years and supports a sizable population of native brook trout. Although not very large here, the brook trout are feisty little fighters. No trout are stocked, and only artificial lures and flies are permitted, an aid in releasing the trout unharmed.

For the first quarter-mile, the road is almost flat, with remnants of old stone walls defining former fields, now grown to brush and saplings. As we walk the tree-lined trail this winter morning, the under-



Hikers can see this old horse-drawn haying machine along the way to Donkey Hollow Trail.

PHOTOS BY AUTHOR

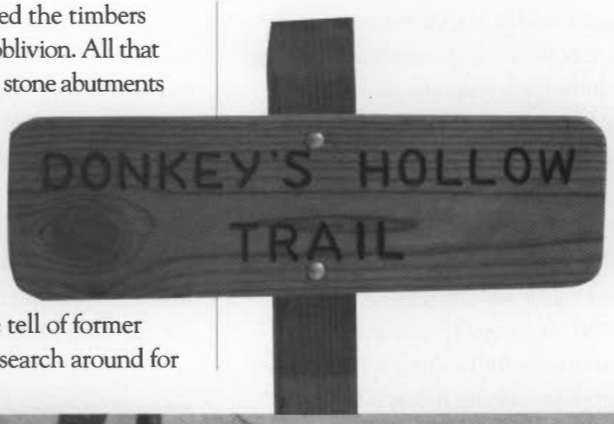
tone of the brook, purling between the stones, seems to make travel easier. Vehicular noises are conspicuous by their absence, and we conclude that the surroundings must have been equally appealing for the early settlers, while offering the opportunity for subsistence agriculture, their principal occupation.

Just before the trail starts its ascent, there is a large clearing where the big frame house, recently inhabited by Harlan Fish, once stood. Dismantled due to the threat of vandalism, the hand-hewn timbers have been stacked neatly at the edge of the old woods road and the excavations have been filled. Gnarled old apple trees at the south end of the clearing stand as a testament to the self-sufficiency of the people of those days. Apples seemed to be the prevalent source of fruit in the 19th century, and this location offered an easy approach to "downtown" Millbrook in the event of any surplus.

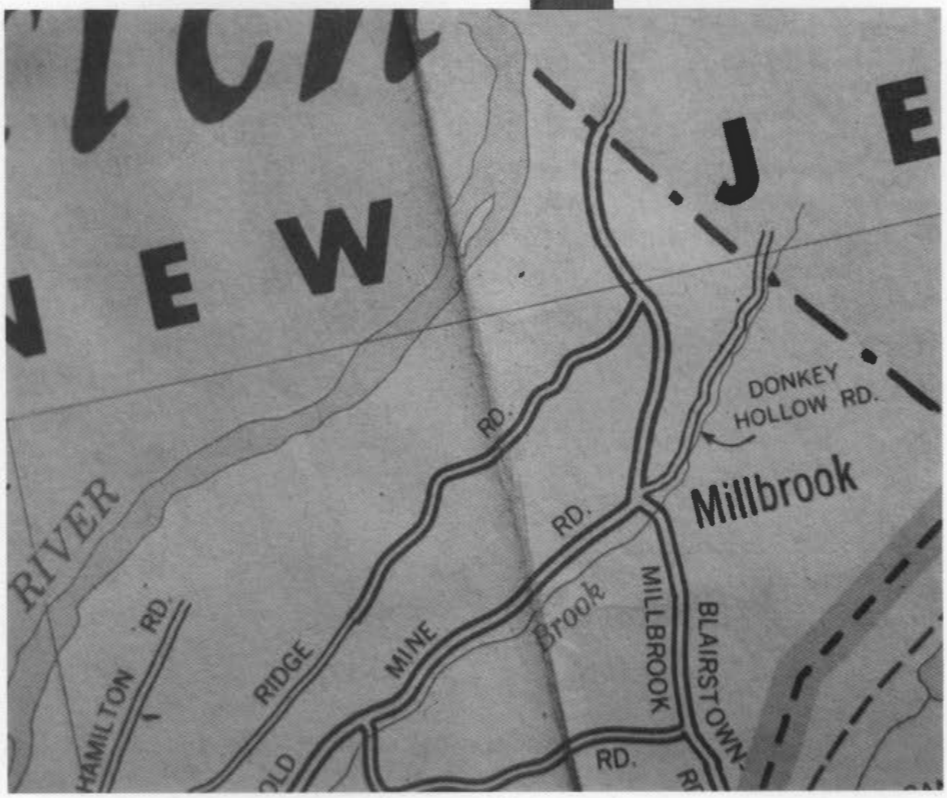
As we enter the woods again, the road begins an easy climb while the brook drops away below. In several places, springs seep from the steep hillside to the west, cross the road and trickle beneath the surface ice to the stream below. The trail crosses into Sussex County. The brook runs far below, gleaming through a dark grove of hemlocks, and we realize we have climbed quite a distance above the floor of the valley.

Descending through the stately hemlocks, we arrive at a frost-rimmed pool and are taken by the quiet of the spot. The pool is filled by a waterfall tumbling from abruptly higher ground, and we make out the remnants of a one-time dam. Possibly it was the power source for one of the sawmills along the brook, but we find no semblance of any structure, which may have been swept away in past floods.

After trying to store this scene in our minds, we climb back to the trail. The road makes a short descent to a hollow where once there was a small wooden bridge to the hilly path up the east side. We wonder if this might have been Donkey Hollow. We have caught some beautiful trout under the bridge, but flood water in recent times has carried the timbers downstream to apparent oblivion. All that remains today are the two stone abutments — and the trout.



Retracing our steps to the nearby trail, we poke around on the opposite side where more old stone walls and piles of stone rubble tell of former habitation. Curious, we search around for a water source and eventually discover an old dug well, perfectly lined with moss-covered stones. What might have been a barnyard has grown up in vines, trees up to 10 inches in diameter, blackberry bushes, shrubs and patches of now-dead grass. We reflect on the endless hours of toil involved in clearing fields, hauling wood and using stones to form boundaries. But that was in an era when today's press for time was yet to be realized. Work was right outside the door and commenced at dawn and ended at dark.



Donkey Hollow Road (now trail) is just north of Millbrook on the map.

The trail angles more toward the northwest now and climbs steadily as we leave the brook for the last time. We now are in Walpack Township, and the hemlocks, which follow the brook, give way to mixed hardwoods with a scattering of cedars. On the west slope, the ever-present stone walls form geometric patterns.

The road levels off and we stop to look at two parallel stone walls that define an overgrown wagon road leading to an abandoned farm in the valley to the east. We sense we are being watched and discern the outline of a doe as she stares intently in our direction. Uncertain, she flicks her tail, wheels

and departs with a few effortless bounds.

The way slopes down to the north now and we anticipate reaching Stillwater-Flatbrookville Road. A few hemlocks are interspersed with the second-growth hardwoods on the west side of the trail, and we surmise we are on the Flatbrookville side of the ridge. Investigation of a more-or-less level area to the left brings us to some more small clearings. Hemlock bark was used extensively for tanning leather in the 1800s, and we wonder if this is how the clearings were created. To the southeast, near Vancampen's Brook Valley, an 1860 map of Walpack by G.M. Hopkins Jr., C.E., shows the Jason Hill Tannery.

We had heard that donkeys or mules were used to snake logs out of the woods for railroad ties and possibly to haul loads of hemlock bark from the sites where the trees were felled and barked. From the quiet recesses of the evergreens, one might hear the "gee" (to the right) and "haw" (to the left) of yesterday's mule skinner as man and beast struggled to wrest raw materials from the forest. This sort of effort must have occasioned a sizable population of donkeys up in the valley, hence, we conjecture, the name "Donkey Hollow Road."

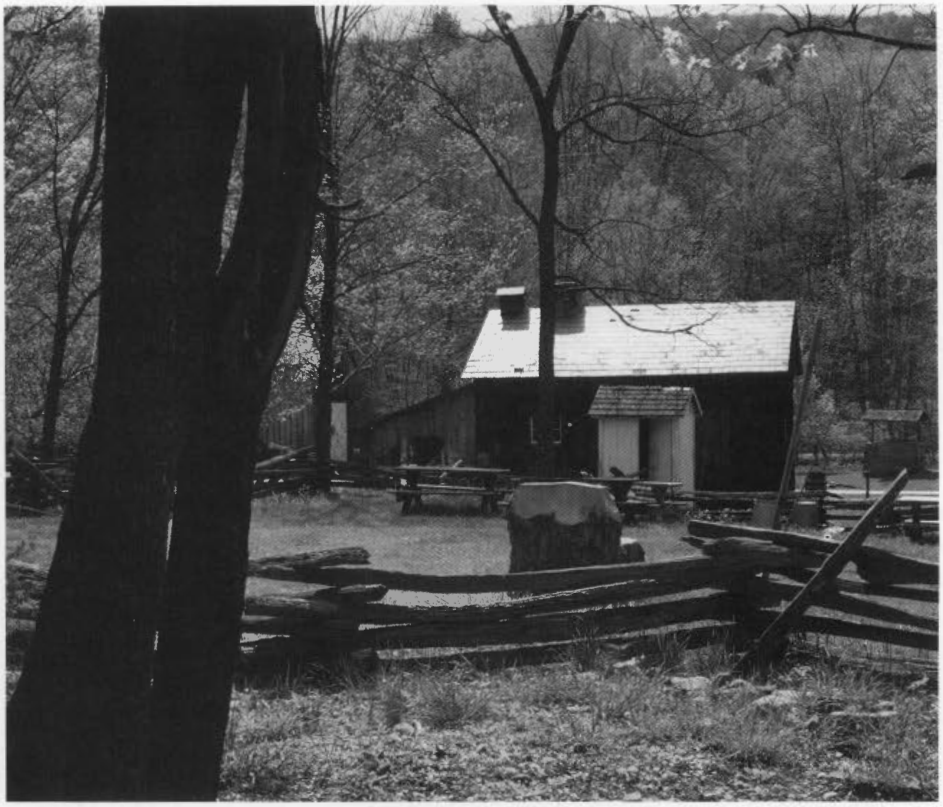
> We sense we are being watched and discern the outline of a doe as she stares intently in our direction.

Donkey Hollow Trail offers interesting possibilities for cross-country ski touring provided there is adequate snow. Six or eight inches are needed to cover some of the rocky hills, and there is no grooming of the trail — you are on your own. It is wise to have a companion along and to be a little circumspect on the steeper, rocky inclines. Snowshoes offer another pleasant mode of travel in the deep snow. Both means of quiet travel increase the chances of observing wildlife at close range.

We return to the trail and continue northward a short distance where we abruptly meet Stillwater-Flatbrookville Road. We admire the clear blue sky from our elevated situation as we break for a trail snack, soak up the quiet, then turn to start the return trip. After a short and easy climb, we start the descent to Millbrook. It is downhill most of the way, perhaps nature's compensation for effort expended.

As we trek along, our fancy meanders through the rugged woodlands. High on the ridge, we can hear the resounding metallic "clunk" of an ax biting into a tree trunk, soon followed by the "swoosh" of the branches and the "whump" of the trunk as a potential woodpile crashes to the ground. Farther downhill, a man at the reins bellows orders to a team of horses straining to snake a log through the woods.

To the south at the far end of the trail, we glimpse the village, with the white church in the distance. At the outskirts of the village there are displays of old farm and woodland equipment as we make our way to the car and return to the world of reality. Our trip up Donkey Hollow Trail has offered a perspective into life as it was lived in northwest New Jersey only a century ago.



A split-rail fence at Millbrook fronts an old blacksmith shop.

We stow the camera and other gear, start the car with a flip of a switch and head for Blairstown, seven miles distant over the hill. We will be there in about 15 minutes. It would have taken that long to harness up the horses in the 1800s. As we zoom up the hill, we visualize a team struggling to surmont the steep grade and ponder what the means of transportation might be in 2093, another 100 years hence.

By Al Peinecke, a freelance writer who lives in Andover

Testing Fuels of the Future

You are sitting at a traffic light and notice the car next to you is very quiet, silent in fact. You guess it's stalled, but then notice the lettering on the side indicating that this vehicle runs on "Clean Electric Power."

Electric vehicles and vehicles powered by sources other than gasoline or diesel are no longer the fantasy cars of the future. They're on our roads now. But with the many alternative fuels available, questions remain about how to choose the best one.

That's what prompted the state to launch its alternative fuels demonstration project, which will study about 200 vehicles in the state fleet that will be powered by alternative fuels. The purpose of the project, coordinated by the Department of Environmental Protection and Energy, is to compare different fuels and determine which ones are best for particular vehicle types or uses. The vehicles will be analyzed to determine the effects on air quality, energy efficiency changes, driver acceptability and maintenance needs.

Alternative-fuel vehicles may be powered by an array of sources — electricity, solar energy, hydrogen, compressed natural gas, ethanol, methanol, propane or a combination of fuels. These vehicles don't look any different on the outside than vehicles powered by gasoline or diesel. The differences lie in the fuel tank for those that run on gas or liquid fuels, and in the engine for those powered by electricity, solar energy or hydrogen.

Alternative-fuel vehicles are cleaner burning than conventional ones, which benefits New Jersey's air quality. This is important since our residents are subject to unhealthy levels of ozone and carbon monoxide pollution certain days of the year. In fact, New Jersey is second only to California in unhealthful air quality. Motor vehicle exhaust accounts for nearly 91 percent of the carbon monoxide problem in the state and about half the ozone created from controllable sources. Even after New Jersey takes all the mandated steps to meet federal Clean Air Act requirements by 2005, it still will fall short of meeting the standards. Therefore, alternative-fuel vehicles that are cleaner-burning than those that merely meet federal standards are a good solution to the problem. In addition, use of alternative fuels reduces the dependence on petroleum, helping to protect residents from shortages and price spikes.

As part of the state demonstration project, the DEPE currently is using an electric van loaned by the Public Service Electric and Gas Company. Electric vehicles often are written off as impractical because of their limited range and long recharging time. These technology-based barriers to widespread use are the focus of extensive research and development activities currently under way. However, the DEPE has found a productive role for the electric van — using it for mail runs and other short-distance transportation needs in and around Trenton. This does not result in significant mileage accumulation, so range limitation is not a concern. And since the vehicle is not needed at night, the eight-hour battery recharging time does not pose a problem.

While at first glance this may appear to be a limited use for a fleet vehicle, imagine if all such vehicles in Trenton were switched from gasoline to electricity, or better yet, if all local-use vehicles in New Jersey's urban areas were electrically powered. The effects on air quality and energy security could be significant.

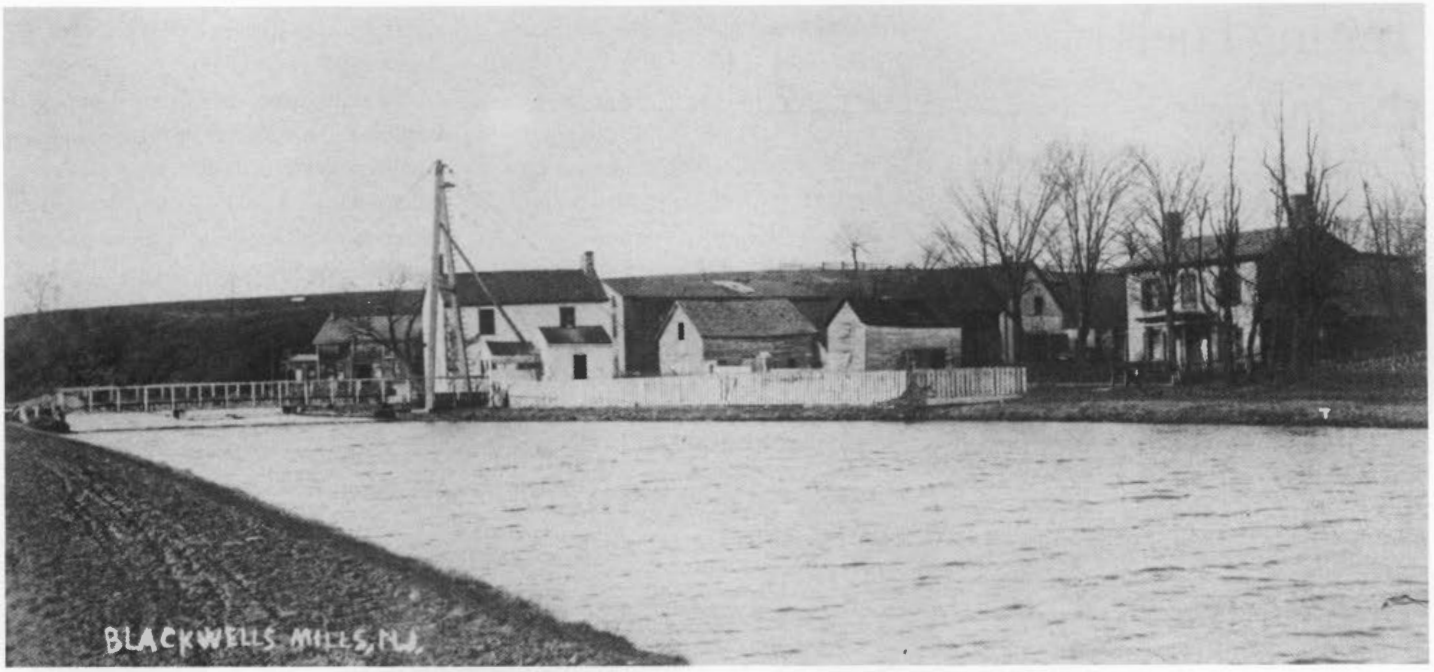
This type of scenario holds true for all alternative fuels. It is unrealistic to expect that all vehicles will be changed from petroleum-fueled overnight. Yet as we find successful niches for certain fuels — like the one for DEPE's electric van — the population of alternative-fuel vehicles will grow. This, in turn, will spark the growth of the support systems needed to fuel and maintain these vehicles and promote public acceptance.

New Jerseyans, like all Americans, have come to take gasoline-fueled vehicles and the corner gas station for granted. To change this will take time and education. The state demonstration project is one means of accomplishing this.

By Nancy Wittenberg, director of the DEPE's Office of Energy

DILIP KANE

Mike Wolf, a senior postal clerk for the state Department of Environmental Protection and Energy, loads mail into the department's electric van.



A vintage picture postcard shows the Blackwells Mills Canal House (taller white building at left), with swing bridge.

Keeping Canal History Alive

The Blackwells Mills bridgetender's house has stood along the Delaware and Raritan Canal in Franklin Township, Somerset County, for more than a century and a half, witness to the overlapping generations of canal crafts that transported goods and passengers. Mule-drawn canalboats, steam-powered tugs and luxurious yachts once plied these waters, which now are exclusively the province of frogs, fish and the occasional canoe.

The canal closed in 1933, and in the late 1930s portions of the canal were filled in, permanent spans replaced swing bridges and the future of the canal as a commercial conduit was sealed. As a final concession, the Delaware and Raritan Canal Company allowed its long-term employees to live out their lives in the locktenders' and bridgetenders' houses that flank the canal at key points between Bordentown and New Brunswick. While some of these vintage structures have succumbed to the elements or the bulldozer, a number have been restored through the persistence of a coalition of canal buffs, concerned citizens and cooperative state officials.

The bridgetender's house at Blackwells Mills, once a remote crossroads between Princeton and New Brunswick, is an excellent example of this small-scale, grassroots preservation. Until 1970, the two-story stucco house was the residence of Sandor Fekete, a lifelong canal worker who had been lockkeeper at the nearby Griggstown locks and repairman on the company maintenance barge.

Shunning modern conveniences, Fekete had lived simply in this little house, raising fruits, vegetables and tobacco for his own consumption in a small plot across the street, drying tobacco leaves on racks in his attic and harvesting grapes for homemade wine. When he died at the age of 90, the canal house was in need of restoration.

Responding to the picturesque setting and romantic folklore, a group of local residents negotiated a 10-year lease on the building from the state in 1971 and, as the Blackwells Mills Canal House Association, articulated a plan to restore the building as a historical and environmental program center, library and museum.

As part of the agreement and for the protection of the then-vacant structure, the canal house association created curator-tenant's quarters on the second floor, then proceeded to make the building more habitable by installing plumbing, electricity, heat, a septic system and telephone. In addition to a general housecleaning and a coat of paint, the association installed a new cedar shingle roof, an expense that was shared by a matching grant from the state. Later, a white picket fence was built along the street to discourage trespassers and errant motorists.

The first-floor interior consists of two cozy parlors and a kitchen equipped with a functioning wood-burning range. The fireplace in the back parlor was completely walled in until several years ago when curious association members, tracing the origin of a non-functioning chimney on the roof, discovered the brick remains in the wall. Two men cleaned and restored the fireplace and adjacent oven, then all celebrated with the first of many cook-ins featuring stews,

cobblers and other Colonial repast.

Initial repairs required substantial funds that necessitated loans from the dozen or so charter members, contributions from friends and a series of fund-raisers to repay the debts. Due to these educational and recreational fund-raising activities, the canal house association has grown over the years to approximately 200 supporters and a large number of well-wishers and contributors on the periphery.

A core of approximately 15 members meets monthly to plan and execute the canal house agenda, which includes varied and interesting events on a regular basis. According to Jim Moise, a charter member and spokesman for the organization, both the Blackwells Mills Canal House Association and the public benefit from the "Second Saturday" events held at the site nearly every month. Fulfilling its original objectives as a historical and environmental program center, the canal house is the site of canoe clinics, foliage walks, flower sales, arts and crafts shows, lectures, musical programs, hobby and collectible shows, as well as the popular cook-ins. The group's main fund-raiser is Market Day in May when flowers and flea market items blanket the back yard and visitors may purchase used books from tables on the front porch, antique treasures from the parlor and sweets from the kitchen.

On New Year's afternoon the canal house will be open for tours, refreshments and relaxation before a blazing hearth — a welcome respite from the hoopla of the holiday eve. The association also accommodates school groups on request, both on site and occasionally with classroom slide shows.

The canal house will be open on New Year's for tours, refreshments and relaxation before a blazing hearth.

BOB SLINEY

Mary Moise stokes the fire as Gladys Hansen prepares the table during a typical cook-in.

While visitors enjoy the wide-ranging calendar of events, they also delight in the site itself. The setting offers a chance to retreat in historical perspective and imagine mules quartered in a large barn in back, a quay on the berm bank where barges stop to unload lime for local farmers and take on agricultural produce for transport to city markets and, the frequent interruptions of the impatient canalboat horn, signaling the bridgetender to prepare to rotate the swing bridge.

Since the late 1970s, the canal house association has been under the umbrella of The Meadows Foundation, a nonprofit organization dedicated to the preservation of Franklin Township's history and historic sites. The canal house is further protected due to its location within the confines of the Delaware and Raritan Canal State Park, a unique recreational ribbon of 19th-century engineering and architectural relics providing a natural setting for canoeists and joggers, cyclists and equestrians.

Members of the canal house association recently have undertaken another project, renovation of the Franklin Inn on Amwell Road in East Millstone. Built in 1734 and originally known as Annie Van Liew's Tavern, the inn at that time was one of the main stops from New York to Philadelphia and was used as a headquarters by British General Charles Cornwallis for a few days during the Revolutionary War. The association has leased the first floor from the owners in return for repairing the building, according to Gene Howe, association president. The plan is to operate a used bookstore there and put the proceeds from the bookstore toward renovation costs.

For additional information, call Gene Howe at (908) 873-2958, or Jim Moise at (908) 297-2641.

By Diane Jones Sliney, a freelance writer who lives in Belle Mead

Tuned in to Nature

Every weekday morning Don Murray settles into the comfortable recliner in his living room where he waits for the phone to ring. When it does, it's his cue to offer advice on nature-related topics to callers who range from the merely curious to the somewhat desperate.

"How big is the spider?" he asked one of his recent callers who had discovered the creature in his house.

"As big as a spaniel," came the fearful reply. But after a further, less-exaggerated description, Murray was able to reassure the caller that the spider was not poisonous and posed no harm.

As host of the radio show "Outdoor World" for the past 15 years, Murray calms such fears, and educates and entertains listeners five days a week with his discussions on nature-related topics such as wildlife, hunting, fishing and history. The program, which airs on WSNJ-107.7 FM, 1240 AM, reaches seven counties in New Jersey and parts of Delaware and Maryland.

Because of severe arthritis, Murray has broadcast the show from his home in Bridgeton, Cumberland County, for the past year. But his living room is far from having a radio station atmosphere. From his recliner, Murray can look out a picture window and see a canopy of beech, hickory and oak trees shading his back yard, as well as the serene view of Davis Mill Pond. On either side of his chair are stacks of wildlife magazines and nature books to which he occasionally refers. But the resource he most frequently relies on is his own experience in the outdoors.

That experience goes back to his days as a teenager when he raised five to six snakes in his home at a time, thanks to an understanding mother, and spent nearly every minute of his free time hunting and exploring all the South Jersey outdoors had to offer.

"My high school football career lasted all of three days until the coach told me I couldn't go hunting on Saturdays," he says, laughingly recalling his devotion to his favorite hobby.

Today, he shares his knowledge through his radio show, which features a talk on a particular topic by Murray, followed by listener questions. Though the show focused primarily on birds when it began 15 years ago, the topics began to broaden as the calls poured in.

"People call in with all sorts of questions and problems," says Murray. "I once had a call from a ship at sea that was 40 miles out while I was talking about fishing for albacore and tuna."

Many callers are unsure of how to deal with the wildlife that enter their back yards, have questions about diseases such as rabies, or are fearful of some animals. Murray once drove to the home of a local listener who called because she was upset about what she termed a "killer bat" flying around her kitchen. With a carefully gloved hand, he set the bat free.

"People are always interested in the outdoors and environmental issues," says Katherine Bold, vice president of WSNJ, in explaining the show's popularity. "Don is very knowledgeable on the subjects, having hunted and traveled all his life. He's very down-to-earth."

Murray has lived in Cumberland County for most of his 76 years and says he was happy to return after a year in a small city in Ohio. "New Jersey has everything you could want, except for glaciers, and I was homesick while I was gone."

Besides being an avid outdoorsman, he also has a keen interest in the state's history. Each year for the past 40 years, Murray has placed American flags by the graves of Civil War veterans buried throughout Greenwich, a tradition now carried on by his grandson, Lance. Murray first began visiting these burial grounds after he stumbled on a grave that was hidden by trees and overgrown weeds while bird hunting. With the help of several people, he cleared the area, which is known as Ambury Hill.

Murray, whose arthritis now keeps him inside much of the time, says he enjoys his radio show because of the response he gets from his listeners, who share his love of nature. "I look forward to going on the air each day because it keeps me in touch with the outdoors."

By Amy Cradic, a Trenton State College journalism intern

Don Murray hosts his "Outdoor World" radio show from his living room in Bridgeton.

J.J. Raia

A vine-covered steel arch marks the entrance to Maurice River Waterfront Plaza in Millville.

Millville Returns to Its Waterfront

The Maurice River, which flows through the heart of Millville, Cumberland County, once served as the city's vital energy source when it was nothing more than a mill town. Today, the town that is widely renowned for its thriving success as a glass manufacturing center is paying homage to the river responsible for its birth and development by once again drawing attention to the waterfront area.

"The river is the main reason the city developed," says Kim Warker, Millville's director of planning. "As the city became industrialized, however, the river was ignored. Now we've gone back to it and are turning it into a public access point again."

The Maurice River Waterfront Plaza is the fourth in a series of projects intended to beautify and preserve city-owned land along the river. Located at one of the gateways into Millville's fast-paced business district, the park offers an enticing setting for visitors and citizens to sit and enjoy the scenic river. For those seeking serenity amidst the hustle and bustle of urban life, the park provides a haven from the busy world surrounding it.

An intricately carved, vine-covered steel arch marks the entrance of the park at Buck and Main streets. A fountain containing a copper holly leaf sculpture serves as its focal point. In addition, there is a free-standing brick plaza wall running along the two streets, carefully maintained landscaping, adequate seating, acorn-style light fixtures atop ornamental posts, and brick pavement forming the park's floor. Although the plaza is only about one acre in size, city officials hope that it will bolster commercial interest in Millville, especially on High Street, which just one block away serves as the city's retail, industrial and government base.

The waterfront project already has created a private interest in nearby properties. As a direct result of the plaza's construction, there is a prospective buyer for the vacant L.G. Nester building located on the corner across the street, says Warker. The buyer plans to convert the empty industrial building into 39 senior citizen housing units.

Construction of the plaza took approximately one year and was completed in 1989. Most of the $750,000 cost was provided by the state Department of Environmental Protection and Energy's Green Acres Program, along with a $361,000 Shore Protection Loan from the department's Division of Coastal Resources.

In 1990, the waterfront park was recognized by the New Jersey chapter of the American Society of Landscape Architects, which honored it with a Merit Award for Landscape Architectural Design. The park's original conceptual layout was designed by Jerry Lewis Associates of Bridgeton, a landscape architecture firm, in conjunction with Watson and Henry Engineers. Artists and blacksmiths John Lupton of Millville and Manfred Bredohl of Germany collaborated on construction of the plaza.

The three previously completed projects are the Fowser Road boat ramp, which provides public access to the river; construction of a floating fishing pier and two Little League ballparks on Sharp Street; and the purchase of new playground equipment for Waltman Park. All of these improvements were made on portions of city-owned waterfront property. Although separated geographically, they remain unified in their intention to preserve, enhance and draw attention to the Maurice River.

The Waterfront Plaza is only part of Millville's linear park plan. The park is the cornerstone of an overall center-city revitalization strategy designed to transform city-owned property into commercial, retail and residential space. Future stages will include shops, professional offices, townhouses or condominiums and possibly a restaurant. The city hopes to extend a public boardwalk along the river that will connect the Waterfront Plaza to upcoming phases, Warker says.

If all goes according to plan, the projects ultimately will bring to the river the recognition and appreciation that it rightfully deserves.

By Lynda S. Montanaro, a Trenton State College journalism intern

PHOTOS COURTESY OF THE EDISON NATIONAL HISTORIC SITE

This scene is from "The Great Train Robbery," considered by many to be the first full-length feature film. It was made in 1903 in Caldwell.

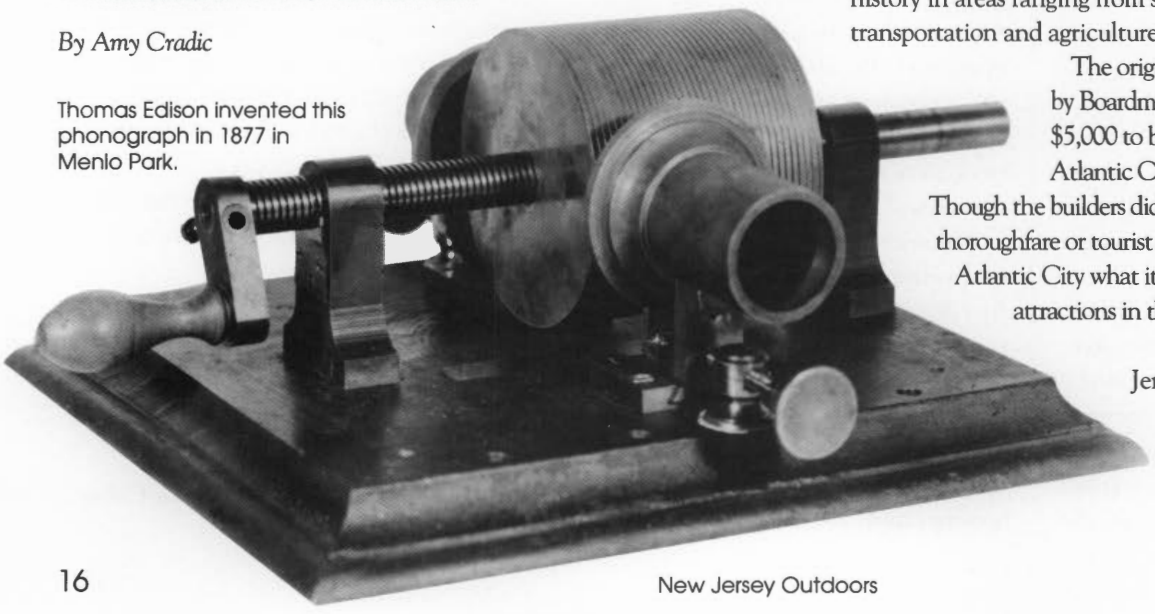
FAMOUS FIRSTS TOOK A LITTLE JERSEY INGENUITY

By Amy Cradic

Passengers on the Camden and Atlantic Railroad who boarded the train at Absecon Island in the mid-1800s inadvertently would bring part of the beach with them, much to the dismay of Alexander Boardman, whose job it was to clean the sand off the seats and floors.

It must have been a tiresome task, because the conductor finally proposed building a footwalk that would keep the sand out of beach-goers' shoes. On June 26, 1870, Boardman's vision became a reality when the world's first oceanfront boardwalk opened to the public in Atlantic City.

New Jersey has had more than its share of inventive pioneers and creative geniuses, making the state the site of several "firsts" in history in areas ranging from sports and entertainment to transportation and agriculture.



Thomas Edison invented this phonograph in 1877 in Menlo Park.

The original mile-long footwalk proposed by Boardman was 10-feet wide and cost $5,000 to build, which was more than half of Atlantic City's annual income at that time. Though the builders didn't intend it to be a business thoroughfare or tourist attraction, it would help make Atlantic City what it is today — one of the biggest attractions in the United States.

The potential of many of New Jersey's most notable "firsts" often was not realized by the individuals who discovered them. Cape May was named after explorer Cornelius

Jacobson Mey who was sent by the Dutch West India Company to establish settlements along the Jersey coast. His vivid description of the area attracted other explorers to purchase land from the Lenni-Lenape Indians in 1630.

It wasn't until the early 1800s, though, that anyone realized that money could be made by providing food and lodging to visitors. Soon, ambitious settlers began to advertise the cape's warm waters and moderate climate. As tourists flocked to the paradise retreat, it became the country's first seashore resort.

New Jersey also is the site of many impressive "firsts" in sports, including the first organized baseball game in Hoboken in 1846, the first professional basketball game in Trenton in 1896 and the first intercollegiate football game in New Brunswick in 1869.

The first intercollegiate football game was played on November 6 when 25 men from Rutgers College and Princeton University lined up on opposite sides of a field on College Avenue in New Brunswick. On that chilly Saturday, the Rutgers students wore scarlet turbans on their heads, the only hint of any kind of uniform. The rules were short and simple; no running the ball or throwing it.

The game was played more like today's version of soccer. Points were earned by kicking the ball between the opposing team's goal posts, and the game was decided by the number of goals kicked. Rutgers won, 6 to 4, but both teams celebrated with toasting and songs, most likely not realizing the significance of the day's event.

Thomas Edison, one of New Jersey's most famous residents, revolutionized civilization with the invention of electricity and opened the door to the world of entertainment with the invention of the phonograph, the first "talking machine."

The great inventor recorded his own voice on the phonograph for the first time on December 6, 1877, in Menlo Park, Middlesex County, as he recited the nursery rhyme "Mary Had a Little Lamb." Edison was trying to create an automatic telegraph when he accidently discovered the phonograph. It came as a surprise for his colleagues, too; one even accused him of being a ventriloquist.

The discovery of the phonograph contributed to Edison's subsequent invention of the first motion picture, which he created in his West Orange laboratory. Edison was determined to build a machine that could be seen, as well as heard, to complement the phonograph, his favorite invention. On October 26, 1889, Edison tested the first motion picture, which became known as a "talkie." As the moving picture sequence played, a separate phonograph supplied the sound.

The movie industry in New Jersey continued to flourish as the state became a key location for filmmaking. "The Great Train Robbery," considered by many to be the first full-length feature film, was made in 1903 in Caldwell, Essex County, and lasted 11 minutes. The first Western film, "A Cowboy Escapade," was filmed in Bayonne, Hudson County, in 1907.

In 1933, a Camden County man by the name of Hollingshead climbed a maple tree in his 10-acre back yard and hung a 40-by-50- foot screen from its branches. He placed a movie projector on the hood of a classic Model-A Ford, creating the the first "drive-in" theater, a booming hit in America's fast -growing motorized society. His yard accommodated up to 500 cars as he put on two shows a night.

Atlantic City became the site of the world's first oceanfront boardwalk in 1870.

ILLUSTRATIONS BY FRAN HUGHES

The first hydrogen balloon air voyage in the country ended in Gloucester County in 1793.

While New Jersey established itself as the home of some of the most inventive leaders in the entertainment world, it also drew attention for its firsts in other areas.

John Holland, a teacher at a small parochial school in Paterson, Passaic County, put together plans to build an underwater vessel that he hoped would make war impractical by providing the ability to destroy entire navies without ever being seen. By 1878, this peace-minded inventor had developed the first submarine, which was 14-feet long, big enough to fit only one passenger at a time. His first attempt to launch his invention in the Passaic River failed when a hose sprung a leak and the submarine sank almost immediately. He opened a small trap door and calmly swam to the surface.

The U.S. Navy tried to build its own submarine using Holland's plan, but its vessel sank. It purchased a later version of Holland's submarine, which the Navy commissioned as the first member of the U.S. Submarine Service. Today, Holland's original submarine is on display at the Paterson Museum.

The first regularly operated steam ferry, the "Little Juliana," was built in 1811 by John Stevens, an engineer and a member of the family from Hoboken that later founded the Stevens Institute of Technology. By 1815, Stevens had turned his attention toward land, constructing the first "steam wagon." On February 6, 1815, he was granted the first railroad charter in the United States, and his was the very first American steam locomotive to ride on a track. The locomotive was mounted on ordinary wooden wagon wheels and traveled around a track in Hoboken at a snail's pace of 12 miles per hour.

America had its first colorful introduction to aviation travel on January 9, 1793. From the yard of the old Walnut Street Prison in Philadelphia, Jean Pierre Blanchard began the first air voyage in the country in a hydrogen balloon that landed in the woods east of Woodbury, Gloucester County.

Blanchard was carrying a passport of introduction from President George Washington that was to be delivered to the first farmer that he met in South Jersey upon landing. The balloon reached a maximum altitude of 5,812 feet as it drifted 15 miles before landing successfully. The entire flight lasted 46 minutes, and the only passenger that accompanied Blanchard in his historic flight was a small black dog.

Other creative thinkers in

A New Jersey farmer started the first Christmas tree farm in 1901.

From Soup to Taffy, They All Started Here

The list of New Jersey's "firsts" covers a variety of topics, from education to the fine arts. Below are a few other examples:

- **First condensed soup,** cooked by the Campbell Soup Company in Camden in 1897
- **First airplane passenger service,** opened on May 3, 1919, in Atlantic City
- **First incandescent lamp,** invented by Thomas Edison in his Menlo Park lab in 1879
- **First brewery in America,** opened in Hoboken in 1642
- **First cultivated blueberries,** marketed by Elizabeth White in Whitesbog in 1916
- **First town to be lighted by electricity,** Roselle, in 1883 by Thomas Edison
- **First coppermine in America,** opened in the Kittatinny Mountains around 1640 by Dutch settlers
- **First public library,** opened in 1757 in Burlington under a charter granted by King George II
- **First transcontinental nonstop flight,** landed in Newark, by Amelia Earhart in 1928
- **First telephone direct dialing, coast-to-coast service,** from Englewood, New Jersey, to Alameda, California, in 1951
- **First Mason jar,** used to preserve fruits, patented by John L. Mason of Vineland in 1858
- **First World Series broadcast,** by radio station WJZ in Newark in 1921
- **First saltwater taffy,** sold at the Jersey Shore in Atlantic City in the 1870s

New Jersey stumbled upon some well-known products in the course of their everyday routines.

In 1901, a farmer by the name of W.V. McGalliard became fed up with his 10-acre tract of land located just outside of Trenton, where he had unsuccessfully tried to produce crops. One day, he noticed that the soil in the field was the same as the soil in his front yard, where Norway spruces grew abundantly.

He planted 25,000 trees in his once unproductive field and struck it rich. He sold the trees for one dollar each, starting the first Christmas tree farm in history. Today, almost a century later, there are nearly 400 of these farms throughout the state.

Elizabeth Lee was a cranberry grower in southern New Jersey who unwittingly created the first cranberry sauce. One day, she decided to boil some of her damaged cranberries, instead of just throwing them away. She named the tangy jelly that resulted "Bog Sweet Cranberry Sauce" and started her own business.

Ignoring the discouraging words that came from the head of a large store in Philadelphia on her first business trip, Lee continued marketing her cranberry sauce and soon merged with several firms, marking the beginning of the Ocean Spray cooperative in 1930.

Amy Cradic is a Trenton State College journalism intern.

References for this article included "Gems of New Jersey" by Gordon Bishop; "Stories of New Jersey" by the Federal Writers' Project; "The New Jersey Book of Lists" by Gerald Tomlinson and Ronald A. Mayer; "Tales of New Jersey" by the New Jersey Bell Telephone Company; "The First Air Voyage in America" by Carroll Frey; and "Football at Rutgers: A History, 1869-1969" by Larry Pitt.

A Goose for Christmas

By Robert Brunisholz

One of the most positive aspects of goose hunting is that it is seldom done in solitude. Although it isn't an absolute necessity, dyed-in-the-wool goose hunters usually bring along a retriever, and that, at least, makes it feel as though you're never alone.

In terms of comfort, that's about as good as it gets. Why men and women rise from toasty-warm beds at 3 a.m. to arrive at an arctic-cold goose blind before sunrise, then huddle against a damp retriever for warmth, is beyond the comprehension of most folks with any semblance of sanity.

But most sane people miss the connection and fail to understand the magic spell that has captivated and invigorated the waterfowl hunter for more than 100 years, especially at this time of year. Undisputedly, a lot of time has passed since Dickens penned the words to his immortal *A Christmas Carol* in 1843, and Tiny Tim notwithstanding, the goose has since been considered the bird of Christmas.

For those who understand the beauty of geese enticed to decoy or call, it would almost appear the holidays and the Garden State's Canada goose hunting season correspond through more than mere coincidence. Although Canada goose hunting usually starts in October, the season is split, and any waterfowler worthy of the name will tell you the peak of the season blends with Christmas, from mid-December through January.

Both the holidays and prime goose hunting begin well after the first counterfeit frosts have turned to genuine, finger-numbing cold. But Christmas offers streets adorned with yuletide lights and gaily decorated stores in which to flee frosty winds. In a goose blind, there are no compromises.

In your heart, either you're a waterfowl hunter or you're not. And you'll quickly find out which when rivulets from runny noses, unprotected against knifing northeast winds, form crystalline mustaches, and puffs of moist breath powder eyebrows and eyelashes white.

Whether one hunts with a faithful retriever or sets out solo in a sneakbox — a boat with a canvas, camouflaged cover — it really doesn't matter. What does matter is that you're out there, goose hunting. For the avid goose hunter, watching a rising sun shoulder its way through a scuddy sky is addictive.

Two-legged partners also are fine, as long as they are not the fast-lane types who want something to happen immediately. Hunting the Canada goose requires patience and no small amount of blind faith (no pun intended), under the most severe weather conditions. Not everyone is tilted in that direction, and go-getters, accustomed to quickly filling game pockets, grow restless, weary and much too cold.

But sometimes sharing a blind with the properly matched partner will result in cherished memories of fine hunts, so long as your companion has that innate, primal feeling for such things as the magnificent sight of a sergeant's chevron of Canada honkers

crossing slate gray skies while warm breath condenses to form delicate patterns of icy lace on furry earflaps. Waterfowling is not something you do. It is something you feel.

Goose-Hunting Has Long Tradition

New Jersey has a rich history of waterfowling that dates back to the mid-1800s. And, were records available, the Garden State's waterfowling heritage undoubtedly predates the first settlers.

From Delaware Bay, to the endless acres of marsh grass and backwaters of Barnegat Bay that offered transient geese shelter from buffeting winds, north to Raritan Bay, all of these areas were home and haven to thousands of migrating Canada and snow geese, as well as numerous species of ducks, brants and coots.

According to waterfowl hunting literature, goose hunters considered Chesapeake Bay nearly utopian for those who wanted to shoot until gun barrels warped from heat. But that was during the late 1800s, into the early 1900s. It was a time when throngs of migrating geese would blot out the sun, and game laws and conservation efforts were thought unnecessary. What few regulations existed were considered a mere annoyance by many gunners.

To the north, Delaware Bay rated a close second to the Chesapeake and was hailed as "the" place to be when goose hunters wanted to fill the trunks of their cars with honkers. Barnegat Bay offered as much, sometimes more. During the pre-Depression era, Barnegat Bay waterfowlers took home mixed bags of geese and ducks in unlimited numbers. But around the turn of the century and into the early 1900s, a new style of hunting was introduced to those waterfowl havens.

Bear in mind, this was a time when many unfortunate, but honest folks were forced to split their families to survive a failed economy. This was the traumatic time that inspired John Steinbeck's classic, *The Grapes of Wrath*, in which he so movingly and accurately depicted farmers and skilled factory workers fleeing barren fields and idle industry to a future clouded with doubt and despair.

Thus was born the market hunter. Out of necessity, men residing on or near Delaware Bay, as well as the estuaries and open waters of Barnegat and Raritan bays, and indeed, just about any marsh or river that held large populations of geese and ducks, strapped punt guns to the bows of boats used to sneak up on thousands of rafted, or tightly grouped, waterfowl.

Punt Guns Were Deadly

For the uninitiated, a punt gun deserves describing. Today's 12-gauge shotgun remains the favorite of waterfowlers. The diameter of a 12-bore scattergun roughly measures about 11/16ths of an inch. Punt guns were bored to sizes as large as two and four gauge (about an inch-and-a-half in diameter), up to and including sizes unmeasurable by gauge. Use your imagination. Some punt guns were merely pieces of pipe with bore diameters comparable to the mouth of a coffee mug.

In the dark of night, one deadly discharge from these miniature cannons would down as many ducks and geese as happened to be in the path of the shot.

Today's hunter is poignantly aware of conservation, and most find it easy to condemn the market hunter. Certainly there were no considerations of season, sportsmanship or bag limits. Money for dinner was uppermost on the market hunter's mind, not conservation.

But one must also keep in mind the era and times that spawned the market hunter. Ducks — canvasbacks and blacks — were the most popular targets because there were so many of

PHOTOS BY AUTHOR

Nothing stirs the soul of a waterfowler as much as the sight of Canada geese circling a marsh (at left).

Canada geese can seldom resist a field of cut corn. Even though farmers have harvested the corn, sufficient stubble and kernels remain for the geese.

them. Each brought as much as 50 cents a brace, and a goose could fetch as much as a dollar and a half. Back then, market hunters were not viewed with the same disdain as we now view game law violators. They simply were seen as men eking out a living as best they could, and considered in terms no less than the way we think of our contemporary neighborhood butcher or fish market.

Waterfowl populations, especially those of the Canada goose and the black and canvasback ducks, began to dramatically decline. The marshes, rivers and bays that once boasted single rafts consisting of thousands of waterfowl dwindled to groups of mere dozens.

The dramatic decline of geese and ducks was the impetus for what contemporary hunters now know as our game code. The setting of seasons and daily bag limits put the market hunter out of business and was the genesis of today's conservation awareness.

Strict Game Codes Approved

Gradually, the populations of once-depleted geese and ducks began to return. Federal and state regulations set stringent bag limits and seasons. The species of geese and ducks that were depleted most were assigned a point value, and hunters could not harvest more than a certain amount of points in a given day, according to what species fell to gun.

While federal migratory laws were enacted, however, it must be kept in mind that during the 1950s and into the late 1960s, New Jersey, and indeed other states, did not enjoy the same environmental laws in effect today. At the same time state and wildlife agencies were working to rebuild decimated populations of waterfowl, marshes were drained, swamps were being filled and lagoons were being boarded-up with bulkheads. To double the trouble waterfowl were in, pollution came along with industrial growth.

Thanks in no small part to the federal and state wildlife agencies, as well as organized sportsmen, environmental regulations were enacted and even stricter game codes were approved. Even private industry started to cooperate in conservation efforts.

Things began to turn around during the early 1970s. Organizations such as Ducks Unlimited contributed much financially, not only to New Jersey, but on an international level as well. Since its founding in 1937, Ducks Unlimited has raised more than $645 million nationwide, and those funds have contributed to the conservation of more than 5.5 million acres of prime wildlife habitat in all 50 states, each of the Canadian provinces and even key areas in Mexico.

In addition to the present federal duck stamp program, the state Department of Environmental Protection and Energy's Division of Fish, Game and Wildlife implemented its own duck stamp program in 1984. The results have been dramatic. During the early 1970s, not more than 5,000 Canada geese wintered in New Jersey. Last year, division biologists conducted aerial surveys that clearly showed the Garden State had more than 101,000 Canada geese in residence.

Duck Stamps Help Preserve Wetlands

On both state and national levels, funds from those programs have been the pivotal point for the preservation of wetlands, and dramatically aided the slow, but gratifying turnaround in waterfowl populations.

As just one example, proceeds from the sale of New Jersey waterfowl stamps and Ducks Unlimited MARSH funds were used to acquire five parcels of tidal marsh, totaling 869 acres, in Cumberland and Cape May counties along Delaware Bay this year. The property becomes part of the Heislerville-Dennis Creek Wildlife Management Area, which annually winters more than 50,000 ducks and geese. According to Frank Tourine, business coordinator for New Jersey's Duck Stamp Program, nearly 8,000 acres of wetlands have been preserved through funding derived from the purchase of New Jersey duck stamps.

One of the unexpected, albeit welcome, benefits of current conservation efforts has been a dramatic increase in the populations of Canada geese. Four decades ago, goose hunters had to travel to areas along the Atlantic flyway to find worthwhile gunning. Loosely translated, that meant coastal or bay hunting.

Today, New Jersey boasts excellent hunting for both migratory or transient Canada geese, as well as a hefty popula-

Check Out These Areas for Goose Hunting

❑ **Assunpink Wildlife Management Area (WMA), at the borders of Monmouth and Mercer counties,** is managed primarily for small game hunting, but substantial numbers of Canada geese utilize the lakes here.

❑ **Dennis Creek WMA, Cape May County,** located southeast of Route 47 at Dennisville, offers more than 5,000 acres of marsh and is on the edge of a major flyway for both Canada and snow geese.

❑ **Dix WMA, Cumberland County,** located just north of Sea Breeze, offers 2,400 acres of wetlands and marshland. Some fields in the area also offer inland hunting.

❑ **Egg Island/Berrytown WMA, Cumberland County,** is located near Dividing Creek and offers more than 8,000 acres of tidal marsh on the Delaware Bay shoreline.

❑ **Fortesque WMA, Cumberland County,** located northwest of the Egg Island tract, has 900 acres on Delaware Bay.

❑ **Great Bay WMA and Absecon WMA, Ocean and Atlantic counties,** on Great Bay, east of Route 9, offer excellent waterfowl habitat and comprise more than 8,500 acres of prime goose hunting areas.

❑ **Heislerville WMA, Cumberland County,** west of Heislerville off Route 47, offers more than 3,500 acres of marshland that fronts on the Delaware Bay and Maurice River. It is top-rated for both snow and Canada geese.

❑ **Mad Horse Creek WMA, Salem County,** just south of Canton, offers more than 6,000 acres of marshland bordering Delaware Bay. Here, goose hunters also will find a number of tidal ditches that provide excellent jump shooting.

❑ **Manahawkin WMA, Ocean County,** north of Route 27, near Manahawkin, offers nearly 1,000 acres of wetlands and woodlands that abut Barnegat Bay.

❑ **Marmora WMA, Cape May County,** located east of the Garden State Parkway, offers 3,000 acres of tidal marshland.

❑ **Nantuxent WMA, Cumberland County,** near Newport, offers 1,000 acres of marshland with numerous small ponds. Canada geese flock to this area, and the ponds offer great jump shooting.

❑ **Swan Bay WMA and Port Republic WMA, Atlantic County,** just west of the Garden State Parkway on the Mullica River, offer more than 1,800 acres of wetlands, marsh and fields.

Caution: Season and daily bag limits for migratory waterfowl are determined by the federal Fish and Wildlife Service. Be certain to pick up a copy of the 1992-1993 migratory bird regulations when purchasing your hunting license.

For further information on wildlife management areas where waterfowl rest or winter, a guide to wildlife management areas can be obtained by writing to the Division of Fish, Game and Wildlife, CN 400, Trenton 08625-0400. Enclose a check or money order for $7.50 and be sure to note which publication you want.

tion of birds that winter in the Garden State and provide inland hunting on many farms, swamps and marshes.

In fact, the state's resident population of Canada geese, those that do not migrate, has increased to the extent that most groundskeepers at golf courses or municipal ponds and athletic fields will tell anyone willing to listen that there are far too many of them. They can be pesty and pesky, and droppings have been cause for concern at more than one municipal swimming pool or pond.

The Canada goose population exploded during the last decade, and many who would not ordinarily hunt honkers have now taken to cornfields and marsh edges, and the method is just as effective as hunting from a drafty blind near Barnegat Bay.

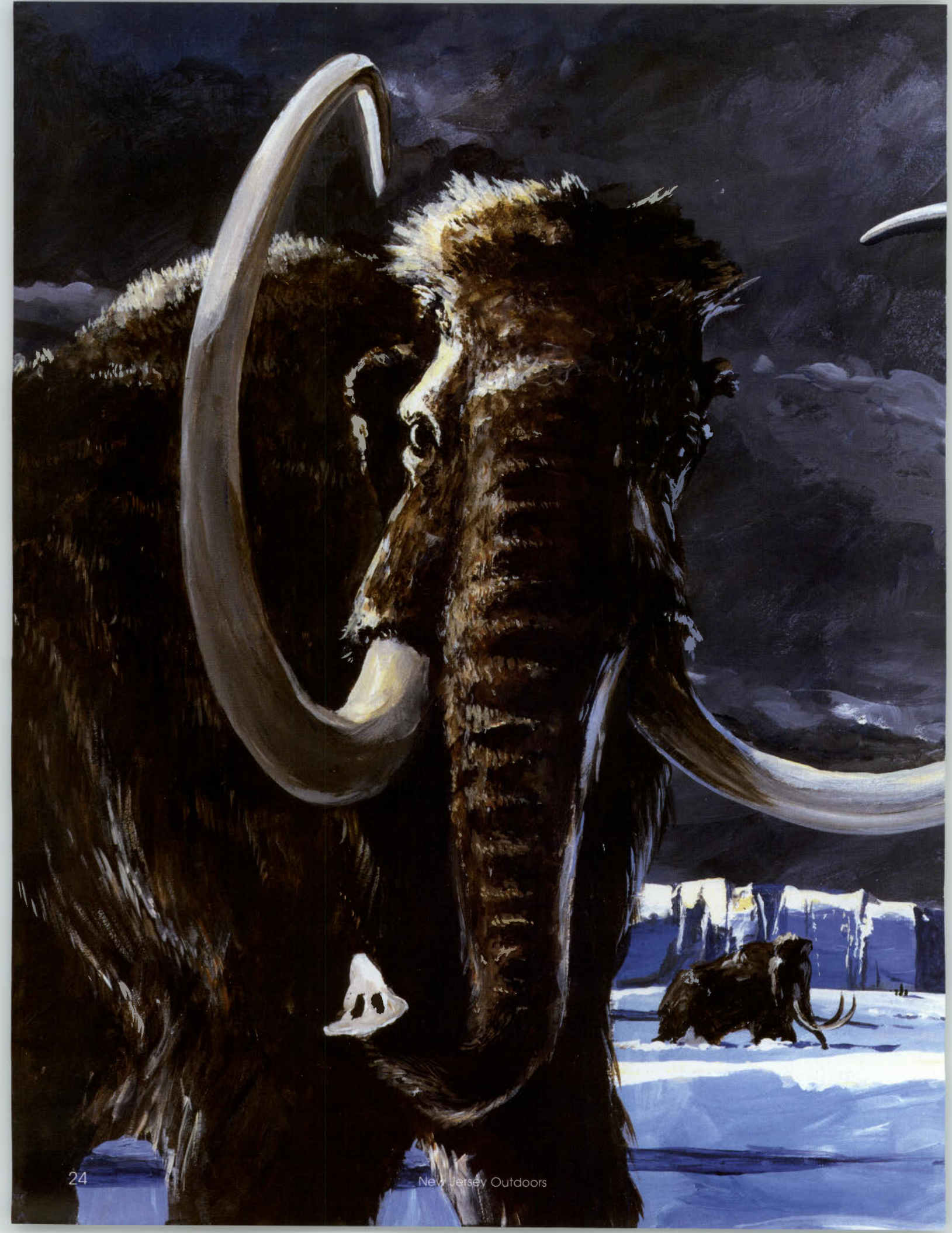
Cut fields replete with leftover hunks of frost-hardened corn attract as many, perhaps even more, geese than a spread of decoys along a major flyway. With some pre-season surveillance, a well-placed brush pile for concealment and a few of what seasoned goose hunters call "stick-ups" (cardboard decoy silhouettes), inland waterfowl gunners can experience shooting equal to, or sometimes better, than that found along the established flyways of bays and rivers.

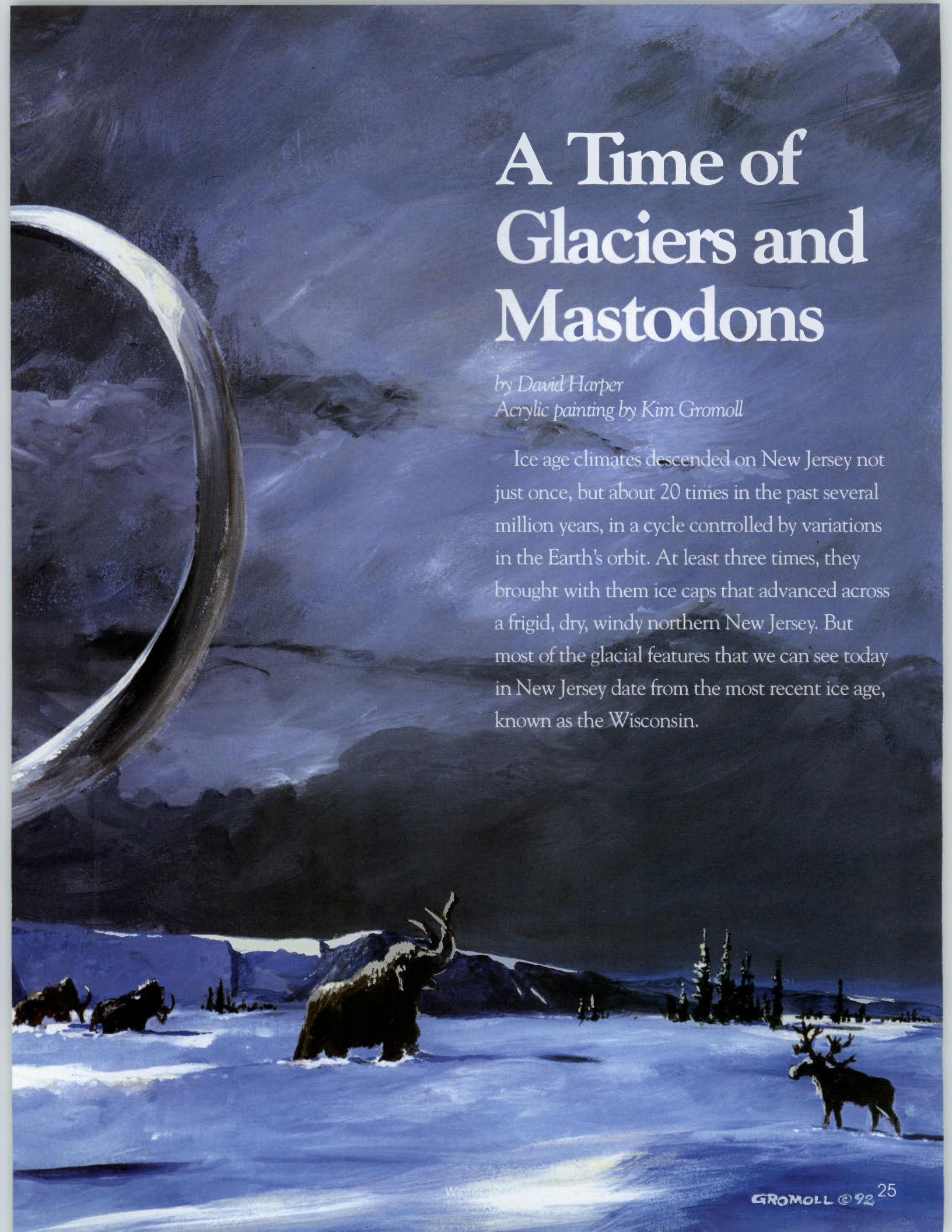
Whether one is addicted to hunting the bird of Christmas from a reed-covered blind on the edge of a salt marsh, or hidden at the edge of an inland cornfield, the majesty of Canada geese leaving their loosely formed Vs to dip toward decoys is a wondrous sight and a gift money can't buy.

Those who long to witness the blurred beauty of cupped wings coming to decoys while ghostly shrouds of mist rise from an ink-black river know all too well the mysteries and magic of waterfowling. True waterfowlers are bound by a love of nature, and the symphonic call of the Canada goose is merely the subtle magnet that draws the goose hunter out into the bleak, cold predawn morning. This is the season of the Christmas bird.

Many of New Jersey's Canada geese winter in New Jersey because of ample food and cover.

Robert Brunisholz is a freelance writer who lives in Long Valley.





A Time of Glaciers and Mastodons

by David Harper
Acrylic painting by Kim Gromoll

Ice age climates descended on New Jersey not just once, but about 20 times in the past several million years, in a cycle controlled by variations in the Earth's orbit. At least three times, they brought with them ice caps that advanced across a frigid, dry, windy northern New Jersey. But most of the glacial features that we can see today in New Jersey date from the most recent ice age, known as the Wisconsin.

The Wisconsin ice age began 100,000 years ago and lasted for about 85,000 years. Glaciers reached New Jersey near the end of the Wisconsin ice age, probably about 21,000 years ago. Most of the ice coming to New Jersey flowed through the lowland between the Catskills and New England. Some flowed across the Poconos to northwestern New Jersey. Because the growth of glaciers left less water in the oceans, sea level fell when glaciers grew. The lowest sea levels off New Jersey were about 300 feet below today's levels. With this lowering, the shoreline moved to about 100 miles east of today's shore.

With the freezing temperatures came cold-loving woolly mammoths, mastodons, caribou, walruses and a large moose-like animal, *Cervalces scotti*, best known from specimens found in New Jersey. *Cervalces* bones have been found widely in eastern North America, but both of the only two complete skeletons ever found are from Warren County.

Mammoths and mastodons are less unique to New Jersey, but surprisingly common. Bones of these elephants have been found at more than 50 places on land, while scallop fishermen and clammers have dredged teeth and bones from as many places offshore. At least seven New Jersey elephant skeletons are in museum displays.

Though the ice age mammals of New Jersey could not have lived in our warm modern climate, most of them were, in fact, tolerant of a range of climate, provided that there was ample food. The true severity of the climate is better shown by the fossil pollen, wind-blown sediments and permafrost features that can be found today.

Ice age pollen from New Jersey is predominantly from tundra and boreal forests of spruce, fir, birch, pine and other plants now most common hundreds of miles to our north. Pollen from oaks, hickories, beeches and other temperate-climate species is scarce. Wind-blown silt, sand dunes and ventifacts (pebbles polished or shaped by wind-blown sand) reveal harsh conditions in areas where the soil now is stabilized by thick vegetation.

Tripod Rock, a glacial erratic balanced on three smaller rocks, is located near Boonton in Morris County.

Permafrost (year-round freezing of the subsoil) left its mark in several ways. Ice wedges, formed by repeated cooling and shrinkage of frozen soil or soft rock, are common permafrost features in central and southern New Jersey. Breakage and frost heaving of the harder rock of New Jersey's mountains left a legacy of boulder fields.

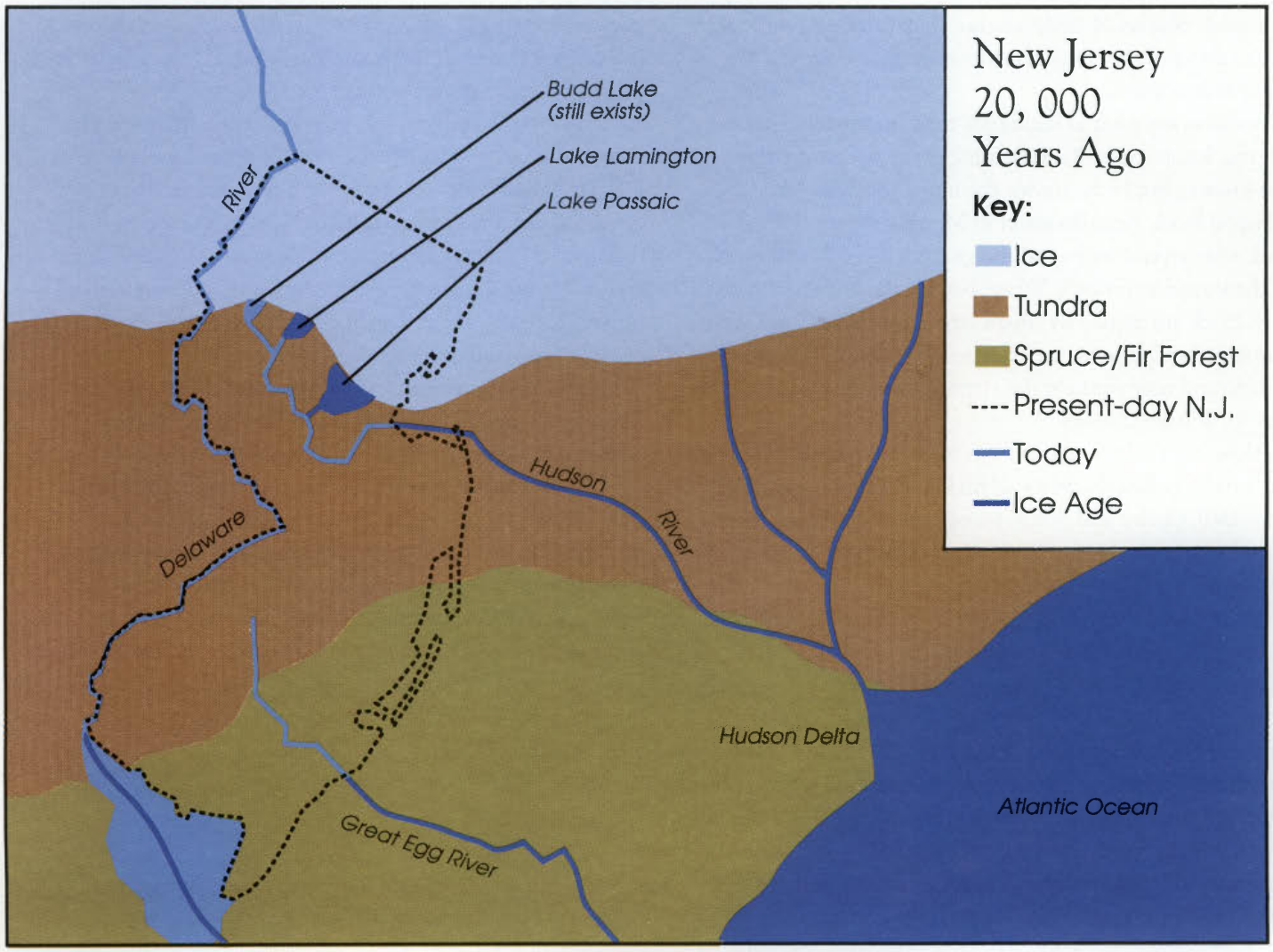
With permafrost, the summer thaw did not melt below the top few feet of soil. Soils became water-logged because water seeped down to the top of the frozen zone and froze instead of percolating down to the water table. Disrupted layering in soil and sediment throughout southern New Jersey shows that oversatu-

rated, muddy soil flowed even on gentle slopes during deep summertime thaws.

The glaciers themselves covered several of our northern counties, but stayed here only 6,000 years or so before progression through the cycle of climate change began to bring us toward today's warmer climate. Though the glaciers were here only an instant in terms of geologic time, they transformed the landscape by erosion and deposition. Scouring of soil and rock lowered hilltop elevations and carved the soft bedrock beneath the Hackensack Meadows, Hudson River and other low-lying areas deep below their preglacial levels.

Much of the sediment eroded when the ice was at its farthest advance was carried to the edge of the ice and deposited on the hummocky "terminal moraine," which crosses New Jersey from Perth Amboy through Metuchen, Short Hills, Madison, Morristown and westward to the Delaware River. Here, at the southern limit of the continental ice cap, was a complex, constantly changing environment. Torrential summertime melt-water streams moving boulders weighing hundreds of pounds could suddenly change course, leaving still ponds. Several feet of sediment deposited in a matter of hours could be swept away just as quickly.

Most of the glacial melt water flowed to lakes that formed where ice blocked river flow. The largest of these glacial lakes, Lake Passaic, was centered in what is now the Great Swamp National Wildlife Refuge in Morris County, and was larger than some of our counties. Elsewhere, melt-water streams deposited plains of sand and gravel along the southern edge of the glacier or carried their sediment southward toward the ocean. A wide, prominent outwash plain gives Scotch Plains and the Plainfields their names. In contrast, only a narrow plain could be deposited in the



constricted Delaware Valley. Much of the sand and gravel instead was channeled past Philadelphia and the present Delaware Bay toward the Atlantic Ocean. (At this time of lowered sea level, Delaware Bay did not exist; the Delaware had cut its channel to 150 feet below present sea level off Cape May.)

Ice began to melt and retreat from New Jersey about 18,000 years ago. Through the 3,000 or so years it took for ice to retreat to the New York border, the glaciers remained active, continuing to flow southward. Under an increasingly negative balance between melting and ice flow, however, they did not flow as far.

Some of the glacial lakes that existed when the ice was at its maximum drained when the ice receded. Many new lakes formed. We know of more than 100 glacial lakes from the deltas, bottom sediments, shoreline features and outlet channels that can be observed today. At least 15 of these lakes were larger than Lake Hopatcong, now New Jersey's largest lake. More than 200 present-day lakes and many thousands of acres of wetlands owe their existence in large part to disruption of preglacial drainage by ice age erosion and sedimentation.

Boulders were left at seemingly random, and sometimes striking, locations by the retreating glaciers. Perhaps the best-known, but by no means the largest of these "erratics," is Tripod Rock, near Boonton in Morris County. Tripod Rock rests several inches off the ground, securely balanced on three smaller erratics. White Rock Lake and the town of Glen Rock are named for much larger erratics. A 2,000-ton limestone boulder was carried at least several hundred feet upslope and now sits near the entrance to Jenny Jump State Park in Warren County.

Although ice had melted from New Jersey by 15,000 years ago, tundra pollen shows a still frigid climate. As warming proceeded, tundra and boreal forest gave way to pine by 12,000 years ago, then to temperate hardwoods by 8,000 years ago.

Sea level kept rising until about 6,000 years ago. Although today's sea level is very nearly the same as the preglacial sea level off New Jersey, the shoreline has not yet come back to its location before the Wisconsin ice age. Instead, barrier beaches that formed as sea level rose have kept the shoreline two to four miles farther east between Bay Head and Cape May. Barnegat Bay and New Jersey's coastal marshes are between today's shoreline and the preglacial shoreline, which lies very nearly beneath the Garden State Parkway along the shore. As coastal erosion continues to push the barrier islands inland, the coastline may yet return to its preglacial location.

Stone projectile points suggest that people arrived in New Jersey at about the time that mammoths, mastodons, giant beavers and other species became extinct.

Submerged offshore are shorelines, deltas, sand shoals and channels formed when sea level stood lower. The shoals and channels are like those formed today by waves and currents at the mouths of estuaries. They progressively drowned and became inactive as sea level rose. Their distribution across the continental shelf traces the westward retreat of estuaries before the encroaching ocean.

While the Wisconsin ice age is not particularly unique among the 20 or so ice ages of the past several million years, it is particularly important to us as a time of human cultural development and colonization. In New Jersey, the earliest undisputed human remains are stone projectile points from early postglacial cultures. These suggest that people arrived in New Jersey at about the time that mammoths, mastodons, giant beavers and other species became extinct. In one hotly contested interpretation, in fact, the extinction of large Pleistocene mammals in the Americas and elsewhere is attributed to the arrival of hunting tribes.

As to the future, predictions based on the Earth's orbit are that another ice age is due to begin soon — which in geological terms means within the next few thousand years. Here, human activity may affect climate, rather than the other way around. Normal climatic cycles may well not continue in the face of massive deforestation, desert expansion and release of greenhouse gases. Instead, it seems likely that the next ice age may be postponed or that the Earth will warm instead of cool.

David Harper is a geologist with the Department of Environmental Protection and Energy's Division of Science and Research, Geological Survey.

Think Green This Holiday Season

by Marybeth Brenner

With the holidays just around the corner, the seemingly endless whirl of shopping, entertaining, decorating, gift wrapping and traveling to see family and friends is about to begin. During this often hectic time of year, it's important not to lose sight of how all of these activities can affect the environment and what we can do to minimize the impact. For instance, each of us generates between 4 and 5 pounds of trash each day, and this amount can significantly increase around the holidays.

Following are some fun and interesting choices to consider this season, from gift ideas to decorations. As you become more aware of how your choices affect the environment, you can incorporate this way of thinking into your everyday life and serve as a year-round example to your friends, relatives and co-workers. Some simple, educated choices on what we buy and how we live can make a dramatic improvement in the environment.

Shop for 'Green' Gifts

Drive to the mall with a friend or relative and consolidate your trips whenever possible. Better yet, walk or take mass transit to your shopping destination. The cars we drive are one of the biggest contributors to increased amounts of ground-level ozone and carbon monoxide, which result in poor air quality.

Remember to bring a reusable tote or shopping bag to avoid having to dispose of paper and plastic bags when you get home. And keep the environment in mind with these gift suggestions:

❑ Memberships in environmental organizations, such as the World Wildlife Federation, the National Audubon Society or the Cousteau Society Inc. — groups that help educate citizens about environmental issues. They also conduct research and work to protect and conserve our natural resources.

❑ Subscriptions to environmentally oriented magazines, which make great gifts that last all year long.

❑ Reusable lunch bags, tote bags and travel mugs. These will eliminate the need for disposable alternatives.

❑ Adoption of a whale or purchase of an acre of rain forest. These gifts are offered through many environmental organizations in the country.

❑ Memberships to aquariums, zoos or local museums. These gifts are ideal for families with young children as they offer an opportunity to learn about nature, wildlife and the environment.

❑ Plants, the ultimate *green* gift. Put one in a hand-painted pot and you have a great personalized gift.

❑ Books about wildlife, bird-watching, gardening or hiking. Many of these books highlight specific areas of the country or specific states, making for a more personalized gift.

❑ Binoculars for bird-watching and observing nature.

❑ State parks passes make good gifts for families. These passes, which cost $35, waive all parking fees associated with admission to New Jersey parks. Information about how to get a parks pass may be obtained by writing to the Department of Environmental Protection and Energy's Division of Parks and Forestry, 501 East State Street, CN 404, Trenton 08625-0404, or by calling (609) 292-2797.

❑ New Jersey Waterfowl Stamps, which are available through the DEPE's Division of Fish, Game and Wildlife. The stamps make great gifts and appreciate in value over the years. They come in two denominations, $2.50 for New Jersey resident hunters and $5 for nonresident hunters. Stamps can be purchased from hunting license agents or by contacting the New Jersey Division of Fish, Game and Wildlife, CN 400, Trenton 08625-0400. For more information on the stamps, call the division at (609) 292-9567. Limited-edition signed and numbered prints of the waterfowl stamps are available at a retail price of $142.50, which includes a resident and nonresident stamp. To find the dealer nearest you, call 1 (800) 382-5723. Also available is an 8- x 10-inch, full-color souvenir card of the print, which includes a resident and nonresident stamp. The souvenir card costs $15 if purchased at the division's offices on the third floor of 501 East State Street, Trenton, or $16.50 if purchased through the mail.

Proceeds from these sales are used to acquire, protect, maintain and improve waterfowl habitat and associated wetlands.

Use newspaper and fabric ribbon as an alternative to store-bought gift wrap.

Avoid Disposables When Entertaining

The holiday season is the time for entertaining, whether at home or in the office. There are several things you can do to help minimize the amount of waste generated at these festive occasions:

❑ Use reusable plates, glasses and cutlery rather than disposables. Many caterers offer this alternative, which often costs no more than purchasing paper products.

❑ Use cloth napkins and tablecloths rather than the disposable paper alternatives.

❑ Set up a clearly labeled container for recycling cans and bottles. Be sure to let your guests know which materials they should recycle, since all programs in the state are not the same.

Create Natural Decorations

Decorating your home or office for the holidays is the best way to get in a festive mood. You can involve the whole family or office in the activity and create decorations that are "environmentally friendly."

❑ Make your own decorations from wood, fabric and ribbon. Paint designs on the wood and use the fabric or ribbon to hang them around your home or on a Christmas tree. Seashells and pine cones also make beautiful natural decorations. Creating and collecting these materials can be great fun for the whole family to share.

❑ If you are purchasing decorations, make sure that they are reusable, not disposable, and save the packaging so that you can safely store them for the years to come.

❑ When decorating outdoors, use natural and edible materials, such as pine cones, popcorn, cranberries, suet and fruit. These will provide attractive decorations while feeding the wildlife in your area.

❑ Try to conserve energy by minimizing your use of lighting.

Choose Christmas Trees Carefully

If you are going to have a Christmas tree, consider the following before you make your selection:

❑ If you are buying a live tree, think about getting one that is dug out of the ground with the root ball wrapped in burlap. After the holiday is over, this tree can be planted in your yard. If you do not own property, consider donating the tree to a local park, school or charitable organization.

❑ If you purchase a cut tree, be sure to recycle it when the holidays are over. Trees are recycled by running them through a chipping machine. These wood chips are then used as mulch. Check with your local recycling office to see if your community provides this service.

❑ If you do cut your own tree or purchase a cut tree, there is no need to worry about deforestation. According to the National Christmas Tree Association, up to 95 percent of the Christmas trees sold are from farms where they are grown as an agricultural crop, like corn or tomatoes.

❑ If you purchase an artificial tree, be sure to keep the packaging so you can safely store your tree and make it last as long as possible.

Reduce the Use of Gift Wrap

This season, try to reduce, reuse or eliminate the mountains of gift wrap usually left behind after exchanging gifts. You can be creative and environmentally conscious at the same time. For example:

❑ Don't wrap your gifts at all. Use decorative boxes, which can be saved and reused.

❑ If you do wrap your gifts, consider using recyclable paper, such as newspaper or brown paper, with colorful reusable bows made from fabric or yarn.

❑ If you purchase gift wrap or holiday greeting cards, look for those brands that are made from recycled paper.

❑ Wrap only the lid of the box; then the box can be opened without tearing the paper and the wrapped box can be reused.

❑ Instead of boxes, consider using tins, baskets or decorative bags. All of these are reusable.

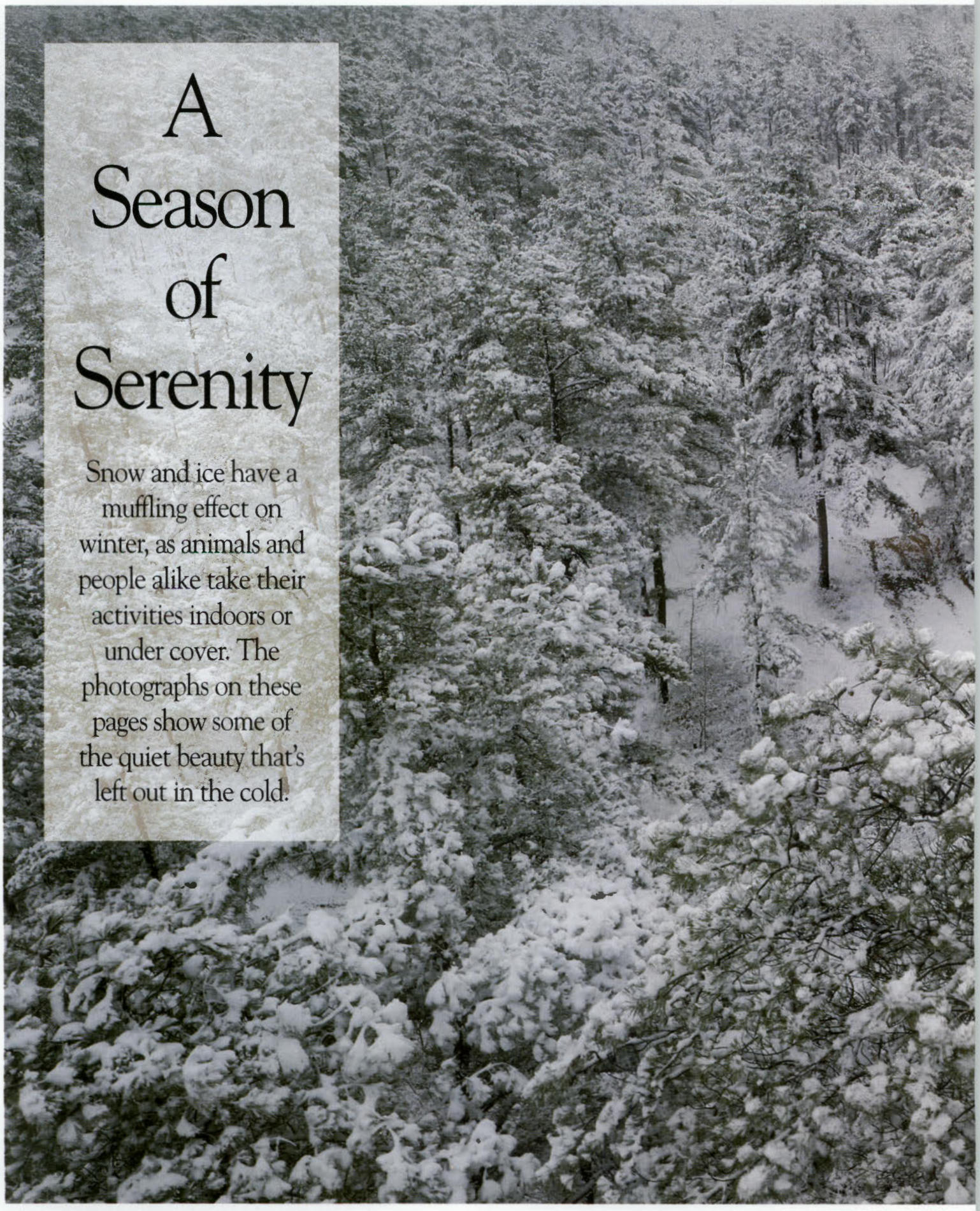
❑ When unwrapping gifts, try not to tear the wrapping paper so that it can be saved and reused.

This is just a partial listing of all of the choices available to you this holiday season. But remember that environmental awareness should be practiced year-round. The choices we make every day — from how we get to work or school to what types of products we buy at the grocery store — all have far-reaching effects. The best gift we can give ourselves and our children is a clean, healthy environment that we can enjoy this holiday season and for years to come.

Marybeth Brenner works in the DEPE's Office of Public Participation and Education.

A Season of Serenity

Snow and ice have a muffling effect on winter, as animals and people alike take their activities indoors or under cover. The photographs on these pages show some of the quiet beauty that's left out in the cold.



Puffs of snow top the trees in South Jersey's Pine Barrens on a winter afternoon.

© TOM TILL

© TOM TILL

Ice forms intricate patterns (opposite page) at South Mountain Reservation, Essex County.

Bits of history on a headstone are worth a pause on a winter morning near Sussex County.

WALTER CHOROSZEWSKI

WALTER CHOROSZEWSKI

Horses stand out amid a snowy background (opposite page) in Neshanic, Somerset County.

The last covered bridge in New Jersey is bathed in sunlight in Sergeantsville, Hunterdon County.

By creating the proper habitat, you can attract birds such as this slate-colored junco to your back yard this winter.

Create a Bird Refuge in Your Back Yard

By Lawrence Niles and Bill McDermott

The winter sky is cloudy and gray, almost the same color as the young sharp-shinned hawk perched 30 feet or so from the bird bath and feeder. As the hawk sways slightly in the harsh winter wind, cardinals and chickadees cautiously flit among the evergreen laurel shrubs that cover much of the South Jersey forest floor. The sharpie suddenly makes her move, and in a flash of gray and white, swoops past the feeder. Birds scatter everywhere, a jay screams and disappears, and the sharp-shinned flies head-on into a group of pitch pine and laurel.

This drama is a common one every winter throughout New Jersey as flocks of hungry birds take advantage of the ready food at thousands of backyard feeders, which range from simple wooden platforms to grand multi-compartmental designs.

Back-yard birds will attract predators like this sharp-shinned hawk.

RICH A. KING

Finding food and keeping warm are essential for birds during the cold winter months. Many North American species are forced to leave the Northeast, such as birds that eat insects. But others move just a short distance to a place where they can reduce the chance of getting caught in a hard winter freeze. For many of them, their first stop is New Jersey, which has some of the most diverse natural habitats in the country. Many of the birds that breed here in New Jersey move south, but others, like the noisy Carolina wren, stay for the winter. The great number of birds that choose to join the year-round residents makes New Jersey an excellent place for winter wildlife projects.

You can can easily convert an ordinary back yard into a quality habitat for these birds. With a minimum of effort, you can bring in northern cardinals, tufted titmice, the purple finch, juncos, white-throated sparrows, pine siskins and the gregarious chickadees. These and other species will, in turn, attract sharp-shinned and Cooper's hawks, which are common predators.

With a little careful management, you can bring in many more species. In winter, as in any other time of the year, birds have three major needs: cover, water and food. A backyard wildlife manager should try to provide all three. Not only will this help the birds, but it will provide you with the best opportunity of seeing the drama of winter ecology.

Cover is probably the most important consideration because it is the most often overlooked. Cover must provide a shelter from winter winds and an escape from predators, both in the air and on the ground. In winter, this means evergreens, either broadleaf such as rhododendron and laurel, or conifers, such as pine, spruce, hemlock or cedar. A cedar provides a nearly impervious refuge for most species and also a fruit "bonus" that lasts long into the winter. But always think of the wind and sun. A good winter perch will shield birds from the prevailing wind and have a number of south-facing points.

Birds need water to drink and to clean themselves. A bird bath or pool does the job, but the obvious problem in winter is ensuring that the water doesn't freeze. This can be done by keeping the water moving or by using a heater purchased through one of the many bird-feeding supply catalogs. But remember to think about cover. A pool of water in the middle of an open lawn may be too serious a risk for many birds worried about being preyed upon by a passing hawk or semi-wild cat.

You also can provide winter food through the shrubs and trees you plant in your yard. Shrubs such as yews, hollies and junipers combine extremely dense foliage with an available food source. Flowering dogwood, sumac, red and white mulberry, hackberry, service berry and pin cherry are all important

food sources that also provide shelter. Other shrubs and vines, such as grape, Virginia creeper, honeysuckle and, on the yard's fringes, even the prickly greenbrier, can be of use.

Putting in a bird feeder will have the biggest impact on the birds in your area. Bird feeders come in a bewildering array of shapes and styles that will appeal to nearly anyone's sense of beauty. What the birds are most concerned with, however, is the food. Here, variety is the key. Try to provide as many different-size seeds as you can. Put out suet (chunks of beef fat available at most supermarket meat counters). Provide sugar and water for the hummingbirds passing through in the fall and spring.

Consistency is important. After you start feeding birds, in time they will visit regularly and become accustomed to your particular type of food. In fact, they will come to depend on it. Your feeder may be the reason that some birds choose to stay in the area instead of moving farther south. When winter is mild and you stop feeding the birds, sometimes they can still move on. But when winter hits hard with snow and freezing temperatures, these birds can no longer make a flight south. They are stranded and need your food.

The woodcock in Cape May illustrate the difficult reality of being stranded in winter. Each year, thousands of woodcock migrate through the Cape May peninsula to their wintering area in the southeastern United States. They usually fly in November and December and stay for a short feeding in the many swamplands and agricultural fields of the lower cape. These habitats act as a natural feeder for these species so they can refuel themselves for their journey south.

One recent December, they came and stayed as winter started out deceptively mild. But the weather suddenly turned harsh and the ground froze solid, preventing them from probing with their long beaks for the invertebrates that keep them alive. Growing weak from hunger and cold, they couldn't fly across the Delaware Bay. They were trapped, and hundreds, perhaps a thousand, died.

This natural event couldn't be helped, but it illustrates the problems birds face in the winter. Woodcocks don't respond to bird feeding or backyard landscaping, but many species do. When you begin helping these other species, it carries a responsibility. If you start, you must continue until winter gives way to spring. Creating a backyard refuge and maintaining it throughout the entire winter is one of the best ways to both help and have the opportunity to enjoy New Jersey's diverse bird population.

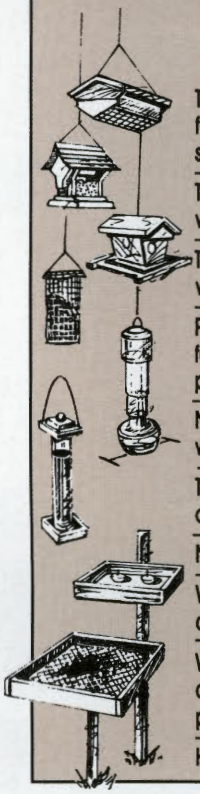
Lawrence Niles is acting chief of the Division of Fish, Game and Wildlife's Endangered and Nongame Species Program. Bill McDermott is vice president of Friends of Endangered and Nongame Wildlife Inc.

BRECK P. KENT

BRECK P. KENT

With a minimum of effort, you can attract common species, such as the chickadee (left) and tufted titmouse.

Attract Birds With These Feeders and Seeds



	Blackbirds	Bluebirds	Bobwhite quail	Buntings*	Cardinals	Chickadees	Chipping*, field, tree sparrows	Cowbirds	Creepers	Crows	Dark-eyed juncos	Doves	Finches	Goldfinches	Grosbeaks	Grackles	House finches	House sparrows	Hummingbirds*	Jays	Juncos	Kinglets	Mourning doves	Nuthatches	Orange-crowned warblers*	Orioles*	Pine siskins	Purple finches	Redpolls	Ring-necked pheasants	Song sparrows	Sparrows	Starlings	Tanagers*	Thrashers*	Hermit thrushes	Titmice	Towhees	White-throated sparrows	White-crowned sparrows	Woodpeckers	Wrens	Yellow-rumped warblers
Tube with tray or platform feeder with black oil sunflower					●	●						●		●	●	●	●	●		●	●			●			●	●	●					●		●	●	●	●	●			
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Wire mesh feeder or mesh cloth hanging bag with peanut butter suet		●			●									●					●	●	●				●										●					●	●	●	
Hanging peanut feeder						●																														●					●		

* These birds do not winter in New Jersey.

More Ways to Help

The backyard habitat movement is not a new one. It has been the subject of a number of efforts by groups such as the Department of Environmental Protection and Energy's Endangered and Nongame Species Program, the National Wildlife Federation, the National Audubon Society and other state groups.

The Endangered and Nongame Species Program conducts projects that allow a better understanding of animals' needs in winter and during migration. It is also the last resort for the state's rare breeding species. The program is supported entirely by donations. It receives no state appropriation. The chief source of funding is the tax check-off on Line 45B of your state tax form.

The program also is supported by a nonprofit organization, Friends of Endangered and Nongame Wildlife Inc. This organization publishes a quarterly newsletter and organizes fall, winter and spring walks, led by program biologists, for members only. Annual memberships are $10 a year for individuals and $15 for families. Anyone interested in joining may send checks and membership requests to:

Friends of Endangered and Nongame Wildlife Inc.
One Wayside Village, #376
Marmora, N.J. 08223
Attention: Bill McDermott

Valuable support also is provided by a network of volunteers who are part of the Division of Fish, Game and Wildlife's Conservation Corps. Volunteers help state zoologists conduct much of the work that helps protect the state's species and their habitats. If you are interested in joining, contact:

Steve Toth
Wildlife Conservation Corps
CN 400,
Trenton, N.J. 08625-0400

The thick-scaled bark of the sycamore tree has dark-colored outer plates and light-colored inner areas.

Get Ready to Identify Plants

by Jim Morris

A winter walk through the woods in New Jersey can mean more than pleasant exercise for your heart and lungs. It's a chance to solve some of nature's mysteries, for lurking around the woods, meadows and swamps are thousands of plants that can be identified with a careful eye for detail and an ability to piece together a puzzle.

In the dead of winter, nature has covered up the easy clues that reveal a plant's identity. The colorful, fragrant flowers of spring and summer are only a memory, and the leaves have fallen to the ground and possibly been swept away.

So how do you solve these cases?

"You have to be a Sherlock Holmes," says Dr. David Smart, who coordinates a two-day plant identification course at Cook College in New Brunswick. "You have to use your imagination and put together the clues."

A detective's eye cannot stop at the plant alone to gather the evidence needed for winter plant identification, he says. You must consider the habitat in which the plant is growing. Is it a mature forest, a wet meadow, an aquatic area, recently converted farmland, or another distinct habitat?

For instance, if you're walking in a wetland, you would not expect to find black oak or red oak trees because they prefer dry, upland habitats. However, a red maple would be right at home in that wet area.

Hidden information lies beneath your feet, says Smart, who also is the resource conservationist with the U.S. Department of Agriculture's Soil Conservation Service. Soil can provide important clues for a budding winter plant identifier. Serious investigators can consult an SCS county soil survey, which identifies the soil type and important characteristics, such as drainage.

For people who simply want to wander in the woods and wonder what's growing around them, consider Smart's "white sneaker technique" for soils investigation. "If you walk out there and your white sneakers turn brown, you probably have the hydrology (of a wet area)," he says.

After getting a feel for the soil, take another look at the big picture before trying to identify individual plants. Can you make an educated guess about the area's ecological succession?

Does the area appear to have been farmed in the recent past? Farming knocks ecological succession back to the beginning, and annual plants generally will lead the vegetation as farmland reverts to its natural state.

Annual plants usually produce big seeds, and as a result they tend to attract wildlife, such as sparrows, goldfinches and other songbirds to an area. Perennial plants, which devote more

Even with leaves and flowers gone, nature has left behind many telltale clues.

BRUCE HAMILTON

Smooth bark gives the American hornbeam a muscular appearance.

energy to establishing a root system than seed production, will succeed annual plants to a disturbed site, such as converted farmland.

"If you look at the history of the area and the soil type of an area, that can key you in to the plants and wildlife you would expect to see there," says Smart.

Reading the Plant Clues

Now examine the plant itself. Even with leaves and flowers gone, nature has left behind many telltale clues that will help you identify trees, shrubs and many herbaceous plants, says Dr. Sharon Wander, who teaches a two-day field course in winter vegetation identification at Cook College. Consider these features:

Architecture — Are the branches and twigs opposite each other or do they alternate in position on the plant? In New Jersey, three main types of trees have opposite branching — maple, ash and dogwood. Think of "mad dog" to remember these trees.

Look at the overall shape of the plant. Ashes have stout twigs that arch out, while maples have more slender, delicate twigs. A sassafras tree, for instance, has twigs that curl upward and create the appearance of a candelabrum in the crown.

Buds — Examine their shape and color or other distinctive features, such as scales or hair, to differentiate plants. For instance, oak is the only genus of trees that features a terminal bud in clusters.

Bark — Although this feature often is more difficult for beginners because its qualities are somewhat subjective, bark can be a quick identifier, Wander says. For instance, is the bark's texture smooth like an American beech or deeply grooved like chestnut oak? Not surprisingly, the bark of shagbark hickory is an obvious giveaway.

BRUCE HAMILTON

The winterberry holly gets its scarlet glow from its reddish-orange fruit.

Finally, look right around the plant for other clues. Unless heavy snow has blanketed the ground, which has been the least of New Jersey's worries in recent years, expect to find leaves that fell in autumn.

"If you think you've got an oak and you don't see any oak leaves around, it probably ain't no oak," says Smart. "Leaves just don't disappear that fast. They may be wrinkled and dried, but they should be there."

Even with the clues provided by soils, succession, bark, branching and buds, winter plant identification can challenge and frustrate the untrained eye.

At Cook College's annual seminar on winter plant identification last year, environmental professionals identified more than 100 plants over two days in the field. During a review near the end of the second day, the group struggled to distinguish among herbaceous plants with similar winter features.

"How about this one," asked Wander, noting the dried stems topped with rounded clusters of tubular flower bases growing in an open field.

"Another dead flower," was the lone, but good-natured reply from the group.

The correct answer, in fact, was wild bergamot.

Bring Along a Few Tools

Assuming you have dressed sensibly for a winter outing, this line of detective work requires little additional equipment. Certain to come in handy, however, is a field guide or plant key that you find easy to use. Recommendations by Smart and Winder include:

- ❑ The *Winter Tree Finder*, a 58-page guide that fits in a back pocket. Published by Nature Study Guide Publishers, it focuses on twig features to identify trees.
- ❑ *The Tree Identification Book* and *The Shrub Identification Book*, which contain large, easy-to-use pictures of twigs and bark, and profiles of winter trees. No back pocket, however, can accommodate these full-size, 250-page books, which were written by George Symonds and published by the Quill Division of William Morrow & Co.
- ❑ *Woody Plants in Winter*, written by Earl Core and Nelle Ammons and published by Boxwood Press. This also focuses on twigs to identify trees and shrubs, and provides line drawings to help visualize features.
- ❑ *Weeds in Winter* by Lauren Brown, for identifying herbaceous plants. This manual provides detailed line drawings to highlight the delicate features that distinguish these plants in winter, and provides side-by-side comparisons to help differentiate similar species. Published by W.W. Norton & Co., it also provides background on plants, such as origin of names, and medicinal and herbal uses.
- ❑ *Pods* by Jane Embertson, which provides color photographs of herbaceous plants in summer and winter, and also serves as a guide for dried flower arranging.

You should carry a magnifying glass to examine small features, such as bud scales on woody material or flower parts on herbaceous plants. Binoculars can help determine branching patterns on tall trees and can help in a more practical way, Wander notes. "You can look closer at a plant

BRUCE HAMILTON

The white oak is distinguished by its grey, flaky bark.

across a field before deciding whether to stomp through two feet of snow," she says.

A bag to collect specimens also is useful if a stubborn identification problem might best be solved in warmer quarters. Wander does not recommend bringing a knife because she tries to avoid examining features that require cutting, such as the underside of bark. "I really don't like to injure the plant," she says. "Identification should not require much mutilation. I don't encourage ripping apart live plants."

Finally, detailed detective work can suffer in harsh winter weather. In winter vegetation field courses, a judicious supply of hot chocolate or hot cider has proven valuable in keeping the eye sharp and the body able.

Where to Go

If you are looking for a wide variety of vegetation to identify on your winter walk, consider visiting some of New Jersey's wildlife management areas.

Assunpink Wildlife Management Area in Monmouth County and Collier's Mill Wildlife Management Area in Ocean County both have served as sites for vegetation identification courses because they offer a generous mix of habitats and plant species. Frequently, you can find open fields, hedgerows, aquatic areas and both young and old forests.

The Division of Fish, Game and Wildlife maintains a diversity of habitats in these management areas to attract wildlife. As a result, these areas are shared by a variety of outdoor enthusiasts, such as hunters, photographers, bird watchers, hikers and fishermen. Please respect the rights of others who use these areas.

Ironically, some of the best-looking local parks make the least attractive sites for identification trips, according to botany experts. Well-manicured areas usually lack diversity of species. "The problem there is that it's harder to find weedy areas because weeds are supposed to be undesirable," says Wander. However, the line between a weed and a wildflower is hard to distinguish, she adds.

Ted Gordon, president of the Philadelphia Botanical Society who teaches a South Jersey-based winter vegetation identification course, recommends Lebanon State Forest in Burlington County because it offers both a good diversity of habitats and helpful trail maps.

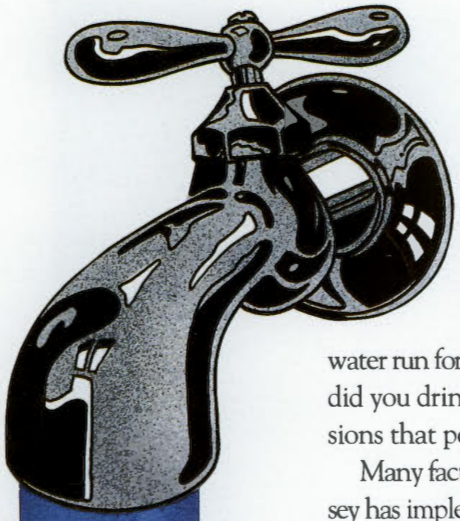
If you're short on plant experience and prefer to know if that bigtooth aspen tree you've identified is in fact a bigtooth aspen, you may want to consider a park or arboretum that provides the names of the plants. However, many of these plants have been imported to the site and therefore are growing in artificial habitats, which eliminates an important winter identification clue.

Smart recommends visiting the Delaware Water Gap National Recreation Area because it contains many areas in different stages of ecological succession.

Other recommended sites cover just about every corner of New Jersey, from the Great Swamp National Wildlife Refuge in Somerset and Morris counties to the Brigantine National Wildlife Refuge in Atlantic County, and from Whitesbog in Burlington County to Stokes State Forest in Sussex County.

Finding sites should not be a problem. Nature has not skimped in providing vegetation for New Jerseyans to see. "That's the great thing about plants," says Wander. "You can botanize almost anywhere."

Jim Morris is assistant director of Cook College's Office of Continuing Professional Education.



Protecting Your Drinking Water

By Barker Hamill and Leslie McGeorge

Rise and shine! As one of your first decisions of the day, did you turn on the tap to fill the coffeepot and make the orange juice, or did you reach into the refrigerator for the bottled water you bought yesterday? Did you let the water run for 30 seconds before using it (saving the water for your plants or to wash the dishes), or did you drink the first flush of water coming out of the tap? These actions are personal decisions that people in New Jersey and elsewhere make every day about their drinking water.

Many factors influence the quality of drinking water, and therefore, how people use it. New Jersey has implemented several innovative approaches over the past few decades that have resulted in stricter drinking water standards and treatment procedures than federal regulations required. Recently, the U.S. Environmental Protection Agency adopted new testing requirements and more stringent federal standards to improve the quality of drinking water nationwide.

Knowing how the water supply is protected, where it comes from and what the potential contaminants are can help you better understand the quality of your drinking water.

What Are the Sources?

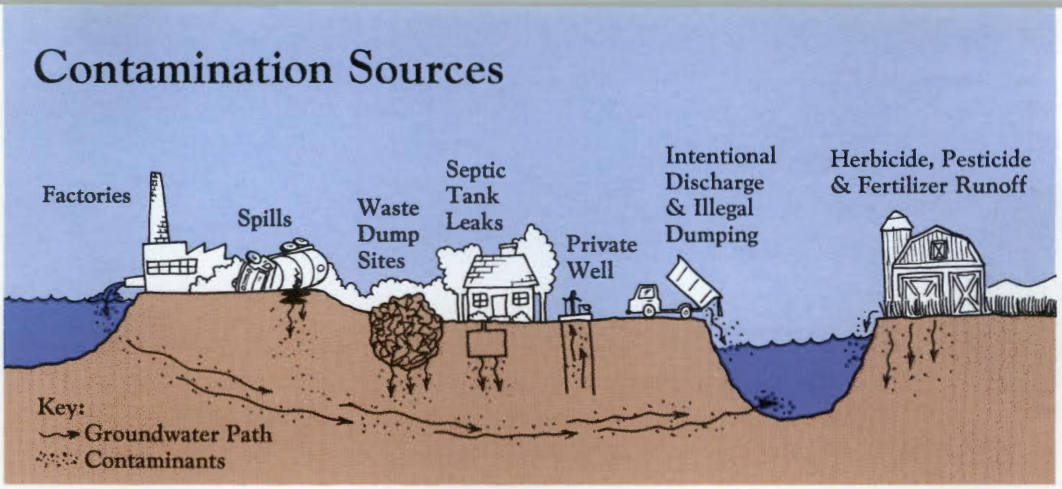
New Jersey's drinking water comes from two primary sources. Surface water from rivers and reservoirs accounts for about half, and groundwater from wells accounts for the rest. Most residents of South Jersey drink public water that is drawn from wells, while in North Jersey most public water comes from surface supplies. There are about 40 surface water intakes and 2,500 wells serving the 637 public community water systems in New Jersey. Public community water systems are what we all think of as large water utilities that serve permanent residential populations. Additionally, there are approximately 4,400 non-community water systems, which are those serving people at non-residential sites, including factories, schools, restaurants and similar facilities. Finally, there are another 370,000 private wells serving individual homeowners, which are considered non-public water systems. Almost 90 percent of New Jersey's residential population is served by public community water systems.

Certain sources of contamination are more likely to affect your water, depending on whether it comes from surface or groundwater sources. For instance, microbiological contamination from sewage wastewater discharge would affect surface waters, while solvents from a leaking underground gasoline tank would primarily affect groundwater. Certain naturally occurring contaminants are found at higher levels in groundwater versus surface water — radon gas, for example.

Some water resources are more protected in general from diverse pollution sources than others. A well that is several hundred feet deep may be less susceptible to a variety of types of contamination than a very shallow well. Knowing something about the source of your drinking water will help you understand the possible types of contaminants that could be present in your tap water.

What Are the Potential Contaminants?

There are various categories of contaminants that can occur in drinking water, including ones that are naturally occurring or produced as a result of human activities; ones that are chemical in nature; those that are biological organisms; and others that intentionally are added to the water, primarily to improve the water treatment process. Often, the levels of contaminants found in drinking water are very low. For many of these substances, the state or federal government has established levels of concern, below which the drinking water quality is considered acceptable. These levels or standards are established to protect public health and provide adequate margins of safety.



All sources of drinking water contain naturally occurring minerals. At certain levels, some of these may cause a bad taste or odor in the water, such as iron, or may have potentially negative health effects, like arsenic. Additionally, certain types of geological formations may contribute significant levels of radioactive substances to the water, such as the radioactive gas radon, or the metal radium.

Chemical contamination caused by human activity can occur in both surface and groundwater sources. There are many possible sources of chemical contamination, including accidental spills, leaking underground storage tanks, hazardous waste sites, septic systems, runoff and leaching of pesticides or fertilizer applications, and wastewater discharges from industries or sewage treatment plants.

If the surface or groundwater from which your water comes is contaminated with human or animal wastes, your drinking water may contain certain types of microorganisms that are of a public health concern. Such microorganisms can include bacteria, viruses and parasites associated with illnesses, such as those that affect the stomach and intestines.

Some chemicals are added to the water, primarily to improve the treatment process and remove contaminants. For instance, disinfectants like chlorine are added to inactivate microorganisms in the water to substantially reduce the risks of many waterborne illnesses like cholera and hepatitis.

What Are the New Federal Standards?

You may have read or heard recent news reports about local drinking water quality concerns, or you may have received a notification of water quality violations from your water supplier. In many cases, these recent developments are the result of the initiation of new federal testing requirements and more stringent federal standards.

Frequently, there may be no actual change in water quality that prompts these reports. What's new is that the requirements are now more protective. A good example of a contaminant receiving this type of media attention is lead. Increased monitoring and a lower acceptable level for lead recently have gone into effect due to heightened concerns over the potential health effects of low levels of exposure to lead.

Increased monitoring and a lower acceptable level for lead recently have gone into effect.

In 1986, Congress revised the federal Safe Drinking Water Act, originally passed in 1974, to significantly increase the number and rate of development of drinking water standards adopted by the EPA. The congressional mandate meant that the number of contaminants to be monitored and controlled in the nation's water supply would vastly increase in the late 1980s and early 1990s. Since 1986, the EPA has adopted four sets of major regulations and will adopt two more sets within the next several years. Overall, these changes represent an ambitious program to improve the nation's drinking water quality.

The following new protective measures have been or soon will be implemented:

- ❑ The basic microbiological controls are more stringent, including the need to provide filtration of water supplies at many previously unfiltered systems across the country.
- ❑ Existing filtration plants are required to produce higher quality water and to perform evaluations of the effectiveness of their disinfection processes.

❑ The previous lead standard (50 parts per billion) for flushed water at any tap has been replaced with an action level of 15 parts per billion to be measured in standing water at high-risk locations (homes with lead plumbing or service lines, or homes built between 1982 and 1987 with copper plumbing and lead solder). This rule will reduce the amount of exposure to lead from drinking water by increasing public awareness of the need to flush a little water before drinking, and making water systems improve their corrosion control treatment to prevent unacceptable levels of lead from leaching into the water.

❑ Existing standards have been revised and new standards adopted for about 60 organic and inorganic chemicals, including an extensive list of pesticides. Previously, standards were available for only about 20 contaminants.

❑ New radiological standards have been proposed, including a standard for radon in drinking water. No such standard has been available to control this source of the radioactive gas.

❑ In 1993, rules will be revised to increase the regulation of disinfection byproducts, those chemicals created by the reaction of naturally occurring organic material in the water, such as leaves, with the disinfectants used to greatly reduce risks from disease-causing microbes. These contaminants are primarily of concern for surface water supplies.

What is New Jersey's Role?

The state has many strategies to protect the quality of our water resources, including source water protection, traditional and innovative regulatory approaches and a water quality research program. Various methods are used to protect sources. New Jersey has an extensive program to monitor and control the release of industrial and sewage contaminants to both surface water and groundwater. Numerous site cleanup programs, such as those involving hazardous waste sites, abandoned industrial facilities or leaking underground storage tanks, incorporate the removal of pollution sources from the environment and the restoration of water quality as primary goals of their activities.

The DEPE's new Well Head Protection Program is designed to identify potential groundwater pollutant sources and merge this information with various pollution control strategies to maximize the protection of the thousands of wells used in New Jersey as sources of drinking water.

Nonpoint sources of contamination, such as agricultural runoff, parking lot runoff, industrial stormwater discharges, residential fertilizer and pesticides also contribute to water quality problems. The state now is in the process of developing a comprehensive stormwater discharge control program to address many aspects of nonpoint source pollution.

In addition to protection of water sources, New Jersey currently uses the following four major regulatory approaches to both ensure the existing quality of drinking water and to achieve improved water quality in the future:

❑ Development of drinking water regulations regarding water treatment, delivery and testing as new information on drinking water quality becomes available.

❑ Permitting of design and construction of treatment plants and water storage facilities to ensure adequate water supply and quality.

❑ Routine inspections of operating treatment plants to ensure that they are being properly maintained.

❑ Water quality monitoring of treated water to ensure compliance with standards.

Prior to the recent federal changes, only a limited number of national regulations on drinking water treatment and testing were in place. Beyond these basic national requirements, New Jersey has used several innovative approaches over the past several decades to provide further protection for the state's drinking water. In the late 1960s, the state mandated filtration treatment at most major surface water supplies and disinfection for all sources providing water to more than 100 ser-

Nonpoint sources of contamination also contribute to water quality problems.

vice connections. These measures were taken primarily to improve the microbiological quality of the water, and still are not routinely practiced in many areas of the country.

In the mid-1980s, New Jersey began a landmark mandatory public tap-water testing program for many synthetic organic chemicals not monitored by the federal program at the time. This so-called "A-280 program," named after its Assembly bill number, covers chemicals frequently used as solvents, raw materials and fuel oil components. The A-280 legislation also gave New Jersey specific health goals on which to base its drinking water standards, resulting in some state standards being more stringent than those now at the federal level.

Although the hazardous organic contaminants monitored by the A-280 program have been detected in New Jersey's water supplies, they are found infrequently. In six years of monitoring, 98 percent of all testing has shown no measurable levels of these pollutants.

New Jersey also has a unique potable water research program to investigate water quality issues that are important specifically to the state. The program is designed to test for the presence of individual contaminants, investigate various sources of contamination, determine how pollutants travel from these sources to our water supplies, develop ways to effectively remove pollutants from drinking water and determine the potential negative health effects of any identified contaminants.

How Do You Make Decisions on Water Quality?

Let's return to our early-morning dilemma of whether to use tap water or bottled water. If your decision is based on meeting established health safety standards, then the public tap water is fine, since both tap and bottled water are required to meet the same standards. If you happen to like the taste of bottled water better than your public tap water, that generally would be a good personal choice for you. If you have decided to use tap water, you can further minimize your personal exposure by understanding your water quality.

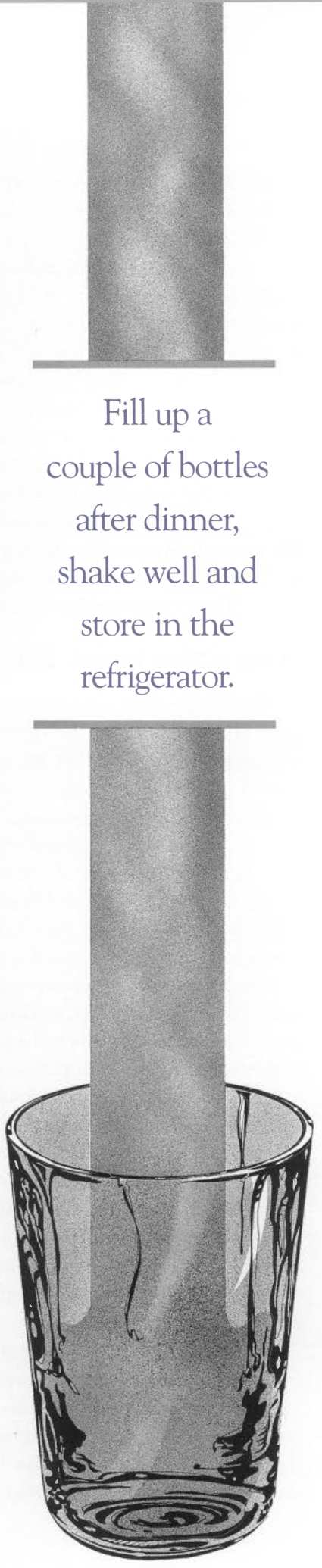
For instance, if you believe you have an increased risk of lead exposure because you have lead plumbing or copper plumbing with lead solder less than 10 years old, make sure you use a good flushing program anytime water stands in the pipes for four hours or more. Alternatively, you can minimize concerns about lead and other volatile organic contaminants by being your own bottled water source. Just fill up a couple of bottles after dinner, shake well and store in the refrigerator. This action tends to remove any volatile organic chemicals and helps to ensure that the next morning you will have well-flushed water to drink, instead of water that has been standing in pipes overnight. This method is a particularly good choice for people who live in large apartment buildings, since water often has to travel through a long system of pipes, therefore requiring a much longer period of flushing first thing in the morning.

You can obtain additional information about your drinking water from a number of sources. Your water utility will have a lot of specific analytical data about your water quality, and these test results are public information. You can also ask where your water comes from and how you can work to help keep those sources protected.

The DEPE's Bureau of Safe Drinking Water has several publications available, as well as staff, to respond to New Jersey residents' concerns. Contact the office at (609) 292-5550.

The EPA has a Safe Drinking Water Hotline that operates Monday through Friday, from 8:30 a.m. to 4:30 p.m., and is capable of providing answers to a wide range of general questions on drinking water quality. Call 1 (800) 426-4791.

Fill up a couple of bottles after dinner, shake well and store in the refrigerator.



Barker Hamill is the chief of the DEPE's Bureau of Safe Drinking Water. Leslie McGeorge is deputy director of the DEPE's Division of Science and Research.

Bookshelf

Ice Fishing: A Complete Guide . . . Basic to Advanced, written and illustrated by Jim Capossela, published by The Countryman Press, Inc., is a simple guide to ice fishing that features a wide range of information, from basics such as beginner safety tips, to effective fishing techniques for the more advanced ice angler. *Cost is $15, plus $2.50 for postage and handling (paperback). Available at bookstores. To order by phone, call The Countryman Press, Inc., at (802) 457-1049.*

Exploring Nature in Winter, by Alan Cvancara, published by Walker and Company, features useful tips on traveling in winter, camping, cross-country skiing, birding and a variety of other winter outdoor activities. This extensively illustrated guide also features a winter survivalist's handbook. *Cost is $16.95 (paperback). Available at bookstores. To order, call Walker and Company's customer service department at 1 (800) AT WALKER.*

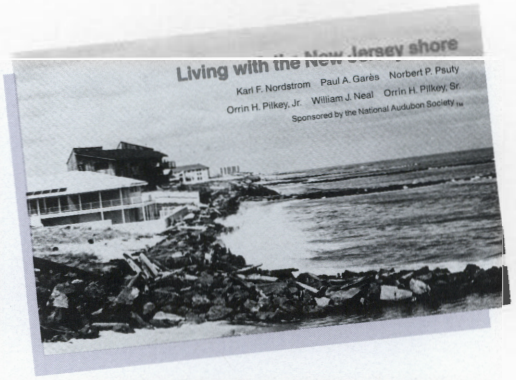
Environmental Dividends: Cutting More Chemical Wastes, released by INFORM, a national nonprofit environmental research and education organization, presents the results of a detailed study of 29 organic chemical plants and their progress in using source reduction as a way to inexpensively reduce chemical wastes. *Cost is $75 plus $3 shipping and handling. Available by writing to INFORM at 381 Park Avenue South, New York, N.Y. 10016.*

Delaware River Basin Commission Annual Report 1991 summarizes the activities and reports prepared by the Delaware River Basin Commission's advisory commitees, including information on water quality and conservation standards. *Available free by contacting the DRBC at (609) 883-9500, or by writing to the Delaware River Basin Commission at P.O. Box 7360, West Trenton, N.J. 08628.*

New Jersey Parks, Forests, and Natural Areas: A Guide, by Michael P. Brown, published by Rutgers University Press, lists nearly 250 recreational areas open to the public throughout New Jersey. Places for hunting, fishing, camping, boating and a variety of other outdoor activities are included, with information on what each site offers. *Cost is $37 (hardcover) or $14.95 (paperback). Available at bookstores. For more information, call: 1 (800) 446-9323.*

The New Jersey Book of Lists, by Ronald A. Mayer and Gerald Tomlinson, published by Home Run Press, features everything from New Jersey's famous people and places to its historic events and sites. A variety of helpful tourist lists are included, including ones on New Jersey's finest restaurants and notable museums. *Cost is $9.95 (paperback). Available at bookstores. To order, send $9.95 plus $2 shipping and handling to Home Run Press, 19 Harbor Drive, Lake Hopatcong, N.J. 07849.*

Discovering and Exploring New Jersey's Fish Streams, prepared by New Jersey Sportsmen's Guides, provides specific fishing locations for trout and other species throughout New Jersey. Each stream segment features articles by some of the best-known writers/anglers in the state, as well as maps, directions, techniques and seasonal information. *Cost is $8.95. To order, add $1.55 for shipping and handling and send a check to New Jersey Sportsmen's Guides, P.O. Box 100, Somerdale, N.J. 08083.*



Living with the New Jersey shore, sponsored by the National Audubon Society, published by Duke University Press, provides helpful information for people planning to buy property or build at the New Jersey shore. The book is an effort to increase public awareness of the hazards of beach erosion on barrier islands. *Cost is $35 (hardcover) or $14.95 (paperback). Available at bookstores. For more information, call Duke University Press at (919) 684-2173.*

Simply Christmas: Great Ideas for a Noncommercial Holiday, revised by Mary Thompson, published by Walker and Company, is a guide to celebrating the holidays the old-fashioned way, with hundreds of suggestions for inexpensive, but imaginative gifts. The book provides dozens of ideas for the environmentally conscious shopper, from recyclable gift wraps to ways to create your own holiday crafts from nature. *Cost is $8.95 (paperback). Available at bookstores. To order by phone, call Walker and Company's customer service department at 1 (800) AT WALKER.*

Geologic Map Series 91-2, scale 1:24,000. **Bedrock Geologic Map of the Green Pond Mountain Region from Dover to Greenwood Lake, New Jersey,** by Gregory C. Herman and James P. Mitchell. *Cost is $10. Orders for this New Jersey Geological Survey map should be mailed to the Department of Environmental Protection and Energy, Map and Publications Sales, Bureau of Revenue, CN 417, Trenton, N.J. 08625-0417. Please make checks payable to "Treasurer, State of New Jersey."*

D&R Canal Paths to Be Linked

The state Department of Environmental Protection and Energy will complete two of the missing links of Delaware and Raritan Canal State Park, which recently was designated a National Recreation Trail.

A total of $1.55 million in federal transportation funds will be used to construct two sections of the canal's trail from Lower Ferry Road to Warren Street in Trenton and from south of Route 202 to the southern border of Lambertville. The completion of these two missing links will unite the existing paths and create a continuous 32-mile path from central Trenton to Frenchtown.

In addition, the DEPE will spend approximately $500,000 in Green Acres bond money to stabilize and restore three historic canal tenders' houses at the Zarephath, Weston Canal and Carnegie Road sections of the park. The work on the houses will restore two of the structures and prevent one from deteriorating further.

The Delaware and Raritan Canal is the fourth trail in New Jersey to be designated a National Recreation Trail. The others are Patriots' Path in Morris County, and the Long Path and Shore Path, both in Palisades Interstate Park in Bergen County. In addition, the Appalachian Trail in Warren, Sussex and Passaic counties has been designated a National Scenic Trail.

To qualify as a National Recreation Trail, land must be available for public use, incorporate significant natural or cultural features and be designed and managed appropriately. The agency managing the land also must guarantee continuous public use for at least 10 years. The designation is made by the U.S. Department of the Interior's National Park Service.

The Delaware and Raritan Canal operated between 1834 and 1933, transporting goods between Bordentown, Trenton and New Brunswick. At its peak in the late 19th century, the canal shipped more tonnage to New York City than New York's Erie Canal. Today, it contains some of the nation's best-preserved canal structures and waterways, including 15 lift locks and two guard locks. It also supplies water to surrounding communities.

You'll Find Cleaner Fuels at the Pump

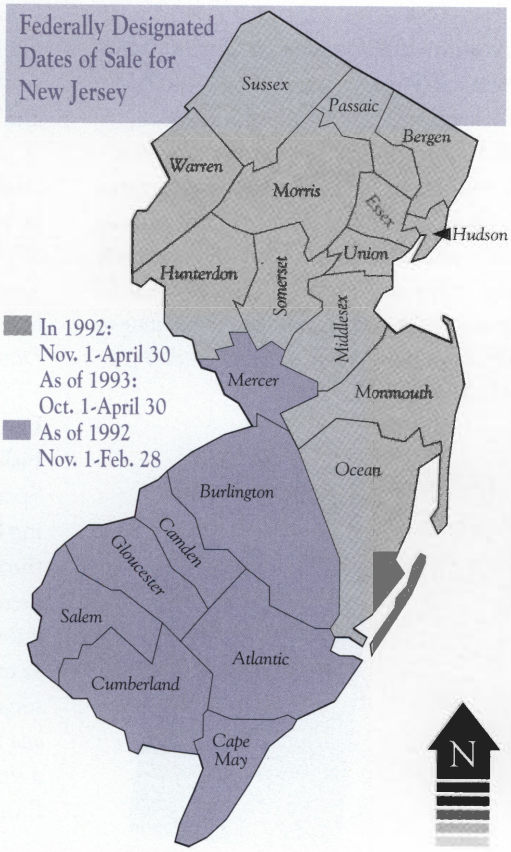
Gasoline stations in New Jersey have begun to sell oxygenated fuels during the cold-weather months as part of a federally mandated effort to improve air quality.

Oxygenated fuels are gasolines that are blended with additives to increase the level of oxygen in the fuel. Adding oxygen to the fuel changes the air-fuel mixture, resulting in more complete fuel combustion and decreased carbon monoxide emissions.

Most of New Jersey exceeds federal air quality standards for carbon monoxide, a colorless, odorless, harmful pollutant that can cause headaches, dizziness and decreased respiratory rates. More than 80 percent of New Jersey's carbon monoxide is generated by motor vehicles.

Petroleum refiners estimate that oxygenated fuels may have a minimal effect on the performance and fuel economy of motor vehicles depending on the vehicle model and year. Car owners should refer to their owners manuals for specific information. Cold weather alone can lower fuel economy.

The refiners also estimate that the additional process involved with adding oxygenates to the fuel may result in a slight increase in the cost to the consumer. However, the costs, if any, will be more than offset by the public health benefits of reduced carbon monoxide levels.



Learn About the Pinelands

The fourth annual Pinelands Short Course, a blend of science, history and folklore, will be held on Saturday, March 6, from 9 a.m. to 3:30 p.m. on the Cook/Douglass Campus of Rutgers University in New Brunswick.

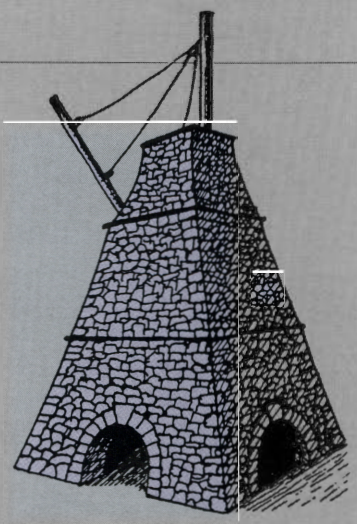
Workshops will investigate a wide range of topics, including Colonial life and industry in the Pinelands; ghost towns; the Jersey Devil; railroading through the Pines; soils and wetlands; and the pygmy pines.

Whether you are a teacher, student or simply interested in learning more about New Jersey's Pinelands, this day-long series of workshops is designed to increase your understanding of and appreciation for the 1.1-million acre region, the country's first national reserve.

Twenty-four new hour-long workshops are included in the new schedule, while workshops like "Pinelands Owls and Hawks," "Landscaping with Pinelands Ornamental Plants" and "Ethnic Groups in the Pines" are back by popular demand. During the lunch break, participants will have opportunities to meet the presenters and view New Jersey Network's six Pinelands videos.

The course will include a round-table discussion featuring teachers who will share information about their use of Pinelands curriculum. A workshop investigating affordable field trips, ideal for today's budget-conscious day-tripper as well as for teachers planning a Pinelands field trip, also will be offered.

Teachers who attend this short course will receive a New Jersey Education Association professional development certificate.



A Jersey bog-iron furnace resembled a pyramid.

Course brochures with registration forms may be obtained from the Pinelands Commission, P.O. Box 7, New Lisbon 08064, (609) 894-9342, or from the Office of Continuing Education, Cook College, Rutgers University, P.O. Box 231, New Brunswick 08903, (908) 932-9271.

Workshops fill up quickly, so be sure to register early to reserve the sessions you want.

New Jersey Firefighters Lend a Hand in Idaho

Twenty firefighters and two supervisors from the Department of Environmental Protection and Energy's Division of Parks and Forestry battled blazes in the foothills near Boise, Idaho, for more than a week in September as part of a cooperative mutual aid agreement with the U.S. Forestry Service.

The fire in the Boise National Forest was started by a bolt of lightning and spread to about 267,600 acres, making it the largest forest fire in Idaho since 1910. There was no loss of life, but extensive property damage was reported.

The Division of Parks and Forestry's Bureau of Forest Fire Management entered the cooperative Mutual Aid Program in 1985. Since the signing of the formal agreement, New Jersey has provided assistance to other states every year except for 1991, including in 1988 when New Jersey fire personnel were sent to fight the fires in Yellowstone Park.

DEPE, Media Join in Ozone Alerts

The state Department of Environmental Protection and Energy has joined with media organizations in a program designed to alert the public when ozone levels are expected to be unhealthful.

The agreement with the New Jersey Press Association and the New Jersey Broadcasters Association is part of a comprehensive effort to educate the public about the effects of ozone and enlist public support for use of mass transit.

Under the agreement, participating daily newspapers and radio stations will include prominent notice of an unhealthful ozone level forecast in their morning editions and newscasts. In addition, the DEPE's Office of Energy will notify news outlets in the late afternoon when unhealthful levels are forecast for the next day.

Many people are susceptible to the effects of high levels of ozone, particularly those with existing heart or respiratory ailments, asthmatics, young children and the elderly. The advisory, devised collaboratively with Department of Health staff, indicates that all individuals should considering limiting activities that make them breathe faster on high ozone days.

There are two types of ozone — stratospheric and ground-level ozone. Stratospheric ozone is naturally occurring and desirable because it shields the Earth from harmful ultraviolet rays that may cause skin cancer. However, an excess of ground-level ozone irritates the respiratory system and eyes, causing health problems.

The major components of ground-level ozone are volatile organic compounds and nitrogen oxides. In the presence of strong sunlight and high temperature, these compounds create ozone. Motor vehicle emissions are a major contributor to volatile organic compounds.

As of September, the traditional end of the ozone season, ozone had reached unhealthful levels in parts of New Jersey on nine days during 1992. The decrease, from 26 days the previous year, was due in part to cooler, rainy weather.

The Isaac Collins House in Burlington City was the home of New Jersey's first official printer.

Burlington, Hunterdon Sites Earn Historic Note

Four sites, including the Palmyra public school complex in Burlington County and the Taylor's Mill Historic District in Hunterdon County, have been added to the New Jersey Register of Historic Places.

The Palmyra school complex is an impressive collection of two multi-story brick buildings, including the "Old School" on Cinnaminson Avenue, constructed in 1865, and the "New School" on Spring Garden Street, built in 1895. The schools retain a high degree of architectural integrity and are significant local examples of 19th-century institutional architecture.

Taylor's Mill, on Taylor's Mill and Rockaway roads, is the last surviving pre-Revolutionary mill in Readington Township and eastern Hunterdon County. It includes an 18th-century miller's house as well as ruins of a grist and flour mill and an extensive system of water power.

The mill is significant for its importance in the early settlement and industry of Readington; the design of its water system; and for its builder — local politician, landholder and miller John Taylor.

Also added to the New Jersey Register of Historic Places are two other Burlington County properties, the Isaac Collins House in Burlington City and the Bishop-Irick Farmstead in Southampton Township.

The Isaac Collins House, which dates back to about 1785, was the home of New Jersey's first official printer, Isaac Collins. Collins, who lived in the house from 1808 to 1817, was King George's official printer for New Jersey before the American Revolution. He later printed the *New Jersey Gazette*, the state's first weekly newspaper; the *New Jersey Almanac*; and the state's paper currency. Other important early works included the state's first edition of the King James Bible in 1791.

Located at 201 Broad Street, the Collins house is a fine example of a sophisticated Federal residential townhouse. It is owned by the Burlington County Historical Commission, which intends to develop the property as a museum.

The Bishop-Irick Farmstead, originally owned by the Bishop and Irick families, is a well-preserved example of a rural Georgian patterned brick farmhouse. John Stockton Irick was a 19th-century banker and businessman who served as director of the Morris Canal Banking Company. He also was a Burlington County freeholder and state assemblyman, and was involved in the construction of the Camden and Burlington Railroad.

The property, located at 17 Pemberton Road, was built around 1753 and remained in the family until 1932. The Farmstead continues as a working farm, with the current owners raising sheep.

The Palmyra public school complex, Taylor's Mill and the Isaac Collins House also have been included on the National Register of Historic Places.

Just Recycle Them

What do you do with a pair of worn-out, old sneakers that have served you well like a trusted friend? Naturally, you don't want to just throw them out.

Well, Nike has found a way to allow your old sneakers to live on. The company is able to grind whole shoes into material that is used for the outer soles of new shoes. Nike says it can recycle every shoe it makes except the ones with cleats.

The first shoes to use the recycled material will be in the stores in the spring in the form of a mid-priced outdoor cross trainer. The soles will contain up to 20 percent recycled sneakers. In testing, the recycled sole has performed as well or better than regular ones. Once the process is patented, Nike plans to share the method with other companies.

Artificial Reef Charts Available

The state Department of Environmental Protection and Energy, in cooperation with the Artificial Reef Association, has released fishing and diving charts of six of New Jersey's artificial reefs.

The charts depict all of the ships, barges, concrete, rocks, tire units and other structures placed on artificial reefs.

The reef sites for which charts are available are: Sandy Hook Reef, 1.5 miles off Sea Bright; Sea Girt Reef, 4 miles off Manasquan Inlet; Garden State North Reef, 6.5 miles off Harvey Cedars; Garden State South Reef, 5.5 miles off Beach Haven; Atlantic City Reef, 8.5 miles off Absecon Inlet; and Cape May Reef, 8.5 miles off Cape May Inlet.

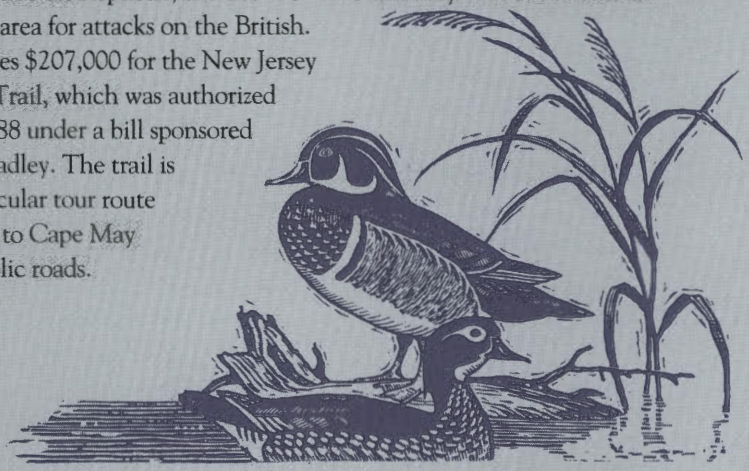
Wildlife Refuges, Heritage Trail to Share $6 Million

The U.S. House of Representatives has approved an appropriations bill that includes nearly $6 million to expand two southern New Jersey wildlife refuges and fund the continued development of the New Jersey Coastal Heritage Trail.

The bill provides $3.5 million for the Cape May National Wildlife Refuge to be used toward purchase of property in Upper, Dennis and Middle townships. The refuge was established in 1989 and consists of property in the Great Cedar Swamp and along the Delaware Bay, which is the second largest nesting area for shorebirds in the world. The Cape May National Wildlife Refuge currently covers 6,600 acres.

The Brigantine Division of the Edwin B. Forsythe National Wildlife Refuge will receive $2 million for land acquisition. The refuge, located in Oceanville, Atlantic County, covers 24,000 acres and consists of coastal salt meadows and marsh, open bays and channels, and uplands brush and woodlands. A portion of the funding may be used to purchase property in Port Republic, the site of a Revolutionary War battle and an important staging area for attacks on the British.

The bill provides $207,000 for the New Jersey Coastal Heritage Trail, which was authorized by Congress in 1988 under a bill sponsored by Senator Bill Bradley. The trail is designed as a vehicular tour route from Sandy Hook to Cape May along existing public roads.



Energy-Saving Light Bulb Unveiled

A California company has developed a light bulb that it says will last up to 20 years, fit into ordinary sockets and use a fraction of the energy of traditional varieties.

Known as an electric light, or "E-Lamp," the bulb can generate up to 150 watts of power and uses only one-fourth of the energy of incandescent bulbs because it produces less heat.

Developers of the bulb say it lasts from 15,000 to 20,000 hours. The typical incandescent bulb burns from 750 to 1,500 hours.

The lamps use a magnetic coil that generates a radio signal, which mixes with the same gas used in conventional fluorescent lamps. The mixture forms a plasma, which makes a phosphorus coating on the inside of the glass glow.

Cost is expected to be $10 to $20 per bulb. Intersource Technologies, Inc., of Sunnyvale, Calif., a co-developer of the bulb, is scheduled to begin production next year on a limited basis.

The fishing and diving charts are sponsored by the Artificial Reef Association, a group of 40 New Jersey party and charter boat captains who have organized a concerted effort to fund the construction of more reef sites. Money collected from the sale of charts will help pay for the cleaning and towing of ships and other structures bound for sinking on the state's eight artificial reef sites.

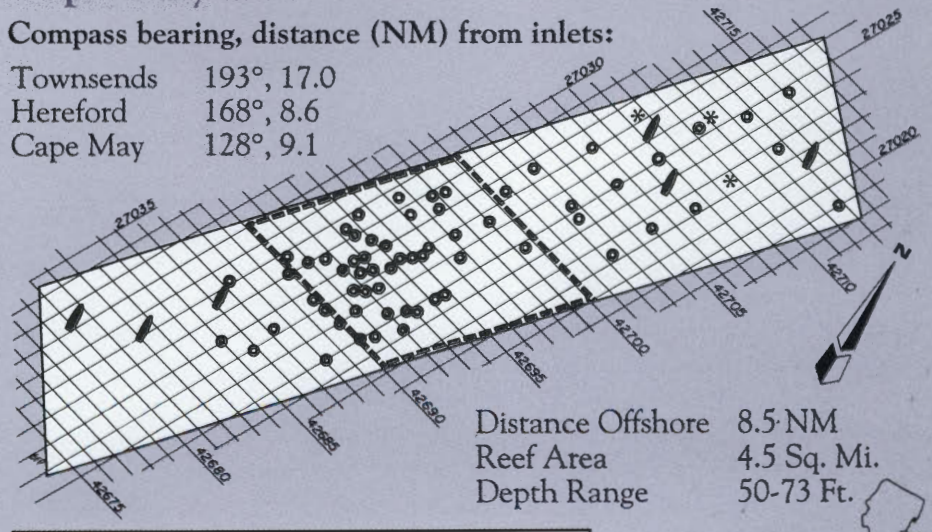
The 8-by-10-inch plastic charts are waterproof and designed to be taken aboard small boats. The reverse sides of the charts have LORAN C coordinates for reef structures.

Charts of each reef site are available for $6.50 ($5.95 plus 55 cents handling) by sending a check, payable to the Artificial Reef Association, to: Reef Chart, P.O. Box 16, Oceanville, N.J. 08231. Please identify the reef site(s) you are ordering.

Cape May Reef

Compass bearing, distance (NM) from inlets:

Townsends	193°, 17.0
Hereford	168°, 8.6
Cape May	128°, 9.1



Follow-Up

Rules Issued on Environmental Ads

The Federal Trade Commission has issued national guidelines for defining terms such as biodegradable, recyclable and compostable, which often are used by manufacturers in making claims that their products are environmentally friendly (NJO Spring 1992).

Though the guidelines are voluntary, they are intended to help manufacturers avoid prosecution under the 1914 Federal Trade Commission Act, which prohibits "unfair and deceptive practices in the marketplace."

The commission said that environmental claims can be made for products as long as the manufacturer can prove a substantial ecological benefit. For instance, the term biodegradable should be used only on products that "will completely break down and return to nature, that is, decompose into elements found in nature within a reasonably short period of time after consumers dispose of it in the customary way."

Plastic trash bags, for example, previously had been advertised as biodegradable. But the commission ruled that the conditions needed for proper decomposition — exposure to air, sunlight and water — do not normally exist in landfills.

The guidelines are the most specific directions the government has ever issued on what constitutes a misleading environmental advertising claim.

Test Now for Radon Threat

Winter is an ideal time to test your home for radon, an odorless, tasteless and invisible radioactive gas that poses a health threat in elevated concentrations.

Radon, which is the second leading cause of lung cancer, enters homes from the surrounding soils, coming through cracks in the foundation, sump pumps, drain openings and porous cinder block. The heating season is a good time to test because windows and doors are more likely to be closed.

The test should be done in the lowest livable area of the house since that is where the concentrations will be the highest. Homeowners can perform their own screening tests or have them conducted by a certified radon service company. If the indoor levels are elevated, a certified mitigation company can work with a homeowner to select the best techniques for reducing radon entry or buildup.

For more information about radon, or a list of certified testing and mitigation companies, call the radon information line at 1 (800) 648-0394, Monday through Friday, from 8 a.m. to 5 p.m.

New Jersey's Number 1

New Jersey's environmental efforts ranked at the top of the list in a nationwide survey of state environmental programs.

City and State magazine, which conducted the survey, gauged the effectiveness of legislatures and governors in confronting pollution and providing for the future. New Jersey excels in recycling, hazardous-waste management, air and water pollution control and in wetland and open-space preservation, according to the magazine, which follows state and local policies.

Joining New Jersey in the top five were California, Oregon, Connecticut and Minnesota.

The bottom five were Oklahoma, South Dakota, Texas, Alaska and Nevada.

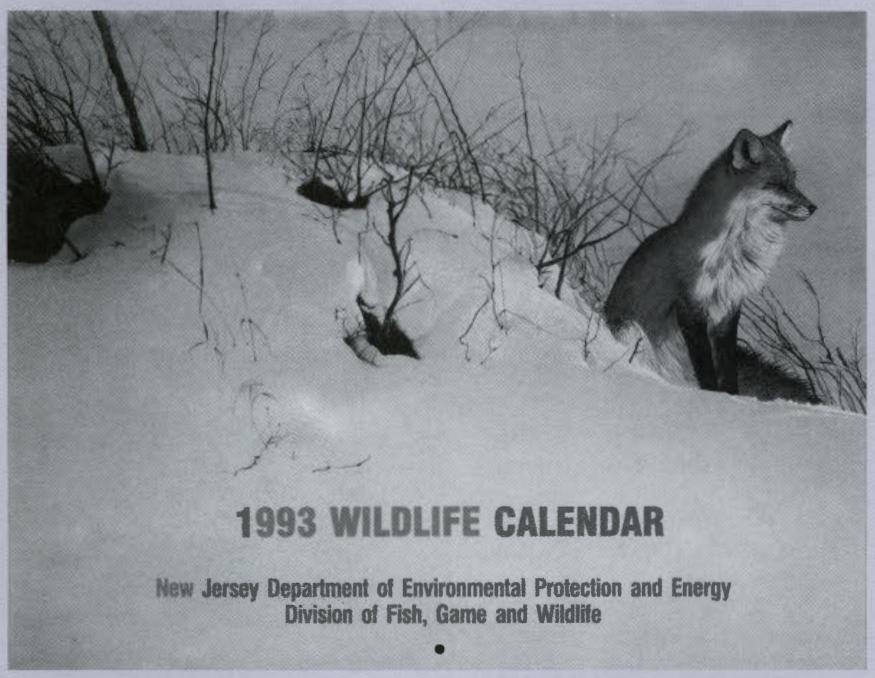
Three New Jersey officials also have earned separate recognition for their environmental achievements from the national Center for Policy Alternatives.

The center, a non-profit organization promoting progressive leadership and policy in the states, presented an environmental leadership award to Department of Environmental Protection and Energy Commissioner Scott Weiner for the state's endorsement of the California low-emission vehicle standard. Weiner serves as vice chairman of the Ozone Transport Commission, which includes representatives from 12 northeast states which also were recognized by the center.

Other New Jersey officials who received awards from the center were former Senator Daniel Dalton, now secretary of state, and former Assemblyman James McGreevey, now mayor of Woodbridge, for passage of legislation advancing pollution prevention.

Roundup by Greg Johnson

Enjoy a Year of New Jersey's Wildlife



The 1993 Wildlife Calendar, featuring full-color illustrations of 12 New Jersey species, is available from the state Division of Fish, Game and Wildlife. In addition to the artwork, the calendar offers information about wildlife and related activities on every page. The calendar can be purchased for $5 at the division's Trenton office at 501 East State Street or at the Pequest Trout Hatchery and Natural Resource Education Center on Route 46. It also may be obtained by mail for $7.50. Make checks payable to the Division of Fish, Game and Wildlife, and send to: Wildlife Calendar, CN 400, Trenton 08625-0400.

For DEPE Info

For information, publications, notices, regulations and other materials on environmental and energy-related issues, write to or visit the New Jersey Department of Environmental Protection and Energy's Public Access Center, 401 East State Street, 1st Floor, CN 402, Trenton 08625-0402, or call (609) 777-DEPE. The center is open weekdays from 9 a.m. to 5 p.m.

DuPont Dedicates Refuge

Du Pont Imaging Systems of Sayreville, Middlesex County, has dedicated a 140-acre wildlife refuge on its property.

The dedication capped a two-year cleanup effort in which local Scout troops assisted company employees in collecting trash from the woods, replacing topsoil, planting trees and shrubs and building bird nesting boxes.

The refuge quickly has become home to at least 42 species of birds. The Monmouth County Audubon Society keeps a monthly count of the species.

The company hopes to get the habitat certified as an official state wildlife sanctuary. This requires maintaining a bird inventory and repositioning the nesting boxes. Future plans include the creation of a wetlands area and the construction of an environmental center within the wildlife preserve.

Follow-Up

Fire Destroys Pinelands Music Hall

An electrical problem was blamed for the summer fire that destroyed Albert Hall in Waretown, which for more than three decades helped preserve the culture and music of the Pinelands.

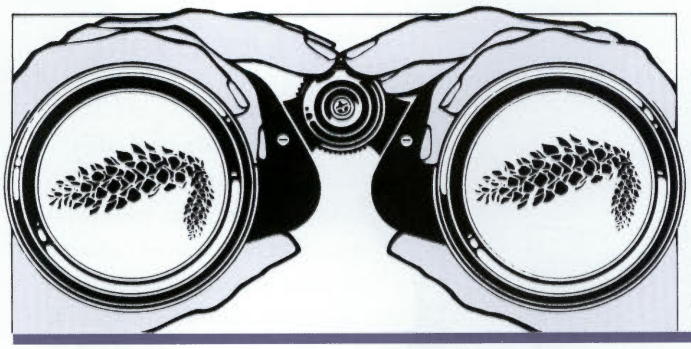
Albert Hall (NJO Spring 1992) had hosted regular Saturday night gatherings of musicians from all over the United States and around the world, gaining a reputation as a no-frills Grand Ole Opry.

The Pinelands Cultural Society operated a craft shop in the building, and stored tapes, photographs and other artifacts, many of them dating back to the 1950s and to Albert Hall's predecessor, the Homeplace.

"The fire destroyed the entire building, all of the contents, all of the archives," says Linda Rouse, president of the Pinelands Cultural Society. But despite the fact that the July 31 fire happened on a Friday morning, the show scheduled for the next night went on as scheduled.

"Even while we were watching the fire burn, we were running back and forth to the public telephone, and we had the regular Saturday night show in the parking lot in front of the building," Rouse says.

While the society looks for a permanent site for a new music hall, Saturday shows currently are being presented at a temporary location, the Frederick A. Priff School on Route 532, Wells Mills Road in Waretown, from 8 p.m. until midnight. Doors open at 7 p.m.



Explorer

"Use It Again"
A Down-to-Earth Idea!

Happy holidays! You probably are familiar with the idea of "reusing" discarded items for other purposes before they are disposed of or recycled. This helps to reduce the amount of trash that exits our homes, schools, businesses and communities, as well as to decrease litter. Examples of this include reusing jars and containers for storage, using both sides of paper for writing or drawing, wrapping gifts in newspaper and donating discarded toys and clothing for use by other children.

People have been reusing items and materials in practical ways for many years, all over the world. This idea also has been practiced by nature for millions of years! For example, the wood of a living tree helps the tree to stand strongly and moves water and nutrients from one part of the tree to another. When the tree is dead, this same wood becomes a home to insects and birds. Eventually, the decomposing wood is "recycled" naturally into soil. Various New Jersey wildlife species also share and reuse numerous items and materials in the wild. For example, the same den will be used by different species of mammals over the years. The same nest is sometimes used by different birds.

People can preserve the natural world by imitating it. By reusing materials and items at home, school and work, we are helping to save the earth's air, land and water, as well as creating less trash and waste. This valuable action is truly a wonderful gift to give because it benefits both the earth and people.

The Challenge

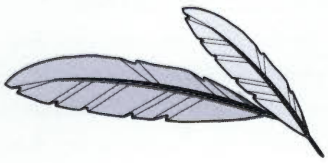
While celebrating the holidays and thinking about the environment, consider this: What used man-made and natural objects or materials can you "reuse" for new holiday decorations this year, then recycle or return to where they were found?

The Search for Reusables

Before creating your new holiday decorations, work with your parents or teacher to collect some natural and man-made objects and materials that you will need to work with. Most of these can be found at home, in school and outdoors. (Leave the "living objects" outside.) Add new objects to the list!

- ❑ Cardboard boxes
- ❑ Pebbles or stones
- ❑ Glass jars and lids
- ❑ Twigs and sticks
- ❑ Glass bottles
- ❑ Pine or hemlock cones

- ❑ Egg cartons
- ❑ Feathers

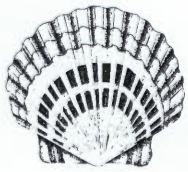


- ❑ Tin cans
- ❑ Dried/dead plants or flowers
- ❑ String or twine
- ❑ Nuts and acorns
- ❑ Bits of material or felt
- ❑ Colorful dead leaves

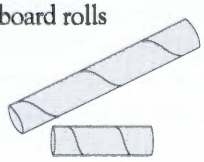
- ❑ Buttons and ribbon

- ❑ Berries and fruits

- ❑ Twist ties/wire
- ❑ Shells from the beach



- ❑ Newspaper/paper
- ❑ Soil, clay or sand
- ❑ Plastic jugs/bottles
- ❑ Pieces of bark
- ❑ Cardboard rolls



- ❑ Animal bones
- ❑ Other:

Think About It:

❑ Which objects came from plants? From animals? From soil?
❑ Which objects needed water in order to be created?
❑ How were each of these objects used?
❑ Select two objects that seem most valuable to you. Why did you choose these?
❑ If you were going to leave all of these objects on the ground in an open area, which objects might still be there in 100 years? What happened to the others?

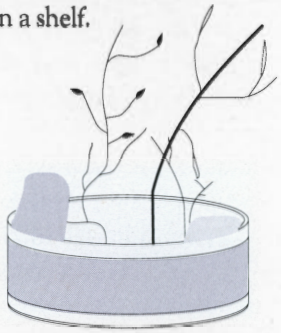
You will need some glue, tape, scissors and clay (from a craft store) for the following activities. Make sure to spread out newspapers to avoid a mess later!

A Place in the Woods

Imagine a place in the woods. Using only the objects and materials that you have collected, create that place by trying the following:

1) Select a medium-size, clear glass jar. Place a flattened ball of clay (or Styrofoam) at the bottom. Carefully break apart and stick any objects into the clay that represent trees. (Make sure that they do not go over the top of the jar.) Place other materials at the bottom. Have an adult make a hole in the center of the jar top. Thread string or ribbon through the hole and knot it beneath the jar top, so the jar can hang. Decorate the jar top and hang it on your Christmas tree.

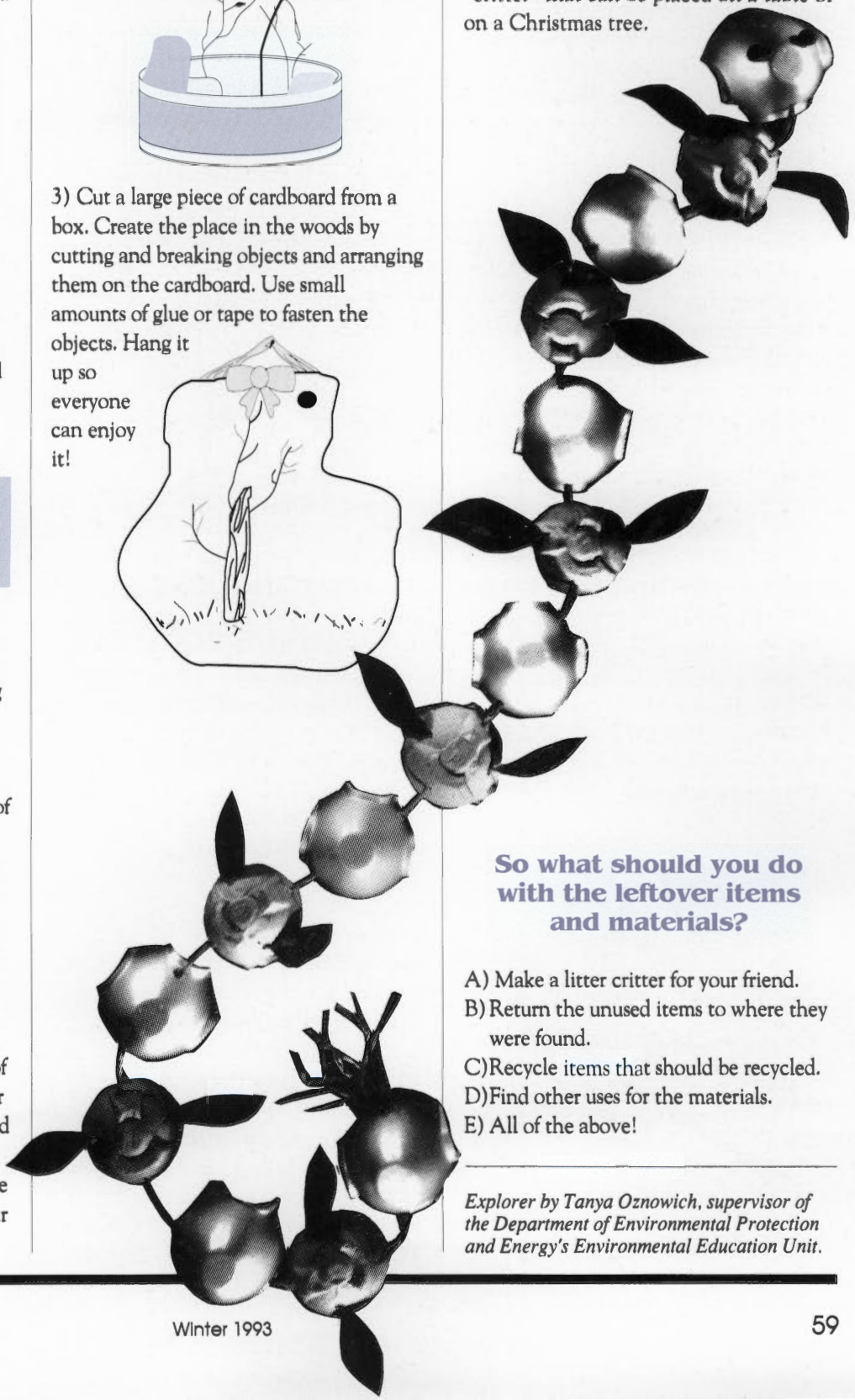
2) Try the same idea, but place the clay ball into a cat-food tin can. (The arrangement can be taller.) Decorate the can and place it on a shelf.



3) Cut a large piece of cardboard from a box. Create the place in the woods by cutting and breaking objects and arranging them on the cardboard. Use small amounts of glue or tape to fasten the objects. Hang it up so everyone can enjoy it!

A Litter Critter

Imagine a real (or imaginary) animal. Using only the materials and objects that you have collected, create a "critter" that can be placed on a table or on a Christmas tree.



So what should you do with the leftover items and materials?

A) Make a litter critter for your friend.
B) Return the unused items to where they were found.
C) Recycle items that should be recycled.
D) Find other uses for the materials.
E) All of the above!

Explorer by Tanya Oznowich, supervisor of the Department of Environmental Protection and Energy's Environmental Education Unit.

DESIGNED AND ILLUSTRATED BY DENISE BECK

Events

January

January through February CROSS-COUNTRY SKIING Enjoy a day in the great outdoors while cross-country skiing, then warm up indoors with a hot luncheon and wine tasting. Sponsored by Matarazzo Farms. Reservations are required. **Hours:** 1 p.m. to 3 p.m. **Admission:** $20 per person **Phone:** (908) 475-3671 **Location:** Matarazzo Farms, Belvidere

Saturdays throughout January and February WINTER ACTIVITIES A variety of winter activities will be held at the Fosterfield Living Historical Farm, including ice cutting on the farm pond and maple-sugaring. Kitchen demonstrations also will be featured at the Willows mansion. Sponsored by the Morris County Park Commission. **Hours:** 1 p.m. to 4 p.m. **Admission:** Free **Phone:** (201) 326-7645 **Location:** Kahdena Road, Morristown

1 EIGHTH ANNUAL NEW YEAR'S DAY HIKE Hike on the Paulinskill Valley Trail. Bring lunch and something to drink, and wear adequate outdoor clothing. **Hours:** 10 a.m. **Admission:** Free **Phone:** (908) 852-0597 Location: Meet at the Halsey intersection, Routes 519 and 626, Newton

2 WINTERING EAGLES AT THE GAP This lecture, by Alan Ambler, will present the research and progress over the past five years in preserving the bald and golden eagles, once nonexistent in the Delaware River National Recreation Area. A slide show presentation will follow the discussion, as well as a question-and-answer session. **Hours:** 7 p.m. to 9 p.m. **Admission:** Free **Phone:** (908) 766-5787 **Location:** Sherman/Hoffman Sanctuary, Hardscrabble Road, Bernardsville

9 & 16 WEEKEND JUNIOR NATURALIST This outdoor education program will be offered for 4th and 5th graders who want to hike through nature, observing and learning about what lives and grows in the outdoors. **Hours:** 9:30 a.m. to noon on Saturday; 1:30 p.m. to 4 p.m. on Sunday **Admission:** $9 **Phone:** (201) 835-2160 **Location:** Weis Ecology Center, Ringwood

January 10 through May 30 AUDUBON BIRDS OF AMERICA Selected prints by the world-renowned 19th-century naturalist and painter John James Audubon will be on display for the whole family at the Noyes Museum. **Hours:** 11 a.m. to 4 p.m., Wednesday through Sunday. **Admission:** $3 for adults, $1.50 for senior citizens and 50 cents for students and children. **Phone:** (609) 652-8848 **Location:** The Noyes Museum, Oceanville

January 31 through February 21 LIVING IN A GREENHOUSE; A LEGACY OF GLOBAL WARMING This exhibit will show the consequences of global warming and explore factors such as pollution, climate change, habitat corruption, temperature fluctuation and altered shorelines. Sponsored by the Somerset County Environmental Center. **Hours:** 9 a.m. to 5 p.m., 7 days a week **Admission:** Free **Phone:** (908) 766-2489 **Location:** Lord Stirling Park, Basking Ridge

16 OCEAN SING-ALONG Learn some new songs about the ocean and the plants and animals that make the ocean their home, while singing some of your old favorites and sharing some of your own. Sponsored by the Marine Mammal Stranding Center. **Hours:** 9 a.m. to 10:30 a.m. **Admission:** $5 **Phone:** (609) 266-0538 **Location:** Marine Mammal Stranding Center, Brigantine

23, 24 SUPER SCIENCE WEEKEND Kids and parents can experience the wonders of science through demonstrations on fossil preparation, amateur paleontology, astronomy and space exploration, as well as through many other hands-on activities. They also can view sunspots, see live monitor lizards, discover careers in science and learn about the solar system at special planetarium shows. **Hours:** 9 a.m. to 5 p.m. on Saturday, 11 a.m. to 5 p.m. on Sunday **Admission:** General admission is free, planetarium shows are $1 **Phone:** (609) 292-6330 **Location:** New Jersey State Museum, 205 West State Street, Trenton

23, 24 CROSS-COUNTRY SKI CLINIC Start a new winter hobby by learning how to cross-country ski. Clinic is for beginning skiers. **Hours:** 9:30 a.m. to noon and 1:30 p.m. to 4 p.m. **Admission:** $19, or $10 if you use your own skis. **Phone:** (201) 835-2160 **Location:** Weis Ecology Center, Ringwood

23-31 AFRICAN AMERICAN HISTORY CELEBRATION This is a day for the entire family to enjoy and learn about the contributions and culture of New Jersey's African Americans. A series of cultural lectures, gospel concerts, performances and art collections will be featured throughout the day. **Hours:** 10 a.m to 5 p.m. **Admission:** Free **Phone:** (908) 842-4000 **Location:** Tatum Park, Red Hill Road, Middletown

31 WORLD OF MINI MANIA MINIATURE & DOLL SHOW A collection of handcrafted miniatures and dolls will be displayed for both the collector and the whole family. Additional workshops, demonstrations and door prizes will be featured. **Hours:** 10 a.m. to 4:30 p.m. **Admission:** $5 for adults, $2.50 for children and $4.50 for senior citizens **Phone:** (201) 382-2135 **Location:** The Marriot Hotel, Newark Airport

Explore Winter Programs at Great Swamp

Maple-sugaring is one of the many winter activities at the Great Swamp Outdoor Education Center in Chatham, Morris County.

Great Swamp Outdoor Education Center in Chatham Township will offer a variety of winter activities for the whole family, including maple-sugaring, nature workshops and moonlight hikes.

A different nature-related workshop will be held every Saturday at 2 p.m. during December. Each workshop will be free and explore topics such as owls, tie-dyeing and winter crafts. From January through February, free maple-sugaring will be offered every Saturday and Sunday at 2 p.m.

Also scheduled at various times during the season are slide shows, a Disney film festival featuring Disney nature films, and a series of hikes, including swamp crossings, night hikes and candlelight walks. The center also offers senior citizen van trips.

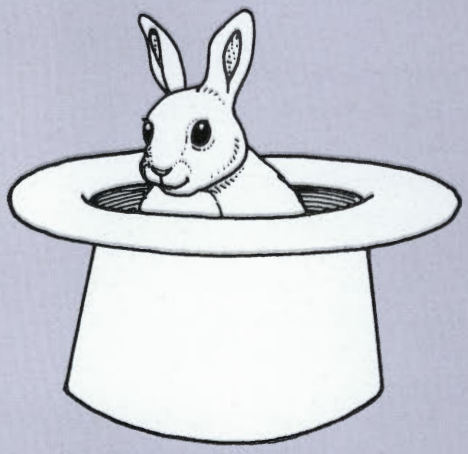
Sponsored by the Morris County Park Commission, the Great Swamp Outdoor Education Center is located on 40 acres of county land adjacent to the 4,700-acre National Wildlife Refuge.

The center is open seven days a week from 9 a.m. to 4:30 p.m. Most of the programs offered are free, but some may require a small fee. For an up-to-date description of programs, costs and registration requirements, call the center at (201) 635-6629.

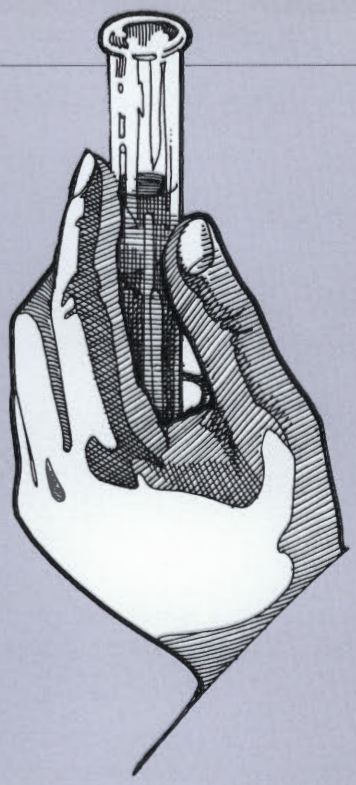
February

Each Sunday in February HIKE THE HILLS Explore the hills of Matarazzo Farms, for both beginners and expert hikers. A hot luncheon buffet and wine tasting will follow all activities. Call for reservations. Sponsored by Matarazzo Farms/ Four Sisters Winery. **Hours:** 1 p.m. to 4 p.m. **Admission:** $20 **Phone:** (908) 475-3671 **Location:** Matarazzo Farms, Belvidere

1-11 THE GREAT ENVIRONMENTAL MAGIC SHOW Enjoy one hour of pure magic performed by environmental naturalists. Watch a rabbit in a top hat recycle itself; a "cannonball mouse"; a movie brought to life; and a host of other fun-filled magic tricks for all ages. All events are linked to a variety of environmental concepts. Sponsored by the Somerset County Environmental Center. Dates are flexible for school field trips or other group activities. **Hours:** Call for specific show times **Admission:** $2 **Phone:** (908) 766-2489 **Location:** Lord Stirling Park, Basking Ridge



6, 7 NINTH ANNUAL TOMS RIVER WILDFOWL AND DECOY SHOW, COMPETITION AND SEMINARS Join more than 125 artists, carvers and supply dealers as they feature everything from paintings and photography to decoys and painting supplies. Competitions for all ages will be held, including painting, carving and flatwork contests. There also will be an additional seminar for children on how to paint their own decoys. Sponsors of the show's competition are Bay Wildlife Gallery and Commerce Bank/Shore N. A. **Hours:** 10 a.m. to 6 p.m. on Saturday; 10 a.m. to 4 p.m. on Sunday. **Admission:** $3 for adults, free for children **Phone:** (908) 341- YMCA **Location:** Ocean County YMCA, Toms River



15-19 FEBRUARY FESTIVITIES A variety of nature and science workshops will be held for elementary and prekindergarten children, along with special planetarium shows. Preregistration is required for all events, except the planetarium shows. **Hours:** Vary by event **Admission:** Program prices vary; call for information **Phone:** (908) 789-3670 **Location:** Trailside Nature Center, Mountainside

20 NEW JERSEY'S HIGHLANDS — GREENWAY TO OUR FUTURE This lecture, by naturalist Peter Bacinski, will increase understanding of New Jersey's Highlands and of why it is necessary to preserve this endangered habitat. **Hours:** 7:30 p.m. to 9 p.m. **Admission:** Free **Phone:** (908) 766-5787 **Location:** Sherman/Hoffman Sanctuary, Hardscrabble Road, Bernardsville

20 BIRDSEED SAVINGS SALE Sponsored by New Jersey Audubon's Sherman/Hoffman Sanctuary. Orders must be placed in advance by February 5. **Hours:** Pickup from 10 a.m. to 4 p.m. **Admission:** Free **Phone:** (908) 766-5787 **Location:** Sherman/Hoffman Sanctuary, Hardscrabble Road, Bernardsville

27 PRESCHOOL SCIENCE FAIR Join your children as they experiment and learn about mirrors, magnets, water and a variety of other scientific subjects. Sponsored by the Trailside Nature and Science Center. Preregistration is required and begins on February 15. **Hours:** Vary by event. **Admission:** Program prices vary; call for information **Phone:** (908) 789-3670 **Location:** Trailside Nature Center, Mountainside

28 ASTRONOMY SUNDAY Learn about the world of astronomy through demonstrations and displays. The day will include children's workshops, planetarium shows and refreshments. **Hours:** 1 p.m. to 5 p.m. **Admission:** General admission is free; planetarium shows are $2 per program **Phone:** (908) 789-3670 **Location:** Trailside Nature Center, Mountainside

Look to the Stars

You can enjoy a spectacular view of the night sky without having to endure winter's freezing temperatures simply by doing your stargazing indoors at the New Jersey State Planetarium in Trenton.

Programs offer visitors tours of the solar system, featuring identification of planets and constellations; simulation of a flight through the rings of Saturn; the opportunity to view a three-dimensional laser light show; or the simple pleasure of gazing at the brilliance of more than 6,000 stars in the night sky.

"One of the most dramatic things to do in the planetarium is to watch the twilight fade away and search for the first appearance of a star," says Richard Peery, the planetarium's director.

Each weekend, visitors watch in awe as the dome of the planetarium comes alive with dazzling displays of our galaxy. Clear images of star clusters, constellations and the Milky Way rotate around the viewers, who feel as though they are actually traveling thanks to the help of special effects projectors.

The laser light shows have proven popular with both children and adults. This year, with the introduction of special holographic glasses, visitors can enjoy watching brilliant three-dimensional patterns of laser color dance among the thousands of stars in the planetarium's sky.

In 1987, new projection equipment was installed, providing the viewer with one of the most realistic displays of a night sky. Although the planetarium can seat only 140, its smaller size offers the advantage of a more intimate setting, says Peery.

More than 50,000 family and school groups have visited the planetarium since 1987. With advance reservations, schools can plan field trips at discount rates. A special question-and-answer session follows each show for students.

The planetarium's schedule of winter programs includes:

❑ "Astronomy Whys," which will answer common questions on astronomical topics and be offered on Saturdays and Sundays in December at 1 p.m. and 3 p.m. There is no age limit.

❑ "Journeys into the Unknown," which will feature exploration from Columbus to the space age and be offered on weekends at 2 p.m.

❑ "Winter Sky Tales," which will teach viewers how to find the stars in winter skies, as well as stories about them, on January 9, 10, 16 and 17 at 1 p.m., 2 p.m. and 3 p.m.

Planetarium shows cost $1 per person. Tickets may be purchased at the planetarium box office 30 minutes before each show. Beginning in January, a series of laser concerts will be offered on weekend afternoons and selected evenings at an admission fee of $6.50 for adults and $4.50 for children 12 and under. Tickets may be purchased at all Ticketmaster locations in the Delaware Valley or at the planetarium box office.

The planetarium is located in the New Jersey State Museum on West State Street in Trenton. The museum is open Tuesday through Saturday, from 9 a.m. to 4:45 p.m., and Sunday from noon to 5 p.m. For more information or reservations, call (609) 292-6333.

By Amy Cradic, a Trenton State College journalism intern

N.J. STATE PLANETARIUM PHOTOS

An expanding gas cloud is visible around a dying star.

Other Places to Stargaze

You can take in the stars and planets at several other planetariums or observatories in New Jersey. Here is a sampling:

❑ ***Newark Museum Planetarium*** **Hours:** Shows every Wednesday at noon and on weekends from 1 p.m. to 4 p.m. **Admission:** $4 for adults, $2 for children **Phone:** (201) 596-6609 **Location:** 49 Washington Street, Newark

❑ ***Novins Planetarium, Ocean County College*** **Hours:** Call for a variety of scheduled events **Admission:** $4 for adults, $3 for children **Phone:** (908) 255-0342 **Location:** College Drive, Toms River

❑ ***Planetarium at Trailside Nature and Science Center*** **Hours:** Every Sunday from 2 p.m. to 3:30 p.m. Group events may be scheduled. **Admission:** $2 per person **Phone:** (908) 789-3670 **Location:** Coles Avenue and New Providence Road, Mountainside

❑ ***Edwin Aldrin Observatory, New Jersey Astronomical Association*** **Hours:** Every Saturday from 2 p.m. to 5 p.m., and 8:30 p.m.to 11:30 p.m.; Sundays from 2 p.m. to 5 p.m. Group events may be scheduled. **Admission:** $1 per person **Phone:** (908) 638-8500 **Location:** Voorhees State Park, High Bridge

❑ ***County College of Morris Planetarium*** **Hours:** Call for a variety of scheduled events **Admission:** $4 for adults, $3 for children **Phone:** (201) 328-5076 **Location:** Center Grove Road, Randolph

❑ **Sperry Observatory, Union County College Hours:** Every Friday evening from 7 p.m. to 10:30 p.m. Group events may be scheduled **Admission:** Call for information **Phone:** (908) 276-STAR **Location:** 1033 Springfield Avenue, Cranford

Mountain ranges and craters can be seen in this view of the moon.

The Turkey Vulture

The turkey vulture *(Cathartes aura)* is probably the most commonly seen bird of prey in the Garden State. On any given summer day in most rural areas, chances are you are within sighting distance of one of these magnificent soaring birds. Turkey vultures are most commonly found over inland portions of the state, and infrequently along the coast.

The common name aptly describes this dark-plumed, eagle-size bird that as an adult, has a small, red featherless head resembling a turkey. In contrast, immature birds have black heads. An adult turkey vulture stands a little more than 2 feet tall, weighs about 4 to 5 pounds and can have a wingspread that reaches up to 6 feet.

Until recently, the turkey vulture was the only species of vulture commonly found in New Jersey. However, over the past two decades the black vulture (*Coragyps atratus*), normally a more southern species, has expanded its range into the state and has been a confirmed breeder as far north as Hunterdon County. Although adult turkey vultures have red heads and black vultures have black heads, this feature often is difficult to see at a distance. In flight, the turkey vulture can be distinguished by its small head, long narrow tail and two-toned wings that are blackish on the leading half and paler toward the trailing edge. Turkey vultures also hold their wings in a slight "V," known as a dihedral. In contrast, the black vulture has a larger head, short, square tail and whitish patches near the ends of the wings, which are held flat during flight.

Although taxonomists have classified the vultures as birds of prey, they seldom kill their own food, but prefer to feed on carrion. These important members of nature's cleanup crew will feast on dead carcasses along roadsides, around dumps and on farms. Other foods include fish, insects and tadpoles. On rare occasions, they have been known to land in heron nests and prey upon the nestlings, and during food shortages have even been observed eating pumpkins.

Like other birds of prey, turkey vultures possess excellent vision that enables them to locate food. However, unlike most members of the avian world, they have an unusually keen sense of smell. In experiments, turkey vultures consistently located dead carcasses that were completely concealed from view. Capitalizing on the turkey vulture's excellent sense of smell, a group of engineers placed ethyl mercaptan (the odor-causing substance in decaying flesh) into a gas pipeline to help detect leaks. Leaks quickly were discovered by watching for congregations of vultures soaring above a section of the pipeline.

> Turkey vultures have an unusually keen sense of smell.

Possibly more than any other species, turkey vultures have inspired people to wonder how it would feel to be able to soar like a bird. It is fitting that these birds should inspire such thoughts since turkey vultures are considered among the most accomplished static soarers of the avian world. Static soaring is the ability of a bird to stay aloft without flapping its wings by simply maneuvering to catch rising currents of air. Turkey vultures are masters at using thermals (rising columns of warmed air) and obstruction currents that occur when air passes over mountains or other objects. Their excellent soaring ability is a result of the bird's relatively low body weight compared to its large wing area.

Turkey vultures are gregarious in nature and will roost communally throughout the year. Roosts generally occur in large trees, on cliffs and occasionally, to the dismay of the owners, on houses and barns. During the morning hours, roosting turkey vultures can be observed holding their wings in a partially outstretched position known as the spread-wing posture. This behavior is believed to serve at least two purposes: to dry the wing feathers and regulate body temperature. Roosting turkey vultures will maintain lower body temperatures at night to conserve energy. By spreading their wings and directing them toward the sun, they can quickly raise their body temperatures to normal daytime levels.

Turkey vultures nest on the ground in forested areas, selecting places such as shallow caves, rocky areas and the base of hollow trees and stumps. No formal nest is constructed, and a clutch of one to three eggs usually is laid on a bed of stones, dead leaves or wood chips. An unusual sighting was reported in Sussex County where a pair nested in an abandoned outhouse.

Incubation duties are shared by both parents, and the eggs hatch after a period of about 40 days. Young turkey vultures are partially down-covered at hatching and are fed regurgitated food by both parents. The ability to fly is slow to develop among these magnificent soaring birds, and it can take more than 12 weeks before the young are ready to take off.

By Michael Valent, a senior zoologist for the Division of Fish, Game and Wildlife's Endangered and Nongame Species Program

NEW JERSEY

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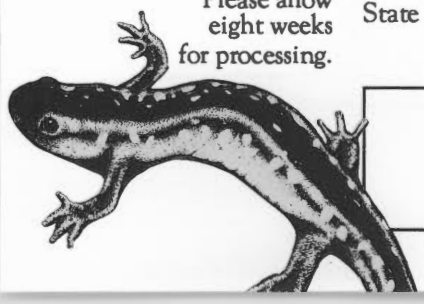

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WATERCOLOR BY BEATRICE BORK

A dusting of snow covers an old boat in Wharton State Forest in South Jersey.

In Next Season's Issue

Get Ready to Go Mountain Biking
Companies Find Team Spirit in the Outdoors
Return to the Days of the One-Room Schoolhouse