Chesapeake Gold: Man and Oyster on the Bay

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Chesapeake Gold

Man & Oyster

on the Bay

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with drawings by

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For Bonnie Gay and Mike
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To the Father through the features of men's faces.

Gerard Manly Hopkins
Prologue: Before

One round of shoreline curved to the next. All about land cradled water. Beyond the coves and harbors, loblolly and maple brushed a feathery sky. Here and there, among the myrtle and the cord grass, the honeysuckle and the pine, were weathered brick facades and white porticos.

I had gone sailing along the Eastern Shore of the Chesapeake Bay with some friends. Late in the afternoon we nosed our boat into a small harbor and set anchor. There was mostly quiet out on the water. A halyard slapped the main mast; currents lapped the keel. The city seemed far behind me.

An hour passed; the breezes settled; the air gave up its warmth. Heading for the horizon, the sun caused the water to shimmer like a myriad of mirrors. I lowered my hand over the gunwale toward the rose and gold.

When I looked up from the water, I saw a man at the entrance to the cove. I saw him quite clearly, for the sun falling behind the horizon had lost all its glare.

He was poling a flat-bottomed skiff across the cove, making for the shore. His arms moved cleanly above the water. One smooth motion flowed to the next. He eased his pole forward almost to the bow of the boat, reached for the bottom of the Bay, and then eased his pole back toward the stern. The boat seemed to glide over the water. As the man came close, I could see that he was old and weathered, brown and furrowed like the houses and the trees nestling one another.

My friends saw the old man too, with his gray trousers rolled at the ankles, his legs spread for balance. They dashed down to the cabin and grabbed their cameras thinking, I suppose, that they would record the picturesque for posterity.
Chesapeake Gold
As they clicked their shutters, the old man did not alter his course or even glance our way. He continued gaining the shore. Broad of back and straight as a spar, he attended only to the water beneath and the beach ahead.

The next day I went back to the city, but I could not forget the old man.

I returned to the Bay.
1 Daybreak

A swath of pale green washed the horizon.

A host of birds announced first light; loudly, competitively, melodically, each laid claim to a piece of the territory.

Bonnie Gay Simmons slung a gray plastic bucket stuffed with oilskins and freshly washed Blackjack rubber gloves into the back of her pickup. Into the front she tossed two grocery sacks packed with breakfast and lunch: Reese’s Peanut Butter Cups, bacon, eggs, chili con carne, two cartons of Pepsi. As she climbed into the truck, her felt-lined rubber boots, stripped of their laces, slipped at the heel. The sky was still dark. She rummaged in one of the sacks, shook out a cigarette, and clamped it between her teeth; then she turned on the headlights.

Small neat cottages with painted shutters; vegetable gardens, the brown earth clumped and ready for seed; rusty crab pots stacked beside old cars, weather-beaten sheds, pine trees and dogwoods: The village she had known all her life remained hidden, waiting for first light.

The pale green that comes before sunrise brightened to rose and gold. Dawn shone over the salt marshes. Fields of bushy, pale-brown grasses turned golden in the morning light. The land stretched out. Skeins of still-dark water meandered like ribbons through the fields. Here and there a stand of salt hay had been burned black in an annual act of traditional husbandry. Rising from the scorch, patches of dense stubble promised spring bounty.

Bonnie Gay turned up the radio. She sang along, the ciga-
rette between her teeth. Hoarse and husky, she matched each successive country singer twang for twang.

The road bent east at Powley’s Marina to turn about one of tiny Fox Creek’s many coves; here as almost everywhere on the Chesapeake the shoreline scrolled and twisted to form channels, guts, coves, harbors beyond number. Fifteen, maybe twenty, wooden workboats waited along the wharf. All were square in the stern and broad at the midway. The watermen were still rising, pulling on their long johns, their vests and chamois shirts, packing up their gloves.

Bonnie Gay traveled north from Wingate through the fishing villages of Crapo and Crossroads, the farming towns of Blackwater and Golden Hill. The marsh, half land, half water, rose by inches as she moved inland up the peninsula. Stands of trees appeared in the distance.

She passed two graveyards begun long ago when men and women rested their loved ones under trees in the yard. One burial plot lay within a circle of cedars on a berm built up against encroaching waters. The tiny markers had toppled. Their inscriptions were rubbed smooth. Another sat hard by Route 336. Here the markers stood tall and firmly rooted. The grass was mowed, the iron fence painted. Down the road, at the end of a long, tree-lined drive, the homeplace stood many-roomed, cared for, solid brick.

Farms appeared, and woods: acres of loblolly and dogwood, holly, honeysuckle, broom sedge, and lady’s slipper. A yellow, rusted table and chair leaned against a swamp maple in a clearing. One day perhaps a muskrat hunter, Bonnie Gay’s Uncle Marcus or her brother Bo, will put them right for a short sit-down during a long day’s labor.

She pulled the green truck up to a phone booth at Golden Hill. She’d already called her brother-in-law before leaving home, but the drowse in his voice made her suspicious. She woke him again. Bonnie Gay was halfway to her destination: the Trudy K., her brother-in-law, Mike Willey, a set of oyster tongs, a culling stick, Taylors Island.

The land was cluttered yet neat around the Willey house on
Taylors Island. Fishnets set out for mending lay between young pines stippling the lawn. Hens and roosters scratched in a tidy wire pen by the side door; two red-brown steers chomped within a square-fenced field.

Mike closed the door of his bungalow. Many vehicles, cars, trailers, pickups, some wheel-less, some not, some ancient, none new, all parked straight and even, edged the drive. An unpainted truck stood by the side door. Mike climbed up and turned the key; the engine protested. His black beard was trimmed close, his hair razor-cut at the neck. He wore pressed wash pants, a tan cotton chamois shirt, and a blue tractor cap soiled at the visor and greasy about the edges.

A great blue heron was fishing in a drainage ditch lining Bayshore Road. Stalking, pointed bill poked down, long neck stretching forward then back, he lifted one spindling leg high out of the water, returned it, then lifted the other: left, right, left, right. Mike's truck rumbled close. The bird drew its skinny neck into its shoulders, flopped its huge wings down then up and rose lumbering from the ditch. It looked prehistoric and seemed to encompass the road.

Mike headed for the dock. A car coming from the opposite direction drew near. Mike lifted his hand from the steering wheel in the languid local gesture of greeting to friend and stranger alike.

I had overslept in the house where I was renting a room back on Todd's Point. All about me, men and women were traveling to the water. Soon Mike and Bonnie Gay would meet at the wharf. Worried about keeping them waiting, I hurried, pulled on long johns, heavy wool socks, cotton turtleneck, wool sweater, and thick cord pants. I tucked my top layers into my bottom layers and hoped Levi's tough, double-sewn seams wouldn't burst. I sucked my stomach in hard so I could snap my pants. Then I shoved a sweatshirt, ski jacket, watch cap, and extra gloves into my pack. I bent over with a struggle and pulled on my fake-fur-lined boots.
The ground was limed with frost. I traveled to Taylors Island by emerging light. Farmhouses, endpoints along lengthy tree-lined drives, appeared. Fields, carpets of winter wheat just rising, unrolled. Past Madison Bay the Gethsemane Methodist Episcopal Church waited, hand-hewn, weatherbeaten, roofless, open to arising day.

I parked next to Slaughter Creek in the middle of a dirt lot behind Cecil’s store. Within, a single fluorescent fixture burned over the cash register. I filled a styrofoam cup from a coffee pot sitting on a scarred oak counter.

Cecil Woods was sweeping the cracked lino with a long-handled broom. I said good morning. He straightened to reveal a wedge of quilted long john beneath his flannel shirt. A blue watch cap was pulled down low over his gray hair. With a worn hand, he tipped his broom against the counter edge and took my quarter.

Far in the back Jimmy Faulkner was waiting for his sons. When they entered, he finished the last of his coffee and slid down from a cracked bar stool. Mike came through the door carrying an empty gallon jug. The men paused for a few moments by a long, narrow table filled with fluted glass ashtrays, crocheted toilet roll covers and etched stainless steel sugar spoons. They talked of the 1984-85 oyster season, which had been poor and unprofitable.

Maryland officials often extend the season from the end of March to mid-April after a lean winter. “Watcha hear say from Annapolis?,” Jimmy said to Mike.

“No tellin’,” he answered. “Callin’ down there, first they saying one thing, then t’other. Don’t know theirselves.”

“So scarce now, best leave it t’lone. Leave some grow big for next year. Maybe then we can do some competing with them Texas arsters,” Jimmy said, poised between cash register and front door, snack cakes in one hand, change in the other. “Hear they got ’em down there big as your head. Anythin’ less than four inches, throw ’em overboard.”

Mike hiked his wash pants and hoisted his water jug. He
grunted and followed Jimmy to the door. Jimmy held it open for me, while Mike waved me through. We walked to the wharf together and helped Bonnie Gay load supplies onto the boat.

Not as many watermen as usual were down at the dock that morning, but not because it was Saturday. Most found they were without a market for another day’s catch when they returned to harbor Friday night and talked with the local buyer.

Irv Rippons was buying most of the Taylors Island catch, which he then sold to Oscar Nelson at the H.B. Kennerly processing plant in Nanticoke. “A few years ago, I was buying and selling maybe two thousand Maryland oysters a day; now I’m selling maybe two thousand a week,” Irv said. “The supply is low. That makes the price high, so processors are getting their stuff elsewhere. The only reason any of them are buying Bay oysters at all is loyalty. That’s it, just loyalty.”

Fishing villages dot the Chesapeake’s filigreed Eastern Shore, a peninsula belonging to three states (all of Delaware, part of Maryland, part of Virginia) surrounded by water (Atlantic Ocean to the east, Chesapeake Bay to the west). Inland points and necks and islands continually reach out to the Bay. About these stands of marshy ground, men and women take their living from the water. They do not call themselves fishermen, for fishing names only a part of their trade. They are watermen, men and women who work on boats, in this case people who crab, clam, trap eels, catch oysters, and fish, each crop followed and gathered in season.

Their lives, like those of the Native Americans who preceded them, are tied to a belief in common ownership of resources. An individual Indian could not purchase property. Land and water belonged to all members of the tribe for use as needed. When the colonists came, land was quickly purchased, parceled, and fenced. Water, however, is more difficult to stake out, so here on the Chesapeake remnants of a communal culture remain.
Native Americans tell the story of a young woman who is about to move with her tribe to a new campground. She remains behind to repack her goods. A handsome stranger steps from the bushes after all her tribesmen move on and she is alone. She tells him she already has a husband, but the stranger takes her with him anyway.

The woman’s tribe returns to the old campsite some years later. There the warriors find a herd of wild horses. When they go out to rope them, they come upon a strange creature. Neither human nor animal, it has the head and chest of a woman and the body and legs of a horse. They capture the creature and bring it back to camp. The young woman’s husband, who thought his wife dead, recognizes her. He soon realizes that she longs to be wild and sets her free.

The Horse Woman is not a monster in this legend. Mystically transformed, part human, part animal, she has become more than herself: an uncommon unification worth the telling of a tale.

Like the Indian Horse Woman, the Chesapeake is a joining of two similar yet distinct natural bodies. Most of the water in the Bay comes from the Atlantic. Layers of heavier salt water enter from the south and flow north along the bottom, while layers of lighter river water enter from the north, east, and west and flow south along the surface.

No layer moves purposefully toward its destination, however. Each pauses to shilly-shally with the tides. As salt and fresh water meet, bump, and collide, they mix. Like companions who, through continual contact, take on one another's characteristics, eventually fresh water in the Bay becomes saltier and salty water fresher, but not uniformly so.

Constant motion makes the Bay different everywhere. Some marine animals prefer the saltier places near its foot, others the fresher spots at its head. Some like its shallow ground, others its deep holes. Oysters grow best at the Bay's midsection, particularly along the Eastern Shore where Taylors Island lies. Though the watermen here crab in the sum-
mer and fish in the spring, traditionally abundant oysters are their economic mainstay.

Each year, though, modern blight creeps further down from the north and up from the south. As silt from construction buries more oysters and toxic chemicals from factories and homes kill more larvae, watermen find themselves left with a shrinking resource they cannot sell.

"Your heart jus' goes out of it when the market's bad," Bonnie Gay says. "Everybody down home's givin' up."

Mike carried two gas cans across the wharf onto the boat. Poked up from wood and metal decking like the hump of a camel, an old auto engine perched amidships. Mike removed its plywood cover and began to tinker. He tapped with a hammer here, probed gently with a screwdriver there. The engine shook. Bonnie Gay and Mike cast off. The Trudy K. traveled north out from Slaughter Creek with a small motorboat tied to her stern. To handle the tiller, Mike leaned his backside up against the engine's plywood cover, put one foot on the deck and balanced the other up against a washboard. His handsome, clean-lined face was closed, unreadable.

Before him, from atop the number six channel marker, having made peace with the ways of men, an osprey, surrounded by a huge untidy nest, surveyed the territory. The March wind pierced; Mike went into the cabin.

I leaned against a corner of the cabin and watched the wind turn the water's rippled surface dark in patches. Whitecaps broke beyond Hooper Point where the creek widened to the river.

The sun slanted across the Trudy K.'s starboard bow. Icy tendrils cut through the many layers of my clothing; I followed Mike inside. Bonnie Gay was making breakfast. "Warn't you cold out there?," she asked.

I told her that I was, but that there was something about water; it made me feel good.

"Jus' so," she said.

She stepped outside the cabin to knock yesterday's coffee
grounds into a white plastic bucket. Then back inside, she refilled the pot, set it on the kerosene stove, poured water from a plastic jug into a dirty frying pan, put the pan on the second burner, and with a spatula loosened yesterday’s debris. Each movement was part of a pattern, a reassuring ritual. After the coffee boiled, she set the pot perking on a kerosene heater tucked into the bow of the boat, then emptied the frying pan overboard and rubbed it clean with a paper towel.

I saw on a narrow bench scrunched between supermarket shopping bags, a pile of oilskins, and a scattering of rubber gloves. I wanted to help, but felt too out of place to offer. Bonnie Gay continued her sure orchestration. She cooked a pound of bacon, six slices of cheese, and three eggs blackened with pepper. Everything went between slices of white bread which she wrapped in paper towels. She handed the first sandwich to me. We ate orange-frosted birthday cake, Pepsi, and Reese’s Peanut Butter Cups for dessert.

The closed cabin grew hotter and stuffier. The trapped smells of kerosene, coffee, bacon, and tobacco circled one another. As the boat rolled and rolled across the chop, I started to go queasy. I thought about saying something but decided instead to take shallow breaths. Then finally Mike cracked the door and the odors leaked out.

He steered the _Trudy K._ toward James Island while he ate breakfast. Every now and then he looked through a scratched windscreen and yanked port or starboard on a line secured from the tiller to the cabin. He stood to the right with one foot up on the narrow bench. Bonnie Gay sat to the left where she had squeezed herself between the cook stove and the kerosene heater.

Mike screwed the cap back on his Pepsi and put it on a shelf. He reached out and rubbed Bonnie Gay’s white watch cap down into her red hair.

“You jus’ have to do it, don’tcha,” she said. “Go on, do it. Go on, rub my head fer luck.”
The look of Puck was in his eye. "Did you warsh last night, Bonnie Gay?" he said. "Whyn't you tell me you was goin' to warsh last night?"

"You know I warsh every night," she said, wary yet rising to the bait.

"Whyn't you tell me? Come on, Bonnie Gay, whyn't you tell me? I might a had some things I wanted warshed."

She ignored the affection in his eyes.

"Aw, lay off't." she said. "What's this? Pick on Bonnie day?" And then she cupped her hand and whacked him twice on the leg.

Mike anchored above James Island: two small chunks of land split, within his memory, by erosion. A small bar with some large oysters still growing on it this late in the season lay close by James, where the water is quite shallow. The Trudy K. could not work such ground, so Bonnie Gay, Mike, and I made ready to board the skiff, towed out from Taylors.

The moment I had been worrying about presented itself. Oyster boats are not equipped with indoor toilets. I supposed the men peed over the side. But what would I do, especially among strangers?

Mike and Bonnie Gay left the cabin; I followed. Then we took turns. One by one we reentered to use a white plastic bucket. I yanked my heavy cords and long johns down my thighs, spread my legs, and tried to balance above the can's narrow rim. Mike and Bonnie Gay tactfully turned their backs to the cabin-door window. Back on deck, holding my face away from the splash, I rinsed the bucket overboard. Mike reached comfortably for the bucket, then took his turn inside the cabin.

Bonnie Gay dressed for work. For protection against mud and wind, she pulled on over her many layers of clothing green oilskin overalls and a jacket. The jacket was too big for her so she belted it with a double length of line. She had cut off the sleeves when it was new because they were so long they interfered with her work. In their place she wore tubes of orange oilskin fastened with Velcro. She secured one of these
around her wrist and forearm, then rummaged in the buckets and the food sacks looking for the other. She had left it home in the dryer, so she dumped out two plastic Sunbeam bread bags and used them, secured with duct tape, instead.

Mike spoke quietly with Bonnie Gay. She went back into the cabin, searched around, and came out with his oilskin jumper. She handed it to me. “It’ll keep the wind off you,” she said. I put it on, twisting the suspenders, cufing the pants, raising the crotch and legs until I could walk. Mike looked me over but was not satisfied. “She might be cold,” he said to Bonnie Gay. She nodded, went back into the cabin, searched some more, and returned with his oilskin jacket. “It gets hot tongin’,” she said. “Mike seldom wears it.” Touched by his concern, I put on his coat, rolled his sleeves, snapped his snaps.

Mike slid a pair of sixteen-foot tongs and a pair of nippers into the skiff, then climbed in. Bonnie Gay gathered supplies for the morning: cigarettes, lighter, Kleenex, Chapstick, Pepsi bottles, water jug, Mike’s pipe and tobacco pouch, his can of Hawkens. She put some things in her pockets and handed the rest to Mike. He helped us into the boat and then drove a few hundred feet or so to the lee of James Island.

Bonnie Gay dropped a heavy metal chain overboard to hold the skiff steady in the cove. We were perhaps a hundred feet from shore. The chain disappeared through silty brown water down a couple of feet to the bottom. Mike moved to the stern, took off his down vest, raised his cap, and then resettled it. Bonnie Gay stayed in the bow. She pulled cotton gloves and then heavy rubber ones on over her polished nails. Mike reached for a set of oyster tongs. Bonnie Gay raised her nippers from the deck.

Mike is tall and thickly muscled about the neck and shoulders. He stepped to the washboard, a thin broad plank attached to the gunwale, then lifted his tongs: two smooth sixteen-foot wooden shafts pinned together near the bottom like a giant salad server. At the end of each shaft was a large metal basket with sharp rake-like points. Mike swung the
tongs up over the gunwale and held them poised above the water.

Bonnie Gay planted her feet firmly on the deck and slid her nippers between her clasped hands down to the bottom. She opened the shafts, felt for rock, mud, shell, or oyster, and then, using her knees and shins to balance her weight against the side of the boat, leaned over to close the points of the baskets against one another.

Astride the washboard, feet spread for balance, knees bent, with a last hefty swing, Mike hoisted his first lick of the day to the skiff. A lick is one rake of the tongs over an oyster bed. When a man makes a good lick, his tongs come up full and heavy; when he does not, his tongs come up empty or loaded with shells.

To use the word lick is to salute the memory of William Bradshaw, an Eastern Shore folk hero who lived on Smith Island until 1917. During his eighty-three years, Lickin' Billy came to stand for the rugged strength watermen's lives demand on the land, raising sustenance, as well as on the water, gathering it up. Shoremen say he wore a size fourteen shoe, weighed two hundred and seventy-five pounds, and stood almost seven feet tall. They tell many stories about his prodigious strength. In one, a ram grew troublesome on shearing day. Lickin' Billy began leading him from the edge of Sheep Pen Gut, a sandy spot across from Rhodes Point, to a nearby shearing pen. The ram began to buck. Annoyed, Lickin' Billy grabbed him by his horns and dragged him to the pen where, without pausing to catch his breath, he lifted the ram over the fence and dropped him in.

Mike lowered his first lick of the day, then his second and his third, to the culling board, a metal tray stretched near the bow from gunwale to gunwale. Bonnie Gay pulled her nippers into the boat. She leaned her left hip up against the starboard gunwale and sorted through the pile of oysters and shells. Clunk, she tossed a large oyster ahead of her onto the deck, then another and another. Scrape, she pulled a pile of
heavy, sharp-edged shells across the metal culling board and pushed them toward the Bay. They hit the water.

Another lick fell to the culling board. Bonnie Gay paused to clamp a cigarette between her teeth. “Shells,” she muttered, “nothin’ but shells, shells, shells.”

I was sitting on an overturned bucket with my back propped against the port rail. All around me life pulsed beyond my hearing, beyond my seeing.

The Atlantic was coursing to the Susquehanna out in main Bay, and the Susquehanna was flowing back. Water in the cove, lapping the shores of Taylors Island, was polishing broken shells to peach and gold. Red-headed woodpeckers knocked in the woods. Flies, bees, beetles beat and droned and hummed, as wind rustled the pines while slabs of loblolly bark curled and thickened.

Within the nooks and crannies of the unseen oyster bed below, Bay creatures were swimming, hunting, eating, and being eaten. Gobies, blennies, and skilletfish, no bigger than a thumb, maneuvered among the crevices. They were hiding and waiting for crustaceans little enough to swallow. Mud worms gathered silt and built their collapsible homes, as tiny crabs crushed barnacles and snails sucked oyster juices, while anemones, looking like flowers, inched their way across whorled shells.

Mike pulled his tongs into the boat, laid his Blackjack gloves on the washboard, opened a can of Hawkens, scanned the sky, then tucked a brown, minty lump between lip and gum. One feathery cirrus cloud floated above the horizon. Mike predicted evening rain. Bonnie Gay stood her gloves, between thumbs and forefingers, up over the lip of the culling board. She reached for a cigarette, then smoked in silence.

Mike’s tongs were lying on the deck beneath the culling board. Sixteen feet long from end to end they almost touched both stern and bow of the skiff. Mike slid them out and stood them up. They rose above him swaying like saplings. He stepped up to the washboard and swung the tongs over the
gunwale. They splashed against the surface of the water. He held the shafts closed as he slipped the rakes down to the bottom. When they touched, he opened his arms to pull the rakes apart.

He forced the shafts back together little by little. The pine poles above him resisted his efforts and bent away. The teeth of the rakes, clawing the bottom, gathered oysters as he leaned to the work. He closed the rakes against one another, then raised the tongs, hand over hand. His hips flowed with the rhythm. When the baskets approached the surface, he reached down to the water. He swung his body to the right, lifted the tongs, pivoted, then swung his body to the left in a single motion replete with power. The catch hovered above the boat for a moment. He opened the shafts. The oysters fell from a toothy metal jaw.

He turned to the culling board to judge his catch. He picked up one whorled blackish-brown lump, turned it in his hand, and looked at the closure. Instead of being sealed, the shell was open; mud oozed out between its edges. Mike tossed it overboard.

"Box," Bonnie Gay said.

Another lick, and another. Every forty-five seconds Mike raised one hundred pounds of tongs and catch to the boat. "Eeoww," he yelled, swinging the next lick to the deck.

I thought he was joking, pretending to be an old hound dog, but Bonnie Gay recognized the cry for what it was. She looked up. "Your shoulder?"

Mike nodded.

"Swollen?"

He poked his left shoulder. "Not yet."

It was barely nine o'clock; they had many work hours left. Bonnie Gay rummaged among the supplies she had brought on board. There were no painkillers.

Mike lowered his tongs.

To a waterman, endurance, like strength, is one of life's cornerstones. A boy named Danny is another of the heroes who figure prominently in the legends they tell. Danny was
famous for his easy hardihood. People say he never wore a coat even in the foulest weather. And once, so the story goes, while walking barefoot with a friend across Elliotts Island, he stepped on a rusty nail. He paused for a moment, raised his foot, and, barely troubled, pulled out the nail. “Now damn,” he said, “wouldn’t that jus’ do somethin’ to a tire.”

Mike looked again at the shelly heap rising on the culling board. He considered the stern. Less than a half bushel of oysters was stowed there. He stepped down from the washboard and started the motor.

“Going lookin’,” he said.

“I know’t,” Bonnie Gay answered. “Can’t catch ’em, if you can’t find ’em.”

There are sixteen acres of oyster reef within this cove. Inching Bonnie Gay’s skiff across some of them, Mike searched for a patch still alive with mollusks.

Bonnie Gay listened in the stern of the boat for the sound of the thick metal chain she had put out earlier knocking against hard bottom. She bent to the deck thinking she heard it, then shook her head and straightened up. Mike altered course; Bonnie Gay lit a cigarette; Mike altered course again, just slightly. Clanks sounded, muffled by water and fiberglass. She listened and raised her hand. He turned the skiff and repeated his course. The chain finally yet definitely jiggled. He stopped the boat. From the deck he probed the bottom with a long pole, then killed the motor and stepped up.

The depleted, shelly patch was disappointing. Mike and Bonnie Gay’s cache of oysters, set down in the stern, did not grow. Mike stepped from the washboard once again.

“Light my pipe, will ye?” he said to Bonnie Gay. He gunned the motor. She packed his pipe and handed it to him. “Puff on ’er,” she said.

He drove the boat slowly, randomly up and down the reef. She heard a faint clicking after a while. He cut the engine. Mike and Bonnie Gay paused before they raised their tongs. In the cove all was quiet.
Mike dropped a lick filled with large oysters to the culling board. His hound dog howls reverberating, he dropped another and another. He turned to Bonnie Gay. “Best stick it off,” he said.

She tied a buoyant old scrub brush to a rusty milk crate, for a marker to guide them around undelineated waters as they worked through the morning. Then she tossed it over.

He worked to starboard; she worked to port. He used sixteens; she used nippers: tongs with short shafts and small rakes meant for plucking up one by one oysters seen from the surface. But the water was brown and silty, so she used her nippers like tongs. She caught what she found by relying on her palms and fingers to gain through the shafts a sense of the bottom.

Oysters were lying on the reef below. Their shells were open and their fringe-like tentacles were stretched out. Bonnie Gay leaned over the gunwale. When she lowered her nippers, they cast a shadow. Sensing danger, the oysters retracted their tentacles and interlocked them to seal off their inner organs. Then they contracted their adductor muscles and banged their shells shut.

Her first drag came up shelly. Her second snagged one five-inch oyster. When it dropped, it jolted the culling board. “Oysh,” she said, raising it, flourishing it triumphantly. “Lookee that, will ya. Just Look At That. Big as your HEAD.”

She chucked her prize to the stern.

A male oyster sought procreation one day many Junes ago here in Oyster Cove. Roused by summer heat, he sent countless microscopic sperm swimming about the inlet. Nearby a female oyster lay on a reef, her organs surrounded by a soft skin called a mantle. Sensing sperm all around her, she wrapped herself in this fleshy cloak and zipped it shut. A million oyster eggs descended and pressed the fastener. She loosened a tooth or two to create an opening. The eggs twined their way to the cove through this break.

In the first of many summer spawnings, thousands of
males and females released sperm and eggs. Millions of eggs floated and billions of sperm, propelled by the lashing of hooked tails, swam to the water's surface. Individually each egg, each sperm was too small to be seen by the naked eye; collectively they turned the water a grainy milk white.

Lumpy, oval, buoyant eggs drifted with the current. They grew more and more round, more and more dense as they waited for fertilization. An anchovy swimming by opened his mouth to gobble them down. Most were eaten, but the tide rushed some to safety at the last moment.

The eggs compacted, lost their buoyancy, and sank. A ripple returned some of them to the surface. Sperm with eager pointed heads swam the cove. Rolling water eventually brought an egg and a sperm together. The sperm stopped and attached. Another sperm found the egg, and another, and another. They surrounded the ovum like metal filings around a magnet. They probed. One penetrated. His head swelled and broke to pieces; he pierced deep. The egg contracted; its cytoplasm, the source of life, quickened. The ovum grew two tiny cells. Beneath these cells, two nuclei, the core of the egg and the core of the sperm, united.

For six hours the egg divided again and again. Then it grew heavy and sank. It remained round until, following a final multiplication, dented twice and grew a broad tail and facing this tail, a circlet of long hairs. The egg was a larva now. It beat its circle of hairs to scull itself to the surface. There the current caught it, overpowered it, and inched it toward James Island.

One night a summer storm swept the Bay. Churning water tumbled most of the larva's companions out of the inlet into the deepest part of the Chesapeake, where they died of starvation. A few remained sheltered within the lee of the island.

The larva formed a mouth and a stomach. Short hairs, called cilia, swept food, microscopic plankton, inward. Its two tiny shells grew to cover more and more of its soft body. It formed a heart and kidneys, an eyespot, a foot; and then, its organs fashioned, its body began to grow.
Three weeks passed. Smaller than a raindrop, the larva knew it was time to settle down. It drifted with the current. Then it smelled oyster effluent and believed it was near a likely home. So it beat its circlet of hairs to scull itself to the bottom where the current caught it and carried it to Natural Oyster Bar 14-6. There tiny fish and snails and crabs reached out to crunch it, but missed.

The larva lowered a foot from between its shells. The foot brushed the bottom in search of something hard and clean, as the larva used its cilia to row itself forward and back. It touched a gallon jug. The jug's hard surface attracted it; it stopped swimming. Its foot inched about the plastic, exploring, evaluating. On the verge of settling down, it touched a slimy patch. It wanted a clean home; the larva swam away.

It rowed hard for a while, struggling upward. Then it swam down to search anew. It moved away from the sun first until it was beneath some shells on the reef. Then it moved up against the pull of gravity until it brushed the smooth underside of an old oyster shell.

It stood straight and balanced its body about its single foot for a moment. Then the foot reached out to explore. As it found the shell both firm and clean, it stretched itself out further and further until it forced the larva to tilt. Finally, the larva laid its left side down on the oyster shell.

It secreted a bit of glue from its foot. The glue hardened, and the larva was stuck fast. Out of one hundred million fellows, it alone had survived long enough to set.

Here on Bar 14-6 where oysters live and die piling themselves one on top of the other, spilling over the edges, is everything an oyster needs to thrive. The current keeps the bar clean by flowing through innumerable nooks and crannies to take away wastes expelled by animals of the reef as well as silt washed from the islands. The ocean brings salt and minerals, the rivers food: diatoms, larvae, pollen grains, bacteria. And crumbling shells release dissolved limestone the oysters use to grow their own rocky covers.

The larva lost its circle of hairs, its eyespot, its foot. It was a
spat now. Through the summer, about a hundred or so young oysters settled with it on its shell. They drew predators. Few survived.

The spat was big as a collar button by December. A springy ligament below its hinge pushed its shells apart like a wedge within a paper clip. An adductor muscle located farther down pulled them back together. Counteracting one another, the ligament and the muscle worked together to keep the spat's shells ajar.

Water flowing between these open shells brought microscopic food to the oyster's gills. Here sticky mucus caught the food; then, fine hairs pushed it upward in waves to the oyster's lips. More hairs sorted. Some food particles, judged too large, certain hairs brushed away. Other smaller particles, found more digestible, different hairs nudged over ridges and valleys down the mouth of the spat.

In the spring, more predators attacked. Ribbon worms and mud worms crawled inside to share shelter with oyster drills congregating there, sucking juices. A boring sponge spread and tunneled looking for entry. But the spat defended itself by burying the worms and plugging the drilled holes with more shell. The spat survived.

As it ate and grew, it had to enlarge its shelter. It collected sticky, yellow stuff called conchiolin between its shells and mantle, a fleshy cloak surrounding its body. Now and then the conchiolin began to ooze. Then, like a pastry chef rolling dough, the spat used its mantle to spread out the conchiolin. Through the fall its shells grew in long, elliptical whorls. They were thick at their centers, thin and sharp around their edges. By winter the spat was no longer round.

The spat produced sperm. In June, although he was no bigger than a teaspoon, he ejaculated. By August, thousands of microscopic young had settled around him.

That winter, silt washed from James Island during a storm buried many spat. Of those that survived most became male; while the oyster, as he approached his second spawning season, turned female.
By its third winter it was large enough for market. Many watermen sought it. Often they raked to its left or right, slightly above it or below.

Oysters hit the culling board, knocking and rattling one another. A few got caught in the teeth of the rakes. Mike whacked them loose. Mud splattered. Its fetid yet rich odor of decay and regeneration wafted from the culling board. The odor hovered when the wind died. Mike worked in silence. Perhaps the pain was gone, or perhaps it was so bad howling no longer helped. Bonnie Gay did not ask.

When the culling board was almost spilling shells, she put her nippers down. She leaned her left hip against the starboard rail and balanced her right foot on an overturned bucket. Her red hair curled out from beneath her watch cap. Her brown eyes crinkled. She was short and slight and young and full of vigor.

She picked up her culling stick and chose a brownish-black lump. It was streaked with gold. She turned it in her hand. On it she found a spat which she had to return to the Bay. She whacked it with the metal end of her stick. Bits of shell from the large oyster splattered. The spat fell to the culling board. She tossed the big oyster to the stern and picked up another. She measured it inside the U of her stick. It did not reach from end to end. She dropped it back to the board.

Both she and Mike were working to starboard, she in the bow, he in the stern. Each time he swung his tongs around to the culling board, she leaned back; even so, the rakes often barely missed her nose. Bonnie Gay's hands darted. When she had sent the last oyster to the stern and was finally caught up with Mike, she pulled all the shells and small oysters to the edge of the board and shoved them over.

Mike poled the skiff south and west to seek fresh bottom. With the tongs, he pushed toward the stern while walking along the washboard. The boat moved quietly through the water. The wind softened. The cove was quiet for a moment.
Then oysters banged against the culling board and the March wind, reviving suddenly, snuck in under the ribbing of my hat.

Bonnie Gay showed me how to cull and then returned to her nippers. Measuring was easy. I slid an oyster into the stick's three-inch gap; if it reached both ends, I kept it. Knocking off spat was more difficult. These young clung tenaciously to the large oysters on which they had settled. My repetitive hacking often killed them. Spotting a box, finding the elusive slit that indicated a dead oyster, was hardest of all.

I tried to keep up by making a lot of quick and uncertain decisions; yet, before I had cleared the board of one lick, another came down. As I worked, the sharp edges of the shells dug through my gloves into my hands. From scraping pieces of rock across the culling board, the nerves along the tips of my fingers started to feel exposed and sensitive. A dull ache stiffened my back.

Bonnie Gay put her nippers down. She helped me catch up, then stepped back to the gunwale. Mike stopped a moment to rub his shoulder. He scrutinized the catch and spotted a box. Then he spotted another.

Tossing them overboard, he said, "Hey there Bonnie Gay, cull them a little more careful, huh."

I looked up, but Mike avoided my eyes. Bonnie Gay did not defend herself. Instead she looked past me and said, "Gotcha, Capt'n." Then she went back to work.

Stuck in the shadows beneath the culling board, my toes went numb. I leaned my backside against the port rail and extended my legs to bathe my boots in sunshine. When my feet were defrosted, I picked up Bonnie Gay's nippers and put them over the side.

Wind and tide combined to push the nippers under the skiff. I switched to starboard, raked too deep, and captured mud. My second lick yanked up two empty shells, snagged by their hinges, and one marketable oyster. As I swung it up, the nippers felt light until they were almost level with my shoul-
ers. Then their weight sunk my arms. I counteracted the sinking with slow upward jerks. I eventually got the oyster to the culling board.

I worked at tonging for a half hour or so until my shoulder ached, then I put the nippers down. Bonnie Gay picked them up. She captured a prize: three large oysters, each over five inches long, grown together. "Sheeit," she said, springing to the culling board, lifting her bounty. "Lookee that. I got me a bunch. A Bunch. Big as your HEAD."

Mike glanced around and grunted. "Light my pipe, will ye?"

She packed his pipe. "Puff on 'er."

Then she chucked her prize to the stern.

The skiff bobbed and rolled. James Island was near, within walking distance, yet far, for icy water, banging the boat and smacking the shore, lay between.

Off in the distance over Taylors Island two turkey vultures soared. Rising and falling, gyre within gyre, they teased the treetops. One banked; the other followed. They swooped to the water, stopped, skimmed the Bay in flat, wide circles, then veered, with wings outstretched and pinions motionless, back to the land.
Settling himself against the motor casing, Mike poured M&Ms from packet to mouth. Bonnie Gay handed him a Pepsi. “Take a break, Susan,” he said, “Take a break.”

Through the morning, poling the skiff to fresh patches, Mike had been easing her south and west. Starting at the other side of the cove, Jimmy Faulkner, with his sons Kevin and Freddie, had been easing his skiff north and east. By now the Faulkners were within shouting distance.

Mike glanced first at Freddie, who was up on the washboard using his foot to push his tongs through the water. Then he glanced at Bonnie Gay. Again the look of Puck flashed in his eye. He cupped his hands around his mouth, raised his chin and shouted: “Hey, Freddie, your zipper’s down.”

Freddie looked up, spotted me, and blushed crimson. He raised his baseball cap. Curly black hair tumbled out. After the blush receded, his forehead was white above the suntan. With exaggerated gestures, bending at the waist, sweeping his cap across his knees, he offered me a deep bow. Then he returned his hat, transferred his tongs from left hand to right, and checked his zipper.

Mike prepared to launch his first dirty joke of the morning. “Hey, Jimmy,” he shouted past cupped hands, “have you heard the one about the preacher and his flock?”

A small motorboat came scooting into the cove from main Bay, through the break between Hills Point and James Island. Mike forgot his joke.

Four people were in the boat: an older man, perhaps a grandfather, a young man, and two children. The boat carried a single set of tongs. The younger man lifted them and
dropped them overboard. He scraped the bottom and brought up a rakeful. There was no culling board on the boat. He dropped the catch to the deck near a seat in the bow where the old man and two children had settled. They sorted the catch without measuring, without culling.

Bonnie Gay and Mike glared at the strangers, then looked at one another. "Well, God damn," she said, "who told them about this place?"

Mike went back to work. He trod the washboard, muttering: "Where's the son-of-a-bitchin' Marine Police now?"

"God damn them weekenders," Bonnie Gay said. "They work all week and then come out t'here taking away from people bustin' their asses to make a livin' at it."

I wondered aloud if they were only out here catching dinner.

"No way. They're goin' t'market jus' like us. God damn them weekenders."

Mike and Bonnie Gay are caught with a conundrum. Their tradition insists that the Bay's common ground be free to all for use as needed. But their history proves that in our culture this freedom invites disaster. Knowing that each man cannot use the Bay as he wishes, they accept regulation; but they resent it, as they resent outsiders who come to compete with them for Bay bounty. Both affront their sense of themselves as people whose ancestry and fidelity to a lifeway give them first rights on the Bay.

Wanting to understand this ancestry, woven over time into a richly patterned tapestry that they feel as much as know, I searched in museums and libraries for information about their fathers' fathers: who were they, what did they think, feel, believe; and, most important, leave behind? Down through the generations what did they bequeath to Bonnie Gay and Mike?

The photocopies piled up: articles written by reporters for newspapers and magazines, reports written by scientists and bureaucrats for government agencies, memoirs written by
watermen for their sons. I read them all and brought them home where I spread them out, fragment after fragment, across my dining room table. Here, trying to connect the fragments, to bridge the gap between what I had come to know and what I wished to understand, I copied on small white cards impressions and facts, quotations and numbers.

In the end I failed and succeeded. More often than not the fragments abandoned me. Refusing to interconnect, they forced me to struggle with parts and pieces of the tapestry. Eventually, I came to understand and accept certain limitations. Scholars and historians are generally interested in the rich and powerful. Most do not record or examine the lives of grassroots people who live by making do and getting by. I could have only pieces saved haphazardly. For connective thread I had to use inference and imagination.

During the seventeenth and eighteenth centuries, settlers generally came to the Chesapeake either as landed gentry, taking up holdings given to them by the crown, or as indentured servants. Once these servants completed their terms they became freedmen. Many freedmen chose to stay and work for a wealthy landlord. Others took their due, a little clothing, an axe, a hoe, three barrels of corn, and moved to the marshes.

Along creek shores and on Bay islands, Bonnie Gay's and Mike's ancestors huddled in small cabins they hewed by hand. Because they did not have large tracts of land, they had no way to gain either status or wealth; and so, I suppose, their lives were meager.

They raised sheep and hoed patches of garden. They carved their dinner plate from burls and knots and made their mattresses, which they piled on the floor, from feathers and ticking. Shoes were a precious possession. In my mind I see them, like other early settlers, making soap, boiling clothes, chopping wood; and at night, finally, resting in a dim and drafty room close by the fire.

Much of their sustenance came from the Bay. From its common ground, they took eels and crabs, oysters and fish.
Some food they ate; the rest they bartered or sold for goods they could not grow or make. Perhaps because it was their only resource, they came to think of the Chesapeake as their own: a bountiful land given by God to the poor.

I glimpsed the origins of Bonnie Gay and Mike’s dilemma over common ground in a piece of a letter written anonymously to a Maryland paper in 1770. The writer accused some wealthy landowners of trying to take the Potomac herring fishery from the poor. “God made the fish like the fowls of the air, free to all men,” he said—meaning, I judge from the rest of the letter, that, though the Bay belongs to all of us, it belongs most to those who live by working on the water.

To build an oyster reef, nature needs time. Larvae find a rock lying snug against the bottom of the Bay and glue themselves down. They metamorphose. Eating and growing, they cover the surface of the rock. The rock doubles and triples in size. The mollusks live out their lives. They leave their shells behind when they die. The shells attract more larvae; metamorphosing, eating, and growing, they perpetuate the process. The rock increases to stretch out across the bottom of the Bay and up through the water, if left undisturbed over the years.

Early Chesapeake travelers exclaimed over new-world plenitude. William Strachey wrote of thirteen-inch oysters. And Francis Michel, reporting home in 1701, said: “They surpass those in England by far in size, indeed they are four times as large. I often cut them in two, before I could put them into my mouth. The abundance of oysters is incredible. There are whole banks of them so that the ships must avoid them. A sloop, which was to land us at Kingscreek, struck an oyster bed, where we had to wait about two hours for the tide.”

Millions of acres of oyster reef grew across the Bay, in shallow places, coves and creeks, rivers and streams, and in deep ones, where they rose, sometimes sixty feet high, from the bottom of the Chesapeake almost to the surface of the water.
I wanted to see a reef, but could not. They are gone now, lost to view, for the dredgers tore them down years ago during the oyster boom. So I tried to imagine one instead, to picture its size and shape and color.

On a warm spring day a wooden sailing ship, with flags flying, made its way to Taylors Island. Against a falling tide, the captain rounded the bend of Slaughter Creek. Stretching across the creek toward the opposite shore, a streaked hump breached the water. The captain passed the dark, wet rock, steering to starboard. Thousands of oysters, their bills snapped shut, pointed up.

My picture did not satisfy. I tried again. The falling tide revealed a reef. Streams and rivulets bubbled down its creviced sides. Free of mud, oyster shells are a pale, purplish-white. So this time I made the rock, grown far above the bottom of the Bay, clean and bright: a massive, glistening, alabaster mound. On it, jagged, sharp oysters pointed up.

I remained dissatisfied. I could not know if my details were either true or accurate without one touchstone, one reef preserved and viewed. I returned to the writings of Michel and Strachey but found there nothing I had not found before. The limited, circumscribed descriptions they gave did not tell me what I failed to imagine; or, thinking I saw, imagined wrong.

A piece of the world’s natural order is gone. I turned and looked at those who took it from the Bay.

Bonnie Gay and Mike tonged oysters with an instrument their ancestors adapted from a Native American tool. An Indian gathered oysters from shallow creeks and coves by raking them to shore with a long-handled, three-pronged fork. Pinning two forks together, early watermen created tongs: a somewhat improved, yet still inefficient tool.

A waterman can pick up oysters growing far from shore as deep as ten or twenty feet below the surface of the water with tongs, if he has a boat in which to stand. The first tong boats were expanded dugout canoes. Oystermen built them by hollowing and fastening together three logs, then adding a
mast and sail. A log canoe is a frail and shaky craft hewed by hand and roughly chinked, without a deck or washboard, and not much bigger than a rowboat.

From the settlement of watermen communities through the turn of the nineteenth century, oystering on the Bay with skiff and tongs was a quiet occupation. Left to themselves watermen found little to fight over.

Oyster merchants then were not concerned with the Chesapeake. Able to make handsome profits dredging along the coast of New England, they built their shucking houses in centrally located Fair Haven, Connecticut. There they took oysters from Long Island Sound and Cape Cod Bay, packed them in ice-filled kegs, and shipped them by horse-drawn wagon to customers in Albany and Hartford, Concord and Rome.

Dredged oysters were cheap because they could be readily caught in profuse quantities. The demand for them is hard to exaggerate where trade routes made them available. Customers ate them the way cattlemen eat steak.

Unlike tongs, which do little damage to an oyster rock, dredges are destructive. A dredge works the way a snowplow would if it were pulled instead of pushed. Clawing the ground with a set of metal teeth, it scraps up into a net bag held open by an iron frame everything in its path. A captain drags away the rock itself, layer by layer, when he pulls a dredge across a reef, again and again. Soon nothing is left for reproduction.

Dredge boats began working New England waters a decade or so before the revolution. By 1810 the oysters of Narragansett Bay, Block Island Sound, and Buzzards Bay were nearly gone. Fairfield merchants needed new grounds fresh with abundant growth to save their businesses; so they sent dredge captains to the Bay to take up and bring back, duty-free, all their ships could carry.

Worried legislators in Richmond and Annapolis soon banned all dredge boats. These laws were good. They spoke to and stood by the need for protection and preservation, as they
upheld common ground’s basic tenet: all could tong the Bay; none could dredge it. In his *Weekly Register*, H. Niles praised these measures. “We have been threatened for several years with the total destruction of our oyster beds by the profligate use of scoops or drags for catching them, by which many more are killed than are obtained.” So, he said, “we are glad to hear that three vessels furnished with drags, and twelve persons attached to them were recently taken possession of by the sheriff of Kent county. The oyster concern in the waters of Maryland is not a small nor unimportant item; and everyone who deserves an oyster will rally round the standard of the law, and unite in the common efforts to arrest and punish all such murderers of oysters.”

Unfortunately, though, neither state committed itself to consistent, tough enforcement. The laws appeared on the books, but lawmakers never created a force of trained and able men equipped with boats and ammunition. Rogues and marauders, roaming the Bay on illegal dredge boats owned by rapacious merchants like Caleb Maltby, treated Virginia’s and Maryland’s oyster laws like bad jokes. For them these laws existed only to be mocked and challenged.

Maltby moved from Fair Haven to Baltimore in 1836. He was ill-tempered and mean, a lover of ruthless competition, says John Wennersten in his book on the Chesapeake oyster wars. When I think of him, I see a small, thin man with a crabbed face and shriveled hand. He is walking up the steps of the hotel he built with oyster money. He stands by a brass spittoon before a disreputable, weatherbeaten fisherman lounging in the lobby in a high-backed chair. Maltby needs a body to captain one of his illegal boats. The fisherman accepts the job and stands up.

One of many who grew illegally rich from the Bay, Maltby is the personification of greed and avarice in my mind. Others came to Baltimore with him. A few left records so we know their names: Daniel Holt and Willliam Numsen, Abiathar Field, Thomas Kensett and Edward Wright. A new railroad
that opened trade routes to the Midwest, and a new law that required residency of anyone shipping oysters out of state brought them. They packed oysters in ice and sold them fresh, or they pickled them and put them up in cans they made by hand from tin blanks cut out and soldered together.

Then Edward Wright found a way to cook these bivalves so they tasted almost fresh. And in 1849 a man in Newark, New Jersey, whose name is not recorded, put together a can-making machine. He called it the Pendulum Press. The savings in labor made oysters even cheaper. Low prices increased demand, so the industry grew; and the lure of fortune brought more entrepreneurs to the Chesapeake.

On the Bay, dreams of easy wealth beckoned. Maryland and Virginia state representatives rescinded previous laws and made dredging legal in 1865. Only certain shallow places, near shore, in the rivers, creeks, and coves, reserved for tongers, remained protected. All else, all the deep holes and big sounds, was suddenly subject to uncontrolled although legal exploitation.

The records gave me this event, and more. They told why these lawmakers of the nineteenth century came to deny their own purpose and truth. The temptations were powerful: jobs, taxes, industrial might, prosperity; all waiting, there for the taking, beneath the water. And I suspect the Maltbys and the Numsens, with their wealth, brought pressures to bear until these legislators succumbed and turned from known fact to dismiss the future.

In eastern Maryland a fishing village called Somers Cove lay hard by the Virginia border, protected from Bay storms by the ruffled shores of the Little Annemessex River. Beyond the town and the river were two of the Chesapeake's richest oyster grounds: Tangier Sound to the north and west, Pocomoke Sound to the south and east. Discovered late because they were deeply hidden beneath the water, the reefs here were barely scarred by illegal dredging before 1865.

John Crisfield, a lawyer, newspaper editor, railroad mag-
nate, and land speculator from Princess Anne, saw the value of the town’s location. Taking a guess, I suppose, he bought up Somers Cove in bits and pieces before dredging opened up the Bay. Then he built the Eastern Shore Railroad to connect Crisfield (a new name for a new town) with Philadelphia and the rest of the Northeast.

Made by drifters who had heard about a promising get-rich-quick scheme, built without thoughts of permanence or plan, Crisfield came to look like an eastern version of a western mining town. A single set of tracks with a loop at the river ran down the center of a marshy wedge to a steamboat wharf and a loading dock. Crisfield flung itself up around these tracks on this wedge, houses to the north, stores to the south. One or two buildings had columns decorating their facades but most were wooden and plain. Planked sidewalks doubling as porches rose above an unpaved street.

Many newcomers raised their homes and processing plants above the water, past the edge of this triangular spit of land, beyond the reach of city and county laws. Robert Wilson described the process in an old Lippincott's magazine. “A man purchases a water-lot alongside the causeway and encloses it with piles. He then dumps in oyster shells until he has enough terra firma to support his house, which he proceeds to build, filling in his yard by degrees as he needs various outbuildings, connecting these by bridges with the main edifice.

“The effect of all this is both striking and unique. Every man's back lot is open to inspection, and it is amusing to see one feeding his chickens on an island at the foot of his yard, and another leading his horse from a peninsular stable, and still another stepping from his kitchen door into the canoe which is moored beneath.”

Vying with Baltimore as the center for oyster trading, Crisfield prospered for a short time. There was much money to be made. In 1868, more than a decade before the peak of the oyster boom, Bay merchants exchanged twenty-five million bushels of oysters for approximately twenty-five million dol-
lars. But then, as happened in Long Island Sound and along the New England coast, the supply of oysters gave out, and the town came upon hard times.

Tongers then must have made a pretty sight sailing their slim, graceful canoes, in fleets, rails awash, out to the rocks of a morning and back to the harbor at night. Like the old man I remembered poling home, silhouetted against the rose and gold of a setting sun, from afar I suppose they looked romantic.

I remember watching Mike and Bonnie Gay once, before I came to know them, from the bridge over Slaughter Creek. On the channel below, framed by the beauty of woods and water, off in the distance, I saw forms at work. It seemed to me that their lives, lived so much within the bounds of nature, must be full of certainty and peace. But then from where I stood, bathed in sunshine, I did not feel the wet of winter, or see the mud of the bottom. Then I knew nothing about the pain of heavy labor and understood nothing about the cruel weight fear of poverty can bring to bear.

Seeing them connected to the landscape in a way I am not, I wanted to believe in the innocence and purity of their lives and their traditions. But one day I found myself talking to a folklorist on Solomons Island. She showed me a file she’d been keeping for her work at the marine museum. She called this file “Watermen: Self-Image.”

In it I found a letter recently published in The Waterman’s Gazette and had to think about myths and men. In this letter Grant Lawson said: “The Chesapeake Bay is more than an oyster factory, it is a WAY OF LIFE. All of Maryland is proud of the independence the Bay has given its watermen, and this way of life must be protected.”

Wanting to understand watermen, I had made a myth. And they have made one too. But now neither they nor I know whether, without the myth they made to face the world, they can be themselves, or anyone at all.

Dredging, too, must have looked romantic from a distance.
"There are few more spirited sights than that presented by a fleet of pungies on the beautiful waters of the Chesapeake dredging for oysters," wrote an unnamed reporter back in 1872, "their white sails bellied out, and masts bending before them as they cleave the crested waves, make a pleasing picture, while the whistling wind, rattling cordage, and ringing dredge mingle with the song of the crew." The big boats must have been sleek and graceful; the Bay vast and compelling; the scene intriguing and foreign.

Those who knew oyster dredging up close remember it differently, however. "I started out as a youngster dredging oysters, back in the 1890's when that life was really rugged," wrote Samuel Sewell in a magazine piece for the Baltimore Sun. "In my time we used hand-winders to bring the oysters on deck. And it was back-breaking work standing over those winders from sunrise to sundown." Crews shipped out for months or weeks at a time because dredge boats worked in deep waters far from shore. The men lived in small cramped cabins, ate coarse, meager food, and weathered brutal winter storms.

Sewell described his labor: "There were usually two hand-winders on a dredging vessel, one on the port and one on the starboard side, amidships. It required four men to a winder, two on each crank. As the dredge became filled with oysters, dragging over the side as the vessel sailed over the grounds, the men would wind the cable around the drum of the winder and bring the dredge on deck. This was almost like pulling in an anchor while the vessel was sailing."

There must have been moments, though, when he felt the romance of his labor; for, talking about a picture of four men turning a windlass, he let cadence and imagery creep in. "Here you can see the wet, slanting deck of a schooner sailing under reefed sails," he said, "foaming water slipping past her side, and the oystermen putting all their strength into cranking the heavy dredge aboard."

Sewell lived by the Coan River on Virginia's Northern Neck. Local captains owned most of the boats he sailed on.
Although they tried to hire crewmen who lived in the community, they were not always successful.

A captain sent word and money to Baltimore when he found himself short-handed. Owners of saloons and rooming houses in the city sometimes took in penniless drifters. When one of these proprietors heard from a dredge captain, he put his vagabonds on a steamer and shipped them down Bay. The drifters—watermen called them tramps—worked first to pay off their debt and then to make wages. Some returned to Baltimore at the end of the season; others hired on for the next year. Of those who chose to stay, many, Sewell said, married local women and became part of the community.

Other captains used shanghaied crews. They hired agents to grab men, lock them aboard, and send them south. Those envoys cruised the Baltimore waterfront, looking for drunks, bums, and immigrants who, once they were captured, would not be missed. Two dollars a head was the going rate. Most taken knew nothing about manning a dredge boat. Many could not endure the necessary physical hardships.

Shanghaiing gave oyster dredging on the Bay an invidious reputation. Some who survived told terrible tales of brutality and death. Flying crank handles and jib booms mutilated many men. Others suffered starvation and exposure. Many were beaten.

Some commanders refused to pay their men at the end of the season when they put their crews ashore. Other captains, as the local expression went, "paid with the boom." A skipper knocked over any crewmen standing topside by jibing his boat abruptly and propelling the boom across the deck. When these men washed up with the tide, local citizens laid them out in plain pine boxes and buried them in remote places with names like Molls Leg and Barren Island.

Captains out to make big money found crews grabbed off the Baltimore dock very convenient because these men knew little and cared less about state regulations. Woodrow T. Wilson said in his history of the area that most of those with a reputation for shanghaiing listed Crisfield, or some nearby
Common Ground

town, as home port. Crisfield then was full of unscrupulous men who came to town to make a lot of fast, easy money. That some among them were willing to kidnap and murder for it seems likely.

The 1865 law divided watermen into two groups: dredgers and tongers. Having come to the area from somewhere else, many dredge boat captains developed little attachment to any community. Tongers were, on the other hand, immersed in their traditions. In the words of one unnamed author of a government report they were, "attached to the soil; a fixture."

"A tongman's social life is a credit to the state," this man said. "Dwelling in their own homes, surrounded always with pleasant gardens or well tilled truck patches, clean and inviting, with the marks of industry everywhere, are the settlements of these toilers in the shell fisheries of the state."

Hunter Davidson, the first captain of Maryland's oyster navy, said in another government report: "In our waters there are two great interests in the oyster trade, which have always been, and are likely to continue, at war. The first group (dredgers) has nearly all the means, and is backed by the wealthy packers. It has large vessels, well manned, equipped for heavy weather and weeks of service off shore.

"The latter class (tongers) is represented by many laborers, but is scattered in small boats that can only take the Bay in comparatively smooth weather. In other words, the dredgers are strong, and comparatively rich; the tongmen are weak and poor; and the worst of it is, that the former rarely lose an opportunity of impressing this fact upon the mind of the latter, by a too frequent transfer of the oysters from the rich inshore beds—reserved by law to the tongmen—to the holds of their own vessels."

Without a sense of obligation to people or place, lured by windfall profits, dredgers found it easy to invade the tongmen's territory. Tongers tried to protect their livelihood but were seldom successful. They came to know anger and resentment as they watched interlopers break the law with impunity.
Dredgers stepped up their illegal raiding toward the end of the nineteenth century when oysters grew more scarce and so more valuable. "The ever-increasing demand for the oyster," Davidson said, "has so stimulated the trade in the Chesapeake, that the oystermen will risk almost any weather, and overcome great opposition, to enable them to reach the handsome profits that are being offered them in the market." Davidson suggested stricter law enforcement. But the state, failing to commit sufficient resources, left tongers much alone to battle for their right to common ground.

An old Scottish folk story I've read tells a tale of common ground. Seeking to improve his lot, a herdsman leaves his village to acquire sheep. His brother is jealous when he returns with an ewe and a lamb. Soon his brother also travels far from home in search of his own sheep. When he finds them, pleased with his new wealth, he brings them back to the village pasture. Then all the herders journey across the countryside and return one by one. The village grass grows thin. Yet, each owner refuses to cull his flock. Saying, "my sheep are not so fat as they once were, but since I have more I am richer," each man clings to his possessions until the trodden pasture withers and the sheep die.

Ownership, rather than stewardship, is modern man's solution to the problem of common ground. But grazing lands and oyster reefs are only, after all, synecdoches for earth and water. And so I wonder how, if we cannot learn to share grass and rock, we will in the end endure?

Dredging is not an absolute evil. When oysters growing undisturbed pile themselves up, the competition among them for food and space is extreme. Crowded and probably a little hungry, they become what Bonnie Gay and Mike call snaps: long, skinny oysters without much meat. Limited dredging, which thins and weeds them, gives them room to get fat.

Davidson acknowledged dredging's single benefit when he reported to the legislature in 1869. But then he said: "When we look at the other extreme, as in our waters, and find five
hundred and sixty-three vessels, each having two dredges, that when filled weigh one hundred and fifty pounds each, making eleven hundred and twenty-six harrows, dragged by vessels, some of nearly sixty tons burthen, under full sail, over the beds, night and day; without regard to the size or condition of the oyster, we can really see that the work is greatly overdone.

"The oyster ejects its spat from April to about August, and the old oysters, shells, and other congenial substances, on the beds, soon become covered with young oysters, the shells of which do not attain sufficient size or strength to admit of handling, or other disturbance, until about the first of November. But the heavy harrow-like dredges commence dragging over the beds the first of September, and keep up until June, a grinding and attrition of a thousand oysters to every one that is taken—thus crushing out the life of the young, filling up the open mouths of all, with the bottom, covering them up, and turning and leaving them in every unnatural position.

"In the water, the star fish, the drill, the winkle, the crab, the drum fish and the sheephead, during their season, subsist in a great measure upon the oyster; but the unseasonable hand of man gives it no rest, and is greater than all other enemies combined."

Davidson suggested a series of strict protective measures that might have saved the reefs if they had been severely enforced. State representatives did eventually pass some of these regulations. But then, capitulating to political corruption and possibly pressure from wealthy packers, they failed to provide the boats and men and guns necessary to enforce restraint.

Instead they commissioned studies. Each report speaks of decline and destruction. Many oysters lay crushed and broken. Mud and sand buried their homes. Borers infested their shells and worms ate at their bodies until predators overtook their prey.

Then: "Finally, the state and local governments decided to
make an effort toward conservation,” said Woodrow T. Wilson in his local history, “but for several years this was just a token effort. After several years the folly of this was realized and it was apparent that drastic measures would have to be taken, but it was too late.”

Wennersten, in his book about the oyster wars, called the rogues and marauders who roamed the Bay less than one hundred years ago pirates. Chief among these outlaws was a man named Gus Rice. Wennersten described him as a dilapidated specimen in foul-weather clothing and a battered waterproof hat whose purple-red face and rough growth of beard “made him look every inch the killer he was.”

Historians say outlaw dredgers wore black and traveled en masse. They smeared their sails with mud to camouflage their boats when they worked at night. Allied with one another, they elected a sentinel boat to stand guard against the police when they scraped a bar. A lantern at night or a flag during the day lowered down the mast signaled: patrol boat sighted. Raised again it warned: enemy approaching.

Rice and his kind evaded the police over and over until tongers everywhere grew desperate to defend their territory. One incident stands out. Watermen mounted a pair of cannon on the shore in the spring of 1888 after they had been driven again and again from the oyster bars of the Chester River. But their aim was bad each time they fired. Unable to hit any of the dredge boats, they could not drive the marauders away.

Rice and his men put up with the plunk and splash of cannon balls falling around them for a week or two, but then they got impatient. One night they formed a raiding party and sailed to shore. They found a lone waterman guarding the guns in the watch tower. They stripped him bare and sent him home, embarrassed and degraded, to warn his fellow towns-men of worse to come.

The police were mostly too ill-manned and ill-equipped to enforce the law when they did try to intervene on occasion. In one typical story, dredgers intent on working an oyster reef near the town of Rock Hall drove local watermen away by
shooting at them repeatedly. The tongers set up a cannon on shore to defend their rights. But that night the dredgers sailed in and took it. Four hundred pirate boats arrived to scrape their dredges over the rocks of Swan Point bar in the morning.

A police boat finally showed up. The dredgers waited for it to sail near. When it was within firing range, the men on the dredge boats closest to it lowered their rifles and attacked, while the rest of the pirates remained at their windlasses. The police fired a cannon but missed. The gun was old and hard to use. The lawmen struggled to reload their cannon, as the pirates bombarded them with rifle shot. But eventually the police had to turn tail and flee.

In all this warring back and forth, there were, of course, watermen who died.

Tongers and lawmen battled dredgers for close to half a century but never either defeated or controlled them. Finally, "oysters, which once were compared to a gold mine became very scarce," wrote Woodrow T. Wilson. "The exploiters had gleaned practically all of them; the natural supply was just about exhausted. Most of the wealthy exploiters left the area taking their wealth with them and left nothing but their empty, cheaply constructed plants, and unemployed workers."

A town built on oysters for the sake of oysters, Crisfield suffered, but survives. As do the sons and daughters of those freedmen who, three hundred years or so ago, with axe and hoe and three barrels of corn, moved to the marshes.

Mike and Bonnie Gay waited for me in her pickup one windblown March morning. Swerving to miss a puddled rut that was removing much of Cecil's dirt drive, I pulled around to the back of his store and parked next to one of the portable plastic johns. Bonnie Gay called to me through her open window from the passenger side of the cab. I hurried over, hunched against the wind. She jumped down.

Wedged together, Mike at the wheel, Bonnie Gay at the
door, me in the middle, we rode around: up Hooper Neck Road to Hooper Point, down Bayshore Road to Cattail Island, around Robinson Neck Road back to Slaughter Creek. Mike stopped to watch the water here and there where the woods broke. He was looking for a lee shore where he could safely walk the washboards; but whitecaps foamed the guts and narrows every place he went.

We walked down to the mud flats behind Cecil's store when the tide fell. The wind had blown a lot of water out of the gut so its rich muck bottom was exposed far from shore. We traveled the verge with our eyes sweeping the ground, like beachcombers. Mike spotted an oyster lump laid bare by the fallen tide. He set out for it across the flats.

I spotted a clump of my own a little further off and headed out. Marsh mud, squishing up, sucked at my boots. It pulled me back and held me to the ground each time I started to pick up my foot. Once it threw me off balance, and I lurched forward. During the moment it took me to stop and straighten my body, I imagined myself toppled over, face down in goo.

I tried to tread lightly, but the going was rough. Eventually, though, I reached firm ground. Many large, round oysters, some of them attached to one another, were growing there. I gathered all I could carry and headed to shore where I added mine to the mound Mike was building on the beach. Bonnie Gay came to help. When we had collected all we could find, Mike went to the woods to get a long stick. He marked the heap with it.

He found an oyster growing inside the neck of a bottle, shaped to the demands of its odd home. I said something derogatory about its looks, and Bonnie Gay reacted. "They're just like us, you know. We all look different, but we're all people just the same."

We combed the flats some more, gathering oysters, making mounds. The next day, when the tide came up, if the wind was down, Mike would pole Bonnie Gay's skiff across the shoal and tong up the oysters he had collected.

Bonnie Gay got caught in a particularly gooey hole; the
bog grabbed her boot and pulled it from her. Her white-socked foot held up above brown marsh muck swayed to and fro through the air for one long moment. Then she caught her balance and thrust her foot back down into her boot. Wiggling it, she tried to ease herself up out of the mud; but the harder she fought, the deeper she sank.

Secure in waders strapped to his thighs, Mike walked out to her. He put down a log. Then he reached out and leaned over to hold her by the waist as she pulled her foot from the rubber and balanced it on the piece of wood. He freed her boot and put it down next to her. She stepped into it and gingerly started out for shore.

At Hooper Point, where the flats disappeared beneath the water, there was a scrap of sandy beach. We lay there for a while sheltered from the wind by a slight rise cut like a cornice. I rested my head against a piece of burnished driftwood and turned my face to the sun. The wind was blowing cumulus clouds across the sky. I found and put in my pocket an amber pebble, smoothed by the tides and warmed by the sun.

"So, Susan," Mike said, "how'd you like proggin'?
I told him I liked it very much.
"Not supposed to do it," he said. "Don't know why. It's like a lot of their laws; don't mean nothin'."
"Never have," said Bonnie Gay, "never will."
Beyond a State of Nature

About a decade after the peak of the oyster boom, when bivalves were growing scarce, biologist H. Newell Martin told an audience gathered at Johns Hopkins University in February of 1891 that oysters could continue to make men rich. He and a few other researchers had made two discoveries in a marine lab at Crisfield. "We established two leading facts," he said, "that the eggs of the Maryland oyster are thrown out into the bay to be fertilized at random, and that it was possible to fertilize and hatch thousands of them in a watch-glass; in fact, that in a few buckets of sea-water one could hatch enough eggs to supply spat for the whole Chesapeake Bay.

"And what does this mean?", he asked rhetorically, then answered: "Honestly and intelligently managed, it means untold wealth for our State. The people of Maryland have a richer heritage than the coal-fields of Pennsylvania or the silver mountains of Colorado. The two latter may, they must, become exhausted as time goes on; while, with some little wise and faithful care, the Chesapeake will bring, year after year, millions of dollars to Maryland citizens. This may seem an extravagant statement; but, if you will consider the facts, you will find that it is but sober truth."

A few years later William Brooks, another professor of biology at Johns Hopkins, published The Oyster: A Popular Summary of Scientific Study. The book became a classic of its kind and was almost always mentioned by biologists when they talked to me about oyster culture.
"The oyster is well known to be enormously prolific, a single one giving birth in one season to many million young; and it is obvious that the annual supply would be enormously increased if all the young which are born could be reared to maturity," Brooks wrote.

"Unfortunately, this is not the case, and under a state of nature millions of oysters are born for each one which grows to maturity. Mobius [another biologist] has shown that in Europe each oyster which is born has only one chance in one million one hundred and forty-five thousand of reaching maturity; I have shown that the chances of each American oyster are very much less.

"One of the most important discoveries of the last fifty years is, that it is quite possible to save many of these oysters by artificial means; and experiments which have been carried on in France, as well as in many parts of our own country, prove that this can be done, successfully and economically, on a very large scale."

One simply had to catch the spat before it got away, Brooks explained, by providing something hard, clean, and firm. Oyster shells were then and remain today the preferred material, but rocks, boards, twigs and branches as well as roof tiles and rubber tires will do.

Oyster culture has had a long history. One of the first people to try it on a small scale was a medieval Roman knight named Sergius Orata. His method was so successful the Romans used it for over a thousand years. Brooks went to see Orata's method before he wrote his book. Then he described it so thoroughly a reader could almost use The Oyster as a propagation manual. "Upon the deep black mud of the lake they have constructed here and there heaps of rough stones, high enough to keep them above the mud and slim," he wrote; "upon these rocks, oysters which were taken from the sea have been placed to supply the spat, and these breeding oysters grow and multiply and do not need to be renewed. Each pile of rocks is surrounded by a circle of stakes, firmly planted in the mud, while their upper ends are untied above
water by a cord, from which, between each two stakes, a small bundle of twigs is suspended so that it hangs in the water near the bottom.

"At the spawning season," Brooks continued, "the oysters upon the central pile of rocks discharge countless myriads of embryos into the water, and many of them, finding, close at hand, suitable material for their attachment, fasten themselves in great numbers to the twigs, and grow rapidly until, at the proper season, the cultivators take up the stakes and bundles, and after removing those oysters which are of a suitable size for the market, they replace the stakes and fagots, and leave the small oysters to continue their growth until the next season."

From this description Brooks moved closer to his purpose. First he told his readers that Orata's methods made him "very rich." Then he went on to give more examples of the prosperity oyster cultivation had brought to various peoples in foreign countries.

He spent a lot of time discussing France. A vital industry had nearly disappeared there until the emperor asked a biologist named Coste to come in and rebuilt it in 1857. Five years later a fifty-acre reef yielded sixteen million marketable oysters. Two years after that, five hundred acres yielded a crop worth eight million dollars.

Brooks finally came upon his point here with this French story. These farms were never very prosperous when the government ran them, even under Coste's management. They began to flourish only when the French government gave them over to private owners. "One of the most interesting and instructive lessons to be learned from this history of oyster farming in France is that private industry in this field, as in all others, can accomplish more than government," he wrote; "and, as the cultivation of private farms spreads, the advisability of devoting all suitable grounds to this use becomes more and more apparent.

"The opposition in Maryland at present to the granting of any natural oyster-bed to private holders is very strong in-
Beyond a State of Nature

deed, but little insight into the future is needed to perceive that the disappearance of this feeling would result in an enormous increase in the prosperity of our people.”

Beneath the discoveries and proposals of William Brooks and Newell Martin lay an assumption. With scientific knowledge, man can manage nature, they believed, so they urged others to accept their recommendations and put them into practice.

But watermen were not so sure. They believed then, as now, in cycles, natural times of scarcity and abundance. “Some years the Bay is full of crabs,” they say, or eels, or clams, or rock fish. “And some years we can’t catch nary a one. It’s the same with arsters. But if you leave it t’lone it comes back. Before this here pollution, everythin’ in the Bay, it came back.”

A century-long political battle emerged from these different views. I came across its beginnings one day when I was rummaging around the Johns Hopkins library looking at books about oysters and oyster culture. Someone had stuck away in the stacks an old green ledger converted to use as a scrapbook. The compiler, who had not signed his name, had clipped and pasted up a series of news reports describing the fate of a legislative effort called the Haman Bill.

B.H. Haman was a Baltimore lawyer and state representative who, like Brooks, believed that private cultivation would save Maryland’s failing oyster industry. He modeled his bill after legislation passed shortly before in the state of Virginia. It called for a survey of Bay bottom, a set-aside for natural oyster bars, and a lease program for private holders.

He gathered his support from Maryland’s landlocked counties, where people had no concerns about common ground. What farmers and merchants there wanted were better roads and bridges. So in his bill Haman linked increased state revenues from a revitalized industry to improved highway construction.

The editorials pasted in the scrapbook supported Haman and his legislation. They expressed no sympathy for the wa-
terman’s position. The state would only lease barren bottom, they said, and there would be no takeover of public ground. Then the editorialists accused Maryland oystermen of being selfish and narrow-minded.

When the Haman Bill became law in 1906, Maryland set up a shellfish commission, which began surveying the Bay and dividing it into natural bars and barren bottom. I looked at these stories and wondered why I knew only one man in the state who had any leased ground at all. So I turned the scrapbook’s brittle pages and kept on reading.

William Webb and twenty-five other tongers from Anne Arundel County were the first to challenge the commission’s findings in September of 1907. They chose some ground in Herring Bay, a broad, open cove located on the Western Shore south of Annapolis. One hundred acres the commissioners called barren bottom were in actuality natural oyster bar, they said. When the judge found for the tongers, the commissioners had to correct their survey.

Other court challenges soon followed. Watermen lobbied their representatives, who wrote more laws that eventually nullified the Haman Bill for all practical purposes.

The industry continued to decline. Packing houses closed and moved away, taking with them an important source of revenue. Maryland responded by creating a conservation commission, which eventually became part of the Department of Natural Resources. To keep the industry going, the commission soon began running its own cultivation program. It levied a tax on harvested oysters and used the money to plant shells and seed on common ground.

The Haman Bill was one response to habitat destruction caused by dredging. Another response could have been to close damaged bars to harvesting. Then the oysters would have renewed themselves. Or the government could have left the situation alone. Then as a waterman’s income fell because bivalves were scarce, he could have gone fishing or clamming or eeling instead. Again, the bars would have been left alone
to recover. But by then, of course, all the processors and packers would have gone out of business.

So scientists, politicians, and businessmen turned to a more standard solution based on familiar principles: resource division, ownership, and private enterprise. They did not succeed because as Eugene Cronin, a marine biologist who has worked with watermen for most of his life, told me once: "Maryland watermen are terrific politicians. They get up earlier and study the legislation harder. And when it matters, they show up in Annapolis, gum-booted, with a little liquor in 'em and they sit up there in that Assembly and, by God, they make their presence felt."

Irving Crouch was nearly ninety when I went to see him on the Eastern Shore near the head of the Chesapeake in the town of Rock Hall where he was born. The memory of physical power was in his walk, for he had been a waterman and lived a rugged life. He watched me closely for a time and asked many questions about who I was and why I came. Then he decided to approve of me and talk to me about changes in the Bay he has seen through the years.

"Well," he said, "it hadn't been too many years ago, about twenty years or so, the main spawning area for oysters, or seed area as they call it, was right here, between here in Rock Hall and Tolchester, right over between here and Baltimore. Now if you want a seed oyster, you have to go down the Bay to below Tilghman Island. About the only place around here we have some oysters is at Swan Point and they're getting very scarce."

He sounded sad as well as old, as if he were recalling the death of a friend or partner, someone with whom he'd been quite close. "Practically all that's here now are oysters that were seeded; the seed was brought up from down the Bay and transferred to Swan Point. These oysters up here are not fertile. Years ago this used to be the main seed area. Here and the Chester River, they produced enough seed to plant the
whole Chesapeake Bay and start the oyster business in the state of New Jersey. That’s the surplus of seed we had in this Bay at that time. But now today there’s hardly a live oyster out there, this silt has smothered ’em all out. That indicates that the pollution problem is steady but sure, slow but sure.”

Erosion and siltation are natural Bay processes. Waves hector a shore until they wear it out and wash it away. They break the land into countless bits and pieces, carry this silt up, down, and around the Bay, until eventually they deposit it either along another piece of shoreline or over the bottom.

Whole islands have simply disappeared. After the turn of the century, watermen living on Hollands Island saw that the ground around them was vanishing. They dismantled their homes, backed out the nails and stacked up the clapboards, put their houses on their oyster boats, and sailed to other fishing villages on the Eastern Shore. Some from the Todd and Parks clans, the Price and the Bennett families went east to Cambridge and Crocheron and some went west to Solomons Island. They put their houses back together in these new places and then returned to working on the water.

As wave action razes a shoreline in one place it builds another somewhere else. Joppatowne was originally settled about two hundred years ago as a deep-water port on the Gunpowder River. Today it is completely landlocked and lies more than two miles from the Chesapeake Bay. People settling around the Bay have not altered the nature or direction of this process of erosion and siltation, but they have speeded it up. As they clear land for homes, office buildings, and shopping centers, they remove the ground’s natural cover. Storms then easily wash the unprotected topsoil into the water.

When the silt comes to rest on the shells of an oyster reef, it makes them slippery so eyed larvae cannot attach and repopulate the bar. The relief of the bar grows less prominent, not as high in the water. Oystermen, nevertheless, continue to gather adult oysters there, further lowering the reef and
making it easier for the silt to pile up. Soon the oysters that remain can no longer breathe, and the reef, which once sheltered many kinds of marine animals, becomes barren.

During the last half of the twentieth century, siltation, the outbreak of two uncontrollable diseases (Dermo and MSX), traditional harvesting pressures, and many poorly understood changes in water quality, all joined together to dramatically shrink the Chesapeake’s once vast oyster habitat.

By the early 1980s watermen had little ground left on which to oyster. George Krantz, who directed Maryland’s tidal fisheries then, decided to speak publicly about this habitat loss and its effect on Chesapeake watermen. He gave an interview to Angus Phillips, a reporter at the Washington Post, in September of 1984. Phillips’s story began thus: “George Krantz has a vision of the Chesapeake Bay a decade from now, and it does not include most of the twelve thousand men who make a living on the water.

“In the view of Krantz, the Bay in 1994 should be run more like a farm than a wilderness. It would be operated by ‘a few hundred’ selected watermen operating under quota systems and raising a major part of their most valuable crop, oysters, on leased Bay bottom.”

Perhaps Phillips knew about the previous eight decades of Bay controversy over common ground, or perhaps he did not. In any case, he continued: “Krantz said the concept of the Bay as ‘common property,’ a wilderness harvested freely since Indian times, is outdated because the nation’s largest industry can no longer tolerate unchecked pressure.”

And then he quoted Krantz as having said: “Everyone does not have the privilege of using the resource. It becomes the property of the state to be subdivided to a selected user group.”

As far as Maryland watermen were concerned, Krantz’s views were yet another assault on their precarious way of life. Like cornered animals, they struck back. “The state is the cause,” Russell Dize, a waterman from Tilghman Island, told
the Post: “If they’d been controlling pollution from the sewage plants and industries like they’re supposed to we wouldn’t have any shortage.”

From Somerset County, Grant Lawson wrote to the governor. “The problem is waste saturation,” he said. “The watermen felt helpless as they watched the deterioration of the Bay by cities and corporations with enough political strength to resist control. Then a period of compromise on the Bay came into being when watermen and conservationists began to understand the real problems. A promise of millions of federal and state dollars brought much hope and a willingness of everyone to work for a Bay clean-up. Now all of this has been overshadowed by an imminent threat that will be more disastrous to our industry than any we have ever faced before. It is instigated by one man and his personal views, which time and again have become policy and regulations, Dr. George Krantz.”

And: “The government wants to decimate the number of watermen working out on the Bay because fewer people are easier to manage,” Larry Simns, who heads the Maryland Watermen’s Association, told the Post. “They’d like to see one guy out there, so they can tell him what to do. But if you lose twelve thousand people and wind up with six hundred, what have you done? A few big operations make all the money and everyone else starves.”

In response to all this furor, the state took money out of its general fund to pay for increased cultivation. But water quality continued to decline and oyster diseases continued to spread, while biologists, politicians, and watermen kept on arguing over stricter harvesting regulations.

Then, late in the 1980s, a new governor named William Donald Schaefer proposed once again an old solution to the problem. This time, he brought the state’s vocabulary up to date. Schaefer appointed a task force to study “private development of aquaculture enterprise zones.” Aquaculture, as the task force defined it, is “the controlled cultivation and harvest of aquatic plants and animals.” But the state has been
cultivating oysters on a small scale since the 1940s, so the thrust of Schaefer's initiative was to argue in new terms for the division of the commons into private holdings.

Larry Simns started the Maryland Watermen's Association in the 1970s because he thought watermen needed a lobbying organization of their own. With the help of two assistants, he ran it part time while he made his living operating a clam rig on the Severn River. Through him, the association has developed a strong voice and a powerful presence in the capital. He is a good listener who always seems to consider everyone else's point of view, although many of his apparent compromises eventually turn into end runs. His ability to find the weak spot in an opponent's argument is impressive.

The governor's task force recommended that the state set up its aquaculture enterprise zones on barren bottom. "But, there is no such thing as barren bottom," Simns maintains. "If a piece of ground isn't good for one thing, then it's good for something else."

"By the time you take out all the ground that's not really available—above the MSX (a parasitic disease) line, below places where it's too fresh, take out all the clam ground and the crab ground, and find a place that won't be silted over—you have maybe one thousand available acres, which is not enough for a large company to come in and make a profit. What the state really wants is to take over the natural bars and give them to the big corporations.

"But it's a sleight of hand, a way to avoid dealing with the real issues, which are disease and water quality. After all, if pollution and disease are killing oysters all over the Bay, what difference does it make if the ground is kept public or made private?"

The haplosporidians that cause MSX are parasites; the Chesapeake Bay oysters on which they live are hosts. In nature this type of relationship is relatively common and generally quite durable. The parasite controls its own destructiveness to keep the animals on which it depends alive.
The host, in turn, develops some protective mechanisms. Once adapted to one another, host and parasite can live together for many years in mutual if somewhat wary accommodation.

Here on the Bay, however, oysters have not developed the resistance they need to survive. Scientists believe part of the problem is their inconsistent exposure to the protozoan. Haplosporidians do poorly in fresher parts of the Bay where oysters grow well, so the oyster never becomes completely immersed in the disease. Without this immersion, it does not adapt. Most likely another part of the problem is the Bay's declining water quality which, experts think, stresses oysters, weakens them, and so makes them increasingly susceptible to disease.

As the Miss Kay sped through choppy seas, Bay water splashed up over her bow. It hit the roof of the cabin and ran backward in a steady stream to a corner where it dripped onto Roy Scott's shoulder. He was perched cross-legged on the port gunwale, his back to the cabin, his head bent over a pile of oysters.

The water darkened his blue sweatshirt in an ever-widening patch, but he did not seem to notice. He continued to sort and count the oysters before him, tossing the dead and the alive, the small and the large, according to category, into one or another nearby can. When he finished sorting and counting, he raised his head to scan the Bay. The October day had turned dark and cold; the wind was freshening.

Roy is a shellfish biologist who works for the state of Maryland. Every spring and summer the state tries to cultivate the bottom by planting oyster shell and seed on some natural bars. Roy designates the bars and determines the amounts of shell and seed, in conference with other natural resource specialists as well as eleven county committees on which about seventy-five oystermen sit. Many of the decisions they make come from the data Roy gathers on this annual Department of Natural Resources fall survey.
This year he has brought four men along with him: Snooky Collier, an Eastern Shoreman from Deal's Island, to pilot the boat; Mickey Astarb, a landsman who joined the Navy, then went to work for the Department of Natural Resources, to function as a general hand; John Hess, a commercial waterman who quit to work for the state; and George Krantz, the former head of tidal fisheries who left DNR to head a government-funded MSX research lab.

Roy looked down at the boat heeled to port and up at the stream of water coming from the roof, then went below. I followed him. The cabin was warm and, compared to the workboats I have experienced, luxurious. In it were padded benches and pilot's chairs, various kinds of storage cabinets, a large rectangular work top, and a tall, slanted chart table.

He went on to the chart table, flipped through the maps, found the one he wanted and put it on top. Neat, penciled-in notes marked places where Maryland was trying to cultivate the bottom. He checked the dates, the amount and kind of shell, the condition of the seed planted, considered the weather and chose a bar. He gave Snooky our new destination, then took off his blue sun visor. In the bunk room, he took a green oilskin jacket out of the closet, put it on and pulled up the hood. Then he went back up on deck.

Wanting to warm up, I stayed below and talked with Snooky. Snooky comes from a piece of marshy ground near the Maryland-Virginia border called Deal Island. Originally the village had another name. In his book about Eastern Shore folk legends, George Carey tells the tale as an old shoreman told it to him:

"In the early days of Deals Island, it was known as Devil's Island. There was a ship bound for Virginia Shore, off course and wrecked on the lower end of the island. The survivors looked out and when they saw nothing but marshes and wilderness, said, 'This is Purgatory, the land of the Devil.' And so it was known as this until the time of the revivals of Joshua Thomas [a Methodist preacher who lived during the early part of the nineteenth century]. The people on the island
thought they would like a more dignified name, and so this visiting minister suggested that they change the name to Deil’s Island. Deil, that’s a Greek word meaning Devil.”

Then through the years in one way or another Deil’s became Deal Island.

Like his island home, Snooky himself was named in this informal, descriptive manner. His given appellation is John, but his grandmother called him Little Snookums after the cartoon character, and the name stuck because it suited him, although others changed it some as he grew older.

Snooky checked his heading on the Loran, a computerized navigational system, and made a correction. We were going to a small cove near Hooper Point, where Slaughter Creek runs into the Little Choptank River. DNR had planted shells there last spring in the hopes of catching oyster young before tidal currents swept them out into main Bay. Six months later, after the spawning season, Roy was returning to look for spat.

Snooky slowed the boat so Roy could sound for shells. He picked up a long silver pole and twirled it, like a baton, for a moment, then lowered it. He explored the bottom, raised the pole, turned it over and lowered it again. Snooky moved the boat slowly across the water. I heard a crunch, the sound of metal hitting shells. Roy called out to Snooky. He idled the motor, then came up on deck to lend a hand.

He stood by close to the cabin ready to handle the dredge controls. The dredge itself was stowed near the stern on a kind of box or wooden platform built up above the starboard gunwale. Roy went to stand aft of it, while Mickey went forward.

Snooky pulled a lever that raised the chain-metal, iron-clawed bag. Then he lowered it. Roy and Mickey helped swing it out from the boat and guide it down toward the water. When the dredge hit bottom, the Miss Kay swung round to starboard. Snooky pulled some more levers to drag the bottom, close the dredge and bring it up. Roy and Micky guided it
Snooky dredged the reef a few more times, then Roy sent him below to take the boat on up the Little Choptank. Mickey scraped all the shells into some buckets and brought them forward to the culling board.

He had on two hats, one white tractor cap inside another of brown corduroy, above the Helly Hanson, government-issue oilskins everyone wore that day. Mickey comes from Silver Spring, Maryland, a large suburban community located north of Washington, D.C. After high school, he did a stint in the Navy, then knocked around from job to job taking courses here and there until he picked up a college degree. I asked him how he liked the work, and he said, “This is an O.K. job. I like working for the state, good benefits, time off. But then I get sick of it because really I’m not all that interested in oysters.”

He dumped the buckets of oysters out and began to sort. Roy joined him, taking his old seat on the port gunwale. John Hess came out of the cabin carrying a clipboard stacked with government forms. When the wind riffled and disturbed them, he went below and got a rubber band. He secured the papers with the band by snapping it around the bottom of the clipboard, then removed himself slightly from the others by choosing a seat on the engine box. He too was wearing green oilskins and wire-rimmed sunglasses, but his tractor cap was blue and said: “Capture a Maryland Memory.”

John lives in Shelltown, a small fishing and farming community located outside of Crisfield. He had been a commercial waterman for most of his life but quit in his later years to take a job with the state. On this trip his work was to record oyster data.

George Krantz emerged from the cabin pulling up the hood of his sweatshirt and then the hood of his oilskin jacket. He joined Roy and Mickey at the culling board. Sorting with the others, he fell into talking about the interview he gave a few years back to Angus Phillips at the Washington Post. “I
just felt someone had to do it;” he said, “that life on the Bay is changing, and we’d better start talking about how to handle that change.” When he talked about Maryland watermen and their bitter reaction to his ideas, he sounded hurt and surprised.

There was little to see at the culling board. The grab had raised nothing but single shells turned black from lack of oxygen. When growers plant shells to increase oyster habitat, they must choose suitable spots. Shells put on soft bottom only sink uselessly into the mud. In Maryland’s state-run program, decisions about shell planting are often made for political as well as biological reasons. George looked at those mud-covered shells and blamed the watermen. They wanted a sheltered place to work on windy days, he said, so they insisted that DNR put them here, even though experts told them the bottom was soft.

Roy was looking at the grab and muttering. He didn’t remember planting shells on soft bottom last spring, so he went into the cabin and looked at the charts, flipped through some records, and checked with Snooky. Snooky had punched the wrong set of numbers into the LORAN; we were at an abandoned bar recently silted over.

He corrected the boat’s position; Roy and Mickey made another grab; the men returned to the culling board. There were oysters on it and spat too: round, plump oyster young with softly fluted edges. I found one hidden deep inside the hollow of a shell. A curled red-purple streak ran down its center. I showed it to George, who said, “Count it in your head, then toss it in the can.”

We talked about the Bay life spread before us. There were blobby round sea squirts puckered up as if to kiss and crusty barnacles budding into flower. A small, warty toadfish already had its teeth. George showed me a yellow boring sponge growing on the white underside of a shell. I ran my thumb over the sponge’s nubby surface and was surprised when I inadvertently wiped it away.

Roy and Mickey moved from the culling board back to the
George stayed where he was, pulled the can of marketable oysters to him and dumped it. He chose the largest, healthiest-looking bivalves he could find. John helped him shuck them out. The oysters were gray and shriveled, the water they lay in murky and full of grit.

George flipped each one out of its shell, then slit its stomach. Showing me a finger-shaped digestive organ near the stomach called a style, he said: "They're starting to come back. See, here. Their styles are reappearing; that means they are starting to feed."

John poked at the cut-up mollusks with the tip of his shucking knife. "So what should I give 'em?" he asked. "What do you think? A two plus? A two?" They were rating the health of these bivalves: the lower the number the poorer the quality. George flipped some more oysters and cut some more stomachs. "No," he said, "they're not that good yet. Give them a one. No, give them a one plus."

On its third day out, the survey team reached the upper half of the Choptank River. The water here is too fresh for MSX to flourish, so the previous spring Roy had brought up a considerable amount of seed. He was anxious to see how the young spat he planted were doing. The wind was up and blowing hard. Snooky took us far upstream around a bend in the river. The wind dropped off near the town of Secretary, and everyone went to work.

The crew fell into a comfortable routine. Roy picked the bars and gave the coordinates to Snooky, then went outside to ready the dredge and pole the bottom. Snooky stayed in, firing the stove and listening to gospel music on the radio, until some final moment when he had to leave to raise and lower the dredge. John recorded data with nervous precision on sheet after sheet of clipped and banded paper. And George, with Mickey's help, loaded samples he wanted to study back at the lab into orange net bags.

Around eleven, the men started taking breaks. George munched on granola bars and crackerjacks when he sat down to draw charts. Then John asked me to heat up his homemade
soup. And Roy came down to lean against the chart table, drink Pepsi and eat jelly sandwiches. He told me he was happy with the spat count, that the seed he’d planted was doing well, though the state could never move enough to make a real difference.

“Mostly,” he said, “we’re trying to hang on, to keep things going, hoping nature will kind of shift.”

The day had been blustery and raw, cheerlessly gray. By two everyone wanted to head for home. Snooky turned the Miss Kay around and drove her fast through choppy seas. Spray washed up over the cabin roof and streamed down steadily onto the deck of the boat. We sat around on the gunwales and the engine box. Then Roy decided to stop and look at some natural seed growing around Howell Point.

There near shore we saw a fleet of tongers gathered together. Their boats were not much more than small shells. I thought about watermen walking washboards delicately, surely, and about chop raising men up and bringing them down.

Who were these watermen and where had they come from? I wanted to know. I studied the sterns of their boats looking for names and home ports but could not see. The distance between us was too great.

Roy stowed the dredges after a while. Then Snooky gunned the motor and sped away. As we passed by, we raised our hands and waved.
David Fauntleroy maneuvered his tractor-trailer over a tremulous narrow bridge. The bridge groaned. In the lagoon below, two gulls perched on the hull of a sunken ship, while a shy pelican, searching for crustaceans, flew off.

Virginia hills on the western shore of the Chesapeake are short but steep. David shifted down. At the bottom of the incline he turned into a dirt and oyster shell lot and drove to Jones Creek. Backing up, he swung the trailer to the left. Pulling forward, he steered the cab to the right. The red velvet heart his seven-year-old daughter gave him, hung in the back of the cab from a gold string, followed every turn.

By degrees he swung the truck around until its back faced the dock. He set the brake and climbed down. Where the door curved to the window, the cab was imprinted with a small red rose and signed with David's given name painted in script. He has come to this marina, owned by Billy and Jo Carter, near the mouth of the James River, in the town of Rescue, to buy oyster seed for Ronnie Bevans, his boss.

The restaurant and store are on the other side of the creek. David showed me a short-cut: up one steep bank, through grass tramped flat; over the bridge; down another steep bank; past a clump of iris; across the back of the yard. But the white shack was locked, the yard empty. Then Billy showed up rattling over the bridge and down the road in a big-old, broad-low car with flamboyant fins.

He greeted David, then turned to me. “How you?” he said. “You still writin’ on that book?”

I asked about the marina: How long has he had it? Why did he build it? “Ronnie Bevans,” he said, hustling out back to
grab a shovel and get to work. He began digging up an old gas line. "And some of them other fellas up on the Northern Neck. They needed a place t' buy seed."

On a map Jones Creek is thin as a wire. It bends through a Virginia county called the Isle of Wight to the mouth of the James. At Rescue, where the shore is straight, Billy's dock follows the creek to the river for about a quarter of a mile.

A waterman named Bubba Joe stopped to say hello on his way to the dock to work on his boat. He and David talked about the sailboats and cabin cruisers tied up next door at the Rescue Yacht Basin. One sport fishing boat, the Moby from Newport News, three decks tall and looking big enough to sleep a crowd, was up in dry dock waiting for repairs. I asked Bubba Joe who owns her. "Some rich come-here," he said. "From the city. Goes out fishin' in a suit and tie."

Billy's wife, Jo, appeared about then at the door of her two-story frame house. She walked down the hill and across the street, limping and a little bent from a recent car accident. First she said hello to David, then she turned to me. "How you?" she wanted to know. "You still writin' on that book?"

We entered the restaurant through an enclosed narrow porch, wide enough for one. Three shelves held some supplies: soda and beer, chips and candy, rubber boots, gloves, a flashlight, some rope. Six formica tables and their assorted kitchen chairs filled the eating area. A high counter for three faced the kitchen. On it was a jar for tips.

Men in jackets and ties and women in stockings and heels came in through the front door while David and I ordered and ate our lunch. Only minutes away from the urban centers of Norfolk, Hampton and Newport News, Rescue, it seemed, had been discovered.

The phone was for David. "Must be Ronnie," he said, pushing back his chair.

I imagined a conversation I had heard before.

Ronnie said: "How you? Did Wayne get on down thar yet?"

"No. Not yet."
"Well, then, O.K. You keep track. You pay attention and keep everythin' straight."

David hung up the phone and returned to the table. He wrapped the remains of his sandwich in a napkin and picked up his Coke. Then he left for the loading dock.

The state of Virginia broke with tradition on the issue of common ground around the turn of the century. Dredging had severely damaged most Bay beds. Once there were only a few oysters left, the industry began to wither. In the hope that private enterprise could create a renascence, the state decided to lease out for private cultivation sections of barren bottom.

The governments of Connecticut and New York had similarly turned their public policy around a few years before. A few large packing companies had then used these new laws to force most self-employed oystermen working Long Island Sound out of business. Chesapeake watermen feared a similar fate, so they fought private cultivation, but those in Virginia lost.

Virginia had to have a map of the bottom to divide up the Bay. James Baylor did the survey with the help of local people who knew their own creeks and coves. The state kept most natural bars in reserve as a commons for Virginia watermen. The rest, called barren bottom, legislators made available as leaseholds to prospective growers. Some of the bottom was useless. But much of it, once shelled and seeded, became productive oyster ground.

Growers and watermen argued over the size of leaseholds. On Long Island Sound, packing company owners, because they were able to rent vast tracts of land, controlled the resource and so the industry. Knowing this, Virginia watermen lobbied for small tenures. Growers, on the other hand, pressed for large leases.

The legislature settled the issue by not settling it at all. One can lease only small tracts directly from the state but can
sublease virtually limitless ground from others. Rent is very cheap. And holdings are granted in perpetuity so they can be passed down from generation to generation.

From this division of Bay bottom into public and private ground, a new breed of oysterman has emerged. Like Ronnie Bevans, this waterman is a packer and a grower. Many are astute businessmen, economically and politically powerful. And some, who would control the industry if they could, deal with traditional watermen only because they must.

I finished my sandwich and started after David. When I got to the loading dock he was walking around to the back of his rig, stepping over muddy spots to protect his cowboy boots. A faint sweet smell drifted out when he opened the doors of his truck. Then Billy appeared on the bridge in his old car and drove down to direct. David backed his truck up around a conveyor belt until the belt was wedged, like a tongue, deep within the truck. Then Wayne Campbell, who works for Ronnie also, pulled up, and David helped him with his truck and a second lift.

Work boats arrived: the Cherish from Poguoson, the Rainbow Chaser from Rescue, Miss Kathy and Dottie from Remlick, the Delta Queen from Deltaville. In each of them, oysters heaped high above the gunwales, spilling over cabin roofs, pushed and crowded watermen to the ends and edges of their boats.

I sat near the dock facing the water on a discarded office chair with a broken wheel. Oystering equipment surrounded me. Ronnie’s trucks were behind me, one to my left and one to my right. Beside me, one on each side, were the tally shacks: tiny booths barely big enough for a worker and a winch. Boats filled the creek before me, like stepping stones leading from bank to bank.

Each boat is independently owned. Billy tells the watermen when Ronnie is buying seed, and the men come to the river. Then Billy buys their oysters and sells them, as a subcontractor, to Ronnie.
Like settlers come together for a barn raising, many people were working, on the boats and in the shacks or with the trucks and lifts, alone and together.

The waterman on the boat closest to me was old and bent, worn thin, I suppose, by working on the water. He wore black boots and, on a spring day, a quilted vest and woolen watch cap. With him was a broad-shouldered youth in T-shirt and jeans. Watching them work, I wished to think each was contributing his forte, one giving energy and strength, the other experience and knowledge; but knew such romantic notions trivialized them. Bending and leaning, rising and falling over his heap, the young man shoveled oysters into a metal tub punched with holes along the bottom. He placed them delicately to stretch his count because Ronnie pays him by the tub or bushel. As the young man stood a last layer of oysters up on end and fanned it out, the old man walked from the boat to the dock. There he caught and swung a long metal hook attached to a rope and boom back to the boat. He latched the hook beneath the handle of the tub.

Judy, who works at the marina for Billy and Jo Carter, was sitting in the tally shack watching. She started the winch. Turning a rope around it, she lifted the tub. The old man guided the cask of oysters across the dock. He dumped them out onto the bottom of the conveyor belt. Judy called the tally. "One," she said. The old man brought the tub back to the boat and walked on across his culling board where he handed the hook to the waterman shoveling in the boat behind him.

Sounds merged: shovels rasping, oysters thudding and clanking, engines whining, and above it all, the call of the tallymen, "tally one, tally two, tally three, and four, and five."

Tired of my chair, I wandered down the dock. The boards were poorly matched and badly fitted. Many broken or warped ones had not been repaired or replaced. I explored the dock to its end, avoiding gaps and holes, stepping up or down at its various sections. Here and there I stopped to look at the workboats. Most were old and worn, a few were freshly
painted; and, one, rounded at the stern, neglected and peeling, had no name.

I returned to the tally shacks and the conveyor belts to sit on the dock for awhile and dangle my legs over its edge. Its weathered wood was rough and warm to the touch. A ketch, which looked huge in this narrow gut, was motoring softly from the Rescue Yacht Basin to the river. Behind it, three barn swallows were chasing one another up and down the creek. Their backs glistened blue-black in the sun. Darting, they skimmed the water, then stopped suddenly to roll straight up and turn. Their thrust-out forked and dotted tails parried with the shore.

I turned to look behind me. David was bent to a squat. With his stiffened back held very straight, he dumped a load of oysters from their wash-tub-size container to the dock. He counted them one by one, sorting out the shell, and then asked Billy for a shovel. Scooping and shoveling, he put the oysters into a burlap sack, tagged the sack, and lifted it to the truck. Back at the plant Ronnie will look at one bag from every boat to check the size and shape of the bivalves as well as the amount of shell left in.

Trying to make David’s shoveling easier, I held the bags open, but found I was not much help. Then I saw on the dock what I thought would be a useful contraption. Someone had set a giant funnel inside a four-legged wooden stand. Below the funnel was a set of metal hooks. We hung the bag on those hooks and dumped a bushel of oysters through the pipe, but their weight knocked the bag off the hooks so that the oysters spilled out all over the ground. I moved the stand and went for the shovel while David shrugged his shoulders and grinned.

Tidal rivers in the Chesapeake have two layers. Light, fresh water washes downstream on top; heavy, salty stuff moves upstream along the bottom. In between, a relatively static zone jiggles back and forth. Larvae like to remain here in this
region until they are large enough to swim down and settle. Sometimes, though, something disturbs them and they swim up. Then, in most rivers, currents sweep them away from their protected coves out to an inhospitable main Bay.

The James, however, is different. Because of its vee-shaped mouth, water leaves and enters this river with some difficulty. Here gravitational forces pull the river's static zone up until it is an almost vertical third layer. In places the edges of this third layer rise to the surface of the water and form ruffles. Scientists call these ruffles junctions. A junction is a place of tension, where opposing currents temporarily suspend oyster larvae, along with other plants and animals, until a flood tide pushes in. The tide forces the junction down to the bottom of the river and back upstream. Trapped oyster larvae ride it away from the mouth of the James upriver toward their original spawning grounds.

An exceedingly large gyre, the James was a great seed river. For more than fifty years, it gave growers the young they needed to make barren bottom productive all over the Bay. Then, sometime in the early eighties, seed on the James disappeared. No one seemed to notice particularly until 1986. That spring, a graduate student at the Virginia Institute of Marine Science set out to track oyster eggs. He wanted to know specifically where the river was taking them. As he looked in places where he thought they would be concentrated, he found no eggs, or even any young at all. Scientists do not know why seed oysters have disappeared from the James, or whether they will reappear. The event has no known historical precedent, though it could have happened before without having been recorded.

A seed oyster is ready to be transplanted when it is about the size of a thumbprint. Since there has been no seed on the river for several years, growers like Ronnie Bevans have been transplanting oysters as big as my fist. These two- and three- and four-year-old oysters, which growers keep calling seed from force of habit, are the river's brood stock, the parents of all future generations. Once they are gone, there is no possi-
bility for regeneration on the river when or if conditions change.

With their shovels, the watermen nibbled away at the bottom edges of their heaps and mounds. The heaps fell down, collapsed and spilled over, then formed up again. Each time they were a little shorter and a little narrower until eventually they faded from view.

The conveyor belts whirred. The talleymen counted by fives: "one, two, three, four, tally; one, two, three, four, tally two." The counts went up and up; every boat had at least one hundred bushels on board, some had over two hundred.

The watermen who had arrived first that afternoon finished their work. One by one they pulled their boats away from the dock. In each, one man handled the tiller while the other cleaned up. The men splashed buckets of water over their decks and culling boards, then sponged and mopped. Some moored their boats further up or down the creek; others took a spot across the way. Many went into Jo's for six-packs and then carried them back to their boats. Sitting cross-legged on the roofs of their cabins, they were free to watch others heave and hoist.

Toward evening, when the last two boats left at the dock were almost unloaded, the conveyor belt jammed. Billy hustled over, shoulders first. His graying longish blond hair was disheveled. He stood in the back of the truck and poked around for awhile with a screwdriver. After he dug out some oysters stuck beneath the conveyor's rubber strip, he told one of the talleymen to start the motor. The conveyor jerked and stopped. David and Wayne, who had started work around 5:30 that morning, looked at one another in dismay.

On the bridge, kids released from school were whooping and hollering, tumbling, somersaulting, and jackknifing from girders beneath the bridge into the creek.

With his screwdriver, Billy shoved some bivalves caught between a set of wheels to the ground. Wayne picked up each one as it fell and put it in his truck. Billy freed the conveyor.
The watermen finished their work. Two marine police inspectors had been waiting on the dock for most of the afternoon. After David and Wayne closed the backs of their trucks, the policemen walked over and clamped a stamped metal seal on each set of doors.

After the last big rainstorm, an inadequate treatment plant had filled the James with raw sewage. The oysters Ronnie bought, because they were growing on a downstream bed, were infested with man-killing bacteria. Before they could be packed and sold, they had to be replanted in cleaner water so they could, through a process called depuration, purify themselves. The police were sealing the trucks to make sure no one put these oysters any place except in the river.

David was carrying about five thousand bushels of oysters in his truck. Afraid to drive back over the shaky Jones Creek bridge, he went around by way of Battery Park. An abandoned, weatherbeaten shucking house was collapsing by the Pagan River. Yellow warblers pecked the ground closeby. As the truck rumbled through, they sprang from the grass and flocked to the trees. Bright flashes appeared, then disappeared, along the many limbs and branches, among the leaves and shadows.

David approached Hampton Roads, a metropolitan area comprising several cities (Norfolk, Chesapeake, Portsmouth, Suffolk, Hampton, Newport News) clustered and grown together around the mouth of the James. A big boom town with an economy based on shipbuilding and defense spending, Hampton Roads has nearly one and a half million people.

An evening mist rose from the river. I could see the shipyards of Newport News through it. Gigantic cranes and lifts, painted pale green, broke the sky. Gas stations, fast food restaurants, motels, and shopping centers covered the land. Surrounded by them, I could find no place to rest my eyes.

Divided by four large rivers, Virginia’s Western Shore, on a map, looks like a three-fingered, outstretched hand. The James and the York carve out the southernmost digit. Above
that, the York and the Rappahannock carve another; and
above that, the Rappahannock and the Potomac fashion the
last. Historians and geographers call this section of Western
Shore Tidewater Virginia.

Running north and south through it is Route 17, a road
state legislators recently decided to call the Tidewater Trail.
David left Hampton Roads behind and drove up the Trail.
When we reached the land between the York and the Rappahannock, the Western Shore's middle finger, views of
houses and farms and trees returned. From the speeding
truck, I caught glimpses of peoples' lives: A Confederate flag
flew near a small brick farmhouse painted white; a spotted
pony chomped grass in a field by the highway. Then those
scenes disappeared behind hills and woods.

Beyond the trees are many rural towns and villages: Mathews, Remlick, Mobjack, Deltaville, Gwynn. As David headed
up the road, I thought about the day I had rambled through
those villages around the countryside to explore. I had ex-
pected to meet some watermen or, at least, see the tools of
their trade. Instead, I mostly saw ordinary farm scenes: a
herd of black and brown cows lowing in a bright meadow
flecked with buttercups, a flock of gray and white gulls
swooping behind a man in a red cap on a blue tractor plowing
his field.

I did find a Methodist tabernacle, though, near Mathews
hard by Mobjack Bay, set in a clearing near a stand of pine.
The marker said it was built in 1897. Made of only a roof and a
wall, it was open on three sides to rain and weather. It had a
simple altar and an exposed choir loft. Sawdust covered a
dirt floor. Fresh white paint gleamed on the hand-hewn
benches and a Bible, protected by the lean-to roof, lay open by
the altar.

The church made me think of Joshua Thomas, a self-taught
waterman preacher who, in the nineteenth century, brought
Methodism to remote fishing villages all over the Bay. He
exhorted watermen to conversion by talking to them about
their lives. "I heard of a brother who, in telling his experience,
said he never pondered seriously his awful condition as a sinner until one dark night bound up the Bay,” he preached.

“He felt a solemn dread take hold of him, for he did not know but some passing vessel or steamboat might run foul of his boat and sink him; and in that case, said he to himself, ‘Where would I go?’ This thought brought him to repentance. He went to a camp meeting soon after and determined never to leave that place until God, for Christ’s sake, should pardon his sins. He did not speak in vain, but was happily converted and joined the Church, to live and die among the people of God.”

Parishioners prayed and socialized in tabernacles like this one while they listened to traveling preachers exhort and admonish. “Shall believers fear, and like cowards fly?” Thomas once asked and then said, “No! desponding Peter, wherefore didst thou doubt? Come and have thy faith made strong by earnest prayer! Come, Andrew; bring the lad with the small basket of loaves and fishes. All things are ready. Let us look for a great blessing, that we may be enabled to praise our God with a loud noise, and feed the hungry multitude with the bread of life!”

Because of Thomas a great many watermen are Methodists, so I looked again for signs of their culture but found none. There were no crab shanties, pound nets, dredges, skiffs, or workboats in the coves and guts or on the beaches. Instead, on Gwynn’s Island, where Captain John Smith nearly died from a stingray’s bite, I found vacation homes, a handsome luxury motel, and a new craft boutique.

David lives, along with Ronnie Bevans, on land lying between the Rappahannock and the Potomac. Virginians call this uppermost peninsula the Northern Neck.

Mostly country, the Northern Neck has no cities or flourishing industries. The population of Colonial Beach, its largest town, is twenty-four hundred. Next in size, Kilmarnock has a population of nine hundred and fifty. People generally farm or work on the water, except for those who commute
about one hundred miles each way to Washington, D.C. Steady jobs that pay a living wage are hard to come by.

The first few times I met and talked with Ronnie he was helpful, friendly, and open, although always hurried. Even so, I continued to think of him as a modern robber baron, an exploiter of place and people, because he was a successful processor. Then David told me a story.

He is a friendly, easy-going man with a broad, flashy smile. After he had worked at Ronnie's for over a decade, he decided he wanted to try something else. "I quit Ronnie," he said, "and got a job fishing for menhaden on one of them boats out at Reedville." Less than a year later the strain of hauling nets in rough weather ruptured two disks in his back. The company that employed him refused to pay his medical expenses or give him workman's compensation.

David and his wife Beatrice (he says it in three syllables with the accent on the a) have four school-age daughters. At home flat on his back, he didn't know how he and his family were going to survive. Help came from Ronnie and his brother, Eddie, as well as some of David's relatives.

When David could work again twenty-two months later, Ronnie gave him a job as a truck driver. "He's a kind man," David said, downplaying the gratitude I heard in his voice. "We wouldn't have made it without him."

David crossed the Rappahannock. The road narrowed, curved, and rose, then opened out again. Fields of winter wheat, pommelled and blown by a recent spring storm, scrolled and twined. The light faded. Bales of hay, rolled up, lay in the meadows. Hedgerows appeared bordering the road, and my vista was gone.

Through the dark, we passed beneath a canopy of trees and arrived at the packing house. David parked by the loading dock. I gathered paper cups, sandwich wrappers, and bags, said goodnight, and started for the trash can, while David, who was not yet finished with his day's work, went to the office.
Shirley Bevans has classic prom queen good looks: auburn hair, green eyes, fair skin, a perky nose. She could have spent her high school years captaining the pep squad, but she didn’t. Instead she married Ronnie before either had graduated. “We were much talked against in the community,” she said. “People told us we’d never make it, so we developed what I guess you’d call a ‘we’ll-show-them’ attitude, a stubborn drive to be successful.”

They stayed with her parents for about six months. Then her grandmother told them they could live in her house in Kinsale. In exchange they did the maintenance and paid the taxes.

Behind Shirley’s grandmother’s white clapboard house there is a small red shed. Shirley and Ronnie started a cottage industry there. Their days began at three in the morning. They washed and packed oysters in generic jars out in the shed with six shuckers. Then Ronnie left to tong more oysters from a nine-acre piece of ground Shirley’s grandfather rented from the state, while Shirley, with the help of her mother, packed the car and made deliveries to various small businesses in Richmond.

One morning when Ronnie got up, he passed out. “Luckily my mother knew it was exhaustion,” Shirley said, “so he went back to bed, and I opened up.”

Then someone reported them to the health department. “Everybody packs oysters out back like that,” Shirley said, “but you’re not supposed to. I guess we stepped on somebody’s toes, took over their territory, or sold too many. Something like that.”

So they bought a packing house and started their company, where Shirley worked with Ronnie until after their fifth daughter was born. Today they grow oysters on hundreds of acres of leased ground all up and down the Yeocomico, operate four processing plants, ship their brand to distributors throughout the Midwest, and employ about three hundred people. “Ronnie jokes sometimes,” Shirley says, “that whoever reported us probably wishes he hadn’t.”
By the time I got to the oyster house at 7:00 the next morning, Ronnie was already on the river planting bivalves. So I went to the lunch room to say hello to Shirley's mother and buy a cup of coffee. I took it to the office. Dan, who works in the skimming room, was sitting behind a desk struggling to wake up. "Tell me," he said, his hand wrapped around a styrofoam cup, "what are you writin' in that book?"

I talked some.

Then he said: "I get it. It's about trying to live connected to the land and the water."

I said yes, that was mostly it.

"That's getting somethin' hard to do."

He left for the skimming room where he supervises workers who wash and pack the Bevans brand. I went down to the river. Ronnie zoomed up to the dock in his speedboat, cut the motor, and jumped out. He was wearing a pink and blue madras plaid shirt with a light-weight, rose-colored parka; and has, I realized then, Mike Willey's harmonious good looks: the same even features, the same pale skin turned to tan; and, at the moment, the same mischievous look in his sky-blue eyes. "Slept in this morning, did ya?" he said, grinning. I laughed and told him that he moved too fast for me.

"So how'd it go yesterday down on the James? Those Guineamen can be kinda rough," he said, looking directly at me. One eye, I noticed, is slightly larger than the other.

Guineamen, who live back in the marshes down around Gloucester Point, got their name, so the story goes, during the Revolutionary War. Angry with the rebels for one reason or another, they agreed to fight for the crown but demanded in exchange that the royalists pay them with guineas, British coins cast in gold. Proud to be thought of as fearless and independent, they are tough, quick-tempered watermen who, when Saturday night rolls around, like to drink and brawl.

Ronnie told me a Guineaman story. Scars and fists and knives figured prominently in it. While he talked, his face was turned to me, but his body was shifted toward the steps to his
Dan came out of the skimming room and walked toward us. Ronnie glanced his way and then, distracted, hurried up the telling of his tale. As soon as he was done, he walked off with Dan up to the office.

I went down to the river where I watched the Yeocomico Planter lumber up to the dock. Wayne Campbell, who the day before was down on the James with David and me, pulled the long, narrow, cumbersome freighter up to the landing. He and Almon Newsome climbed down from the pilot house. Wayne is slight but hard-muscled. He has a bumpy face and a scrap of beard in the curve of his chin. Almon is tall and thin. He was wearing a perfectly pressed beige Marine Police officer's uniform. That morning, while I was grabbing an Egg McMuffin around six, Almon took the metal bands from the doors of Ronnie's trucks.

A group of men was milling around some pieces of heavy equipment over by a cement loading dock. Some stood on the ground near a large front-end loader. Others, up on the dock, stood between a smaller machine and a tractor-trailer pulled to the platform and left with its doors open.

Wayne glanced at his watch and hurried over. He climbed to the dock, got on the small front-end loader, and drove it from the platform into the back of the truck. He scooped with a mechanical arm and hand, gathered some oysters and then backtracked out into the open. Another workman named Earle waited down below on the large front-end loader. With his bucket, he caught the oysters Wayne poured out, then made a U-turn, as a warning bell clamored, and drove to the Yeocomico Planter. There he loaded the boat and returned. Like boys playing with toys, through it all, he and Wayne kept on grinning at one another.

Ronnie yanked open the screen door of his office building and came down the steps. He spotted me and grinned: "Betcha I walk a hundred miles a day," he said. Then he hurried to the loading dock. He looked around and grabbed a
shovel. He strode into the back of the truck to dig through the oyster pile and redistribute it more evenly. Then he saw his son-in-law Tim standing there waiting to ask a question. He dropped the shovel and walked with Tim, talking all the while, to the warehouse.

Every now and then some of the oysters Wayne poured from his scoop into Earle's fell to the ground. Occasionally Earle got down to pick them up. But most of the time one of the men walking by did it for him without being asked.

Ronnie came back from the warehouse where he had gone with his son-in-law Tim. He was ready to go, but Wayne and Earle hadn't finished loading the freighter. At the river, some of the men had taken a break and were tossing a football around. Ronnie joined them for a time, laughing with them and telling stories. But then he glanced at the half-empty boat and forgot the game. "Don't you," he said to me, "jus' hate to hurry up and wait."

Ronnie leases hundreds of acres of oyster ground from the state. It is scattered here and there up and down the river. I asked how he keeps track of what he rents and, since he can't see the bottom, what he plants. He took me up to the office to show me. In a central room where his secretaries work, he opened the drawer of a file cabinet. I spread charts and records out on a plush blue carpet and, leaning on one elbow, pulled out a notebook.

"Anything else you need," he said, going into his office, "you let me know."

In the midst of writing down some names of leaseholds (Mrs. Griffiths, Crow Bar, Mundy Point, Shannon, Cornish Cove) I heard, through his open office door, part of a phone conversation. "This twenty-seven dollar arster from up at Rock Hall, don't send me no more of them," Ronnie said in a good-natured but emphatic way. "There's no way we can make out on those kind of prices." Not able to grow anywhere near enough oysters to meet his needs, he buys much of his supply from brokers around the Chesapeake and, like all good businessmen, bargains for the best product at the best price.
Knowing, I suppose, that the size of his operation gives him clout, he continued: “We can do without ’em; it won’t hurt us any. But I feel like I’m obligated to you and the boys on the Bay. But we can go to Louisiana. I don’t want to do it, but I will if I have to.”

As a rule packers and watermen don’t particularly trust one another. Disputes over the quality of oysters delivered and the prices paid are constant. Underlying those issues, however, is another. Watermen and packers have quarreled over common ground since the days of the Baylor Survey. Watermen see the break-up of the Bay as an opening wedge processors can use to try to take over public rock, so they feel threatened.

Packers and watermen last shot at one another over common ground in 1928. Oystermen thought a packer had appropriated some public rock on Mobjack Bay. They attacked his armed guard and took his oysters to retaliate. The governor called up three militia companies but couldn’t settle the dispute. It went on until the processor gave up some territory to make peace.

The shooting is over today, but the hostility remains. When David Fauntleroy was recovering from his back injury, Ronnie went to visit him one Sunday. They heard clatter as they walked to the river toward a piece of ground Ronnie rented from David’s grandfather. When they got close to the bank, they saw, through heavy fog, a man standing on the washboard of a boat. Ronnie pointed a shotgun he happened to be carrying at him and told him to come ashore. “He caught him that one time,” David says, “but you had to know that man had been stealing from Ronnie for years.”

The Yeocomico Planter was ready at last. I walked down to it with Wayne while Ronnie stayed on for a while to work in his office. Four of us, Roy and Almon, Wayne and me, rode the heavily-laden freighter out to Mundy Point. Its graceless rounded bow plowed through the water.

I stood on the forecastle with Almon. The water was calm and smooth and in places near shore so dark green it was
almost black. All around us, crabbers slowly drove up and down the river. Following behind them, gulls scavenged. Some of Ronnie’s dredge boats were out, circling left.

We passed Shirley’s father’s eel plant, a small, neat building which was for a time the subject of some controversy here in Westmoreland County. Many new people have bought homes on the Northern Neck in recent years. Most are weekenders or retirees. Shirley and others whose Tidewater roots go deep call them ‘come-heres’.

Some of these new neighbors objected when Shirley’s father Kenneth began to build his plant. They said it would spoil their view of the river. The court eventually held a hearing, however, and found in Kenneth’s favor, so this dispute is settled for now. “What these people didn’t understand,” Shirley said, “is working on the water is the way we make our living; it’s the way we’ve always made our living.”

We passed a small white shucking house, an abandoned fish factory built of brick, and a marina where some big pleasure boats were moored beneath a tipped and slightly rusty corrugated roof. Knarry tree limbs and saplings rose in a bent and wobbly way above the surface of the water. Each carried aloft an initialed wooden sign. Ronnie had driven them down in places all over the river to mark the bounds of his and Shirley’s ground.

At Mundy Point, Wayne idled the motor and waited for Ronnie to come aboard. He looked at his watch and sighed. There were too many tasks left for him to do before his day was over. “Time is so precious,” he said softly half to himself and half to me.

Wayne is an intense, serious man. His parents split up and left him mostly on his own when he was thirteen. He stayed in school for three more years, then quit. “I was a street kid,” he said, “a punk.”

He wandered around picking up jobs here and there, factory jobs, construction jobs, boat crew jobs. Then finally he came home and settled down. “I had nothin’ when I came
here and went to work for Ronnie,” he said, “no car, no home, nothing. Ronnie was the one who helped me, who gave me my start, the way to start buildin’ for my family.”

Wayne thinks of Ronnie as a fair but demanding boss. “He’ll call you up at two or three in the morning,” Wayne said, “telling you there’s a truck he needs you to come in and unload. And you know you’re being tested. So when you go in to ask for a raise he’s goin’ to remember that test and talk with you about it.”

Most everyone who works for Ronnie puts in an extremely long day. Some people complain, but most do not—in part, I suspect, because each person knows that no matter how hard he works Ronnie works harder. Also, here on the Northern Neck many people continue to respect old-fashioned labor. Some believe Ronnie’s drive has taken him beyond the bounds of reasonableness, though. “Sometimes I think it’s the business that’s runnin’ him,” his brother Eddie has said, “and not the other way round.”

Ronnie Bevans embodies many time-honored American virtues. He is exceedingly hard-working and also kind. The men he employs admire and like him. He chooses to stay in rural Virginia because he wants to remain connected to place and people, to his roots and the land’s traditions.

Among his attributes is an attitude toward the land and the water that most of us share. Americans do not believe that men should accommodate themselves to the landscape but rather that we should mold the landscape to our purposes for our use. Given this belief in interference, one can see almost any activity connected to land and water as beneficent. Nineteenth century oyster dredgers said they were improving the reefs by thinning and cultivating them. And marine biologists generally talk about their manipulation of the Bay in terms of increased fertility and productivity.

Ronnie has continued to transplant James River oysters to his leased grounds for many reasons. Transplants give him a source of supply in spring and summer when public beds close and prices go up. They decrease his dependence on
watermen so that he has more control over his business. He knows that if he does not buy up these bivalves someone else will. And most important: He believes he is raising a valuable crop in a barren place where nothing much grew before.

Once, the Yeocomico produced its own oyster seed. Then, about a quarter of a century ago, something changed in the river and the seed disappeared. Ronnie, who saw it go, has some conjectures about it. Since men have diverted so much fresh water to various land uses, the river is saltier than it used to be. Perhaps this increased salt content makes the Yeocomico inhospitable to eggs and sperm. Or perhaps pesticides washed into the river with run-off from surrounding farms are killing spawn.

Man-made blight on the river forces Ronnie to bring more oysters up from the James at a time when two diseases, Dermo and MSX, are decimating its reefs and rocks. A fungus, Dermo invades the body of an oyster to attack its sex organs and connective tissues. Like MSX, it grows best when hot, dry weather makes Bay rivers particularly salty.

Dermo, lying dormant in the oysters Ronnie bought, wiped out much of his crop in the summer of 1986. The following year he tried to control the disease by buying oysters taken only from selected rocks thought to be fungus free and by planting them far apart to avoid contagion.

Like Dermo, MSX is harmless to humans. The disease is caused by a single-celled protozoan from the haplosporidian group that worms its way through a bivalve's lips and gills into its inner organs. These animals particularly like to go for an oyster's gonads. The oyster fights back by growing cysts around the microorganisms, but eventually these cysts choke it to death.

Oyster biologists do not know where Dermo and MSX came from or why they appeared on the Bay, almost simultaneously, some thirty years ago. They may have been brought here with a boatload of Japanese oysters someone planted somewhere experimentally. Or they may have been
here all along, inside Chesapeake bivalves, but kept in check by the oysters' good health and superior strength until environmental stresses, attacking that vigor, broke the balance.

Ronnie appeared, driving his speedboat very fast. His tractor cap with Bevans Oyster Company written on it was flipped backward. Grinning like a kid out for a jaunt, he stopped short and reached for a pair of tongs. He made a grab to check his crop. Then he dropped his hook, stepped to the Planter, and climbed to the pilothouse.

Designed particularly for transplanting oysters, the Yeocomico Planter is an odd-looking boat. Its long, narrow deck is sloped into a deep, wide vee. At the bottom of this vee there is an open channel and beneath that a rubber-coated conveyor belt; both run the length of the boat. To keep the channel closed until they are ready to plant, the men lay a series of tightly fitted metal plates over it.

Roy, Almon, and Wayne went down to the deck. Wayne straddled the oyster mound, his back to the pilothouse. He held a crowbar in his hand. When he heard the conveyor belt hum, he turned starboard and dug through the oysters. He hooked the crowbar into a hole bored through one of the metal plates and yanked it up. As the plate rose, oysters sank down into the open channel. Wayne turned to port, hooked and yanked again. More oysters collapsed, and he jumped away.

Roy washed the oysters down the sides of the vee, through the channel, and onto the conveyor with a hose. The belt took them beyond the prow of the boat to a metal disk. As the disk rotated, it knocked the oysters off one after another. Each plunked against the surface of the water, formed a small circular ripple, splashed some mud and then disappeared. The ripples grew, fanned out and intersected with one another.

Ronnie moved the boat along, planting the oysters sparingly. He steered it around the edges of a small and oddly-shaped piece of ground and then moved it inward, shortening
the length of his furrows, tightening his turns. The water was shallow but so muddy he could not see the bottom. He used a set of stakes he had driven down to mark his bounds as well as intuition and memory to guide him.

He was absorbed by the task at hand. When he did look up, I asked: “Do you ever think about doing something else for a living?”

“A lot of people ask me why I don’t play golf,” he answered, “now that I have the time and the money. So I tell them that isn’t what I like to do. What I like is being out here on the river doing this.”

At first I thought he misunderstood my question, and then I saw that he did not.

Once when I visited Shirley at home, she showed me her favorite family photograph. In it Ronnie, as a boy, sits on an overturned bushel basket. He is looking up at his grandfather, who was an oysterman too. Ronnie’s back is to the camera, but the angle of the shot catches his expression. His eyes are charged with love and admiration.

Ronnie turned off the conveyor belt and idled the motor. For the moment, until Wayne and Earle reload the boat, he was finished planting. Wayne came up to the pilothouse. Ronnie moved back and gave him the wheel. As Wayne took it, Ronnie put one arm around his shoulder and hugged him the way a coach does to thank or hearten a player returning from the field.

He climbed down the ladder and returned to his speedboat. Then he zipped off.

Wayne brought the Planter around and urged it forward. And we returned to the oyster house, riding the back of a boat slowly upriver in a persistent, turtle-like way.
5 Metamorphosis

Down in Virginia, along the northern bank of the York, a research facility connected with the college of William and Mary, the Virginia Institute of Marine Science, is located on a triangular spit of land in the town of Gloucester Point. I traveled down the Tidewater Trail to the institute one day because I wanted to meet two marine biologists working there. Recently hired for a new project, they were trying to reseed some of the Bay with cultured oysters.

Around Gloucester Point, the Trail's four lanes are hedged with small brick shopping centers. I turned from the highway between a fast food restaurant and a gas station and drove past some cul-de-sacs built for commuters from Newport News. I took a rutted dirt road to the river. The hatchery was down that road near the point of a crescent-shaped basin.

The building was boxy and white, with a bank of windows around its second story. I walked around a bit before I went in. There was a pile of oyster shells near the entrance and, beyond that, an experimental plot of marsh grass with a please-don't-walk sign on it. Near the water's edge some turtles dozed in tubs. Past them, out on the river, a white hut floated on a raft. A jumble of pipes ran from that building across the marsh to the hatchery.

I went inside to see the hatchery and meet the scientists. The building was divided into one large double-storied room off to the right and several small offices and storage rooms, some on the first floor, some on the second, off to the left. In the large room, vats and tubs were lined up in orderly rows like assembly tables in a factory. To one side were the vats: round containers of gray plastic about five feet high and five
feet across. To the other were the tubs: green rectangular troughs about six feet long and three feet wide. Pipes with spigots and heavy electrical cord hung from the ceiling down over each container.

The floor of this main room was awash, an inch or two deep, with York River water. Ken Kurkowski was wading through it, shoving it from him with the outer edges of his boots. He had the slight stoop of a distance runner; beneath jeans and polo shirt, his body was long and lean and stiff. His hair was clipped short above his ears and neck as if it had been dealt with severely by a militaristic barber.

A green hose lay on the cement floor. It had been cut apart and then spliced back together with a metal clamp. He hunkered down to it, clenched his jaw, and loosened the clamp. Then he righted a filtering mechanism: a clear plastic box about the size and shape of a large briefcase containing two meshed white cylinders, each about a foot long.

One storage room jutted into the two-story main room of the hatchery, like a small box set down inside a large carton. The room had a ceiling but no second story counterpart; one could stand on its roof while inside the building. Ken's assistant, Jim Greaves, was up there now on the lid of the box splitting and attaching another section of hose to the narrow ends of a portable water heater.

Out on the river in the floating hut, six pumps were pulling 80,000 gallons of water from the York. The water flowed across the marsh to the hatchery. When Jim reached up and opened a valve, he directed some of that water through a pipe suspended below the ceiling to the attached hose and then through the water heater. The heater warmed the water and then gravity dropped it down the wall of the small box to the floor of the hatchery. The hose took it through the filtering mechanism Ken was holding, then raised it over the lip of a gray tub. It spurted out there.

Clean water is the blood and bone of a hatchery. But the York is not a clean river. Military installations, ships, and factories, pouring forth toxic waste, use it like a sewer. Their
leavings have settled down and combined with the bottom through the years. Now when the wind blows west, as it often does here on the York, it lifts up and stirs poisoned mud around in the water. When this mud comes into the hatchery with water from the river, it clogs many of the mechanisms Ken depends on. But more important, the poison bound to it, if left in the water, kills the larvae Ken is trying to grow.

Ken held the filtering mechanism in his hand. He shook it up and down. The water foamed, then settled. He watched it circling around inside the clear plastic through an intricate series of nooks and crannies woven into the carbon filters. The larvae he was about to spawn would survive only if these filters cleaned the water thoroughly.

His neck and shoulders were stiff with tension. With a thunk, he set the plastic holder on the cement. It fell over. He stood it up again; then, seeking a flat surface, scraped it back and forth across the floor until it remained upright. He paced to the water fountain, then back to the carbon filter. Kneeling down to it, he pumped a red button on the top, scowled, rose, and waded to Jim who had moved off to the other end of the hatchery.

After they spoke, Jim climbed in a loose-limbed way back up to the lid of the box. His wet polo shirt was sticking to his thin ribs. He cleaned some mud out of the stopped-up heater and came down.

Ken started picking brood oysters for tomorrow's spawning. He walked between the rectangular tubs, his narrow body taut. In each was a group of oysters gathered from a particular river or cove. Ken had fed them all well and kept them warm to convince them summer had come, although it hadn't. By now he expected some, fat with eggs and sperm, would be ready to spawn.

He wanted the most fecund, so he stopped before bivalves taken from Mobjack Bay. Because they had been in the hatchery for many weeks, they should be ripe. He dipped an oyster up with his hand and took it from its shell. It was thick and swollen. He carried it to his office and nicked it near the
center. Milky sap flowed from the cut. He diluted the sap with some river water and put it on a slide. Through the microscope, he saw distinctly formed eggs lying pendant on the glass.

If one oyster was ready to spawn, the rest were too. Ken went back to the trough. None of the oysters gave him any outward sign of its sex. Without opening each one, which would kill it, he could not know for certain if he were choosing both males and females. He could guess, however, using size and age as his guides. Oysters change sex from year to year. Most begin male, then become female during their second winter. Ken did the best he could. He picked four small ones that were about a year old and eight large ones that were about two or three years old.

He scrubbed them with a stiff brush, concentrating fiercely, loosening, flicking, rinsing mud and debris rich with likely predators from their deepest crevices. The oysters turned from blackish brown to golden tan. He lined them up in a long, shallow pan: three to a row, four rows across, small ones to his left, large ones to his right. He went outdoors after he finished.

I followed him, notebook in hand. Stone walls lined both sides of the walkway. He leaned against the one on the right; I leaned against the one on the left. I glanced at him, then looked away. He has, I thought, been buried by his work; the frustrations of it have overcome him.

I walked over to the mound of oyster shells left to bleach in the sun. The soft edges of a white shell streaked with purple crumbled in my hand when I picked it up. I didn't know what to say. Finally, I told Ken I thought it must be hard to have someone hanging around all day watching you work. And I thanked him for letting me do it. He looked my way and cleared his throat. Then I asked him how things were going, if he was finding it possible to raise larvae here on the York.

“This is a bad place for a hatchery,” he said, thrusting out his neck and chin. “We get a lot of westerly winds here. They stir up the bottom and who knows what's in that. There's a
weapons station right over there. If they ever have a mercury spill, that’s it for this place.”

Each word was both held back and driven out: “Last week’s larvae were born without shells. I don’t even know what the contaminant was, so I filter everything, otherwise they’re dead in twenty-four hours.”

A dark green van with a battered fender and a flaked VIMS insignia on it pulled up. Rich Bohn, a marine biologist who also worked at the hatchery, was towing a white plastic tank with the rounded corners and curled rim of a footed bathtub on a flat-bed trailer. About four feet high and six or seven feet long, it would have made a great jacuzzi for two. Rich slid open one of the truck’s side panels and lifted out a Coleman cooler, some corrugated plastic pipe, and a small motor nailed to a board.

He took everything into the hatchery. He pulled around behind the building, parked, and came back to us. He was wearing jeans and carrying a hard-backed leather briefcase in his hand.

Inside the hatchery he took an eyedropper and a clean slide from a shelf and carried it to a vat of larvae spawned nearly three weeks ago. He sucked up a bead of water and put it on the slide. Then he diluted the bead with a squirt from a container filled with brackish water, took the slide to Ken’s office, and put it under the microscope.

When larvae are ready to set, they form beneath their transparent shells dark brown spots that look like eyes. Rich had promised 800,000 larvae to Fred Biddlecomb, a grower up on the Northern Neck, for the day after tomorrow. But so far Ken had been able to rear only half that number.

Ken came in. “It looks like we’re going to be short,” Rich said. “How about I call Fred up and let him know? I can find out what he wants to do. He can go with what we have or wait until next week and see what happens.”

“Don’t worry,” Ken said. “This batch is healthy. They’ll be ready.”

Early the next morning the hatchery was a noisy place.
Water gushed from pipes and hoses, fell into tubs and troughs, drained down gutters and canals. The sounds accreted to fill the room with a dam-like roar.

The brood stock were aligned in the shallow turquoise pan. I stood over them watching, picturing their pleated gills inside their protective covers spread out like delicate fans. Their bills were open. Ribbons of flesh flourishing tentacles like cacti bearing spines protruded from all around the edges of the shells.

One cleansed itself, and a tiny puff of brown waste rose up. A large bivalve opened his shells wide, then snapped them shut. A smaller one followed suit. I dipped my finger in the water.

Ken was up at the far end of the hatchery. He turned, saw me, and came over. I said good morning. He nodded and then said with a grunt: "Don't stand over them like that. They won't spawn."

Chagrined, I asked if I had ruined his efforts. "Not yet," he said and walked away.

In my curiosity about the brood stock, I had forgotten that many hatcherymen have certain taboos they call on during the still-mysterious spawning process. One I know only spawns oysters in total darkness. Another insists on complete silence and will allow no person other than himself in the room.

An hour later the oysters had not spawned. Ken dropped a cube of frozen sperm into the pan to coax them. Hormones in it roused a male. He spurted a curdled stream from his side. A female clapped her bills so hard she raised herself nearly upright. She twirled around on her hinge and then sharply contracted her adductor muscle. A dense cloud of white appeared in the water.

Ken watched the oysters. As each began to spawn and he was able to determine its sex, he quickly separated the brood stock. He put the four females into a single bucket. Then he put three males in another bucket, three in another, and two in the last. The oysters spent themselves, spawning mightily
inside plastic pails. The water turned to clotted cream. Ken put them back in one of the green rectangular troughs when the spawning was over.

He stared into the pails and rocked his clenched jaw back and forth. He had to get his proportions right to fertilize as many eggs as possible. If his concentration of sperm was too thin, many eggs would remain sterile. If it was too thick, many eggs would be fertilized by more than one male cell; then, they would be deformed when they turned into larvae. He made his decisions by judging the look of the water, since there was no way for him to count or measure.

He diluted, poured, and stirred until all the eggs were mixed with sperm. Then he paced to the water fountain, then back to the buckets, then back to the water fountain. He put some eggs under the microscope to see if they had been fertilized yet. Most had grown the sign he was looking for: a tiny, transparent knob called a polar cell. He poured the eggs into a large gray vat and went outside.

Oysters spawn billions of eggs and sperm because these reproductive cells are utterly unprotected in nature. Ken's work was to use his scientific knowledge to improve on nature's seemingly haphazard system. To harvest as many young as he could, he controlled as many factors as he could: the warmth of the water, its cleanliness and salt content, the quality and amount of available food. When he was successful, he brought far more eggs through to metamorphosis than would ever be possible in the wild. And yet his work seemed to annoy rather than satisfy him, perhaps because it required that he isolate and technically control many natural processes.

I followed him outside, once again. This time I tried to ask some personal questions, and found out a little. He is not a native of the Bay. He grew up on Long Island, studied there at Stony Brook, and then went to work on the Sound for Blue Points, a clam company. He developed some expertise in the raising of clams there. Although he did not want to leave home, he did want to be a hatchery manager and had no hope
for promotion at Blue Point. "I was third in line there," he said. "And there is no retirement age. People work 'til they drop. So I came here to make a career move."

He talked about the demands of his job and the inadequacies of his tools. He wanted many improvements, he said, but I wondered if they would in the end make him any happier.

William Brooks was the first person to artificially spawn oyster larvae when he worked as a biologist at Johns Hopkins. Achieved in 1879, his success set scientists to dreaming. Soon, they said, oystermen will be raising bivalves as scientifically, productively, and profitably as any other farmer raising any other commodity.

"We should not be surprised to see the day when we shall talk of breeds of oysters as we now do of hogs," said Julius Nelson, a student of Brooks who worked on oyster propagation at the New Jersey Agricultural College. "A celebrated spawner may come to cost several hundred dollars."

First, though, scientists had to learn how to keep larvae alive through metamorphosis. Brooks never managed it, nor did his student Nelson. Food was the main problem. Tidal action sweeps food floating and traveling in the water past free-swimming larvae in nature. Scientists had to find a way to imitate this process to culture oysters in a hatchery.

Success didn't come until forty years after Brooks' initial discovery. About 1920 a marine biologist named W.F. Wells realized that concentrated natural algae, bubbled through a tank so the larvae could feed on them, fattened oyster larvae up enough for them to survive metamorphosis.

Scientists believed that commercial hatcheries using Wells' discovery would be profit-making ventures. And a few companies on Long Island Sound did go into business. But here on the Chesapeake natural seed grown by the estuary remained less expensive and more reliable than its cultured counterpart.

Then came the MSX epidemic of 1959. The Virginia oyster
industry feared for its life as the disease spread. Industry leaders went to the legislature, which turned to the scientific community. Everyone’s immediate goal was to reseed the Bay with inexpensively grown cultured seed. From the start, shells were the dominant obstacle.

When they are ready to metamorphose, larvae look for something hard and clean on which to settle. This substrate is called cultch. For cultch, larvae prefer other oyster shells, for some unknown reason, although most anything from a rubber tire to a plastic jug will do.

In nature, where tidal action keeps larvae hovering over their spawning ground, shells and young tend to stay together. In man-made systems, however, they are almost always apart: larvae in the hatchery, shells at the shucking house.

Biologists began by bringing cultch from the shucking house to the hatchery. They set the larvae there. Then they fed and sheltered the young, called spat, in the hatchery on these pieces of shell for two or three months until they were big enough to survive in the Bay. Oyster shells are large, bulky objects. In the hatchery they took up so much space experimenters could grow little seed. Also, they were expensive to buy and ship. And they had to be transported twice, from the shucking house to the hatchery and then from the hatchery to a grower. Scientists soon realized they had to find a better way.

Next they tried growing seed without any cultch at all. John Dupuy, who designed the VIMS hatchery where Ken and Rich worked, came up with what his fellow scientists thought was a promising system. He set his larvae on long sheets of ribbed plastic. Then once they metamorphosed, he washed them free and poured them loose into hatchery tanks. Growers transplanted them to the Bay two or three months later when the young were about the size of a dime.

Cultch’s bulk and creviced surfaces give oyster young some defense against predators. Without this protection, spat can be easily found, grabbed, eaten by certain Bay creatures.
Dupuy's free spat never made it through blue crab season, so VIMS closed the hatchery in the late 1970s and used the equipment to house turtles.

In the meantime out on the West Coast, an entrepreneur named Bill Black was reversing the whole process. Instead of buying and shipping boatloads of cultch into his hatchery, he was sending tiny packages of eyed larvae out to anyone with a pile of shell who wanted to grow some oysters.

This reversal was the outcome of an accidental discovery. By mistake someone working in Black's hatchery drained a tank and left a batch of eyed larvae out overnight. Instead of dying, as everyone in the field assumed they would, the larvae survived by closing their shells. So Black set them; and, to his surprise, they flourished.

Black took this success one step further. He decided to sell eyed larvae to people who had shell and good natural growing sites readily available. Gone for him was the cost of buying and handling shell and, as an attractive bonus, the cost of feeding spat expensive man-made food for several months.

While Black and others were refining this technique, called remote setting, a small group of Virginia growers happened to fly to the West Coast. They went to look at hydraulic dredges and saw instead several remote setting operations. They soon realized that this new process was giving the West-coast industry an excellent head start against its East-coast competition. When they got home, they called in a few political favors.

The state agreed to fund a five-year development project. VIMS reopened the hatchery. Although the location is bad, the building was generally appropriate and available. The institute took the turtles out and hired Ken Kurkowski from Blue Point and Rich Bohn from Wiegardt and Sons, a Washington oyster grower. Their job is to adapt West-coast technology to East-coast conditions. Ken works in the hatchery spawning and raising larvae; Rich works in the field demonstrating the remote setting process.
Rich loped in then, his black bushy hair awry. He asked me to ride with him up to the Northern Neck to meet the grower Fred Biddlecomb. When I said yes, he pulled the van with the trailer and the mobile tank around to the front of the hatchery. Back in went his briefcase, the plastic pipe and the small motor. I stepped up to a hard seat and pulled the safety belt across my lap.

Rich grew up in Chicago, in a family of six children. He is the son of an engineer. "One of my professors advised me to pick the kind of place where I wanted to live and then study a related species," he said. "Well, I knew I wanted to be near water, so I chose mollusks. I went to a couple of schools out on the West Coast, Oregon State and the University of Washington. When I was at Washington, Coast was building its hatchery across from the school on Puget Sound."

He talked and drove. Every now and then he pulled a cigarette from his briefcase and held it, while he smoked, turned down and in so that it was mostly hidden by the curled palm of his hand. "I worked for Coast, it's the biggest oyster company out there and probably in the country, for two years in their hatchery and then went to work for Weigardt and Sons on Willapa Bay. He's the second largest oyster grower out there, and he wanted to get into a remote setting operation."

"Basically I worked out a system of production for him that cost him the same or less than he was paying for natural seed. And on top of that, it was more reliable. In a natural situation, a grower just gets what falls down. Sometimes he gets five hundred or a thousand spat on a shell but usually its more like ten to fifteen seed. With my system you can control the number of seed on a shell. If you need twelve per shell, because that's the best number for your grounds, I can get you that, or ten or fifteen or whatever."

I looked around when he slowed down to pull a map out of his briefcase. We had left behind the shopping malls that line Route 17 around Gloucester Point and were on a country road. Rich chose a route and turned left. We passed a small
store, a Methodist church, and some large and prosperous-looking farms. He put his map away and went back to talking.

He decided to come east after several years of Pacific Northwest weather. Part of his responsibility at VIMS is to learn about the Bay and go from there. Most everything is different here: the type and number of predators, the temperature range, the salt content, the tidal flow, even the oyster itself. The West Coast oyster, *Crassostrea gigas*, is a larger, whiter and, many say, less tasty species. Whatever biologists have learned about its food, temperature, and salt requirements may or may not apply here.

"We have to do the temperature and the salinity stuff over, and we have to do the food over to a degree," he said. "Though we have some scientific indicators that we can go back to, whether or not they will work at a particular site is something you have to check each time. Every location is different, each one has its own set of problems so we have to go through everything every time."

Like one of the old-time Methodist preachers who brought religion to the people of the Bay, Rich is taking his show on the road. Needing more than a horse and a Bible, he carries with him a host of low-tech scientific paraphernalia. His purpose is to reseed the Bay by teaching growers like Fred Biddlecomb how to set larvae on their own.

When Rich talks about Fred and the other growers he works with, he calls them watermen. His appellation confused me for a while. Fred Biddlecomb leases one hundred acres of oyster ground from the state. He is in a rudimentary way an aquaculturist, like Ronnie Bevans; and not, as I think of watermen, a hunter-gatherer who takes his living from the commons. Rich, however, comes from the West Coast where there is no commons and so no hunting and gathering tradition. He uses the term in a generic way, I think, to honor those who choose a life connected to the water.

Rich turned left at a tree with a nailed-up, hand-lettered sign announcing Fred Biddlecomb's availability as a party-boat captain. He drove down a dirt lane to a clearing, passed
a series of outbuildings and parked on the levee above Cockrell Creek. A rambling white farmhouse stood on the knoll above.

Fred came through the door of one of the outbuildings. A sturdy middle-aged man, he wore cracked-leather dress shoes and a full-length blue coverall. He smiled when Rich introduced me but, in keeping with Bay custom, did not shake my hand. I noticed the bright blue of his eyes first, then the warmth of his smile, which was marked in front by two buck teeth.

The sun streamed down without interruption on this day in May. Standing in the clearing, I wished I'd brought a hat. Fred's wife, Beverly, came down from the house to say hello. She turned to her husband after a while and said: "Take off that coverall will you. Just lookin' at you makes me hot."

"Feels right comfortable to me," Fred said; but then, he unzipped his suit and stepped from it as he glanced sheepishly at Rich and me. He was wearing dark blue cotton work pants.

Fred Biddlecomb's ground on Cockrell Creek was naturally productive for many years. All he did to maintain it was shell the bottom each season and return any small oysters he mistakenly harvested. Spatfall took care of itself in the natural course of things. His yield was about fifteen to eighteen bushels an acre. Then the Chesapeake got saltier further up. MSX moved up the Bay with the salt, and his harvest fell to six or seven bushels an acre. He was interested in Rich's project because he thought a more disease-resistant oyster would develop from it.

Rich detached the tub and trailer from the van and locked down the trailer's wheels. Then Fred took him over by an oak tree to show him the system he'd worked out to bag shell with a hopper and shovel.

Rich liked to set his larvae on shell enclosed in mesh bags. These bags make the shell easier to handle. They also help protect young oysters from predators once they are transferred from a setting tank to the Bay. Rich provided growers
Metamorphosis

with everything they needed to participate in his project, except this bagged shell. That they had to get on their own.

Fred held up a rusty chicken-wire cylinder full of oyster shell. He beamed and said: “Darned if I didn’t happen to have some of this lying around. Weren’t good for nothing. Holds these shells together pretty good, don’t it.”

Oyster larvae are particularly sensitive animals. They can be easily damaged by many substances, some known, others unknown, because they have no shells or any other means of protection. Rich rubbed at some of the rust but didn’t say a word. I wondered if he’d forgotten to tell Fred about buying non-toxic polyvinyl mesh, or if Fred had decided the mesh wasn’t worth the price? Then, Rich looked down. Near him was a large pile of loose shell with a wisteria vine growing up through it. “Is this the stuff you put in the bags?” he asked.

“Surely. Been sitting around here since the sixties, the year my mother died. Things was so turned over, we never got a chance to put ‘em down in the creek. That old bush grew up right through ‘em.”

The shell bags were a fait accompli; Rich understood that. “The tannin on the shells could be a problem,” he said, “but we’ll see. I know you wanted to use what you had on hand.”

He and Fred carried the shell bags to the tank and stacked them up in an orderly fashion. Then Rich started his motor, took his plastic pipe to the creek and began to suction. When the tub was full of filtered creek water, Rich put the pipe back in the van. He talked some with Fred. “I’ll be back day after tomorrow with the eyed larvae,” he said, and left the water to warm and the shell to cure.

The next morning when I arrived, Ken’s assistant, Jim Greaves, was at the back of the hatchery getting ready to run the centrifuge. He climbed a makeshift ladder to the top of a square tank set on a wooden platform held in the air like a kid’s treehouse. He looped a green hose over the edge of the tank, then screwed a disk to the nozzle of the hose. He stretched a tan mesh bag around this disk. Its purpose was to
keep mud, large predators, and big pieces of plant life out of the tank. Jim opened the hose, filled the tank, and climbed down.

The centrifuge was an olive drab cylinder nearly as tall as a man. It stood on another platform next to and below the raised tank. Jim climbed three steps to the platform and filled the cylinder with water from above. In the water were millions of microscopic plants and animals that had rushed into the tank with the York through small holes in the filter.

When the centrifuge was full, he screwed on the lid. Then he pressed a series of buttons, carefully following instructions taped to the wall. The centrifuge screeched. It began taking water from the plankton and spinning these animals down into food for the larvae. Like a clothes dryer, it was mashing its contents against its sides. Jim put on his sound mufflers and walked away.

Ken put on his sound mufflers too. He was sorting larvae near the front of the hatchery. Like Rich’s tank that resembled a bathtub, the equipment he used looked familiar yet odd.

He began by draining a round vat, called a conical, which had a diameter of six or seven feet. The conical had a valve and a spigot near its bottom. Corrugated tubing connected that spigot to a cylinder about twelve inches high and twelve inches across that had a mesh bottom. The cylinder was balanced on top of two plastic rollers set inside a large dishpan with holes in its sides. As the water traveled from the conical through the cylinder into the dishpan and out onto the floor, it left behind on the mesh a brown lump of larvae.

When it was almost empty, Ken marched to the conical and stared over its rim. Larvae covered with silt were stuck to its sides. He hosed them down. They washed through the corrugated tube into another cylinder of about the same width but much shorter. Worried that the dirt clinging to them would kill them, Ken rinsed them off. Then he took them to a small table by the front door and told Jim to “give them some ABA.”

He returned to the conical with a bucket of soapy water in
his hand. He put the bucket inside the vat and jumped to the top of the conical. Lying on his stomach across the rim of the vat, his feet flailing the air, he scrubbed the conical with a large green sponge, then jumped down and rinsed it out.

He started to refill the vat with clean water for the larvae. He screwed a disk and filter bag arrangement into a pipe that hung down from the ceiling. The setup was the same one Jim used to fill the tank by the centrifuge. It acted like a colander, letting water and microscopic food through, holding back dirt and predators. Muck from the York began to turn the bag dark brown.

While the conical filled, he made his way back to the small table to work at sorting the larvae. There was a set of plastic rings stored in a rack on the table. They were the size and shape of sieves children play with in the sand. The bottom of each was crosshatched with mesh of a different size, and each was numbered. Ken considered the numbers (53, 63, 130, 183), chose a ring and put it beneath the first cylinder with the brown lump of larvae in it.

With a trickle from a hose, he washed the larvae in the first cylinder around against its mesh bottom. The smaller animals tumbled through while the bigger ones remained behind. He set the bigger ones aside. With more water from the hose he crowded the small larvae together by pushing them against the side of the ring. They formed a grainy pink lump. Ken decided they were dead because they were pink instead of brown. He threw them away.

He turned then to the larger larvae he had set aside. He chose another ring and separated them, using the same process. Then he turned to the batch Jim had treated with ABA and separated them. With easy efficiency, he nudged microscopic animals from container to container. Two hours later, he had the contents of one conical sorted into two batches. The animals in one batch had eyes and so were ready to metamorphose. These he put into a plastic bucket. The animals in the second batch needed more time to grow. These he returned to a clean conical filled with water warmed by a
heating element plugged into an electric cord hanging from the ceiling.

"Time for lunch," he said to me suddenly, biting off each word at both ends. Then he marched into the room Jim had stood on a couple of days before and opened the fridge. He took out an insulated lunch box with "Budweiser" stamped across its top and carried it to his office. Wanting talk, I followed him into his office and settled myself on a cleared-off, scarred wooden desk. He closed the door and took off his sound mufflers. I hung mine on a hook and asked him what ABA was and why he gave it to the larvae?

He unzipped the Bud box and took out a peanut butter and jelly sandwich. "It's pencillin," he said as he eased a corner of the sandwich out of a plastic baggie, "and they get it because they're bottoms."

Then he bit down, chewed, dropped his sandwich to his desk; and, like a first-time father-to-be, paced back to the hatchery. I followed, retrieving my sound mufflers on the way.

Ken returned to the larvae he'd set aside in a bucket on the floor. Hundreds of thousands of marine animals the size of pinpricks formed swirly brown strings in the water. Because they expel mucus before they metamorphose, they were beginning to stick together. Ken plunged a plastic disk full of spoon-sized holes up and down through the water. When the larvae were separated and stirred, he sucked up a drop with a small syringe.

I followed him into his office. He put the drop of water on a slide and diluted it. Then he stepped back from the microscope. In a brusque and harried tone, he asked me if I'd like to take a look. I almost said no. But then I realized it was my own sense of displacement which was keeping me from looking beneath his gruff manner. There might be kind intentions, I thought, under his quarrelsome, impatient tone. I thanked him and borrowed his chair.

Transformed from nondescript grains of sand to little fat pears, the larvae pushed themselves across the slide by paddling hairy curled cilia. Each had all it needed to settle and
change: a velum, looking like two fleshy bearded lips, hung
down; a foot, sprouting hairy toes, wriggled nearby; and a
dark spot, resembling an eye, stared blankly through a trans-
parent shell.

Ken’s restlessness unnerved me so I gave him back his
chair. He counted larvae softly, out loud, moving the slide all
the way to the right, then systematically shifting it around
beneath the microscope. Next he took a calculator from his
briefcase. He multiplied his count, clenching his jaw so hard
the muscles rippled. He had culled approximately 400,000
eyed larvae. With those he’d separated the day before, he had
enough for Fred Biddlecomb.

He gently sprayed the slide with water and washed the
larvae back into the bucket by the door. The phone rang. The
call was for Rich, who was not back yet. The intrusion irri-
tated Ken. He demanded a message in his gravelled voice,
then returned to work.

He poured the larvae from the bucket into a mesh-bot-
tomed ring. With a slip of water from a nearby hose, he
gentled them out of the ring onto a black mesh square. Then
he dampened two paper towels and put them in the bottom of
a small plastic container. He gathered the corners of the mesh
square and raised his tiny bundle. He could have held it in the
palm of his hand. Instead he put it on top of the towels,
covered it with more wet paper, and carried it to the fridge.

Jim turned off the centrifuge. He lifted the cover and took
out a set of giant blades slathered with dank, blackish-green
paste. The paste came off in gobs when he scraped it from the
blades. He put the gobs into an Osterizer, added some water
and turned on the machine. He poured the mixture, which he
called schmooz, into wineskin-shaped transparent bags.

Oyster larvae live on microscopic plankton. Some of these
small plants slip through Ken’s filtering system, but there are
never enough. So Ken and Jim give the larvae supplemental
food: plankton broken down and concentrated in the cen-
trifuge; and algae grown in the back room.

Jim is a lanky man with a shaggy beard. Before Gloucester
Point, he lived in California where he went into the woods for two and three months at a time to study a small bird called the Least-bill Vireo. His counts helped convince the state to put this bird on its endangered species list.

When the money for his studies ran out, he returned here to a place he had lived when his father was in the army. He worked for a while as a road surveyor to support his wife and two young children, then took this job as Ken's technician because it paid more. But he was not happy here. He hoped he would be able to return to California some day to continue his bird studies.

He fed the larvae a wineskin of schmooz and a bucket of algae. Then he glanced at the clock on the wall and went into the office. He looked at his soaked shirt and jeans with dismay, sat on a wooden bench, took off his blue boots, and put on a pair of tattered sneakers. I asked him about the penicillin. "It does the same thing for the larvae that it does for people," he said. "Only these animals are getting their infections from the river."

The next morning arrived hot and sunny, like most mornings that spring. The weather was perfect for walking on the beach, picnicking in the park or repairing your boat to get it ready for crabbing, as most weathermen do during April and May. They were enjoying the weather too, like the beachcombers and the picnickers, but they worried, for they knew they would suffer from it during the following oyster seasons. No one called it a drought exactly; it was just another unusually dry spring, making the Bay saltier so MSX could spread further up its rivers and streams.

I met Rich at eight in front of the hatchery. We went by car this time because he had so little to take. He brought a gray one up from the motor pool and parked it by the hatchery door, then he put the container of larvae and some wineskins of schmooz in the trunk.

Fred was working on his boat when we arrived, getting it ready for the vacationers he takes out fin fishing in the summer. He and Rich small-talked about that for a while. His wife
Beverly came down from the house. I asked her if she liked to fish too, and she answered by taking me onto the boat to show me the different fishing derby prizes she has won. She tried hard to hide her amazement when I told her I'd never been out with a hook and line.

Rich went to the trunk of the car and took out the cooler. He brushed ice away from the beaker and lifted it out, took off the paper towels and opened the mesh square. Fred and Beverly stared at the larvae. Assembled they looked like nothing much at all: a spoon of wet dirt fallen from a potted plant, a clump of sand worked into the toe of a shoe. Exclaiming over the larvae's size, Beverly and Fred seemed to have expected something else, something larger and more prepossessing. Fred asked about numbers; were there truly 800,000 in that tiny clump? Rich assured him that there were.

He turned on the small motor set up alongside the tub next to the trailer. It stirred the water and bubbles rose to the surfaces. Then he climbed up on the trailer and leaned over the tank, raised his arm and, making me think of Johnny Appleseed, scattered the larvae. The sowing took only a moment and was, like the crustaceans themselves, not very impressive.

He poured out a wineskin of schmooz, covered the tub with a sheet of plywood, gave Fred some more packs of food and some brief instructions. We said goodbye and started up the drive.

Behind us, the larvae began to swim around. The squashed food moved too with the motorized bubbles. The larvae found it and spooned it to their vela with their short curled hairs.

Ready for transformation, they looked for a place to settle. In nature they would have moved toward the light, but Rich's sheet of plywood confused them. Lost in the dark, they swam in all directions and landed everywhere on many different pieces of bagged shell.

After they were securely moored, they began their day of change. Eyespots and feet, cilia and vela disappeared. They could not eat without these crustaceous equivalents of hands.
and mouths so they nourished themselves by osmosis. They broke down their own body fats to release energy and used it to pull proteins and carbohydrates from the water.

Metamorphosis is a dangerous undertaking for oyster larvae. Few survive in the wild, perhaps one or two out of a million. They do better in captivity, though, where they have the advantage marine scientists give them. Of the 800,000 he sowed at Fred Biddlecomb’s, Rich expected some eighty thousand to live, if all went well.

Rich considers himself to be an environmentalist, like most marine biologists. As an environmentalist he says he believes in preservation and protection of the Bay, but much of his work to increase estuarine productivity involves manipulation of the Chesapeake and its species.

About this manipulation ecologist Mark Sagoff wrote in “Ecology and the Law”: “The day may come when the Chesapeake is divided by concrete weirs into neat aquacultural plots; ecologists may then write computer programs to manage the production of crabs, oysters and other ‘finer’ foods insofar as there is a market for them. They may even create new species by recombining genes or they may culture edible tissues in vitro, meanwhile the main channel of the Bay could be utilized efficiently as a sewer and liquid highway.”

Rich’s work and the work of many other Chesapeake scientists bring the goals of William Brooks, the Johns Hopkins professor, and Julius Nelson, his student, quite close. It is likely that he will succeed and so make the Bay a more productive place. But the methods supporting this productivity will change the Bay into something increasingly man-made.

And yet one of the main purposes of environmental protection is to preserve the integrity of a place and its ecological system. The Bay is an entity all its own, created by the forces of nature. As such it has an intrinsic character, history, life, and eventual death. The more successful Rich is the more his work alters that natural history.
From Fred Biddlecomb's, Rich drove down to Chuckatuck Creek to see Tom Hazelwood and Bob Johnson, two watermen Rich had been working with on a regular basis. All the way down Route 17 through the towns of Hampton and Newport News, he smoked and talked.

The remote setting project at VIMS is a five-year experiment. Its goal is to reliably provide seed that can survive in the Bay to growers at a price low enough for them to make a profit. If the project fails, the institute will close the hatchery. If it succeeds, the institute will either run the hatchery as a money-making venture or sell it to an independent entrepreneur.

"It's guys like Hazelwood and Johnson that are going to make this project work," Rich said. "They've already gone into it in a big way, barges, cement tanks, the works; it's great. And they've started to think about short cuts, ways to cut down on their labor, make the operation more efficient and save costs. They're exactly what I was hoping for all along. The only problem is I'm worried about stylochus."

He stopped talking for a moment and pulled his cigarettes from the pocket of his shorts. "It's an oyster worm," he said and stopped to light up. He lowered the car window a little and carefully blew the smoke away from me toward the crack. "And it's been getting into the oysters."

He drove across the James River Bridge, past Boone's Trading Post, and through the county of Eclipse to Tom Hazelwood's wharf hard by Chuckatuck Creek. As soon as we got there, Rich put on a pair of black hip boots and went to the water, but I had to pause and look around.

Lying on the wharf and on the dirt and grass lot surrounding it were several rowboats, a boat trailer, an old dredge, a couple of diesel engines, a long-handled paint roller left standing in a bucket of turpentine, some rusty oil drums, buoys cut from bleach bottles, the metal frame and wheel base of a tractor trailer, a hammock, a wooden railway with cable and winder, some scrap lumber, a kid's rubber float, and the bodies of two trucks, among other things.
The doors on one truck were closed. Inside the other were a can of peanuts, a propane tank, a culling board, some plastic trash cans, a stack of bushel baskets and two non-representational paintings done in oil.

After I'd walked around a little and stared a lot, I went over to Rich and watched him wade through the water. His hip boots nearly reached the bottoms of his shorts. He was trudging through two and three feet of mucky brown stuff, stopping every now and then to pull up a shell bag and take out some of its contents. He then put these shells into a bag of his own.

Once they have metamorphosed, larvae become juvenile oysters, called spat. Rich leaves his spat in their setting tank for four or five days. Then he stacks them while still bagged on flats near shore. The bags help keep out predators. He keeps them there in what he calls a nursery for about two to three months.

He looks for a place where there is some tidal action when he chooses a nursery site. Low tides uncover the oysters and force them to close up. He believes this stress ultimately grows a tougher animal with a sturdier shell. It also helps kill predators.

He waded in from the shallows, rolled down his hip boots, tagged his bag of samples and put it in the trunk of the car. He walked over then to the wharf and pulled another shell bag tied there up out of the water. Tiny glass shrimp with bulging black eyes hopped out all over the cement. He pulled some shells out of the bag. Only a few spat about a week old were left on the pieces of cultch.

He pressed his forefinger against one tiny brown spat no bigger than the half-moon on his nail. The exposed oyster worm remained motionless when the spat's top shell flaked off. Rich stared at its flat oval body, at its line of egg sacs running straight down its center, and then flicked it away. There was no oyster beneath it, just a pale tan bottom shell with two brown center stripes tailing off into a vee. He turned
the cultch in his hand; both sides were speckled with the remains of dead spat. He rinsed some more cultch, bagged and marked it for study back at the lab. Then he returned the shell bag to the water.

A black truck with Hazelwood Oyster Farms painted on its door pulled up, and a tall man with a fringe of dark hair got out. He and Rich looked at some shells and talked about predators. “We’re losing more to those little round worms every day,” Tom Hazelwood said. “It’s up over seventy percent.”

“Well, there isn’t much we can do about stylochus; the shell bags don’t keep them out. So let’s just do what we’re doing, planting the spat early and hoping some other predator goes after the worms.”

I asked Tom about the wharf. “It belonged to my father,” he said. “Few watermen use it now, but I’m partial to tradition. So I keep it in the family.”

I glanced around: “It looks to me like it gets used plenty.”

He chuckled. “Well you know, Bob and I cleaned it up not so long ago, and it wasn’t much after that we started missing things. We’d want to use this or that and it was gone, so then we had to go right out and buy it new.”

Tom showed me the equipment he and Bob use to remote set: a conveyor belt that bags shell somewhat automatically, two cranes used for loading, stacking, and unloading shell bags, a barge for planting and two cement setting tanks (eight feet long and sixteen feet wide), which they built themselves.

The Hazelwoods have oystered in Virginia since 1860. Tom and Bob lease two thousand acres from the state but only two hundred of these have remained productive. “The best land stopped producing first,” Tom said, “but it’s not disease; we don’t get much in the way of disease. There just aren’t any spat.”

Bob Johnson pulled up then with some friends of his and Tom’s who raise oysters in the Delaware Bay. He came over and stood next to Tom. Tom has dark hair and eyes, and he is
big. He reminded me of a third baseman or a linebacker when he walked. Bob was wearing a tractor cap that said “Sippin’ & Sailin’ Club.” There was a picture of a trawler on it. He is fair and slight with classic even features.

Bob is not from an oystering tradition. “When Bob wanted to get into the oyster business,” Tom said, “he bought in the way a man buys into farming.” They tong public ground in winter and work their leased land together in summer when the public grounds are closed and the oyster prices high. When they heard about Rich’s system, they decided to invest some time and money in it. They built two cement tanks and one barge, borrowed one crane from a friend and bought another.

Tom hopes to return to productivity the eighteen hundred acres his father gave him. Bob wants more security for himself and his family. “I’ve always liked working on the water,” he said. “Wouldn’t want to do anything else, but it’s a day-to-day kind of thing. When times were lean, I always said somethin’ better’d come along, and it did. But now I want something more, something secure for the future I can leave my sons.”

Bob and Tom use the ground on the other side of the creek as their nursery. The water here on this side is too filled with silt washed down from nearby construction sites to be much good. Rich wanted to motor over and look at the spat. Bob was eager to see it himself, so he offered to take Rich and me. Tom, though, decided to stay on the wharf with their oystermen friends from Delaware Bay.

Bob walked down to a small fiberglass runabout named *The Barge Tender* which was, the boat clearly said, registered in Eclipse. He told us the story as he drove us across the creek. “Eclipse used to be a county. Then the cities around here like Norfolk and Portsmouth began growing, and people wanted to be part of it. They wanted to have it two ways, in my opinion, live in the city and country both. So they merged the county of Eclipse into the town of Suffolk. When I went down
to register my boat, the clerk gave me a hard time. She told me there was no place called Eclipse. That made me mad. So I said, 'Well now, look here ma’am, I’ve lived in Eclipse all my life, and I know it exists. We went a round and a round about it until she had to finally give in.”

At the nursery site, Bob cut the motor and reached for a paddle. The tide was high so the shell bags were two or three feet below the surface of the water. Bob stretched out flat across the seat of the boat and started to fish around in the water with the paddle. As he dug deeper, less and less of him remained in contact with the boat. I was sure he was going to fall in when he finally found a loop of rope and pulled up a shell bag.

He found two more and brought them all onto the boat. The spat in each bag had been set approximately one week apart. Most of the youngest were gone, eaten by worms. But those from two and three weeks ago were healthy and big as collar buttons. The sharp, brittle edges of their bills rose from the cultch like starched ruffles.

Rich took some samples. Then Bob returned the spat to the Creek and drove us back to the wharf.

The oystermen were standing in a circle near the setting tanks. Bob and Rich joined them. The men talked about round worms. Rich said they were a new problem for him because there aren’t any out on the West Coast. Then they talked about the weather, the lack of rain, and the high salinity in the Bay. I watched Bob leave the group, walk over to his truck, pick up a pouch, and tuck a hunk of chewing tobacco in the side of his cheek. His handsome features, natural grace, and bulging cheek made me think of Mike Willey.

He reentered the circle. From dry weather and too much salt, the men had moved on to disease. Someone said he thought MSX had been introduced by a grower trying out a non-native species. Someone else said it was mostly a sign of the Bay’s bad health. Then another man said the oysters
themselves would develop immunity over time through natural selection. Bob spit on the ground decorously and said something about that being true only if the oysters were given access to a large enough gene pool.

Listening, I thought about Bay farmers of the future.
I wanted to see where the Chesapeake begins, so I went to Lake Otsego. The place where I stayed was up on the side of a hill. Someone had cut away the trees below. That evening I sat on the porch outside my room and looked at the water. I could only see it in broken fragments here and there like the shards of a dropped vase.

Rain dripped from the eaves above me and splatted when it hit the ground. Puddles formed below the ends of the drainpipes and spread to the flower beds and stones laid down for a path. All around me in the mountains, streams were gathering up the rain and sending it down rifts and valleys to the lake below. With the rain came flecks of soil and sediment, particles of rock, as well as nutrients leached by the water from the land.

I thought about walking to the lake to see it up close, turned gray by clouds and rain, but knew dark would come before I reached the shore. Damp seeped through my skin into my knees and elbows. I went inside and put on another sweatshirt. Then I rolled open one of the louvered windows and lay on the bed listening to rain thrum against the porch. I thought about the physical ease and comfort of my life: how soft I am and dependent on all the ways in which man has learned to harness nature.

In the morning through fog and drizzle, I went down to the verge by the lake. It was sheer and wooded. I walked along the narrow ledge, hugging the guardrail, until I came to a gentler slope where the trees had been cut away for a public boat landing. I stood in the clearing and looked across the bay but saw only blank folds of heavy mist. They hid from view
everything I knew was there, hills and homes, pastures, creeks and fields.

As the rain stopped and the fog lifted, mountains emerged. Like a crown, their slopes and valleys circled the shore.

I found a dirt road someone had scraped into the side of a hill and followed it around and up to the top of a mountain. I was hoping to see all of the lake from above, but the trees in leaf for summer closed the view.

When I turned to look behind me down the side of the hill that falls away from the lake, I saw a narrow rift and a mountain stream. I walked down the steep slope to the stream. Water hit a stone ledge, frothed up, and rushed away. I wanted to know if the stream wound around the hill to the lake so I tried to follow it, but the bank I needed for walking soon disappeared.

I went back up to the crest of the hill and then down to the road. In places by it rainwater had gathered in rivulets. Some sprang from the ground suddenly, dropped over small rock outcroppings, and then disappeared. Others stayed in view. I followed one as it traveled in its gully down the mountain. Twice new rivulets appeared and, like small lines in the palm of a hand, moved to the stream and joined its course.

At the bottom of the hill, I crossed the highway, stepped back over the guardrail, and stood on the lake shore once again. Lake Otsego is a long, thin body of water lying in the north central part of New York State. The mountains around it are small and yielding, the lake itself serene, inviting, and easy to get to for anyone who wants to visit.

James Fenimore Cooper lived most of his life here on this lake. Otsego is the Glimmerglass of his stories. So nearby in the village of Cooperstown there is an historic home filled with memorabilia, and a farmers' museum, as well as the Baseball Hall of Fame and, of course, some pretty recreation areas on the water. Many people raise livestock here or build vacation homes or go into business providing public accommodations for tourists.

At the boat landing, two streams fed the lake. I followed
one back to a culvert and then farther to the side of a hill. The water was clear and caught the light where it tumbled. I cupped my fingers and reached down but then, thinking about polluted water, pulled back my hand.

During the early part of the twentieth century a waterman named S.J. Watson leased ground in Virginia and raised oysters near the mouth of the James River in a creek by the harbor town of Hampton. As this town grew, the people in it had to make a decision about their waste. They could have built a treatment plant to clean and process it before they flushed it into Hampton Creek, but they didn't.

Raw sewage is full of nutrients. When towns dump waste directly in the water, these nutrients feed plankton, which in turn feed all kinds of mollusks and fish. Watson's oysters grew magnificently.

But raw sewage also contains bacteria that cause typhoid fever. Oysters take in and harbor these water-borne organisms, which do not harm them, as they filter food through their digestive systems. Then when people eat these oysters, they catch the disease. These links between waste, oysters, and typhoid were common knowledge by the 1890s. But the people of Hampton continued dumping sewage anyway. By 1914 their creek was so polluted federal health officials prohibited the sale of oysters taken from it.

Watson sued the town. He said its practice of dumping waste was illegally ruining his property. The local court awarded him forty-five thousand dollars. But the town of Hampton appealed the case and took it to the state supreme court. The issue, as both Watson and the town saw it, was one of property rights. Public municipalities, Watson argued, did not have the right to destroy private property. The town disagreed. The just claims of public use, it said, superseded those of private ownership.

The state supreme court reversed the local court's decision and found for the town. "Since the state holds its tidal waters and the beds thereof for the benefit of all the public," the
court said, “we are of the opinion that the city of Hampton has the right to use the waters of Hampton Creek for the purpose of carrying off its refuse and sewage to the sea.”

Frank Darling carried on the fight from there. His oyster leases were out in the James River at its vee-shaped mouth in the section of water called Hampton Roads. The sewage Newport News dumped above him eventually floated down river and ruined his beds. Darling took his case from the local circuit court to the Virginia Court of Appeals and then to the United States Supreme Court. There in 1919, for the sake of public benefit in the name of industry and commerce, Justice Oliver Wendell Holmes approved Newport News’ right to pollute.

He said that “one of the very most important public uses of water” was to be a natural outlet for impurities flowing from the land. So he agreed with the Virginia Court of Appeals that townspeople had a right to send their refuse to the sea, which was, in the court’s opinion, “the sewer provided by nature.”

Holmes must have been thinking about the Earth in linear ways. For most educated men and women then, all things, time and people as well as effluent, moved onward from present to future, youth to age, Bay to ocean. Scientists helped promulgate these views. They thought of the Bay as a one-way transport system that carried refuse away to the ocean where people would not ever have to see or smell or think about it again.

Through the ages other cultures have looked at life differently. Primal peoples thought the things of the Earth were connected and that motion was circular. The future comes around to meet the past; the spirits of the dead are always with us, they said. And the gifts men give to nature, even the poison ones, return to the givers.

From time to time poets, mystics, and visionaries in more modern times and cultures have written about this kind of interaction between man and earth. In 1977 a twenty-seven-year-old woman named Robyn Davidson set out to cross the Australian desert with four camels and a dog. It took her
eight months. Along the way isolation, hardship, and the teachings of an aborigine, with whom she traveled for a time, forced upon her a new awareness of connections.

"I would see a beetle's tracks in the sand," she wrote. And, "what once would have been merely a pretty visual design with few associations attached, now became a sign which produced in me instantaneous associations—the type of beetle, which direction it was going in and why, when it made the tracks, who its predators were.

"A new plant would appear and I would recognize it immediately because I could perceive its association with other plants and animals in the overall pattern, its place. I would recognize and know the plant without naming it or studying it away from its environment. What was once a thing that merely existed became something that everything else acted upon and had a relationship with and vice versa." During this time Davidson saw herself as only another living being, acting and acted upon in the world. Gone were any sense of separation from the environment and any belief in man's supremacy over it. But later, after she finished her trip, she did not fashion a life around her vision; for she was, after all, a contemporary Western woman. Instead, she moved to London, where she chronicled her adventure in articles and a book.

Throughout the first half of the twentieth century, legislative efforts to preserve the Bay and its resources centered on two seemingly isolated problems. To prevent the spread of contagious diseases Maryland and Virginia had to control bacterial pollution. They monitored and closed off tainted waters and, finally, mandated some waste treatment before disposal. To try to conserve the Bay's failing supply of mollusks and fish, they used regulation: reduced catch limits, shorter fishing hours, and tightly controlled seasons. But these rules never brought about any improvement. No matter how much watermen were forced to conserve, the Bay's resources dwindled.
By the 1970s the Bay was so dirty and its natural fecundity so reduced that Charles Mathias, a senator from Maryland, began agitating for a major scientific study. People in Washington started to call the Chesapeake "a national treasure." Then in 1976 Congress gave twenty-five million dollars to the EPA for a long-term investigation.

Not that the Bay hadn't been studied before. Eugene Cronin, who was head of the Chesapeake Biological Lab on Solomons Island for many years, said in a report he gave at the International Symposium on Coastal Ecosystems: "Research has been conducted since about 1870, with rapid expansion since World War II. About 400 scientists, engineers, lawyers and other investigators have indicated that they are conducting investigations related to the Chesapeake. About 63% of the non-government scientists are in the four cooperating institutions of the Chesapeake Research Consortium, created in 1972. It comprises The Johns Hopkins University, the University of Maryland, the Smithsonian Institution and the Virginia Institute of Marine Science. These four large long-term research centers cooperate on Bay-wide or multi-disciplinary problems when coordination is appropriate. In addition, many smaller centers, colleges and individual persons are active in research."

Although the list is long, investigators accomplished little, in part because they tended to study the Bay repeatedly in disconnected ways. Mostly they looked at problems and processes as if they did not affect one another and failed, for a long time, to see the Bay as an integrated system.

Then came the development of ecology as a science. In 1982 the EPA applied a new scientific view to its collected data. In its introductory report, it said: "Each of the Bay's parts is related to its other parts in a web of dependencies and support systems. The weather, air, land, water, plants and animals all form a complex web of interdependencies which together make up the Chesapeake ecosystem. And lest we forget, humans are also an important and very dependent part of this overall system."
The Bay is a living organism that, like the human body, cannot always rid itself of harmful substances. A homeowner living up in the hills above Lake Otsego puts in a septic system. Nitrogen and phosphorus from this septic system leach into the ground water around his house. The ground water collects and joins a small spring. Further down the hill, the spring feeds a creek which, along with other mountain streams carrying nitrogen and phosphorus, empties into the lake.

Small amounts of these chemicals are nourishing to various plants. Plankton use some to grow. The rest travel with the lake water through Otsego’s outlet to the north branch of the Susquehanna River. As the river moves south through New York, Pennsylvania, and Maryland, more than two hundred creeks and streams join it. Some of these, particularly those which drain agricultural lands, are glutted with nitrogen and phosphorus. In the river as in the lake, plants and animals feed on a small percentage of these chemicals. The rest continue running with the Susquehanna to the Chesapeake Bay.

But here they stop traveling on. They move, instead, with the tides back and forth, down, up and around. As in the river the plankton use some. The rest remain and accumulate.

Tiny plants float suspended near the surface of the water. Alone each is invisible to the naked eye. They move with the tides. Each takes dead matter, water, chemicals, light, gas and uses them to create life. In the Bay, all productivity begins here with plants and the process of photosynthesis.

It is simple for phytoplankton to find sunlight. They only have to stay near the surface of the water. It is also simple for them to get carbon dioxide, the gas they need. All around them, it is dissolving from the air into the surface water. But the chemicals they need, particularly phosphorus and nitrogen, must be broken down and changed before they can be used.

After plants and animals die, they decompose. As they decompose, they yield phosphorus and nitrogen. But phy-
toplankton cannot use phosphorus until bacteria and fungi combine it with oxygen and change it into phosphate.

Phytoplankton get usable nitrogen in a similar way. Bacteria and fungi break down the proteins in dead organisms and change them into amino acids. Then the bacteria take carbon out of these acids and convert them to ammonia. They combine the ammonia with oxygen and produce nitrites and nitrates. For plants, all of these compounds, ammonia, nitrites, and nitrates, are valuable sources of nitrogen.

Through ascent up the food chain from zooplankton to larvae to fish and then to man, all Bay life depends on plants. And all plants depend on phosphorus and nitrogen. Phosphorus is necessary for reproduction and nitrogen for the making and maintaining of protein. These chemicals come to the Bay naturally from forest run-off and plant and animal decomposition as well as unnaturally from industrial plants, sewage treatment systems, and farms.

Nitrogen and phosphorus are nutrients, fertilizers that spur plant development and growth. But too much of them, like too much of any food given to any biological system, makes the Bay sick.

There are many varieties of phytoplankton: brown, green, and blue-green algae, diatoms and dinoflagellates. Phosphorus and nitrogen feed them all. Some of these plants are edible; larvae and invertebrates depend on them for survival and growth. Some are not edible; they bloom along with the others, grow, and, because they can't be eaten, sink and decay. As part of this decomposition process, they take oxygen from the water and use it up.

The water becomes deoxygenated, anoxic. Bacteria cannot change ammonia into nitrites and nitrates without oxygen. Instead anaerobic bacteria produce a dissolved gas called elemental nitrogen. Nothing in the Bay can use this gas except blue-green algae. To them elemental nitrogen is a rich fertilizer. They bloom and die but feed nothing. Then they decompose and use up as they break down even more of the Bay's dissolved oxygen.
In water as on the land, all higher life must have oxygen to survive. Air and water meet on the surface of the Bay. Wind stirs and mixes them up. As they mix, oxygen dissolves and becomes part of the surface water. But most Bay animals don’t live on the surface. They live at or near the bottom.

In the fall, as the sun recedes, surface water cools and grows more dense. It becomes heavy and sinks of its own weight; on its descent it mixes with lighter, deoxygenated water below. As it falls and mixes, it brings fresh supplies of oxygen with it. This process goes on through the winter, so in the cold months there is enough oxygen for all animals living on the bottom of the Bay. Then in spring and summer this mixing slows. The water begins to stratify: light, oxygenated water stays on top, heavy anoxic water remains down below. Many animals rouse themselves from dormancy. Their respiratory rates increase and they need more air, but oxygen is in short supply at this time of the year on the bottom where the water is deep.

When biologists began studying the Bay about one hundred years ago, the depth below which nothing much could live through summer was around forty feet. Then in the 1970s that depth rose to thirty feet. And again in the 1980s to twenty and then fifteen.

Most Bay oysters live about twenty-five feet below the surface. To prevent deterioration of their body tissue, they close up their shells when the water around them becomes anoxic. But their metabolic processes suffer so that they can only survive for five days at the most. Their larvae die first, however, because they need more oxygen and have no shells to close up or any other means of protection.

On the bottom of the Bay, down its center, runs a narrow crevasse more than sixty feet deep. From this rift, valley walls rise steeply until they are about thirty feet below the surface of the water. Here the bottom of the Bay flattens out, like a coastal plain, although it does continue to rise gradually from thirty to ten feet below the water’s surface.

For the last fifty years or so anoxic water has been filling
up this valley in a gradual way. More recently, around ten years ago, it began spilling over, pouring out, and spreading across the Bay's coast-like plain. During a spill, crabs crawl and fish swim to shallow water. But oysters, of course, cannot.

Donald Baugh works for the Chesapeake Bay Foundation, an environmental group that monitors marine life. When he reported on anoxic events in 1985, he said: "As this low dissolved oxygen water spills onto the shallows, it causes extensive die-offs in oysters. Most oyster beds in the Bay have experienced heavy mortality in water deeper than eighteen feet. In fact, entire oyster beds, like the once famous Hodges off Tolchester on the Eastern Shore have experienced almost one hundred percent mortality." Oysters die, and fish disappear, but some worms adapt to anoxic conditions and survive.

In medicine doctors have many names they use to know and describe disease. They name these illnesses of the body to gain control over them, to bring them under the purview of man's knowledge and power. Eutrophication is the noun scientists use to denote the process of burgeoning algae and suffocating water. But this noun tells us more about ourselves than about the problem it names. The source of the word eutrophication is the adjective eutrophic; in people this adjective is used to describe a healthy state of adequate nutrition.

Pressed to talk about eutrophication, ecologists say that we have over-enriched the Bay. But here again their vocabulary falls short. To enrich is good and so to say that we have enriched too much is to say very little indeed. The word does not turn the coin, does not name the thing itself so that its quiddity is brought into view.

The Susquehanna was narrow and quiet as its outset in upstate New York. I followed it down through the Endless Mountains past the towns of Unadilla and Vestal, Almedia, Shickshinny and Espy. On the way I stopped to watch men
and women use the water. A fleet of canoeists paddled by. Two men stood in the woods and fished. Another man launched a craft while an old couple wandered through a park to the shore. Each had, I suppose, little reason to think about the ways in which the river links him to the Bay.

Ten miles or so past the town of Windsor, the north branch of the Susquehanna fell from New York State into Pennsylvania. Then at Oakland it made a hairpin turn and twisted up to flow around Binghamton and then down again in a slow arabesque back to Pennsylvania. It began to loop like an amusement park ride at Towanda and continued in this fashion for about seventy miles. Along the way, collecting rain water from the hills and mountains, it gained force and widened out.

Near Wapwallopen it straightened and headed almost directly to its union by the Shamokin Riffles with its western branch. Doubling the river’s size, this joining created the Susquehanna’s main stem. When Robert Louis Stevenson saw this main stem near Harrisburg, where it was more than a mile wide, he stopped and asked about it. Then in his journal he described the river as “great and broad and shining.”

Every minute, this river delivers nineteen million gallons of water to the Chesapeake. More than half of the Bay’s fresh water comes from it. The Susquehanna drains thirteen million acres of land over a course of four hundred and forty-four miles. On this land livestock farms abound. Many are worked intensively, so that much nitrogen and phosphorus from animal waste eventually makes its way to creeks and streams flowing to the river and then to the Bay.

I followed the river south to Harrisburg on country roads that crossed its shores here and there. Many times I parked by the side of the road and walked up a hillside. I was looking at farms, at cows and barns and hayracks, and water. Ponds appeared in the hollows, then trickled away. Ground water rose up, formed a stream, and coursed down.

But always walking on a hill in a certain spot, I could see
only one piece of a larger whole. To picture the system with all its parts, I had to call to mind a schematic drawing I'd found of the Susquehanna River Basin. On it the principal streams moved in shades of pale gray to the river, which was rendered with a darker, heavier line. Sometimes the tributaries resembled spread fingers joined to a hand or lines gathered in the corner of an eye. But the scheme itself, with a great organ-shaped Bay drawn in at the bottom, looked like a Gray's Anatomy drawing of veins carrying blood to the heart.

In Lancaster County I parked near the top of a hill in the shade of an oak. I was looking for the Conestoga River, a tributary of the Susquehanna that flows through southeastern Pennsylvania. Below me were barns and white-painted houses grouped in clusters, and fields of lush green and deep gold. I walked down the road to the bottom of the hill. There in a sheltered hollow five farms were drawn up close to one another like beads in the palm of a hand.

The road flared to the right. I followed it around a curve. Pasture and barns were on one side, corn, hay, and orchard on the other. The road narrowed and flared again. I let it take me from branch to branch past windmills and silos, stands of corn, cows, melon patches, and vegetable gardens. The fields were small and exactly cared for.

A man and a boy were hitching up a rectangular buggy. Their clothes were dark blue and black. The man wore suspenders and a wide-brimmed hat. He drove the buggy down from the barn to the blacktop and nodded to me as he passed. The horse's hooves clopped on the highway, then faded into the distance. I became aware of quiet. No cars approached; no planes flew. There was no electric hum or roar or whine of engines and no music.

A farmer forked hay into a horse-drawn wagon while a barefoot girl trimmed iris stalks by a mailbox. On her way from house to vegetable garden a woman greeted me. Her soft voice broke the quiet.

I heard the beat and rustle of wings and turned toward the sound. In one of the windows up on the second floor of a
rectangular building I saw an Amish boy wearing the sect's traditional straw hat. An annoyed chicken pooked. The boy was gathering eggs. He glanced at me, waved, and went back to work. I looked down past the chicken house and saw a wooded ridge. It had the slope of a river bank.

The Amish are a Mennonite sect who farm in Lancaster County according to certain religious tenets. These tenets demand severe simplicity as well as close attachment to the land and one another. In many ways their principles are quite similar to those on which Chesapeake watermen base their lives.

Like Hampton Roads in Virginia, Lancaster County came into fashion about two decades ago. Its growth was swift and extensive. Development rippled outward from the hub of the city, as entrepreneurs bought land to put up office buildings, homes, and shopping centers.

Amish people, as well as those from some other Mennonite sects, do not leave the land. Farming as a way of life is too much a part of their religion. So to resist the twentieth century, they, like watermen, had to learn to adapt to it. When a son was old enough to have a farm of his own, if there was no affordable land to buy, his father divided what he had into smaller tracts.

One can make a living working a ten-acre tract only if he raises animals. As the size of their Lancaster County farms dwindled, Amish farmers began to raise more cows and chickens, less vegetables and grain. Other farmers in the area did the same, to increase their profits. Modern developments in animal husbandry, improved breeding techniques, better feeds, major advances in disease control, and more efficient farm buildings made this shift possible. At the time, agricultural experts and farmers alike saw only that they were increasing profitability and productivity.

In the 1970s, livestock and poultry made up two-thirds of Lancaster County's agricultural production. Farmers here were raising more dairy cows per acre than any other farmers in the country, for by then population pressures had made
land parcels so small there was practically no other viable way to farm. One unforeseen result was an inundation of manure: thirteen and a half tons of it per acre.

Environmentalists divide polluters into two groups. Executives who join together in corporate committee to run the large industrial constructs of our society, paper mills, meat processing plants, coal-burning factories and oil refineries, are point source polluters. Because of their scale, the foulings they leave are relatively easy to see and trace.

The rest of us are non-point source polluters; that is, we assault the environment in small and hidden ways. We pour cleaning fluid down the drain and salt our icy driveways in winter, or fail to shop for biodegradable laundry detergent. Each individual act seems harmless because we cannot see through an intricate series of connections and so cannot feel the damage we do miles away.

For many years scientists believed that inadequate or faulty treatment plants (point sources) caused most of the Bay’s eutrophication problems. Then the EPA completed its study and found farm manure (non-point sources) to be an unexpected and primary cause.

Richard Watts used to work for the Peace Corps as an agricultural advisor. Then he took a job with a fertilizer company and after that was a consultant for the Chesapeake Bay Foundation. The Bay Foundation is an environmental organization based in Annapolis, Maryland; in the mid-1980s it opened a satellite office in Pennsylvania to deal with Susquehanna-caused Bay pollution. Richard was surveying Lancaster County farmers. He wanted to find out what they knew and were willing to do about eutrophication in the Chesapeake. I met him one morning in Lancaster at the Farm and Home Center, a plain brick building located between two car dealerships.

He drove out into the country and stopped at a large, well-kept farm. The grass around the house was watered and trimmed, the flower beds mulched and planted. Richard knocked at the door, but no one answered. We went around
back. A man in a brown pickup came out from behind one of the many buildings. Richard introduced himself. A family of three ran the farm, the workman said. Two brothers were in the fields but he could call up the third who ran the office. Then he drove off to deliver some pies to a restaurant owned by the family.

We waited by the drive. An older man in blue work clothes pulled up. Richard told him about the Chesapeake Bay Foundation and then talked about animal waste and water. "So," the man asked, "who is it that we’re supposed to be saving this Bay for?" Richard paused for a long moment, then took a breath. He might have said for one another or even for the Earth itself, but he did not.

Instead he talked about all the people living around the Bay who use it and care for it. This successful self-made man was not impressed. "Well," he said confusing intention with responsibility as people often do, "I’m from the school of hard knocks, and we’re farming here the best way we know how. So, I don’t much see why we should worry about cleaning up some body of water we’ve never seen and don’t much care to."

The main office of the Bay Foundation is located in an old church; the tone of its publications is fervent. CBF writers work hard in newsletters and reports to call readers into service. But Tom Sexton, who runs the Harrisburg, Pennsylvania, office, has no faith in the power of environmental morality and zeal. "Sure," he said, "I could talk to people about doing right by the environment, but it wouldn’t work. Because that’s not what is necessarily in their self-interest.

"Instead I talk about the relationship between economics and ecology. If you have a strong, vital Bay then you have employment: tourists, fishermen, gas stations, bird watchers, the whole thing. Most of the important environmental victories we’ve had came about because of economics. Someone found a more cost-effective way to do something that was good for nature. This way the environmental movement becomes part of the country’s growth and progress."

Good husbandmen get rid of their manure every day to
keep their animals clean and healthy. Most wash it from their barns into trucks, take it to their fields and spread it out. Manure makes excellent fertilizer when farmers use it properly. Otherwise, the nitrogen and phosphorus in it wash with rain and snow through the Susquehanna drainage basin to the Bay.

Nitrogen is a fickle element that continually changes form, chemistry, and location. Often it is not there in the ground when a farmer needs it for his crops. Either bacteria have changed it and made it immobile, or the air has volatilized it and turned it to gas, or rain has leached it from the soil and transported it to the nearest creek. So farmers buy nitrogen in chemical form and put it on the land to help ensure the success of their crops. But many could use manure instead. The basic practices are simple: spread it only when crops are ready to take up the nutrient and work it into the ground so the nitrogen doesn’t evaporate or wash away. But the details, involving soil samples and computerized crop analysis, are complex.

Various state agencies have hired agricultural advisers to help farmers with these practices, which can bring them significant savings as well as cleaner water in their wells and nearby streams. That the Bay will be healthier is for most at best a pleasant addendum.

Phosphorus is more stable than nitrogen. It binds to tiny particles of dirt and moves with them from place to place, particularly to nearby creeks and streams, when rainwater erodes unprotected topsoil, and from there to the Susquehanna and the Bay.

Erosion control is the only way farmers can keep their phosphorus out of the Bay. Gerald Heistand is an erosion control specialist who works for the Lancaster County Conservation District. “There are many ways to keep topsoil out of the water,” he said. “Mostly we use terraces, grassed waterways, and strip cropping. But all the methods we have are inconvenient and expensive. There is no immediate economic gain in them for the farmer.
"The investment he makes in erosion control is not returned to him in his lifetime, so it's hard to get people to use these practices. Except for government programs, we can only talk about future generations, say to them that they are stewards of the land. But there is no economic incentive, only a kind of moral obligation."

I did not know how I was going to get to Conestoga Creek, for Lancaster County back roads do not move directly in a linear way from point to point. I looked at a map but couldn't create from the various free-form shapes on it, mostly triangles, hexagons and squashed circles, a route I thought I could follow. So I started out without a plan in what I hoped was the right direction.

Eventually I found a one-lane bridge with a marker on it. Across the bridge, the road turned and followed the creek. I got out of the car and walked. The country was nearly flat, the river shallow and slow. A farmer had fenced in some land around the water to use it as a cow pasture and dammed the creek to make a pond, merging here private use and public property. Cows stood in the shallow water seeking relief from the heat. The earth was trampled, the grass eaten to nubs; the air smelled of manure.

Toward evening I sat down on a grassy bank near the one-lane bridge that crossed the creek. The sky got dark; trees blew in the wind. I let the rain soak through my hair. Beneath me tiny streams were zigzagging downward. Carrying nitrogen, they were traveling through rocky fractures, pores and crevices to a hidden pool. The pool was growing and spreading out, traveling to places where the land sloped down. There water was springing free and flowing to the creek.

The storm gathered force. In the pasture nearby rain was pounding the bare and trampled earth, breaking loose bits of soil once connected to the ground. Water was splashing the loose dirt up and taking it away fleck by fleck. Full of phosphorus, the rain was rolling and curling in sheets across the pasture, down to the creek.
Conestoga Creek empties into the Susquehanna at the village of Safe Harbor. I went there in the morning. The Safe Harbor Water Power Corporation has built a hydroelectric plant at the junction and put in a public park. I walked across the grass down to the Conestoga. People were in the park but no one was using the water. It was the color of khaki, viscous and grainy like bad soup.

The limb of a tree floated downstream. I followed it to the Susquehanna. Where the creek joined the river mud spread out in the shape of a fan. Then slowly it began to settle and drop from view.

From Safe Harbor, I traveled south to Maryland, almost to Havre de Grace, where the river joins the Bay. There I could no longer see the dirt. The Susquehanna, although it was not, looked clean and blue and shiny again.
We worked hard for long hours, and loved every minute of it. We ate simple, wholesome food, with a hunger born of heavy muscle-straining toil; and slept the sweet deep sleep of exhaustion. We worshipped God and were awed by his handiwork. It was a good life.

—William Hooper, Memoirs of a Chesapeake Bay Waterman

The last time I tonged with Bonnie Gay Simmons and Mike Willey, Mike was late. Bonnie Gay and I waited for him near the boats in the lot by Cecil's store. For a time, we leaned against her green pickup and watched the sun rise over Taylors Island. Then Bonnie Gay began pacing from her truck to the front of Cecil's store, where there was a battered phone booth. She called Mike eventually, but there was no answer. Soon after, she started loading the supplies she'd brought onto the boat.

She asked me to go inside and pick up a loaf of bread. The store was empty; all the men who hang out there had left for Slaughter Creek. I handed two plastic milk jugs to Cecil; he opened a tap and filled them with drinking water. Bonnie Gay pumped gas into a spare can; we took these things down to the workboat.

When Mike arrived, she said something sharp about the delay. He looked at her closely but did not reply. By the time we finished bringing everything down to the boat, the sun was well up over the horizon. She cast off. He took the Trudy K. up Slaughter Creek, around the bend between Hooper and Ragged Points, and dropped anchor out in the open where the water is deep.
We dressed silently and transferred supplies from the workboat to the skiff. The sky was brilliantly blue, the air calm. He piloted the small boat through the shallows of Oyster Cove until we were close by James Island. When she leaned over to put out the drag chain, the sun beat down hard on the back of her neck. She winced, then gingerly touched her red, puffy skin, swore energetically and told me that the sunburn she got the day before still hurt. He turned and looked at her, then went back to steering the boat. She pulled open the folded neck of her sweater so that it covered her up to her chin.

He idled the motor, raised his tongs, turned them over and, with the shafts, explored the bottom. When he heard some shells crunch, he cut the motor and stepped up to the washboard. She said she thought the first lick looked promising; after all it was nearly April and they had been working this reef all season.

He did not. He put down his tongs and started the motor again. Eventually she heard the chain clink; he turned the motor off and went back to the washboard. The wind died completely. Flies buzzed around my face and hands, settled briefly on the oysters and the culling board, then startled up and buzzed again. I began removing various layers of clothing. A fetid smell hovered over the oysters.

He got restless, laid down his tongs, started the motor again, looked for a while, tonged briefly, then quit. This place was bad too, he said, played out. The morning wore on like that. She occasionally exclaimed over the size of an oyster—hoping, I suppose, that he would settle down and get to work. But he did not. We broke for lunch an hour early.

During the past four or five million years, many bays like the Chesapeake have come and gone, filled the Susquehanna River Basin, then left. Each appears then disappears as the temperature of the Earth rises and falls. Bays come after an ice age when the world warms and the continental ice sheets melt. Icebergs crack and split. Melt water from them scours
out a basin as it pours down into the ocean; the ocean rises and flows across the continental shelf and then up into the Susquehanna River Valley.

A new bay remains for ten or fifteen thousand years until it fills with sediment or the Earth grows cold once more. Then icy continents cool masses of warm air full of moisture. The moisture falls as snow. Through long cold winters, the snow collects on the land and turns to ice. In the summer not much ice melts and so little water flows to the sea. The sea shrinks. The ice sheets grow, thicken and spread. Water evaporates from the ocean and the bay, but then comes back to the land as ice and snow. The bay recedes, then disappears.

Twenty thousand years ago ice sheets more than a mile thick in places covered the continent as far south as the headwaters of the Susquehanna River. The ocean was three hundred and twenty-five feet below its present level. The continental shelf rose above it, a sandy plain of meadows, fresh water marshes, and climax forests. The lush vegetation growing there fed mammoths and mastodons, bison, musk oxen, horses and tapir. In Maryland and Virginia the days were cold, thirty below zero on average in the winter. No estuary rose and fell in the Susquehanna River Valley, although the river itself flowed a hundred miles or so over the continental shelf to the sea.

Then the earth began to warm. Meltwater ran from the glaciers in rivulets and streams to the Susquehanna. The Susquehanna carried this water to the sea, and the sea rose. The ocean flowed up the river valley, pushed the river back to its source, filled the valley, and spilled out over the plain. The river flowed back and joined the sea; together they covered the continental shelf. For ten thousand years sea and river spread fifty feet of water a year over forest, meadow and marsh. Flora and fauna drowned in their wake.

But as the forces of time and nature were making this estuary we call the Chesapeake, some three thousand years ago, they were also filling it in.

During the last ice age, the continental glacier moved
southward through New York and Pennsylvania first. It cut deep into the land and plowed it up as it advanced. Then it retreated. In its wake, it left mounds of debris: boulders, rocks, gravel, sand, silt, and clay. This till covered the Susquehanna Drainage Basin for hundreds of miles. In places it was more than a thousand feet thick.

The Susquehanna carried this debris to the Chesapeake. In flood it rolled down rocks and boulders. Its tributaries took cobbles; streams bounced sand and silt along. Fine particles traveled in suspension, then settled out.

The river carved out a valley once epochs ago; now it is filling this valley in, for estuaries have a life and a death of their own. Although man thinks of them as permanent, when they are measured by geologic time, they are transitory like us.

On the way back to the Trudy K. for lunch Bonnie Gay defended Mike. “You know Susan,” she said, “it’s like looking for a needle in a haystack. You can be six inches from ’em and never know it.”

When she was out of the sun in the cabin of the boat, she peeled back the neck of her sweater. The wool had been rubbing her irritated skin all morning. She cussed, then appealed to Mike.

“How ’bout this?” he said, taking off his tractor cap and settling it backward over her flame-red hair so the visor shielded but didn’t touch her skin.

She tilted her head to the left and the right, then held up her chin as if she were standing in front of a mirror. “So, how do I look?” she asked, all smiles. I watched her preen and told her that she looked fine, just fine.

She fried some hamburgers and dosed them heavily with black pepper, put them on slices of white bread and piled them up with raw onion. I asked why her small boat didn’t have a name. She looked at me with incredulity. “Because it’s a skiff, Susan,” she said. “Round here people don’t name no skiff.”
Mike looked at the pocketwatch he keeps hanging in the cabin, grimaced, shrugged his shoulders. We returned to the skiff. There were four or five bushels of oysters lying in it. He looked at them in a dispirited kind of way, pulled the can of Hawkins from his pocket and took a chew. Then he piloted the boat back to the reef and idled the motor, picked up his tongs and climbed to the washboard. The set of his shoulders, the swing of his hips had changed: lost their power, their vitality, their assurance.

He made two more licks, then gave up. He laid down his tongs and drove the boat from the reef into a narrow cove north of Taylors Island. The water was clear and shallow, no more than a foot or a foot and a half deep. He turned off the motor and pulled it into the boat, stood in the stern and began to pole. We moved smoothly, quietly through the water toward the shore. Water lapped the sides of the boat. Through it I sometimes saw wavering shadows, dark forms: rocks, a clump of grass, a few fish, an occasional oyster.

Still trying to save the day, to take some commercial profit from it, she picked up her nippers and held them out over the water. When she saw an oyster, she reached down. The splash sounded through the quiet. She snapped up the bivalve, dropped it to the culling board, then tossed it to the stern.

He picked it up, took his knife out of his pocket and shucked it out, then offered it to me. The oyster was round and fat; its shell made a handy dish. I thought about pictures of oyster-eaters I had seen in books, brought the shell to my mouth and tipped it up. The bivalve slithered out, and I swallowed it down. It felt sleek and tasted of salt.

Mike took more oysters from the pile and shucked them out. He offered one to Bonnie Gay, but she turned it down.

"Time was when oysters grew thick here near shore, and eel grass too," he said to me. "People worked it for a livin'. But it's coming back, the eel grass is. You can see it here in places, the grasses coming back."

He stopped shucking oysters and started to pole again. We seemed to be gliding over the surface of the water. When she
saw an oyster, she pulled it in. Then her nippers broke. But he kept on poling along through the stillness, rounding the cove, following the shore. Slowly he traveled toward an old dock that had heaved and buckled. It lay on its side, something manmade, formerly useful, now broken and curled.

We heard the putt of a motor and turned to the sound. A boater had appeared at the entrance to the cove; he cut his motor and moved toward us. Mike, who could not possibly have seen the boater across the distance, must have recognized something about the boat (the rise of its bow, the cut of its stern?). He spoke the name of the driver to Bonnie Gay, who nodded in assent.

The man came close, waved, then veered off toward shore. He tied his boat to a piling stuck up out of the water near the broken dock, then waded in. Mike turned to Bonnie Gay and said: “Gilbert’s probably got a spare set of nippers up there in his shed.”

They discussed the act of borrowing: could Gilbert spare a set of nippers, would the heads of these nippers be properly set, should Mike or Bonnie Gay promise their return? They agreed to ask. Mike started moving the skiff in closer to shore.

As we approached, I watched Gilbert go into a small trailer, then come out. I couldn’t see what he was carrying in his hand. He went over to a forties washing machine set up in the side yard and pulled out some clothing. He squeezed that through the wringer, shook it out, then pinned a red plaid shirt to a line strung between the trees. While Mike carried us closer, Gilbert made several round trips between trailer, washing machine, and clothesline to hang jeans, long johns, and variously colored long-sleeved shirts out to dry.

Mike called out when he got within shouting distance. Gilbert turned and scrutinized us, then walked down to the water. He was broad-shouldered and barrel-chested and was wearing a yellow one of those plaid flannel shirts.

The men talked with one another across a distance of perhaps thirty feet. Mike introduced me; they passed the time of day, talked island gossip, considered the spring run of
fish. Eventually Mike told him that Bonnie Gay had broken her nippers. Gilbert went up to his shed.

Mike started getting in close to shore. Pools of water eddied between some jutted rocks exposed by the falling tide. Bonnie Gay kept us from them with the shafts of her broken nippers. When Mike could go no further without damaging the keel of the boat, he held us steady by lowering the shafts of his tongs to the bottom. Nippers in hand, Gilbert returned and stood on shore. Bonnie Gay leaned over the gunwale and held out her arms. She gripped the borrowed nippers firmly; Gilbert let go.

Mike pushed off; stern first we slid through the water away from shore. She wanted to go back to James Island. She liked traveling around, seeing things, she said, but wanted to make a day’s pay. He said no, he didn’t want to do it, at least not today. They argued some back and forth. Finally, she called him captain and let it go.

Through the afternoon, we rounded the cove bit by bit, watched ducks dive and turkey vultures soar. Here and there she nipped up an oyster. He watched these few bivalves pile up in the stern.

Eventually, he glanced at the sky. The sun was settling down toward the horizon. “Quittin’ time,” he said. “Bonnie Gay, you going t’ let me quit, today?”

“Ain’t catching nothing no way.”

He poled to deeper water, lowered the anchor, and started it up. She laid Gilbert’s nippers down, took off her gloves, and put a bucket over the side. Sea water splashed on the culling board and ran off carrying with it mud and broken bits of shell. She dumped more water on the muddy washboard, found the old scrub brush with the splayed bristles, and went to work.

By the time we reached the Trudy K., the skiff was clean. Mike tied her up. Bonnie Gay examined the stern and got out muttering: “Seven bushels, look at that, seven bushels, won’t even pay gas for the boat.” She went into the cabin; he stayed on deck, his back to sun. The wind riffled his close-cropped
hair; he ran his fingers through it. I wanted the look of Puck back, flickering in his eye.

Bay water glinted behind him. Waves crested and broke. Near sunset, banks of clouds massed in the west along the horizon. They seemed to form on the surface of the water and rise. As the sun sank into them, the Bay turned dark, not green, but purple and iron gray. Watermen call this sea, this sun, these clouds a lee set.

I went into the cabin; Mike soon followed. He stood there by the door and looked at Bonnie Gay. She rose from the bench and faced him. There was a spot of mud on the rise of her cheek.

He reached into his pocket and took out a handkerchief, stepped toward her, and rubbed the spot away.
In the fall of 1987, I started making my way back to Taylors Island. I had not seen Mike and Bonnie Gay for more than two years.

I took a familiar route across the bridge at Annapolis over to the Eastern Shore and from there traveled the road beachgoers use to get to the ocean. Along the way, I saw new development of every kind: homes for weekenders, malls for shoppers, restaurants for tourists.

The narrow bridge across the Choptank was gone. In its place was a newer, speedier four-lane crossing. I took it and then veered right, skirted Fishing Creek and went off to the Taylors Island Road.

At Madison, where the Little Choptank fills a sheltered cove, an old man and a boy angled for fish. Near them a small trailer had crumpled into the marsh. I parked by the side of the road and got out, then followed a crooked path around the trailer through the *Spartina*, rousing an occasional bug as I went. The cord grass was turning pale gold.

When I got to the edge of the marsh, I looked for something dry on which to sit. I wanted, as always, to see the Bay whole, assembled, woven together, the pieces of its parts joined in complex pattern.

The sky was cerulean, the water quite still. The small cove curled tight around me. I stayed for a while, then went up to the road. From there I could see a narrow channel meandering through the marsh in a peaceful, random way. I admired the view, then returned to the Taylors Island Road.

Past Madison the Gethsemane Methodist Episcopal Church, with its stained glass windows and hand-hewn
weathered siding, was gone. I crossed the bridge over Slaugh-
ter Creek. Bonnie Gay’s pickup was parked by the water.

Through summer and early fall, Mike runs a soft crab
business there. He buys peelers as they are about to shed,
holds them in wooden trays filled with water and waits for
them to burst their shells. Seafood enthusiasts buy them like
that so they can eat them whole.

I parked by the creek and walked out to Mike’s crab shanty.
Bonnie Gay was in there, bent over one of the floats. Her back
was to me, but I recognized her hair. Her small frame looked
vulnerable without its layers of protective clothing.

She turned to my hello, expecting, I suppose, someone
from the island. It took her a few minutes to get over her
surprise. We went up to the small trailer Mike was using for
an office. She gave me a beer. She’d been coming down to the
crab house, she said, to help Mike shed out the last of his
peelers.

“Times is getting harder, year by year. You know, Mike left
the water last winter: He went up to Baltimore and got a job
dredging channel. A friend offered me a manager’s job in a
tourist restaurant opened up over at Cambridge, but I didn’t
take it. I went out tongin’ with my brother Bo instead.”

There was no vitality in her voice.

When we heard a truck come close, we looked out the
trailer window, then waited for Mike to pull in and park.
Bonnie Gay went out first and caught him walking toward us.
“Guess who’s this that’s showed up,” she said.

I tried to sneak up behind him, but he caught me coming
down the step. He broke into one of his quick, shy smiles.
“Well, Susan,” he said, “lookee here. Where you been keepin’
these past two year?”

He had been repairing his culling board, getting it ready
for the oyster season. It was set up on saw horses by the crab
shanty. The three of us stood around it eating hot dogs. “Had
to go up to Baltimore last winter,” Mike said, “worked on a
channel dredger. Guess Bonnie Gay told you ‘bout that. Just
can’t make it on the water no more. Summers I do allright
with this crabbing business, but come winter I'm back in debt."

He was apologizing to me for having sold out. I knew that. What I didn't know was what to say. So, watching him fix up his culling board, I asked about the new oyster season.

"Don't look too good so far," he said, then decided to bank on hope. "But them arsters, they'll come back. Sooner or later they'll come back."
On one of my first trips to the Bay, I stopped at the EPA to talk with investigators there about their work. After a while, we started discussing watermen. I said I was going to Taylors Island and wanted to go out on a workboat. Someone told me to look up Mike Willey; he thought Mike would take me out.

I missed Mike by about two hours the next morning. But Cecil, who ran the general store, told me Mike would be in early because he was slaughtering a steer. I waited and looked around the island. When Mike came in, I asked him for a job; it seemed like a good idea at the time, but now I'm not sure why.

My request startled Mike, but he didn't laugh or say anything about my lack of qualifications. Instead he said times were hard so he and Bonnie Gay weren't taking on any help. I told him about the book I wanted to write and asked if I could go out with them for the day. I don't think he wanted to take me, but he also didn't want to say no. Finally he said I could come if the weather was good and I was at the dock by 4:30 A.M.

Mike is not a talker and has, like many watermen, perfected the art of the paradoxical answer. Whenever I asked a question because I wanted to learn something, he answered it in a deliberately contradictory way. So I learned to watch and listen and try to help. On and off he and Bonnie Gay and I talked about ordinary things: family life, food, childhood memories. We also told a lot of dirty jokes.

Although I knew I was being tested, I had fun. At the end of the day, Mike asked what I planned to do next. I told him I wanted to come back and sail on the Trudy K. again. A look passed between Bonnie Gay and him. I don't know why they agreed to keep taking me out, but they did. Altogether I spent about four weeks on their boat, listening and watching. Although the work was hard and the days very long, we had many good times.

After a couple of weeks, other watermen working out of Taylors Island got curious about me. Some approached me and we became
friends. Through them I learned about the Bay. They told me where to go, what and who to see; when they could, they made introductions for me.

As I learned my subject, my project became more interesting to others. Eventually almost everyone, including scientists, businessmen and government officials, went out of their way to help me.

Before I began to write, I considered the problem of pseudonyms. Certainly I did not want to expose or embarrass anyone. On the other hand, I knew many people would be recognized, particularly in their communities, no matter what I did about real or made-up names. This realization (as well as one of my purposes, which is to talk about the work lives rather than the personal lives of Bay people) ultimately made my decision for me.

Following is a discussion of some publications, particularly books and articles, arranged by topic, which were especially important to my research and writing.

_The Chesapeake_

There are not a great many books about the Bay itself. Of these, J.R. Schubel’s *The Living Chesapeake* (Johns Hopkins University Press, 1981) is one of the best. Here Schubel describes the formation of the Bay, its estuarine processes and its eventual demise. In it there are also good photographs of watermen at work.

I found the Environmental Protection Agency’s *Chesapeake Bay: Introduction to an Ecosystem* (Washington, D.C., 1982) invaluable. Published to introduce Chesapeake Bay research completed by the EPA, this small booklet looks at the estuary as an interconnected and interrelated natural resource.

Gilbert Klingel’s *The Bay* (reprinted by Johns Hopkins in 1984) is a beautiful book. Klingel sees and describes Chesapeake marine life with great love, perspicacity, and depth.

John and Mildred Teal’s *Life and Death of a Salt Marsh* (Little, Brown, 1969) was a groundbreaking book in its time. Here the Teals demonstrate the before-unrecognized ecological importance of marshland.

Alice Jane and Robert L. Lippson’s *Life in the Chesapeake Bay* (Johns Hopkins, 1984) is a well-organized and beautifully illustrated guide to Chesapeake marine life. The authors proceed by detailing various Bay communities.
L. Eugene Cronin, who for many years was the director of the University of Maryland's Chesapeake Biological Laboratory at Solomons Island, was particularly helpful especially during the initial stages of this project. The scientific articles, government reports, and conference proceedings he made available to me deepened my understanding of the Bay.

**Watermen**

Several authors have written good books about Chesapeake watermen and their culture. The most important to my research was Carolyn Ellis's *Fisher Folk: Two Communities on the Chesapeake Bay* (University Press of Kentucky, 1986.) Ellis' descriptions of and conclusions about waterman culture are penetrating and invaluable.

Randall Peffer spent a year on Tilghman Island working with watermen as they followed various crops in season. His account of this year, *Watermen* (Johns Hopkins, 1979) is both colorful and accurate.

*God, Man, Salt Water and the Eastern Shore* by William Tawes (Tidewater, 1977) is a charming memoir. Tawes grew up in a poor but loving waterman family on Jenkins Creek near Crisfield, Maryland.

*The Lord's Oysters*, a novel about growing up on the Chesapeake by Gilbert Byron (Johns Hopkins, 1957), is filled with many eccentric local characters and charming boyhood stories.

A waterman's identity is often closely connected to his culture's legends and folktales. In *A Faraway Time and Place: Lore of the Eastern Shore* (Ayer Co., 1971) George Carey brings together a wide selection of these tales.

Joshua Thomas was a lay preacher who, about the middle of the nineteenth century, helped bring Methodism to many remote Bay communities. *The Parson of the Islands* by Adam Wallace (originally published in 1861 and reprinted by Tidewater in 1978) is the only existing biography of this man.

**Man and Bay**

In *Beautiful Swimmers: Watermen, Crabs and the Chesapeake Bay* (Atlantic Monthly, 1976) William Warner characterizes the enduring and complex relationship between watermen and the Bay. Their dependence on the estuary and their love for it is made vivid and appealing here.
Boyd Gibbons in *Wye Island: Outsiders, Insiders and Resistance to Change* (Johns Hopkins, 1977) also reports on the relationship between people and place, but he is concerned here with a broad range of Bay residents. His central theme is the effects of modernization on isolated, rural areas.

*Bay Country* by Tom Horton (Johns Hopkins, 1987) is a significant collection of beautifully written environmental essays. Horton looks closely at Bay life in and out of the water. And, his report of extensive environmental damage is sobering at best.

**Oyster Wars**

In *The Oyster Wars of the Chesapeake Bay* (Tidewater, 1981) John Wennersten makes much significant Bay history available to the general reader. His identification of many historical documents was most helpful to me.

A few of these essential documents are: Hunter Davidson's "Report of the Oyster Resources of Maryland to the Honorable William S. McPherson, Superintendent of Labor and Agriculture"; "Extracts from the Report of Francis Winslow to the Maryland Legislature on his Oyster Survey of the Bay" by Francis Winslow; "The Common Heritage of All," an address published by the Nationalist Club of Baltimore for the people of Maryland on what then was called "The Maryland Oyster Question"; various entries on oysters and oyster dredging found in *Niles' Weekly Register* (vol. IX, fourth series); "Survey of Oyster Grounds in Virginia," a report made by J.B. Baylor to the governor of Virginia in 1895.

**Oyster Biology**

The most complete and up-to-date discussion of oyster biology available is Paul S. Galtsoff's *The American Oyster, Crassostrea Virginica Gmelin* (Bulletin of the U.S. Fish and Wildlife Service, 1964.)

*The Oyster: A Popular Summary of Scientific Study* by William Brooks (Johns Hopkins, 1905) has much important biological information in it.

I learned a good deal about oyster diseases from *The Oyster: The Life and Lore of the Celebrated Bivalve* by Robert Hedeen (Tidewater, 1986.)
Sources

Bay Pollution

Two organizations helped me to understand the impact of environmental pollution on the Chesapeake.

Many Chesapeake Bay Foundation publications, particularly its newsletters and annual reports were extremely valuable to me. Also important were conversations I had with CBF scientists working in the Harrisburg office.

At the end of its seven-year Chesapeake Bay study, the Environmental Protection Agency published four summary reports. Of these Chesapeake Bay: A Profile of Environmental Change and Chesapeake Bay: A Framework for Action (1983) was most helpful.


Oyster Culture

Rich Bohn, then an aquaculture expert at the Virginia Institute of Marine Science, never tired of answering my interminable questions about oyster culture. The information he shared helped me make connections between many seemingly disparate scientific articles. Eventually through our discussions, I was able to organize bits of information into a comprehensible whole. His patience is much appreciated.

For those interested in looking at some of this scientific literature, Victor Kennedy and Linda Breisch's "Maryland Oysters: An Annotated Bibliography" (A Maryland Sea Grant Publication produced by the University of Maryland at College Park) is extremely helpful.

A practical guide to oyster growing, particularly the setting of eyed larvae is "Methods for Setting Hatchery Produced Oyster Larvae" by Gordon and Bruce Jones (Marine Resources Branch, Ministry of Environment, Province of British Columbia, 1982.)

Environmental Ethics

As I learned about the Chesapeake, I found myself searching for a less manipulative and so more satisfying environmental ethic. I found seeds for such an ethic in two seemingly unconnected bodies
of literature: writings about native American culture, and feminine culture.

Most enlightening to me was Jamake Highwater's *The Primal Mind: Vision and Reality in Indian America* (Harper & Row, 1981.) His discussions of man's place in time, space, and the natural world as seen by primal peoples are simply wonderful.

Charles Alexander Eastman's *The Soul of the Indian* (The University of Nebraska Press originally, reprinted by Houghton Mufflin in 1911) helped further my understanding of essential, alternative views.

Two collections of native American tales, cultural descriptions and responses to foreign incursions helped deepen my insight. One is *The Ways of My Grandmothers* by Beverly Hungry Wolf (William Morrow, 1980); the other *Touch the Earth; A Self-Portrait of Indian Existence* compiled by T.C. McLuhan (Simon & Shuster, 1971.)

For me the central books about women and their moral perspective are *In a Different Voice* by Carol Gilligan (Harvard University Press, 1982) and *Women's Ways of Knowing: The Development of Self, Voice and Mind* by Mary Belenky, Blythe Clinchy, Nancy Goldberger and Jill Tarule (Basic Books, 1986.) Each in its way outlines a morality of inclusion which, set against our more traditional morality of exclusion, leads to various exciting environmental possibilities.
Finally, many people come together and contribute to a book.

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