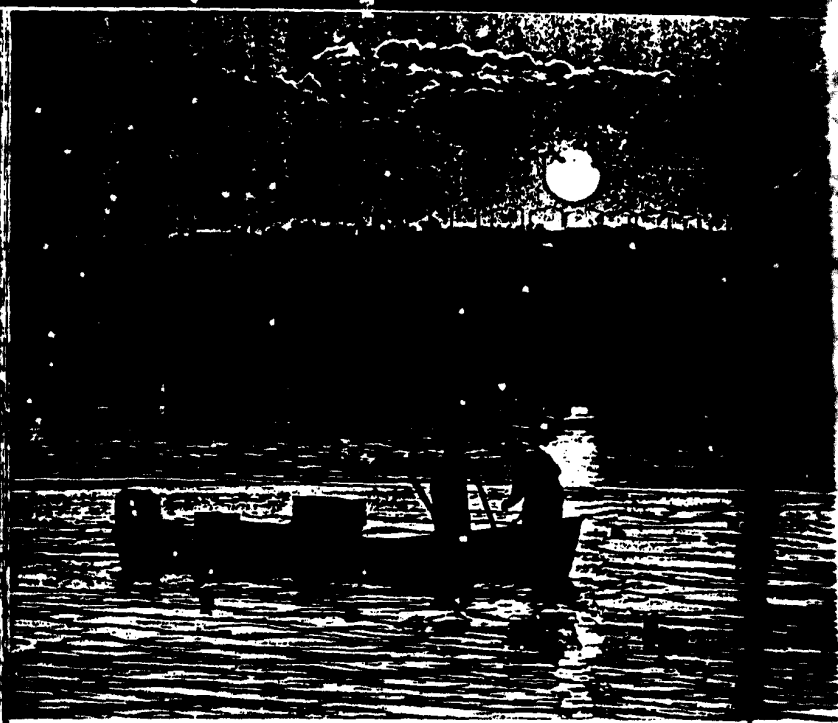

Spring returns with its bounty—nets heavy with shad—for early-morning fishermen

The Hudson: "That River's Alive"

By ALICE J. HALL, NATIONAL GEOGRAPHIC STAFF

Photographs by TED SPIEGEL BLACK STAR

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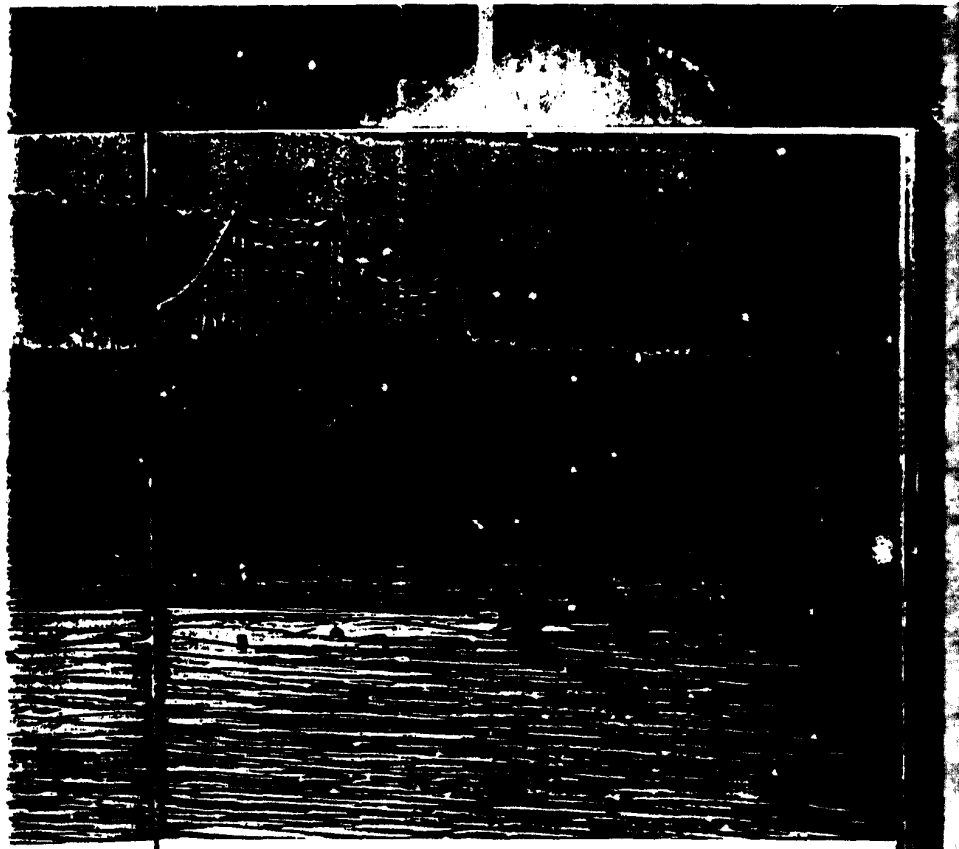

oning fishermen

by the Tappan Zee Bridge. The news is good: The Hudson is getting cleaner.

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IT WAS ONE of those sultry dog days of August, not peculiar to New York State. I was standing in a houseboat on the Hudson River 35 miles north of Wall Street, watching a trawl come in. Morning fog veiled the river in gray anonymity. But along shore I could make out fishermen baiting their hooks and optimistic sunbathers in bikinis arranging towels on seawalls.

On board the *Needham*, a floating research station of the Boyce Thompson Institute in Yonkers, estuarine expert William Dovel and his assistants looked expectantly at the taut line off the stern. Dovel had warned us there was no predicting what such a five-minute sweep by a 35-foot-wide net might bring up.

"It's like dipping a tablespoon into roiling vegetable soup—a random sample."

With a groan the winch raised the bulging net overhead, and a stream of fish cascaded into waiting washtubs. This was no vegetable soup, but a gargantuan bouillabaisse.

A dozen hands reached into the wriggling mass, sorting out species.

"There's a striper . . . and a spot."

"Watch out for the . . ."

"Ow!"

". . . crab pincers."

MONS 001760

We identified juveniles of a dozen marine species, from bay anchovies to shad, plus

white perch, carp, and bluegills from upriver. I could see why Dovel calls the Hudson estuary one of the richest fish nurseries on the East Coast (painting, pages 66-7). A fifth of the striped bass caught in the North Atlantic, he estimates, grew up in the Hudson River.

The fishermen sum it up best when they say simply, "That river's alive." The good news surprises those who remember the Hudson of the 1960's, when it epitomized the nation's problems with water pollution.

Each summer, dissolved oxygen in the water around New York City sank toward zero. Upriver, sailboat hulls picked up oil-slick souvenirs left by tankers and barges. At the confluence of the Mohawk, a noxious blend of raw sewage and paper-mill wastes, dubbed the "Albany Pool," spread its stench every summer. Fish kills surfaced near power plants. A Presidential council called the river "an open sewer," and in an understandable burst of hyperbole, spoke of scavenging eels that attacked engineers taking water samples.

Such horror stories helped spur an environmental movement and federal legislation to "restore and maintain" all of America's waterways. Millions of dollars have since gone into Hudson cleanup alone, generating ongoing controversy about how clean a river should be. Clearly, the time has come for a progress report on this historic, scenic waterway.

River's Lower Half Driven by Tides

The Hudson is not a simple river. Large as it looms in the American mind, it is a midget in size, 306 miles long and 71st down the list of our rivers by length. Born in the pristine isolation of the Adirondacks, it exits into the Atlantic past New York City, one of the most densely populated metropolises in the world. (See "Close-Up: U.S.A."—The Northeast, a supplement to this issue.)

In the Hudson's oft turbulent upper half, a dozen dams impound 70 miles into gentle "lakes." In its lower half, the Hudson isn't a river at all but a tidal estuary, an arm of the sea. Powered by the lunar pulse, high tide arrives at Troy, 150 miles from the Atlantic, twice each day to lap the base of the federal dam. At the adjacent lock, unwary boatmen occasionally tie up at sundown, only to be wrenched awake by stretching lines as the water drops nearly five feet on the ebb.

The Hudson's 13,370-square-mile watershed reaches into five states. Minor tributaries rise in Connecticut, Massachusetts, and Vermont. New Jersey claims 20 miles of shore. But basically the Hudson is New York's river.

Explorers, Artists, and Railroad Barons

It took three and a half centuries of progress in the Empire State to despoil the waterway, a gradual transition set in motion by an explorer and witnessed by some of America's favorite artists and authors.

In the bright September of 1609, when Henry Hudson sailed his *Half Moon* to the present-day site of Albany, he was seeking a possible passage to the Orient. The English captain was only the first of a long line of explorers, sloop sailors, steamboat pilots, bargemen, dredgers, and Coast Guard officers who viewed the river solely as a highway.

The slow "civilizing" of the river was recorded by a succession of landscape artists, the Hudson River School of the mid-1800's. Thomas Cole, Asher B. Durand, Frederic E. Church, and Albert Bierstadt carted palettes into the open air to capture the play of light on water, the idyllic farms and vineyards, the shad fishermen, the forested slopes, and storms brooding over the Catskills. They painted a quarry here, a foundry there, a brick factory, an icehouse—miniature intrusions overwhelmed by the setting.

In the 1840's railroad magnates discovered the river and began a transformation felt today. Along both shores they built their tracks near the waterline, eventually corseting almost the entire estuary below Troy.

Washington Irving, then America's most popular writer, watched the rails arrive at Sunnyside, his Tarrytown estate (page 79). He had always sought inspiration along the river, savoring its "wildness and savage majesty." Protesting against the "iron monster," he balked at selling his waterfront. But eminent domain prevailed, and the rails came through.

Roller coaster gone wild, the upper Hudson rollicks clear and clean through Adirondack Park—giving two white-water enthusiasts a ride. In contrast, the past century turned the lower Hudson into an industrial drain and oil-fouled ship channel. Legislation and local activists have brought a dramatic turnaround in little more than a decade.

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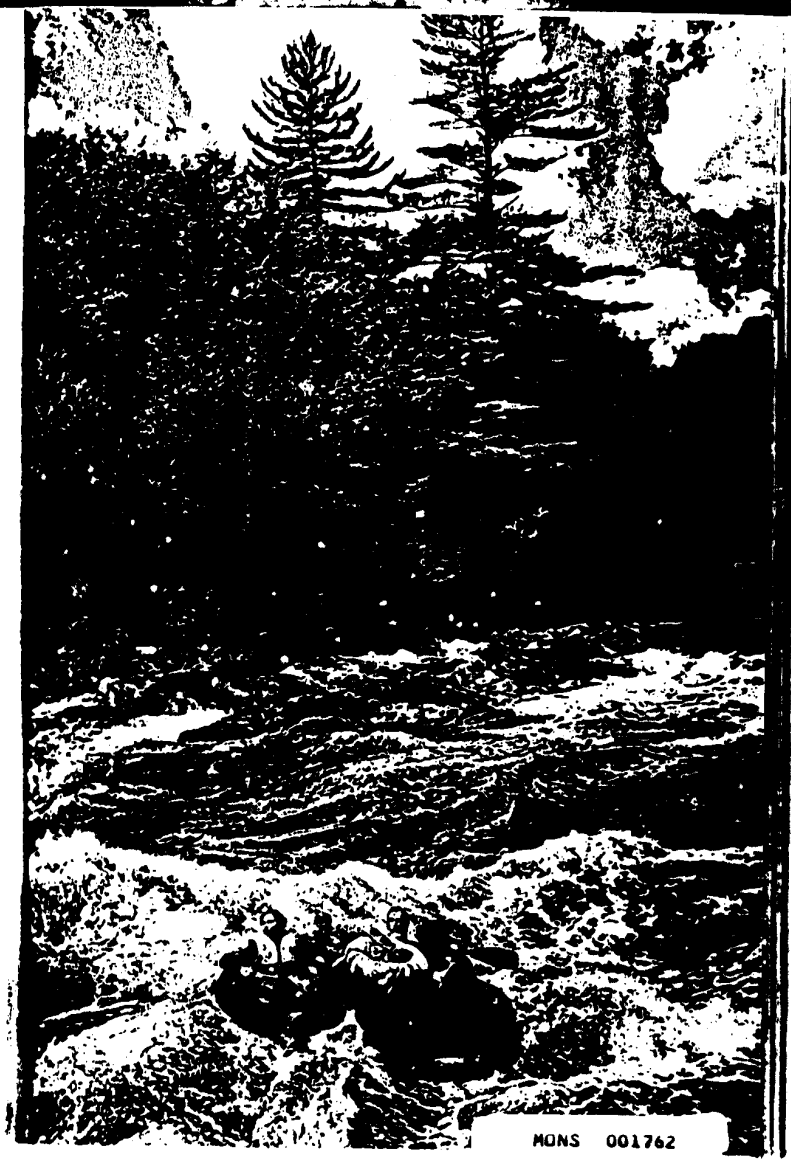
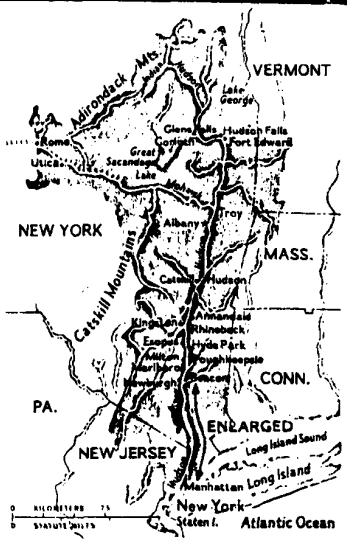


MONS 001762

Hudson estuary

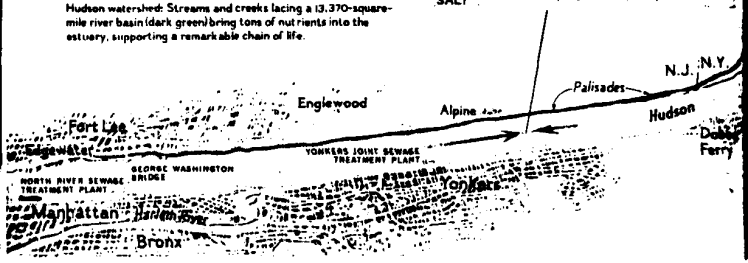
TIDAL TO TROY, saline to Newburgh, the lower Hudson boasts as rich and varied an aquatic environment as Chesapeake Bay, thanks to nature's timing. Some 20 marine species and 40 freshwater fish utilize it as a nursery. Yet as cities demand more space, more water, and more places to dump refuse, the lower Hudson is most affected.



Hudson watershed: Streams and creeks lacing a 13,370-square-mile river basin (dark green) bring tons of nutrients into the estuary, supporting a remarkable chain of life.

SPRING: Upriver runoff (blue arrow) pushes the salt water down toward Yonkers. Marine species enter, blueback herring (1), followed by shad (2), sturgeon (3), and striped bass (4), race upriver to spawn and depart. Young menhaden (5), blue crabs (6) hatched in salt water, and baby eels (7) from the Sargasso Sea swim in to feed.





I sensed Irving's indignation during a visit to Sunnyside, a retreat as appealing as the character of Rip Van Winkle. Its shadowy glades seem haunted still by the ghosts of Ichabod Crane and the Headless Horseman.

On a grassy knoll Irving's "cocked hat" of a house, a comfortable stucco with eccentric gables and turrets, surveys his domain. Over the portico a gnarled wisteria planted by the author still twines. To the west spreads the Tappan Zee, the river's broad reach he loved. Not a hundred yards below the house gleam the rails he hated.

This day, amid the rattle-clatter-chug of work cars and cranes, a gang of men hammered rails, upgrading track for the arrival of high-speed trains to carry the commuters who move ever farther from Manhattan.

Industries Transform the Riverside

The scene could have been 1850, when the rails cut off Irving and all following generations from riverside strolls. The embankment arrowed across a cove south of his house, rendering a boat landing useless and eventually turning open water into marsh. With

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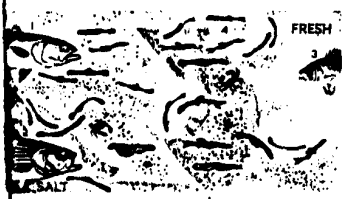
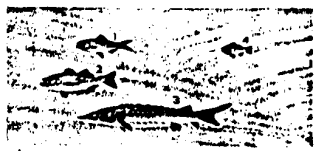
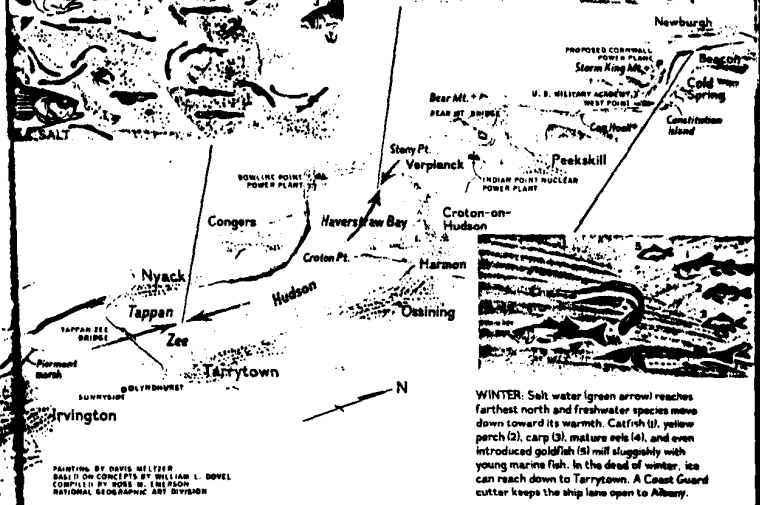
SUMMER: Conditions in the Tappan Zee make it an ideal fish nursery. The mingling of salt and fresh water works to trap and suspend nutrients. Sunlight, warming this shallow bowl, promotes the growth of algae that are consumed by microscopic animals. These, in turn, provide food for larval and juvenile fish, which fall prey to adult bluefish (1), striped bass (2), and white perch (3). Bay anchovies (4), reproduce so rapidly and so abundantly that they could support a fishery.



FALL: Now at the juvenile stage, spring's hatch of shad (1), and bass (2), as well as three-to-five-year-old sturgeon (3), head to sea, but not the freshwater white perch (4).





WINTER: Salt water (green arrow) reaches farthest north and freshwater species move down toward its warmth. Catfish (1), yellow perch (2), carp (3), mature eels (4), and even introduced goldfish (5) mill sluggishly with young marine fish. In the dead of winter, ice can reach down to Tarrytown. A Coast Guard cutter keeps the ship lane open to Albany.

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the railroad came noise, cinders, sparks, and water pollution. The rail yards at Harmon spewed waste oil into the river until halted by court order in 1969.

Manufacturers found the rail-river combination irresistible. By 1960 some 1,000 industrial sites, including four power plants, were overusing the river's capacity to dilute and assimilate wastes. Rarely did voices call for a halt; instead they warned "Swimmer, beware." Too many New Yorkers had relegated their river, in every sense, to the wrong side of the tracks.

As use turned to abuse, complaints grew louder. Irate citizens banded into pressure groups. In 1966 the Hudson River Fishermen's Association resurrected the long-ignored Federal Refuse Act of 1899 against dumping in navigable waterways, and the government started suing individual plants.

Folksinger Pete Seeger, longtime resident of Beacon, worked the broader arena of public opinion. To draw people back to the river, he and other environmentalists built the *Clearwater*, a 106-foot replica of an 1800's Hudson River cargo sloop. Now its great gull wing of





Giving voice to a silent river, folksinger Pete Seeger helped create an environmental group that built the sloop *Clearwater*. Shoreside festivals, such as a fall pumpkin sale (right), dramatize the river's plight and promise. With money raised, the organization cries foul against polluters and agencies that fail to regulate them. The *Clearwater* sails past the magnificent Palisades (above), scene of a victory for earlier conservationists who purchased the cliffs for a park just in time to keep them from being blasted down for building stone.

sail brings volunteer crews to riverside towns to spread the message.

Seeger often comes along, energizing every gathering with his gravelly-voiced songs (above). Then, slinging his banjo on his back, he proselytizes the earnest young people who crowd around him with the plea, "What can I do?"

Patiently, he repeats the litany of citizen participation: "Get in touch with a local sloop club, or form one. Look for local water polluters. Write letters to representatives; sign petitions. Help your town open a waterfront park. Pick up the trash yourself."

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Seeger does just that, early and late, at the Beacon park his club created on the site of an abandoned dump. "I should be retiring now," he confided to me. "But I'm more enthusiastic than ever about *Clearwater*'s achievements, and I want to contribute more."

Storm Over Storm King

Hudson conservationists won an astonishing early victory when a handful of river people blocked plans of one of the nation's largest power companies. In 1962 Consolidated Edison announced its intention to cut 500 feet into a 1,355-foot mountain named Storm King in the dramatic gorge of the Hudson Highlands. There a pumped-storage plant would raise river water to a mountaintop reservoir. At hours of peak power demand in New York City, water plummeting back into the river would generate electricity.

Nearby Cornwall-on-Hudson was pleased by the prospect of employment and a broader tax base. Residents of other towns were enraged. Frances Reese recalled the consternation of her neighbors as we relaxed on the porch of her home beside Wappinger Creek.

"We are not against progress or power plants. We just want them sited where they

MONS 001766

will not damage irreplaceable resources."

Mrs. Reese joined the Scenic Hudson Preservation Conference, an organization of 20,000 members that she now heads. Scenic Hudson, arguing the value of beauty as a public resource, won a landmark decision against ConEd in 1965. The case helped influence Congress to pass the National Environmental Policy Act of 1969, requiring federal agencies to evaluate the impact of any project—such as new power plants on the Hudson—before granting funds or license.

ConEd now proposes to build much of its Storm King facility underground, but Scenic Hudson still opposes, and hearings continue.

During those years of environmental battles, public opinion was building for state and federal action. In 1965 New Yorkers passed a billion-dollar bond issue to upgrade all sewage treatment to the secondary stage. Congress in 1972 passed the Water Pollution Control Act Amendments, setting nationwide standards for industrial discharges. Approached step by step, the goal is zero discharge of pollutants into navigable waterways by 1985. Congress charged the Environmental Protection Agency with the difficult task of enforcement, a job since shared in New York with DEC—its Department of Environmental Conservation.

River Stages a Comeback

The new laws have achieved some striking results along the Hudson. Factories are carefully measuring water use and effluents; many are installing costly waste-treatment facilities; all must report their progress regularly to both EPA and DEC. Nine out of ten companies along the river say they met the first federal deadline this past July by installing "the best practicable control technology currently available."

International Paper Company—once one of the worst polluters by its own admission—takes special pride in success.

"Ten years ago we didn't even know what



HAND-COLORED PRINT FROM FRANK LESLIE'S ILLUSTRATED NEWSPAPER, AUGUST 5, 1878. PRINT THOMPSON INSTITUTE

Wrestling a 300-pound sturgeon into their scow, fishermen contributed to a flourishing industry just a century ago. At Hyde Park a caviar merchant cured the eggs on the spot and auctioned the veal-like meat. Overfished, the sturgeon seemed to disappear. Now *Charlie White, who has "caught every kind of fish there is on the river,"* sets extra-heavy nets off Verplanck. On Memorial Day at the Viking Boat Yard, he displays a two-day catch (right)—676 pounds of sturgeon.

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was going into the river," IP mill manager Richard O'Brien admitted as I toured his plant at Corinth. I watched enormous logs of spruce, red pine, and poplar, trucked from within a hundred-mile radius, shoot down water-filled sluices and disappear into debarkers and grinders. More colossal equipment bleached, squeezed, dried, and ironed the high-quality publication paper. Clay, dyes, and titanium dioxide flowed into the vats, providing filler, color, and coating.

Residues used to go directly into the Hudson, together with 24 million gallons of waste water daily. Now the mill has cut water use by nearly two-thirds and begun treating waste-laden water in its own three-million-dollar plant. Still, four thousand pounds of wood and clay particles, plus traces of chemicals, flow into the river every day. Mr. O'Brien adds: "It will cost another twenty million to reach zero discharge by 1985—if it can be done at all."

Is the river any cleaner? Weekend sailors think so. And the waiting list for slips in the river's sixty-odd marinas grows longer.

Swimmers agree, discovering as I did the





Floating trash truck, the Army Corps of Engineers' *Driftmaster* **(above)** scoops debris from New York Harbor. Cleanup is unending and complex. Junked cars headed for recycling are stored at riverside in Newburgh **(right)** near natural-gas tanks, creating this eyesore.

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languid pleasure of floating on the current at refurbished beaches near Glens Falls, Kingston, Cold Spring, and Croton Point. I was forewarned about the murky water and muddy bottom by an angler. "Don't expect the Bahamas," he told me. "The current and tides keep sediments in suspension."

Fish Attest to Cleaner Water

Yes, the river's cleaner, say the Hudson's 55 commercial fishermen, their numbers sharply reduced since the 1930's by the changing economy, the river's dirty reputation, and unpredictable catches. They point to the return of the delectable blue crab and to sizable hauls of shad.

It is the month-long spring run of silvery shad, racing for fresh water to spawn, that keeps these men in cash. Like harvesters awaiting ripening wheat, they set their nets in succession from south to north. First in line near the river's mouth, Ronnie Ingold of Edgewater, New Jersey, with half a dozen hired hands takes as much as 10,000 pounds of shad a day. Three weeks later, 100 miles upstream near the city of Hudson, Everett



MONS 001770

Nack rows out drift nets to take his share.

While shad pay the bills, Atlantic sturgeon in the Hudson arouse the greatest interest and tell most about this complicated nursery. Sturgeon were living when today's continents drifted apart. A century ago they were netted by the hundreds off Hyde Park, where a professional caviar man salt-cured the roe, marketing it at ten dollars a barrel. Sturgeon meat, smoked or salted, became so common in the state capital that it was called "Albany beef." By 1900 too many fishermen meant not enough sturgeon to go around, and the industry died.

Tracking a River Monster

There were probably always some sturgeon in the river, believes Bill Dovel, who now conducts a pioneering two-year field study of the remarkable fish. One May morning I joined him on a sturgeon chase; before I knew it, a sturgeon was taking me for a ride.

Perched in fisherman Charlie White's 16-foot skiff, I stared down at a smooth gray body, five hefty feet of energy, lassoed to the bow. The head looked like the snout of a toothless crocodile, the mouth like a retracted vacuum-cleaner hose.

Charlie had netted the fish off Verplanck and was supposed to tow it to the *Needham*, anchored in mid-river. Instead, the sturgeon was towing us with undulating surges, and Charlie—all 200-plus pounds of him—was standing in the stern, laughing. Finally, he whipped his antique outboard into sputtering motion and delivered us to the vessel.

It took three men to wrestle the thrashing creature into a sling for weighing (76.5 pounds), measuring (67.5 inches), and sonic tagging. When the sturgeon was released, it carried a tiny sonic transmitter wired to its bony back plates. I twisted a receiver to locate the first bleeps. Listening was like riding on its back as it meandered in the area for hours.

Such tracking has helped Dovel write a scenario for spawning sturgeon. From May to July, ripe females follow smaller males up the river, swimming with the flood tide and resting on the ebb. Reaching fresh water from Stony Point to Hyde Park, they spawn. The female "rubs out" one to three million eggs, a load weighing as much as fifty pounds. If even one-tenth of one percent survive the next five years, a thousand more adult sturgeon will range the Atlantic from Nantucket to Kitty Hawk.

While Dovel pursues sturgeon for science, Charlie White and Howard Jordan hunt them for cash (page 71)—and hope that someone will come along to revive the caviar industry. For now, they sell their catch at the Fulton Fish Market in Manhattan. There at dawn in a dimly lighted fish shed, I watched Steve Tatick butcher fish. His profits came from shad and flounder measured in tons. But as a favor, he would buy single sturgeon for resale to a Florida man who smoked it—to sell for $12 a pound.

With the help of two other men, Tatick strung up a 171-pound sturgeon. In five mighty whacks, he beheaded it. Then with a neat slice, he opened the belly to gut it. Onlookers gasped. The two-foot cavity overflowed with gray black eggs. They weighed 34 pounds—and they went into the trash.

Caviar to Match the Caspian's

Uptown, in a plush office building, Arnold Hansen-Sturm, president of Romanoff Caviar, talked excitedly about reviving the Hudson caviar industry. "The river roe I've seen compares favorably with Iranian *sevruga*, which retails for $13 to $15 for a four-ounce jar."

Hansen-Sturm now imports 75,000 to 100,000 pounds of cured caviar from Iran annually to pack in his New Jersey plant. About the same amount was exported from U.S. rivers a hundred years ago.

But a businessman needs more than hope to launch a million-dollar enterprise. He needs state regulations to prevent overfishing. He needs the certainty of roe in large lots—say 3,000 pounds at a time, properly salt-cured from freshly caught fish. The eggs must meet exacting standards for quality and purity. For now, Hansen-Sturm pays for lab tests

Futuristic towers and ramparts of concrete flank the river at Albany, overwhelming the natural watercourse. The new billion-dollar Empire State Plaza, a 12-building state office center with saucer-shaped meeting hall, dominates the city. Downstream, the Port of Albany handles a million tons of cargo from ocean freighters annually.

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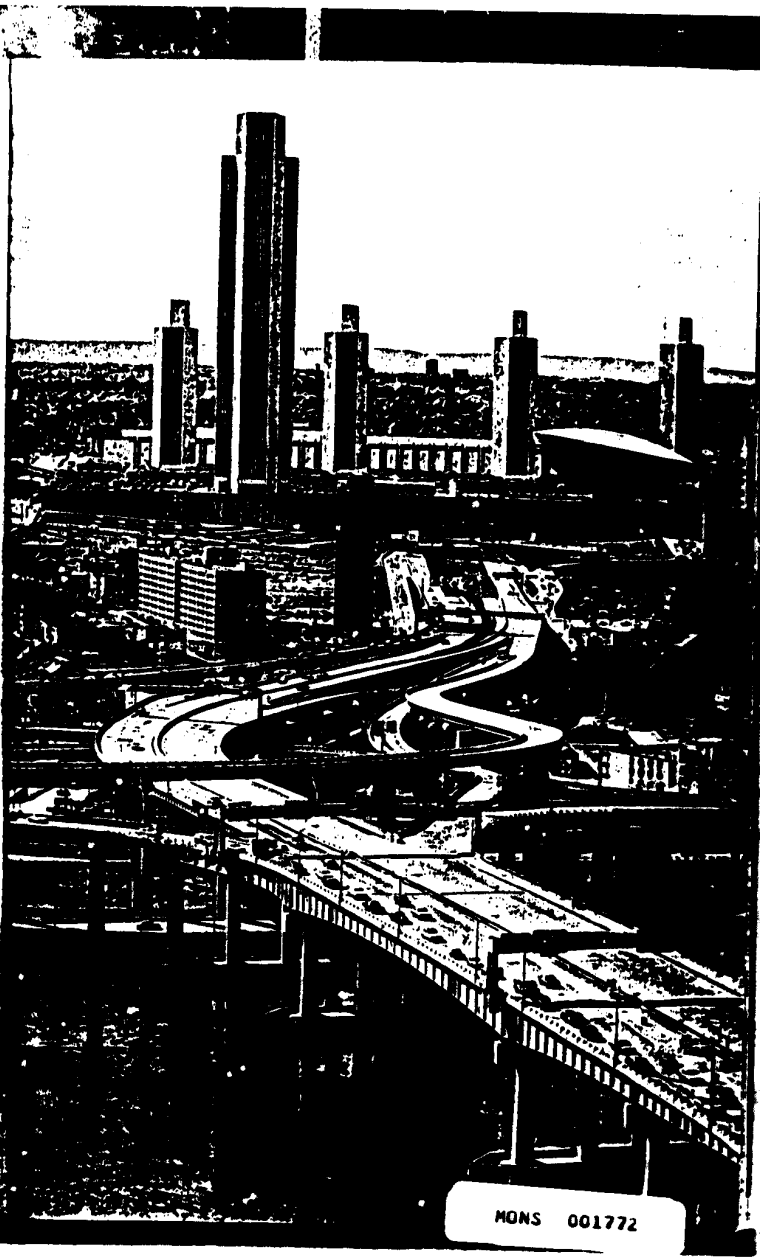

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that have proved Hudson roe to be free of most toxicants. He keeps an eye on Dovel's research, and he waits.

Meanwhile, what judgment does New York State pass on the health of its resource?

"The Hudson is definitely cleaner, but. . . ." The chief of water monitoring at DEC, Ronald Maylath, spoke with some hesitation. "When pollution was at its worst in the early sixties, the water level was low, at near-drought stage; now we've had plenty of rain, and the Hudson has a much higher flow. Such variables make comparison difficult."

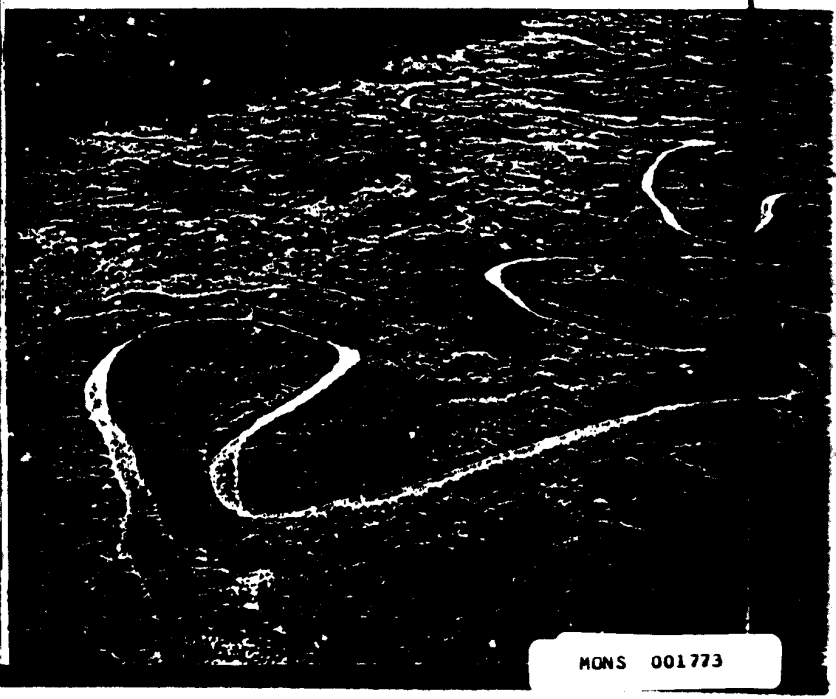
The river is cleaner in what the state measures: dissolved oxygen, bacteria, biochemical oxygen demand, and suspended solids. Until recently, no funds or staff existed to check routinely on toxic chemicals and heavy metals. Industry is still not required to monitor the specific chemicals it may discharge directly into the river or through a city's sewers.

"It's what we don't test for that frightens me," Maylath shook his head. His nightmares became notorious reality in 1975, when a crisis arose over something called PCB.

Poisons of the Electrical Age

In 1929 chemists compounded PCB's—a family of polychlorinated biphenyls—as fire-resistant fluids to insulate transformers and capacitors, those electrical storage containers found on power poles and even in fluorescent lights. Their usefulness spread —from plastics to printing inks. In all industrial nations, PCB's have leached from discarded products into waterways, where they do not break down. Now traces show up everywhere from Arctic ice to human milk.

Nature's water purifier, a marsh converts wastes into elements of the food chain. But marshes, such as this one near Piermont (**below**), cannot assimilate persistent industrial poisons such as PCB's. The contaminants entered the river from dumps and with



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An unprecedented PCB concentration—as much as 230 tons—lies in Hudson River sediments. From 1946 to 1976 General Electric, a principal user of PCB's, discharged them at the rate of 30 pounds a day with waste water from capacitor plants at Hudson Falls and Fort Edward. In 1973, GE's schedule for lowering its daily discharge to a few ounces was approved by DEC, and later by EPA.

Concern over PCB's was legitimate. In 1968 in Japan a machine leak of the compound into rice oil caused a tragic poisoning. The 1,500 victims of *yusho*, or oil disease, suffered skin lesions, swollen limbs, and eye and liver problems. Japan banned PCB's in 1972, and GE developed a substitute fluid for capacitors sold there.

In August 1975, then commissioner of DEC Ogden Reid learned of startling PCB readings in Hudson fish—as high as 350 parts per million in the flesh of a rock bass. That was 70 times the federally established "safe" level of five parts per million for food fish. Astonished and angry, he appointed a state hearing mediator to fix GE's responsibility. He later banned commercial fishing on the river, though exempting shad, blue crab, and mature Atlantic sturgeon because of low traces in those marine species. Consumers were advised to eat no more than one river fish a week.

As months passed, I listened to Hudson fishermen grow increasingly bitter. After the spring shad run, they stood idle while great schools of striped bass ripped upriver to spawn. Many of the fish had passed Long Island, where no ban existed and where fishermen were reaping tons of them.

"They're the same fish," Howard Jordan

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waste from plants at Hudson Falls and Fort Edward. Now New York studies how to rid the Hudson of PCB's, which show up in river fish; last winter, technicians lowered a core sampler through ice holes to collect riverbed sediments for monitoring (right).





MONS 001774





Fortunes founded on railroading built lavish Hudson estates. Ironically, tracks along the shore cut owners off from easy access to their yachts. Frederick Vanderbilt, grandson of the titan of the New York Central, owned this country palace in Hyde Park (above), now a national historic site.

Lyndhurst, home of railroad magnate Jay Gould, overlooks the Tappan Zee at Tarrytown; a great-great-grandson, Kingdon Gould III, and his wife, Kristin (left), attend a party in the national trust mansion.

Nearby, the home Washington Irving called Sunnyside (right) captivates visitors with its enchanted air, a spell regularly broken by passing trains.

MONS 001775





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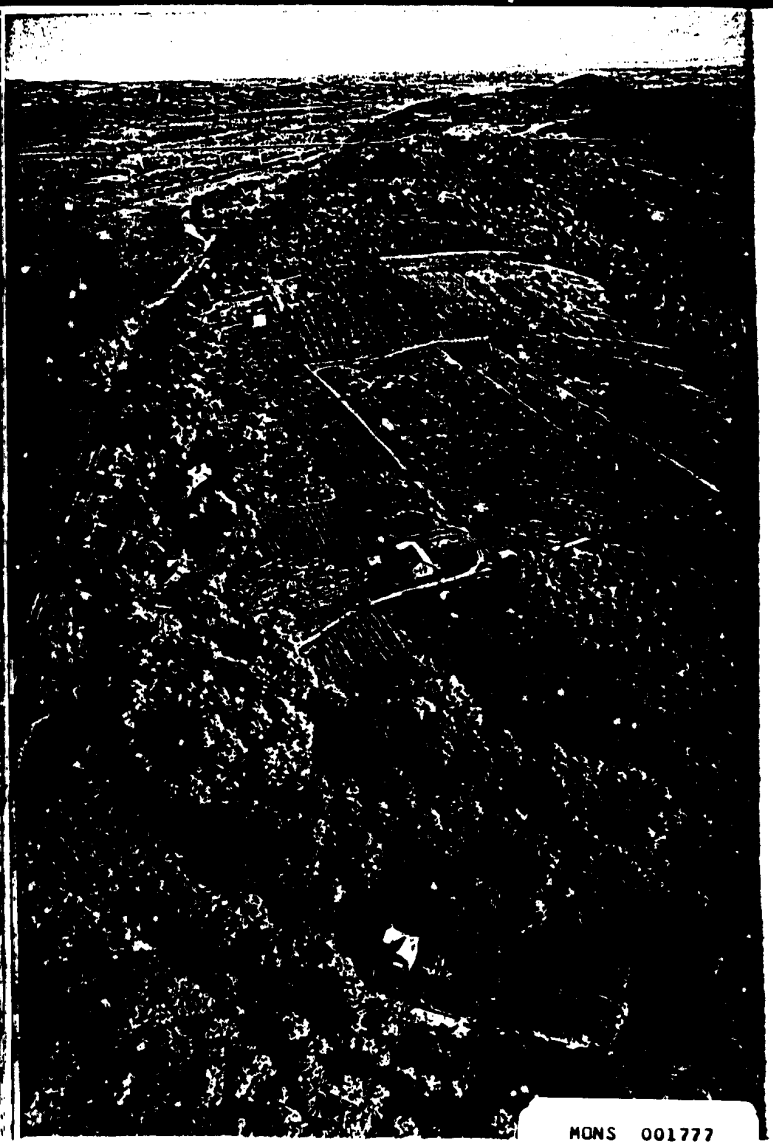

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said. "Is there a gate at the Battery?" Others charged politics in Albany, saying, "We're just crumbs."

While the state attempted to keep PCB's off the dinner tables, some GE employees realized they had handled and inhaled the chemicals for years. Their union asked noted cancer researcher Dr. Irving J. Selikoff of New York City's Mount Sinai Medical Center to begin a long-range study. So far, he has found skin problems; other ailments that may be PCB-related are under investigation. He explains: "PCB's in trace amounts may not be immediately toxic. But like inhaling cigarette smoke and asbestos, ingesting PCB's over long periods might present a risk."

A River Clean Enough to Drink?

In 1976 the state mediator determined that GE had violated water quality standards. The firm has converted to a substitute that, it claims, will "virtually eliminate environmental risk," and has built a $3,500,000 waste-treatment plant. In a negotiated settlement, GE paid $4,000,000 toward research and river cleanup. DEC agreed to pay $3,000,000, acknowledging its negligence in watchdogging. The unusually high settlement signals that industry and regulatory agencies may be held responsible for past mistakes.

In one way the PCB crisis actually pushed river cleanup a step ahead. It focused national attention on dangerous chemicals that, once loose in the environment, cannot be controlled. Congress last fall, after five years of debate, passed a Toxic Substances Control Act; now new chemicals suspected of being risks must undergo prior testing before they reach the marketplace. The act singles out PCB's for total ban by 1979.

But what of all the older, untested chemicals going into the river? PCB's are only the tip of the iceberg, the Environmental Defense Fund charges. It wants EPA and DEC to monitor much more rigorously.

How much cleaner should the river be? A lot cleaner, if many New Yorkers have their way. They are looking to it as a source of more drinking water. Reservoirs on tributaries supply millions of residents in the basin, but only 100,000 people in seven communities get their water directly from the Hudson.

The river could be a major source of supply for New York City and nearby counties, says the Army Corps of Engineers. Anticipating a doubling of demand by the year 2020, it suggests withdrawing 400 million gallons a day from the 21 billion gallons that flow past Esopus during spring runoff, when the salt line lies far to the south. Such plans are subject to public scrutiny, and already opposition is gearing up. Won't the withdrawal pull the salt line north, upsetting natural balances? Won't the project ruin a scenic stretch of



Red-cheeked as their prizes, twins Jody and Robin Feder carry a fall treat from the J. R. Clarke & Son fruit farm near Milton. South of Rip Van Winkle Bridge (facing page), Greendale Farm raises apples, pears, grapes, and hay. River towns try to balance growth with guardianship of their "windows" on the water.

riverbank? What about the toxic chemicals in the water?

The town of Queensbury can answer the last question. The community of 18,500, which spreads like a nibbled doughnut around Glens Falls, drinks river water purified by the most modern plant on the Hudson.

"We Did It Ourselves"

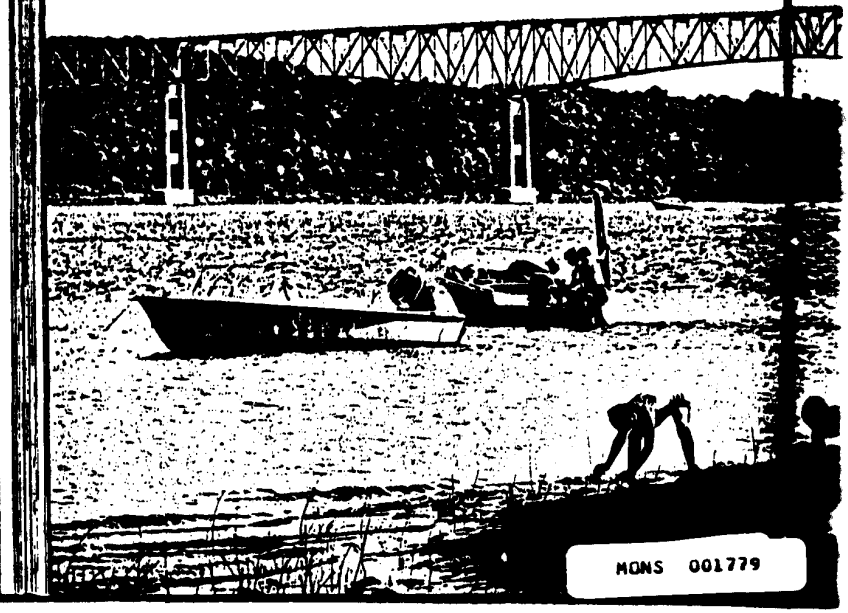
In the 1960's complaints about water quality in deteriorating wells, about low pressure, hardness, and taste sent water experts scrambling. They drilled test wells and even considered tapping Lake George, ten miles away. With six other towns, Queensbury undertook a water study and sought federal and state aid. But water was running out; in 1971 the town on its own turned to the Hudson.

Now water superintendent Thomas Flaherty wins nothing but compliments about taste and quantity. Summertime bans on car washing and lawn sprinkling are in the past. The automated five-million-dollar plant can treat five million gallons a day. Chemical compounds and a granular activated-carbon filter cleanse the water of bacteria, heavy metals, and toxic chemicals. A tank larger than an Olympic swimming pool catches ten feet of sediment a year.

"We wanted to discharge it into the river where it came from," Flaherty chuckled. "But EPA wouldn't let us. Said *we'd* be polluting. So we truck to a landfill."

The restoration of the Hudson has meant more than nursing it back to health. It involves saving what is left of natural shore-

Families discover a river restored at Ulster Landing Park near the Kingston bridge.



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lines and even restoring some that were lost.

Environmentalists' messages bombard local officials: Don't wipe out that marsh with landfill. Move the dump away from the shore. Buy some property from industry to give a spot of shore back to the people. Save those stretches of open land from suburban sprawl.

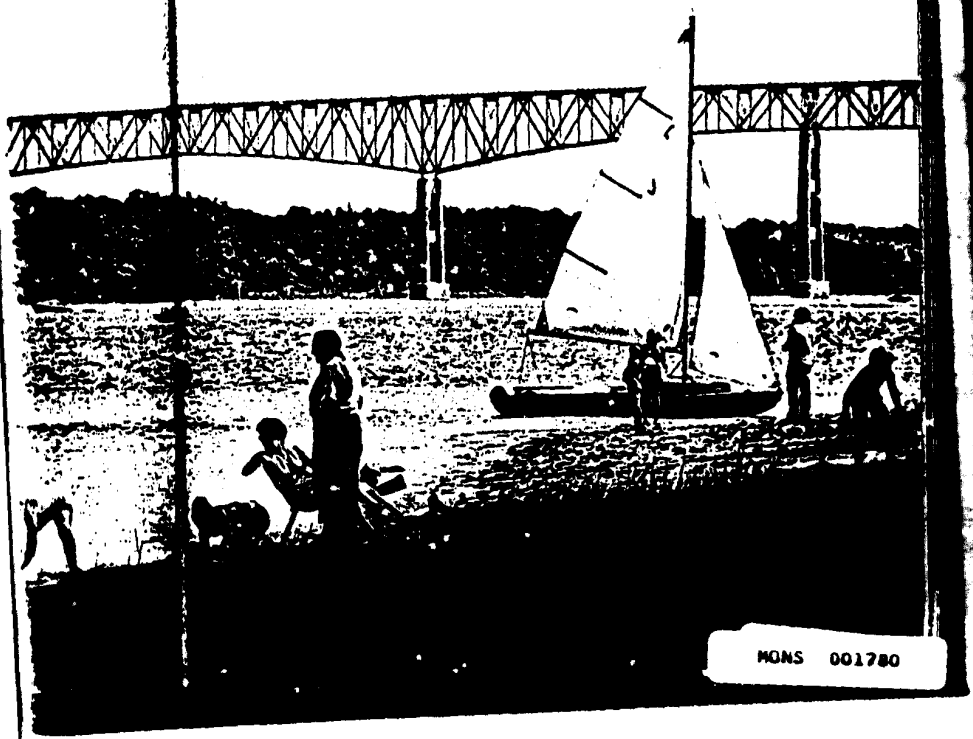
Preservationists are achieving that goal by bringing notable private estates into public use. In one of those curious quirks of history commonplace along the Hudson, they find themselves spiritual allies of the 19th-century magnates who landscaped only a central stage for their mansions, leaving acres of woodlands for privacy and view.

I recognized this phenomenon at Franklin Delano Roosevelt's home at Hyde Park with its mile-long trail to the river. On a bright July morning I hiked the path through a grove that F.D.R. planted, past a pond where he taught his children to swim, under towering hemlocks, and over a tumbling brook. In a tidal pool near the shore, tiny blueback herring spawned days earlier were circling. Like F.D.R., I too had to cross the tracks to reach the Hudson.

Private and public moneys open more such estates to the public every year. Olana, the Moorish mansion of artist Frederic Edwin Church, was destined for the auction block in 1966; today it is a state historic site. So is Clermont, a handsome seat of the Livingston family; there Robert Fulton, a protégé, docked his famed steamboat.

Octagon House in Irvington, an 1859 example of the mid-century fad for eight-sided

In 1973 Ulster County bought a former church camp to create the public park. 83



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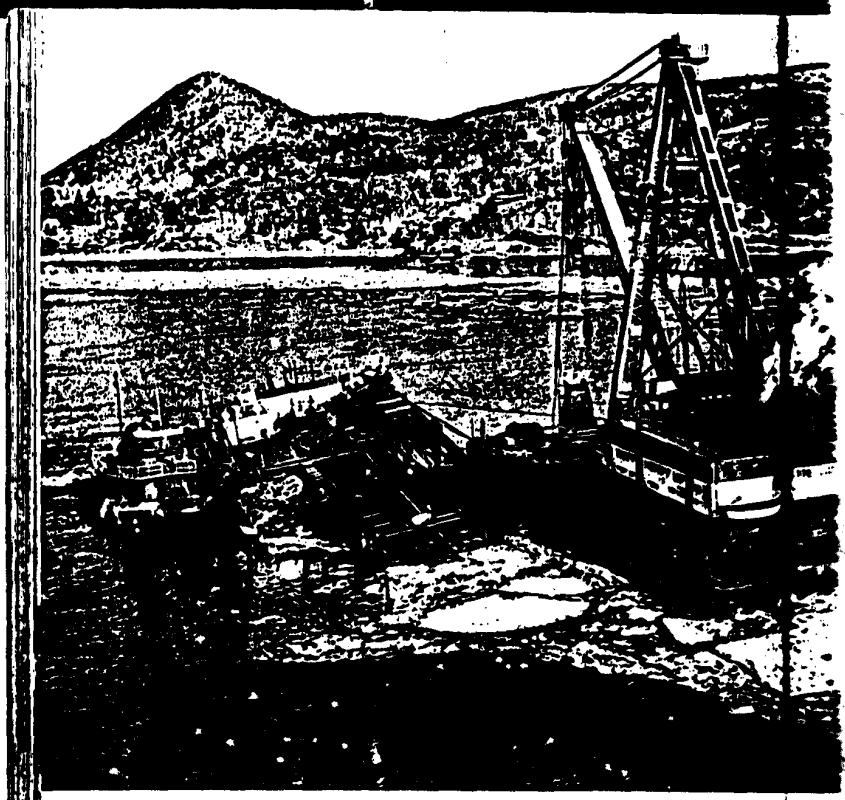

houses, depots, and even barns, belongs now to the National Trust for Historic Preservation. That organization will sell it with the proviso that new owners restore and maintain it intact.

An even more ambitious scheme fires a group called Hudson River Heritage. Members aim to protect 16 miles of riverfront near Rhinebeck. Winthrop Aldrich, an heir to an estate called Rokeby, believes the area's past makes all of it a national resource.

In 1783 Margaret Beekman Livingston divided her Dutchess County land, 25,000 acres, among nine children. Aldrich's forebear was the first mistress of Rokeby. After William Astor, wealthiest man in America, married her daughter, he enlarged the original house to fifty rooms. Later, architect Stanford White "improved" the interior.

"For the Astors it was a summer retreat," Aldrich said. "Now even the tax assessors acknowledge it's a white elephant."

A state official of limited means, Aldrich wishes he had some of the Astor money to keep up the decaying mansion. Ceiling paint peels in a reception room hung with wallpaper

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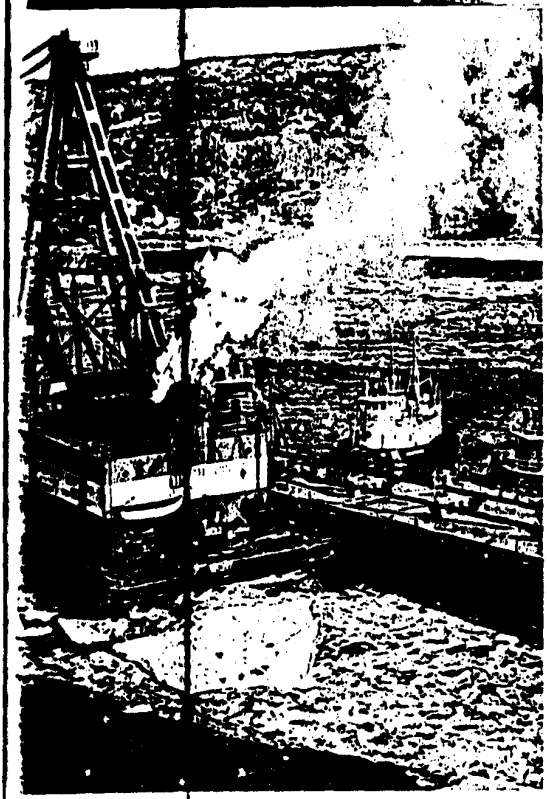



One mishap meant months of cleanup last February when the barge *Ethel H* struck Con Hook Rock, losing 420,000 gallons of oil destined for an upriver power plant. Directed by the Coast Guard, a derrick keeps the listing barge afloat (left) as pumps transfer remaining oil to another vessel. To attach underwater lines, Rick Hathaway (above) had to dive under the ice-and-oil-choked surface. Crews placed floating barriers around nearby marshes, steam-cleaned rocks, and scraped beaches for 70 miles to Long Island—a million-dollar job.

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brought from Paris in 1811. Water stains, like a giant's tears, streak marbleized paneling. Aldrich and his family live in a portion of the main house, while renting out gardeners' and farmers' cottages and keeping the land in crops just to pay the taxes.

Some owners succumb to the temptation to sell off parcels of land to meet their tax bills. The whole area could thus disappear under a tide of housing developments if something isn't done, Aldrich believes. Hudson River Heritage seeks designation of the 16 miles as a national historic district. Owners may be eligible for federal tax relief and rehabilitation grants in exchange for public use, such as hiking trails and house tours.

The Roman Catholic Church itself owns a number of estates, using them as seminaries, hospitals, schools, and nursing homes. One priest quipped, "I've heard the river called the Vatican Canal."

Recycling of properties is continuous. In a former Christian Brothers seminary near Rhinebeck, controversial Korean evangelist Sun Myung Moon trains converts. In the town of Hyde Park a onetime Jesuit seminary

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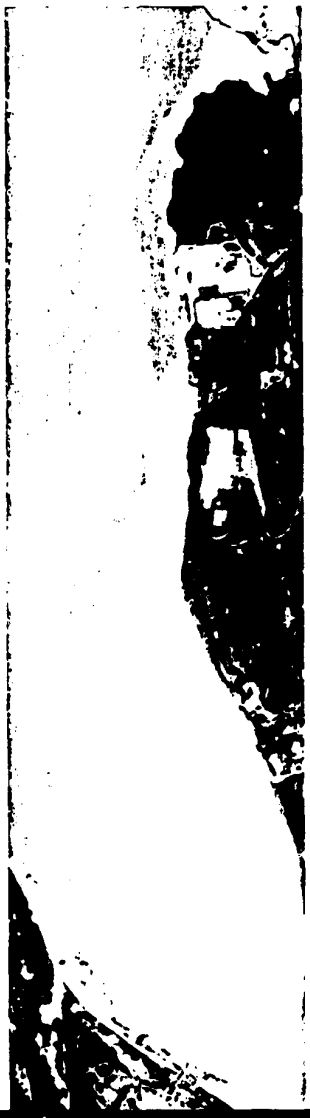

shelters an organization with the intriguing initials CIA. That's what locals call the Culinary Institute of America, the Harvard for would-be chefs, maitre d's, and restaurateurs. I enjoyed Dutchess County apple pie in the Escoffier Room, a student-run dining room. The house wine—Benmarl—is bottled across the river.

Wines to Rival the Rhine's

There, near Marlboro, vintner Mark Miller makes his stand against urban sprawl with a showplace for rural renewal.

Never suited to large-scale agriculture, the Hudson's slopes nurture pastures, truck gardens, orchards, and vineyards. Some of America's earliest experiments in viticulture took place along the river. But crop problems and Prohibition pushed vintners into apple growing, and high taxes now pressure some farmers to sell to developers. One elderly viticulturist sold to the Millers.

A retired magazine illustrator, Miller, his wife, and two grown sons began planting French hybrid grapes to test which were best suited to the mid-Hudson. From the hilltop home they designed, they overlook their own straitlaced vines and their neighbors' shaggy-branched apple trees to the river. The terraced hills and the soil resemble those of the Rhine Valley, and the quality of sunlight matches Rome's, Miller insists. "But it's the Hudson that's the key to our special climate, tempering the change from winter to spring."

To raise capital and share their enthusiasm, the Millers hit on an ingenious plan. They began a Société des Vignerons. Anyone

White plume in an infrared image shows that water used for cooling the Indian Point nuclear power plant (**left**) is warm when expelled. Whether or not this affects fish, the intake system is known to kill some fish, eggs, and larvae. EPA ordered closed-cycle cooling that would require construction of two 60-story towers, which the plant operator, Consolidated Edison, asserts are unneeded, costly, and ugly. Hearings continue.

With no room on Manhattan, New York City builds a sewage plant in the Hudson (**right**) at 145th Street. Fiscal, political, and design problems delay completion to 1986, pushing the cost toward a billion dollars.

ENVIRONMENTAL PROTECTION AGENCY (EPA PLUME); CONSOLIDATED EDISON (EPA)

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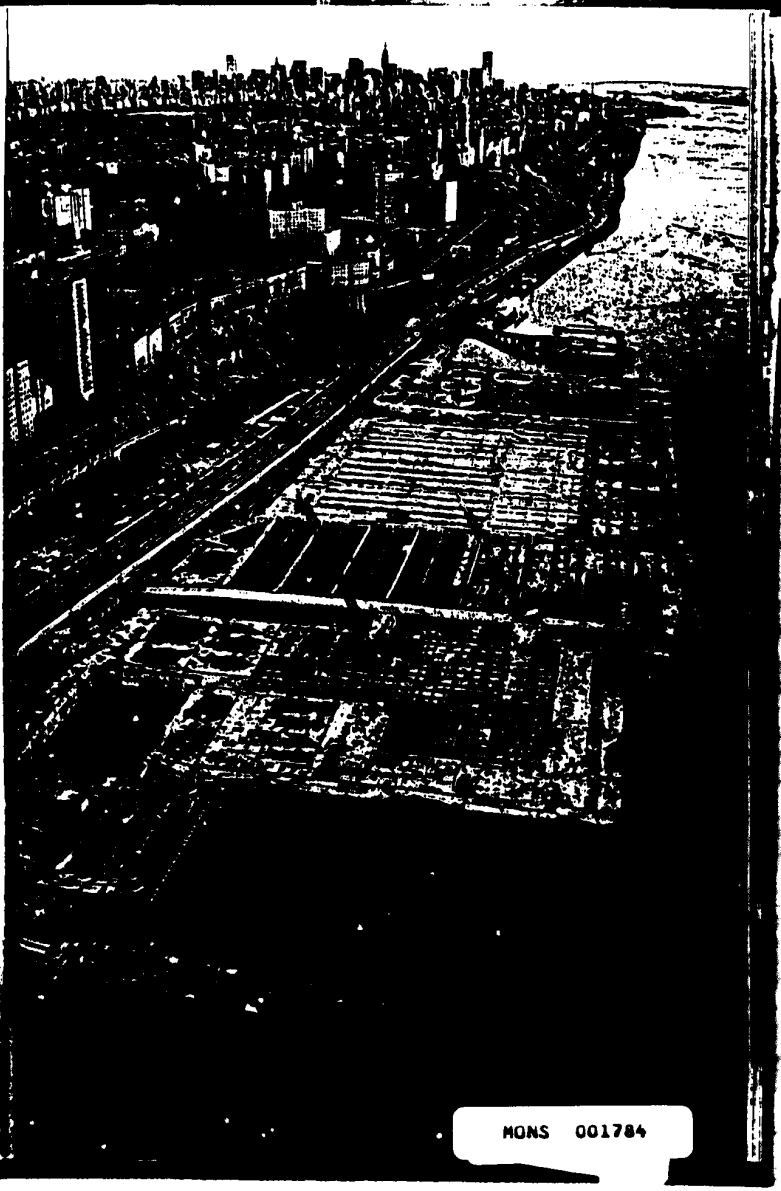

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can become a *vigneron*, or winegrower, by purchasing a permanent right to two vines. Annual dues pay maintenance. In September, vignerons arrive to help with harvest; in March they come to taste and select their bounty—12 bottles of wine.

In the tasting room, 28-year-old son Eric, the winemaster, savored a glowing libation and pronounced judgment: "As a young red, this Baco Noir was like strawberries. With aging, it's less fruity and more austere." I quickly signed on as a vigneron, staking my claim to the resurgent Hudson shore.

Realm of Spatterdock and Mummichogs

Estates and vineyards have supporters, but humble marshes have constituents too. A conference at Bard College in Annandale drew 25 marsh specialists, one for every 160 acres of tidal marsh on the Hudson. With self-taught naturalist and Bard instructor Erik Kiviat, I explored this domain by canoe.

We had to duck under a railroad bridge to enter Erik's special province, North Bay. It was a fitting approach, since probably half the Hudson marshes were formed after the railroad cut across creek mouths. Then sediments built up, and plants took root.

In the 350-acre confines of North Bay, rustling spatterdock and ten-foot cattails waved. Slow-moving, tide-carved rivulets snaked between mudbanks pocked with muskrat burrows. Ahead of the bow, silver flashed, like Lilliputian porpoises at play.

"Mummichogs," Erik identified a type of killifish. "They skip across the water when disturbed. They're an important link in the marsh chain."

Eroded nutrients from the land nourish algae and aquatic plants; killifish eat the plants; birds, fish, and snapping turtles relish the killifish. Thus the marshes, like the river shallows, serve as nutrient factories for the estuary. They are also stopovers for birds migrating along the Atlantic flyway.

Many marshes have been badly damaged by landfill, factory wastes, and poisons leaching from dumps, but not North Bay. Erik dipped up a floating seedling. "Golden club. That's a sensitive plant that has disappeared from the Kingston Marsh, but flourishes here. It seems to be one signal—a canary in a coal mine—about the health of a marsh."

Each semester Erik turns the marsh into a living laboratory, passing on to the next generation of ecology students his concern for the natural world.

An even younger generation is being imbued with the river's legacy in an unlikely place—the Yonkers waterfront. There Carol O'Leary, of the recreation department, helped persuade the city—poor to the point of defaulting on its bonds—to back a summer boating program.

With hard-won funds she bought canoes and kayaks. For a site she leased a vacant Naval Reserve center. From the Yonkers Canoe Club next door came young people to serve as counselors. During four-week sessions thirty youngsters train in safe boating and come to treasure their river. Field trips take them to the marsh behind Constitution Island, to South Street Seaport Museum in Manhattan, and across the river to a sandy notch of shore at the base of the towering Palisades, below the town of Alpine.

Learning Firsthand About a River

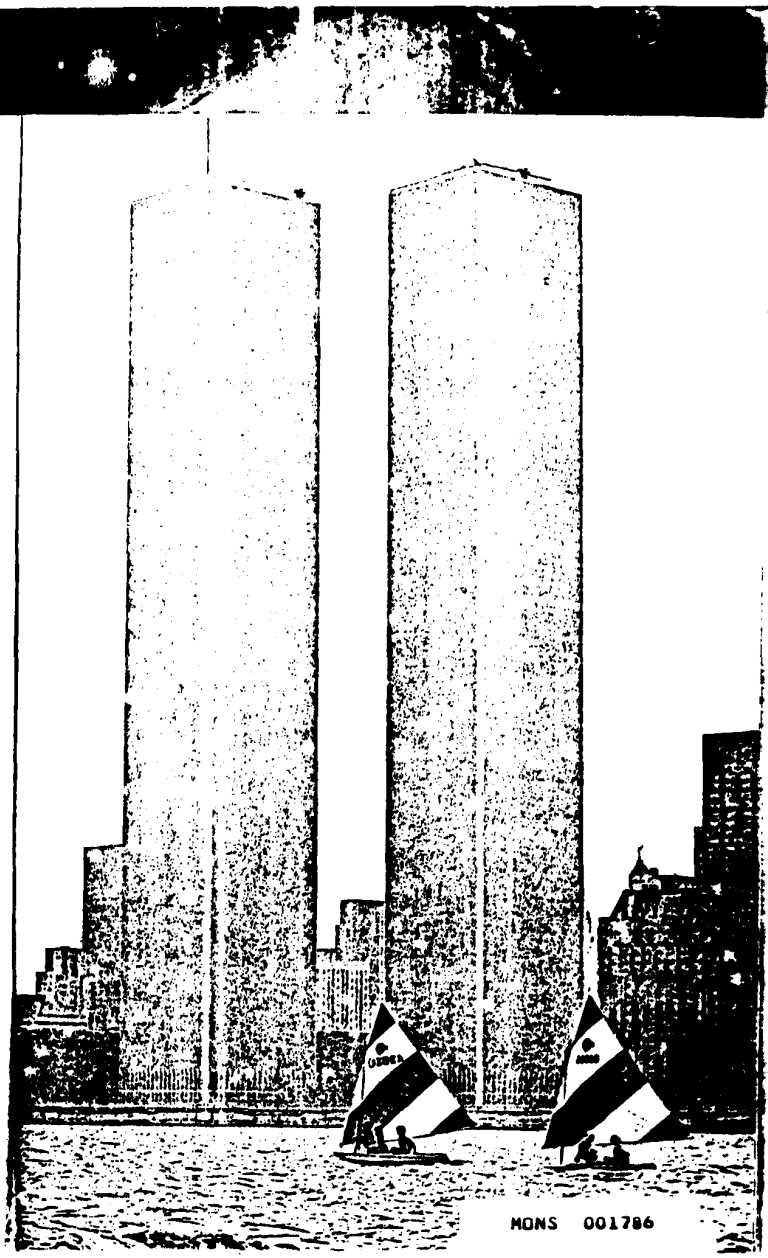
I joined the youngsters for a camp-out at Alpine, their final fling of the season. The mile crossing was an easy paddle, leaving plenty of time before dark for hamburgers and hikes, marshmallows and storytelling. As I scrunched down in my sleeping bag on the sand, 9-year-old Rose Anne Noone didn't want me to miss a thing. "Look at the river now. It's so still. The wind is barely rippling the waves. In the morning it will all change."

Morning was a long time off, what with passing tugboats, Albany-bound freighters, wailing trains, even a light rain.

But as predicted, at sunrise the waves were high, the wind blew from the north, and the tide raced out to sea. The youngsters were undaunted; the Hudson was their territory now. In a small way they had joined the ranks of river lovers, the diligent officials, responsible industrialists, and dedicated environmentalists who care enough to help the Hudson on its road to recovery. □

Aquatic playground in the shadow of the World Trade Center, the Hudson hosts a Sunfish regatta, emblematic of New Yorkers' renewed enjoyment of their river.

MONS 001785



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