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THE CONTROL OF NATURE

## FAREWELL TO THE NINETEENTH CENTURY

The breaching of Edwards Dam.

BY JOHN McPHEE

In the view of conservationists, there is something special about dams, something—as conservation problems go—that is disproportionately and metaphysically sinister. The outermost circle of the Devil's world seems to be a moat filled mainly with DDT. Next to it is a moat of burning gasoline. Within that is a ring of pinheads each covered with a million people—and so on past phalanxed bulldozers and bicuspid chain saws into the absolute epicenter of Hell on earth, where stands a dam. The implications of the dam exceed its true level in the scale of environmental catastrophes. Conservationists who can hold themselves in reasonable check before new oil spills and fresh megalopolises mysteriously go insane at even the thought of a dam. The conservation movement is a mystical and religious force, and possibly the reaction to dams is so violent because rivers are the ultimate metaphors of existence, and dams destroy rivers. Humiliating nature, a dam is evil—placed and solid.—"Encounters with the Archdruid," The New Yorker, April 3, 1971.

"ITH John McPhedran, I carried a canoe around a ballfield in Waterville, Maine, and on into woods. The terrain fell away there sharply. The boat was heavy but its skin was indestructible, and we dragged it, bumping on roots. So much for the loving care reserved for canvas, bark, and kevlar canoes. This one had no need of it. Its makers promote its type with pictures that show one being thrown off the roof of their factory in Old Town. So we twitched it downhill like a log. On the threshold of the year 2000, this was just one of the countless ways of saying farewell to the nineteenth century.

A few days earlier, we would not have had to choose a model so tough. We put it into Messalonskee Stream, which carried us into the Kennebec River, which, in this stretch, had suddenly lost about five million tons of water as a result of deliberate demolition. Fifteen miles downstream, in Augusta, a dam two stories high and more than nine hundred feet wide had been breached on the first of July.

There were rapids at the mouth of Messalonskee Stream, but they had

been there in pre-Columbian time. Just above the dam's impoundment, they suggested what its depth had concealed. A blue heron tried to lead us through the rapids, or seemed to, in a series of short, nosy flights down the left bank. A kingfisher watched. The Augusta Water Power Company blocked the river in the year that Martin Van Buren replaced Andrew Jackson as President of the United States. It was the year of the Panic of 1837, when real estate collapsed, banks failed like duckpins, and homeless people died in the streets. The first steam railroad was nine years old. Oberlin, the first coeducational American college, was four years old. If you could afford Buffaloe's Oil, you used it in your hair to fight baldness. In Augusta, primarily thanks to the new dam, some people could afford Buffaloe's Oil. The dam powered seven sawmills, a gristmill, and a machine shop. Incidentally, it had a fish ladder.

Beside the second rip we came to was a sofa bed, its skirts showing the stains of fallen water. We expected more of the same. We expected grocery carts. This, after all, was not Township 13, Range 11, of the North Woods, where nearly half the State of Maine consists of nameless unorganized townships. This was settled, supermarket Maine, but in the fifteen river miles upstream of Augusta we would see one beer can, no grocery carts, and three tires. Now we saw a mallard, a pewee, goldfinches. We heard song sparrows, a wood thrush, a veery. I wouldn't know a veery from a blue-winged warbler, but John McPhedran is acute on birds. I've known him since he was seventeen, seventeen years ago. Since then, he has become a botanist, a general field naturalist, and a freelance water-quality consultant who works for the Maine Department of Transportation. We saw sticking up from a large and newly emergent river boulder an iron bolt fully an

inch and a half in diameter and capped with a head like a big iron mushroom. I knew what that dated from—the log drives of the Kennebec, which began in Colonial times and came to an end in 1976. Put a chain around that bolt and you could stop a raft of logs.

We saw no white pines, very long

gone as the masts of ships. Or spruce, for that matter. We saw deciduous trees. In fall, the river's walls would be afire in oranges and reds, but now, in summer, the leaves seemed too bright, too light for Maine. Among them were few houses-in fifteen otherwise uncivilized miles, a total of three nervous houses peeping through narrow slots in the trees. This seemed to report a population that had turned its back on the river, which it had, for the better part of a century, because the river was cluttered with the debris of log drives, becessed with community waste, spiked with industrial toxins. Square-rigged ships once came up into the fresh Kennebec to carry its pure ice down the east coasts of both Americas and around Cape Horn to San Fran-

cisco, and even across the Pacific, but by the nineteen-forties and fifties the Kennebec had developed such a chronic reek that windows in unairconditioned offices in the Capitol of Maine—six hundred yards from the river—were kept tight shut in summer. After the Clean Water Act, of 1972, the Kennebec, like so many American rivers, steadily and enduringly cleared, and the scene was set for the dam destruction

of 1999 and the restoration of this part of the river.

We looked down through clear water, color of pale tea, at a variously rocky and gravelly bottom. In Maritime Canada, I had recently fished over a scene like that in a place locally known as the Shad Bar. Shad like to spawn over that

Penger Sierce

Penger

"You're going to look back in years hence and say, 'It all began right here on this riverbank.'"

kind of riverbed. In this river, 1837 was not a good year for anadromous fish. Something like a million American shad came up the Kennebec before the dam at Augusta stopped them. Immemorially, the Kennebecs themselves speared Atlantic salmon below falls upriver. The fish ladder at the Augusta dam may have helped to some extent, but it disappeared in a flood in 1838, not to be replaced.

We saw and heard three crows charily screaming at a red-tailed hawk—a sedentary drama enacted in a dying tree. A spotted sandpiper watched as well, from a newly dried rock in the fallen stream. Like a scale model of the Yukon River, the Kennebec was unfolding before us not in multiple twists

and turns but in sizable segments, long reaches—a bend, a mile here, another bend, two miles there. They quickly added up to Six-Mile Falls, a rapid that was covered over by the rising impoundment in 1837, and until just a few days ago had been an engulfed series of bedrock ledges under the stillwater pool. In 1826, the United States Engineer Department surveyed the Kennebec River and mapped Six-Mile Falls, so named because they were six miles downstream from Ticonic Falls, at Waterville. The engineers' report (1828) would preserve that name, if nothing else, while the surf-like sound and the roil of white water were taken away for a hundred and sixtytwo years. Six-Mile Falls, the Army engineers reported, were "three ledges

of rock forming three distinct pitches." Downriver, we heard them now—that sound of gravel pouring on a tin drum. You don't need Sockdolager, the Upset Rapid, or Snake River Canyon to pick you up with that sound. Any riffle, let alone a small rapid, will do. I can feel adrenaline when I fill a glass of water.

Six-Mile Falls was a white riverscape of rock and plunge pools, small souse holes, tightly coiled eddies, and noisy,

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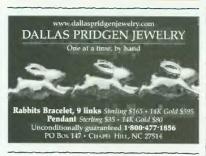


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THE NEW YORKER, SEPTEMBER 27, 1999

staired cascades. As we approached, we had to stand up and look for the thread of the river. The place was making scenery lifted from the dead. For six, seven, eight generations, it had been as withdrawn from the world as Debussy's cathédrale engloutie, but now, as in the time long gone, it was making its own music. Its higher rock, in broad, flat segments, was covered with filamentous algae, which under water has the look of long grass, combed straight by current. This algae was in thick brown mats, opened to the sky by the breaching of the dam and on their way to removal by the wind. We picked what seemed to be the most promising chute. The canoe slipped through it. We spun around and hung in an eddy. From riverbank to riverbank, water was falling in a hundred different ways. The truly moving fact that this scene, now restored, had been occluded for so much historic time was in an instant wiped from my mind by an even more stirring thought. Migrating fish "bag up" at the base of any rapid. You could be here during the spring migration and catch the milling shad.

From the bateaux of Colonel Benedict Arnold, coming up the Kennebec River, these impeding ledges of rock would have looked about as they again do now, and the bateaux surely had no choice but to bag up here, too. There were two hundred and twenty of them, newly made of green and shrinking pine, and eleven hundred Revolution-

ary soldiers, some in the bateaux, some on foot along the banks, collecting at places like Six-Mile Falls to portage the boats or haul them up the rapids. Local farmers came, with oxen, to help. Passing through here in September, 1775, Arnold's was the inspiring expedition that at-

tempted to capture Quebec, meanwhile encountering so much cold, swamp, snow, and hunger that the soldiers—who included Henry Dearborn, of New Hampshire; Daniel Morgan, of Virginia; Aaron Burr, of New Jersey—boiled their own moccasins for soup.

Thirteen years before the arrival of the Pilgrims at Plymouth Rock, the first English settlement on the Kennebec River was established. Flowing straight south from what would become known

as Moosehead Lake, the Kennebec was the central thoroughfare of Maine. When the Plymouth Colony was eight years old (1628), Plymouth set up its own trading post on the Kennebecforty miles inland from the ocean, at a place known to the Kennebecs as Cushnoc. According to the Abenakis, of whom the Kennebecs were a band, cushnoc meant "head of tide" or "where the tide stops." The tide stopped at a rapids squeezed by Cushnoc Island. Ocean ships were stopped there, too. Traders continued upriver in smaller boats. This moment in any major riverthe site of the first rapids above the sea—is known universally as the fall line and is an obvious place for a city. Richmond, Washington, Trenton, Troy, and Montreal grew at the fall line of rivers. Fort Western was built on the fall line of the Kennebec-on the left bank, close to Cushnoc Island-in 1754. As early as 1785, settlers there were speaking of the island, the rapids, the ledges, the gravels as a suitable site for a dam, and in 1797 the island, the fort, the native village, and the white settlement became the Township of Augusta in the Massachusetts district of Maine. In red brick and white clapboard, among state buildings of Maine granite, Augusta is still a town—larger than Montpelier, smaller than Juneau.

A<sup>T</sup> about 6 A.M. on July 1, 1999, the first of more than a thousand spectators began to collect above the eastern

end of the Augusta dam, in a place known locally as the Tree-Free Parking Lot. Tree-Free Fiber is a bankrupt company that recycled paper. The view was immediate, across three hundred yards of barrage—called Edwards Dam since the eighteen-eighties, when the Edwards Manu-

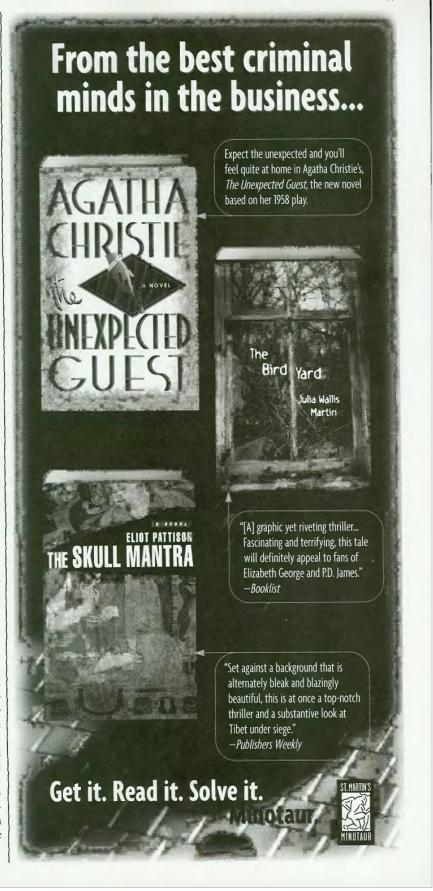
facturing Company bought it and was soon operating a hundred thousand spindles and employing a thousand people in one of the largest cotton mills in the world. The dam was veiled now in falling water, an exception being a gap at the west end, where sixty feet had been dismantled and removed. A curvilinear cofferdam, convex to the current of the river, ran like a short causeway from the west shore to the broken end of the dam, cupping

#### THE CONTROL OF NATURE

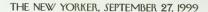
the wound and holding back the river.

The crowd gathered in suits, ties, and combat fatigues, sandals, sneakers, boots, and backpacks-babies in the backpacks. There were port-a-potties, T-shirts for sale, booths of brochures-Trout Unlimited, American Rivers, Salvation Army Emergency Disaster Services. There was a row of television cameras. A helicopter preëmpted the sound of the river. With "Muddy Water" and "River" and a banjo and a guitar and a pennywhistle, a trio called Schooner Fare tried to compete. Two fixed-wing planes, one of them on floats, flew in circles even tighter than the chopper's. The people had come to hear the Secretary of the Interior, the Governor of Maine, and the Mayor of Augustabut mainly to witness the freeing of the Kennebec, the breaching of the dam.

To dam-allergic conservationists, the idea is insufficiently satisfying that hydroelectric-power turbines spare the atmosphere by reducing the burning of fuels. During the energy crisis of 1973 and thereabout, the conservationists kept this viewpoint somewhat muffled while small-scale hydroelectric enterprises blossomed by the hundreds at small existing dams and helped meet a national need. By 1986, though, long lines at gas stations were in long-term memory and the environmental movement made a literal breakthrough on dams. The Federal Energy Regulatory Commission, which had before then been instructed to promote unequivocally the development of hydroelectric dams, was now instructed, by an amended Federal Power Act, to give "equal consideration" to wildlife, recreation, environmental quality, and related factors when renewing licenses or granting new ones. At Edwards Dam, in Augusta, Maine, for example, ocean fish coming upriver to spawn—such as Atlantic sturgeon, Atlantic salmon, and American shad-had received essentially no consideration for sixteen decades: they could not get past the fall line to their historical birthing grounds above the dam. Disturbed by the plight of American shad in another New England river, in 1849, Henry David Thoreau described them "patiently, almost pathetically, with instinct not to be discouraged, not to be reasoned with, revisiting their old haunts, as if their stern fates would relent, and still met by the



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"Wait! I've got a quarter!"

Corporation with its dam. Poor shad! where is thy redress? When Nature gave thee instinct, gave she thee the heart to bear thy fate?" Thoreau would have been thrilled to know that the answer to his questions would one day be handed down by a federal agency called FERC.

Prodded by activists' lawyers, the commission soon developed what amounted to a retroactive statement of environmental impact. Edwards Dam had been making electricity since 1913-lately, 3.5 megawatts, scarcely enough to light the warehouse at L.L. Bean. The license was up for renewal. Since "needed and appropriate" fishways would cost three times as much as removing the damand the power it produced was hardly a redeeming factor—the commission ordered the Edwards Manufacturing Company to shut down its turbines, deconstruct the dam, and restore to a natural, free-flowing state the public waterway the company had used for profit.

This was the first big dam in a major river to be ordered out of existence by the federal government while the owner was left holding a wet application. In a national way, the Tree-Free Parking Lot was full of people who hoped for more, manifestly including Rebecca Wodder and Margaret Bowman, of American Rivers, who would afterward raise glasses of champagne in celebration of "the

new era of dam removal"; Amos Eno. of the National Fish and Wildlife Foundation; Todd Ambs, of the River Alliance of Wisconsin; Mike Lopushinsky, of New York Rivers United; andfrom Arizona-Pam Hyde, of Glen Canyon Institute, dedicated to the removal of Glen Canyon Dam from the Colorado River. They sat on folding chairs as if on a ship's deck for a formal surrender. For the victors, this was Yorktown, Cornwallis sulking in his tent. It was not a great moment for the National Hydropower Association, despite its reminders that eleven per cent of the national energy pool keeps three hundred and thirty-five million tons of carbon dioxide out of the air. It was not a great moment for wistful Augustans, lining the riverbank, who remembered the water-powered mills that had nurtured their town. Dieter Bradbury, of the Portland Press Herald, later wrote that he had seen "part of Augusta's rich industrial heritage slowly drain into the Atlantic."

To some environmentalists, hydropower seemed cleaner than the ultimate deal by which the cost of removal was effected. The owner's way out was to give the dam to the State of Maine. The state's way out was a many-back scratcher in which the Bath Iron Works, thirty miles down the Kennebec, and a consortium of hydropower stations up the Kenne-

bec jointly provided more than seven million dollars—or enough to eradicate the dam with four million left over for restoration programs involving fish.

Bath Iron Works. If the Kennebec was historically rich in salmon, sturgeon, and shad, it was no less so in ships. The first was built in 1607. În the forty miles of the tidal river, thousands followed. The Hesperus, wrecked multiguously by Henry Wadsworth Longfellow, was built in Pittston, on the freshwater Kennebec. Bath was once the fourthlargest seaport in the United States. The Bath Iron Works carried the tradition from the age of sail into the age of steel, and continues to build destroyers for the United States Navy. Exasperated with the inefficiencies of building new hulls on inclined ground, the shipyard desired to fill in seventeen acres of the Kennebec and

build new drydocks. With the concurrence of the State of Maine and the Kennebec Coalition of environmental groups, the Iron Works contributed two and a half million to the razing of Edwards Dam, and, unopposed by environmentalists, will build the drydocks. The Kennebec Hydro Developers Group added nearly five million to help see Edwards gone. Their reward will be postponements of up to fifteen years in the requirement to install fish passages at their dams. Jonathan Carter, who once was a Green Party candidate for governor of Maine and is now the executive director of the Forest Ecology Network, told the Kennebec Journal, "By following the money trail and the inside dealing, the hoopla becomes clouded by sellouts, buyouts, and trade-offs, which set very dangerous precedents."

Maine's first governor (1820) was William King, a Kennebec shipbuilder, and also farmer, miller, sawyer, store-keeper, banker. A French traveller mistook him for an authentic king (according to the Kennebec poet Robert P. Tristram Coffin). In any case, King was known for being "as independent as a hog on ice." This set of facts seemed to cluster about Maine's current governor—the Independent Angus King—as he rose to speak in the Tree-Free Parking Lot. He had tousled hair. He had a



sandy mustache, medical in nature, and he wore a red and gold tie covered with blue fish. Having secured seven million dollars for the cause, he now lifted things to a loftier stratum than the lubricated trade-offs in his Kennebec River Comprehensive Hydropower Settlement Accord. Speaking without notes, he mentioned POP. He defined POP. He described the promise of its cybertronic effects in connecting entire communities to the World Wide Web, and he said that POP would be to the twentyfirst century what the community dam had been to the nineteenth. It was time for the dam to go.

A year earlier, a short way downstream on the same riverbank, Bruce Babbitt, the Secretary of the Interior, had said, "This is not a call to remove all, most, or even many dams. But this is a challenge to dam owners and operators to defend themselves, to demonstrate by hard facts, not by sentiment or myth, that the continued operation of a dam is in the public interest, economically and environmentally." In the months that followed, the ancestral truism "As Maine goes, so goes the nation" was frequently invoked by people proclaiming a new national momentum in sentiment toward removal of dams. And now, in an open-collar faded-brick Madras shirt, Bruce Babbitt looked across the crowd before him and counted the television cameras. He remarked on the considerable number of reporters, who had travelled from cities in four time zones. "They're not coming just to celebrate good news," he said. "I'm here to tell you, that's not what the American press is about. Reporters are here because they know this is the beginning of something that is going to affect the entire nation. It's a manifestation of who we are: neighbors living in a democracy. Before the Clean Water Act of 1972, the river was so polluted that it turned buildings black and literally peeled the paint off the walls. For healthy rivers and fisheries, the removal sets an important precedent.

You're going to look back in years hence 15 5



"O.K., here I am in the fourth grade, but is that really what I want to be doing with my life?"

and say, It all began right here on this riverbank.' " Later in the day, Babbitt waxed almost Biblical, adding, "It's about coming together to restore the waters, recognizing that the rivers in turn have the power to restore our communities."

Begging his pardon, but from where I was sitting it all seemed to be about fish. Another speaker—among ten or so before and after King and Babbittspoke with reverence of a deceased state legislator who had helped lead the cause against the dam: "Wherever he is, I hope he's hooked to an Atlantic salmon on a fly rod somewhere," said the speaker, as if the purpose of destroying the dam was not so much to benefit as to barb fish. An economic study that might have been carried forward by a day trader had determined that fortyeight million dollars would be brought to the river by sport fishermen soon after the dam was gone. In the eighteenth century, Kennebec salmon were so abundant that farmers hiring help typically had to promise not to feed them salmon more than once a day. And now the eighteenth century-POP!—was coming back to the river.

Lewis Flagg, who was in the crowd, had told me that he expected as many as seven hundred and twenty-five thousand shad to be spawning north of Augusta in fifteen years or so. Flagg was the director of the Stock Enhancement Division of Maine's Department of Marine Resources. He enumerated the biological advantages of removing a dam-any dam. (1) It gets rid of obstructions to migration. (2) It restores natural habitat. (3) The river resumes the natural variations of its flow. (4) The siltation of spawning and feeding habitat ceases in what had been the impounded pool. (5) It gets rid of debris. (6) It gets rid of unnatural temperatures downstream. (7) It removes turbines that kill juvenile fish. Unless you're a stocked trout in the cold water downstream from a dam in Arkansas, the rationale for dam removal is quite compelling from a fish's point of view.

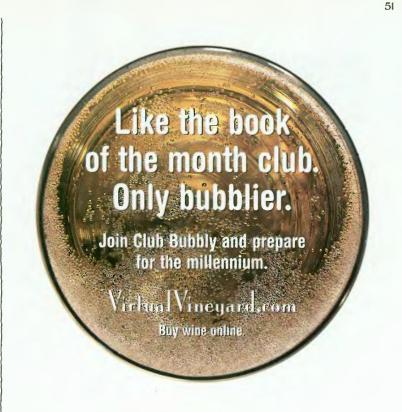
Schools of striped bass had been seen by construction workers nosing up to Edwards Dam that morning. A big Atlantic salmon broached and-two feet out of water-just hung there, watching. A high-school bell was mounted on a post near the microphones, and Babbitt, King, and oth-

#### THE CONTROL OF NATURE

ers—on schedule with the speeches and the downstream recession of the morning tide—began to ring it. And ring it. Evan Richert, of the Maine State Planning Office, shouted into the microphones, "Set the fishery free!" He did not say, "Set free the river!"

On the cofferdam near the west bank sat Reggie Barnes, of Alton, Maine, at the levers of a Caterpillar 345 backhoe with a two-and-a-half-yard bucket and a thirty-nine-foot groundlevel reach. Even from across the river, it looked Cretaceous, its head above the trees. Facing east, it swung right, and it bit a few tons of gravel. After swinging farther to the right and dropping the load, it went back for more. It was eating the cofferdam. It ate from south to north, toward the restrained water. Swing left. Bite. Swing right. Drop. Swing left. Bite. The machine was opening a chasm, and the north end of the chasm was becoming a pillar of gravel separating air from water. Bite. The pillar thinned. Frankly, I had not imagined this moment in history to be dramatic-the engineering was so extensive, monumental, and controlled. I mean, a Stuka wasn't dropping one on the crest and flying off to Frankfurt. But this backhoe, positioned on the very structure it was consuming-swinging to and fro on the inboard end of the cofferdam—was hypnotizing a thousand people. It hadn't far to go. The bucket had not reached water before water reached the bucket. From a thousand feet away, even through binoculars, not much could be seen yet but occasional splashes in motion, south. They were occasional enough to cause Reggie Barnes to roll his treads and get the big backhoe out of there, fast. It scooted off the cofferdam and partway up a hill. A bottle of champagne had been cracked on the bucket before it all began, and now from beneath a mass of hard hats came a cheer that might have been audible in Portland. While the hard hats watched and the Nature Conservancy watched with the leaders of American Rivers, the licks and splashes increased in frequency and height above the cofferdam, which was now being eaten by the Kennebec River.

Rapidly, it widened and deepened its advantage. It became a chocolate torrent. It shot through the gap in the western end of the dam itself and smashed into the foundation wall of the gate-





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THE NEW YORKER, SEPTEMBER 27, 1999

house, once the entry to the power canal. The foundation wall of the gatehouse consisted of very large blocks of granite. The liberated currents caromed off it and angled into the lower river. A milky brown plume spread through the clear water there and nearly reached the eastern shore, a thousand feet away. In eight minutes, the Kennebec, completely in charge of everything now, melted down the cofferdam until a channel had opened

seventy feet wide. The rage of high water seemed to fly through the air before hitting the granite wall and exploding back into the river. In the Tree-Free Parking Lot, the assembled phalanges of the environmental movement were standing

as one, standing on their chairs for a line of sight through a forest of elbows apexed with binoculars, framing Babbitt on a cell phone before the frothing river. The volume of the rapids grew. After the initial blowout of sediments, the thundering water turned white and the slicks were cordovan glass. The Kennebec River in Augusta, after a hundred and sixty-two years in the slammer, was walking.

ND twelve days thereafter, in the A<sup>ND</sup> twelve uays the company of the ND twelve uays the north twelve u from Waterville to Augusta, we passed a concrete boat launch that had launched its last boat. Its lower lip was many yards back from the river and much higher than the surface of the water. Broad shingle flats had become exposed here and there, but mainly the banks of the river were so steep that evidence of the breaching was confined to the two sides. Small, hanging streams and small, hanging falls were cutting fresh canyons to the river. A kingbird went over us, a bald eagle, a cedar waxwing. A cormorant swam past us, and two beavers off the left bank slapped and disappeared.

Standing high in the river now, like stockade towers, were the rock-filled cribs of the log drives. Made from trees with a hundred and twenty rings, they disciplined the flow of logs. This stretch of river had a park-like appearance, with no structures but these emblems of the history of Maine. An island, high and elongate, sitting up like a warship on its hull of rock, had twenty-three of these towers leading to it and five away

from its downstream end—a beautiful campsite. But for whom? When dams are built, the complaints of inundated communities gradually gurgle into silence, and when dams are destroyed—evidently—complaints in fresh demeanor come to life: the owner of the island is the nephew of the owner of the mainland east of the island. During the several months of deconstruction, as the pool above Edwards Dam gradu-

ally stabilized with the tailwaters below it, the island would become a part of the mainland, where properties legally extend to the thread of the river. A family may be destined for family court. Others—no less environmentally concerned

than the Wilderness Society-have complained that an ecosystem sixteen decades old (no matter that it is manmade) is being destroyed, creating a serious threat to the yellow lampmussel and the tidewater mucket. On the day of the breaching of the dam, volunteers from Nokomis High School worked feverishly all afternoon rescuing lampmussels and muckets while baby lampreys squirmed in the muck around them. In the absence of Edwards Dam, carp and other untouchable species might get into tributary streams. When the State of Maine proposed building dams in the tributaries to block the carp, letters to editors shouted derision. A citizen of Augusta called the Edwards Dam breaching the "blunder of the century." Noting that the dam site is actually a fine place for a much higher dam and more hydroelectric power, another writer ridiculed a government "pushed by environmental wackos."

Dams are said to last about fifty years. One of four American dams is that old and eighty-five per cent will be by 2020. In the state of Washington, the Federal Energy Regulatory Commission has warned Condit Dam, on the White Salmon River, that fishways will soon be required. Condit is four hundred and seventy-one feet long and a hundred and twenty-three feet high. Removing the dam may be a cheaper alternative to fishways. On the Elwha River, the owner of two dams that have also blocked salmon has agreed to the destruction of the dams. Congress will

#### THE CONTROL OF NATURE

probably pay for it. The United States Army Corps of Engineers is preparing a report on four dams on the Snake River, due in 2000. They date from the sixties and seventies, they are half to three-quarters of a mile wide, they irrigate thirty-six thousand acres, and they make enough power to light Seattle. From Pasco, Washington, to Lewiston, Idaho, they block a hundred and forty miles of river, and the price of their removal is a billion dollars. The Corps of Engineers, like any bureaucratic agency, has no higher agendum than its own survival. It can survive as well removing dams as building them.

On Fossil Creek, in Arizona, a paradise of rock ledges and travertine pools, it's 5.6 megawatts versus the Gila topminnow and the razorback sucker. Embrey Dam, on the Rappahannock River, in Virginia, has the same height and width that Edwards had in Augusta and cuts off well over a hundred miles of historical spawning grounds of shad. Removal would cost four million dollars, fish passage would cost 10.2. A dam on Malibu Creek, in California, is a hundred feet high, and the reservoir behind it is completely landfilled with silt. It is seventy-five years old. A rare species of steelhead used to run up there. Savage Rapids Dam, on the Rogue River, in Oregon, is thirty-nine feet high, four hundred and sixty-four feet wide, and was built eighty years ago to help small farmers whose farms are now real-estate subdivisions. The endangered Colorado pikeminnow would be considerably less endangered following the removal of Price-Stubb Dam, on the Colorado River, which was built for irrigation before the First World War and has not watered anything since 1919.

Since 1960, over a hundred small-river dams have been removed in the United States, nowhere as feverishly as in Wisconsin, where the Slabtown Dam, on the Bark River, was destroyed in 1992; the Wonewoc Dam, on the Baraboo River, in 1996; the Hayman Falls Dam, on the Embarrass River, in 1995; the Readstown Dam, on the Kickapoo River, in 1985; the Mellen Dam, on the Bad River, in 1967. Baraboo was Barbeau once. A barbeau is a sturgeon. The tribes called the river Ocoochery (Plenty of Fishes). Wisconsin has deconstructed forty-nine dams,

ranging in height up to sixty feet and in length to four hundred and fifty.

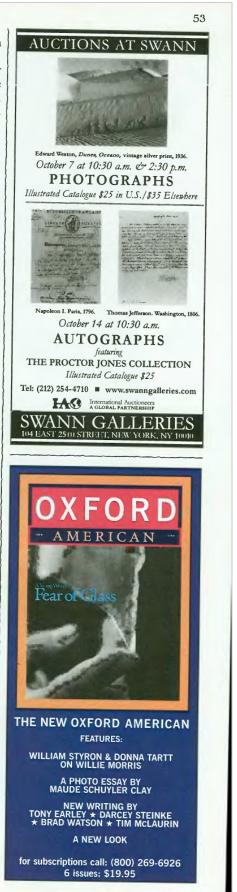
There are sixty-six thousand river dams in the United States five or more feet high. The highest—Oroville, on the Feather River—is seven hundred and seventy feet high. The greatest producer of power is Grand Coulee Dam, on the Columbia River, making six thousand megawatts. American Rivers once said that the power made at Edwards could be saved "by replacing seventy-five thousand light bulbs with energy-efficient bulbs." Grand Coulee appears safe unless someone comes along with a hundred and thirty-two million light bulbs.

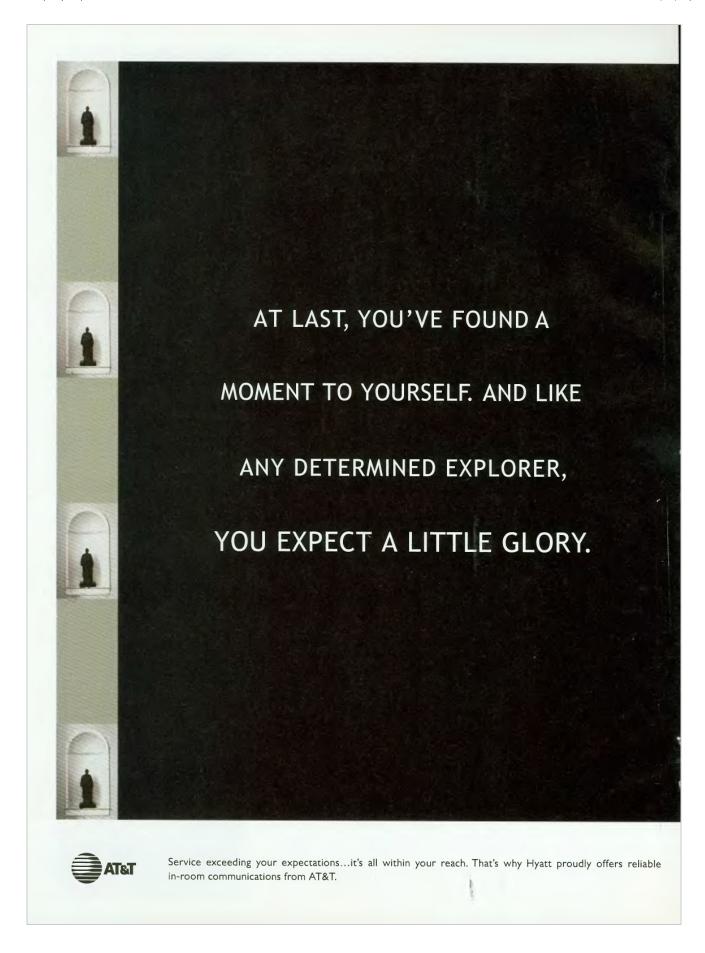
To be completely free, the Kennebec River will have a more than metaphorically uphill struggle. In its watershed above Augusta are at least a hundred dams, ten in the main stem from Waterville to Moosehead Lake. In the resurrected rapids of this stretch above Augusta, its fifteen miles seemed both modest and momentous. It was about the length of Manhattan Island. A lot of fish could spawn there. In its possibilities as a state park, its beauty and seclusion, it rallied the nineteenth century. From no river in the country of the Kennebec's size or stature had a dam ever been removed. On the fresh current, we rounded a final bend. Down the long thoroughfare of water and trees we now saw-three and a half miles away and rising from mid-river like the blade of a gun sight—the bronze and granite Capitol of Maine. To left and right, above the trees, were the spires of two churches. With John's father, Alexander McPhedran, we had scouted early in the morning for a place to end the trip, and, with some difficulty, had found one, about a quarter of a mile through woods from a small roadside park. We had left a white-birch log on a rock to mark the spot. Seeing it now, a mile down, John McPhedran rummaged in his pack, removed a cell phone, and asked his father to pick us up. +

### RAISED EYEBROWS DEPT.

[From the Charleston (S.C.) Gazette]

Officer Peter Roush, the new hire, said getting residents involved will quiet a lot of the complaints. "I think once we expose ourselves to the people in the town, and they expose themselves to us, we'll do fine," said Roush.







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