New Jersey Outdoors

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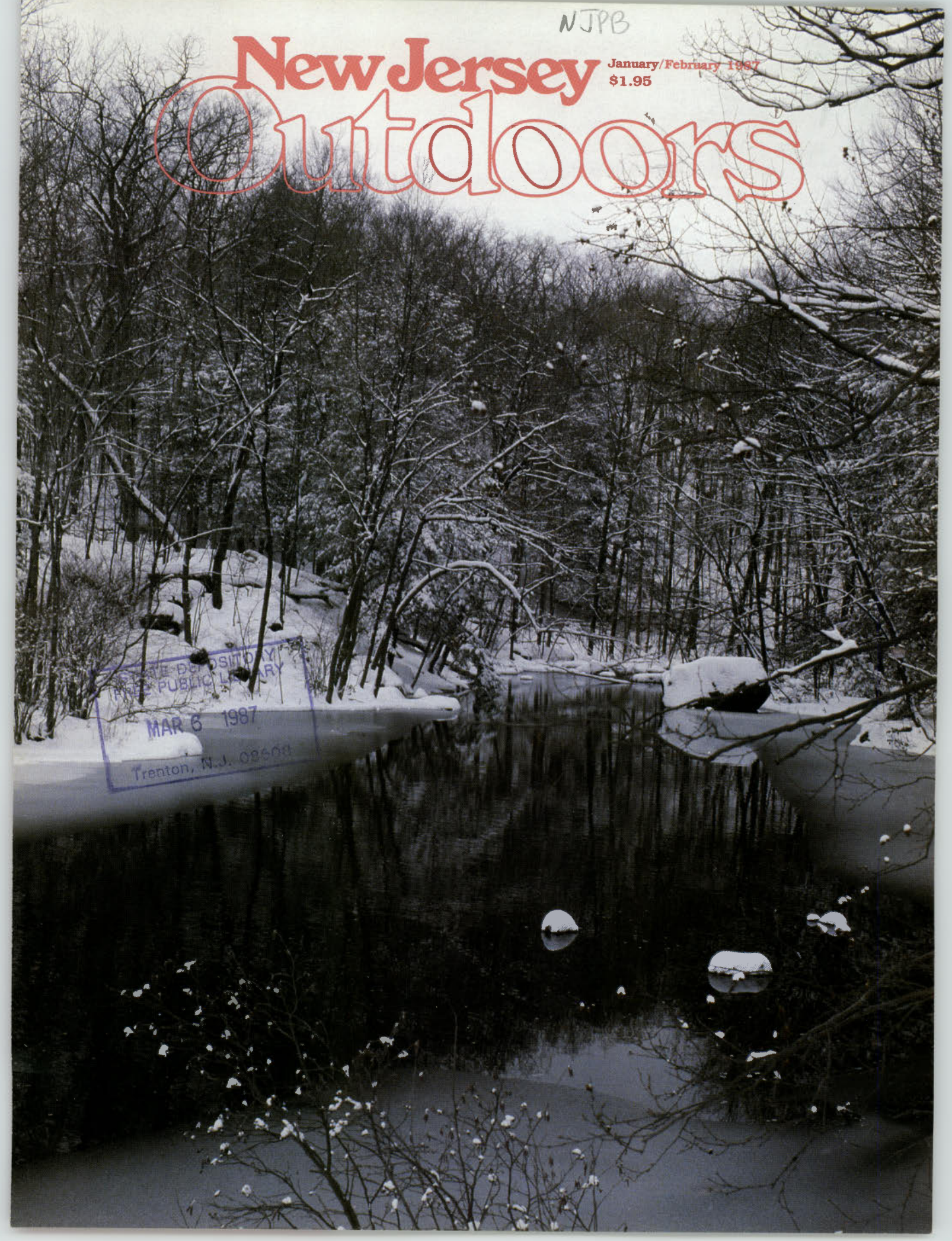

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New Jersey Outdoors

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NEW JERSEY OUTDOORS CREDO
This publication is dedicated to the wise management and conservation of our natural resources and to the fostering of greater appreciation of the outdoors. The purpose of this publication is to promote proper use and appreciation of our natural, cultural, and recreational resources, and to provide information that will help protect and improve the environment of New Jersey.

Guest Editorial

The one theme that is carried throughout this issue's three articles on historic resources is "equitable balance." "The Jerseymen and the Constitutional Convention" by Susanne Banta Harper emphasizes the concern among the founders of the Constitution for an "equitable balance of power between the states and the federal government." "Preserving the Past at State Historic Sites" by Patricia Reardon and "Cast in Iron" by Allen G. Eastby both acknowledge the importance of a balance between public and private involvement in the restoration of our state's historic sites. To what extent can this theme be expanded beyond the specific examples cited in these articles? In particular, is a balance between public and private involvement a key factor in historic preservation?

At the national level, both the National Park Service and the National Trust for Historical Preservation involve both public and private organizations in their programs. The National Park Service, which handles all federal historic preservation programs, works with each state's historic preservation office—in our state, the Office of New Jersey Heritage. These offices administer the federal programs for the benefit of both local governments and private organizations throughout the state. The National Trust for Historic Preservation is a public/private agency which assists both public and private agencies through technical assistance and small grant and loan programs.

At the state level, the public/private partnership works in many different ways. Twelve of our 37 state owned sites are leased by private organizations, including numerous Friends groups, as at Allaire and at the Hermitage in Ho-Ho-Kus and arts groups, such as the Mid-Atlantic Center for the Arts in Cape May and the Waterloo Foundation for the Arts at Waterloo Village. At the Proprietary House in Perth Amboy, Middlesex County, there is another kind of partnership and balance. For many years the Proprietary House Association, a local non-profit citizens' organization, worked to save the residence of the last Royal Governor of East Jersey, William Franklin. The state acquired the structure in 1970. However, due to its large size, deterioriation and substantial alterations, funding and use were the key issues. The final proposal involves the participation of two private groups. A private architect and investor will rehabilitate and lease the 19th-century wing and the upper floors of the main building for professional offices. The Proprietary House Association will lease the main floor and basement for museum space.

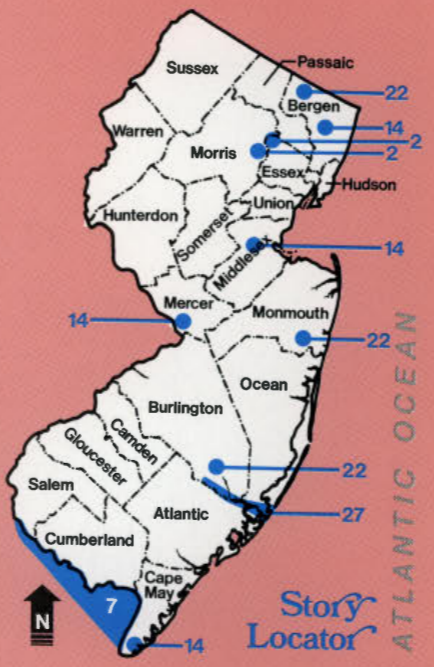
Another example of a balance between public and private involvement in New Jersey's historic preservation efforts is the New Jersey Historic Trust. Established by state law in 1967 and restructured in 1984, the Trust functions through the Department of Environmental Protection as "an instrumentality exercising public and essential governmental functions." It can own and restore historic property, accept facade easements on historic structures, and perhaps most important at a time of shrinking federal grant money, make grants and loans to private and public agencies. The Trust's close working relationship with the Office of New Jersey Heritage provides an excellent example of a balance between private and public involvement.

These examples at the national and state levels indicate that a balance between private and public involvement is vital to historic preservation efforts. Historic preservation has always relied on the dedication and support of the private and the public sector. When public funds are limited, the cooperative and imaginative involvement of public and private groups as in the Proprietary House project is increasingly important. The Office of New Jersey Heritage and the Division of Parks and Forestry will work to continue to strengthen this public/private partnership with citizens' groups in its historic preservation projects.

—Nancy L. Zerbe

Nancy L. Zerbe is the Administrator of the Office of New Jersey Heritage. With a Master's degree in Historic Preservation from Columbia University, she has been with DEP since 1980.

In this Issue



This issue includes a suggestion made by several of our readers. On a New Jersey map, we have highlighted areas referenced in articles in this issue. The article page numbers listed in the table of contents appear on the location map. A quick glance shows points of interest throughout the state.

This issue also initiates a **CLOSER LOOK** at one of New Jersey's better known professional photographers—Michael Spozarsky whose images have been used on the front cover of this issue and illustrate several articles. With a portfoli that covers a full range of seasons and topics from architecture and advertising to scenic and editorial, his works have been published in corporate reports, numerous magazines including New Jersey Monthly, Architectural Record and Homes International and by the NJ Division of Travel and Tourism, the NJ Motion Picture Commission and the NJ/NY Port Authority. Michael Spozarsky's studio is located in Newton, New Jersey.

Time & The Wetlands

BY CATHIE CUSH

PHOTOS BY PAUL AYICK

Time is relative. Some 250 million years ago, mountains fought their way up from the sea that covered the land we now know as New Jersey. Eons later, a massive river of ice tried its best to move those mountains, damming the Passaic River to form Lake Passaic. The Wisconsinan Glacier moved slowly and, when it receded, Lake Passaic drained and flat lake bottom areas became wetlands, then very little changed for a very long time.

In comparison, the time that's passed since the turn of the century seems like the proverbial wink of an eye. Yet in that time the changes that have occurred in the Passaic River Basin have probably been as drastic as any in its long history. The wetlands here, like those in other parts of the state, have suffered the impact of man's presence, and today they are in danger of being lost completely.

The inland wetlands are in a state of crisis, observes Helen C. Fenske, assistant commissioner of the Department of Environmental Protection. We've gone past the threshold where [loss of wetlands] is acceptable," she states.

"The wetlands in the Passaic Basin are probably under greater stress than any others in the state," adds DEP's Sally Dudley.

The wetlands play a key role in issues from wildlife habitat to flood control, and development often interferes with their ability to carry out that role. A number of solutions to problems involving wetlands in general, and the Passaic River wetlands in particular, have been proposed. While there are many different opinions concerning what should be done, all seem to agree on one thing: There is not much time.

Flora, fauna and flood control

Although they can differ greatly in appearance, from marshes and swamps to seemingly dry forests, wetlands have one thing in common: At some time in the year they are water-soaked or submerged long enough to support the plant and animal species that are adapted for life in saturated soil conditions. Like other freshwater wetlands, those in the Passaic Valley are important for many reasons. "The Great Swamp [National Wildlife Refuge], Great Piece Meadows, Hatfield Swamp and Troy Meadows are probably the best pieces," says Richard Kane of the NJ Audubon Society. "They're among the few large wetlands remaining, and they are potentially unprotected. Even the Great Swamp is under pressure from outside development."

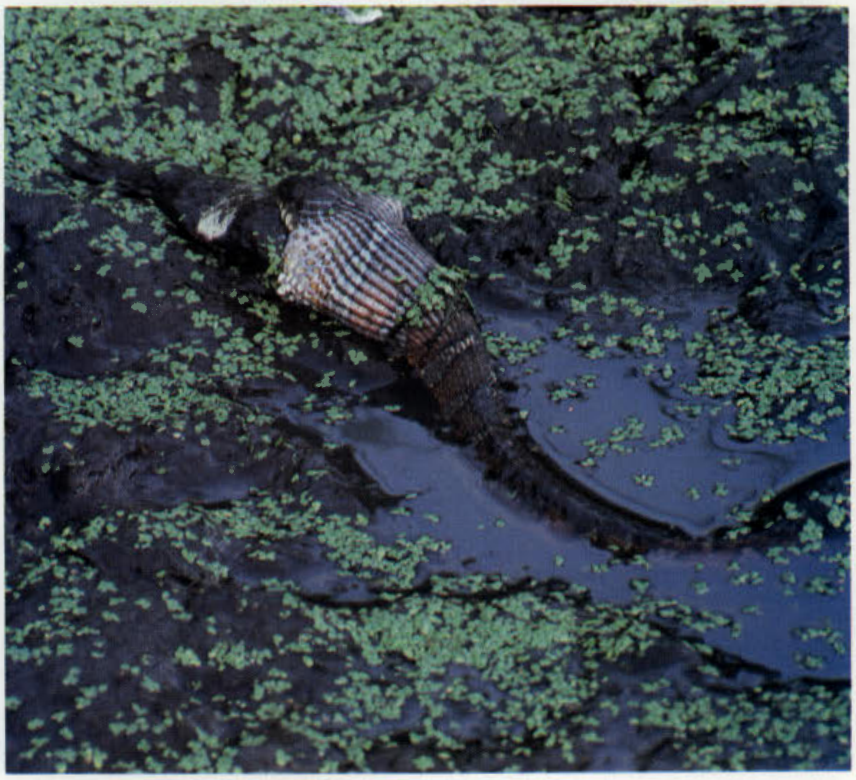
The ecological sensitivity of inland wetlands is now well understood. They provide habitat for many types of flora and fauna, including many endangered and threatened birds and amphibians. Large, relatively undisturbed areas of wetland such as Troy Meadows are particularly important because of the diversity of species they shelter. "One-third to one-half of the State's endangered, threatened and declining species are wetland dependent," notes Kane. These include the bog turtle and blue-spotted salamander as well as the great blue heron and northern harrier. "The only place barred owls are numerous is Great Swamp," he reports. "The American bittern, which has been proposed for threatened status in New Jersey, is spotted less frequently in the Passaic Basin marshes where it breeds," he adds. What is particularly disturbing is that many of these species seem to be disappearing from wetlands that are relatively protected. The sedge wren is gone from Great Piece Meadow.

"There are many aquatic species that are not replaceable if wetlands are lost," Kane adds.

While waning numbers of endangered species are dramatic, there are more mundane, yet likewise important, reasons to protect wetlands wildlife habitat. The creatures that live there play an important part in the food chain. And wetlands provide the basis for many recreational opportunities. "If you didn't have wetlands, you wouldn't have fishing,"

Left: Sun setting over Great Piece inhabitants (insert left—night heron with prey; insert right—cattails.)

Below: Northern water snake completing another step in the food chain



Right: Solitude on the Passaic River

Below: Snapping turtle taking time to enjoy the wetlands

Kane notes. "Wetlands are an important recreational asset." Birding is another popular wetlands-related pastime, and because the Passaic wetlands are in the Atlantic flyway, they are prime territory for spotting migratory birds. Canoeing is another one of many wetlands-oriented recreational activities. "New Jersey's economy is based on wetlands to a great degree," he reminds.

Wetlands also act as natural water filtration and purification systems. "One of the effects of development on or near wetlands could be a reduced water supply," warns Ella Filippone of the Passaic River Coalition, a watershed association headquartered in Basking Ridge. "Water is going to become a short resource. The way the basin is not being managed is going to cause this," she predicts. Ideally, water filters through wetlands vegetation, which traps sediment and pollutants. The less wetlands area, the less water can be filtered and cleaned naturally.

During heavy rains and spring thaws, wetlands act as sponges to hold water, a property that helps control flooding downstream—and one that has made wetlands particularly important in the heavily developed northern portions of the state. During some particularly heavy storms, large wetland tracts may look like lakes. Cyclical flooding of the wetlands is necessary for the ecological system, and it helps prevent high waters further downstream. Roads, parking lots, storm drains and other types of development interfere with the ground's ability to retain water, and the region is feeling the impact.

"The Passaic River Basin is the most severely flooded area on the East Coast," reports Cliff Day of the US Fish and Wildlife Service Absecon field office. Damage has run nearly $80 million a year—most of it paid for through the Federal Flood Insurance Program.

"Insufficient attention was paid in the past to protecting wetlands," notes David Moore of the NJ Conservation Foundation. "Hundreds of wetlands have been filled in the Passaic Valley. The filling has created higher flood levels elsewhere. In Wayne, for example," he continues, "Willow Brook Mall was constructed on a wetland. As a result, in periods of heavy rain, the mall gets water up to its front doors.

"If we had never allowed people to build in part-time rivers, there would be no floods," Moore says. "In the past 25 or 30 years, two things happened. Development has accelerated in the headwater areas, and at the same time we've allowed more development in the

flood plain areas downstream." The result of this, he says, is that "we now have severe damage with only moderate floods, and we're going to see more severe damage in the future."

Nearly 50,000 homes and businesses lie within a flood plain that has been declared a national disaster area seven times in the last two decades. Floods in 1984 cost an estimated $250 million in damages and caused the loss of two lives. The worst flooding of record occurred in 1903; if a disaster of similar magnitude were to take place today, estimated damages would be $1.5 billion.

Channeling energy for preservation

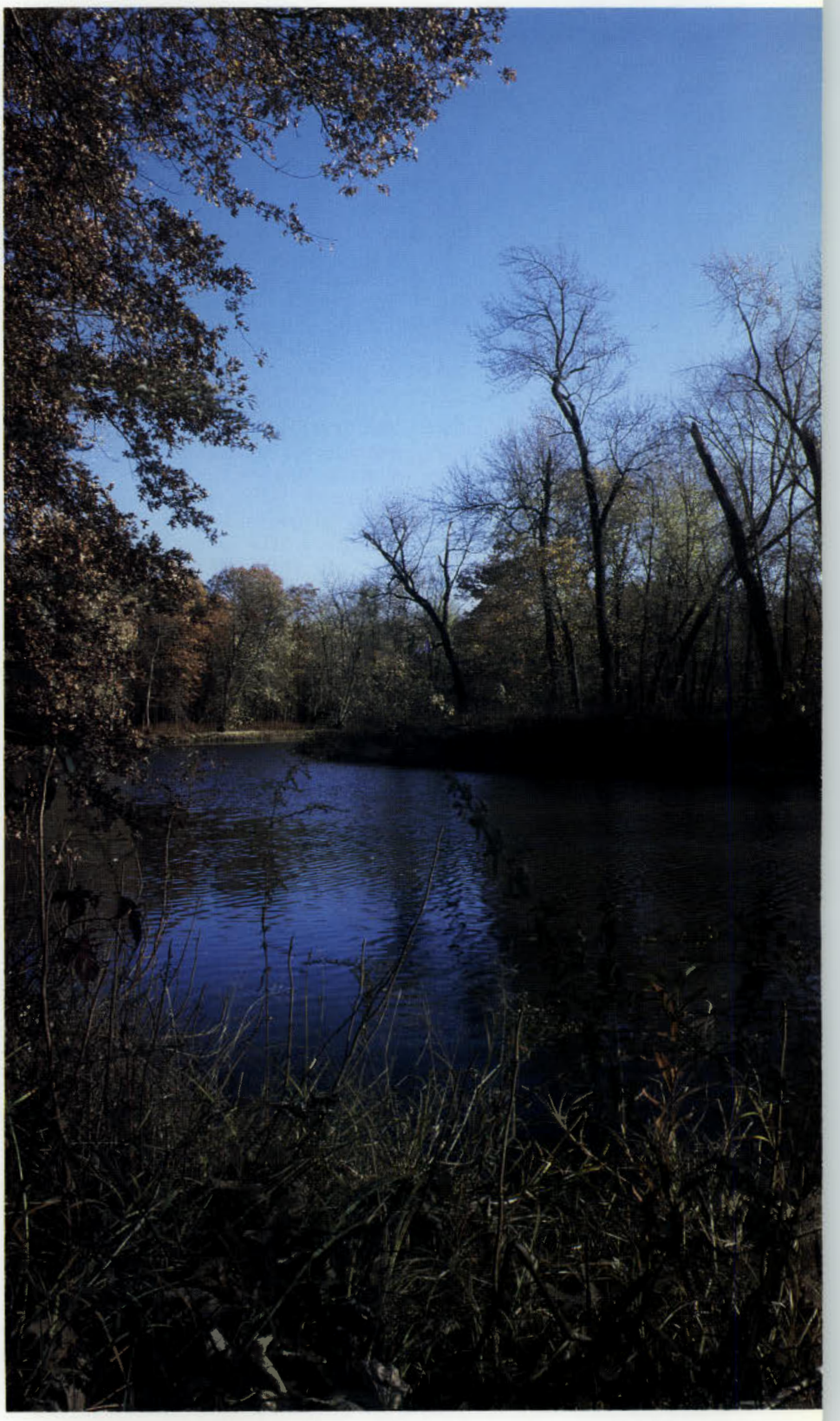
For many reasons, then, it's apparent that not only must existing wetlands be preserved, but damage already done must be mitigated. As David Moore observes, "We've already provided the example of the way *not* to do it."

Currently State laws protect wetlands along the coast, in the Pine Barrens and in the Hackensack Meadowlands. "We do not have a law that protects inland wetlands," Assistant Commissioner Fenske states. The only protection offered to the Passaic wetlands is Federal Section 404, which prohibits filling of wetlands unless the development is in the public interest. Unfortunately, however, most agree that enforcement of this regulation is difficult. State and Federal agencies lack the necessary manpower, and individual municipalities often don't follow up to see that the permit is secured. Watchdog efforts by the Passaic River Coalition's Flood Plain Watch have resulted in 27 stop work orders on wetlands projects. According to Filippone, aggressive enforcement of Section 404 "would be the end of the story."

Proposed legislation kown as the Ogden Bill would regulate development in the wetlands—a move that many say is just one step in the right direction.

"Even though these areas have been degraded over the past 30, 40, 50 years, they are still significant," notes John Kolodziej, a consultant for Wildlife Preserves, Inc., an organization that owns wetlands in several areas in the Passaic River Basin. "One of the keys is that you don't have to build in a wetland to impact it. If you continue to build in areas nearby, you will degrade the wetland."

Changes in the runoff cycle caused by nearby development can upset these systems. Kolodziej says he would like to see buffer zones based on the size and importance of each wetland. Just how big a buffer is necessary is difficult to say. "The real quandary is, we really don't know that. If you develop an area, you're going to impact the wetland even if you're a mile or two miles from it."



Below: Grasses slowing down the flow of rain waters

"By and large it's going to be increasingly difficult to allow any development in wetlands except that which can't be prohibited because of public need," Fenske comments. "The public cost is incredibly high to build on them."

Acquisition of existing wetlands would provide even greater protection, and another plan in the works incorporates acquisition of about 5,000 acres. (More than 300,000 acres would be regulated by the Ogden Bill.) Yet although such measures would protect wildlife habitat and prevent flooding problems from worsening, they would not solve existing flooding problems. The solution is going to have to be as complex as the intricate ecosystem it is meant to protect.

Many advocate acquisition of homes in the flood plain. "I'm personally in favor of buying out people affected by flooding. Get the people who are most affected first," says Kolodziej. Filippone agrees. "It is senseless," she says, "for the federal government to pay to repair flood damages to the same properties year after year." The Federal Emergency Management Agency has appropriated $4 million to buy out flood-prone residences in Wayne, Lincoln Park, Oakland and Fairfield, and has already purchased 10 homes in Pequannock. More must be done quickly. "We have to get some people out of there," Filippone insists. "It's not fair to have them waiting for the next flood."

One long-range component of the solution might be the Army Corps of Engineers' Pompton/Passaic Duel Inlet Tunnel Flood Control Plan. This plan proposes that a 14-mile tunnel be built to divert flood water from the Pompton and Passaic Rivers in Wayne Township to a spot in the Passaic River in Clifton. The Flood Control Plan also incorporates some acquisition of both wetlands in the central Passaic Basin and property in the flood zone. If approved, final designs for the $885 million tunnel are expected to take several years, and construction another decade. The tunnel wouldn't be in operation until shortly after the turn of the century, according to Division of Water Resources Project Specialist James Gaffney.

Wetlands must be considered in their entirety . . .

Like other ecological systems, the Passaic wetlands must be considered in their entirety when solutions are being discussed. Some environmentalists fear that the proposed tunnel might divert too much water, not allowing the cyclical flooding that the wetlands need for nourishment. They speculate that it might also merely move flooding problems further downstream. An environmental impact statement is slated to be released by the Army Corps this winter.

According to Dudley, DEP supports both the protective legislation and the tunnel project. "Even if the Army Corps' plan went into effect tomorrow, there would still be other wetlands that would need to be protected," she explains. "They're complementary."

"The Passaic Basin isn't a simple system—it's a very complex area from an ecological and hydrological viewpoint. It's also a very political area," says Filippone, who advocates less massive structures than the tunnel as part of the solution. "You can't do it out of a text book and you can't do it in isolation." There are, as she says, "so many pieces to this puzzle."

"I think it's going to be tough going," Fenske admits. "I think there's more and more realization that it isn't just an environmental question. We've come a long way in realizing that wetlands are critical lands that need to be protected. It's going to take political courage. We need long-term protection, not short-term exploitation." NJO

MSX and the Oysters of Delaware Bay: the Oyster

By Susan Ford and Jean Jones
Photos By Michael Spozarsky

When oyster boats sailed from the Maurice River town of Bivalve up the Delaware Bay to the seed beds in the spring of 1956, no one suspected that the oyster growing season would be any different than the preceding 100. For four weeks, 130 boats, ranging in size from 80-foot schooners with crews of 18 to 20 men down to small 20-foot outboards with only two or three men aboard, worked to transplant more than half a million bushels of small seed oysters from the public beds [where oysters set naturally] to privately leased growing grounds in the Maurice River Cove.

The industry in 1956 was smaller than it had been 50 years earlier, but it was still prosperous. Planters had every reason to believe that after two or three years in the saltier waters of the lower bay, the oysters could be marketed at a handsome profit.

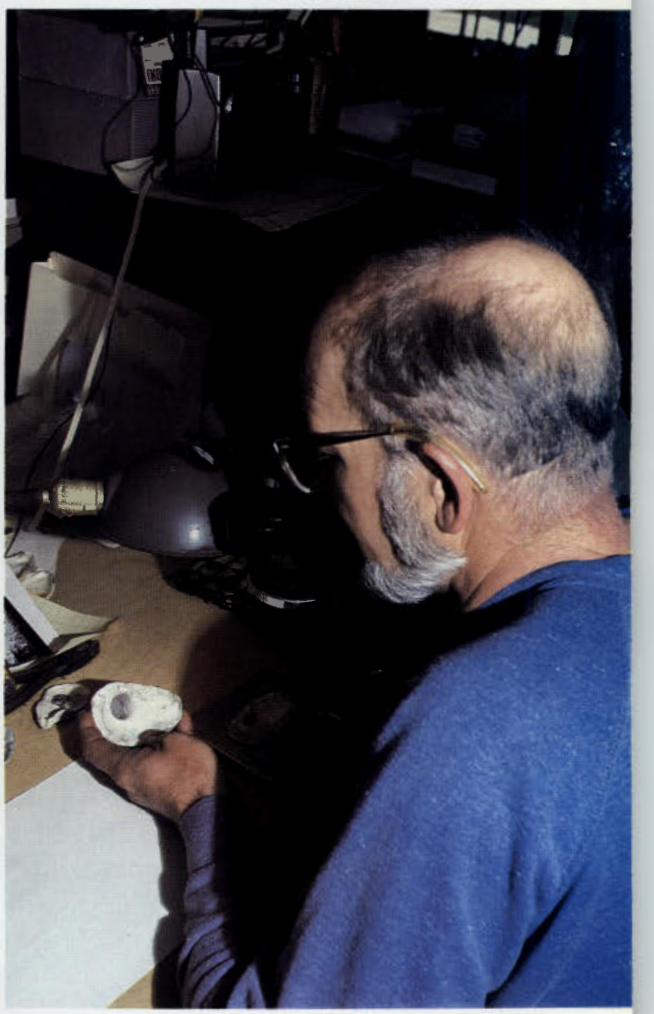
Before the year was out, however, many of the oysters were to die mysteriously in what was the first recorded infestation by the parasite, now called MSX, that continues to beset the great oyster-producing states of the mid Atlantic Coast.

To appreciate fully the effect of MSX on the Delaware Bay oyster industry, centered in the southern New Jersey communities of Bivalve and Port Norris, we must first understand something of the history of the industry and how it operates.

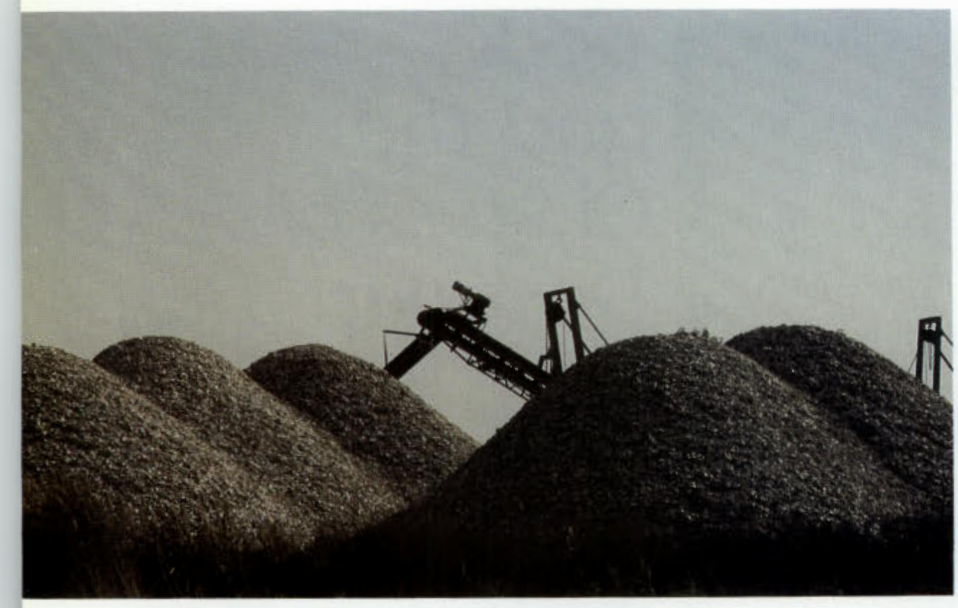
The earliest records of oyster harvests date to 1880, when 400 boats harvested 1.6 million bushels from Delaware Bay. Fifty years earlier, oystermen had begun to "farm" the shellfish rather than harvest them directly from natural areas. Oyster farming makes use of the physical characteristics of the bay and the biological characteristics of oysters and associated organisms to increase the production and quality of market oysters.

Fresh water from the Delaware River mixing with salt water from the Atlantic Ocean creates a salt concentration gradient along the axis of the Delaware Bay. Water at the mouth of the bay is nearly full-strength sea water, or about 34 ppt (parts of salt per thousand parts of sea water). Upriver at Artificial Island, site of the Salem and Hope Creek Nuclear Generating Station, the salinity averages about 6 ppt.

Oysters grow over much of this range and are especially abundant in waters with salinities between 10 and 25 ppt. Hundreds of other species also inhabit the bay bottom, but many are less tolerant than oysters of the low-salinity waters in the upper bay than are oysters. Since some of these species are oyster predators, or compete with oysters for food and space, their absence in the upper bay creates a "sanctuary" for young oysters.



Researcher Don Kunkle examining oysters at the Rutgers lab in Bivalve.



Over many thousands of years, the result has been the formation of vast natural beds of oysters that stretch from False Egg Island Point to Hope Creek.

Oysters grow much faster in the lower bay, however, and there they attain the plumpness and salty flavor demanded by the market. Early oystermen soon discovered that oysters transplanted to the lower bay for a period of growth and conditioning commanded a much higher price than those marketed directly from the upper bay.

From Seeds to Market

The planters knew that a certain fraction of the transplanted oysters would be killed by predators, principally by the oyster drill, a small snail that bores a hole through the shell and consumes the meat, but the growth of surviving oysters compensated for the mortality. On the average, for each bushel of seed oysters transplanted, a bushel could be harvested for market. In some cases, several bushels were harvested for each bushel planted.

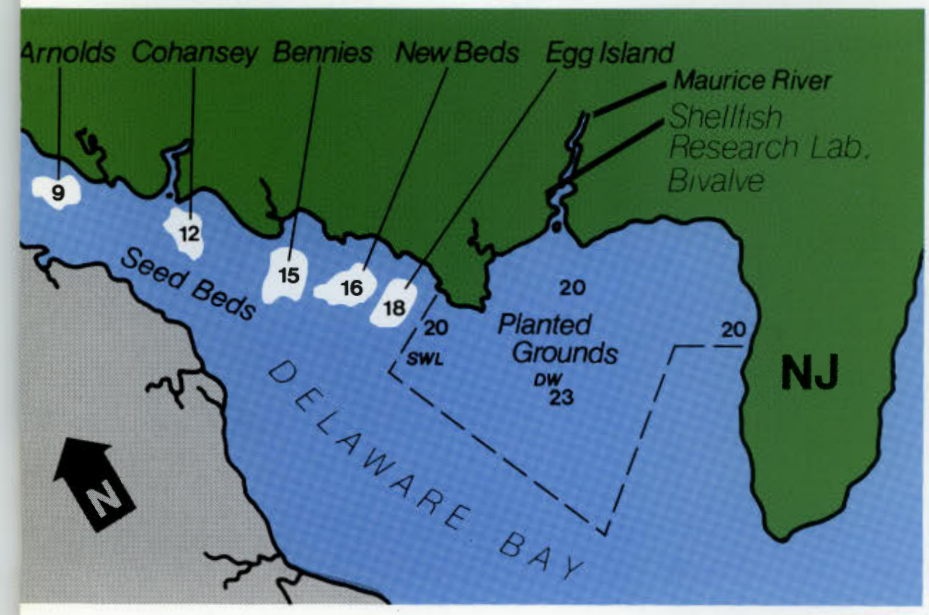
The biological and ecological distinction between the upper and lower bay was recognized by the State of New Jersey in 1899 when it took over management of the seed beds and began to lease grounds in the lower bay to oystermen, who were allowed to transplant oysters from the seed beds in May and June.

The oyster "farming" industry grew and prospered. Originally, oysters were shipped in the shell, first by boat to Philadelphia and later by rail from Bivalve to all parts of the country. Since the 1920's, however, most have been "shucked"—their shells are removed and meats packed in iced containers for transport to market.

Shells are returened to the bay and spread over the bottom, where they provide a clean surface for the attachment of young oysters, which begin life as free-swimming larvae. They cement, or "set," themselves to clean, stable objects after two weeks.

Harvests from New Jersey's leased grounds between 1880 and 1930 ranged between one and two million bushels annually; however, the constant removal of oysters from natural beds, particularly those nearest the planting grounds, began to exceed the set each year. The situation worsened after 1945, when the oyster fleet was permitted to dredge for seed using engine rather than sail power. The change greatly increased maneuverability and dredging efficiency and further depleted the beds.

To maintain the supply of market oysters, planters relied increasingly on large imports of seed oysters from Virginia to supplement



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native stocks. Probably more than half of the seed planted in Delaware bay in the late 1940's and early 1950's was imported.

Thus, the industry was already facing problems in 1957 when MSX appeared. That spring as the water warmed, oystermen "tried" grounds of seed planted in 1956, expecting the big iron dredges that they dragged across the bottom to come aboard loaded with living oysters. To their dismay, though, the dredges were filled with the gaping and empty shells of dead and dying oysters. Between 50 and 85 percent of the oysters in the center of the leased grounds died during a six-week period in April and May, 1957, a mortality unparalleled in the experience of even the oldest oysterman.

Fearing that the deaths would continue, oystermen decided not to plant seed oysters that spring. When the destruction did not persist into summer and fall, plans were made to resume planting the following year. Meanwhile, the Oyster Research Laboratory at Bivalve, part of the New Jersey Agricultural Experiment Station at Rutgers University, prepared to search for the cause of the oyster die-off, should it recur.

Another half million bushels of seed oysters were planted in spring 1958. In late summer, oysters again began to die. This time, the effect spread into areas spared in the earlier epizootic (an epidemic in nonhuman animals), including the Delaware side of the bay. Between 1957 and 1959, 90 to 95 percent of all the oysters on New Jersey's grounds and at least half of those on the seed beds as far up the bay as the Cohansey River died.

The loss was catastrophic, and by 1960 the harvest was less than 25,000 bushels, a decrease in landings of 97 percent in just four years.

In 1958, Dr. Leslie Stauber, a Rutgers parasitologist, discovered a microscopic organism in the tissues of both live and dead oysters that neither he nor other scientists had ever seen before. It was a spherical, single-celled organism containing many nuclei. Its discoverers named it "MSX" for "multinucleated sphere X (unknown)." The acronym has persisted, although the parasite now bears the scientific name *Haplosporidium nelsoni.*

MSX is Only Found in Oysters

MSX belongs to a small group of spore-forming parasites of invertebrates. It has never been found in any organism but oysters, and it is not harmful to humans. In 1959, the parasite appeared in lower Chesapeake Bay, where it had a devastating effect on the Virginia oyster fishery. Since then, it has been found from Florida to Cape Cod, but serious destruction as a result of MSX has been concentrated in Delaware and Chesapeake Bay and in the smaller coastal bays of New Jersey and the Delmarva Peninsula.

The origin of MSX remains a mystery. It may have been introduced into Delaware Bay in another host species that moved into the area, or it may have been brought to North America in oysters from Japan, since a similar parasite is found in Korean oysters. It also may have been present before 1957 but in a form that was harmless until a mutation turned it into a killer.

Regardless of its source, MSX was clearly the most widespread and devastating pathogen ever known to have infected a commercially important shellfish species.

Since the 1950's, the Delaware Bay oyster fishery has made a gradual comeback. Nearly 100 vessels are now licensed to catch seed oysters, and hundreds of thousands of bushels of high-quality oysters are landed at Bivalve each year.

The story of this recovery and of the research and management efforts to assist the industry provides an example of how scientists, fisheries managers, oystermen and Mother Nature herself worked together to attack a catastrophic problem. NJO

the Jerseymen and the Constitutional Convention

By Susannne Banta Harper

The Jerseymen who contributed so much to the framing of the Constitution brought long experience in law and government to their endeavors. William Paterson, David Brearley and Jonathan Dayton were educated at Princeton, whereas William Livingston was graduated from Yale. Certainly, the task facing all those who gathered in Philadelphia in May of 1887 was enormous. There was an urgent need to establish a government that would provide a framework for a sound economy, establish a means for effective foreign policy and sustain workable interstate relations. Yet few things concerned that generation of Americans more than their overwhelming belief that power, if concentrated, would be abused. None worked harder than the New Jersey delegates to establish an equitable balance of power between the states and the federal government.

The Articles of Confederation, the first constitution of the United States, organized a federal system in which the states gave the central government the authority to raise armies, make treaties, borrow and coin money and oversee legal cooperation among themselves. The Articles, however, gave no power to collect taxes. As a result, it was nearly impossible for the central government to carry out its duties. Further, there was no executive to see to the implementation of laws, nor were there federal courts to enforce them. Particularly damaging to the effectiveness of the central government under the Articles of Confederation was its lack of control over foreign and domestic commerce. Chaos loomed as economic crises rampaged through the infant nation during the critical years of 1783 to 1787.

The urgent need for reform caused leading citizens from five states to gather in Annapolis in 1786 to formulate a plan for better commercial interstate relations. New Jersey had especially strong motives in seeking an improvement. Since it had no major ports of its own, its merchants shipped their goods from New York and Philadelphia. Under the Articles, states were not prohibited from imposing duties. New York levied an import tax on goods from New Jersey, placing a heavy financial burden on New Jersey's merchants. The government of New Jersey demanded relief from New York's damaging policy, and the issue became one of overriding concern to the State Legislature.

New Jersey found an able advocate of its rights in William Paterson. Paterson strongly opposed the financial burdens small states suffered as a result of "big-state" policy. He was among those who traveled to Annapolis in search of a means to bring equity and order to the nation's commerce. When Alexander Hamilton urged the group to plan a convention committed to revision of the Articles of Confederation, Paterson was among his strongest supporters. It was agreed among the Annapolis delegates that a convention of all 13 states be convened at Philadelphia the next year for the purpose of improving government and commerce.

Most of the men who gathered in Philadelphia in 1787 were young, ambitious and college educated. For the most part, they were nationalists intent upon establishing a stronger central government, but commitment to this goal existed in varying degrees. Their official purpose was to revise the Articles of Confederation. Since nationwide interest in the proceedings caused the delegates to fear that public criticism might disrupt the work at hand before they had accomplished their mission, they chose to meet in secret. Although the business of the convention was conducted behind closed doors, the presence of George Washington as presiding officer of the convention established public trust in the proceedings.

The Virginia delegation opened the conven-

From printing by Thomas Pritchard Rossiter (1817-1871), "Singing the Constitution", courtesy of Fraunces Tavern Museum, New York City

tion with a proposal recommending a series of changes in the relationship between the central government and the states. The Virginia Plan recommended a central government with three separate branches: legislative, executive and judicial. Representation in legislature was to be based solely upon population.

"Myself or my state will never submit to tyranny or despotism," the outraged William Paterson declared upon hearing the proposal. The New Jersey delegates considered the Virginia Plan an attempt by large states to dominate the nation at the expense of small states such as New Jersey. Led by Paterson, New Jersey's delegates were to play a major part in hammering out a series of compromises to which all delegates could agree.

The New Jersey delegation developed an alternative to the Virginia Plan, and Paterson introduced it to the Convention. This alternative proposal sought to protect the rights of small states by retaining a higher degree of state sovereignty. New Jersey's delegates insisted that their state could not submit to any government in which it did not participate as an equal. They led the fight for equal representation of all states in the new legislature.

As the debate over the Virginia Plan and New Jersey Plan raged on, Connecticut, Delaware and Maryland joined New Jersey in opposition to representation based on population. Finally, a compromise proposal offered by Connecticut's Oliver Ellsworth was debated by the delegates as a possible solution to the impasse over representation. The Connecticut Plan proposed a Congress comprising two houses. The states would be represented equally in the upper house and by population in the lower house. Eventually, the Convention approved this plan, known as the Great Compromise.

Another resident of New Jersey, William Livingston, played an important part in a second major compromise agreed to at the Constitutional Convention. The agricultural South feared that navigation laws detrimental to its interests might be passed by a new and stronger government. These states wanted any act on tariffs or navigation to require a two-thirds vote of approval by the Congress. Northern states feared this would hamper the development of effective trade legislation, one of the primary needs of the nation. Livingston, as one of a Committee of Eleven on Navigation Acts, was instrumental in working out a series of compromises acceptable to northern and southern states. In this compromise, Navigation Acts would be passed by a simple majority, but export taxes were forbidden and a 20-year moratorium on the issue of importation of slaves was adopted.

Once the delegates had hammered out a document to which they could agree, the Jerseymen became ardent supporters of its ratification. One of these was David Brearley, who was born at Spring Grove, an estate on Princeton Pike in Lawrenceville. (On both the State and National Historic Registers, Spring Grove is a private residence owned by the Lawrenceville School.) Brearly presided over New Jersey's Ratification Convention, and under his guidance, New Jersey became the third state to ratify the new Constitution. Subsequently, he served as United States District Judge and as Presidential Elector in 1789.

Another Jerseyman, Jonathan Dayton was the youngest delegate to attend the Constitutional Convention. However, he has left a less clear-cut image than the other New Jersey delegates, owing to his involvement in the Burr Conspiracy.

Dayton had known Aaron Burr from childhood, when Burr, who was an orphan, lived with Dayton's uncle. The two youths were classmates at Princeton and continued to be close associates in adulthood. As Burr's politi-

cal career crumbled following his duel with Alexander Hamilton, he developed a plan that proposed to seize Kentucky, Tennessee and Mexico and forge these into a rival empire to the United States. A letter, known as the "cipher letter," outlining these plans was at one time believed to have been written by Burr. Recent scholarship, however, suggests the possibility that it is in the handwriting of Jonathan Dayton. Both Dayton and Burr were tried on charges of treason before Supreme Court Justice John Marshall in 1807. Both were acquitted of the charges.

Jonathan Dayton's later years were plagued by financial woes. He purchased Boxwood Hall in Elizabeth in 1795 and lived there until his death in 1825. The house, a National Historic Site open to the public, includes displays of a variety of personal items owned by Dayton.

Undoubtedly, of all the New Jersey constitutional delegates, William Paterson and William Livingston were the most famous and most influential. The New Jersey Legislature selected William Paterson as one of the state's first Senators. In establishing the judicial branch, the Constitution set up the Supreme Court but left the development of lower courts to the Congress.

When Paterson left the Senate to become New Jersey's second governor, he oversaw two developments that would influence the future of the state and the nation. The Society of Useful Manufactures was incorporated and established in the newly chartered municipality of Paterson during his governorship. Paterson, who had been so concerned with the economic health of the state, contributed his name and approval to New Jersey's future in the form of one of the nation's major manufacturing centers. In 1795 President Washington appointed Paterson to the Supreme Court. He served as an associate justice until poor health forced him to retire in 1806.

New Jersey named The William Paterson College in honor of its premier statesman. The college hopes to become the national center for the study of Paterson's role in the development of the national government. Accomplishment of this aim was advanced by the acquisition of 247 documents known as the Paterson Papers. Robert Lepresti, Special Collections Librarian at William Paterson College, notes that the collection, which consists primarily of Paterson's notes on court cases, is used periodically by legal scholars. The very fragile papers have been deacidified to enhance preservation and are kept in acid-free boxes and folders, housed in a special conservatory in which proper humidity and temperature are maintained. Microfiche copies of the papers are available for use by students and the general public.

The fourth New Jersey delegate to the Constitutional Convention, William Livingston, was originally from New York. He retired to Liberty Hall, his estate in Elizabethtown, New Jersey, in 1772 to pursue the quiet life of a country gentleman. His adopted state, however, called upon him for a multitude of services for the next 18 years. He became a member of the Essex County Committee of Correspondence in the Revolutionary era and subsequently served as New Jersey's governor for 14 years. Livingston's name is one of New Jersey's best known. The Essex County town of Livingston bears his name.

Like William Paterson, Livingston is the object of important historical research. In 1979 the New Jersey Historical Commission began publishing his papers under the editorial direction of Dr. Carl E. Prince of New York University. The volumes include both personal and official documents of Livingston's life and career in New Jersey. Two volumes have been published and are available from Rutgers University Press. A third volume is scheduled for publication, and two more are planned.

Although two centuries have passed since Paterson, Livingston, Brearley and Dayton signed the Constitution on behalf of New Jersey at the Philadelphia Convention, the words of William Livingston still capture the essence of the document's importance. The United States Constitution, Livingston declared when urging its ratification, provides a "golden opportunity to prove to the world the possibility of the existence of a free, democratic republic."

Note:

The five New Jersey delegates who signed the Declaration of Independence were: John Witherspoon, Francis Hopkinson, Richard Stockton, Abraham Clark and John Hart. NJ

The four who signed were influential New Jersey statesmen

CALENDAR OF EVENTS

JANUARY

8-11	GARDEN STATE OUTDOOR SPORTSMEN'S SHOW, Rutgers University Gym and Annex, College Avenue, New Brunswick, (Main Campus). 201-968-3070
10	ALLIANCE FOR NEW JERSEY ENVIRONMENTAL EDUCATION CONFERENCE, Ocean County Community College, Toms River. Workshops on nature through the arts, games that teach, short field trips, wetlands and more for teachers, interpretive specialists, group leaders. Pre-kindergarten through high school. 201-766-5787
18	SPRINGER'S BROOK—LOWER FORGE HIKES, 6 and 8 miles. Meet at Atsion Rangers Station, Route 206, 11 miles south of Red Lion Circle. 10:00 am. 609-267-7052

JANUARY AND FEBRUARY

Saturdays AND Sundays	MAPLE SUGARING. Morris County Outdoor Education Center, Chatham. 201-635-6629
31	ICE FISHING CONTEST, 41st Annual Event. Knee Deep Club, Lake Hopatcong, Landing. 201-839-4514

FEBRUARY

1	ICE FISHING CONTEST (See above)
14-22	34th Annual EAST COAST BOAT SHOW, Asbury Park Convention Hall, 201-775-0900
19-22	10th Annual ATLANTIC CITY BOAT SHOW, Convention Center. 609-482-6400
24	FLY TYING CLASSES, Ernest Schwiebert Chapter, Trout Unlimited, Fly Tying School. Ewing Adult Classes, Fisher Junior High, Ewing Township. 609-882-9087

PHOTO BY MICHAEL SPOZARSKY

Hear Ye, Hear Ye . . .

New Jersey's Natural Resources and Recreation

What do YOU think?

- ☐ **What do we need?**
- ☐ **Where do we need it?**
- ☐ **How much do we need?**
- ☐ **How are we going to pay for it?**

The Governor's Council on New Jersey Outdoors has been investigating these and other issues related to New Jersey's natural resources and open spaces since last fall. With 21 leaders from business, local government, recreation, the environment and the general public, the Council has scheduled three public hearings to hear how YOU think New Jersey should approach these very important questions. Plan to attend the hearing in your part of the state. Better yet, plan to testify!

Hearing schedule

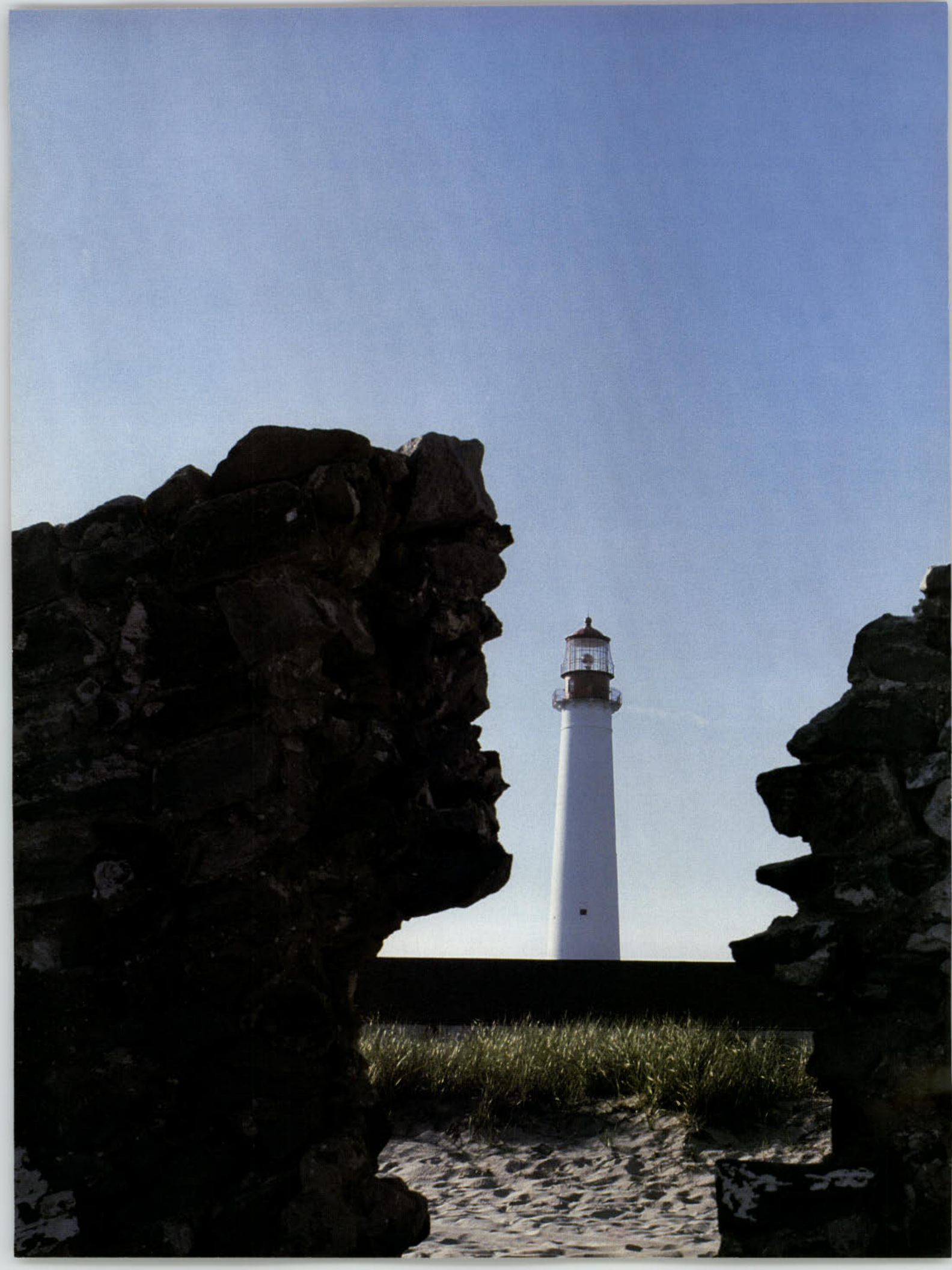
Tuesday January 13, Glassboro State College Student Center, Glassboro
Tuesday January 20, Trenton State College Student Center, Trenton
Tuesday January 27, Ramapo College Student Center, Mahwah

All hearings will run from 3 PM to 9 PM with a dinner break from 6 PM to 7 PM.

Survey questionnaires will be distributed to all attending the public hearings and will also be available on request.

For more information or for a copy of the survey, please contact

Governor's Council on New Jersey Outdoors
CN 402
Trenton, NJ 08625
609-292-3541



Helping Preserve New Jersey's Past

BY PATRICIA REARDON

The State of New Jersey owns and operates 24 historic properties, and another 12 are owned by the State but leased for operation to private agencies, usually local civic organizations made up primarily of volunteers interested in historic preservation. Recognizing the importance of such groups—who are often plagued by personnel and money shortages—the State attempts to provide them with much-needed financial assistance for restoration and maintenance. The groups, in turn, provide the administrative services, specialists and volunteers needed for day-to-day operation.

The Hermitage

Such an arrangement occurs at the Hermitage in Ho-Ho-Kus. Located on nearly five acres of wooded land, the historic site is valued for both its Revolutionary War background and the outstanding Gothic Revival cottage that graces the property.

The house, its furnishings and the land upon which it stands was bequeathed to the State as a museum and park by its owner, Mary Elizabeth Rosencrantz, who despite advanced age and poverty, tenaciously clung to the estate until her death in 1970.

Two years later, Friends of the Hermitage was formed as a private organization dedicated to the protection and restoration of the property. The group worked closely with the State to initiate vital basic repairs and also to secure the house from vandalism. In 1981 the State leased the Hermitage to the Friends, who administrate its operations.

Since that time the DEP and the Friends have collaborated closely on the building's continuing restoration, which includes structural repair, drainage, plumbing and electrical systems and exterior detail work.

According to Hermitage Director, Florence Leon, "a great deal has been accomplished through State support and funding of several important restoration projects. We have a good working relationship with the various levels of DEP," she says.

The history of the Hermitage dates back to 1760, when the original section of the present house was built as a smaller two-story dwelling in the English Georgian style.

In 1767 James Prevost, an officer in the British Army, purchased the property but, because of military obligations, was absent much of the time. A romantic interlude occurred there when Prevost's wife, Theodosia, became the object of Aaron Burr's affections. She is said to have had "graceful and winning manners" and was accomplished and well versed in literature. Her charm extended even to General Washington and his staff, who in 1778 lingered at the Hermitage for four days and nights, enjoying Theodosia's hospitality.

Burr indeed must have been smitten. He called frequently at the villa and, after the death of Theodosia's husband, persuaded her to marry him.

In 1807 the socially prominent Rosencrantz family acquired the estate and retained it uninterrupted for four generations. Under their ownership, the original house was redesigned, substantially enlarged and completely renovated in the Gothic Revival style; the results of these changes remain intact today.

For current visitors, the Hermitage provides slide programs, special exhibits, lectures, workshops and annual Christmas presentations, including a condensed dramatization of Dickens' *A Christams Carol.* Tours of the villa are conducted by decents lecturers who have been trained on the history of the house.

Edison Memorial Tower

Further south in Middlesex County, another historic site, Thomas Alva Edison Memorial Tower, stands as a tribute to New Jersey's great inventor. The lofty monument, erected in 1937, looms 131 feet high over 45 acres of Edison State Park on the exact site of the inventor's original Menlo Park laboratory, which operated between 1876 and 1886.

The entire complex—tower, museum and land—is owned by the State of New Jersey and leased to Edison Township for administration and maintenance. Ongoing cooperation between the two ensures preservation of the structure.

An example of this interaction is the restoration project that recently was completed by the Township through a $15,000 State grant. The work included masonry improvement and waterproofing, resealing of the bulb that crowns the tower and repair of the lights that illuminate the entire construction.

The monument, often simply called Edison Light, is commemorative of the 10-year period during which, along with other accomplishments, Edison produced and tested the first practical incandescent lamp (carbon filament), invented the phonograph and completed a system for generating and distributing electric current.

The original compound at Menlo Park included machine and carpentry shops, glass works, a library and Edison's family residence. It was served by an electric train built in 1880. Christie Street, leading into the complex, was the first in the country to receive incandescent street lamps—in 1879.

Construction of the tower required 1,200 barrels of Edison Portland Cement and 50

PHOTO OF CAPE MAY LIGHTHOUSE
BY MICHAEL SPOZARSKY

tons of reinforced steel. Set on a concrete pad two and one half feet thick, the structure is topped by a 13-foot replica of Edison's original incandescent lamp.

The lamp itself contains 153 separate pieces of amber-tinted Pyrex glass housing 12 bulbs in three sizes emitting 1,000, 200 and 100 watts, respectively. Cast by the Corning Glass Works, the bulb is illuminated nightly and can be seen for a distance of several miles.

Contained in the tower's base vault, the eternal light, a replica of the first light bulb, glows softly and is never allowed to burn out.

Adjacent is a small museum crammed with examples of Edison's inventions: cylinder and diamond disc phonographs, records, voice writers (Ediphones), batteries, miners' lamps, a telegraph relay and the Edison telephone. It also contains a replica of the first street lights and a collection of memorabilia. The museum's curator, George Campbell, conducts educational guided tours for groups of interested schoolchildren. Other visitors to the site may also take advantage of this service by appointment.

Trenton Barracks

At the Old Barracks Museum in Trenton, the State has just completed the first part of a four-phase restoration plan to be financed through New Jersey's Green Acres Bond Fund. Costing $159,000, the first phase of construction was directed to the Officers' Quarters, a separate but adjacent building that was sadly sagging under the weight of an excessively heavy slate roof. The heavy tiles were replaced by lighter cedar shingles, as in the original.

Construction also included stabilization of structural supports and a corrective restoration of chimneys, dormers and decorative wood.

Phase Two, scheduled to begin in autumn of 1987, will address the problems of electrical, heating, plumbing and security systems as well as restoration of the interior of the Officers' Quarters.

The final phase, projected to start in three years, will include a climate control system, fire stairs and access for the handicapped. Accurate restoration of both interiors and exteriors will culminate the project.

Trenton Barracks was built in 1758-1759 during the French and Indian Wars and is the only barracks of this era still extant in North America. Its history, reflecting America's own, is colorful.

At the war's onset, British troops were sent to protect the colonies. In December 1756 about 250 soldiers descended on Trenton and were billeted for the winter in the town's 100 or so private homes, raising local ire. A series of petitions was then presented to the legislature attesting to "the evils of the situation" and suggesting a remedy: erection of barracks not only in Trenton but also in Burlington, New Brunswick, Elizabethtown and Amboy.

During the American Revolution, Trenton Barracks was occupied by a detachment of Hessian troops just prior to their infamous defeat by General Washington at the Battle of Trenton on December 26, 1776. Afterwards,

American militiamen occupied the building, often with their families in tow. In fact, 50 babies are known to have been born there.

After the Revolution, the building was sold and divided into private residences. In 1793 the middle section was torn down to provide access to the New Jersey State House. Other changes took place. Walls and porches were added and removed, chimneys and roofs were rebuilt, and doors and windows were altered.

Throughout the nineteenth century different sections of the building were put to various uses, including a school for young ladies and a home for "respectable" widows and single women.

In 1899, when the building was offered for sale, a group of concerned Trenton women led by Mrs. Beulah Oliphant raised over $6,000 to purchase the south wing. Out of this fundraising effort was born the Old Barracks Association, whose purpose was "to preserve and maintain" the historic structure, which they did then and still do today.

In 1914 the State of New Jersey acquired the barracks with the stipulation that the Association would retain administrative authority. The State then reconstructed the 40-foot, previously demolished section of the barracks and restored the entire structure to its eighteenth-century appearance.

Annual operating expenses are funded by the State through DEP and supplemented by admission fees, gift shop revenues and private sources.

The museum retains a staff of 18 people annually, who serve over 20,000 students from 188 schools. According to Director Cynthia Koch, in 1985 they welcomed 29,000 visitors from 45 states and 30 foreign countries.

Offerings include "sound and light" dioramas, permanent and changing exhibits, slide programs and outreach services. The staff maintains eighteenth- and nineteenth-century period rooms and a life-size, fully equipped squad room. Tour guides employ first-person interpretation by assuming the character of a person from the past. Thus visitors "meet" sergeant Jonathan Cuff or camp follower Miss Hannah McCloud, who may loudly complain of supply shortages while engaging the guests in conversation.

Cape May Lighthouse

Most visitors to Cape May Point stop to admire the venerable lighthouse standing guard there. But for safety's sake, they may not enter. Cape May Lighthouse is in need of repair.

Built at New Jersey's southernmost tip by local artisans under the supervision of the Army Corps of Engineers, the lighthouse was completed and first lighted in 1859. It represents the finest in engineering technology of the mid-nineteenth century.

Reaching 170 feet in height with walls eight feet thick at the base, the tower supports a rotating electrified beacon producing 350,000 candlepower, visible 19 miles out to sea.

Over the years, the red brick structure has begun to show signs of serious deterioration. Enter private citizens—in this case the Mid-Atlantic Center for the Arts (MAC).

No stranger to the historic preservation struggle, MAC originally convened in 1970 as a small ad hoc group to save Cape May's Emlen Physick Estate from demolition. From that modest beginning it has grown to an 800-member civic organization with a current operating budget of $500,000. The group engages mainly in historic preservation, support of the arts and tourism.

Recognizing the historical significance of the lighthouse—with a maritime history that dates back to whalers who first settled at the Cape in the mid-1600's, MAC actively pursued a plan to lease it from the State with the idea of initiating repair and officially opening it for the first time to visitors.

On September 10, 1986, the first step toward this goal was realized. In the shadow of the lighthouse, a special ceremony took place marking the signing of two important documents: a lease from the State passing responsiblity for operation of the facility to MAC and a contract on a line-item appropriations bill passed by the State Assembly in 1985 that provides $50,000 in restoration funds.

According to Tom Carroll, president of MAC, preliminary plans call for improved interior lighting, an intercom system and installation of an additional handrail along the stairway. Eventually, the tower windows and exterior shutters will be restored to their original design, the copper roof will be repaired, and the entire structure will be waterproofed and treated to a fresh coat of paint.

An estimated total of $250,000 is needed to complete the restoration implemented by MAC. The entire project will be monitored by DEP and the US Coast Guard, which retains primary responsibility for the beacon itself.

Working in cooperation with State agencies, historic preservation groups and concerned municipalities perform an important custodial service. They safeguard and preserve our past. Paul Taylor at New Jersey's Office of Heritage sums it up:

"These private agencies that maintain the historic sites are enhancing the public experience—and doing a good job, by the way."

The Hermitage
335 North Franklin Turnpike
Ho-Ho-Kus, NJ 07423
phone: 201-445-8311
Hours: 1 p.m. to 4 p.m. Wednesdays and first and third Sundays of each month

Edison Memorial Tower and Museum
37 Christie Street
Menlo Park, Edison, NJ 08820
phone: 201-549-3299
Hours: 12:30 p.m. to 4 p.m. Wednesday through Friday; 12:30 p.m. to 4:30 p.m. Saturday and Sunday (also open Tuesdays Memorial Day through Labor Day—12:30 to 4 p.m.)

Old Barracks Museum
Barrack Street
Trenton, NJ 08608
phone: 609-396-1776
Hours: 10 a.m. to 5 p.m. Daily; 1 p.m. to 5 p.m. Sundays

Cape May Point State Park
Cape May Point, NJ 08212
phone: 609-884-2159
Hours: Open during daylight hours throughout the year.

Left: Photo of old Trenton Barracks by Sharon Wysocki

Etching of the Old Hermitage by Jane Ferrari

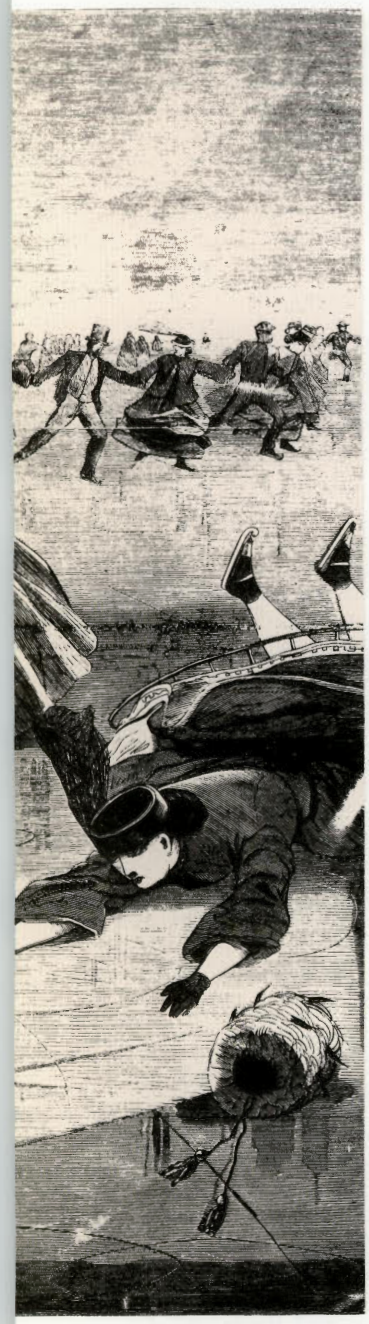
Remember Ice-skating?

Remember ice-skating? Rushing to lace up skates as your nimble fingers reddened, then gliding across the lake while the wind whipped your cheeks a rosy red and watered your eyes until tiny crystals formed frosty lashes? Remember the clanking sound from your blades as they scraped the ice sideways, and the swooshing noise as you skittered to a stop in a spindrift of fine powder?

If you have forgotten what it is like to ice-skate, it's time to awaken memories and pull boots and blades out of cold storage and give the sport another round. Ice-skating has taken a back seat to other winter activities, but there are many reasons to ice-skate that bear reminding.

First off, ice-skating is most accessible in this state—from mountain lakes to indoor and outdoor rinks, open creeks, farm ponds, frozen fields and quiet coves. In some communities, ice-skating is only walking distance away. With skates flung over their shoulders, skaters

By Gail Greco



Winslow Homer Etching courtesy of the Kelmscott Gallery, Chicago Il. As published by Dover Publications in "Winslow Home Illustrations" (1983).

heading toward a frozen body of water are a refreshing site in the middle of winter.

Ice-skating is a healthful sport. It burns calories and strengthens the heart and lungs. Muscles are stretched, increasing flexibility. The occasional skater benefits with some cold-weather exercise while building stamina for more strenuous winter sports.

Ice-skating is also an antidote to winter blues and cabin fever. Cloudy days are better served on the ice, where you may literally bump into neighbors and friends who have been hibernating. You will entertain each other as you attempt to imitate the professionals. You remember—a few foolhardily spins on one foot, only to flop awkwardly against the hard surface, unabashedly facing chuckling peers.

I skated most of my young adult life on Cupsaw Lake in Ringwood and have returned to find that the ice-skating scene there has not changed. This neighborhood facility resembles many New Jersey lakes in winter, brimming with activity as though a Grandma Moses painting come to life. Hockey players swoop pucks into nets. Toddlers saw across the lake on double runners. Mothers and dads push baby sleds while the family dog edges carefully nearby, his front legs stretching to sliding halts. Daring skaters still play "Crack the Whip," locking arms to form a chain and building speed as they skate in a circle. One by one, the skaters on the outer ends of the chain are propelled across the lake for a whirlwind trip.

An inexpensive sport

Taking in nature is another reason to ice-skate. The surrounding scenery can help you catch your winded breath. Stop for a rest and a view.

Then there are the sounds of the ice. As it warms, it expands under the sun, amplifying a rolling, almost booming noise from below the surface like that of an active volcano. New skaters scurry to shore, but experienced blade-runners know this is normal and that the ice is not about to part.

Ice-skating is an inexpensive sport. A pair of skates and comfortable outer clothing is all you need. There are three types of skates—figure, hockey and speed. Their average price range is $30 to $60. The most common skate is the figure skate. It has a high boot and jagged edges at the front of the blade for spins, jumps and stops. A hockey skate has a low-cut boot with padding around the ankle. It has a thick, molded toe and heel but no teeth on the blade. A speed skate has a long, thin blade extending beyond the length of the boot.

Clothing should be light and not cumbersome. Jackets made of the lightweight material for cross-country skiing break the wind. Heavy, puffy parkas obstruct vision and maneuverability, ultimately shaking you off balance.

The price of ice-skating is attractive. If you skate on a lake or pond, there is usually no charge. Rink fees are minimal—low enough to bring the entire family and still have enough left over for the hot cocoa afterwards.

A true leisure activity

News about skating usually makes only competitive headlines such as "Battle of the Blades," "The Thinner the Winner," and "Magic Moments of the Best Skaters," but even though professional competition is admirable and exciting to watch, you don't have to skate like a pro to enjoy the sport. However, a few lessons for beginners are recommended so that no bad habits are formed. If you are not interested in learning skating techniques such as toe loops and flips, then skating is quick and easy to learn, since it is an extension of walking.

Some skaters prefer lakes to rinks because they provide freedom of movement, an appealing prospect. The ultimate goal is skating on a clear "polished" lake in any direction, but lakes are subject to weather conditions and ice surfaces.

The ideal ice is "sheet ice," smooth as glass and usually occurring on the first freeze of the season. Every stroke of your blade appears on the translucent surface. When you see that the ice is this perfect, hurry down to the lake or pond and skate. It can change quickly if snow falls or temperatures change.

Temperature changes may cause the ice to refreeze and buckle. It then becomes choppy, and your skates will bounce over tiny bumps. Experienced skaters can handle this type of ice, but anyone still gingerly zigzagging over sheet ice should travel cautiously on this crusty coating.

Lakes can also be dangerous. How do you know if the lake is safe? Skaters provide some reassurance. If you see several skaters or ice fishermen, conditions are probably all right. Some public ponds and lakes are inspected and determined safe by officials, but they will usually rope off the section that has been tested. Some lake communities post signs, "Skate in This Area Only" or "No Skating Today." Where there is no one policing the lake, you can do some of your own testing. Ice should be a minimum of two to four inches thick. To test it, chip it with ice chisel. Be sure you have a rope-carrying companion behind

Photo by Michael Spozarsky. Photographer's son and friend skating on Little Swartswood Lake

you, and make several more tests farther out. The ice may be thinner in other areas, since it does not freeze uniformly. Approach any frozen area with caution, especially early in the season. You may also use your skate to test safety. Kick the back of the blade into the ice. If it breaks through water, then the ice is too thin.

The general rule of skating is never go alone. If you should fall through the ice, a fellow skater can assist. It is wise to carry rescue equipment with you—a rope, pole, hockey stick or anything that can be gripped by a flailing skater in a pool of water. If such an accident occurs and you do not have anything to fetch with, look around for a tree branch or a board. Even a pair of blue jeans can work by hoisting one leg out to the victim and holding onto the other as you pull.

A human chain is also an effective means of rescue. The American Red Cross explains: "Rescuers should approach as closely as possible and then lie on the ice. Each person holds tightly to the skates or ankles of the person ahead of him. The lightest person should be closest to the victim. When the lead person grasps the victim, the person nearest to shore pulls the other back.

"Once you have rescued a victim, get him or her indoors as soon as possible and remove wet clothing. Wrap the victim in blankets until you can immerse the victim in warm water."

If you are the victim, the Red Cross suggests this method of self-rescue: "Do not attempt to climb out of the hole immediately. Kick your feet to the surface to the rear so that you avoid jackknifing your body beneath the ice rim. Extend your hands and arms over the unbroken surface, kick your feet, and bring yourself to a level position. Attempt to work forward onto the ice."

Three more things to remember when skating: Be conscious of holes in the ice on lakes where ice fishermen are known to practice their sport. Never skate on a river unless the thickness of the ice is known (since moving water does not freeze well enough for skating). And ice that was safe in the morning may weaken toward the end of the day if the sun has been shining on it.

Ice rinks have a hardwood base with a few inches of frozen water on top. I used to skate at South Mountain Arena, an indoor rink in West Orange, and have also skated in outdoor rinks at Bear Mountain State Park, just over the New Jersey border, and in New York City at Rockefeller Plaza and Wollman Memorial Rink in Central Park. Rinks have a guaranteed frozen surface that is smoothed over by machinery when it becomes too choppy. However, rinks are inhibitive. Even though they usually provide musical accompaniment such as "The Skater's Waltz," at most, you can only go around in a circle. Racers, or those who want the freedom of movement, are better off on a lake or pond.

Romance on the Ice

The ice also recalls scences of romance. Courting couples on an ice date were favorite subjects of artists, especially Currier and Ives and Winslow Homer. They depicted skaters of the nineteenth century arriving by a frozen pond in a horse-drawn sleigh. Ladies in long dresses and furry muffs and men in long-tailed coats and top hats skated and looked longingly at one another under moonlight.

This romantic view of skating is only half the history of the sport. Scandinavia is one of the areas in the world where skating began. Here city areas were surrounded by canals that, when frozen in winter, became pedestrian walkways. People crossed the canals and other frozen bodies of water by attaching polished animal shank bones to their shoes with leather thongs.

The classic book, "Hans Briker, Or The Silver Skates," was set in the Netherlands, and the Dutch improved ice skates by designing them out of wood and later iron. In this country, skater E.W. Bushnell of Philadelphia invented the clamp-on skate in 1848.

Ice-skating as a sport presumably originated in Scotland when the Skating Club of Edinburgh was formed in 1642, but it wasn't until 1858 in Quebec City, Quebec, that the world saw its first covered ice rink.

Ice-skating has come a long way since it started as a purely utilitarian activity. Today, it is not the number one winter sport in the country, but ice-skating has proved that as long as there are freezing temperatures, there will be ice-skaters. Look for them this winter on a mountain lake or roadside pond. Watch them sweep blithely across the frozen water and see if you aren't inspired to retrieve those skates from the attic and score one for ice-skating, just like you used to. NJ

Dear Editor

New Jersey Outdoors welcomes letters from readers. Letters for publication should include the writer's name and address and should be mailed to: Editor, New Jersey Outdoors, CN 402, Trenton, NJ. 08625. Letters may be edited for reasons of length or clarity. Please keep the letters coming. We'd like to hear what you think about the magazine. We'll also try to answer questions and if we cannot, we'll ask our readers for help.

NJO Went to A Fishing Contest

I would like to take this opportunity to say "Thank You!" for contributing copies of *New Jersey Outdoors*. Your involvement helped make this years Kiddie Fishing Contest a great success. In fact, it was the second largest in our history. There were a total of 911 boys and girls in attendance.

It was through the efforts DEP, *New Jersey Outdoors* and other corporate donors that made it possible for each boy and girl to have a real fun day.

On behalf of the Mercer County Federation of Sportsmen's Clubs, Inc., and especially the children, thank you.

We hope that you will continue to support us in the future, and help keep the last Saturday in June a memorable day for children.

Sincerely,
David Weaver, Chairman
Mercer County Federation
of Sportsmen's Clubs

NJO received a letter from Carl Schielke, age 75 of Trenton. It was just loaded with interesting facts:

Do you know where the Osage Orange grows in New Jersey? Most people don't even know what it is!! It is bigger than a grapefruit and its color is light green.

Do you know that the wild orchid of the New Jersey Pinelands has three names! Lady slipper, moccasin flower and in Latin—*Cypripedium.*

Do you know that you can lure a New Jersey fox with a squirrel call gadget? I did it! That goes back lots of years. There was a bounty then.

I used to know where to find trailing arbutus along the Assunpink Creek, on a steep earthen bank. That area is now in Mercer County Park, 300 yards from where I was born in the 1761 Rogers/Schielke farm house.

Coincidently, one of the winning articles of the 1985/86 NJO writers contest was on the Osage Orange. Look for it in this issue on page 33.

Many of our readers are interested in learning more about the wild plants of the pinelands. See Carnivorous Plants of the Pine Barrens *by Terence M. O'Leary (March/April 1985, p. 18) and* Hunting For Treasure *by Rick Radis (Sept/October 1986, p. 20).*

Many different kinds of open space, including Mercer County Park, has been preserved with Green Acres Funds by municipal, county and state programs. We shall highlight some of these areas in future issues.

From A New Reader

Having recently moved to New Jersey from Colorado I periodically find myself suffering from a form of culture shock where outdoor activities are concerned. Your magazine was a pleasant reminder that the wonders of nature abound no matter where one lives.

Although not a foxhunter, I read the article "Season of the British is Here" with a great deal of interest. My hat is off to those of the New Jersey hunt clubs who pursue the "bloodless hunt". My choice is hunting with a camera which I find a much more fulfilling sporting activity then hunting with firearms. I would love more articles on these types of activities.

Bob Smits
Trenton

It is nice to know that we at NJO can satisfy a big Colorado outdoor appetite. The goal of NJO is to provide a wide variety of articles about New Jersey's natural resources. Some of the articles will involve different kinds of recreation—active, passive including hunting, fishing hiking, etc. Others will deal more with the appreciation of the beauty and heritage that surrounds us here in such a small state. We hope that our readers find enjoyment in all.

More On The Trial

The DEP plan put forth in April 1985 to purchase the NYS&W railroad right-of-way and convert it to a mutlipurpose trail in Four Warren County communities (Knowlton, Hardwick, Frelinghuysen, and Blairstown) and Four Sussex County communities (Sparta, Stillwater, Lafayette, and Hampton) has sparked a certain amount of controversy. (See NJO January/February 1986—*Rails To Trails or Rails to Backyards?*)

The Committee for the Proposed Paulinskill Valley Trail has been promoting the use of this flat cinder-based railroad bed as a trail. We feel that this railroad bed is ideally suited for this purpose. It also provides much needed access to the Paulinskill River for fishermen and canoeists. The trail can be used by the handicapped and by older people, not able to enjoy other steeper and more rocky trails in New Jersey. The trail is of interest to railroad buffs, provides a cross section of the local ecosystems and offers opportunities for bird watching.

In August 1986, the Sussex Voice conducted a poll on the establishment of this trail. Of the 650 responses received, 589 (over 90 percent) felt that Green Acres funds should be used to purchase the railroad right-of-way for a trail, 55 were against the proposal while six were undecided.

The result of this poll should dispel any notion that no one in the area is in favor of the trail. It shows, rather, that they *do* want to preserve the railroad bed for recreational purposes and realize that if we pass up this chance to save it, this unique asset will be lost forever.

Len Frank
The Committee for the
Proposed Paulinskill Valley
Trail, Hackettstown

If any reader would like to express their opinions, please write to NJO or The Committee for the Proposed Paulinskill Valley Trail, C/O Len Frank, 205 West Moore Street, Hackettstown, NJ 07840.

The Paulinskill Valley Trail Committee announced the 1987 series of hikes along the trail. Please contact Bill Weiler, Hike Coordinator, 52 W. Union Avenue, Bound Brook, NJ 08805. Telephone (201) 356-3289

OOPS!

NJO Goofed. We mislabeled not one, not two, but all of the photos illustrating the *"Barnegat Bay Decoy Carvers* article that appeared on page 10 in the November/December Issue.

Starting in the upper right corner, the correct captions and credits are:

U/R "Shore Birds" carved by Harry V. Shourds, photo by Ray Fisk

L/R "Canada carved by William H. Cranmer, photo by Arthur Liese

L/L "Black Duck" carved by William H. Cranmer, photo by Arthur Liese

U/L "Harry V. Shourds Workshop, photo by Steve Perrone

Cast In Iron

BY ALLEN G. EASTBY

By June of 1783, the American Revolution was all but over. Treaties of peace had been signed and the British were evacuating their last stronghold, New York City. Early in the month, Major Carl Leopold Baurmeister, adjutant general (that is, principal staff officer) to the commander of the Hessian troops in America, was sent to Philadelphia to investigate reports that German prisoners of war were being held against their wills. If he could, Baurmeister was to secure the repatriation of the captured soldiers. His mission had been a mixture of success and frustration since many Hessians wanted to stay in the new nation, and as the major was returning across New Jersey to New York, he stopped in Morris County at the little community known as Mount Hope. The Hessian wanted to see if the information reaching the British intelligence service was correct and if, indeed, there were Hessians being held at the village.

Baurmeister found 28 Hessians at Mount Hope, all of them employed by John Jacob Faesch at his iron furnace. A thorough-going professional soldier, the Hessian adjutant general was also interested in the Swiss-born Faesch's "works," where the shot shells* the rebels had been firing at him and his friends for nearly eight years had been cast. As Baurmeister knew, Mount Hope shells were in great demand by the rebel artillerymen, who thought they were "almost perfect," far better than the shells cast in Pennsylvania. He also must have been aware that the Mount Hope "works" were only one of a dozen New Jersey "furnaces" that made ammunition for the rebel army. The Hessian adjutant general no doubt was surprised to discover the other products of the "works," horseshoes, rims for wagon wheels, kettles, skillets, nails, stoves and ship fittings. But then, Baurmeister couldn't have known that in 1783 the New Jersey iron industry was over one hundred years old.

The iron industry in North America had its beginnings in New England. It came to New Jersey in 1764, owing largely to the efforts of Col. Lewis Morris of New York. Morris, a wealthy merchant and businessman whose entrepreneurial activities extended from sugar plantations in the West Indies to "manors" (as his large holdings in New York and New Jersey were called), began to acquire land in what is now Monmouth County. With the help of two "men of iron" he brought down from New England, he established the Tinton Falls Ironworks.

During the decades that followed, the iron industry grew steadily. The "iron masters" were the pioneers who pushed into the hills and mountains of northern and western New Jersey and deep into the Pine Barrens, constantly searching for iron ore, and for virgin forests their "colliers" could turn into charcoal to feed forges and furnaces. By 1768, the royal governor of New Jersey, William Franklin, could report that in his "province" there were eight blast furnaces for making pig iron, 42 forges for "beating out" bar iron, one slitting mill, one steel furnace and one plating mill. As it grew, the iron industry transformed the face of New Jersey. The forests were cut down to provide charcoal and the cleared land was then sold to farmers, towns sprang into existence, roads were built and streams were dammed and diverted to power bellows and hammers.

In southern New Jersey, the iron industry followed a unique path. The ore in the Pine Barrens, called "bog iron," was produced by a complex series of physical, chemical and biological processes. It was found, usually in knobby nodules, in swamps, bogs and along stream beds and could be literally harvested by teams of "ore raisers" patrolling the waterways in flat-bottomed boats. The seemingly endless forests of pine promised a steady supply of charcoal, and the nearby shore areas could be sources of the key component iron masters needed to transform raw ore into usable iron, "flux," in the form of clam and oyster shells. But so forbidding were the Barrens that it was not until the middle of the eighteenth century that they were penetrated. Yet once it began, the "bog iron" industry grew quickly. By the 1770's, the iron works at Batsto were making artillery pieces for the forts defending Philadelphia from British attack.*

During the decades following the American Revolution, the New Jersey iron industry supplied the new nation with pots and pans, stoves and nails. The fittings for the first American steamships were made of New Jer-

Left: Photo of Allaire Furnace by Fred Louquet

*Shot shells were hollow "cannonballs" that were filled with gunpowder and fired by howitzers or mortars.

*They weren't very good guns: they tended to explode when they were fired. Of greater importance to the American rebels were the salt pans (used for evaporating seawater) made at Atsion and Batsto. In an age without refrigeration or canning, salt, used to preserve food, was as valuable as gold.

sey iron, as were the nails that held together the first canal boats and the picks and shovels used to dig the canals. Also from New Jersey forges and furnaces came the rails, the wheels and the engines of many of the earliest railroads. And it was the railroads and canals that were to transform the iron industry.

By opening up the Pennsylvania coal fields, and later the great ore fields of the midwest, the canals and railroads allowed the iron masters to begin using the latest iron- and steel-making technology. By the 1840's, the small furnaces and forges in the New Jersey highlands and the "bog iron" works in the Pine Barrens were no longer able to compete and soon they were closing down, their fires dampened for good and their hammers stilled. No longer would the winter woods ring with the sound of axes, no longer would the sky be darkened by the smoke from charcoal making fire pits, and no longer would the boats of the "ore raisers" skim the waters of the Pine Barrens. But this was not the end of the iron industry in New Jersey.

Even as the "bog barons" and the "forge masters" were passing into history, new generations of entrepreneurs were turning cheap transportation by rail and canal and the technology being developed in Europe to their advantage. By the late 1840's, the blast furnaces at Phillipsburg were supplying enough iron and steel for the mills and works at Trenton to produce 14,000 tons of nails and wire a year. During the Civil War, artillery from the Ringwood Works in northern New Jersey earned a reputation for accuracy and reliability, and in Paterson, as everyone knew, the best locomotives in the world were made. By 1882, the 10 blast furnaces in Sussex and Warren counties were producing 150,000 tons of pig iron every year. The output of New Jersey's iron mines continued to rise, from 100,000 tons of ore in 1855 to over 900,000 tons in 1882. But in success were the seeds of disaster.

New Jersey rails and New Jersey locomotives made it possible to open the vast ore fields of the northern midwest. With rail transportation, the ore was cheap, especially when compared with the price of ore blasted and pickaxed from deep beneath the Jersey Hills. By 1893, the production of Jersey mines had dropped to 350,000 tons a year, and by 1935, it was reduced to a little over 55,000 tons a year. Even the Second World War failed to revive iron mining in New Jersey. As mining declined, so did the rest of the industry. The two great ages of the New Jersey iron industry had come to a close.

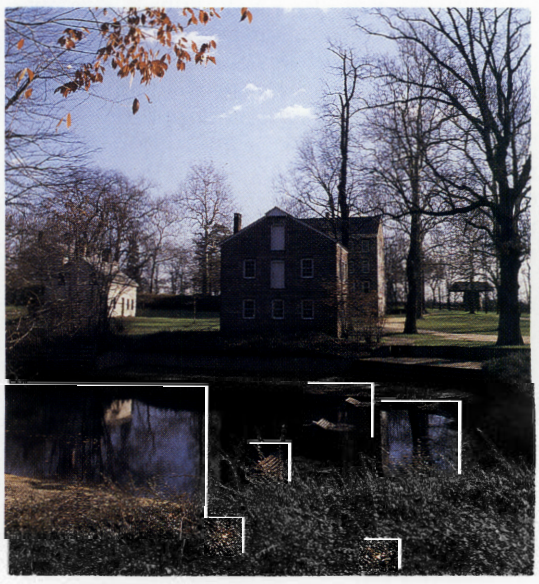
Today, the history of the New Jersey iron industry is being preserved. Under the overall direction of the Department of Environmental Protection's Division of Parks and Forestry, the Office of New Jersey Heritage supervises three historic sites that capture the lives and times, the triumphs and the failures of New Jersey's "men of iron" and of the women who worked alongside them.

In Ringwood State Park in northern New Jersey stands the impressive Manor House, a monument to the wealth that could be wrung from iron and coal, and the sweat of thousands of miners and millhands, during the last half of the nineteenth century.

The early iron pioneers pushed into the hills near Ringwood in the 1720's and 1730's. During the 1760's, a consortium of London and New York City bankers and merchants financed a major enterprise into the hills and valleys. One of the leading figures of the early days at Ringwood was John Jacob Faesch, who was to go on to own the iron works at Mount Hope. But it was not until the middle decades of the nineteenth century that Ringwood emerged as a major center of the iron industry. Under the ownership of three families, first the Ryersons, then the Coopers, and at last the Hewitts, Ringwood's mines produced tons of ore and the blast furnaces lit the night sky.

Little now remains of the mines and furnaces, but the Manor House is still there, open to the public.

At Batsto and Allaire are two "iron towns" typical of the communities that were established in the Pine Barrens by the iron masters. These once all but deserted "ghost towns" now are visited by thousands every year. Allaire in particular is one of the most popular "resto-



Above: Photo of Batsto Mansion by James Rosmus

Left: Photo of Allaire Village Mill Pond by Fred Louquet

rations" in the region. In 1986 alone it received over 200,000 visitors.

But preserving, and where necessary, restoring New Jersey's past is no easy task. It takes the skills and knowledge of historians and architects, sweat, money and, above all, commitment. Over the years the Department of Environmental Protection has shown it has the commitment. A great deal of excellent work in preservation, restoration and research, has been done. Recently, the state's historic sites, including Allaire and Batsto, have been intensively studied, and realistic plans can now be drawn up.

The DEP is not alone in its efforts. As do most historic sites in the state, Ringwood, Batsto and Allaire are helped by groups of interested citizens organized as "friends" groups. At Allaire, a nonprofit corporation has been working for over 20 years to foster a more complete restoration of one of the state's unique historical landmarks.

One ingredient vitally necessary to the preservation of our heritage that has never been lacking within the state government or among citizens is enthusiasm. It was this same enthusiasm and all that it brings with it—the readiness to face problems, the refusal to admit defeat, the willingness to sweat—that built the iron industry and that will preserve history. It was this enthusiasm that Hessian Major Carl Baurmeister sensed when he visited the iron works at Mount Hope.

In July 1783, when Baurmeister finally left Mount Hope for New York City, he had at least an inkling of the future. During his seven years in America, he had found the people to be not only "bold and daring," but "industrious and enterprising." And now he had had a chance to see what one of these "enterprising" Americans—John Jacob Faesch—could do: make iron and then transform it, and not just into weapons of war but into the tools of peace, stoves and skillets, nails and horseshoes.

During his ride back to New York, it's not hard to imagine the Hessian reflecting on what he had seen. After all, the one and only time during the course of the American Revolution Baurmeister had had the chance to lead men—something he yearned to do—had been in December of 1777 after the commander of the Grenadier Battalion von Minnegerode had been killed when the Hessians had tried to storm a rebel position on the Delaware River, one of the forts equipped with mortars and howitzers cast at Batsto by Jersey men of iron.*

Learning More About New Jersey Iron

The full history of the New Jersey iron industry, especially during its early stages, has yet to be written, but it is possible to piece together the story. The following books will serve as an introduction.

Beck, Henry. *Forgotten Towns of Southern New Jersey.* New Brunswick: Rutgers University Press, 1961 (reprint of 1936 edition).

Boyer, Charles. *Early Forges and Furnaces of New Jersey.* Philadelphia: University of Pennsylvania Press, 1931.

*The account of Baurmeister's visit to Mount Hope is based on Berhard A. Uhlendorf, translator and editor, *The Revolution in America: Confidential Letters and Journals 1776–1784 of Adjutant General Major Baurmeister of the Hessian Forces* (New Brunswick: Rutgers University Press, 1957), pp. 572–576.

Pierce, Arthur. *Iron in the Pines.* New Brunswick: Rutgers University Press, 1957.

Ransom, James. *Vanishing Ironworks of the Ramapos.* New Brunswick: Rutgers University Press, 1966.

Wacker, Peter. *The Musconetcong Valley of New Jersey: A Historical Geography.* New Brunswick: Rutgers University Press, 1968.

If it can be found (and it is a rare book), there is one historical novel about the New Jersey iron industry during the American Revolution that is worth reading, Charles J. Peterson's *Kate Aylesford,* published in 1855.

Much of the history of the New Jersey iron industry lies buried in works on local (town and county) history and in scholarly journals. It's worth the trouble to search for this material.

In Search of Iron

One of the most fascinating pursuits for the amateur historian is the search for "lost" iron works, those that have not been preserved. Fascinating but frustrating since many "forges," "furnaces" and "mines" have literally vanished, many without the faintest traces. Yet it is possible to locate the sites of some of these. And it is rewarding, in a quiet, introspective and reflecting way to stand on the spot where "smutty and sweaty Vulcans," many of them slaves, indentured servants or prisoners of war, made cannonballs to be fired at the British or wheel rims for the wagons that would carry families westward.

The place to begin the search is in the local library, where there is bound to be a selection of books on the iron industry and local history collections. Often, town and county histories will provide clues and, every once in a while, explicit directions to the sites of abandoned iron works. Usually, however, histories have to read in conjunction with modern road and topographic maps and nineteenth century atlases (of which most libraries have copies). Then, once you have a fair idea of where you're going comes the best part: finding the sites.

But please, don't ruin things for yourself and others: ask permission before you invade private property, and respect the privacy of others.

Parks of Iron

New Jersey's iron industry is preserved and commemorated in two state parks, Ringwood and Allaire, and in Wharton State Forest.

Located near Greenwood Lake on the border between New Jersey and New York, Ringwood State Park is the site of Ringwood Manor, the magnificent estate of the Cooper and Hewitt families. Aside from relics of the days when the now wooded hills were dotted with mines and furnaces, and in addition to the magnificent Manor House, which captures some of the flavor of the lives of New Jersey's "iron masters," the park offers picnic grounds and hiking trails, fishing and hunting and, nearby, the Skyland's Manor with its botanical gardens. It is particularly striking during the fall.

Located in Monmouth County and bisected by I-95, Allaire State Park is, of course, the location of Allaire Village, a restored "iron town." In addition to a glimpse into the past, Allaire offers picnicking, canoeing on the Manasquan River, riding and hiking trails, natural areas, camping and, in the spring and fall, some decent trout fishing in the Manasquan River. There is also a golf course and the Pine Creek Railroad, which features rides on the only narrow-gauge railroad in New Jersey.

Wharton State Forest, almost 108,000 acres, is situated between Atlantic City and Philadelphia and can be reached by the Atlantic City Expressway, the Garden State Parkway and US Routes 30 and 206. In the State forest, there are extensive camping facilities, a swimming area at Atsion Lake, picnicking, riding and hiking trails and excellent canoeing. Hunting and fishing are both popular. Wharton State Forest also has two "iron towns," Atsion and Batsto. The Atsion site is largely undeveloped, but at Batsto, it's almost as if you stepped into a time machine and emerged in the first half of the nineteenth century.

Visitors to Allaire and Batsto should begin with a stop at the interpretive centers, where there are superb displays tracing the history of the towns and of the "bog iron" industry.

These areas frequently have special programs that are of interest, ranging from craft displays to art shows.

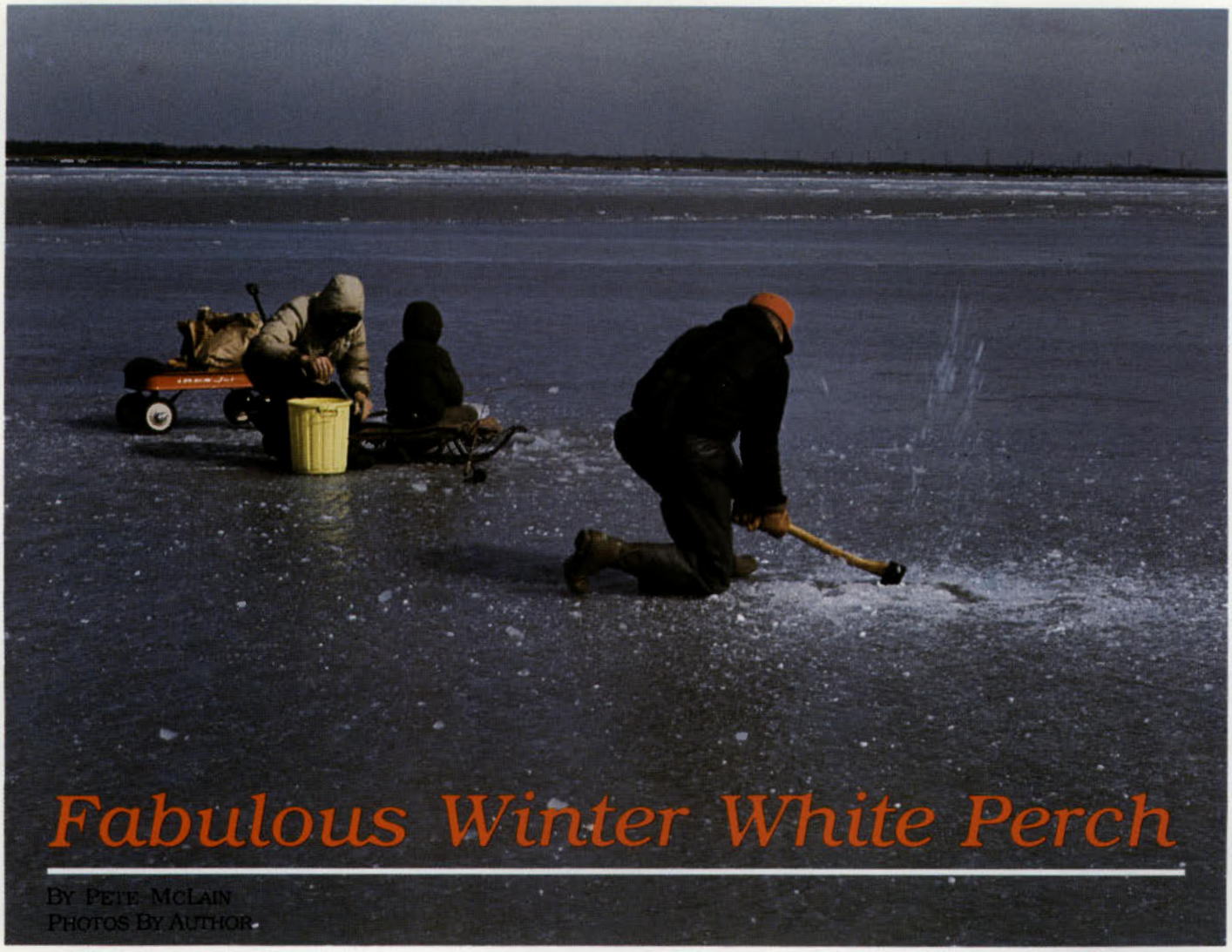
For more information, you can contact:

Wharton State Forest
RD #4, Batsto
Hammonton, NJ 08037
609-561-0024

Batsto Historic Site Visitors' Center
RD #4, Batsto
Hammonton, NJ 08037
609-561-3262

Allaire State Park
PO Box 220
Farmingdale, NJ 07727
201-938-2371

Ringwood Manor, Ringwood State Park
Box 1304, RD
Ringwood, NJ 07456
201-962-7031



Fabulous Winter White Perch

By Pete McLain
Photos By Author

When the frigid winter northwest wind whips the tidal water to a froth in late December and early January, the mighty Mullica River west of the Garden State Parkway freezes over. After a few days of subfreezing weather, the ice may reach the three-to four-inch thickness that is safe for walking and fishing. This is when the legions of winter white perch ice fishermen bundle up in everything they own and participate in what is probably the best brackish-water ice-fishing on the East Coast.

Motorists driving down the Garden State Parkway crossing the Mullica River Bridge see to their right the crowds of fishermen on the south side of the river, in the famous Collins Cove. Here is where the action occurs. There are other locations along the coast, such as Toms River, where you can ice-fish for white perch, but Collins Cove is by far the most popular and productive.

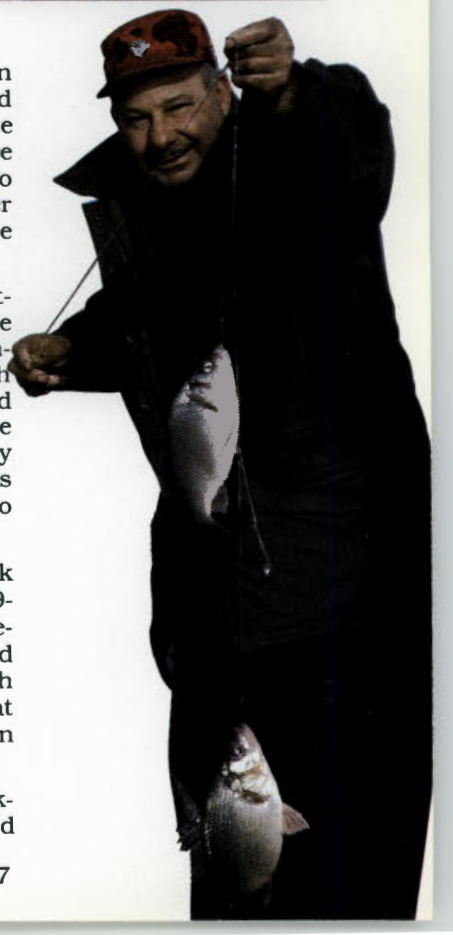
Collins Cove forms a big bulge off the main flow of the Mullica River and when the Garden State Parkway was constructed in early 1950's, the fill material for building the access to the bridge was dredged from this area. This dredging resulted in a hole about 35 to 40 feet deep in the cove, which has a normal depth of about eight feet.

The dredge hole, which is several acres in size, acts like a giant magnet during the cold weather, pulling great schools of perch to the warmer water trapped under colder surface water. Small bait fish and grass shrimp also seek out this warmer water. As the winter wears on into mid-February, the water in the dredge hole chills and the fish move out.

Nuncie Bruno, the proprietor of the Chestnut Neck Boat Yard, less than a mile from the cove and the headquarters for the perch fishermen, reports that the best fishing for perch is in early January, when the first ice is hard enough to walk on. The perch schools come into the Cove with the cold weather, and they are ready and waiting for the anglers just as soon as the ice is thick and hard enough to support a fisherman's weight.

Bruno and the staff of the Chestnut Neck Boat Yard and Tackle Shop (phone 609-652-1119) check the ice and provide a telephone fishing report daily. There is no need to guess when the ice is strong and the perch are biting. Simply call the Chestnut Neck Boat Yard. They have the tackle, bait, information and a fine luncheonette.

Usually the Mullica River beyond the Parkway bridge freezes in later December and



January. Some years it may not freeze, if the weather is exceptionally mild, but eight out of ten years there will be "white-perching" in January.

To reach Collins Cove, which is just west of the Garden State Parkway on the south side of the Mullica River, get off the Parkway at Exit 48 South, go south for two and one half miles to the Port Republic Post Office, go under the Garden State Parkway and take the first road to your right. This is the entrance to the Port Republic Wildlife Management Area, which is the only access to Collins Cove. The Division of Fish, Game and Wildlife has provided parking areas for the ice fishermen.

For ice-fishing in Collins Cove, your tackle can be as simple or as complicated as you care to make it. Most veteran winter white perch fishermen prefer a short, light-action spinning rod with 4-pound test monofilament line, between ⅛ and ¾-ounce lead weights or split shots and a No. 4 hook. If they are fishing live grass shrimp, a short shank hook is better than the long shank that is used for small killie fish baits.

Most anglers use an ax to chop their fishing holes, but some prefer the regular ice-fishing auger. Portable, battery-operated, sonar fish-finders are invaluable in white perch fishing to locate the exact depth at which the fish are feeding. The perch, move in tremendous schools around the hole. The secret is to determine exactly how deep these roaming fish are and to get your baited hook to that depth. On some days the schools may be moving at a depth of 10 feet, and the next day they may be down around 20 feet, so determining the school's depth and setting the bobber on the line so that you are fishing where the fish are feeding is the key to success. If you don't use a depth-finder, mark or knot your line at the length that you catch the first fish when testing the fishing depth.

Some anglers will set standard freshwater flag tip-ups in the ice holes, but generally action is so fast and furious that the tip-ups are too slow. Most perch fishermen will sit on a bucket or stand by the ice hole and wait for the bobber to dunk under the surface of the water: then a quick jerk sets the hook, and the perch is reeled to the surface and plopped on the ice. Catches of a bushel of white perch a day for two anglers who know their ice-fishing are not uncommon. Most of the white perch will run from ½ to ¾ pound; some will top a pound, and a few will go to 1½ pounds.

As with any other hunting and fishing activity, the sportsman must exercise a degree of common sense and safety. Saltwater ice is different from freshwater ice, and it must be respected. First, saltwater ice does not freeze as hard or remain as hard as sweetwater ice. Second, the tidal currents cut away under the ice, which can also be weakened by the warmer ocean water flowing under it. Finally, the saltwater ice may rise and fall with the tide, up to five feet every six hours. This can weaken the ice and move the entire ice mass a few feet from the shoreline at high tide. The best advice for fishing on saltwater ice is to watch the local fishermen. If they are not fishing, stay off the ice. Also, follow the recommendations of the staff at the Chestnut Neck Boat Yard. They note the ice conditions daily.

No state fishing license is required to fish the area of Collins Cove. It's important to take enough warm winter clothing to protect yourself from the wind. Snowmobile suits, wool hats, insulated rubber-bottomed boots and extra gloves are recommended. Some ice fishermen bring small tents, canvas lean-tos, plywood sheets and even lightweight aluminum boats to provide some protection from a blustery winter wind. Small gasoline or alcohol stoves are handy for warming coffee and soup, and also for keeping your hands warm.

The best fishing is usually at low tide and on the start of the flood tide. However, this does not always hold true. Generally, the best fishing time is early in the morning, especially on weekends. When the crowds start to chop holes and stomp around on the ice, the fishing may slow down. Local ice fishermen will usually be fishing shortly after daylight and have their fish by 10 AM, when the crowds arrive. On weekends there may be 300 to 400 people on the ice. During the week there may be only a few anglers there. If you can fish during the week, it's generally better than on weekends.

Some anglers from northern New Jersey and Pennsylvania come down the evening before and stay over in a motel so that they can be on the ice shortly after sunrise. There are a number of motels in the Absecon and Pleasantville area and along Route 40.

If you would like to get in on the Mullica River's white perch bonanza, start calling the Chestnut Neck Boat Yard in late December or early January. Just as soon as they say that the ice is safe and the perch are biting, get down there fast and get in on the action. It's too good to miss. NJO

The Birdwork Hat Trick

By Steven C. Rafe
Photos By Kathy Rafe

Your dog jumps in on a bird. You want to reprimand him and set him back exactly where he had been standing. You know that the closer you come to that spot, the more effective your correction will be.

Arthur knew the theory well. He and his dog, Rowdy, had been doing it for months. He had joined what I affectionately call "the push-me-pull-you school of dog training." In short, "If you 'push me,' dog, by busting that bird, I'll 'pull you' back to where you should have held point."

Each time Rowdy would jump in, Art would get on his dog's case, and the bird would go. Art would glance up at it, mutter under his breath and struggle to haul in the dog at the end of the checkcord. Art was never certain where the dog had been standing, so he never quite knew where to put him back. Every weed, every stick, every piece of stubble looked alike—especially since, angered and frustrated, Art could see only red. So Art would just stop someplace and that's where he would reprimand his dog all the more. Art knew there had to be a better way.

There's good news for Art, and Rowdy, and everyone else who has been this route. We call it the "Birdwork Hat Trick." It gives you a place marker for yourself and a reminder for your dog that will help build staunchness on point.

The behavioral technique involved is called "Prompting and Fading." The hat you wear into the field becomes the "prompt," or reminder. How you introduce it and gradually phase it out is where the "fading" comes in.

Plant a bird in a likely place, then allow your dog to work the area on a loose checkcord. (A tight leash triggers the dog's natural opposition reflex and makes it even more likely that he will jump in on the bird when you ease up on the leash.) Say nothing. When he stands the bird, walk over to him from the side and remove your hat where he can see you do it without spooking or distracting him. Bend over to the ground and set the hat down about a foot in front of your dog, a bit off to one side. Then start your search for the bird. (A caged bird, well-concealed, will make your job that much easier.)

If the dog catwalks or jumps in, grab him immediately and give him a sound scruff shaking. For maximum control, grip the loose skin with each hand, one beneath each ear. This correction comes as close as possible to how a pack leader among wild canines would correct a lesser member of the pack. Thus, he'll understand it and accept it more readily. If you want to make it even more of a pack-leader correction, growl at him as you shake him.

As you continue the scruff shake, head back toward your hat. It's your marker for setting him back precisely where he broke. This removes a lot of the stress of training from you. Knowing you're on the right spot eases your mind and will make your correction that much more effective.

Now, here's the part that makes the difference: Just before you get to the hat, stop shaking your dog. Cease all punishment by the time he stands on the spot from which he broke. You want to do everything possible to avoid having him make any negative association between standing on whoa and the scent of birds.

Stand there quietly with the dog on whoa for at least ten seconds, then say "Goood Whooa," in calm, drawn-out tones. Since your goal in all training should be to help your dog succeed, this praise will help to show him when and where he is successful. Be sure to wait at least ten seconds between the correction and the praise: When they come too close together, they confuse the dog.

Since many dogs can be called "place learners," this technique helps him learn which place is bad (the place between the whoa and the bird) and which place is good (the place where he pointed the bird).

Soon he will have no question about what happens when he breaks and what happens

when he holds steady. You've used a quick, modified version of another behavioral technique: The proper coupling of punishment and reward. And you've done it according to the "rules" for corrections that canines understand best: You've communicated in his own language.

Do not flush this bird for him. He broke, and flushing a bird for a dog that performs improperly actually increases his chances of busting the next bird. It reinforces the negative behavior by giving the dog something he might have had in mind himself: Seeing the bird fly.

Through a behavioral technique called "chaining," the dog might mistakenly link the sequence together. If he could explain it, the dog might say: "First I break point, then my trainer reprimands me, then he praises me and flushes the bird for me. Now I know how to get to see birds fly. It all starts when I bust the bird." Not exactly what you had in mind, is it?

Sure makes sense, doesn't it?

Instead, after you say "Goood Whoooa," command "heel" and walk him away from the bird. Moving him toward birds under any circumstances after a find could condition him to move in on birds on his own when hunting. To have a sound performer, the only bird you should allow him to head towards is the one you send him to retrieve.

Keep him walking until he shakes his entire body from the top of his head to the tip of his tail. This indicates that he has just "shaken off" any association with what happened prior. It's a good way to prevent a delayed chase.

Consistency

Work him on two more birds, and each time he points, set your hat down in the same way and follow the rest of the routine if he breaks.

If he only takes a step or two, it's harder to separate the "bad" place from the safe place. So, physically move him forward another two feet and hold him there as you do the scruff shake for about eight seconds at most. Then stop the correction at once and move him back to where he had established point. This helps remind him that moving gets corrected but it also tells him that the place where he points is a "safe place." This is another important concept in dog training the behavioral way.

Over several sessions of three birds each, follow the same routine. The hat will become his reminder that he will be punished if he breaks, but praised if he holds steady. Once you get three successes in a row, you can begin to phase out the use of the hat. However, if he's still breaking point even on as few as three birds out of ten, you probably have a hole in your earlier training that will have to be repaired before you train at this level.

It may be as simple as having the dog relearn how to hold steady as you walk toward anything on the ground. Whatever the root of the problem turns out to be, correcting it now will save you a lot of frustration later.

Once your dog is holding his birds, you can start phasing out the use of the hat—gradually so that he doesn't even notice you are doing away with it.

Doing away with the hat

Here's how to do it: On the next couple of birds, touch the ground with your hat, then shift it over to your side, away from the dog, and put it back on.

After the dog is pointing successfully as you do that, on the next bird or two, almost touch the ground with the hat, then put it back on.

After the next successful point, extend the hat to about your knee level, then put it back on.

In the next phase, extend the hat to about waist level.

After that, to shoulder level.

Then on a later bird, simply take it off and put it back on.

Finally, you should be able to just touch the brim and it will have the same effect as it did when you put it on the ground several sessions ago.

When he is on point, watch for any changes in the dog's body language (especially the shift of weight off one shoulder as though the dog were getting ready to move one leg forward, or a shift of weight to the rear, as though he were getting ready to spring).

If you think he is considering breaking point, set the hat on the ground. Going back to that level reinforces the effectiveness of prompting and reminds the dog that remaining steady gets praised and busting birds gets punished.

After you have phased out the hat gradually, whenever your dog is on point in a tricky situation and you want to make sure he will hold, all you need to do is touch the brim of your cap where he can see you do it. That will be a silent communication between you and your dog—your way of showing him how to succeed, thanks to the Birdwork Hat Trick. NJO

Contest Winner

The Osage Orange

By Frank Curcio
Photos By Author

We had moved from our urban birthplace to a countrified setting in the fall of the year after the trees had shed most of their leaves and appeared barren. So, I had noticed nothing unusual about the tree in the back corner of the yard that pretty much blended in with the other trees that formed a line further back.

Over the winter we planned all sorts of plantings, gardenings and landscapings and, as spring approached, set about putting our plans into operation. The yard work brought me close to and all around that corner tree. I thought that that tree must summarize everything that can be wrong with a tree. The orangy brown bark was rough and shreddy, deeply and irregularly furrowed. At a fairly low level the short trunk sprouted branches which seemed gnarled and random, angularly jutting upward, rapidly arcing downward or sideways, haphazardly tangling among themselves, creating a jumbled visual din. And, to add injury to visual insult, the branches were armed with powerful, firmly set, ferocious spikes over an inch long that easily pierced the leather work gloves I wore while pruning the lower branches. The milky sap was abundant, thick and sticky; it befouled the pruning shears and pruning-saw blade. I was relieved when the yard work took me away from that tree.

In late spring it blossomed with glossy egg-shaped leaves, long and pointy, dark green on top, pale beneath, reminding me of the elm leaves I knew from the city. It still appeared raggedly shaped but was leafy and green, hid its own worst features, was not in the way and therefore easily ignored.

Driving along a back road that fall, I noticed at the road edge, under vaguely familiar trees, some yellowish green—almost chartreuse—"golf balls" nearly the size of grapefruits. At home, I found one such "golf ball" under that tree in the corner, and more were hanging heavily from the topmost branches among the dulling and yellowing leaves. I had never seen or felt anything like it. It was dense, heavy and coarse; deeply textured; and where it had hit the ground, a sticky, milky juice oozed from a soft, darkening bruise.

I showed it to our paper boy, a Scout, who said, "It's an Indian Orange; they grow all around here." I checked my gardening books and tree book and found no reference to "Indian Orange." Curious, I clipped some leaves and headed for the County Library's Reference Room, and in a forestry textbook saw a picture of that gnarled, spiky, "golf-ball" producing tree. It was labeled "Osage-orange, Maclura pomifera (Raf.) Schneider."

Workhorse of a tree

Botanists seem to categorize the Osage-orange as a workhorse of a tree, stressing its usefulness over its decorativeness. Descriptions of its appearance tend to contain many negative adjectives; one botanist charitably put it: "seldom used for shade or ornamental purposes." But it has been a useful if minor and little known tree.

Its common name—Osage-orange (some botanists write it with a hyphen, some without)—is derived from two facts. Its fruit—the yellowish-green "golf-balls," which grow three to five inches in diameter—does resemble a large orange. The Indian orange, however, has a coarse, fibrous texture and sticky, bitter juice making it unpalatable to humans and animals; although, in the dead of winter, squirrels have been know to gnaw through the pulp and feed on the seeds.

While the Indian orange is botanically unrelated to the true (citrus) orange and is quite inedible, it belongs to a worldwide family of edible fruit-producing plants and exhibits many of the characteristics of its relatives. The Osage-orange is part of the "Moraceae" family, which includes figs, mulberries and breadfruit. The Indian orange's surface texture is quite reminiscent of a mulberry for it, too, is a compound fruit made up of numerous small drupes closely grown together. (A "drupe" is a fleshy fruit with, usually, a single pit—like a cherry.) Other edible relatives of the Osage-orange are the common fig group and the breadfruit group of Pacific island fame. In fact, the fruit of the breadfruit tree is startlingly similar to the Indian orange in size, shape, color and surface texture but there the similarity ends. Another nonedible member of the Moraceae family is the rubber tree, source of natural latex. The abundance and stickiness of Osage-orange sap is certainly reminiscent of this relative.

The other element in the name of the tree, Osage, refers to the Native Americans whose lands contained the original range of the tree—the rich bottomlands of the Arkansas and Red River valleys. The Osage, then, would

have been among the first to take advantage of the tree's usefulness. And they did.

"Bodark," "Bois-d'arc", and "Bowwood" are regional names for the Osage-orange, indicating an obvious use. The dried heartwood is very hard; it is stronger than white oak but more elastic. Flexible, straight, clear-grained, the wood was prized by bow makers from at least the time of Lewis and Clark. This particular use has continued until more recent times.

In addition to bows, the Osage used the tree as a source of dye. While the "orange" of the Osage-orange tree is actually yellow-green, the outer bark is orangy brown, the inner bark is dark orange, the roots are covered with a carroty-orange layer, and the sapwood is yellow. The orangish inner bark and the lemon-yellow sapwood provided the Osage with a yellow dye, a use picked up by the European settlers. Until the petrochemical revolution, Osage-orange continued as a source of yellow, tan and khaki dye as well as of tannin for the treatment of leather.

Osage-orange wood is one of the heaviest and toughest of American timbers. Because the wood is as durable in contact with soil as it is strong, fence posts, railroad ties and cabin supports were made from it. In horse and buggy days the wood was used in the construction of the hubs and rims of farm wagons. The wood itself is yellow upon first cutting; sapwood remains so, but heartwood turns brown upon exposure.

And the entire Osage-orange tree—unlovely as it may be—found use for its hardy durability, its drought-resistant qualities, its adaptability and its long, strong, sharp thorns in the form of hedgerows and windbreaks. This fact brings us from the Red River valley to New Jersey.

From seeds and cuttings

Hardy to New England, Osage-orange can be propagated by seed, from the cuttings of young wood and from root cuttings. It is an undemanding tree; planted, it can be forgotten. Classified as a small to medium tree, it generally attains heights of less than 60 feet. It has a short, stout, early divided trunk ideally suited to act as a hedgerow or windbreak along grazing or pasture land. Before barbed wire came into use, the fierce thorns of the Osage-orange made it an effective cattle barrier. Osage-orange has been widely planted to delineate field boundaries in the south, the midwest, Pennsylvania and New Jersey.

That Indian orange tree in the back corner was less of a mystery now. Except. While there is a hedgerow of Osage-orange trees that runs nearly a mile, how did that single standing tree, 70 feet west of the hedgerow, get there? It could not have been an offshot of a tree in the hedgerow since they are of the same size. And just who had planted them and when?

Two chance events, a casual conversation with a senior citizen and some highway construction near an Osage-orange hedgerow, helped me toward a better understanding of the Indian orange. At a wedding reception back in the city, a senior citizen, a distant relative, asked me where I was living. Answering, I asked him if he knew the area. He did, and elaborated that during the Great Depression, he had visited a CCC camp near there. The Civilian Conservation Corp was a Depression Era Federal program that created jobs for unemployed young males in forestry, agriculture and conservation of natural resources. And, indeed, there had been a small CCC camp in the area.

50 years later

Some time later, construction equipment turned up near one of the Osage-orange hedgerows that crisscrossed the area; road-widening would end this hedgerow. A few days later, the trees were gone. But the stumps had not been removed! I rushed home and returned with tape measure, ruler and brush. The stumps, cut about eight inches above ground level, averaged 43 inches in circumference and 13 inches in diameter. A ring count indicated that they had begun life in the late 1930's. I rushed back home again and measured that tree in the yard and the others in the hedgerow. They measured about 43 inches in circumference eight inches above ground level.

That Indian orange tree in the back corner of the yard is still a ragged, haphazard, gnarled, spiny tree, not suitable for shade or ornamental purposes. But when I look at it now, that's not what I see.

I see, rather, a city-born young man dealing with but not understanding the hard times that had brought him so far from his familiar home and neighborhood, doing what the times demanded be done, facing the beautiful but unknown countryside daily. He walked the hard, rocky soil planting strange-looking tree cuttings in a row between two treeless fields that covered an empty hillside. About halfway up the hill, he broke for lunch, sitting alone in a small flat area covered with coarse grass just west of the treeline he was planting. Glancing around while he ate, the young man thought—this picnic spot needs a tree; one would look real nice right here. Fifty years later, I'd say he was right. NJ

Eastern Cottontail

BY JOE PENKALA

The eastern cottontail rabbit is a well-known animal in New Jersey. Cottontails were a part of New Jersey's fauna when the first white settlers arrived. However, their numbers have greatly increased since that time. The land clearing and agricultural practices of the settlers produced improved rabbit habitat, to which the rabbits responded with an increased population.

The cottontail is distributed throughout New Jersey, though densities vary from area to area. Its coat is reddish-brown to gray along the back and sides, white below. The underside of the tufted tail is prominently white, from which the "cottontail" gets its name. At maturity, a cottontail measures 14 to 19 inches in length and weighs 2½ to 3 pounds. Females are slightly heavier than males.

The cottontail rabbit is an "edge species." It prefers an area where different habitat types merge, rather than an area consisting of all one cover type. An area of small, grassy fields interrupted by hedgerows and clumps of trees or shrubs will support more rabbits than an area of similar size covered with only a single, uninterrupted vegetation type. This varied vegetation provides valuable food, shelter and escape cover. Preferred habitat consists of brushpiles, briars, hedgerows, swamps, orchards, abandoned fields and fallen timber. The home range of a rabbit is small, usually less than an acre.

Rabbits are strictly plant eaters consuming greens, corn, tree bark, buds and seeds. In the spring and summer, herbaceous material is the mainstay; during the winter, the bark of shrubs and trees composes the major portion of the diet. Water requirements are satisfied by succulent plant materials, though free water may be taken occasionally.

The cottontail has always been known as a prolific species. In a 5-year period, a single pair of cottontails together with their offspring could potentially produce 350,000 rabbits.

Breeding may begin as early as January and extend into November, but normally runs from February through September. Since the gestation period is 28 to 30 days and a female is capable of mating on the same day she gives birth, it is possible for her to have as many as seven litters per year. However, the average number is three or four litters, with four or five young in each. The young are born blind and naked and weigh less than an ounce. They are placed in a fur-lined, shallow depression made of grass and leaves. At the end of one week, their eyes are open; at about 10 days they weigh approximately four ounces and can forage for themselves. By that time, the female is on her way to having another litter.

If the cottontail has such a high reproductive rate, why aren't we overrun with them? The reason is their high death rate. The life expectancy of a cottontail at birth is about four months. Prospects are a little brighter for those who survive to leave the nest because they have passed a critical stage; their life expectancy increases to eleven months. Individuals may live four or five years, but this far exceeds the average life expectancy.

From a low breeding population in February, the numbers increase to a peak in July. When the population is at its peak, individuals are most subject to disease, predation and other density-dependent mortality factors. With the peak of reproduction past, the population begins to decline. Between August and March, 80 to 85 percent of the population is lost to predators, disease, weather, automobiles, hunting and so forth. The remaining 15 to 20 percent is sufficient to return the population to its midsummer peak.

Each year the Division of Fish, Game and Wildlife receives many calls from people who have taken young rabbits from their nests. Wild rabbits never really become tame and usually die when caged. Those people who remove young rabbits from their nests to keep as pets are not doing the animals any favor. The nest has not been abandoned; the mother will return to feed the young at nightfall. Our best advice is to leave them where they are.

It may be difficult to do, but this is the real act of kindness. We must not allow ourselves to be fooled into thinking that the situation is different—in nearly all cases, young wildlife do not need to be saved. Resist the temptation to help them. Only when they are found injured or with their dead mother is there reason to do something, and the State's wildlife law is specific about what may be done legally.

Nearly all wild birds and mammals are protected under the law. They may not be legally taken from the wild or kept—never consider them as possible pets; it is both illegal and unwise. They are wild animals that belong in the wild. NJ

FRONT COVER

Wolf Lake in Byram Township. Photography by Michael Spozarsky

INSIDE BACK COVER

Eastern Cottontail Rabbit. Illustration by Carol Decker

BACK COVER

Snowy Owl in Liberty State Park. Photograph by Frank Schleichek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