

# NATIONAL GEOGRAPHIC

SEPTEMBER 1992

### Dolphins in Crisis

By Kenneth S. Norris Photographs by Flip Nicklin



In the past decade millions of these intelligent marine mammals have been drowned in nets or poisoned by polluted waters. Now the world acts to protect them.

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## Pushkin

By Mike Edwards Photographs by Lynn Johnson



Ushering in a golden age of literature, Russia's beloved Alexander Pushkin has always been more than a poet to his countrymen.

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#### The Cruelest Commerce

By Colin Palmer Photographs by Maggie Steber Paintings by Jerry Pinkney



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A native son returns to the lake country of his youth and finds once sleepy fishing camps yielding to upscale resorts. The walleyes still bite, but solitude is a rare catch.

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Vivid wall paintings unearthed in central Mexico depict gruesome sacrifices and mythical creatures offering a glimpse of a long-lost culture of warrior merchants.

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COVER: Like synchronized swimmers, Atlantic spotted dolphins—an adult and a juvenile—hover for a look at the photographer in the clear waters of the Bahamas. Photograph by Flip Nicklin.

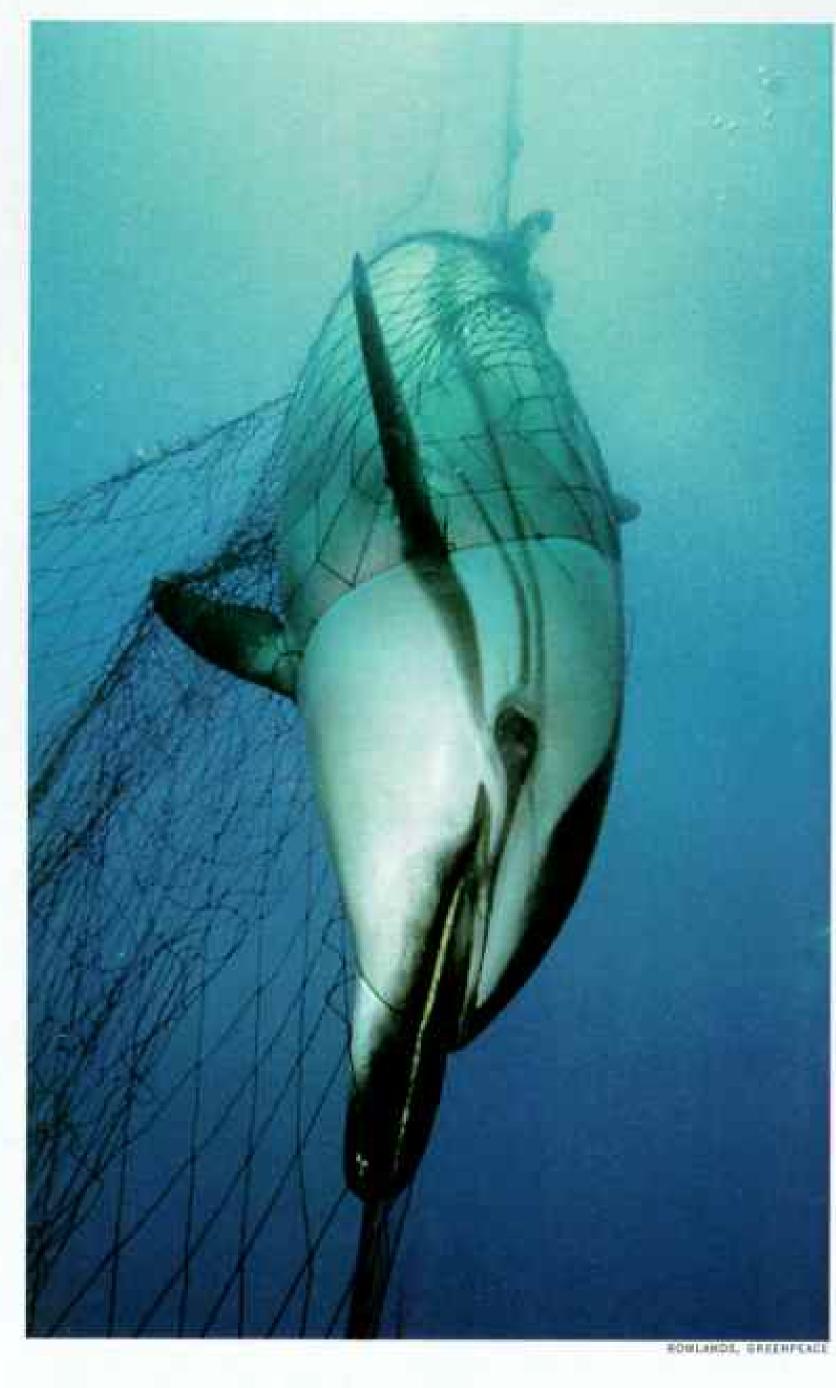
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Voyagers in a blue universe, Atlantic spotted dolphins set course in the Bahamas, conversing with whistles that leave bubble trails. Their tight formation may discourage sharks, but the mammals have yet to devise a defense against the predation of man.

By KENNETH S. NORRIS
Photographs by FLIP NICKLIN





Another dolphin's life is claimed by a fishnet, the animals' greatest single threat. Near Hawaii, spinner dolphins (following pages) glide ahead of the view port of the author's research vessel.





HE MAN-MADE HARBOR OF FUTO is nestled against the black lava cliffs of Japan's mountainous Izu Peninsula, 40 miles southwest of Tokyo. Traditional fishermen here trap and slaughter schools of striped dolphins as food for the local market. It's strong stuff—dark mahogany slabs of meat bounded by a rind of pungent blubber.

When a dolphin school is sighted near Osbima, an island 20 miles offshore where the Kuroshio current flows, the village fleet of two dozen fishing vessels steams out to form an arc behind the animals. Hanging over the sides of the vessels are metal pipes, whose bottoms flare like trombones. To steer the dolphin school, fishermen bang the pipes with hammers and drive the nervous dolphins back toward Futo and finally into the harbor, which is then closed off with a net. On those days the water runs red with blood.

Photographer Flip Nicklin and I arrived in Futo last winter with our Japanese companion, underwater photographer Koji Nakamura, who has a home on the peninsula. It was one stop on our quest to document the state of the world's dolphin populations, a journey that took us nearly from Pole to Pole and covered the better part of a year.

Futo's harbor surface was lost beneath a gauzelike white mist. The village fleet was winched 30 feet above the water's edge on a broad concrete apron that rings the harbor to protect the boats from sea waves that plague the area.

Koji's friend Hideo Miyamoto, maintenance engineer on one of the boats, invited us into the fishermen's cooperative, out of the rain that now came sheeting down. We climbed the stairs, hung our dripping jackets on pegs, and found a warm room where a cluster of fishermen sat on tatamis, chewing on split, dried jack mackerel. A big bottle of beer was opened and shoved our way.

Through Koji's interpretation, the conversation quickly grew lively. Fishermen the world over like best to talk about fish, or in this case whales and dolphins. I drew pictures of several species. Bottlenoses are smart, they said. Of sperm whales: "It's hard to catch them, they just dive." Then I drew a Stenella attenuata, the dolphin they hunt. "They're stupid," one fisherman said.

For decades the dolphin catch was very heavy, and nine villages on the Izu Peninsula had fleets. Now only Futo's is left. "But the dolphins seldom come in any more," said a grizzled veteran. "We haven't made a drive all year, and the fishery is all but out of business." Government scientists had said the dolphin populations were declining under the impact of the fishermen's take, but the veteran could hardly believe it.

"How could that be?" he asked. "We never took more than a few thousand dolphins. Catches 50 times that big don't do anything to the tuna fishing."

As a graybeard among U. S. dolphin scientists, I knew why the fishery had declined. Dolphins don't reproduce the way tuna do, I explained. A female dolphin may live 35 years and have a dozen

Kenneth S. Norris, a retired professor of natural history from the University of California, Santa Cruz, has been studying cetaceans since 1950. He describes himself as "an old fossilized marine mammal guy." This is his first article for National Geographic. Wildlife photographer Flip Nicklin lives on an island in Washington State's Puget Sound. His most recent story in the magazine was "Beneath Arctic Ice," in the July 1991 issue.



Happy ending for a harbor porpoise: Canadian researcher Andrew Read releases the mammal, which was caught in a Bay of Fundy herring trap. Read and biologist Andrew Westgate often receive calls to rescue porpoises from the traps, which have breathing room above water level.

Local fishermen have stopped reporting porpoises killed in gill nets, fearing publicity will hurt their livelihood.





"When I started here,
I made friends with fishermen," says Read. "Now a
lot won't talk to me. They
don't try to catch porpoises. It's just that too
little money goes for
research to help fishermen avoid catching them."

Performing a postmortem on a porpoise at the Grand Manan Whale and Scabird Research Station, Westgate (left) compares toxin levels with those in porpoises from more polluted waters. young in her life, while a skipjack tuna that lives only ten years may produce two million eggs in a single 90-day spawning season.

"It's easy to destroy a dolphin population by harvesting it," I told them, "while fish such as tuna can be remarkably resilient under heavy fishing pressure."

I could have added that the evolutionary ancestors of dolphins once lived on land. Perhaps only because they have developed a superior sensory system-the ability to detect things with tiny echoes of their own sounds, or echolocation-have dolphins survived in the sea at all.

The fishermen looked puzzled and doubtful. In 1971 they had trapped almost a thousand juvenile striped dolphins in one outing, perhaps killing most of an entire generation of this species in the Kuroshio. But it wasn't their way to worry about such thingsto be asked to take the dolphins into account. Maybe increased boat traffic was a factor in

## A WORLD OF DANGER AND NOWHERE TO HIDE

ore than 40 species of dolphins and porpoises thrive, but several groups are dwindling, threatened by overfishing, accidental capture, pollution, and damage to their habitat (map).

Closely related to whales, dolphins and porpoises are found in nearly every sea. Generally dolphins have conical teeth, a defined beak, and a curved dorsal fin. Often confused with dolphins, the six species of porpoises usually have spade-shaped teeth, a rounded profile, and triangular dorsals.

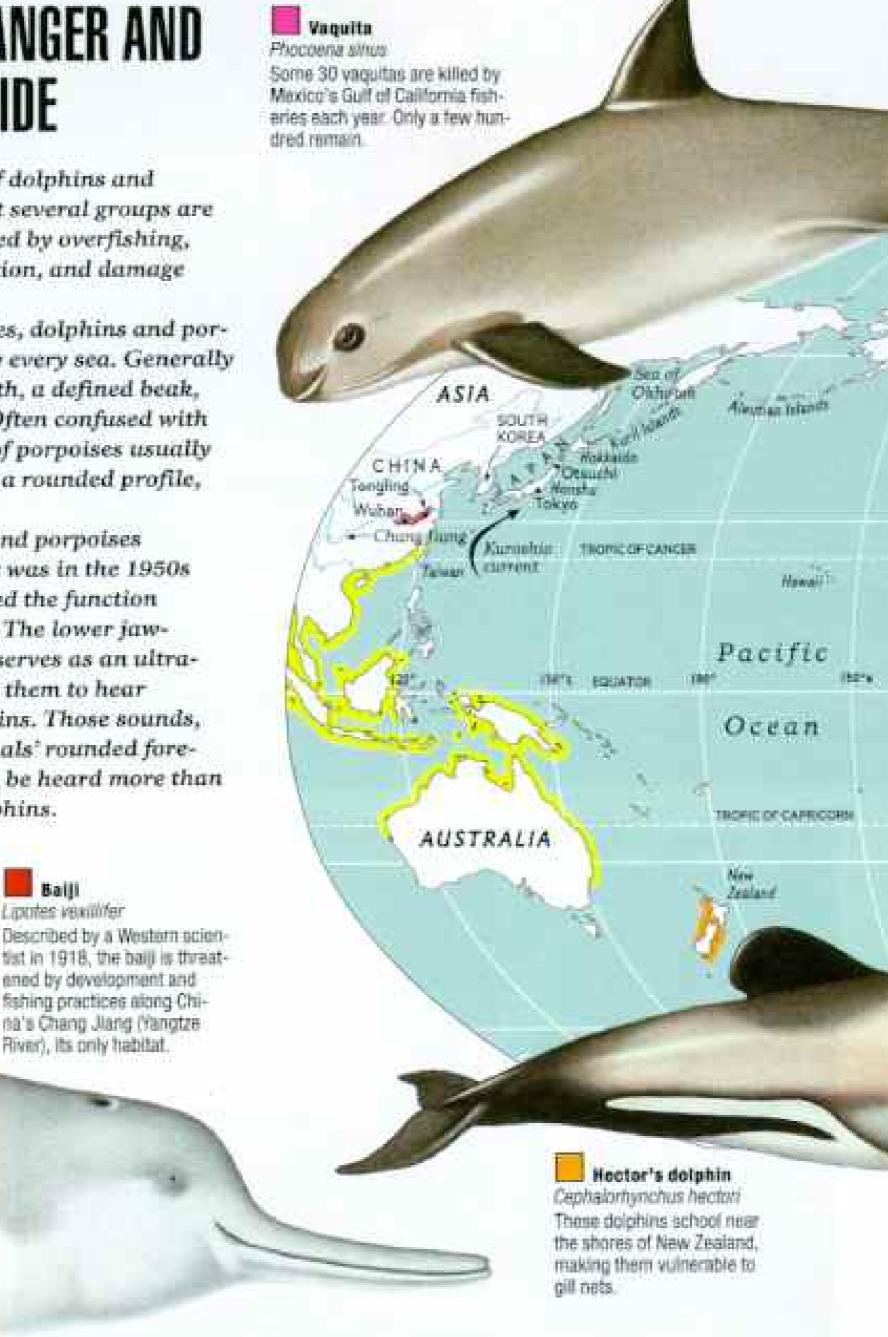
Virtually all dolphins and porpoises share a benign "smile." It was in the 1950s that the author determined the function behind the animals' grin: The lower jawbone flares outward and serves as an ultrasensitive car that enables them to hear sounds from fellow dolphins. Those sounds, emitted through the animals' rounded foreheads, called melons, can be heard more than a mile away by other dolphins.

PRINTINGS BY BERES HARREST CO.

Bailli Liputes veniliner

ened by development and fishing practices along China's Chang Jlang (Yangtze

River), its only habitat.

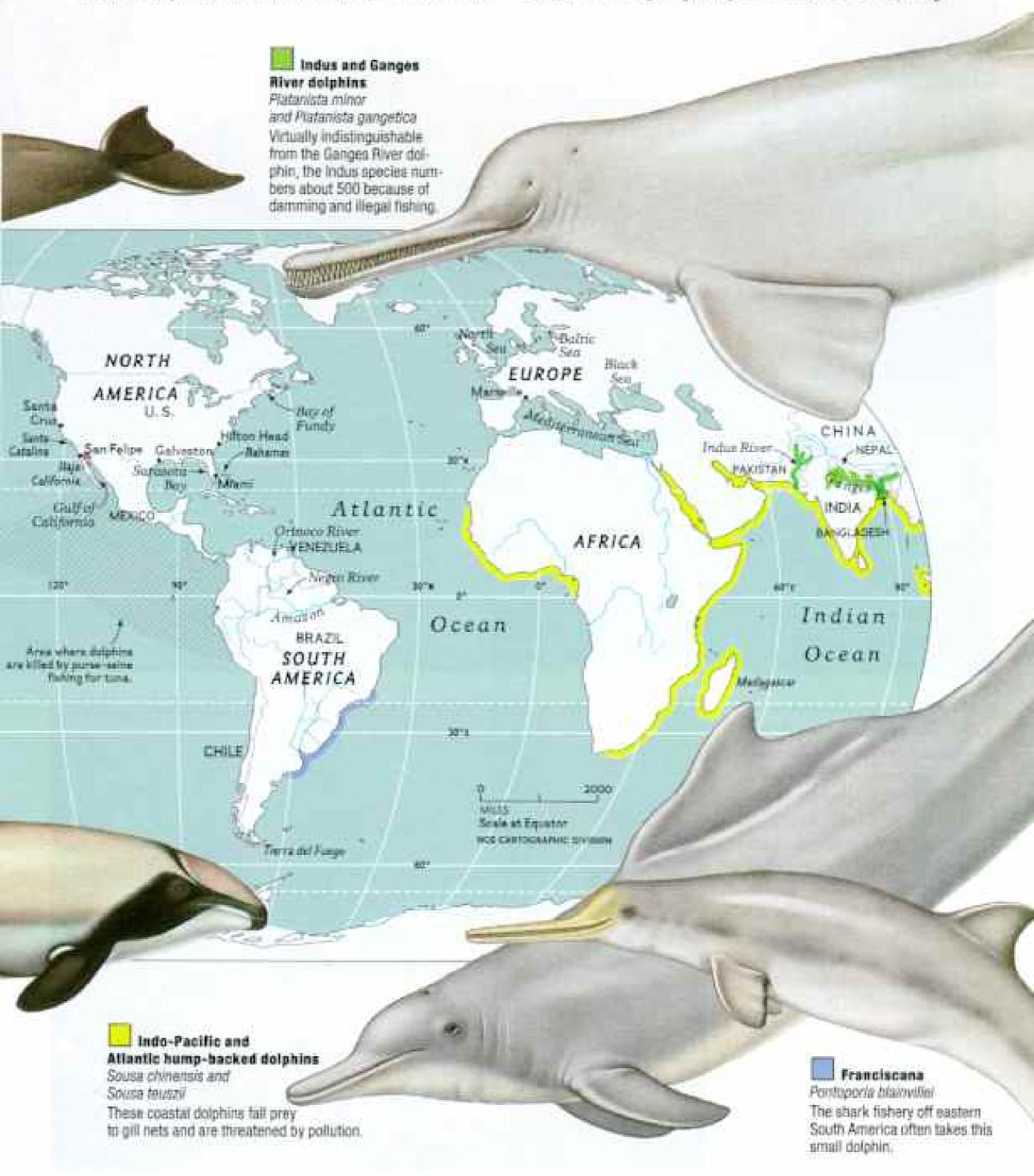


the dolphins' scarcity, they speculated, or the decline of squid, food for dolphins.

The fishermen of Futo are no different from many others. They are men trying to wrest a living from the sea, and they are being battered by forces beyond their control or understanding. Flip and I frequently found dolphins regarded as just another kind of fish. The statistics are appalling—so many thousands drowned in this kind of gear, so many hundreds harpooned in that fishery—but on the

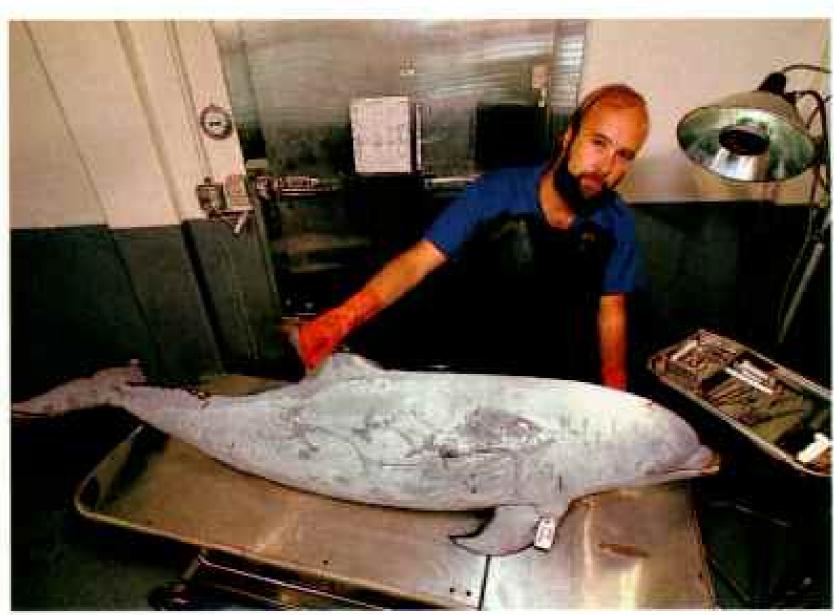
commercial level there are few pangs of conscience; nearly every human society has grown used to killing fish.

They are mammals, smaller relatives of the great whales. And some dolphins are among the most intelligent animals on the planet, in the respected company of chimpanzees and elephants. Their memory capacity matches our own; they





At play in a polluted stew, bottlenose dolphins follow shrimp boats that harvest the Galveston ship channel. Physiologist Graham Worthy of Texas A&M University's marine mammal program (right, with a frozen specimen) has found high levels of PCBs and mercury in beached Texas dolphins. He has also found long-banned DDT stored in dolphins' blubber.





can follow remarkably complicated directions—through both visual and auditory commands—such as, "Retrieve the little black ball, not the white one, and take it to trainer Jim." And they remember strings of random numbers as well as or better than we do.

What's more, dolphins seem capable of developing ties with human beings. To many, the familiar bottlenose dolphin has come to be cherished. Increasingly we find ourselves fascinated with the prospect of having kindred spirits in the alien sea. Our knowledge of these dolphins is their protection. You cannot wantonly kill what you come to know and love.

Wherever Flip and I went, we found dolphins to be potent symbols of a new awareness that human endeavor and the health of the natural world are intertwined. The dolphin's fate has become a gauge of where the entire earth stands.

together make up the order known as Cetacea. Thirty-seven species of dolphins are scattered throughout the world's oceans and inland waters, both cold and warm, and in rivers and bays. They range in size from the lordly killer whale (technically a dolphin), often nearly 30 feet long, to five-foot creatures such as the rare, black dolphin of Chile.

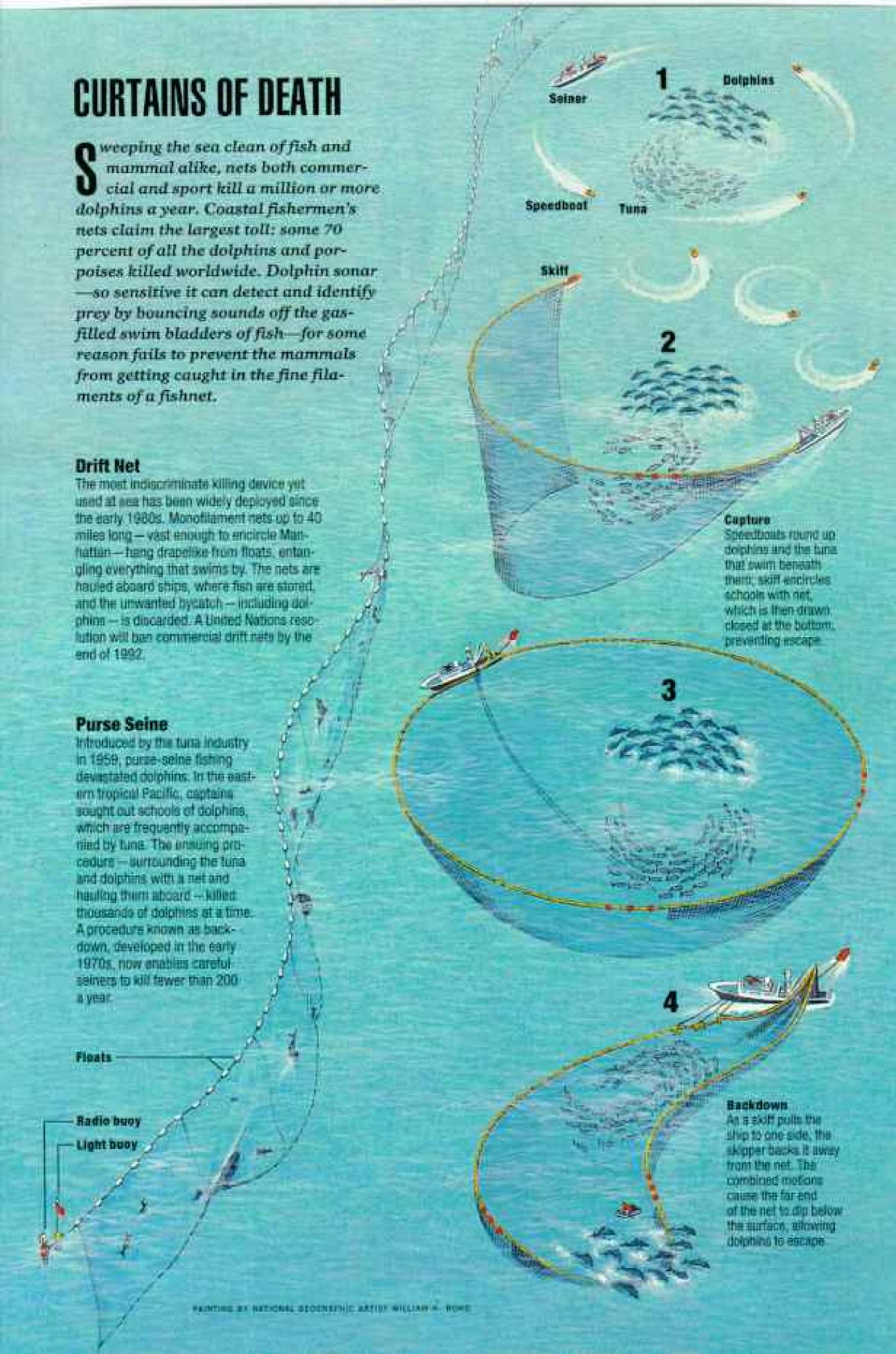
We scientists classify six other cetaceans as porpoises—mostly small, sometimes very beautiful animals that live only about half as long as dolphins. Porpoises lack a prominent snout, or beak, and their teeth are spade shaped instead of conical. But many people call all species dolphins, and, adding to the confusion, there is also a large game fish called dolphin, or mahimahi.

One thing is clear. For the past two decades dolphins and porpoises around the world have come under intense pressure. In 1990 I took part in a worldwide symposium on "Mortality of Cetaceans in Passive Fishing Nets and Traps," which was sponsored in part by the United Nations. The symposium revealed that a million or more dolphins and porpoises of many species are dying each year in nets. Most are not even wanted but are the "bycatch" of fishermen seeking other prey, usually fish or squid.

The culprit is the gill net, a simple contrivance of twine and knots known since ancient times. Fish poke their heads through the mesh and become entangled by their gills as they attempt to withdraw. Dolphins meet the same fate when they hook teeth, beaks, or fins in the mesh and quickly drown. Murky-water species such as porpoises are especially hard hit, and some are in serious decline. Colonies of seabirds too have crashed precipitously, when birds were snagged by gill-net fleets far offshore.

In the remote, open sea, until recently earth's last untapped commons, two vast and very different fisheries kill large numbers of dolphins. One is the yellowfin tuna purse-seine fishery, and the other is the drift-net fishery.

In seining, dolphin schools are actively sought by fishermen because they are beacons

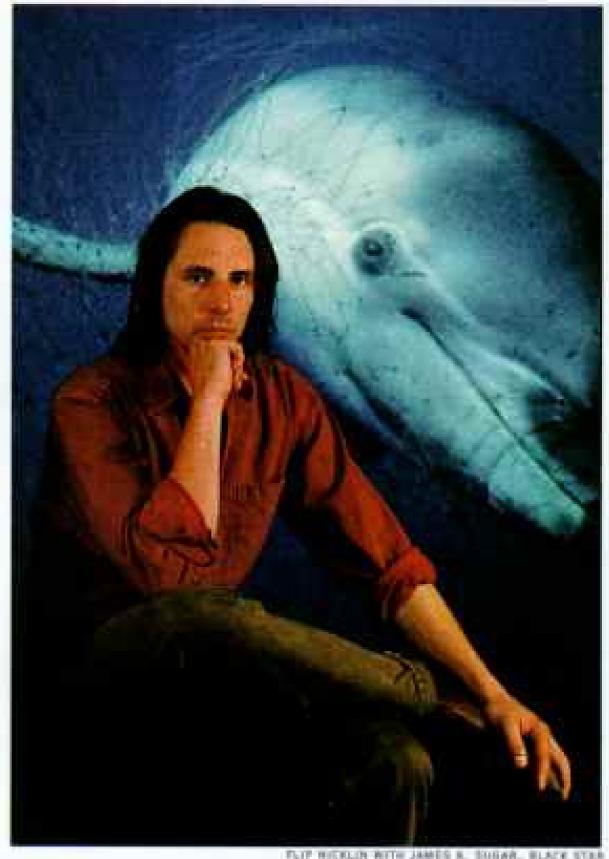


## EXPOSING THE SLAUGHTER

Armed with a video camera, Samuel LaBudde (right) got a job as a cook on a Panamanian tuna boat and came home with images of wholesale dolphin slaughter (below). The year was 1987-15 years after the Marine Mammal Protection Act ordered fishermen selling tuna to the U.S. to approach "zero mortality" for dolphins.

LaBudde's tapes for Earth Island Institute galvanized the drive for "dolphin safe" tuna. Now most nations ban the import of tuna caught by the encirclement of dolphins. Just three of 35 U.S. tuna boats still use this method, and pressure is mounting on other nations to abandon it.

"More than 150,000 dolphins were killed in 1987-now it's 20,000 a year," says Earth Island executive director Dave Phillips, "That's still 20,000 too many, but it shows the changes we've seen."





SAMUEL LARDODE, MARINE MAMMAL FUHE



for the tuna that often swim beneath them. Tuna tend to congregate beneath surface objects, and scientists speculate that traveling with a dolphin school may help the tuna locate food as well as give them protection from predators.

The fishermen circle both dolphins and tuna with a mile-long, curtain-like net, close off the net bottom to form a teacup shape, then attempt to separate fish from mammals, an imperfect maneuver in which thousands of dolphins die each year.

The seine fishery was pioneered by the United States but is now dominated by Mexico and Venezuela. When the fishery started in the late 1950s, it killed more than a quarter of a million dolphins a year. But the fishermen





BEEFHER DAWSON

themselves eventually found ways to reduce the indiscriminate carnage, maneuvering their ships and nets to release the dolphins while trapping the tuna.

Under a voluntary program sponsored by the Inter-American Tropical Tuna Commission, skippers are being trained to use dolphinsaving maneuvers, and the worst skippers are being taken out of the fleet. The dolphin kill now totals around 20,000 animals a year. Although some dolphin populations were severely depleted by the huge seine fishery in the eastern tropical Pacific, they may now be holding their own.

Today no seine fleet, no market, no cannery goes unobserved for long, and every action of the tuna-seine fishermen is monitored by The drowning of Hector's dolphins in New Zealand sport gill nets (left) has led to a ban on the nets in areas frequented by dolphins. Its effectiveness is yet to be seen. Fishermen in the Gulf of California return every week or so in their small boats with a rare vaquita (bottom left, dead atop a gill net). Even floating refuse is a threat; nylon twine entangling a dolphin (below) had nearly sliced through its dorsal fin when rephotographed seven weeks later.





KILLA NAL'A PRILIFIET

increasingly potent conservation groups. Most of the tuna that U. S. citizens and some Europeans eat is now designated "dolphin safe" because it comes from waters where seiners set their nets around floating logs or other objects instead of around schools of dolphins.

The problem is that the dolphin-safe requirement excludes many nations from selling to U.S. markets, even those that have done their best to comply with new regulations. Some fishermen complain that the dolphin-safe designation was an economic ploy by U.S. canners to capture the canned-tuna market for their own fleets. Latin American fleets are now likely to simply turn around in frustration and ignore the restrictions on dolphin killing.

HE OCEANIC DRIFT-NET FISHERY, a far larger, highly unselective industry, pays out unimaginable lengths of gill net into the open sea every night, especially in chilly northern and southern waters. The nets, of almost invisible synthetic fiber, hang like silent walls. Nearly everything that swims into them tangles and dies.

In 1990 the U. S. Marine Mammal Commission estimated the aggregate length of these deadly nets at 25,000 miles, enough to ring the earth.

Drift netting, which emerged in full force during the 1980s, has produced no safeguards at all. Three Asian nations—Japan, Taiwan, and South Korea—have used the nets to feed their tremendous national appetites for squid and other seafood from the Pacific and Indian Oceans, while in the Atlantic several European nations have drift-netted primarily for albacore tuna. Marine mammals of the open sea, which had never before known an obstruction, had to find their way through net corridors that subdivided their world into an endless, lethal maze.

Modern nets are made of nylon, impervious to rot and nearly as strong as steel. If sections are torn free in storms, as frequently happens, they may continue to catch everything that encounters the mesh, even after months at sea. They become ghost nets, and nobody can count the animal life they destroy.

In June 1991 the United States announced its concern about open-ocean drift netting. The statement was unusually blunt: "The sheer numbers of individuals and species involved strongly suggest the potential for serious disruption of the ecosystem of the North Pacific Ocean."

In order to harvest 106 million neon flying squid, said the report, more than 41 million other animals of more than a hundred species were being entangled in the fishing gear. Almost all died.

Now both watchdog scientists and environmentalists are celebrating a major victory. Last winter the three Asian drift-netting nations, led by Japan, agreed to abide by a United Nations resolution that will halt driftnet fisheries by the end of 1992.

Compliance brings massive problems to these nations: It will take determination for them to turn drift-net fleets to other pursuits and to find alternative employment for many thousands of workers.



Other, more insidious dangers face dolphin populations. The open oceans still seem quite clean, but severe pollution threatens many coastlines and bays, especially in the Mediterranean, Black, North, and Baltic Seas. Agricultural runoff and industrial waste have introduced toxic chemicals, and the exuviae of civilization—fragments of fishing gear, polystyrene cups, plastic bags, and kitchen trash from ships' galleys—are found everywhere, on the distant beaches of Tierra del Fuego and the Aleutian Islands as well as in the harbors of Miami and Marseille.

It was not difficult for Flip and me to find dolphins surviving in degraded habitats. In Texas last summer I sat on the stern of the





After a ban on commercial whaling, hunters in northern Japan quadrupled their yearly take of Dall's porpoises (above), up to 40,000 in 1988. Regulations pushed the total back to about 18,000. Over-harvesting has made some of Japan's dolphin stocks all but disappear. Ten years ago the waters of Futo harbor ran red with the blood of up to a thousand dolphins driven to shore (left). A recent drive, the first in two years, yielded 30.

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Texas A&M University research vessel Nai'a III as it eased up the murky brown Galveston ship channel. In petroleum-stained waters huge freighters discharged cargo and unloaded monstrous four-legged open-ocean oil platforms hauled in for repairs.

But half a dozen fishing trawlers, with names like Cherie M and Trinidad, scraped the bottom of the channel for grass shrimp, as if nothing was wrong with their estuary. Behind one of them a family of bottlenose dolphins rose to breathe, then dived to snap up shrimp displaced from their muddy burrows. What, I wondered, was it like for dolphins to live in such a place? How were they affected by eating such shrimp?

I asked my guide and old friend, Bernd Würsig of Texas A&M University's marine mammal program. Bernd, an energetic scientist, is investigating how oceanic pollution affects marine mammals.

"Dolphins, as you know, wear a coat of blubber, a fat layer that protects them from cold," he explained. "But the blubber also serves as a depot for food. Usually when a dolphin swallows a toxic pollutant, its body somehow steers the dangerous molecules into the fat layer where they simply accumulate and temporarily do no harm. That is, everything is fine until the dolphin is put under stress for some reason and has to call on this food store.

"If that happens, and it happens for any of 10,000 reasons, the dolphin can die quickly, as the harmful molecules flood back into its system in a rush. These pollutants include some of the most violent poisons known, and many of them disrupt normal physiological processes."

"What do you expect here?" I asked.

"Well, so far the dolphins seem to be doing OK. Fortunately, Galveston Bay is well flushed by tides and the chemical levels are not yet extreme, so that old female and her family following the trawler over there are not yet in trouble. But it might not take much more."

extinction. Two are dolphins living in the cloudy waters of lowland rivers whose valleys are dense with people; the Indus River dolphin of Pakistan and the baiji of the Chang Jiang (Yangtze River) of central China. Another is a small, sweet-faced porpoise living only in the upper Gulf of California, in Mexico. The fourth, I believe, is the

black dolphin found along the rocky coastline of Chile.

I was the first scientist to discover the Mexican porpoise, almost 35 years ago. On a mercilessly hot desert day, as I was trudging along a remote Baja California beach, I saw a skull protruding from the sand and didn't recognize the species. My colleague Bill McFarland (now director of the University of Southern California marine station on Santa Catalina Island) and I finally concluded it was an unknown porpoise, and we named it *Pho*coena sinus, or porpoise of the gulf.

But local fishermen, it turned out, knew it well as the vaquita, or little cow; they said it often got tangled in their nets. Later, boating on the gulf, I caught a glimpse of one. Just five feet long, they are evasive animals with black eye patches and large, curved dorsal fins. But it was years before I saw a whole vaquita, a sad fatality in a fisherman's net.

Now only a few hundred survive. They share their small range with a shrimp-trawl fishery that wipes almost the entire bottom clean every few months and a gill-net fishery that catches sharks and, illegally, the endangered totoaba, a member of the croaker family. Both fisheries kill their share of vaquitas.

One authority, Greg Silber, now with the U.S. Marine Mammal Commission, calculates that 25 to 35 vaquitas die in these fisheries each year, but considering the desperate poverty of the people here, laws for wildlife protection are no match against hunger.

"In all the hundreds of miles I've traveled across the Gulf of California in search of vaquitas," Greg told me, "I rarely saw them except off the port of San Felipe, where I could almost always find two or three."

The Mexican fishery laws must somehow be made to work, or the species will die out before we come to know it. Even a few paid rangers with a couple of good boats might halt the decline, as would new jobs for fishermen. But will those things happen?

The Indus River dolphin is one of the strangest on earth. It is similar to species from 20 million years ago and almost identical to the Ganges River dolphin of India, Nepal, Bhutan, and Bangladesh. Both are nearly blind; their pinhole eyes detect only dark and light. They have very long snouts lined with teeth that they seem willing to use in defense, unlike most dolphins. Ranging from five to eight feet



A world apart, two primitive river dolphins share improbable beaks and tiny eyes. Development along the Yangtze River has all but destroyed the habitat of China's baiji (above, in a Wuhan research aquarium). Its only hope may be reserves being set up by the Chinese government. Rescued from an Amazon tributary being drained for irrigation, a boto (below) was released into a lake in Brazil.





Forty miles from the nearest Bahamian island, researcher Denise Herzing follows a pair of Atlantic spotted dolphins with video and sound equipment. Herzing guards

in length, they swim on their sides and sweep their long bony snouts in wide arcs across the river bottom, emitting long trains of echolocation clicks that let them hunt fish in an allbut-opaque world.

The Indus River in Pakistan is subdivided by huge concrete barrages that permanently divide dolphin populations and may have contributed to precipitous declines by stifling breeding. No more than 500 Indus dolphins remain today, mostly in the lower reaches of the river. The government of Pakistan has taken steps to save them, and the population seems to have stabilized. The Ganges dolphin faces the same problems but appears to be a little better off because it was originally spread across more of the subcontinent.

The baiji of China, another freshwater species, has a tooth-lined snout and short, muscular tail. It is even more endangered than the Indus dolphin. After its original description in 1918 by zoologist Gerrit S. Miller, the baiji disappeared, as far as the West was concerned, into the turmoil of a changing China with successive governments and the communist revolution. Only in the late 1970s, when China became more open to foreigners, did we learn that the species still lived, though reduced to a precarious few. Today there are probably less than 200.

In 1986 Chinese biologists, who had operated for so long by themselves, invited me—as part of a Western delegation to Wuhan, on the Yangtze River—to help devise a strategy for the baiji's protection.

Wuhan lies in one of the most densely populated areas on earth. People and bicycles were everywhere; voices sounding like a flock



the exact location of their school, which now regularly accepts humans. She fears betrayal of their trust: "The biggest threat to these dolphins is being loved to death."

of birds rang in my ears. At the Institute of Hydrobiology in Wuhan, the only two baiji in captivity had become tame little creatures.

"This one we call Qi Qi," said Chen Peixun, the director of river dolphin research, pointing to a fawn-colored dolphin that was tossing its snout out of the water with every breath. "It was caught on rolling hooks."

Rolling hooks are illegal devices—long, braided lines to which a hundred or more sharp, unbaited hooks are attached. When a fish comes to investigate, it gets snagged and drawn in to be hooked a dozen times more. Baiji, attracted by the thrashing fish, come too close and are also caught. Others succumb to propeller wounds and explosives used for construction along the river. The known dead clearly add up to more than the species can stand. The only hope for the baiji is to establish

reserves where they can be protected and bred.

In a sheltered channel at Tongling on the lower river, one such reserve is being developed by Zhou Kaiya, dean of biology at Nan-jing Normal University. One of China's most famous naturalists and an indefatigable worker for the baiji, he has rallied community support for his project. The people have built a statue of the baiji, a local drink called Baijitun Beer advertises the dolphin's plight, and there may be a chance to save the species.

HE LAST OF THE DOLPHINS I consider possibly endangered is an elegant little charcoal-and-white animal of the southern coast of Chile, the black dolphin. Living among the innumerable islands and fjords of that rainy, windswept coast of rolling breakers, it is harpooned by local

Honorary dolphinhood is bestowed on the fortunate few who swim with researcher Herzing's Bahamian subjects. One dolphin swam in ever tightening circles around photographer Nickiin, coming within two feet of his lens (right). Nor did a pair mind humans observing their mating (below right): "They're pretty active that way," says Herzing.

fishermen in what seems to be unsustainable numbers and then used primarily for crab and fish bait.

The most recent expedition by an American scientist to find the species located only two small groups. My hope is that the remote, forbidding habitat still houses undisturbed pockets of black dolphins.

Two dolphins, the boto and the tucuxi, live in the Amazon and Orinoco River systems of South America. They are not yet endangered but are enmeshed in the ongoing environmental cataclysm of deforestation and development in the tropical rain forest.

The boto is a cantankerous pinkish loner of a dolphin, so supple it can grasp its own tail. When the Amazon spills into the forest in the flood season, the boto often swims miles from the main channel to feed among the trees.

The tucuxi, only about five feet long, is a shy animal that travels in schools just like an ocean species, filling the river with the sharp clicks of its echolocation.

I encountered them both two decades ago when I traveled to the Negro River, a northern tributary of the Brazilian Amazon. On a small island in the center of the river, I had found a giant tree. Each day I would climb to a branch suspended 20 feet above the water and wait. When the first boto came by, I saw it puttering in the tea-colored water. Rising to blow, the dolphin poked its lumpy forehead and long, tooth-lined beak above the surface. Through my underwater microphone I could hear its clicks rise and fall as it swung its head back and forth in the murk.

The vastness of these watersheds has kept Amazon dolphins from extinction, but massive dam projects are dividing their once continuous riverine homes into strings of still water lakes, and deforestation and agricultural development are upsetting the nutrient refreshment cycles essential to productivity of both the land and the river. The portents are poor for these creatures and for most other



living things in that forest—one of the richest biological troves on earth.

effectively and swiftly to protect a population at risk. On the wintry northern end of Honshu, Flip and I visited the Japanese port of Otsuchi, where a local traditional fishery had for a time begun to threaten its stocks of Dall's porpoises.

In the past decade, as supplies of whale meat waned, the market for these porpoises suddenly rose fourfold to an unsustainable 40,000 porpoises in 1988.

Toshio Kasuya, a marine-mammal scientist who had been studying the porpoises, was gravely concerned. To make an estimate of the







Resting spinner dolphins cruise while they snooze near Hawaii. Despite such serene moments, roughhousing dolphins, especially bottlenose, often scrape one another with



their teeth and may even inflict broken jaws, says Florida Sea World's Daniel Odell, who studies stranded marine mammals. "They're whacking each other out there!"

total population, Dr. Kasuya's team traveled a grid pattern out across the Sea of Okhotsk, and the chilly waters east of Hokkaido and the Kuril Islands, counting animals. For clues to their reproductive biology his team dissected and studied Dall's porpoises that came into the markets.

His conclusion: The porpoise stocks were indeed in jeopardy if the pressure kept up. The Japanese government quickly intervened, and the catch was severely curtailed.

Yet laws are not enough to save some dolphins. There are mysteries about dolphin lives and capabilities that conservation research cannot solve and the study of captive dolphins has not yet explained. Why don't open-sea dolphins encircled in tuna seines try to escape instead of sinking in helpless piles on the net floor? With their sensitive sonar, why are they so maddeningly vulnerable to gill nets? How much noise and chemical pollution can coastal dolphins stand before they disappear? The answers lie in basic science, only now beginning to provide the needed information.

and found scientists committed to protecting dolphins with all the intensity of lionesses protecting their cubs.

Down on Sarasota Bay, on the west coast of Florida, a population of about a hundred bottlenose dolphins live in seeming peace with the human race. This has happened even though the skyline of their bay is jagged with condominiums and the manicured lawns of hundreds of bayshore homes slope down to sterile seawalls abutting the waters where the dolphins swim.

Randall Wells, a conservation biologist with the Chicago Zoological Society, probably knows more than anyone else about wild bottlenose dolphin populations. He and his colleagues have lived with the Sarasota dolphins for more than 20 years, and they know every one personally. A birth or a disappearance is greeted with the same emotion reserved for family. They have patiently unraveled how dolphins socialize, breed, nurture their young, how they communicate, and what constitutes their family groups.

Randy took my arm solicitously as I stepped down into the waiting skiff. We cast off, brushing aside mangrove branches, and pushed out into the still bayou that leads into Sarasota Bay. The skiff—its Bimini top up, producing a blissful patch of shade in the hot Florida sun—navigated under a bridge. The fin of a lone dolphin cut around the pilings.

"That's old Hannah," Randy said in my ear above the outboard roar. "She's almost always alone, and usually around this bridge. She's probably learned to catch food near the pilings. But I think mother dolphins need company to raise their young properly; Hannah has had two calves since we've been here and neither survived."

I marveled at Randy's lightning identifications from nothing more than a fleeting gray back and fin. He knows all hundred dolphins by tiny nicks and marks, the wear and tear of dolphin life.

Randy told me that Sarasota Bay supported a society composed of rather sedentary female bottlenose dolphins and their young and males that often wandered far more widely. His colleague, Peter Tyack of the Woods Hole Ocean-ographic Institution in Massachusetts, had found that the dolphins' individual sounds help weld this society together.

"Each dolphin has a distinctive signature whistle," Peter had told me at his office. "Infants tend to develop whistles unlike those of their parents, and other dolphins learn to associate each whistle with the appropriate individual. By listening for whistles, a dolphin can keep track of members of its group even when it cannot see them. It seems that a dolphin can also call a particular individual by imitating its whistle, opening a kind of phone line between the two.

"While some acoustic features of a signature whistle are stable, others may vary. These changes may pass on additional information that all the other dolphins in the area can listen in on. This means that a society based heavily on learning can be maintained inside a dolphin school."

Dolphins, in other words, may live in their own educated culture, a thought with profound implications.

Randy headed the skiff up the coffeecolored bay, and we entered the boat channel. Few speed limits restrained the long "cigarette boats" and giant motor-yacht castles whose proprietors stood in the sterns with highball glasses in hand—that swashed by. We rocked crazily in the double wake of one and, as the water calmed, noted a cluster of gray dolphins plunging along with us.

"What do the dolphins think about all this



Lunch on the beach is standard fare for bottlenose dolphins near Hilton Head, South Carolina. The small group herds mullet to shore, lunging after the panicity fish when they leap onto land. Theirs is an exclusive dining club; dolphins just a quarter mile down the beach have never been observed using this technique.

traffic?" I asked. Randy knows these wild animals so well that any perturbation of their world is immediately obvious to him.

"Well, you might think they like it, but I can tell you that after a weekend, when this channel really goes crazy, the dolphins tend to be quite skittish and difficult to approach. They don't recover for a day or two. The worst are the Jet Skis, because they aren't limited to the channels. They can go anywhere."

Two of these machines snarled by, doing crazy eights over the shallows. I wondered how long it would be before this invasion broke the delicate balance that had allowed the dolphins to regard us as benign. The shallows are the last refuge of the dolphins, whose forebears probably swam in this bay long before the first Europeans came to the New World.

Randy told me that the people of Florida feel very protective about their dolphins. Still, I mused, the dolphins will all disappear unless the pollutants from Sarasota and other towns along the shore are directed away from the bays, and unless the remaining mangroves and seagrass meadows—where the dolphins' food grows—are protected.

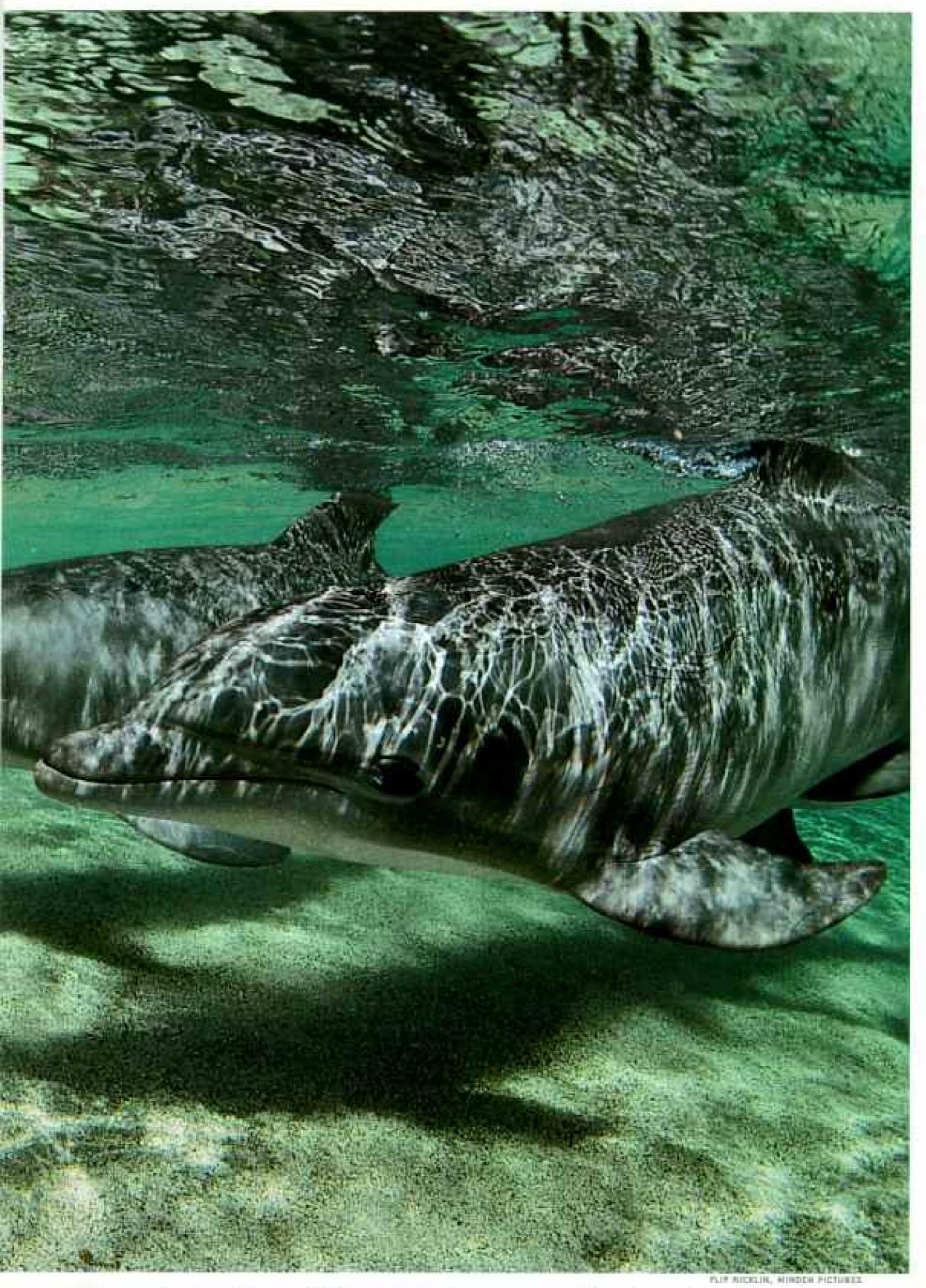
Camp on the Kona coast of the Big Island of Hawaii. Back in the 1960s when I started my behavioral work with dolphins, I decided that if we were ever to truly understand animals that can swim more than 70 miles a day in the open sea and reach speeds higher than 20 miles per hour, we would have to observe them underwater. So, like a young boy playing out his daydream, I turned to building boats that would broach the sea-surface barrier between us.

The third and latest version is a 23-footer that features a yard-wide underwater viewing cylinder ringed with five big, water-clear windows about halfway down (pages 6-7). We built the vessel at the Santa Cruz, California, marine station where I work.

One of her main architects was Jan Östman-Lind, a Swedish scholar who is completing a doctorate degree under my supervision. Jan, a precise and capable seaman, had given the boat the Swedish name Smygtittar'n (Peeping Tom), and I designated him the skipper. Jan and his wife, Ania Driscoll-Lind, also a graduate student of mine, were sent ahead with the vessel to study the spinner dolphin, a slim,



Young eavesdropper Steven Clever listens in on dolphin talk at the Dolphin Quest Learning Center on the Big Island of Hawaii. The clicks he hears are sonar signals,



which bounce back, enabling a dolphin to locate objects even at night or in murky water. Such educational programs give a rare chance for intimacy with the animals.

long-beaked species known for its ten-foothigh spinning leaps.

Jan and Ania were waiting at the airport when Flip and I arrived. It had been ten years since my colleagues and I had completed our second study of the Kona dolphins, and it was good to be back. We made our way to Honokohau Harbor, where our ungainly vessel lay moored in the calm green water, and loaded our duffels aboard.

Jan started the engines with a roar and eased the throttle back to a slow burble as we ventured out into the soft morning swells and headed north toward Hoona Bay.

"We know almost 400 of them now," Ania said, "by their individual scars and marks."

I pulled rank and clambered below. All the magic flooded back as I sat there immersed in the glassy blue majesty.

"A school of about 50 to 60 dolphins, in spread formation off to port," Jan's voice crackled through the intercom. And then a group of 12 cruised in, suspended in hydrospace, gray-blue shapes resolving into elegantly patterned animals. One flirted with the capsule, looking in at me from three feet away. I knew by their tall dorsal fins, serious demeanor, and the swellings on the lower edges of their muscular tails that they were adult males. The Smyg had been greeted by a male coalition.

The squad of males was similar to those I had seen when I was diving in tuna nets, where they were angry and snapping, interposed between me and the rest of the school. They seemed to be trying to maintain order in their school as the net slowly compressed their little society ever closer together. Finally they collapsed and sank to the net floor, joining the other dolphins.

Perhaps if the fishermen could release those netted dolphins earlier in the seining process, I thought, these male coalitions would help the rest of the school escape. The compacting net seemed to squeeze something vital out of dolphin society.

Now we have begun to understand what that vital factor is. An unseen communication between the dolphins, we think, allows them to melt away ahead of the rushes of predators. This magic may depend on one dolphin being able to assess the tiny movements of its neighbors in fractions of a second. If a dolphin moves a pectoral fin, for example, the pattern of dark and light markings where the fin meets the body is slightly altered. Such changes could signal the intent to turn or dive, and thus the school is coordinated faster than an eye can blink or a shark can slash among them. It seems that they require the presence of one another in some subtle geometry to maneuver.

When dolphins in a tuna net are crowded together, most of them can no longer see one another's patterns and movements. Denied this protection, they sink in hopeless disarray.

We tested these ideas by encircling spinner dolphin schools in a special net with an adjustable opening in its side. Remarkably, it took an opening of more than 400 square feet before a school would voluntarily rush out into the open sea. Otherwise they refused to leave. "Too small," they seemed to say. "We need at least seven dolphins to survive. Our schoolmates cannot all go through that opening en masse, and we won't go alone."

The last leg of our exploration. This is a place where humans leave land altogether to meet the dolphins of the open ocean. Over an immaculate, submerged plain of white sand perched at the edge of the dark abyssal sea, 50 to 100 Atlantic spotted dolphins come daily to flirt and play with swimmers.

I had come to see dolphin behavioral scientist Denise Herzing at work and to hear about her seven years of study with the wild population. Then I wanted to talk to some of the "civilian" visitors whom Denise takes on her trips. What had they come here for, beyond the simple pleasure of swimming with these gentle animals?

Scientists and lay people often have trouble understanding one another, and a wall rises between those who feel committed to learn facts about dolphins and those who are seeking contact on a more spiritual plane.

Next morning we boarded the Wren of Aln, Denise's research catamaran, and skipper Dan Sammis navigated us to a special place in the sea where there was no hint of land in any direction.

"It's hurricane season," Denise said, "our best time of year. The water's usually calmer now, and we can often spend hours with the dolphins."

We anchored in 25 feet of water and waited until the schools of spotted dolphins came nosing by. Then, one after another, we



Zeroing in on a bottlenose dolphin's signature whistles, a suction cup microphone (above) relays data to a boat near Florida's Sarasota Bay. Researchers hold the wild dolphin to prevent cables from tangling. No wires are needed for self-contained data recorders (right), color-coded to match zinc oxide markings on the dorsal fin. Wired for sound (below), dolphins are briefly corralled for observation as they communicate.





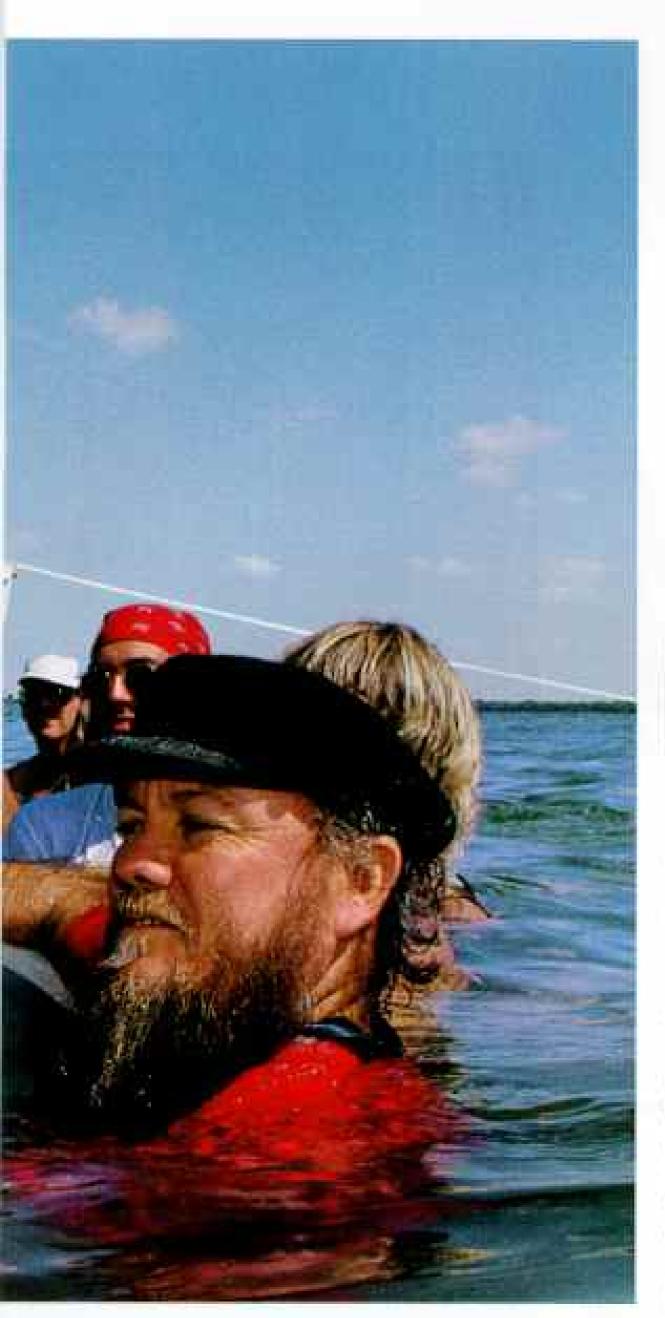


jumped into the tepid, gin-clear water with our snorkel gear.

Denise was attempting to live with the dolphins, much like Jane Goodall had done before her with chimpanzees. "These dolphins are so accepting of us," she told me, "that they may just let us into their lives. We need to nurture this relationship, and from that we can learn so much about them."

Denise laid out the rules: We were to be unobtrusive observers; we could swim with the dolphins, but they would decide how close we would meet. Denise hoped they would come to regard us as harmless, and perhaps a little dull, and go about their normal affairs. When Flip and I entered the water, about a dozen dolphins swam right over to us. They circled, pirouetting around and under us, gave a pump or two of their flukes, and glided off into the blue like sailplanes, four times as fast as we could hope to go. There was no doubt that the dolphins came in to play. The speckled-bellied juveniles came most often, waiting graciously for us to do something even mildly exciting.

One young female came so close I had to be careful not to elbow her. Her pectoral fin reached out and trailed along my dive skin in a sort of caress. Fairly forward, I thought, when we had just met, but dolphins are noted for



Smiles all around, a dolphin named Misha returns to his Tampa Bay home after two years in California, where the author studied his sonar capabilities. Misha has rejoined the wild community where, says the author, "The others must be asking, 'Where have YOU been?"

Then, as Denise had hoped, the dolphins went about their normal business in our presence. They searched out little flounders buried in the sugary sand bottom, they nursed their young, had little tiffs with one another, and with considerably less concern than I felt, skirted around a stolid six-foot hammerhead shark that went sculling by.

afterdeck with Denise and her guests and talked in the glow of a light hanging from the boom, grateful that the relent-less heat had passed. The sinking sun bathed the cumulus clouds in pastel shades, then dipped below the horizon in a blaze of orange shafts. In the darkening sky appeared the jeweled fishhook of Scorpius, as scintillating and lovely as a necklace.

"Why is there such a strong attraction between people and dolphins?" I pondered aloud. Lynda Green of Key Biscayne, Florida, who had already made five trips to visit these dolphins, summed it up: "Our world is so full of violence and fear. Here, from the sea, comes a wild animal that accepts us. You scientists pick apart and try to explain everything. Why can't we just let things be, just as the dolphins do? We feel so safe in their company."

The questions that night went much further. What else do dolphins know that we do not? What is contained in their caresses? In their sounds? Do they know things we cannot understand? Can they show us? Our guilt about the state of the world is deep, after all.

We must learn what we are destroying, and then it will not be so easy to destroy. Only then can we and the ocean world finally live in something approaching ecological peace. We are in the desperate, painful center of change, but a new generation of earth keepers is taking charge, and with them is coming a whole new concept of the world. Dolphins will be our partners.

National Geographic EXPLORER will broadcast "The Dolphin Project" on Sunday, October 18, at 9 p.m. ET on TBS SuperStation.

the amount of time they spend each day caressing one another.

There was no trace of dolphin fear in all this, just a reaching across the barrier between our two kinds. I wondered why they persist when we are so clumsy in the water. But they were flexible enough to accept us, warts and all, and to recognize that we were benign. And they were curious enough to initiate balletic games with us, to peer intently into our faces. We, who are so covered with trappings—cameras, dive skins, masks, snorkels, flippers, weight belts—must be objects of some curiosity when they are so sleek and totally unencumbered in their fluid world.

Dolphins in Crisis 35

He wrote of passion
and regret; he defied
tsars to champion
individual freedom
and sing of "noble
hearts in a cruel age."
He gave Russians a
romantic image of
themselves, and he is
still their favorite,
the poet



PAINTING OF ALEXANDER PUSHKIN, MADE AS A MOVIE PROP, FINDS A HOME IN A SUNDAY SCHOOL CLASSIFOOM OF THE MOSCOW CHURCH WHERE HE WAS WED IN 1831.





Photographs by LYNN JOHNSON BLACK STAR



LIVING BESIDE THE NEVA, PUSHKIN GAZED AT ST. PETERSBURG'S CHARMS FROM SUCH A WINDOW AS THIS, WHERE SILVERY FISH DRY IN THE JUNE SUNSHINE.



love you, work of Peter's warrant,

I love your stern and comely face,

The broad Neva's majestic current,

Her bankments' granite carapace,

The patterns laced by iron railing,

And of your meditative night

The lucent dusk, the moonless paling;

When in my room I read and write...

- THE BRONZE HORSEMAN, 1833

ill the hour of my freedom come?

'Tis time, 'tis time! To it I call;

I roam above the sea, I wait for the right weather,

I beckon to the sails of ships.

Under the cope of storms, with waves disputing,

on the free crossway of the sea when shall I start on my free course?

- EUGENE ONEGIN



EXILED BY THE TEAR TO ODESSA, THE POET DREAMED OF ESCAPING BY SAILING SHIP TO LIBERTY BEYOND THE BLACK SEA PORT. INSTEAD, HE WROTE ON.



"Am I not worth your love like Venus?

"Am I not worth your love like Venus?

Mark what I choose to tell you, then.

I may forget the gulf between us

And make you happiest of men.

Here is my challenge—who will meet it?

For sale I offer peerless nights.

Who will step forward—I repeat it—

And pay with life for his delights?"

loved you—and my love, I think, was stronger

Than to be quite extinct within me yet;

But let it not distress you any longer;

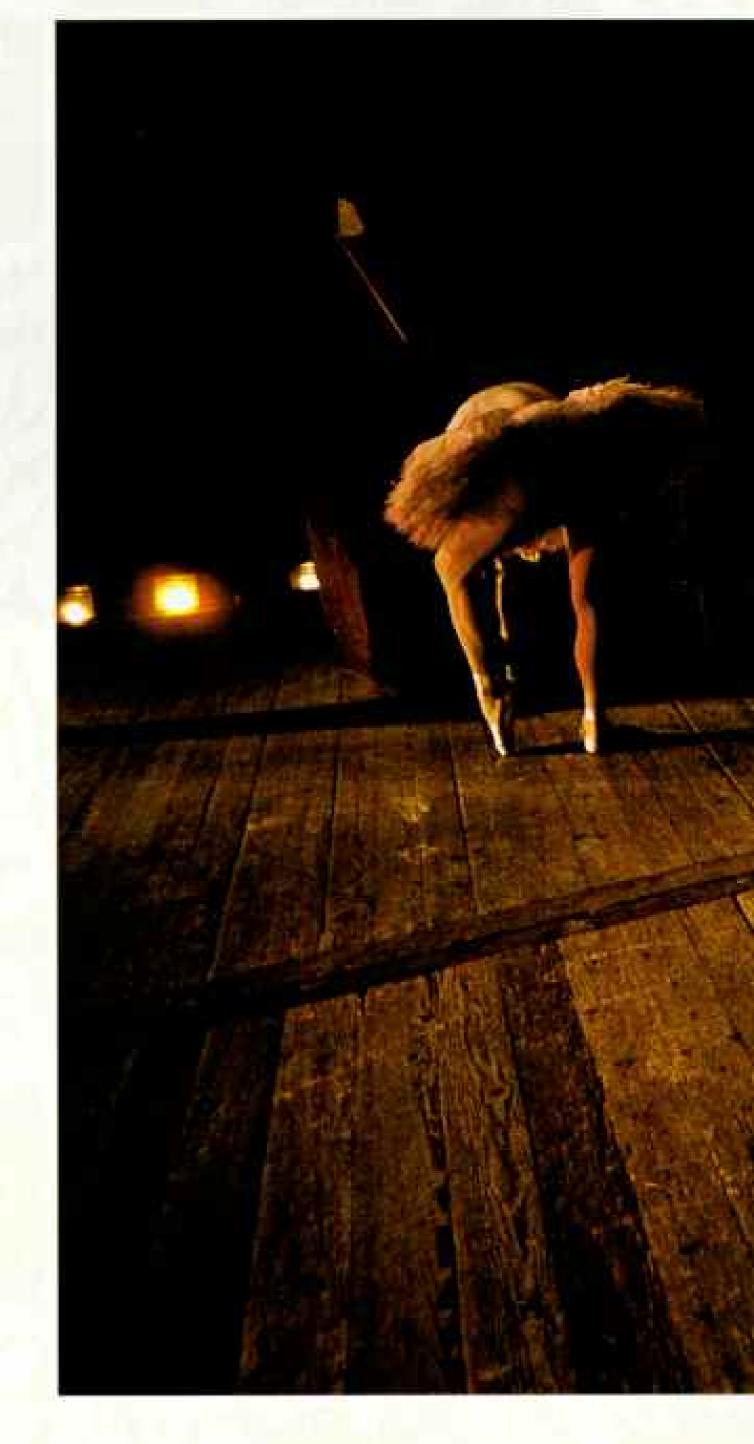
I would not have you feel the least regret.

I loved you bare of hope and of expression,

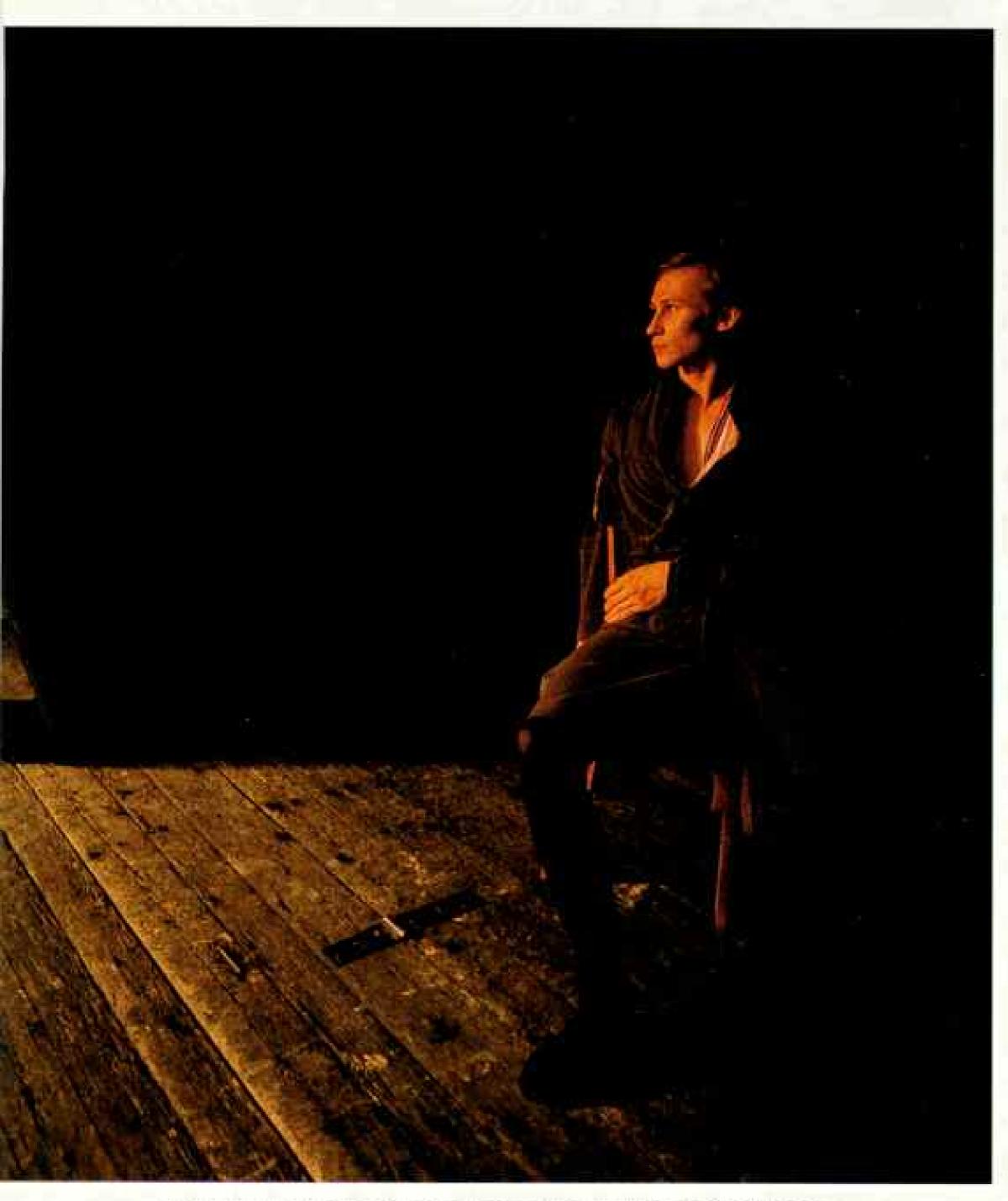
By turns with jealousy and shyness sore;

I loved you with such purity, such passion

As may God grant you to be loved once more.



- UNTITLED, 1825



DIVAS AND SALLET DANCERS ENCHANTED THE POET, WHO HAUNTED REHEARSALS IN ODESSAL HIS BONIS GODUNOV AND NUMEROUS OTHER STORIES BECAME OPERAS.



Ot's time, friend, time! For peace the spirit aches—
Day chases day, each passing moment rakes
Away a grain of life, and while we, you and I,
Would rather have lived on, lo, all at once we die.
Here happiness is not, but peace and freedom are.



And Lensky, left eye closing, aimed but just then Eugene's pistol flamed. . . . and the poet, without a sound, let fall his pistol on the ground.

Pushkin homeward after dark on January 27, 1837, those lines from his masterpiece, Eugene Onegin, rang like a prophecy. Russia's greatest poet had a bullet in his gut. By a frozen stream on the outskirts of St. Petersburg, he had dueled a Frenchman

enamored of his wife.

His valet laid him on a sofa in his study. The somber visages of physicians telegraphed the certainty that the wound was mortal.

Regimes come and go in Russia, but probably no man, neither tsar nor commissar, certainly not Lenin nor even Peter the Great, enjoys the enduring reverence accorded Pushkin. "In Russia a poet is more than a poet," to borrow a line from Yevgeny Yevtushenko, whose verse once enraged Soviet leaders. There being no Russian Jefferson or Lincoln (and under communism no God either), poets became teachers, the beacons of the spirit. Which is why so many of them went to labor camps in the Stalin years.

That Pushkin also suffered—exile, then a duelist's death suffuses his immortality with a bittersweet cachet. That he was also a womanizer and a gambler spices his fame, just as those habits spiced his works.

For a century and a half he has been read for pleasure, and sometimes for escape. It was not unknown in communist times for despairing men to dive into Pushkin, memorizing *Onegin's* 5,600 cadenced, rhyming lines.

In sum, Russian culture has no greater foundation stone than this man of modest stature and slightly dark complexion who lived only 37 years.

Had he strode the stage in the recent chaos, as the Soviet Union stumbled toward collapse, I believe he would have employed his talents as bard of the democrats who hastened the downfall. I can see him on the ramparts of the Russian White House in August last year, thundering against the tanks that beleaguered President Boris Yeltsin.

In later life, squeezed under the tsar's thumb, he was compelled to mute his liberal views. Still, as biographer Stella Abramovich declares, "He never wrote a line he did not believe in." For Russians emerging from communism's lockstep, that lesson in integrity may be as important as any rhyme he put to paper.

In the apartment where he died, Russians still weep for him, as tour guides measure out the agony of his passing.

"For 46 hours he was racked with pain," Olga tells the tourists.

Eyes moisten. "Friends and physicians were astonished at his courage." Now the tears roll. "Bulletins were posted on the door: 'The patient is in grave condition.' "Everyone is numb by the time

of her final sally: "The tsar would not permit a funeral in the great cathedral, St. Isaac's."

Thousands had thronged to Pushkin's home as he lay dying, and Tsar Nicholas I feared that a public funeral would become a public protest. He had humiliated this "enemy of all authority," as the secret police called the poet, had censored him and spied on him. There was also the delicate matter of Pushkin's wife; the tsar, like the Frenchman with whom Pushkin dueled, had eyes for Natalya, said to be Russia's foremost beauty.

This year, on February 10 (the anniversary of Pushkin's death by the Gregorian calendar\*), I heard the dolorous Russian Orthodox funeral liturgy sung for Pushkin in the church of the royal equerries. Not regal St. Isaac's but this sanctuary in the stables was the place chosen by Nicholas for Pushkin's rites.

Under communism the stables church, stripped of icons, became office space. But last year the bureaucrats finally surrendered the premises, and for the first time since the 1920s Pushkin was memorialized in the original venue.

In St. Petersburg's Summer Garden, where the poet often strolled, a young woman asked me, "Do you have a Pushkin in America?" No, I said. "Then I am sorry for you."

How many American writers would it take to make one Pushkin? Several. "He comes to us when we are babes nursing our mothers—we are cradled with his fairy tales," playwright Viktor Legentov says. "The poems that young men recite to their sweethearts are Pushkin's. He penetrates every sphere of our lives."

Most of Pushkin's work was scratched with a goose quill, nibbled to sharpness. Besides the verse novel Eugene Onegin, he wrote the historical drama Boris Godunov and some 700 poems. He later turned to prose—The Tales of Belkin—even history.

His novella The Captain's Daughter is easy reading in any language, but to translate the music and meaning of Pushkin's verse while maintaining his tight eight-syllable line is a daunting task one reason his poetry seldom appears in English. Retired Dartmouth professor Walter Arndt, poetically and linguistically gifted, is among the few who have succeeded. Most of the translations in this article are his.

Pushkin was perfect in nearly every line: spare, witty, sometimes sensuous or ribald. The Russian language sang as never before, and in this rich soil other artistry flowered. Gogol, Dostoyevsky, Tolstoy, and other writers sought inspiration in his works. Mussorgsky created the quintessential Russian opera from Godunov; Tchaikovsky scored Onegin. In all there are 20 Pushkin-inspired operas as well as ballets and other works by composers such as Glinka, Rimsky-Korsakov, and Rachmaninoff.

Peterburg. This is the old spelling to which the city we call St. Petersburg returned in 1991. Pushkin would recognize many of the columned mansions, but he would wince at the decrepitude. Though Moscow-born in 1799, he attended the Imperial Lyceum in the St. Petersburg suburbs, in a town now named Pushkin. In the capital he was among

\* Other dates in the article are reckoned by the Julian calendar, in use before the 1917 Revolution.



Inspired by Pushkin's words, a student recites "Autumn" to a gymnasium audience in a town, outside St. Petersburg, now called Pushkin. Here the tsar set up a lyceum for the nobility, with classes taught in French. When the student Pushkin recited his work on a royal stage (right), Russia's then leading poet called the 15-year-old "the one who will replace me." Pushkin later wrote "Liberty" and other verses that led to exile.





PAINTING BY 6, REPIN, TREE, PRESENT BUREING BY PETERSBURG.

the nobility of perhaps 5,000 who lived mostly off serf labor while becoming drenched in French; language, literature, even French wines were in fashion. Discovering Voltaire and Rousseau in his father's library, Pushkin read French before Russian, and later wrote in both.

Poetry was a hobby of the nobility, but Alexander Sergeyevich Pushkin stood out as a prodigy, published at age 14. He was also distinguished by his visage, dark, with protruding jaw and curly hair. "A true age by his face," he said of himself.

Abram, Pushkin's mother's grandfather, was an Ethiopian prince captured by the Turks—if you believe the family legend. What is certain is that as a boy Abram was brought from Constantinople, a gift for Peter the Great. Peter educated him, and he became a general. The poet was proud of his dark-skinned great-grandfather, to whom he attributed his passions.

In 1817 Pushkin emerged from the lyceum to become a government clerk, when he wasn't gambling and pursuing actresses. The wastrel, however, gulped the progressive breeze whispering through St. Petersburg. High-minded nobles were plotting to bring about a constitutional monarchy and abolish serfdom, which held about half of Russia's 45 million people in bondage. The conspirators had formed a secret society, the Union of Welfare.

Young Pushkin mingled with these liberals but, too brash or too dissolute, was never trusted with their secret. Yet many admired his poem condemning serfdom as well as his "Liberty," an ode that proclaimed:

Oh, kings, you owe your crown and writ To Law, not nature's dispensation; While you stand high above the nation, The changeless Law stands higher yet.

For Russians today "Liberty" echoes like a universal truth. Liberal jurists struggling to find an anchor for the reemerging Russian state cite these lines as argument for a government that respects human rights. In the 1930s such lines were also employed by Stalin's propagandists—as proof that Pushkin would have espoused Soviet socialism.

Like many poets, he doesn't pigeonhole easily. He was complex—"so rich that you can make him anything you want," said Pushkinist Igor Nemirovsky, who helped me locate the poet's Petersburg haunts.

In the maelstrom of post-Soviet politics, politicians on the right are making him theirs too. At a rally in St. Petersburg last winter I heard Pushkin invoked by communists demanding restoration of the Soviet empire. Pushkin too showed himself empire proud, defending Russia's harsh suppression of a Polish uprising in 1830-31.

"Liberty" was too hot for Russia's censored journals. But drafts circulated among the elite... and inevitably one reached Tsar Alexander I. Banished to the south, Pushkin was soon writing of the capital of the present-day Republic of Moldova:

Ah, Kishinev, you thrice-damned town! . . .

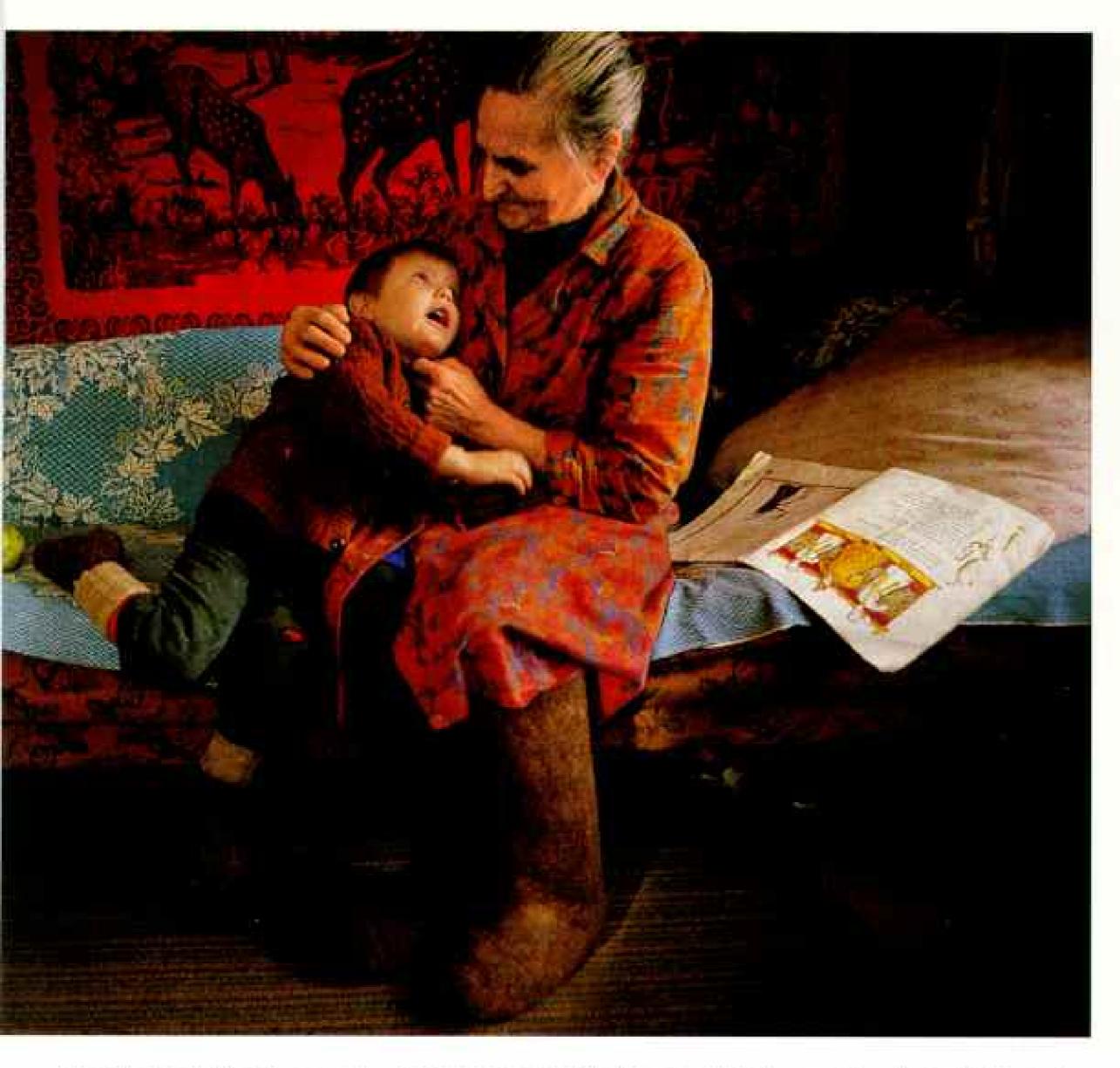
Your guilty roofs of filthy brown

Shall feel the Lord's wrath crashing down.

Yet the young genius had arrived triumphant in this backwater.



Sharing a golden moment, a grandmother reads Pushkin's adaptations of folk and fairy tales to her grandson Misha, age three. Pushkin's own nanny, Arina Rodionovna, was a freed serf who recited traditional



tales that fired Pushkin's imagination and love of his native language. He later called her "the kind friend of my wretched youth," for she raised him with love, while his uninterested parents pursued social position. Russians were delighting in "Ruslan and Lyudmila," his first important work. A rhymed folktale playing on ancient legends, it was farce and fancy, with sorcerers and clashing knights.

In Chişinău, as Kishinev is now called, the 21-year-old exile was an attention-seeking smart aleck, insulting his elders, dressing bizarrely: a red cape, perhaps a tasseled fez.

And he was fanatically touchy about his "honor," as he would be all the way to the grave. He walked swinging a 20-pound iron "cane"—strengthening his shooting arm, in case his almighty honor required defense.

Duels were illegal, but dozens took place every year. One day in swirling snow Pushkin faced Col. Semyon Starov. The trouble had started at a ball; Starov's officers wanted a quadrille, Pushkin a mazurka. Insults passed. "Satisfaction" was required.

Under Russian rules the opponents advanced toward each other and could shoot at any time. Snow-blinded, Pushkin and Starov fired and missed. They reloaded and advanced again, and missed

PURHORISEY DOM. ST. PETERSBURG

A seal with Hebrew script marks a letter that Pushkin wrote in two directions and then stamped with a ring given him by Countess Vorontsova. Pushkin had courted her in Odessa until her husband, the governor, sought his removal. Pushkin wrote of the seal ring: "Mid embraces I was bidden: 'Guard this talisman of mine: In it secret power is hidden! Love himself has made it thine." "

again. Pushkin was ready for another go, but the seconds rescued the situation; the ammunition was wet, they said.

Legend says the short-fused poet may have gone to the dueling ground six times. But he apparently never fired toward anyone except Starov, instead standing coolly as his opponent pulled the trigger (perhaps intentionally missing). Once he ate cherries and spat the seeds toward the accused card shark who had him in his sights. It apparently satisfied Pushkin to be called brave—or to live on the edge, as he always did.

HE RULES OF EXILE were loose. Pushkin wandered in the Crimea, that "delight to the eye" thrusting into the Black Sea, poking about the old Tatar palace that still stands, much altered, at Bakhchisaray. Of a fountain there he heard this legend: An old khan fell in true love with a virginal denizen of his harem, and when she died—probably killed by a jealous harem mate—he built the fountain to symbolize his grief.

Thus was gathered the stuff of poetry. "The Fountain of Bakhchisaray" fetched 3,000 rubles from a Petersburg publisher. Five rubles a line for 600 lines was unheard-of. He had invented a profession.

He probably lost much of this handsome royalty at whist. A poor gambler, he even wagered and lost folios of unpublished works.

Wherever he found a library, Pushkin devoured it. Lord Byron's romanticism influenced him. He read Byron and Shakespeare in English and James Fenimore Cooper in French. Greek and Roman classics, Schiller, Corneille. He may have been, as even Tsar Nicholas I remarked, "the most intelligent man in Russia."

His muse was fickle; he created in binges, when inspiration struck. A friend recalled seeing him sitting at night with bits of paper. Next morning in bed he still pored over those scraps, beating time with his quill as he recited verse. In Chişinau he already was writing Onegin.

To friends in St. Petersburg and to his brother, Lev, he sent poems for publishers. He often railed at the "little old lady," the censor, who decreed, for example, that he could not call Russians "freedom loving."

Not only the censor monitored him. Pushkin was also watched by the police, who read his mail. Reports went to Alexander I. Today it seems amazing that the tsar of all the Russias would interest himself in a modestly successful (at that time) poet who sometimes wore baggy red trousers and needed a haircut. Such, however, was the imperial way. Privately Pushkin wrote biting verse about the tsar, but in public he grew cautious. And at 23 he was more mature; as a friend said, "Experience suppressed in him his outbursts." There would, of course, be relapses.

First, good times. Joyfully he wrote in 1823, "I put in my appearance in Europe" — by which he meant Odessa.

Friends in St. Petersburg had managed to arrange his transfer to that Black Sea port of 30,000, hub of a thriving enterprise zone attracting entrepreneurs as likely to be Italian or Jewish as Russian. In the opera house he could hear the works of the "entrancing Rossini." And French wine arrived duty free.

Odessa raised handsome edifices like Vienna's. Next to an inn

where Pushkin lived stands the queenly old Hotel Bristol, now the Krasnaya ("beautiful") and still dripping garlands and pilasters.

Free enterprise continues to thrive in Ukraine: Those ladies standing in front of the Krasnaya are not waiting for prayer meeting. When Pushkin saw a pretty face, he would exclaim, "I can't live without her!" Anna, a general's wife; Calypso, with the burning eyes; the Gypsy Zemfira, who let him share her tent: He once wrote that he had loved 113 women.

"He had a very large heart," said a museum guide with a smile when I asked if she believed this. Biographers say his scorecard included many momentary infatuations. Poem after poem sprang from these encounters.

In Odessa he dared court the wife of the local governor. Eliza Vorontsova's smile, it was said, was "an invitation to kisses." She appears in numerous poems. One recalls a gold seal ring she gave Pushkin, a talisman to:

Shield thee, love, from evil preying, From new heart-wounds . . . From forgetting, from betraying.

Disaster, self-inflicted, came after only a year in idyllic Odessa. Pushkin carelessly wrote that he was "taking lessons in pure atheism" from an expatriate Englishman. Atheism was almost as bad as criticizing the tsar—and the police read this letter.

The place was his mother's estate, Mikhaylovs-koye, near the city of Pskov, a hard 36-hour carriage ride south of St. Petersburg.

It would be a wonderful place to write, if your muse required solitude. The plain house (Pushkin called it a "decrepit hovel") looks out on a lazy stream and a pond. It is one of the most peaceful spots I've seen in Russia.

To isolate the cosmopolitan Pushkin in such a place, friends said, was assassination. A local historian, Boris Kazmin, puts it this way: "Pushkin had the choice of becoming a drunk or a truly great poet." He was bored but not destroyed. Send "some books, for God's sake," he pleaded. Childe Harold, Walter Scott, histories, a Bible. And mustard and Limburger cheese.

Alone but for the serfs, Pushkin nevertheless had lots of company, for he conjured his heroes and heroines. As he put them on paper, he littered the floor with chewed quills.

To St. Petersburg he dispatched "my ravings," 60 poems for a book. By now he had become known. The book sold well for its time: 1,200 copies in two weeks.

The "little old lady" snipped with new vigor, the government had wind of the Union of Welfare plotters. From "André Chénier," his poem about the French poet-martyr, she excised all reference to the French Revolution.

At last he sent off the first canto of Eugene Onegin. There would be eight of these fat chapters, appearing about one a year, like a soap opera in verse. All educated Russia waited for the poet to finish the next installment.

For a masterwork, it is short on plot. Onegin is a St. Petersburg



Mocking himself, Pushkin drew this caricature of a dandy with long sideburns in his manuscript for Eugene Onegin. Like the hero of that wildly popular verse novel of jealousy and unrequited love, Pushkin was an irreverent pleasure seeker. But he was dead serious about his work, always rewriting to make his words powerful and spare. wastrel. Surfeited with life, he retreats to the country, where he meets innocent Tatyana. Captivated, she offers her love. Bored, he declines. After a trivial falling out with his friend Lensky, a poet, Onegin kills him in a duel. Appalled, he wanders. Five years later at a ball he sees Tatyana, regal now and married. Suddenly Onegin wants her desperately and offers his love. She refuses. The End.

Onegin endures thanks not only to Pushkin's rhymes but also to his insouciant asides and his vivid portrayal of noble life. He peers into the dressing room where Onegin, "Fashion's acolyte," grooms with all sorts and sizes of combs, scissors, files, and brushes. In one aside, Pushkin rhymes for 63 lines about his own passion for women's feet.

After such detours he recovers smartly—"onward, onward with my story!"—and sets off anew with his characters:

Meanwhile, Pushkin completed the historical drama Boris Godunov, based on the Time of Troubles, in the early 1600s, when an imposter claimed the throne and plunged Russia into civil war. He was ecstatic about this work, the basis of Mussorgsky's opera. Reading it alone in his hovel, the poet said, "I clapped my hands and shouted, 'Atta boy, Pushkin, 'atta boy, you son of a bitch!"

N NOVEMBER 1825 Alexander I died without an heir. The new emperor would be his younger brother Nicholas, but this became clear only after weeks of confusion.

Seizing the moment, and joined by 3,000 troops, the revolutionaries of the Union of Welfare struck on December 14. Ill-prepared, the Decembrists arrayed themselves in Senate Square, then hesitated—while 12,000 loyal troops massed. For hours the ranks faced each other. At last Nicholas ordered his artillery to fire. The bloodied challengers scattered. Some ran onto the Neva River ice, drowning when it gave way. There would be no constitutional monarchy; serfdom would continue for 35 years.

The special niche that the Decembrists occupy in Russian hearts is due in part to the harsh punishments they received. Pushkin wrote privately of Nicholas I:

He was made emperor, and right then Displayed his flair and drive: Sent to Siberia a hundred-twenty men And strung up five.

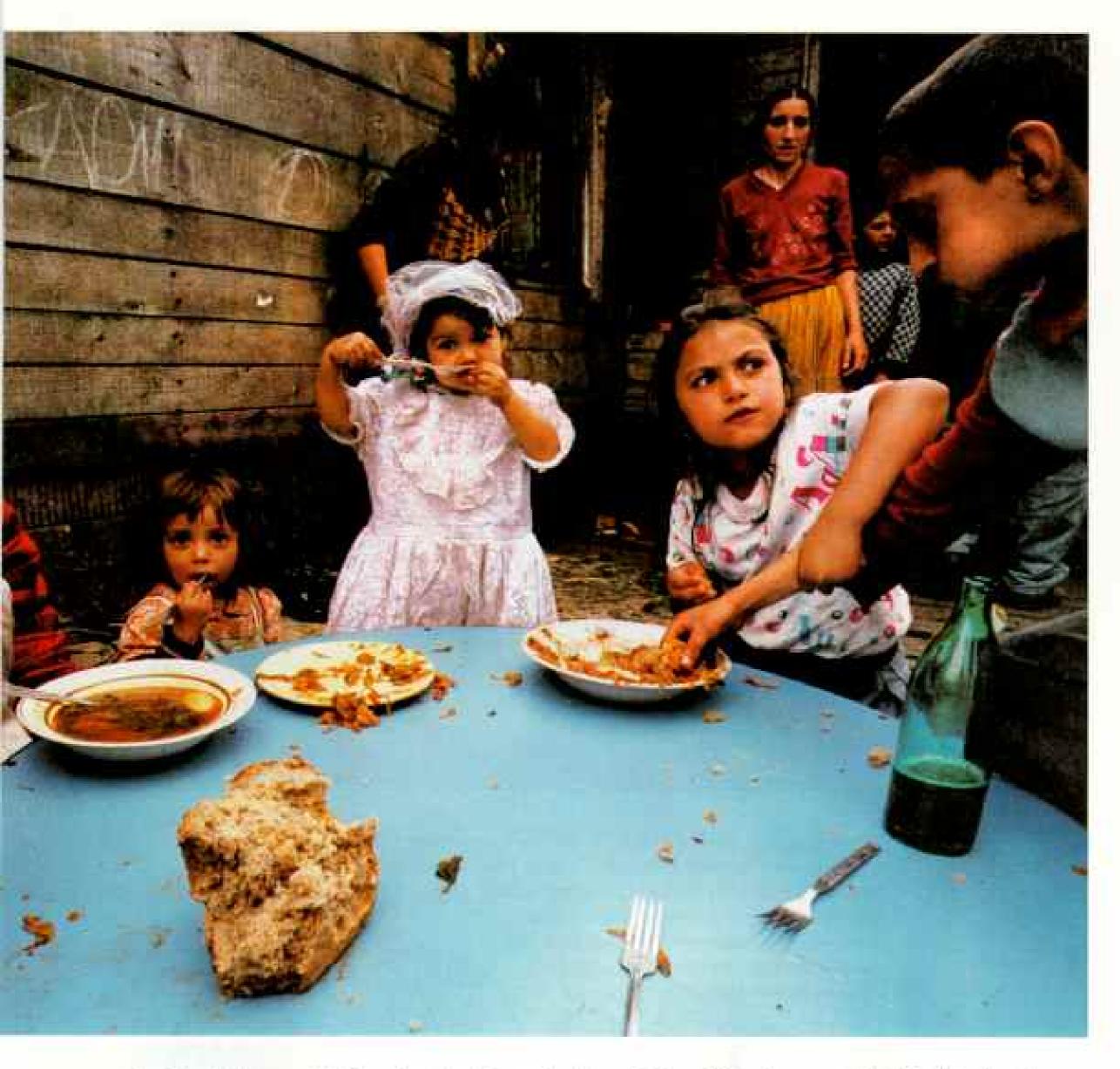
Many were his close friends. Among their papers the police found "Liberty" and other Pushkin poems. At his farm prison the nervous poet sent his memoirs up the chimney. He composed a taut poem about a shipwreck, from which he alone, "secret singer" to the crew, survived.

In September 1826 he was summoned for questioning by Nicholas. At length the tsar appeared satisfied with Pushkin's declaration (not quite true) that he had abstained from anti-imperial verse. In seeming magnanimity Nicholas declared him pardoned—if he continued to behave. One other proviso: The tsar himself would now become his censor.

Free after six years! But within weeks Pushkin realized that his freedom was fenced. Reminders would come again and again from a sinister police agency known as the Third Department. Shocked



Scrapping over plentiful food, Gypsy children celebrate a birthday, undisciplined by their elders outside St. Petersburg. The wild-spirited freedom of nomadic Gypsy camps appealed to the romantic Pushkin during his southern exile; it was said that he loved a Gypsy girl. His



verse "The Gypsies" seems both personal and prophetic: "Yet you, too, Nature's sons undaunted, Are strange to happiness, it seems!"

Laws in the 1950s under Stalin forced Gypsies to settle down and conform. by the Decembrist uprising, Nicholas created this Big Brother department to search for subversion. No journalist's scribbles, no poem's possible hidden meaning, would escape its suspicious eye, and Pushkin found himself in the clutch of its chief, Count Alexander Benckendorff. Imagine answering to the chief of the KGB, and you've got the picture.

When Pushkin read Godunov to a small audience, Benckendorff knew of it. He rapped Pushkin's knuckles; he must not even read his works before submitting them to the tsar. Pushkin submitted the drama. Back from Benckendorff came the verdict: It required "detailed expurgation." (Nicholas believed some passages alluded to the Decembrists.)

Only about 10 percent of Pushkin's vast production appeared during his life. Most of the rest is known from his papers, protected today like gold. In fact, they repose where bullion shipments were once stored, behind steel doors in the vault of the old St. Petersburg customs house. It is now Pushkinsky Dom (Pushkin House), where



Poetry brings solace at the St. Petersburg prison where Victor, held incommunicado, awaits trial for selling military gear. He tucks his verses—and Pushkin's—in paper missiles (right) and shoots them blowgun-fashion over the walls to Olga. She returns endearments by slingshot.



a score of Pushkin scholars labor. Their grail is a new, annotated edition of all Pushkin's words, but with Russia in poverty, it probably won't see daylight soon.

I followed chief Pushkinist Sergei Fomichev through the vault's heavy doors. From a shelf he drew a leather-bound notebook. Alongside the scribbled lines, Pushkin had deftly sketched faces and human figures while awaiting his muse. Dr. Fomichev thumbed the pages, "Here he was writing 'The Gypsies,' " he said. "And here"—turning pages—"it was Onegin," In the margin stood a regal Tatyana.

The 18 notebooks stored snippets of verse, stanzas, outlines. He dated almost everything; thus we know he wrote the 372-line poem "Count Nulin" in two days, while the gestation of other works spanned months.

USHKIN'S PAPERS REVEAL that he believed people would remember how "I honored freedom in my cruel age." But he also published verses that were complimentary to Nicholas.

I took up that seeming contradiction with the poet Yevgeny Yevtushenko, the best known modern singer of Russian freedom. "Pushkin made mistakes, but they were honest mistakes," he said. "He was never a bootlicker. He could write a poem completely insulting the tsar in the morning, but by afternoon he might pity the tsar as also a man."

A tall, taut rope of a fellow, Yevgeny (Ghenya, as he likes) lives in a comfortable dacha in a writers colony outside Moscow. His long arms waved and his icy eyes glittered as he threw out phrases that, even in fractured English, were like verses in the raw. He had half a dozen descriptions of Pushkin's closeness to Russians, such as: "He's like a child in the family . . . no, the enfant terrible. He's a cross you don't wear because it's already under your skin."

Ghenya talked about the independent writers union he was organizing to replace the Soviet agency that once rewarded obedient wordsmiths and blackballed the rest. "This is the first time in all our history that we haven't had censorship," he said. "For so long we had iron bars on our souls."

That brought him back to Pushkin. "He represents the great harvest of tongues cut out and buried in our land."

Hence, to some, Pushkin is a saint. To others he's a big brother to emulate. "Pushkin came to my studio years ago," sculptor Leonid Baranov said, "and he's still here." All around were torsos and limbs of plaster and metal—and several Pushkins. "You Americans have had people you could look up to, like the men who wrote your Constitution," Leonid said. "We didn't have such people. Pushkin stands out as that rare Russian, an independent man."

Pushkin, alas, offers no lesson in sheer survival, the most urgent topic for Russians today. What does independence mean when you stand for hours to pay fierce prices for bread, milk, and sausage? "The mystery of the Russian soul," declared a thoughtful Muscovite, Alla Zismanova, "is that you can't satisfy it with material things. People will soon realize it is not enough. Then they will return to the passion of poetry."

And when they do, Muscovite Maria Stepanova will be waiting.



Pushkin's friends were among those who openly rebelled against the tsar in December 1825. Five of the revolution-aries were hanged, and 120 were sent to Siberia. Pushkin's poems had nourished their liberalism, but he was never included in their secret society—and was cleared. Feeling guilt, he sketched their fate in his notebook and wrote: "I, like a fool, might have been on [the gallows]."

Pushkin

I like a line from this young versifier: "Every good poem is a place to live." The kept Soviet poets "wrote words that were loud and beautiful," she said, "but they had no meaning. We must go back to the beginning, to the time of Pushkin. . . ."

exile, now 27, was briefly the darling of Moscow and Petersburg. He had never known the audience that was under his spell and that now wanted even to touch his clothes.

Society, however, was fickle. Liberals suspected him of selling out to the tsar. Soon, critics scorned his new poems. Despair filled his verses while he gambled away his royalties.

Wanting to settle down, he sought a wife. When other prospects looked unpromising, he turned to a 16-year-old far beneath him in intellect. But of Natalya Goncharova this could be said: She was gorgeous—wasp waisted and full bosomed, with a beautiful face.

Natalya's mother was as broke as Pushkin, and she demanded from him a generous loan. For Natalya's dowry, she said. Another loan was expected for the trousseau. In plain language, Natalya like many other young women of society—was offered for sale.

Pushkin solved his prenuptial financial crisis 300 miles east of Moscow in Boldino, where his father had granted him a share of his serfs. Though he had condemned serfdom, his chattels became mortgage collateral; 200 souls netted 38,000 rubles (about \$120,000 today). For dowry and trousseau he gave up more than half of the money. Many Boldino citizens are descendants of those chattels. Carpenter Vasily Skovorodov just shrugs at the thought that his forebears were marriage fodder. "It was the system," he said. "There were abuses in Russia, just as in America you had slavery at the same time."

Pushkin called the village of Boldino "dreary." But in three months there in 1830 he poured out 30 poems as well as short stories and the drama "Mozart and Salieri," the basis for a longer modern play and movie, Amadeus.

In a subsequent autumn in Boldino his mind floated to the towering equestrian statue of Peter the Great, "the Idol on its granite cliff," in St. Petersburg. He wrote perhaps his finest poem, "The Bronze Horseman." A lowly clerk, "my pitiful Eugene," loses his fiancée when the Neva floods the capital. Like a madman he stands one night before the statue and hisses his fury at the city's creator:

Up there,

Great wonder-worker you, beware! . . .

Peter's face burns and seems to move. Eugene runs, and all night hears behind him,

. . . high upon his charging brute, . . . The Bronzen Horseman in pursuit.

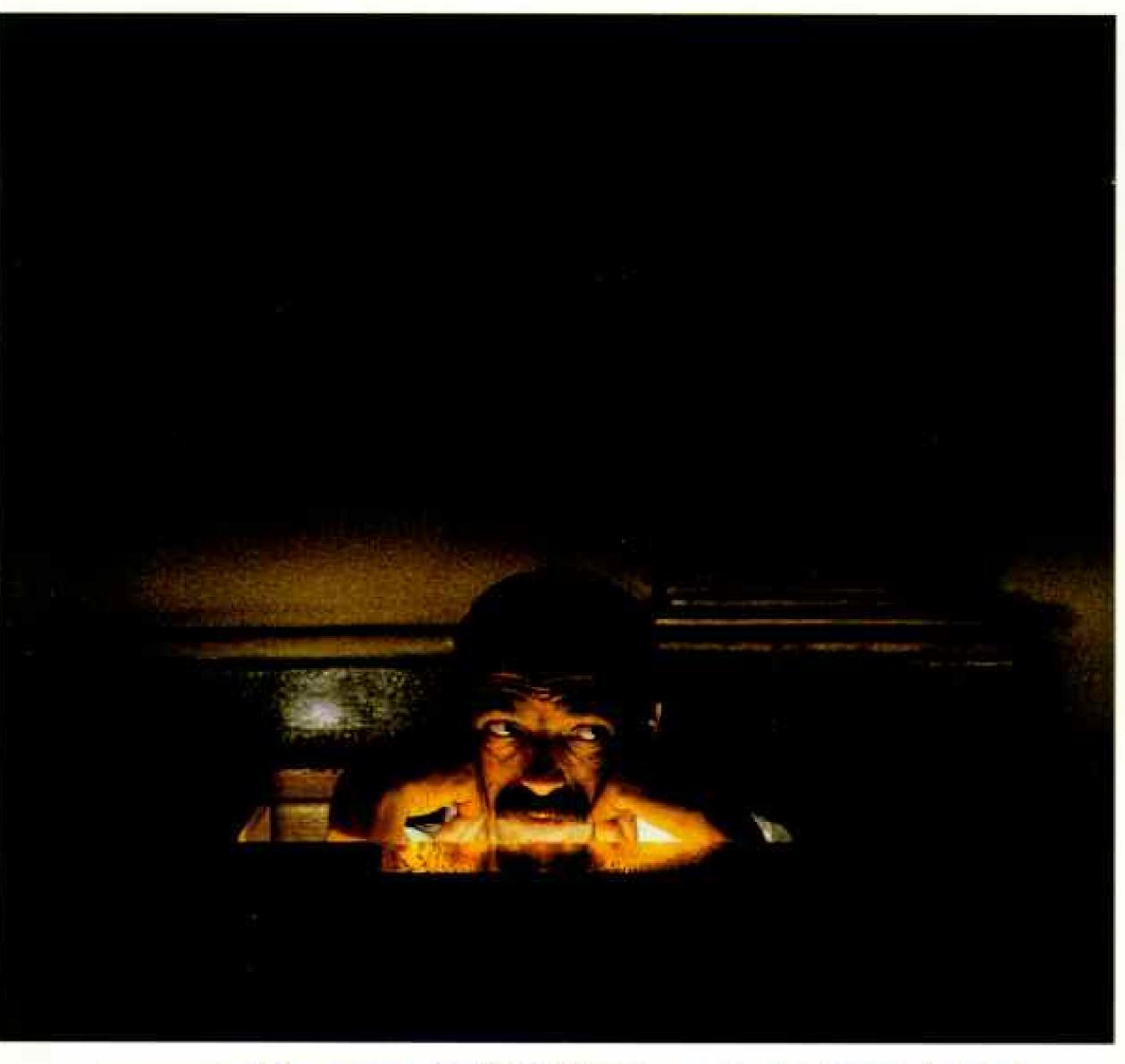
Eugene never passes the statue again without abjectly doffing his cap and slinking away.

The poet and Natalya were married on February 18, 1831. Pushkin apparently was happy. And he was almost chirping as he told friends, "The tsar is very kind to me." He was on the government payroll at 5,000 rubles a year.



Long under surveillance, Pushkin was spied on by officials, monks, even his own father. Watchful eyes still track activities at tourist hotels, as in Odessa (above).

Pushkin, ever loyal to the tsar, limited his opposition to words, unlike the anti-Semitic, neofascist Pamyat party, whose demonstrations have led to violence.





It was not the poet, however, but Natalya, now 18, who attracted the tsar. Nicholas made Pushkin a Junior Gentleman of the Bedchamber, a flunky required to attend balls and other court occasions. "The court wished," he realized, "that Natalya should dance at [the] Palace."

He stumbled toward disaster amid bemedaled uniforms and a froth of expensive gowns, while all male eyes feasted on Natalya. "I don't believe there was any man who did not fall in love with her," declared biographer Abramovich. Once even a noble's moonstruck 13-year-old son approached her and said, "I must tell you now

that I love you, because soon I must go to bed."

Natalya adored the attention-and flirted back. Pushkin's letters to her (some read by the police) were like those of a pleading father: "Flirtation is not in fashion. . . . I demand of you coldness, propriety, dignity. . . . Don't coquette with the Tsar."

Communist writers condemned Natalya as "a fickle-minded society beauty." But I herewith log the objection of Gregory Pushkin, greatgrandson of the poet and Natalya. "She was not a bad person," he insists. "She was a good mother. She and Pushkin were happy." During their six years together she bore four children. Modern scholars do not accuse her of infidelity.

Gregory was 78 when I met him. He got close to words only as a printer for Pravda. The story in the family, he told me, is that "my grandfather wrote in his will: 'Don't try to write poems or prose; you will never write better than Alexander Sergeyevich, and if you write worse, it will be as if you cursed his name." "

Pushkin stuck his head farther into the noose by borrowing from the imperial treasury: 20,000 rubles, then 30,000 more. He hoped to recoup the money from his new works. But the public was indifferent to these and also to the literary journal

he launched with friends.

Yet he struggled to maintain his integrity, refusing to adapt his works to please the tsar or public taste. He managed to publish a poem condemning autocracy, and he irked Nicholas by being a no-show at command performances.

People saw him as "sad, pensive, and worried." Twice he issued duel challenges (neither accepted) for perceived insults.

N 1836 Georges d'Anthès was pursuing Natalya. A handsome Frenchman in the Russian horse guards, he was the adopted son of the Dutch ambassador, Baron Louis van Heeckeren. A diarist wrote that d'Anthès "showed his feelings toward her more and more openly," and finally she no longer tried to stop "the manifestations of his uncontrolled passion." Pushkin was seen "scowling like Jupiter" as d'Anthès cast tender glances at Natalya, then danced a mazurka with her.

On November 4, 1836, Pushkin received a mailed "citation"



Marrying at last, the poet selected a reigning beauty, "my one hundred thirteenth love." Of 18-year-old Natalya, shown here with Pushkin before a looking glass, it was said she had a "soul made of lace." Attending balls was her passion, a pursuit that exhausted and helped impoverish her husband. When a handsome French baron paid her too much attention, Pushkin challenged him to a duel.

awarding him the "Order of the Cuckold." The authorship of this vicious prank is still debated. Enraged, Pushkin sent d'Anthès a challenge.

What followed sounds as improbable as a comic opera. Van Heeckeren and d'Anthès proposed a solution: To quiet the gossip and assuage Pushkin, d'Anthès would marry Natalya's sister, Catherine. D'Anthès also had courted her—to be near Natalya, the gossips said. Pushkin agreed gleefully, believing his adversaries would be seen as cowards. Honor and reputation were paramount.

The wedding took place on January 10, 1837. Pushkin refused

to attend, of course. The social season was at its height, inevitably locking the newlyweds and the Pushkins together night after night. Defiantly, d'Anthès again pursued Natalya. Pushkin cast the die in a letter boiling with insults. D'Anthès's conduct was "contemptible," He was "a coward and a scoundrel."

Some of Pushkin's friends condemned the tsar for not preventing the looming tragedy by ordering d'Anthès to a faroff post. Others said the duel was not stopped because Count Benckendorff, the secret-police chief, hated the poet.

At about 4 p.m. on January 27 Pushkin with his second, an old school chum, went to a secluded spot outside town, by the small Black River. Pushkin knew d'Anthès—his despised brother-inlaw—would be waiting.

The seconds tramped the knee-deep snow in a lane of 20 paces. Near dark, the enemies advanced. They were less than a dozen steps apart when d'Anthès fired. Pushkin dropped. Propped up on one arm, he finally took his shot. "Bravo!" he cried, seeing d'Anthès stagger. But the wound was superficial.

On the anniversary of Pushkin's death, people come to the obelisk that marks the spot, in a copse now shouldered by apartment buildings and stitched by streets and railroad track.

I watch them approach across the snowy ground. Lovingly, one at a time, a woman places eight carnations on the monument. A father brings two girls who kneel and light candles.

An old woman arrives, in black coat and shawl. She stands facing the obelisk, makes a fervid cross, and places a single rose. Dark is coming. As I walk across the tracks to the street, I look back. She is still there, stone-still in reverence, a monument herself, respecting a saint.

Nicholas ignored the outrage. He bestowed a pension on Natalya and paid Pushkin's debts. She remarried. Van Heeckeren and d'Anthès, with Catherine, left Russia.

Pushkin's body was taken to a monastery near Mikhaylovskoye for burial, with a police escort to forestall a demonstration: Even as a corpse he could not escape Benckendorff. But he never died.



PAINTING BY A. YOLKOY, 1888, PURHADE MULTUM

Like the closing chapter of a Pushkin tale, the poet and Baron d'Anthès met to duel in the cold dusk of January 1837. D'Anthès got off the first shot, badly wounding Pushkin, who raised himself to make the shot he was entitled to. Standing sideways, the baron took the bullet in his arm and lived, but in two days Russia's greatest poet was dead.

Pushkin

have outlasted all desire,

My dreams and I have grown apart;

My grief alone is left entire,

The gleanings of an empty heart.

The storms of ruthless dispensation

Have struck my flowery garland numb—

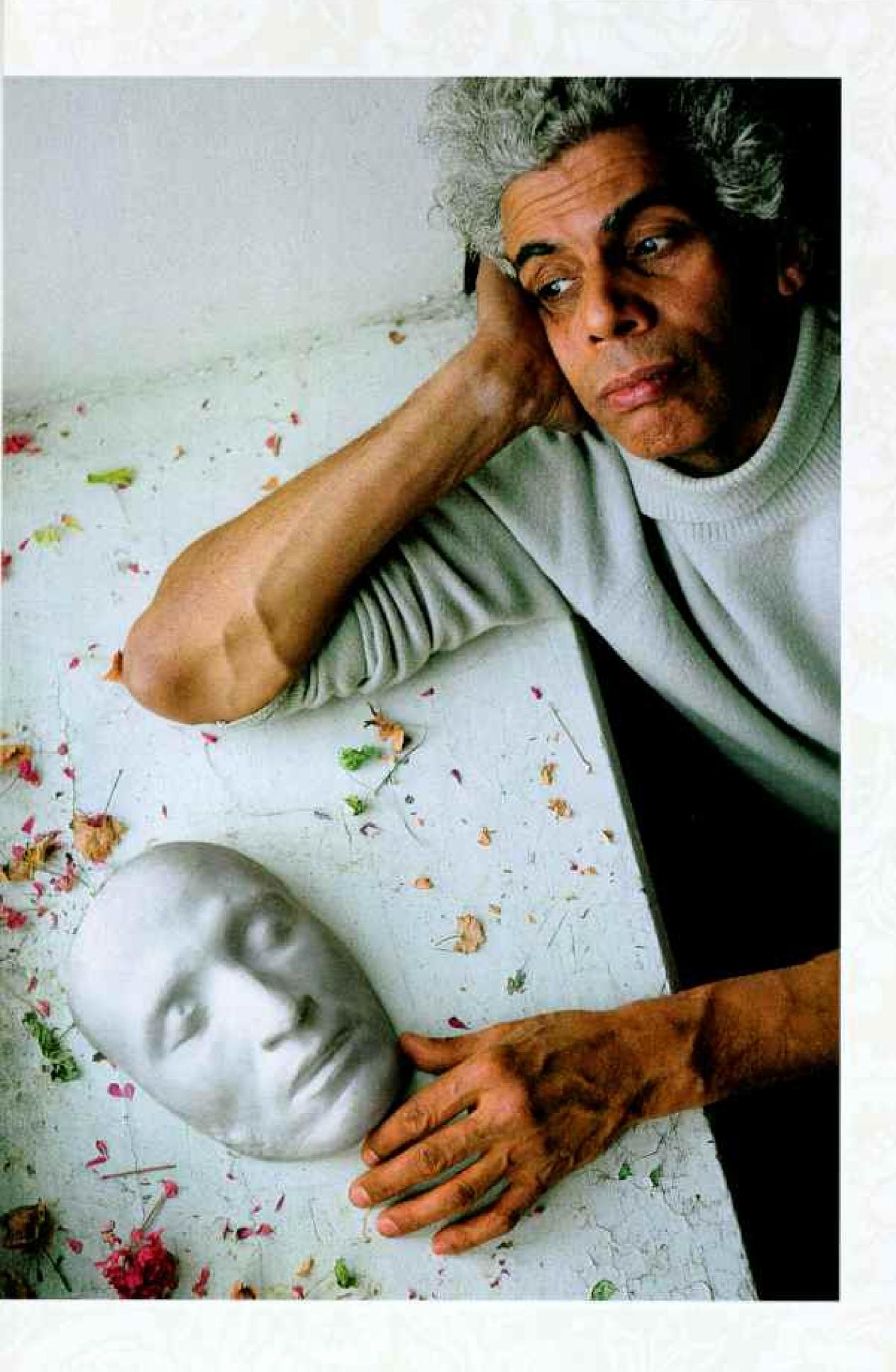
I live in lonely desolation

And wonder when my end will come.

- UNTITLED, 1821



YET PUSHKIN LIVES — IN THE DREAMS OF YOUNG GIRLS LIGHTING A CANDLE TO HIS MEMORY AND IN THE VOICE OF BUSSIAN POET JAMES PATTERSON, WHOSE FATHER WAS AN AFRICAN AMERICAN, HE KEEPS A DEATH MASK OF PUSHKIN, WHO BOASTED ABOUT HIS GREAT-GRANDFATHER, AN ETHIOPIAN.



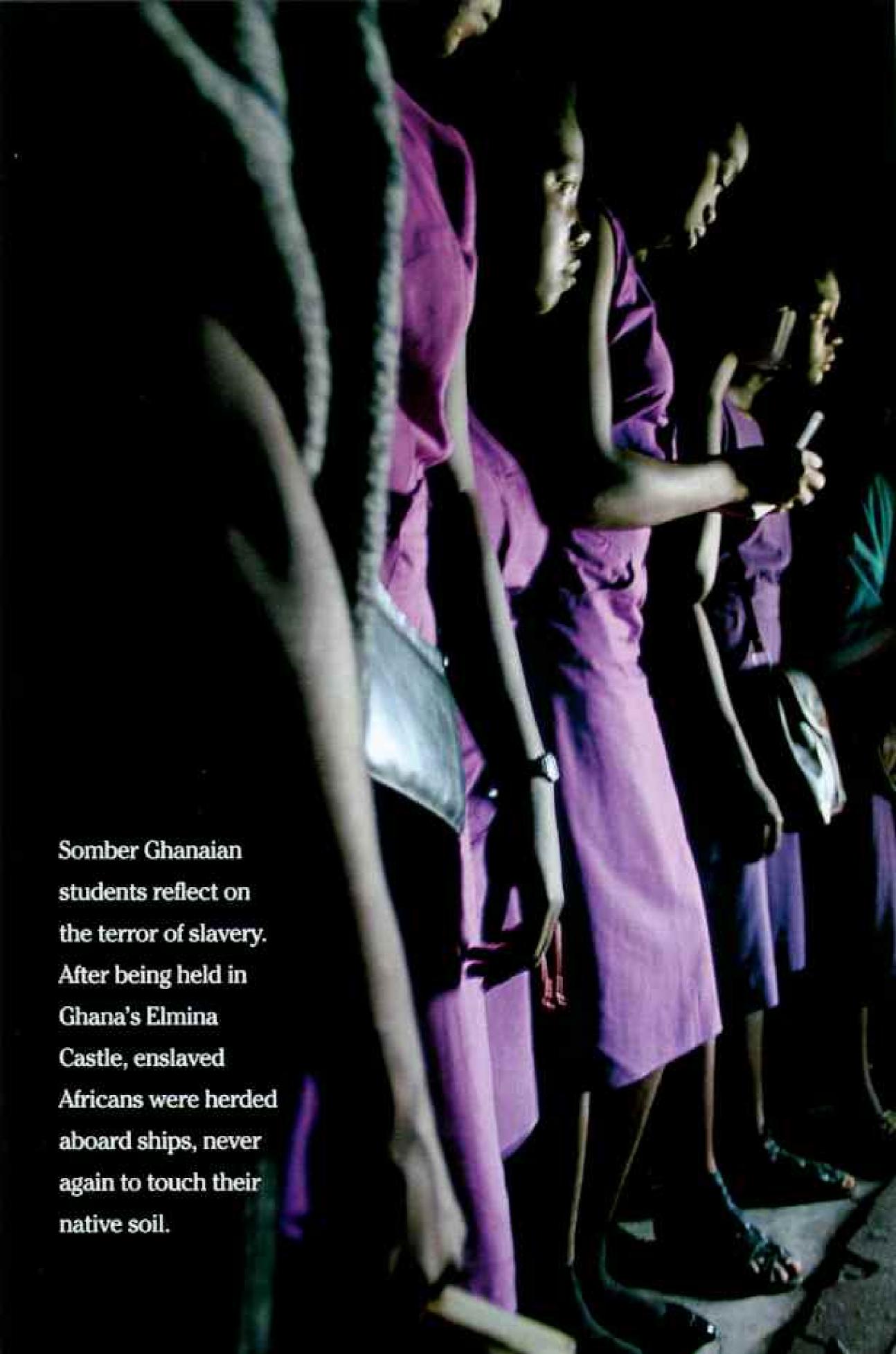


# AFRICAN THE STAVE THADE THADE THADE THADE THADE THADE THADE THE STAVE THADE TH

Rusted shackles on the coast of Senegal suggest the bitter fate of captive Africans during the three and a half centuries when European traders sold their human cargo across the Atlantic. Descendants of slaves in the Americas struggle still to break free of their legacy while reaching back for roots never quite severed.

By COLIN PALMER
Photographs by MAGGIE STEBER
IB PICTURES

Paintings by JERRY PINKNEY





Kingston, Jamaica, Nadine Gunter and Philip Adjodha were united in holy matrimony last December in a quiet ceremony conducted by a Roman Catholic priest. As the couple exchanged vows, I recalled the night when Nadine, my sister's second child, was born. Now, 26 years later, I had flown from the United States to attend the wedding with family and friends.

Later that evening, as the Reverend
Joseph Brennan blessed the food at the reception, he noted that the wedding united
not only the bride and groom and their families but a number of Caribbean islands as
well. In this gathering, composed primarily
of blacks, his comments struck a deep emotional resonance. History had created a
people widely dispersed from their ancestral
African homeland, yet they had endured,
reestablishing relationships that transcend
geographic boundaries.

Born on the island of Jamaica, Nadine met Philip in New York City. Philip's father, who is from St. Lucia, met his mother in Guadeloupe, where they married; they moved to New York, where Philip was born.

As the descendants of Africans who came to the Americas in slave ships, Philip and Nadine share a unique history of migration, transplantation, and mobility. They lay proud claim to their heritage and to its tradition of struggle, resilience, survival, and achievement.

With an M.B.A. from Columbia University Nadine works for a New York City bank. Philip is an accountant with a law firm. When I complimented Nadine on her success, she thanked me and said thoughtfully, "As a people, we cannot be prisoners of the past. We still have challenges to confront, and we can't afford to lose confidence."

In a very real sense Philip and Nadine's story began with Christopher Columbus's momentous voyages to the Americas. The first person of African descent to arrive, or the first for whom there is firm evidence, came in 1492 as a member of Columbus's crew. He was apparently a free man,

Jamaica-born Colin Palmer is a William Rand Kenan, Jr., Professor of History at the University of North Carolina at Chapel Hill. Photographer Maggie Steber covered Miami for the January 1992 National Geographic. probably a mulatto from Spain. In 1494, during Columbus's second expedition, at least two other blacks disembarked on the island of Hispaniola, where the Spaniards had established their first settlement.

There is no evidence to suggest that the Spaniards had planned to enslave Africans when they began to colonize the Caribbean. They intended to make the indigenous peoples they called Indians perform the manual labor they themselves disdained. But the Indian population declined precipitously as a result of mistreatment and epidemics of such diseases as smallpox, measles, and typhus, and the colonists had to look elsewhere for exploitable labor.

Slavery was not unfamiliar to the Spanish. They had long used slaves—Jews, Slavs, Africans, and other Spaniards—even though their body of laws that sanctioned slavery also held that it was "the most evil and the most despicable thing that can be found among men."

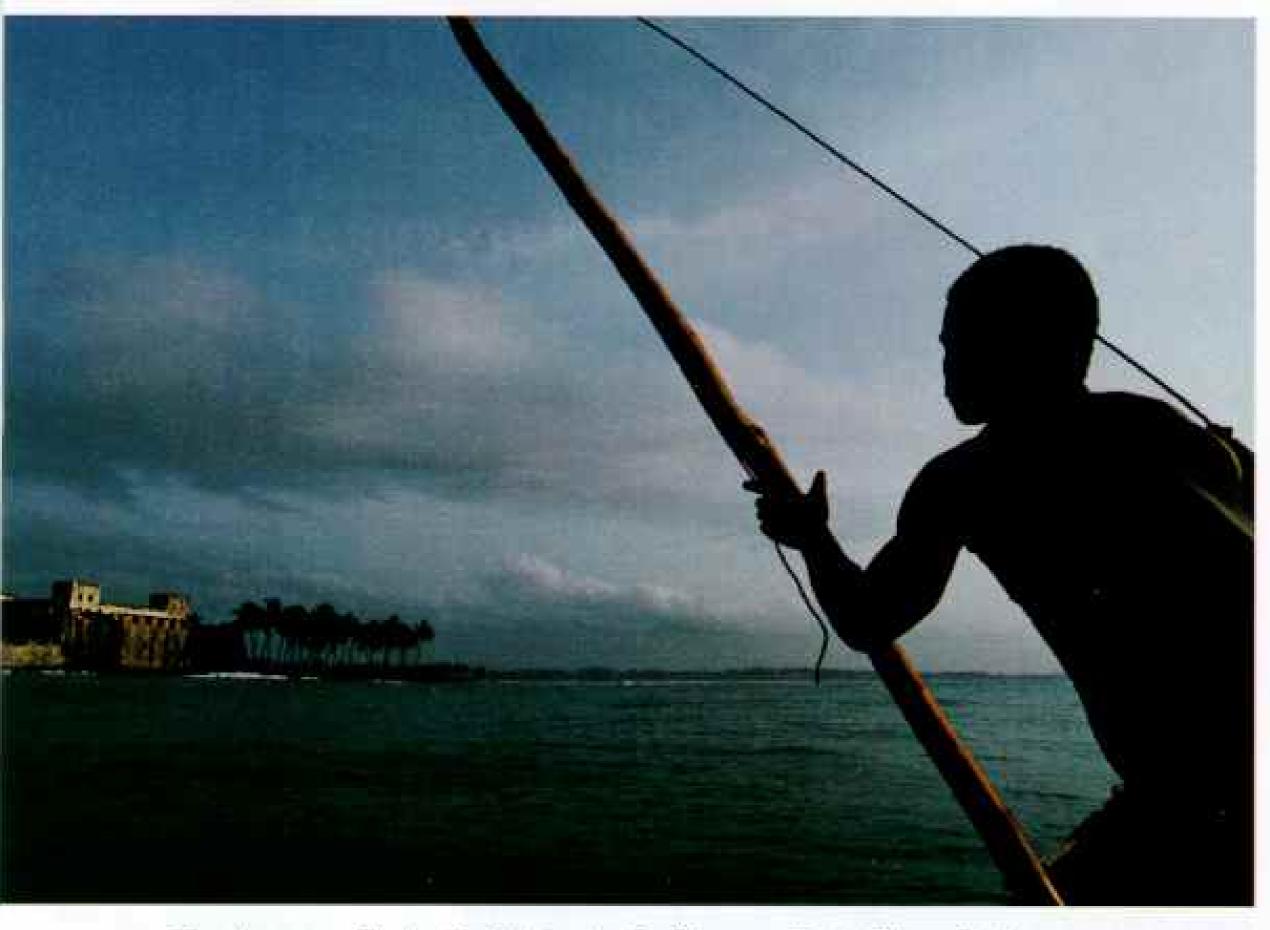
So it was that in 1501 the Spanish monarchs Ferdinand and Isabella granted permission to the colonists to import black slaves.

ROM HISPANIOLA black slavery spread rapidly to the islands of Cuba, Puerto Rico, and Jamaica, to the mainland colonies of Mexico and Peru, and then throughout Spanish America.

In 1619 a Dutch "man of warre" brought "20 and odd" blacks to ease a labor shortage in Jamestown, Virginia, inaugurating the use of black coerced workers in England's mainland colonies. Illness and inadequate diet had weakened many Jamestown settlers, although, as founder John Smith wrote, some given to sloth and idleness "never did know what a dayes worke was."

We can never be certain of the total number of Africans who arrived in the Americas as slaves. Scholarly estimates today range from 10 to 12 million. Countless others died on the African coast awaiting shipment or perished during the Atlantic passage. Of the survivors, most—about 95 percent—went to the Caribbean and Latin America (map, pages 70-71).

Portugal's Brazil received the largest share of Africa's children, perhaps five million, the Spanish colonies about two million. Most of the remainder went to British,



Morning coaxes Elmina Castle into view for fisherman Kweku Tikgay. Each dawn he navigates past the imposing fortress, built in 1482 by Portuguese traders, and drops his net for the day's first haul. The Dutch captured Elmina in 1637, a victory that symbolized their forceful entry into the African slave trade.

French, Dutch, and Danish colonies in the Caribbean. Only about 500,000 slaves were delivered to the mainland north of Spanish Florida. Although the slave population of the United States numbered four million in 1860, most of these persons were American born. Spared the full impact of diseases that devastated slaves in the tropics, the North American slave population was able to stabilize and reproduce itself naturally from the early decades of the 18th century.

to the Americas was undertaken by Portuguese, French, English, and Dutch, among others, with varying degrees of success. Spaniards, although major purchasers of slaves, did no trading on the African coast until the late 1700s.

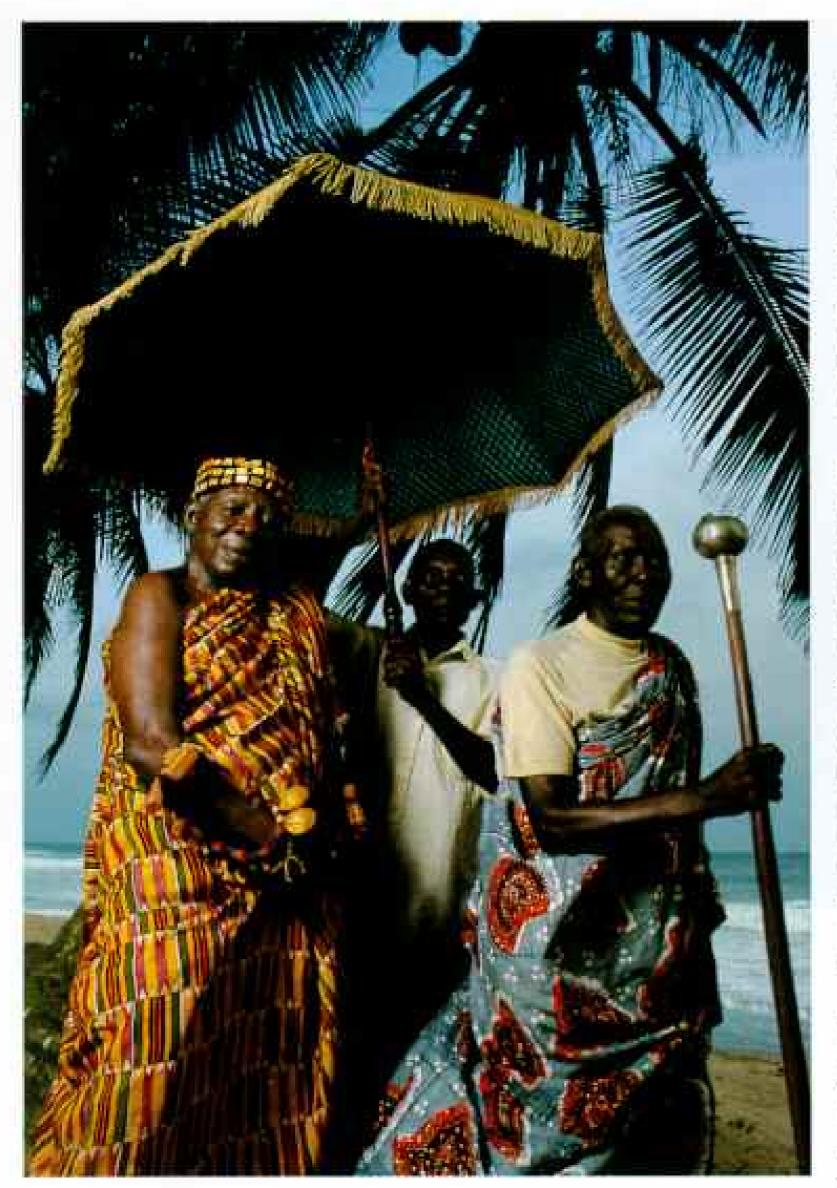
Though colonists on the North American mainland were not significant actors in the slave trade until around 1730, the first American slaver was dispatched by Boston merchants as early as 1644. This vessel, the Rainbow, was one of three sent to Africa to establish a trade in "negars" as well as in other products. It took a number of slaves to Barbados.

The colonists became more active in the trade as the demand for labor grew along with the plantation economies of the Americas. Accordingly, the years from 1740 to 1810 represented the heyday of the trade, when an annual average of about 60,000 slaves were delivered to the Americas.

To facilitate trade, forts were established along the West African coast. The Gold Coast (contemporary Ghana) saw construction of more than 50 such posts along 300 miles of coastline.

The larger forts were called castles.

Among the best known, Elmina Castle in Ghana was built by the Portuguese in 1482 but fell to the Dutch in 1637. Cape Coast Castle, begun by the Swedes in 1653, was later held by the dey, or ruler, of the Fetu



Palm and parasol shade the gold-laden head of Chief Asmah in Ghana. That precious metal lured European traders to the area, where they discovered the profit in slaves.

people; it was acquired by the Dutch in 1664 and by the English in 1665. This castle could accommodate more than a thousand slaves.

The forts included residences and offices for the white traders, warehouses for the trade goods, and quarters for the slaves. Traders built these forts with the permission of the local ruler and paid rent for the privilege. They had to be repeatedly defended from assaults by other Europeans and Africans as well.

When visiting the surviving forts, I could barely suppress my profound anguish. The massive structures attract
even as they repel. As one
enters these monuments of
doom, with their thick
walls and austere rooms
that now lie empty, one
can still hear the cries
of the enslaved, punctuated
by the sounds of the angry
waves crashing against
the shore.

The damp, dark dungeons where the captives were imprisoned, chained and fearful, lying in their own excrement, still assault the sensibilities. Narrow tunnels from the dungeons to the waiting ships remain as terrifying today as they must have been for those who passed through them to begin their journey of no return. The tears flow freely as one descends into these hells, and the gasps of the visitors remind us that the trauma of the trade has not yet been spent.

At the 18th-century Slave House on Gorée Island, a short ferry ride from Dakar, Senegal, tourist cameras flash in the renovated rooms. Some historians question the authenticity of

the site, but the notes left behind by visitors over the years—many of them prominent black Americans—are impassioned and compelling.

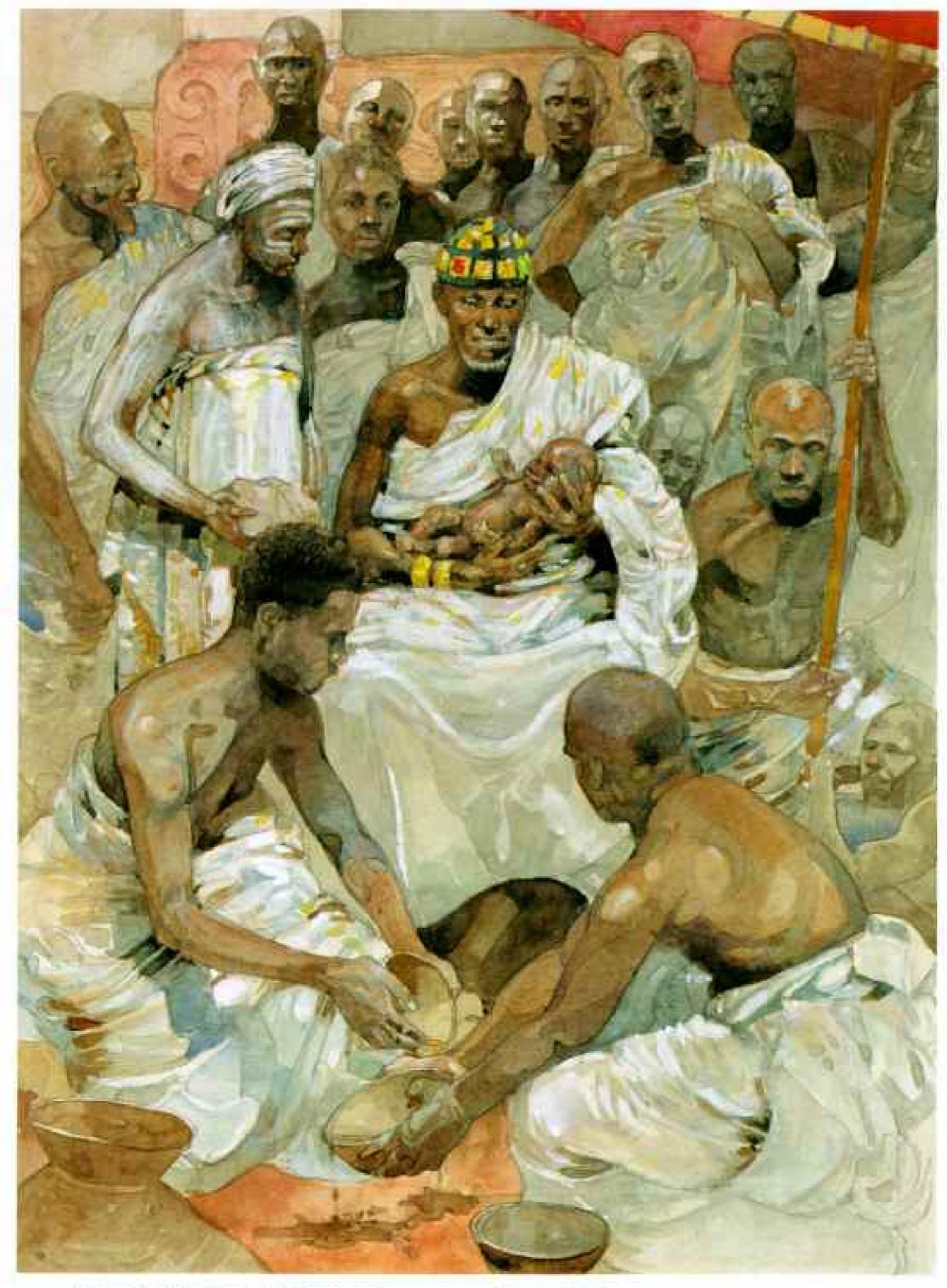
Two black women from South Carolina sobbed quietly beside me, overwhelmed by the emotional power of the moment. "What a tragedy, what a waste," one of them whispered.

I tried to console her: "Remember, the slaves were also survivors; their souls and spirits were never completely crushed. We are survivors too. We are still here."

She nodded, composed once more. "Yes. There is more to it than the waste of lives."

Later, outside the Slave House, an island youth asked me in halting English, "Where you from?"

I pondered. Was I Jamaican, American,



A MAN-CHILD IS BORN: In a remote village of the Denkyira, an Akan-speaking people of Ghana, a saga begins. In this tale—based on historical research—the year is 1685. An elder cradles a newborn child as others pour libations of palm wine during a sacred ceremony. The elder announces that the infant will be named for his forebear Owusu Mensa and calls upon the ancestor to forever protect the child from danger. His forest home is rife with warfare, and captives mean profits for slave traders both black and white.







# **AFRICA'S LIVING TREASURE**

Rich in natural resources, Africa was the source of another precious—and profitable—commodity for traders. At the start of the 16th century, Europeans opened a new trade avenue by transporting slaves across the Atlantic. By 1870. when the commerce ended, 10 to 12 million African men, women, and children had been taken to the Americas.

ETHIOPIA

SUBAN

## CAMEROON

Portugal established plantations on São Tome, a major sugarcane-producing Island during the late 15th and 16th centuries. The island also served as an entrepot for the slave trade to Europe and the Americas.

GABON

CENTRAL AFRICAN REPUBLIC

> THE YOUNG WARRIOR IS CAPTURED: Beaten in body and weakened in spirit, Owusu Mensa struggles to understand how he, a Denkyira warrior, can be yoked like some common criminal. Now 16 years old, he has been taken prisoner after a battle with a rival kingdom. His courage is shaken when his enemy reminds him that the white men who come across the ocean will pay highly for him. Ownsu Mensa believes that the men will kill and eat him.

CONGO

Bahango

KONGO

Lugada

Mountain

Benguela.

ANGOLA

Ovlimbundu

The greatest number of slaves taken to the Americas came from the Congo-Angola region.

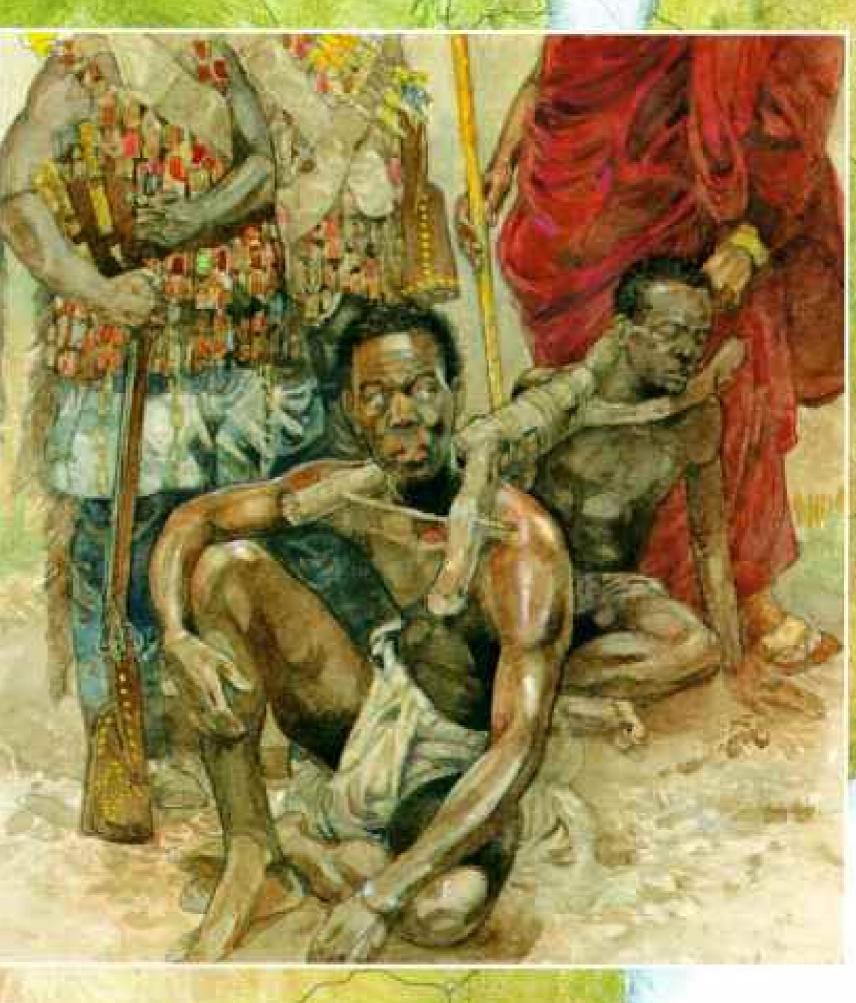
### EUROPEAN FORTS ca 1740

- British
- Danish Dutch
- French Portuguese
- Port
- OYO Kingdom

For People

Age To

HOS CASTRONAPPING SPECIAL AND A SALES



African, or all of these? "I am a Senegalese," I told him jokingly.

"No, you no look African," he chided.

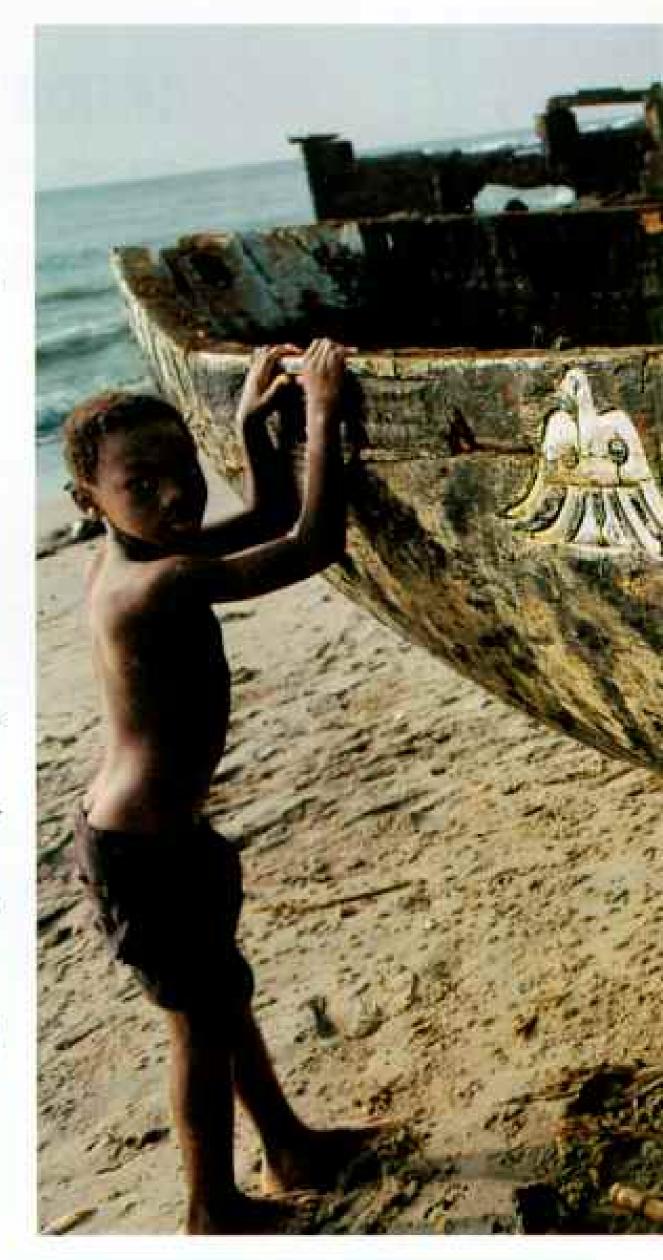
I recognized in that exchange our mutual curiosity, our need as children of Africa to reestablish connections. But I also sensed, with some sadness, that history had made us strangers, and there was no need to pretend otherwise.

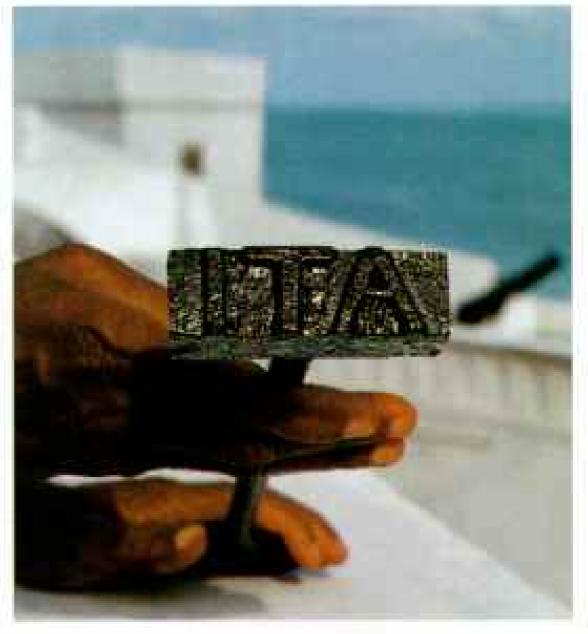
their slaves in various ways. Most of them, perhaps as many as 80 percent, were captives taken in wars. African states fought frequently over territory, succession, and commerce. Some nations, such as the Asante, extended their power over neighboring states on the Gold Coast during the 18th century and took captives in the process. As one trader observed, "Most of the Slaves that are offered to us are Prisoners of War, which are sold by the Victors as their Booty."

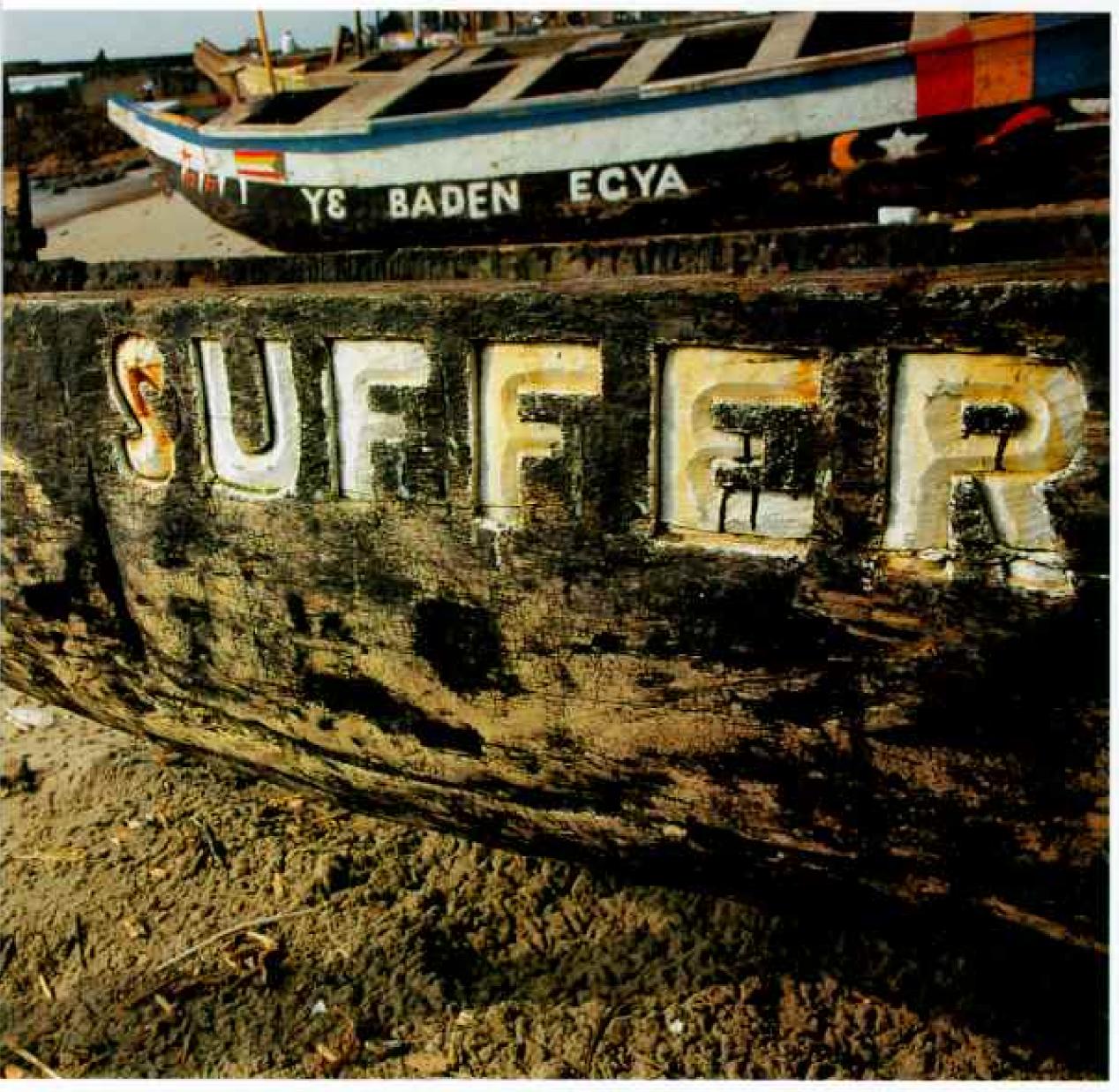
Others likely to be sold into slavery included debtors and those convicted of such crimes as homicide, treason, and theft. Still others were simply unfortunate enough to be abducted and swiftly sold to traders. Individuals who engaged in this practice faced severe penalties from their own people if they were caught, since their atrocities could lead to war between the victim's home territory and that of the kidnapper. "Not a few in our Country fondly imagine that Parents here sell their Children, Men their Wives, and one Brother the other," wrote a Dutch trader. "But," he added, "those who think so deceive themselves."

Most of the persons placed on the slave market were men. Women and young children were less likely to be offered for sale. Females were highly valued as workers in African societies; they bore the brunt of the productive labor as well as fulfilling reproductive functions.

African traders brought their slaves to the coastal markets fettered in groups, or coffles. As one purchaser in the Gambia described it, "Their Way of bringing them is, tying them by the Neck with Leather-Thongs, at about a Yard distance from each other, 30 or 40 in a String, having generally a Bundle of Corn, or an Elephant's Tooth [tusk] upon each of their Heads. In their Way from the Mountains, they travel thro'







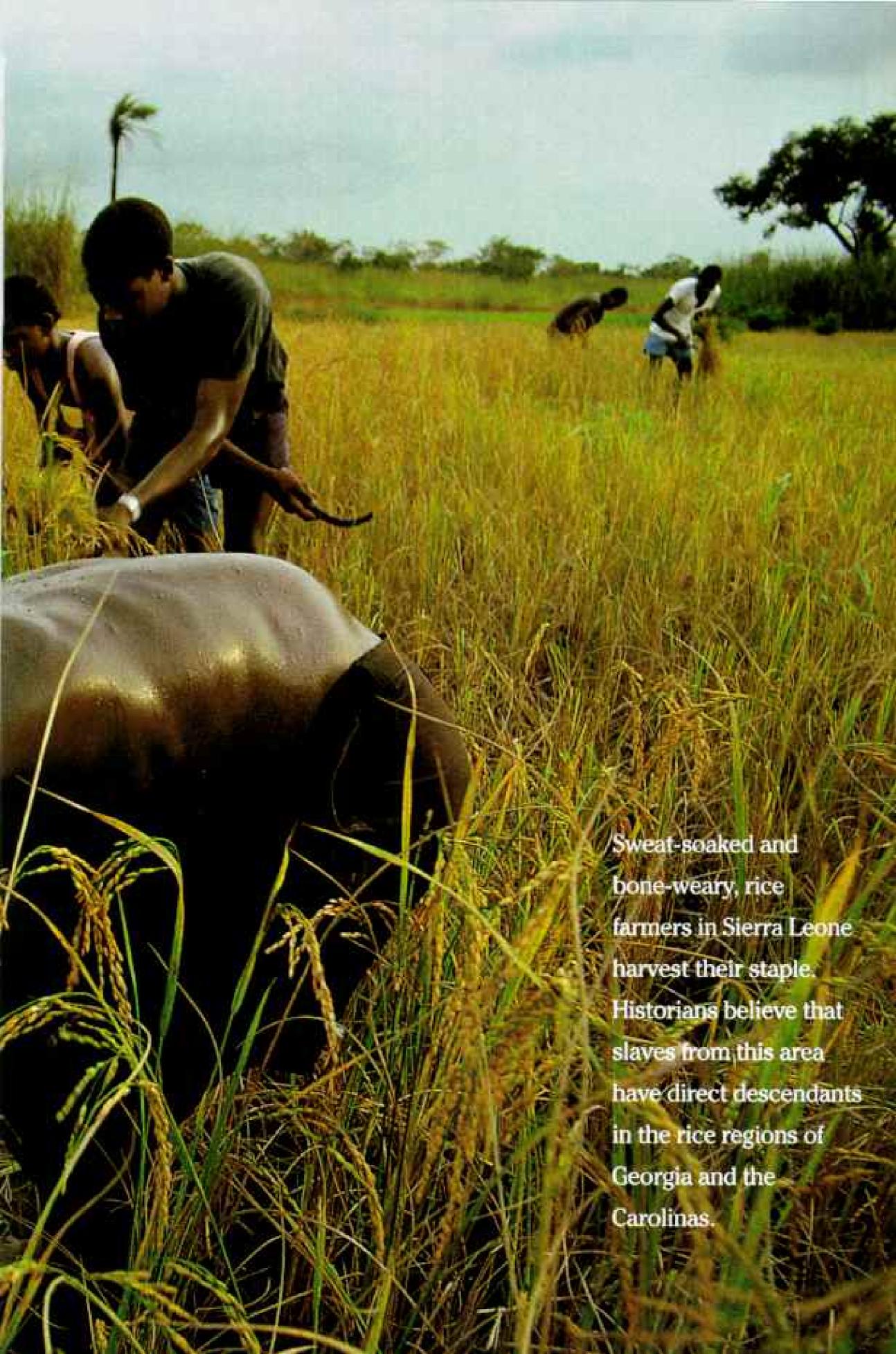
Suffer. The word carved into a Ghanaian fishing boat echoes the pain of slaves once held at nearby Cape Coast Castle. Begun in 1653 by Swedes, the trading post was among more than 50 built along the Gold Coast.

Slaves endured this iron brand's torture (left). It was discarded by an unknown trader, but those bearing its mark would for all time be known as human property.

On the beach near Elmina Castle a Ghanaian boy has bound his day's catch of cutlass fish in his rubber sandals.









very great Woods, where they cannot for some Days get Water, so they carry in Skin-Bags enough to support them for that Time." Some caravans thus brought "150 slaves plus gold and teeth."

preferences among the African ethnic groups. The Akan of the Gold Coast were regarded almost everywhere as rebellious and troublesome. Yet among South Carolinians, as one merchant expressed it, "The Slaves from the River Gambia are preferr'd to all others with us save the Gold Coast." The Ibo from the Niger Delta were stereotyped as easy to control although given to moodiness. Mexican buyers feared slaves from Angola as too bellicose.

Many purchasers sought Africans of a certain age, complexion, and physical form. One trading company advised its agents who went to Madagascar for the Spanish to buy slaves "of the blackest sort with short curled hair and none of the tawny sort with strait hair." Cuban buyers liked slaves "who are not too much of the yellow cast," and those in Venezuela also favored Africans of the "finest deep black." While the basis



for these preferences is not entirely clear, most Africans who came to the Americas may be said to have been of "deep black" complexion.

Englishmen in Barbados preferred black women who were "young and full breasted," not surprisingly, since many owners demanded sexual services of slave women. Males were to be young and healthy, and "well grown of a middle stature not too tall nor too short."

In general the Africans who came to the Americas lived in the area between modern Senegal and Angola. In addition, some Spyglass trained on the gulf, a concrete lookout seems ready to sail from rooftop to sea. Statues decorate the headquarters of the Elmina asafo, one of ten associations of Ghanaian men who provide civil defense and maintain the towns.

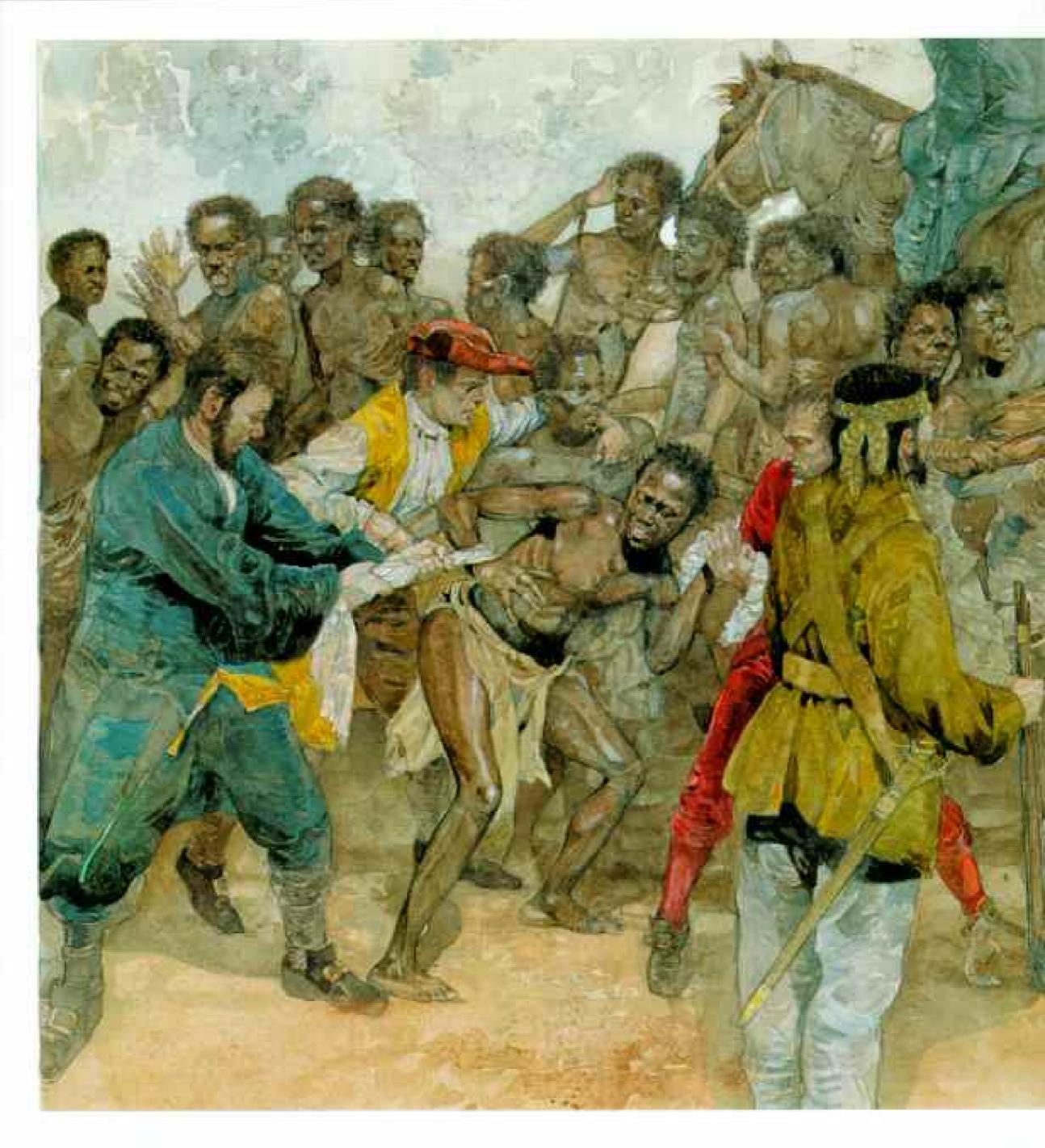
Free asafo men in the 1600s labored at trading posts and helped defend them against Africans as well as Europeans. Like the girl selling candy, women did most of the petty trading.

slaves came from Mozambique and, to a lesser extent, Madagascar.

A significant number hailed from the Senegambia; they were such peoples as the
Wolof, the Mandinka, and the Bambara.
Many more came from Sierra Leone and
from the Gold Coast, home to the Akan and
Fetu peoples, among others. Another important supply area encompassed the Bights of
Benin and Biafra, a region that now includes
the nations of Togo, Benin, Nigeria, and
Cameroon. Major groups in this area
included the Fon, the Yoruba, and the Ibo.
The Congo-Angola region, represented by
such peoples as the Bakongo and the
Mbundu, supplied the greatest number of
slaves to the Americas as a whole.

Today descendants of these slaves find it almost impossible to trace their lineage to any specific ethnic group. A remarkable—and controversial—exception was the late author Alex Haley, who apparently managed to link genealogical oral history on both sides of the Atlantic to track down an ancestor captured by slavers—a Mandinka from the Gambia—for his book *Roots*.

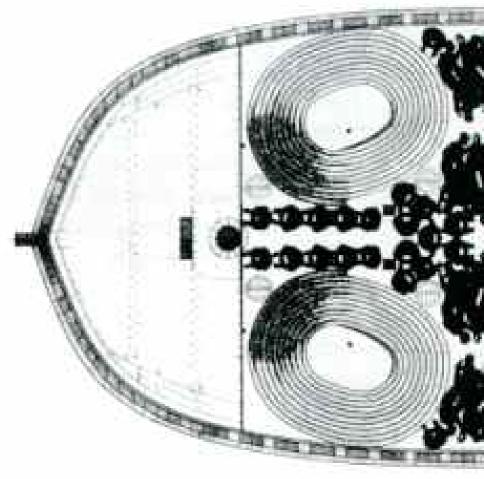
For the most part, however, adequate records simply do not exist. Slave traders invariably noted the geographic area from which the slaves were taken, such as "Congo" or "Angola," but seldom identified their ethnic backgrounds. The slaves were also renamed by their purchasers, complicating any genealogical search. Thus, their descendants, such as I, will peer in vain into a thousand faces in Africa for some glimmer of familial recognition, some point of ancestral connection. They and I will never know the liberating ecstasy of discovering what soil our ancestors walked, what ethnic group commanded their fealty, what cultural moorings gave meaning to their lives. That is unknowable.



## SURVIVOR FOR SALE:

On the slave vessels Africans are stored so closely on wooden platforms belowdecks that some must crouch while others are forced to lie down (right). For two months in a ship's belly amid filth, disease, and death, Owusu Mensa has nowhere to run.

Upon docking in Brazil's Rio de Janeiro, the Africans are shoved toward a crowd of waiting white men. One fires a gun in the air to start the "scramble" auction, where slaves are grabbed, bundled together with ropes and sashes, and sold for a set price. Fighting with his last bit of strength (above), Owusu Mensa is wrenched away by the Portuguese miner who buys him in this free-for-all.

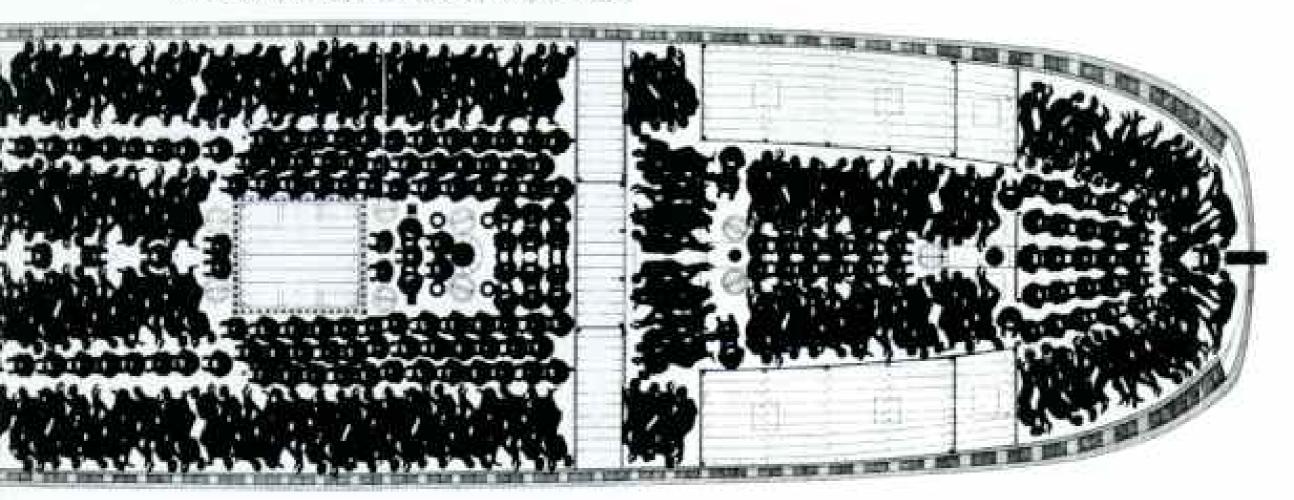




CARA DE MUNEDA DE MÉRICO (COINS), AMUNIVO UDHERAL DE LA MACIÓN (ABOYE SIGNE), TRAITE ET WAVING MERRYEN, ET JERN BOODHIOT, PARIE, 1884 (EXLON).

Languarbee tauta bien Do Gottudalle San Como DE Der Vand De Communiter otors Donatounts book & more aldlesin Alexante Clacen prima de Resact Chat Verney Mrs Selargo Marmado Luis Detiona Oliver I Spelad & Weint Beingame La Maromena Domingoropio relaus Chatte Libro de Amjono provotecao mayonagio Dogwar nigen on from Louis gurar Som ouna tacoa bico de fecto Tublica minereta puro Concer selebonto Cinquenta seum dean Dado o pagado Como Antonio Guello pro Juma doi perentres com Lo De no Comme Love & Carntinga Cougnicos

"A negro, my slave called Luis from the land of Angola, twenty-five years old, more or less... for the price of four hundred fifty pesos." In 1635 a Mexican bill of sale decreed the destiny of yet another black. Many slaves sold in Mexico worked in mines where the very silver they unearthed would be used to buy the servitude of other Africans.



Yet the bonds that tie blacks in the Americas to Africans were never shattered, only strained. Although the slave trade resulted in a physical separation from Africa for its victims and their progeny, deep spiritual links and emotional wellsprings survive—intense, indestructible, and sustaining.

one trader expressed it, "The Countenance, and Stature, a good Set of Teeth, Pliancy in their Limbs and Joints, and being free of Venereal Taint, are the things inspected and governs our choice in buying." The enslaved person was branded with the purchaser's mark on the shoulder, the breast, or the buttocks.

The traffic in humans required a wide assortment of goods: textiles, guns and powder, alcohol, mirrors, knives, ironware, pipes, tobacco, pots, pans, beads.

In 1714 one woman at Cape Coast Castle was purchased for two small blue perpetuanas (lengths of woolen cloth), seven guns, and 22 sheets. Traders of the London-based Royal African Company purchased 40 slaves at Whydah (now called Ouidah, in Benin) in 1731 for 337 trading guns, 40 muskets, and 530 pounds of gunpowder. In that year five male slaves were bought at Dixcove on the Gold Coast for 25 large perpetuanas, 1 medium-size perpetuana, 39 sheets, 3 long ells (a measure of cloth), 30 guns, and 40 pounds of gunpowder.

The price of slaves followed the law of supply and demand. With the growth of the slave-based plantation economies in the West Indies, Brazil, and mainland North America from about the second half of the 17th century, prices rose rapidly. A large number of independent traders entered the market. Their competition in acquiring slaves contributed to the price increase.

One of the best known of the African entrepreneurs was John Kabes of Komenda,

Faith crossed the ocean and survives in Brazil in Salvador, Bahia, transformed into Candomblé, a blend of African beliefs. Dressed in the white and blue of Yemanja, goddess of the sea, three Baianas offer thanks for the morning's first catch. in Ghana. During his long trading career, from the 1680s until his death more than 30 years later, Kabes served both Dutch and English interests. Owing to the wealth he acquired as a trader, farmer, proprietor of salt pans, and political leader, he exercised enormous influence over his own people and over adjacent areas as well. The English slave trader Sir Dalby Thomas once said of Kabes, "He is so great a man, and so great a trader . . . the kings of these places love and fear him. He makes them at any time do as he pleases."

A man of such power and prestige was invaluable to the Europeans. On occasion Kabes advised them on the proper manner of



dealing with his fellow Africans; he assisted the whites in reopening trade routes that had been closed by local rulers. He was the recipient of various favors from agents of the Royal African Company. Sir Dalby even built him a house near Cape Coast Castle.

But Kabes was as independent as Thomas was arrogant and stubborn. In 1704 the two men quarreled. Eighteen months later, the company's trade at Komenda having fallen off without Kabes's influence, the English sought reconciliation. The alliance, though by no means smooth, continued until his death. In appreciation for his services, the company allowed him to be buried at the British fort at Komenda.

until traders acquired full cargoes for the ships. The dismal wait could be long or short, depending on supply conditions. If wars were being fought in the interior, a flow of captives could be anticipated. As a white trader at Cape Coast Castle noted with satisfaction in 1712: "The battle is expected shortly, after which 'tis hoped the trade will flourish."

The many captives who died on the coast as they awaited departure fell victim to a variety of diseases and to infection of wounds suffered during their capture and branding. The damp dungeons in which they were kept certainly contributed to the high mortality.







The prisoners knew nothing of their destination or their ultimate fate. English trader William Snelgrave wrote that "these poor People are generally under terrible Apprehensions... many being afraid that we design to eat them."

As they waited, the slaves must have been racked by emotions—fear, anger, disbelief, defiance, resignation—each exacting a price. Yet, as their subsequent behavior would show, many also found an inner resolve not to be vanquished, not to yield control over one's inner sanctuary to one's captors.

Dr. Thomas Trotter, a ship's surgeon who

watched the slaves being brought aboard, reported that they "show signs of extreme distress and despair from a feeling of their situation and regret at being torn from their friends and connections." Traders described their haunting moans as the ship began its journey into the unknown.

and souls to their limits. The human cargoes were arranged on wooden platforms "like books on a shelf" on various levels in the cramped hold. Rarely was there space for an adult to stand crect.

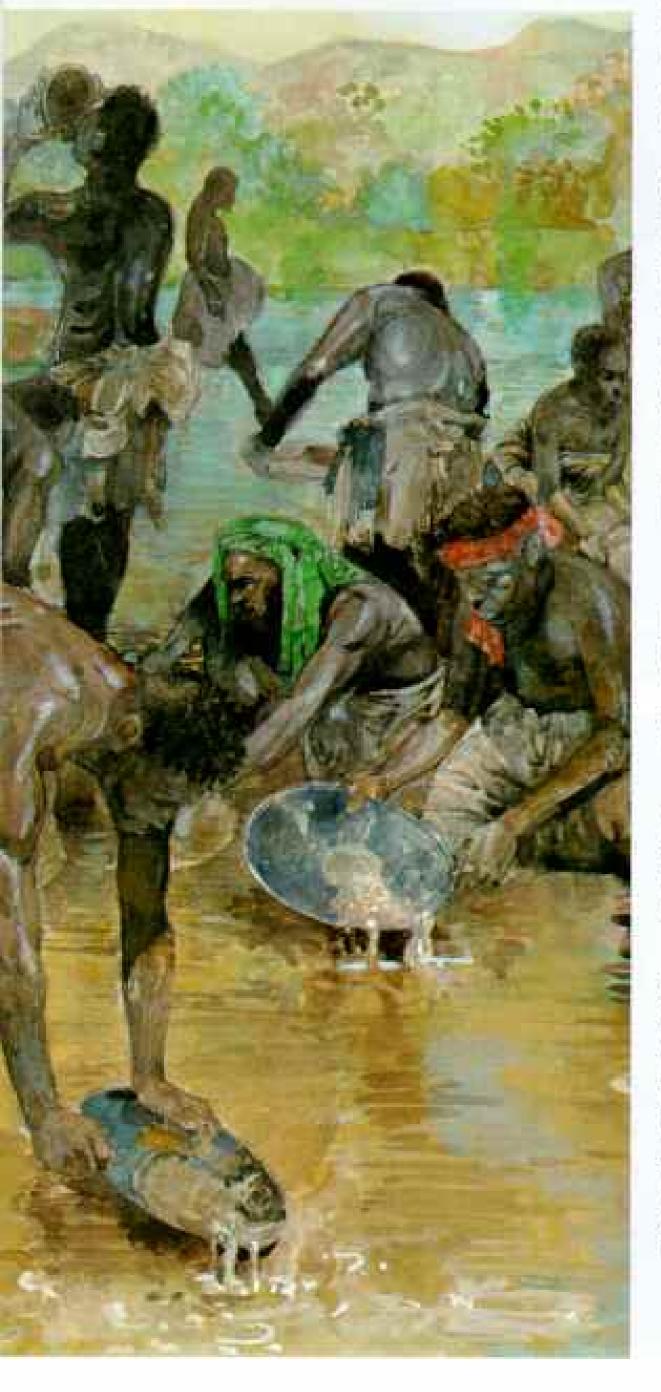


Some had barely enough room to lie down.

One ship's surgeon observed that the traders

"wedged them in so that they had not so
much room as a man in his coffin either in
length or breadth. It was impossible for them
to turn or shift with any degree of ease."

Some traders, of course, realized that such crowding increased the incidence of disease and death. One agent of the Royal African Company complained in 1704 of inadequate space on the ship *Postillion*: "The slaves are so large, [and] it being the general opinion that the slaves could not be healthy in the space of three foot, they broke up one of the



platforms which was the reason she couldn't carry more than 100 slaves."

Eight years later the company advised its agents at Cape Coast Castle; "Pray lade no more than are necessary to prevent Mortal-lity which has often happen'd by crowding the ship with too many Negroes." Not until the 18th century did European countries engaged in the trade set standards for the allocation of space to the slaves; it may be doubted whether the rules were obeyed.

Fearing rebellion, ships' crews generally chained the slaves securely in the hold, usually in pairs, the right ankle of one connected to the left ankle of the other. James Penny, who commanded trading vessels for more than 20 years, recounted that when no danger "is apprehended, their fetters are by degrees taken off."

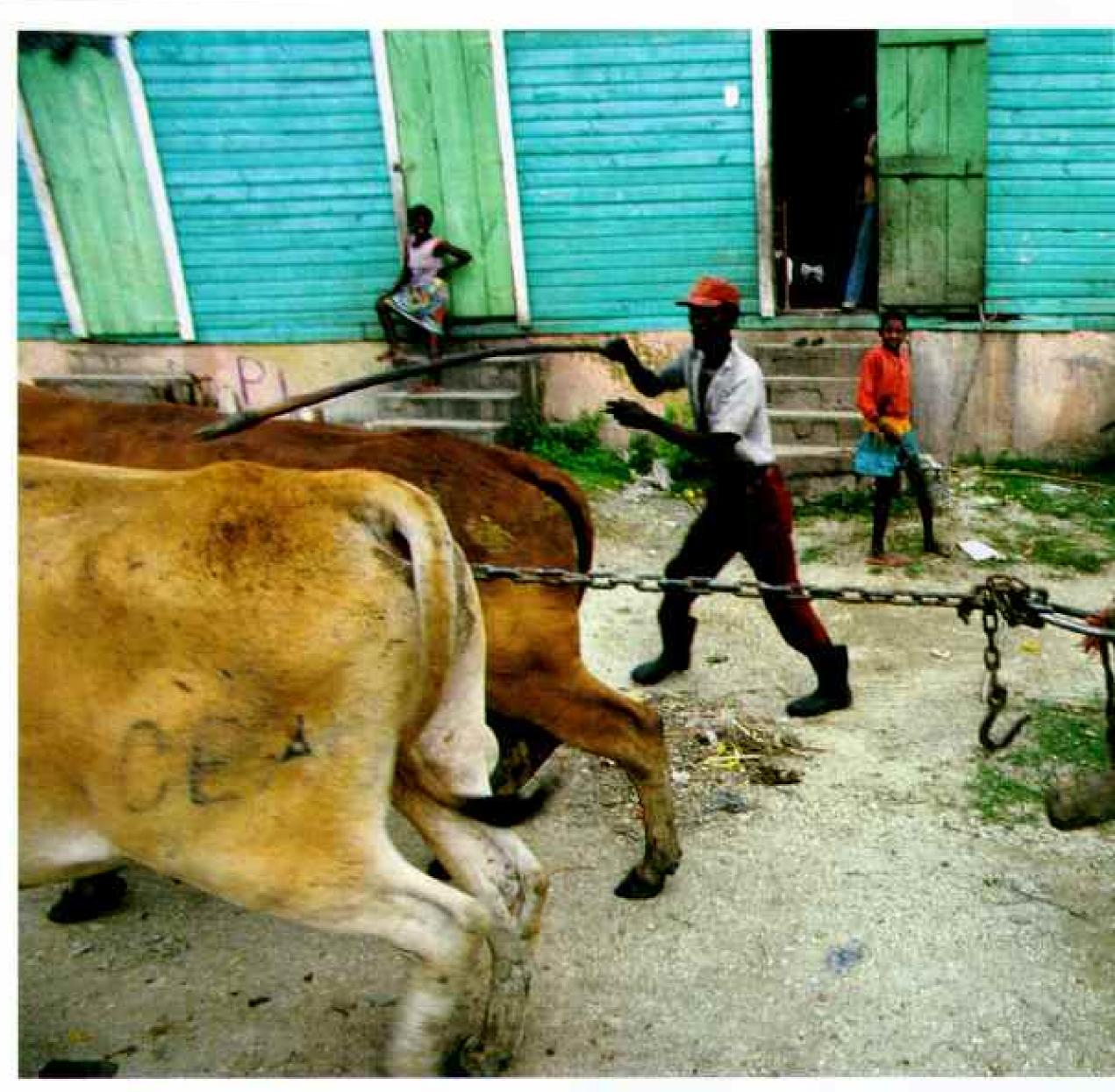
The crews did not always depend on harsh discipline, shackles, and whips to control the slaves. The more humane captains permitted music and drumbeating and encouraged singing and dancing. On the better-managed vessels, rum was provided as well as pipes and tobacco. Women were given beads and other trifles with which to adorn themselves. Contented slaves, it was presumed, would be more tractable.

packed together, the heat belowdecks became unbearable. The air reeked of excrement and infected sores. By the 18th century, ships customarily had portholes to aid ventilation, "windsails to throw down a current of air and gratings on the decks." But to the human cargo the hold remained a fetid hell.

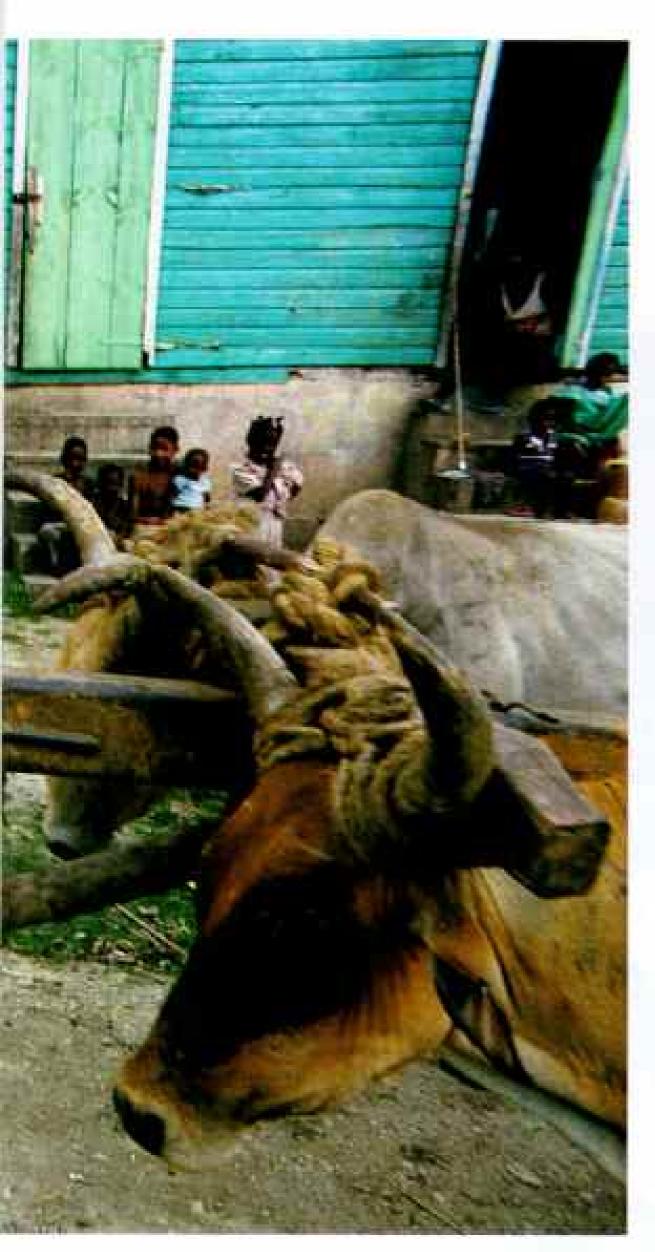
As an aid to good health, slaves were periodically taken on deck for exercise and fresh air. While they were being "danced" on deck, the crew cleaned and disinfected their quarters with vinegar. Although exercise

## SLAVERY, DAY IN AND DAY OUT:

Owusu Mensa pans for gold in eastern Brazil. He hands his findings to the mulatto overseer, while both are watched by the master. Despair and quiet anger fill the young slave's life. He has learned Portuguese to survive, but he does not speak much. More than 200 years later, African-American poet Langston Hughes will give words to Owusu Mensa's silent yearning: "So long, So far away Is Africa's Dark face."







Bright washes of color awaken drab Haitian living quarters at a sugarcane plantation in the Dominican Republic (left). A Haitian worker guides an oxdrawn cart to a nearby mill. An experienced cane cutter (below left) earns no more than 37 pesos, or three U. S. dollars, a day. Says one laborer, "We live no better than slaves."

cargo -- to smallpox and delivered 88 others infected with the disease.

Many who survived the passage showed other signs of distress. John Huffam, the Royal African Company's agent on the island of Nevis in 1714, reported that arriving slaves "were very feeble and weak at their landing and many having such a contraction of nerves by their being on board and confined in irons that [they] were hardly capable to walk."

Malnutrition, even starvation, accounted for the poor condition in which many slaves came ashore. A staple food was a mush of maize and palm oil, though traders who learned the value of delivering a healthy cargo adjusted the menu to suit different cultures and might serve rice or yams as well.

On longer voyages provisions sometimes gave out. When the *Pindar* reached the island of St. Christopher in 1715, the receiving agent stated euphemistically that the length of time the slaves had been at sea "occasioned them to be low in flesh."

Some slaves did arrive in fair to good condition. Experienced traders knew how much depended on the attitude of the captain and his crew toward the Africans. Sir Dalby Thomas declared that, "Notwithstanding all the care that can be taken both in Europe, Africa, and America, if the Captains, mates, surgeons, and cooks are not honest, careful and diligent, and see that the slaves have always their victuals, well drest, well fed, well washt, cleanly kept and kindly used, the voyage will not be worth a farthing."

The construction of faster ships in the 18th century reduced the death rate. The slaves most likely received better medical care by then, and diet and sanitary conditions may have improved. In general, mortality declined from about 25 percent in the 17th and early 18th centuries to about 15 percent after 1730. By the 19th century the range was between 5 and 10 percent.

helped, many still contracted disease during the passage. Measles, scurvy, and various "fevers" attacked slaves and crew alike. Many were sick before they embarked for the Americas. Some traders shipped slaves known to be carrying contagion. In 1726 two vessels—the Sea Horse and the St. Michael —lost more than 600 of the 1,030 slaves they carried from Madagascar to Cartagena.

Smallpox and the "bloody flux" (dysentery) were particularly feared; both created untold suffering. The Katherine brought "470 slaves in a miserable condition" to Barbados in 1708, the result of smallpox and "a tedious passage." In 1716 the Indian Queen had a disastrous voyage to Buenos Aires. It lost 140 slaves—almost half its of the captives struggled to liberate themselves from the moment of capture. Their best chance for escape was while they were still on African soil or aboard the ships on the coast, thus crews took elaborate precautions.

Haiti's great deliverer, Toussaint
Louverture looms behind a young visitor
to the National Palace in Port-au-Prince.
He led the only successful slave revolution
in the Americas, a campaign against the
French that ended with independence in
1804. The country's history is steeped in
extreme poverty and political turmoil.

Thomas Phillips, who made a slaving voyage in 1693-94, reported that armed men guarded the vessels and there was "a chest full of small arms, ready loaden and prim'd, constantly lying at hand upon the quarterdeck, together with some granada shells; and two of our quarter-deck guns, pointing on

> the deck thence, and two more out of the steerage."

> Still, rebellions occurred. At least one indomitable African left his own tragic mark on the history of the time. In 1721 Captain Tomba, a remarkable man "of a tall, strong Make, and bold, stern aspect," was the leader of a few villages in Sierra Leone that refused to deal with slave traders. Tomba and his people killed other Africans and burned their houses because they had traded with the English.

Aided by villagers, a white trader known as Old Cracker ambushed and captured Tomba, but not before Tomba had killed two of his assailants in a fierce struggle.

Seemingly nothing could break Tomba's spirit. When Old Cracker presented him for inspection to the traders, Tomba refused to display his physique. Whipped nearly to death, the proud African endured the beating stoically, only "shedding a Tear or two, which he endeavored to hide as tho' ashamed of."

Captain Harding, commander of the Robert, out of Bristol, purchased Tomba. Once aboard the ship, Tomba conspired with a few other slaves, one of them a woman, to kill the crew and escape

"while they had a Shore to fly to." With the woman and another man at his side, Tomba smashed the heads of three sleeping guards with a hammer before being felled himself. The three rebels were clapped in irons.

Normally, rebellious slaves, particularly at the start of a voyage, could expect the death penalty as a harsh example to others. But Captain Harding, his owner, considered Tomba and the other man too valuable to kill. Rather, he had them whipped. He vented his fury on the other, more expendable conspirators.

One man was put to death, and two others were coerced into eating the first victim's heart and liver before they too were killed. The ultimate cruelty was reserved for the woman: She was hoisted by the thumbs, whipped, and slashed with knives until she died. The rest of the slaves were forced to watch the entire ordeal. Unfortunately, we do not know how Captain Harding eventually disposed of Tomba. He may have ended up in any one of the colonies.

O AFRICANS arrived in the Americas, to be sold yet again, to end up in the cane fields of the Caribbean and northeastern Brazil, the tobacco cultivations of Virginia, the rice fields of South Carolina, and households everywhere.

Many slaves rejected their condition, continuing a struggle that had begun on the African coast. Some resisted passively, malingering, pretending not to understand the masters' orders, deliberately breaking tools, or feigning illness. Others, in a long history of violent protest, chose open revolt.

The first recorded slave rebellion in the Americas, on the island of Hispaniola in 1522, was suppressed. Slaves in Mexico City conspired in 1537 to murder all the Spaniards and claim their freedom. They elected a king to lead them into battle, but the plot came to light and was aborted. Other major conspiracies occurred in Mexico in 1608 and again in 1612.

Jamaica experienced a major rebellion in 1673, when 200 slaves rose and killed 12 whites. Uprisings were planned in Barbados and Antigua. Slaves in New York rebelled in 1712, killing nine whites. The authorities responded by executing 21 blacks, burning some to death, hanging others, and breaking one at the wheel. South Carolina's blacks posed several violent challenges, most notably in 1739, when they rebelled at Stono. killing whites and setting fire to their houses. The last major rebellion in the United States was led in 1831 by a charismatic slave preacher, Nat Turner, who was hanged after his band of rebels had killed some 55 whites in southeastern Virginia.

Among all such efforts, however, only the slaves of Haiti managed to fight their way to freedom, after a protracted struggle that ended in 1804.

While rebellions largely failed, escapes at times succeeded. Known variously as Maroons, Cimarrons, or Bush Negroes, fugitives established free settlements in remote and inaccessible areas in a number of countries.

In North America they found haven in the Great Dismal Swamp in Virginia and North Carolina and in mountainous and swampy locations throughout the Deep South. As early as 1605 Brazilian runaway slaves established a series of settlements in Pernambuco in the northeast. Known collectively as Palmares or Little Angola, the community may have numbered as many as 20,000 at its peak. It was eventually destroyed by the Portuguese.

Mexico too had runaway communities.

The most famous, in the Orizaba region, was led by a remarkable African named Yanga, who reputedly was of royal lineage in his country. Yanga fought off Spanish assaults and eventually won the right to establish a pueblo, of which he became governor.

Today Yanga's statue in Mexico remains a symbol of black defiance and liberation.

Jamaican Maroons—the word comes from the Spanish cimarrón, or runaway—bedeviled the English until peace treaties between their leaders and colonial authorities were signed in 1739 and later. Contemporary Maroon villages such as Moore Town and Accompong each year enthusiastically reenact the struggle against the slave regime. "We are the original guerrilla fighters," one Moore Town resident told me with obvious pride.

their African heritage, their daily experience in the slave quarters, their interaction one with the other, and the physical landscape to create a series of vibrant cultures uniquely their own. The new cultures afforded slaves crucial psychological space and helped preserve their identity in the face of the abuse and atrocity visited on them as human property.

The richness of those cultures can be observed in the contemporary societies of the Americas. The Caribbean islands with their

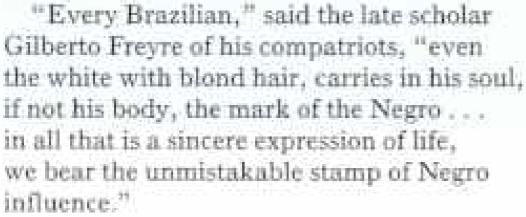


black majorities bear an unmistakable African imprint in their styles of religious expression, art, music, language, culinary habits, dance, and folk beliefs. Haiti's voodoo, or vodun, has been characterized by Yale art historian Robert Thompson as "one of the signal achievements of people of African descent in the western hemisphere; a vibrant, sophisticated synthesis of the traditional religions of Dahomey, Yorubaland, and Kongo with an infusion of Roman Catholicism."

Brazil remains the country with the largest number of people of African descent in the Americas—probably as many as 70 million, or nearly half the population. Any visitor to its northeastern states will readily agree with the 17th-century priest Antônio Vicira that "Brazil has the body of America and the soul of Africa."

In Salvador, capital of the Brazilian state of Bahia, most residents are of African descent, and one can still visit the old market where slaves were sold, the churches (with black saints) where they worshiped, the streets they walked, the houses in which they served. The cuisine, the art, music, and dance are flavored with Africa. Africaninspired religions such as Candomblé, rich in initiation rites and spirit possession, hold continued vitality and appeal.





British Caribbean in 1807 and in the U. S. in 1808; Brazil finally enforced prohibition in the 1850s. Yet the trade lives on in the children of Africa found in the societies of the Americas today, sometimes representing the majority of the population.



Machetes slice the air during Akinkanju, a rite of passage for young men who follow Yoruba-based traditions at a village in South Carolina.

Dorothy Spruill Redford has traced her slave ancestors to a North Carolina plantation. "Finding them helped identify their tangible contributions," she says. "It gave them worth, and me completeness."

Refusing to be defeated, these people and those before them have contributed their sweat, genes, and cultures to the making of their societies. Theirs is a poignant tale of the infinite capacity of the human spirit to confront and survive adversity.

The millions of blacks like newlyweds
Nadine and Philip, who continue to live quietly productive lives, weather life's storms,
and seize its opportunities, provide ample
evidence that the African peoples in these
new lands were never vanquished. They,
and all Africa's children, must draw strength
from this history of travail, transcend its
awful burden, and command their future.

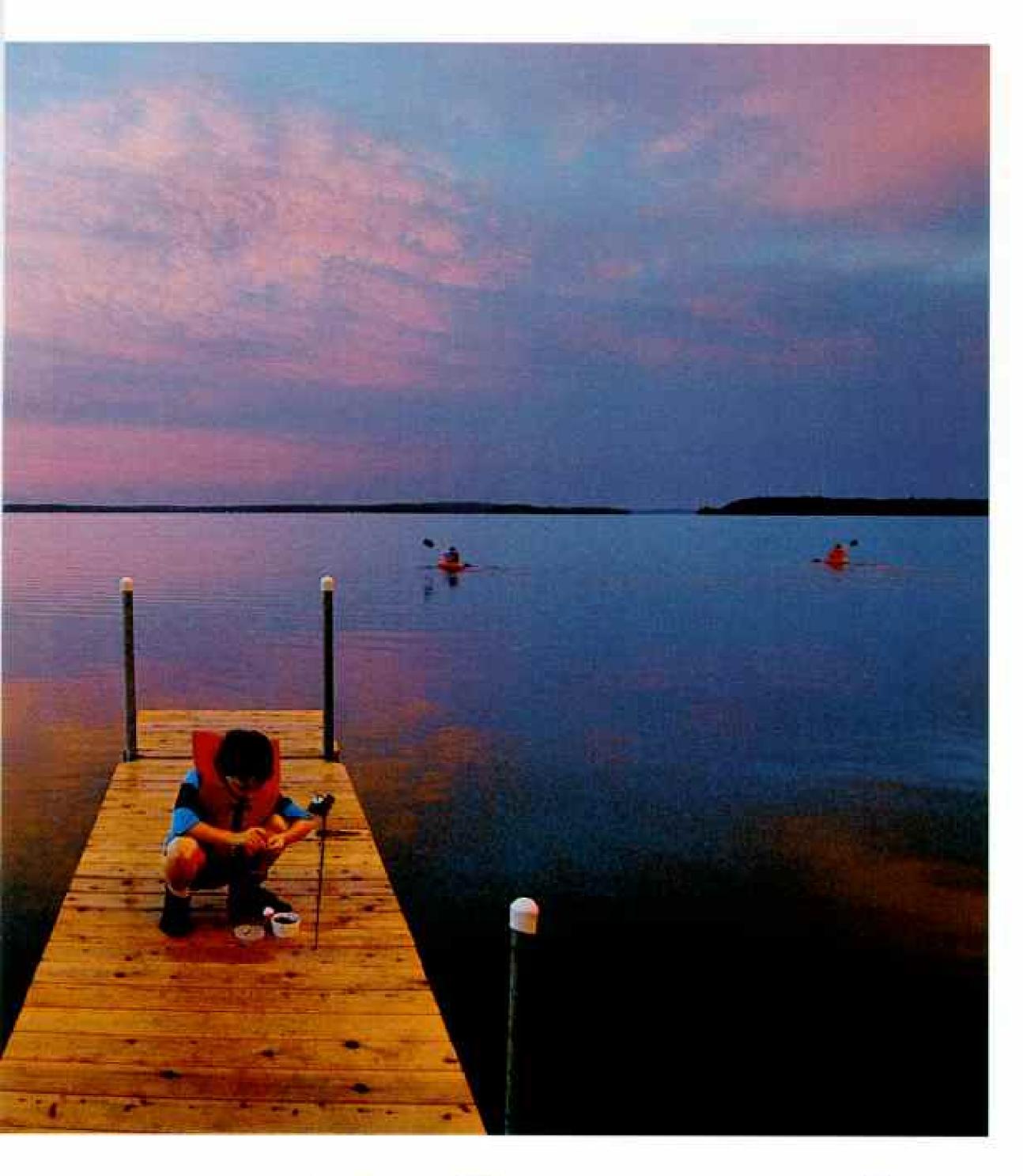
The Cruelest Commerce 91

Sky-blue water mirrors clouds over Upper
Whitefish Lake, Families have gone on summer pilgrimages to
Minnesota's lakeside
resorts for generations,
but the growth of tourism has made solitude
as rare as a day without mosquitoes.

Article and photographs by WILLIAM ALBERT ALLARD



## Nines A LIFE



## ota Memoir



Diamond in the rough marks Brainerd's \$100,000 Ice Fishing
Extravaganza on Gull Lake. From lake level the action resembles an
industrious rookery as 5,300 contestants congregate around 9,000
predrilled, eight-inch-diameter holes to compete for prizes. Last January's first-place winner reeled in an eight-pound eelpout and drove
away in a new Ford truck. Yet the biggest winners in the Jaycees
event were local charities, which shared profits of \$18,000.





HEN WE USED to drive up to the lake, the roads would turn to gravel as we drew nearer, then to sand as fine as sugar that would embrace the tires of our Chevy, drawing them in until I could almost feel the wheels being swallowed and the road taking control. "Almost there," we would say, looking for the small wooden sign nailed to a tree at the end of a tunnel of pines that perfumed the air and led to another week at a cabin on Gladstone Lake. Almost there.

I grew up surrounded by water, or so it seemed. Born and raised in the "Land of 10,000 Lakes," I discovered relatively late in life that Minnesota actually has more than 15,000. Minnesota has more boats per capita than any other state in the nation, and claims more shoreline than California, Florida, and Hawaii combined.

The heart of the lake country is north-central Minnesota. It was there, every summer, that my family rented a cabin, as Minnesotans say, at "the lake"—in our case, Gladstone, a quiet 400-acre lake near Brainerd. My parents first went there in the 1920s, when they were young and just married and the roads were not much more than graveled cow paths; for 60 summers our family would return. It was there, swimming and fishing, exploring the shoreline and enduring the mosquitoes one could never truly escape, that I came to love the lake country in that special way one loves as a child.

A recent study revealed that 97 percent of all kids in Minnesota go fishing. "That's deplorable," commented one northern Minnesota newspaper. "What on earth went wrong with that other 3 percent?" When I went fishing as a kid, it was with the most basic technology. We didn't have a motor; my father would row a rented flat-bottomed boat, and the oarlocks would creak and clunk as we crept across the water. A big motor in those days was 25 horsepower. You could really go with one of those.

In a photograph from an old family album, my father stands with a friend on the shore of the lake. Between them they hold a stringer with about 20 walleyes and northern pike. My father wears knee-high, lace-up leather boots. He is handsome and young. In pencil, along the edge of the photograph, my mother has written: "Lake Gladstone . . . Enough for breakfast."

Ten years have passed since we last gathered as a family in those cabins clustered in the trees. Last year I decided to go back. When I was a boy, the lake was my own special world for one week each year. Not nearly as far away from my home in Minneapolis as I envisioned, it was far enough away from the confines of the city to make me crave to be there, where the pines were tall and the forest deep. I wanted to run to the dock in early morning, when sunlight glistened off the dew-covered boards as if they were inlaid with diamonds. I wanted to see what creatures had passed along the water's edge while I had slept, leaving their footprints as calling cards for my imagination. That week that promised to last forever brought laughter and stories to tell when it was over, which was always too soon. As a friend of mine put it, nothing seemed difficult, and there was always a second chance.

Now as I drove north, I knew there would be changes in the country I had known as a child; I guess I went in search of what was left.

It didn't take me long to discover that now the lakes are big business. Everything in my memory was scaled down to human size or smaller, but today the lakes generate 1.3 billion dollars in direct and secondary

Dusk empties frontrow seats at Big Rock
Resort on Leech Lake,
as fishermen—their
boat's running lights
lit—troll for walleyes, large, aggressive cousins of the
perch. The pursuit of
walleyes is a mania
verging on obsession
for thousands of
Minnesotans.

Silent for the moment, a common loon incubates eggs on a bog island in Leech Lake. The hoots, wails, tremolos, and yodels of loons sound an eerie chorus across the waters. Habitat loss has reduced loon populations in many areas of the nation, but not in Minnesota, where 10,000 loons summer on the state's lakes.

expenditures each year and create 28,000 jobs. And every third tourist who visits the lake country fishes. All those lines with hooks on the end annually harvest some 35 million pounds of fish, including walleyes, northern pike, bass, and panfish. I used to be happy with a few sunnies-the ones that were big enough to be "keepers," as my mother called them.

There are a half million more anglers coming to the lakes now than 40 years ago. And every spring, on a Saturday around the middle of May, it seems every one of them heads for a lake. They come from all over the state and far beyond, clogging the two-lane highways with caravans of boat-laden trailers. Bait shops stay open around the clock, all the resorts are full, and there are no motel rooms to be found. It's opening day of the walleye season.

OPENING DAY last year I walked down to the harbor from my rented cabin at a resort on Lake Winnibigoshish in the silverblue light of dawn. The clear water slapped against the shoreline. In groups of two or three, fishermen were coming down to the docks, yellow minnow buckets at their sides, coffee thermoses under their arms, or fishing rods and tackle boxes. Nobody talked much. It was early. One at a time the boats left the harbor, moving slowly out through the shallow channel, their shapes and sounds eventually engulfed by water and space.

"I don't think any other state has the same kind of enthusiasm for opening day," Ron Schara, outdoor writer for the Minneapolis Star Tribune, told me later as he fried up some walleyes and northern pike.

> "The entire state gets up for it. People who never fish come out on opening day. Of course, it's easier to get up north today than it used to be. Used to be all gravel roads, and it was a commitment to come up this far north, beyond Brainerd. When the roads were bad, that was enough to make this country seem a bit too far. It's not too far any more."

That night, in the cabins back at the resort, men were sitting around tables and on the edge of their beds, talking. "This is a place we can go to get away from the things that might be bothering us," one of them explained. "We can talk about problems in our work and in our marriages. For some of us it's the

dead of brutal winter. When I was a boy, fishing was a summertime thing. Most resorts were shut down by mid-October. Still, just about every lake used to have at least a few ice-fishing houses sitting out there like lonely Arctic outposts. Now that people can reach the lakes whenever they feel like going, a lake as big as 132,000-acre Mille Lacs sprouts 4,000 ice-fishing houses grouped in small villages across the

only time and place we do that." In the morning they will go out again to fish. And to talk. Minnesotans' passion for fishing now carries them straight into the

Writer and award-winning photographer WILLIAM ALBERT ALLARD has been contributing to this magazine for nearly 30 years. His stories have ranged from

Peru to William Faulkner's Mississippi, the Basques to minor-league baseball.

He has also published three books, but this is his first look at his native state



of Minnesota.



surface. On Gull Lake an annual January fishing tournament attracts more than 5,000 fishermen to an area about a half mile square where 9,000 holes have been drilled. From the air it looks like a page from one of those Where's Waldo? books for kids. I can only imagine what it looks like to a fish.

Each February the town of Walker hosts an eelpout festival on Leech Lake. The eelpout is a freshwater cod, and this is about as crazy an outdoor event as you might find anywhere. Some 10,000 people show up for the weekend, though it's pretty clear that many of them have no intention of putting a line in the water.

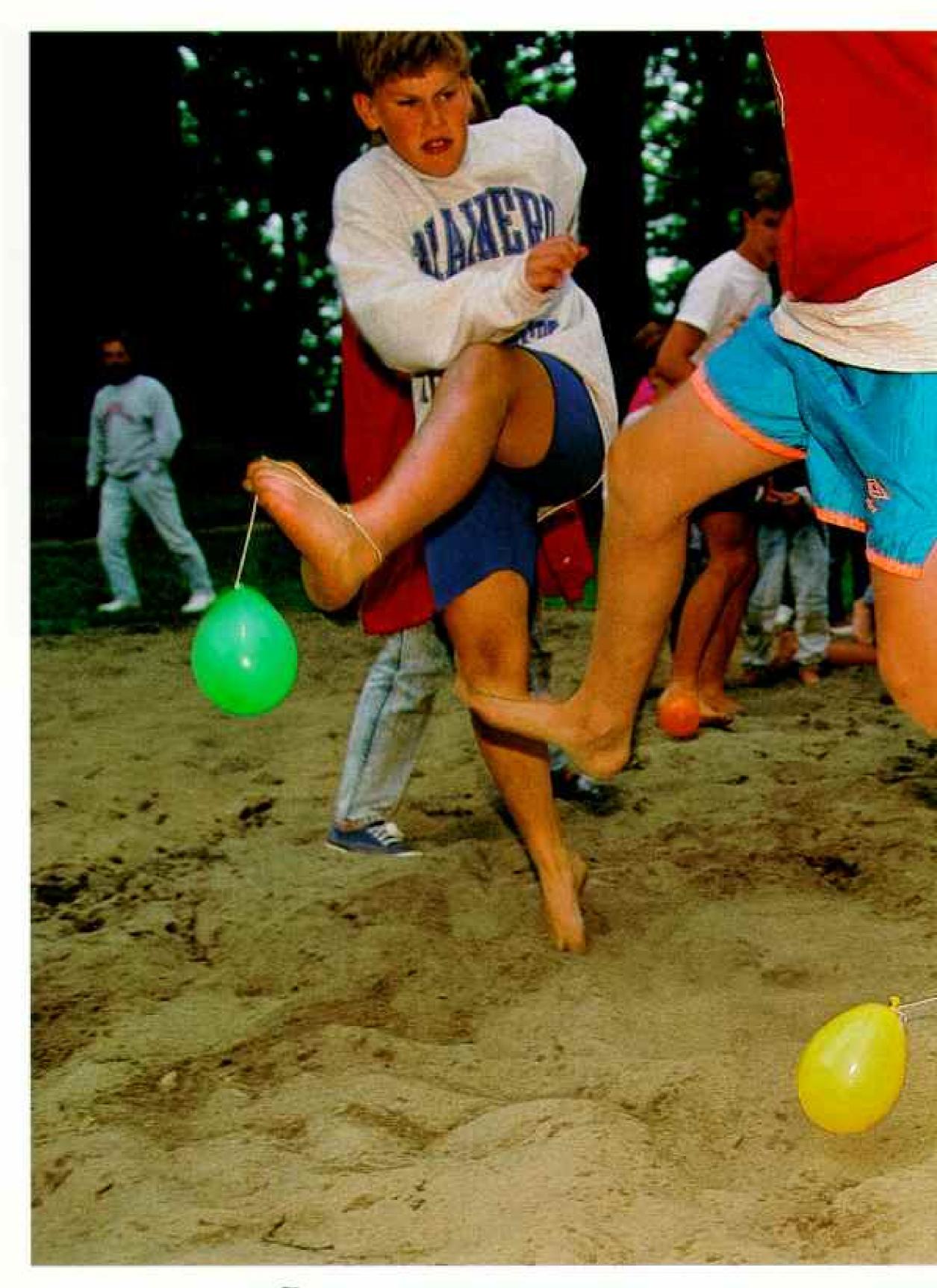
At dawn on the first day I stopped by one fish house (a beat-up mobile home). Four young men from the mainly Finnish town of Menahga were trying to fire up a wood-burning stove to heat the water for their hot tub just outside the front door. They had arrived the night before, and all appeared in need of sleep.

Not satisfied with the stove's output, one of the young anglers decided to prime it a little by pouring some charcoal starter fluid down the stovepipe. He got what a thinking person might expect—a small explosion out the end of the pipe and a hand that was considerably warmer than it had been. He jumped back, shaking his hand in great surprise. "Well, jeez," one of his buddies observed, "you spent a month down in Minneapolis. You'd think you'd know better."

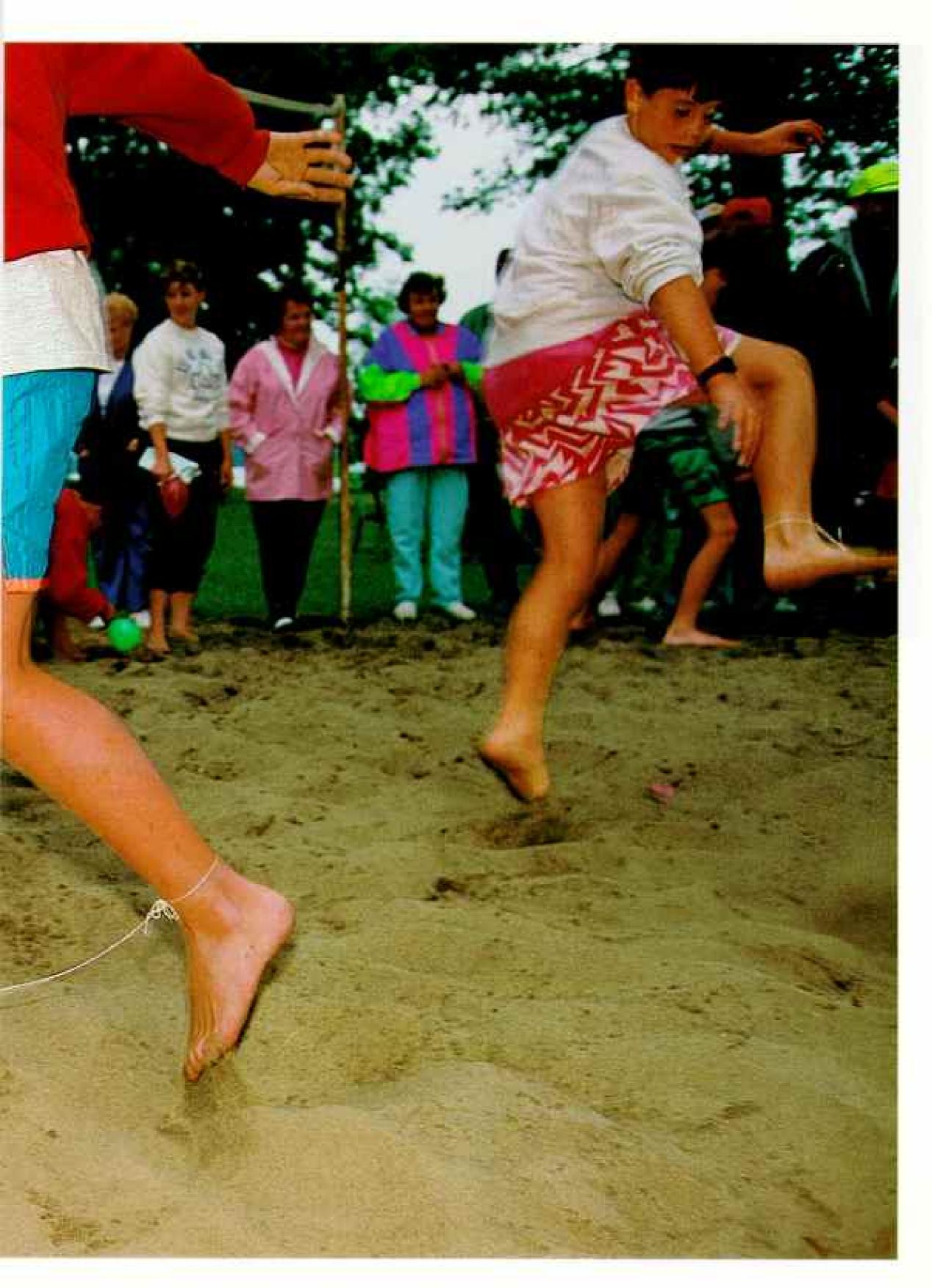
Two of the other men were struggling to erect a banner identifying their spot as The Oasis, but just couldn't get it to hang straight and finally gave up. "That's close enough for the girls we go out with," one of them said.

Later that day I stopped by again. They were all submerged in the hot tub, drinking schnapps and beer while a few snowmobilers bundled up

Minnesota Memoir 101



Balloon-bursting contest turns the Kee-Nee-Moo-Sha resort on
Woman Lake into a stamping ground for kids. While many resorts



lure vacationers with the traditional draws of fishing and swimming, others have expanded to include sailing, hiking, and tennis.



Catch 'em, clean 'em, and fry 'em up: Panfish caught at Bambi Resort on Lake Hubert go from fishing pole to plate in short order. A brief holiday season keeps most small operations low profit, and rising land values have tempted many owners to sell cabins off one by one.

in suits and helmets stood watching them like a crew of ice-stranded astronauts. Country music spilled out from the fish house. Merle Haggard on ice. One of the men in the tub made an effort at social grace by introducing his companions.

"Til give you a little history of our group," he said, pointing out each man with a stick of firewood. "This is my brother-in-law, this is my brother-in-law, and this is my brother-in-law's brother-in-law." Having established the family tree, he lowered himself back into the steaming water, a shot glass dangling from his neck by a string.

The eelpout is not a pretty fish. It is flatheaded, potbellied, and drips with slime. When held up for examination, it has a rather unnerving tendency to wrap its slimy tail around your forearm. While Minnesotans worship the walleye to a point just short of having a "blessing of the walleye" as folks do with foxhounds in the South, most of them don't want an eelpout in their house, let alone their religion. But the "pout" does have admirers among those who truly like the taste of fish. The strip of meat along the back is considered, by those who know, to be delicious. I suppose it's a bit akin to kissing an ugly person in bright light: The effect may be just wonderful, but getting to it can be a trip.

People were looking at frozen eelpouts hanging from racks at the festival weigh-in station. "Oh, gross!" said a pretty girl who didn't look like the type to bait her own hook.

"God," uttered a woman, holding her hand to her mouth in repulsion.
"It's hard to believe they came out of that beautiful lake."

"I actually went out there and caught one of those things last night," said a man who was wearing a hat made from a skunk and carrying a bottle of something wrapped in a brown paper bag. "Felt my IQ drop about 30 points." There are other signs equally important. Where the lakes once beckoned with unbroken shorelines bordered with birch and aspen, today many are necklaced with docks and boathouses. Although restrictions on construction have been established, much of the shoreline has now been developed, especially around Brainerd. When I asked one biologist what effect people have had on the lakes, he replied simply: "Devastating."

For example, lakes in and near the Twin Cities are choking with Eurasian water milfoil, a tenacious aquatic weed that can take over the surface waters, making lake recreation such as swimming and water-skiing difficult if not impossible. A small piece of milfoil clinging to the undercarriage of a boat trailer, although apparently dried, dead, and harmless, is still capable of infesting a lake—even several days later. Although the Department of Natural Resources (DNR) pleads with lake users to clean all boats, motors, and trailers of weeds of any kind, it is widely assumed that Eurasian water milfoil will eventually appear in lakes up north.

Pollution has also come from fertilizer runoff from farms and wellmanicured lakeshore cabin lawns. When I arrived in the lake country in the spring, I heard that an old friend of mine, Earl Seubert, had a cabin up on a small lake named for a lovely flower: Trillium. But people were calling it "the worst lake in the world."

We sat in his cabin talking about old times and old friends. Then Earl told me about a local contractor who drained septic tanks; about 15 years ago, he began spreading the sewage on an upland hayfield that sloped down into a ten-acre wetland.

"There were beaver dams back in that swamp," he said. "When the

Bratwurst with sauerkraut gets the onceover from children
at Kee-Nee-Moo-Sha,
where years of
shared vacations
have turned families
into good friends and
made a Wednesday
night potluck dinner
a tradition.





DNR blew up the dams to prevent flooding of private lands, all that stuff came into our lake. By the middle of summer each year I could stand in the water up to my knees and not be able to see my feet."

But Trillium Lake may be on the way to recovery. Seubert and his neighbors have undertaken a cleanup effort. The predominant problem is an overload of phosphorus and sulfur, nutrients that promote algal bloom and, in the worst cases, rob the lake of the oxygen its creatures live on. The lake-association members have been joined by Del Hogen, a biologist with a chemical-testing lab. Hogen devised a process he calls "nutrient inactivation," and under his direction they treated eight acres of the 136-acre lake by spreading a mixture of iron compounds over the bottom.

"The mixture is activated in the sediment by bacteria and natural chemical processes that in turn deactivate the phosphorus and sulfur," Hogen explains. "The test worked beautifully." As a result, virtually all of the lake has been treated.

Can nutrient buildup be prevented in the first place? "Well, we've reduced phosphates in detergents," Hogen said. "We're seeing new.

Sea of wild rice
engulfs an Ojibwa
woman and her husband on Leech Lake.
He gently bends the
slender stalks and
knocks grain into
their canoe. Because



the lake is on Leech
Lake Indian Reservation, only residents
may gather the wild
rice, a yearly harvest of some 210,000
pounds worth a dollar a pound.

restrictions on wells and septic systems. There will probably be a need for some kind of community septic system in the future. But I sometimes wonder what the priorities really are for some people. Some lake-shore property owners have asked me how they can build up the nutrients to grow some 'decent' fish. And these people live on some of the clearest lakes we have. I tell them to go fish somewhere else."

Pollution comes in many forms. The sound of a Jet Ski and other "personal watercraft" that pound across the water like aquatic snow-mobiles can break your sense of seclusion from far, far away. People old enough to remember might find the sound reminiscent of the old-style dentist's drill, the kind with lots of belts and pulleys, that didn't have constant power but would surge when the dentist stepped on the foot pedal. The sound of those things kind of reminds me of that.

On a big lake you can probably get away from them, although maybe at the cost of your favorite fishing spot. But on a small lake you're destined for the dentist's chair, at least until they go home or the sun goes down. New regulations now prohibit owners from operating personal watercraft between sunset and 8 a.m. At least that's the law. Enforcing it is another matter in a land of more than 15,000 lakes.

"The typical lake user is different today," said Al Lindner, who with his brother, Ron, founded the In-Fisherman Communications Network in Brainerd. "In past years people could experience a solitude that isn't always there today. People wanted to see the sun come up and be the only one on the lake."

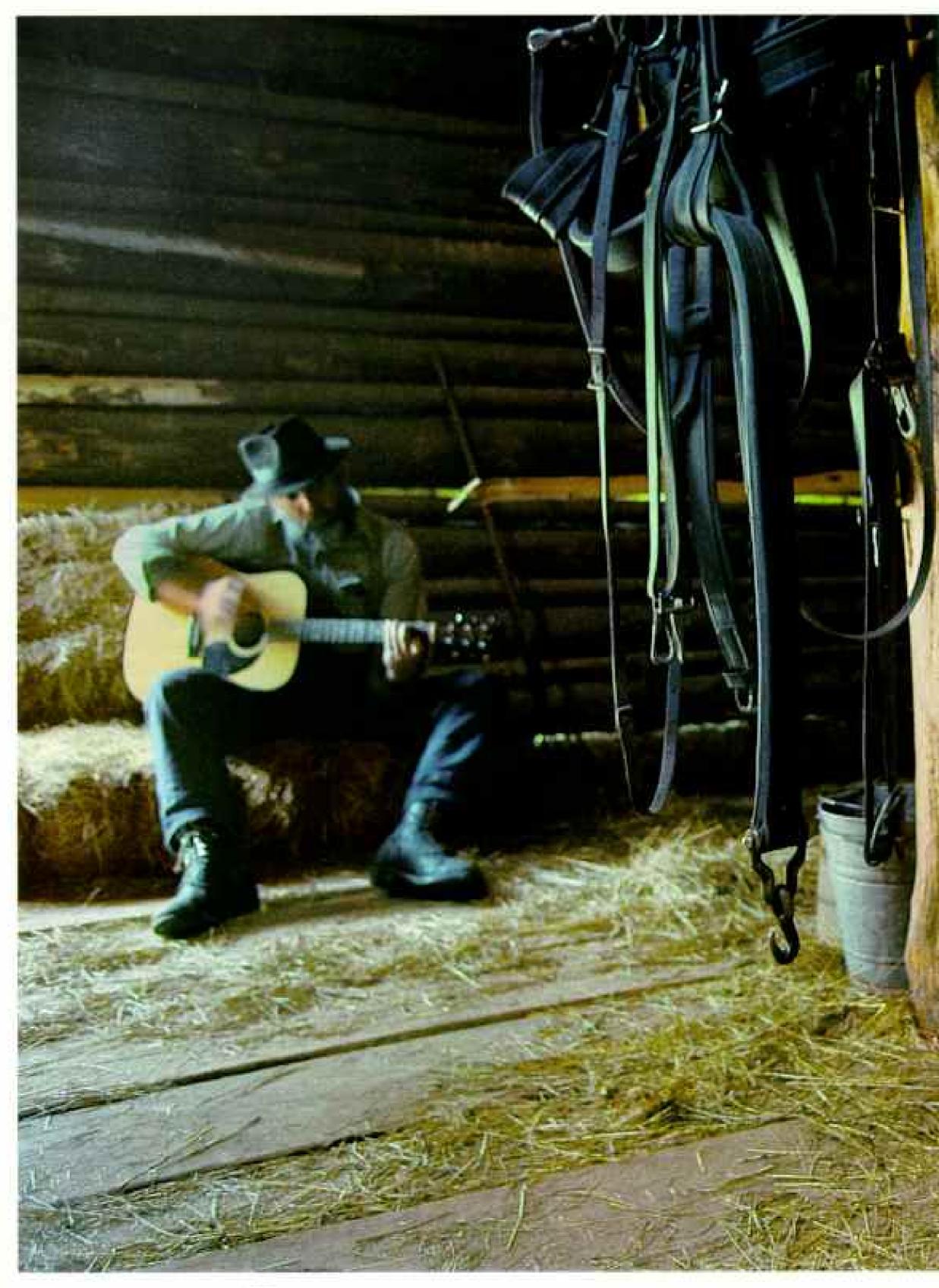
"We call it the canoe and loon syndrome," Ron added. "The loon in the water and you're in there with the canoe. I love it. It's gone."

Not quite. The Ioons are there, if not always the privacy. The common Ioon—a mediocre name indeed for such a marvelous creature—is Minnesota's state bird and can be found on most of the lakes over 50 acres. Loons are simply wonderful in the water, and, best of all, they make music. At least it is music to my ears, and to those who are so affected by the haunting repertoire of calls that they move to northern Minnesota to be with them. Perhaps it is because their sounds remind us that this land was once truly wild and untouched by the hand of man and because they show us that if we are simply quiet and listen, there is still peace to be found in these mirrored waters.

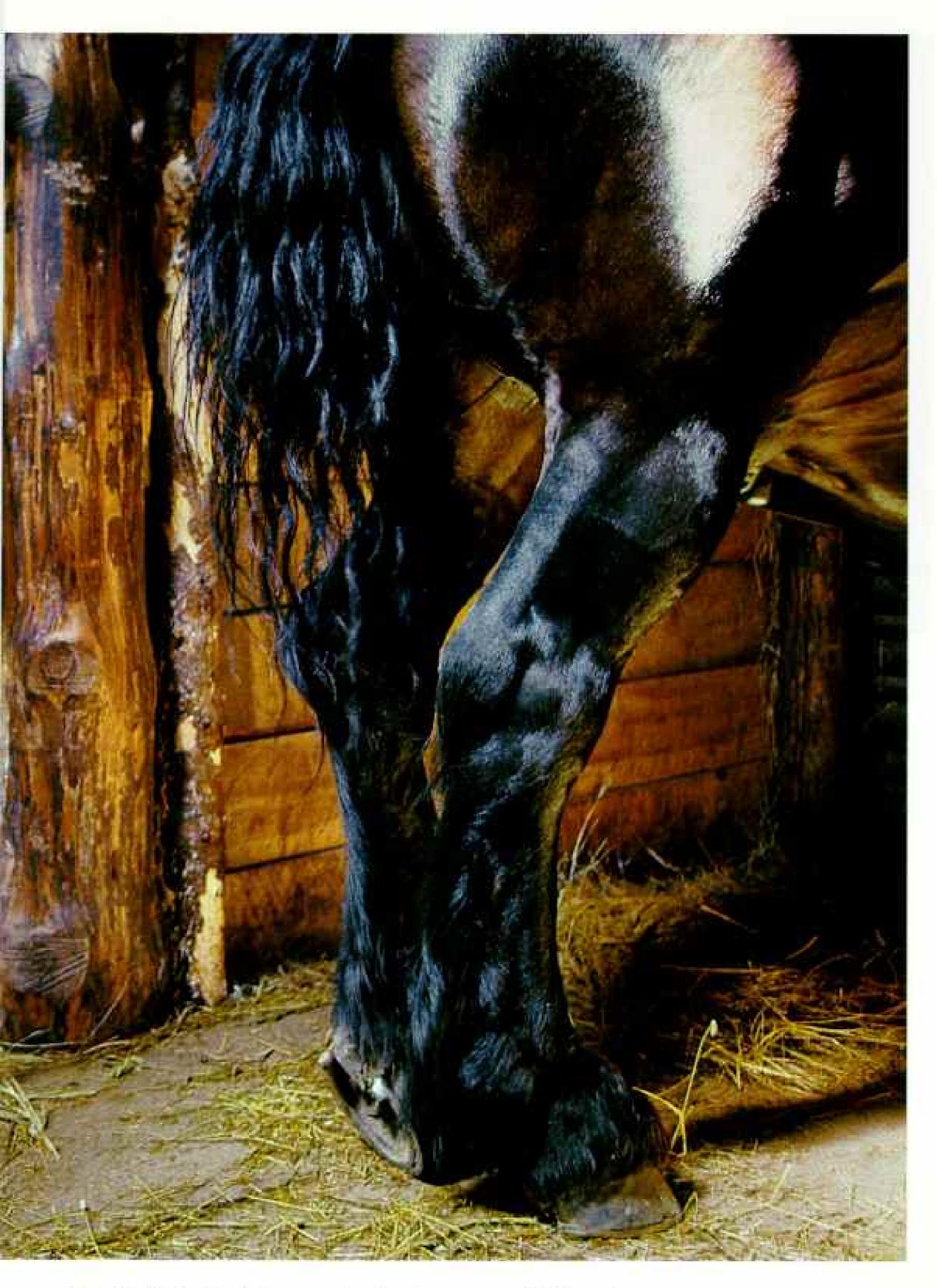
I can't possibly remember when I first heard a loon because I would have been an infant. But I can remember years of hearing them from gently rocking boats with a scrim of early morning fog between me, the rising sun, and the rest of the world or while standing on a shoreline in the depth of night while northern lights played their magic across the sky and my mind; someway, somehow, I was always hearing those sounds as if for the first time.

about the length of a cigar and made of birch bark. At roadside souvenir places you could buy lots of simple handicrafts
that reflected the lake-country region—birch-bark canoes,
little birch-bark drums, slices of pine with the bark still dark and
flaky around the edges. Painted on the face of the wood, under a
honeyed glaze of varnish, would be some homily or perhaps the name
of a lake-country town and something about it, like "Little Falls,
Minnesota, Home of Charles Lindbergh." Or maybe it would show the
face of an Indian.

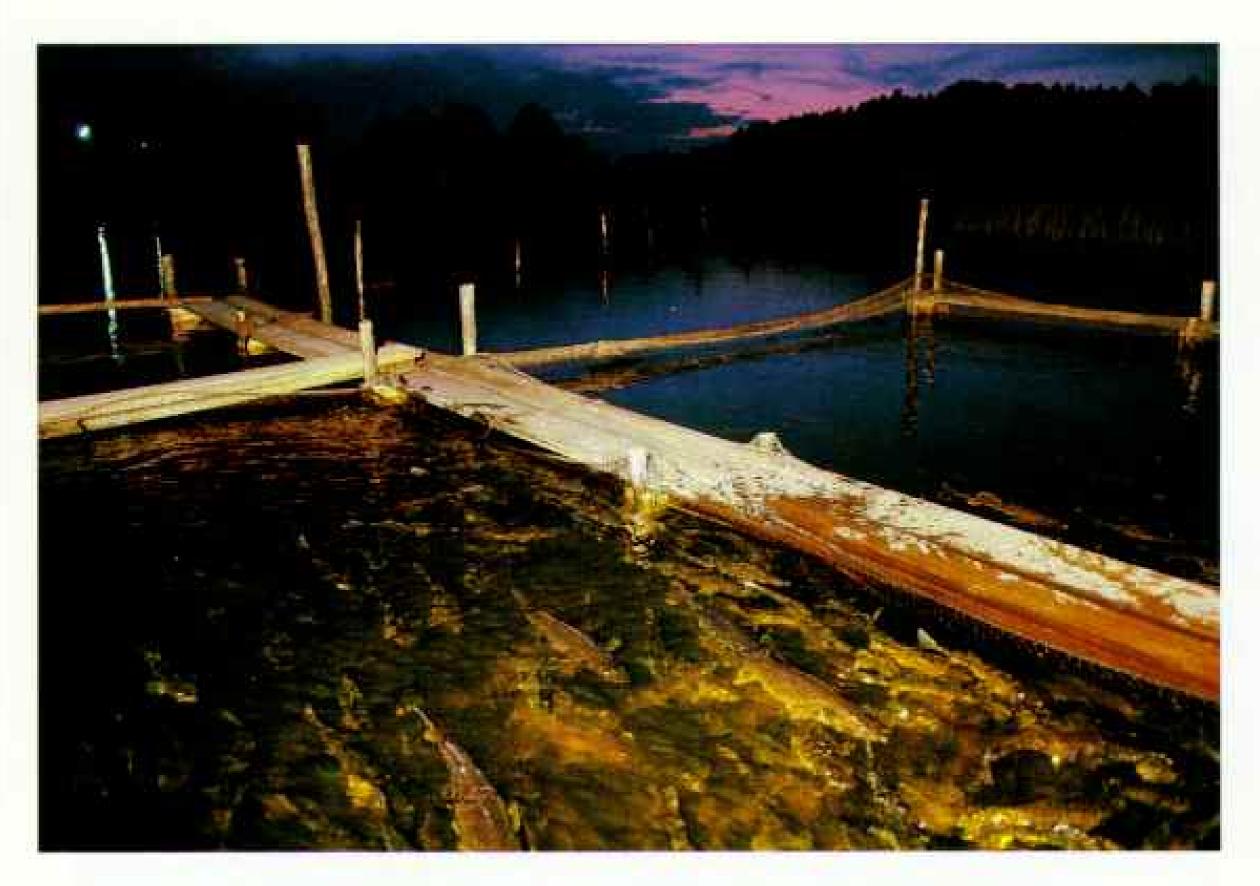
I don't remember seeing any Indians when I was a child, but, of



"Doc's teaching me French," says guitarist Will Hollnagel about the French Percheron draft horse at the Forest History Center in Grand



Rapids. Will and others re-create a logging camp of 1900, peak year for the white pine industry that helped open northern Minnesota.



Wall-to-wall walleyes jam holding cribs in Little Cut Foot Sioux. a small lake adjoining Lake Winnibigoshish. Wildlife specialists trap spawning walleyes, gently massaging them to extract eggs and sperm—part of a million-dollar program to stock lakes lacking suitable spawning grounds or depleted by pollution or severe winter kills.

course, they were there. The Ojibwa were present when the first white explorers appeared in the 1600s. Some of the lakes and towns in this region, such as Bemidji, take their names from the Ojibwa. And the last armed conflict between United States military forces and American Indians took place not out West, as one might think, but in Minnesota, on the shores of Leech Lake in the autumn of 1898.

The Ojibwa are still here, and things are changing for them too. Legalized gambling on the state's reservations started as small-scale bingo games in the early 1980s. Today there are casinos built alongside huge parking lots filled with cars and pickup trucks and charter buses from far and near. Some call these multimillion-dollar casinos "the new buffalo."

I went to a Memorial Day powwow near Cass Lake, where I met Deanna Fairbanks, an Ojibwa woman in her early 40s. A law-school graduate, Fairbanks is now a tribal judge on the Leech Lake Indian Reservation. Her handsome face looked thoughtful when I asked what the new buffalo could mean.

"The casinos have brought many jobs," she said. "People here today are able to find work where they couldn't before. And the money brought in is going to help the tribe become more independent.

"But, of course, there is a bad side to the situation. We are basically poor people, and some can end up depending upon a windfall...looking for that winning jackpot. Some of our people get hooked. They end up hocking the chain saws they use to make a living. Or their cars."

Bruce Baird is a member of the Leech Lake Reservation as well as director of Indian education for several school districts. "It will reduce the tribes' dependency upon the government," he stated. "What the tribes are going to have to do to survive is to develop managers, accountants, administrators. The casinos are becoming big business. But there's a downside. There's always idle time on a reservation, but idle time with money, that's a problem."

Money isn't the only thing of value that is asserting itself among the Ojibwa today.

"We're seeing a resurgence of our rich culture," Deanna Fairbanks said. "And we're on our way to maybe getting one problem licked: the alcoholism. It's OK not to drink now. People have seen their families split up, lives destroyed. Many tribal leaders today are nondrinkers. My father served three tours in Vietnam and came back with a severe drug and alcohol problem. He's been clean for 16 years now. He tried AA, but it didn't work for him. He had to go back to the sweat lodge—to his spirituality. I'm so proud of that old warrior."

I left Deanna beneath some pine trees, braiding the waist-length blueblack hair of her 19-year-old son. I walked through the campground at dusk, weaving my way around campers, tents, and pickup trucks, passing families seated by fires, the licking orange flames just strong enough now to cast shadows. Indian women in beautifully beaded buckskin dresses with pastel shawls dripping from their shoulders walked together through the trees. Hundreds of metal cones sewn to their dresses made a soft chorus of clattering in passing, and from the dancing circle came the sound of drums.

I grew up to the sound of waltzes and polkas. My father played accordion, my mother played piano. They performed—not terribly well—at Scandinavian lodge dances, and I would sometimes go with them and watch. I remember the women in their summer dresses and the men, some of them farmers, with their bronzed faces and flesh-white brows. When the men danced, the backs of their shirts were tight and slick

Monument to a fish?
You betcha! A giant
walleye greets visitors to Garrison on
132,000-acre Mille
Lacs Lake. Called the
"factory," Mille Lacs
spawns more than
two billion walleye
fry a year, four times
the amount produced
by state hatcheries.



Minnesota Memoir



with sweat. They were working-class people, some of them born, like my father, in another country.

My father came to Minnesota from Sweden in 1905 when he was six. His father was looking for cheap land to farm. Up in the lake country it was cheapest, but much of that land had already been harvested hard of one crop—trees. It was the logging and railroading boom of the late 19th century that truly opened northern Minnesota.

Prior to 1900, you could almost be guaranteed a community of loggers from Maine or Canada. "English and French were the languages," says Skip Drake, site manager for the Minnesota Historical Society's Forest History Center in Grand Rapids. "Shortly after the turn of the century you'd find a camp bunkhouse filled with immigrants right off the boat; Germans, Dutch, Polish, Irish, Finns, Norwegians, Swedes. Some had no idea what they were doing in the woods. It might be their very first job in America."

Before leaving the Forest History Center, I wandered through the recreated turn-of-the-century logging camp. There was a wistful feeling of times past. In the horse barn, where they keep a Percheron draft horse Fish get a break at
the Bemidji area's
annual "Take a Kid
Fishing" event. Kept
alive in water-filled
plastic bags long
enough to photograph, many are



then released. Kids
get a break too. Last
year 90 volunteer
guides treated 180
children to a day's
fishing and a picnic
at Lake Bemidji.

like the ones that hauled fortunes from the forests, a man dressed as a logger sat on a hay bale, strumming a guitar and singing to himself, waiting for tourists. The melody, so soft but clearly recognizable, was like the voice of an old friend to my ears: "Hälsa Dem Därhemma—Greet Them at Home," one of the best-loved immigrant songs of Scandinavian Americans, a lilting waltz from my childhood.

In years past you could find a polka band in just about every crossroads tavern in the north; today you have to search hard to find any.

"It's all rock and roll now," said an accordion player I came across at a
polka festival held in a barn converted to a dance hall. The dancers
were all middle-aged or older. The men wore polyester pants, and the
women swirled around the dance floor in pleated skirts shorter than
their ages seemed to call for.

"Some of these old guys are in their 80s, and they don't miss a dance," said a man wiping sweat from his brow and gulping down a beer. "My God," he said, "I can't do it. I smoke, and I'm all done after about a waltz and a half."

A lot of the dancers were members of the Polka Lovers Klub of America (Po.L.K. of A.). Somebody told me that the Minnesota chapter was the "mother club" but other state chapters had dropped out of the organization because of "too much arguing." Just what is happening to this country, I wondered, if there is dissension among polka lovers?

FTER THEY LOGGED OFF a lot of this country," one man told me, "people said, 'Hey, you can see the lakes now,' and started building cabins along the shore."

Resorts, at least the smaller ones I used to know, were always mom-and-pop businesses. Twenty years ago there were around 2,500 resorts in the state. Today that number has dwindled to about 1,200. "Land has simply become too expensive," Ted Leagjeld said at Driftwood on Upper Whitefish Lake, one of the oldest resorts in the state. "The mom-and-pop resorts with just a few units have become worth much more when sold as individual cabins. The big resorts are getting bigger, and the small ones are disappearing. We're a bit more than twice the size we used to be."

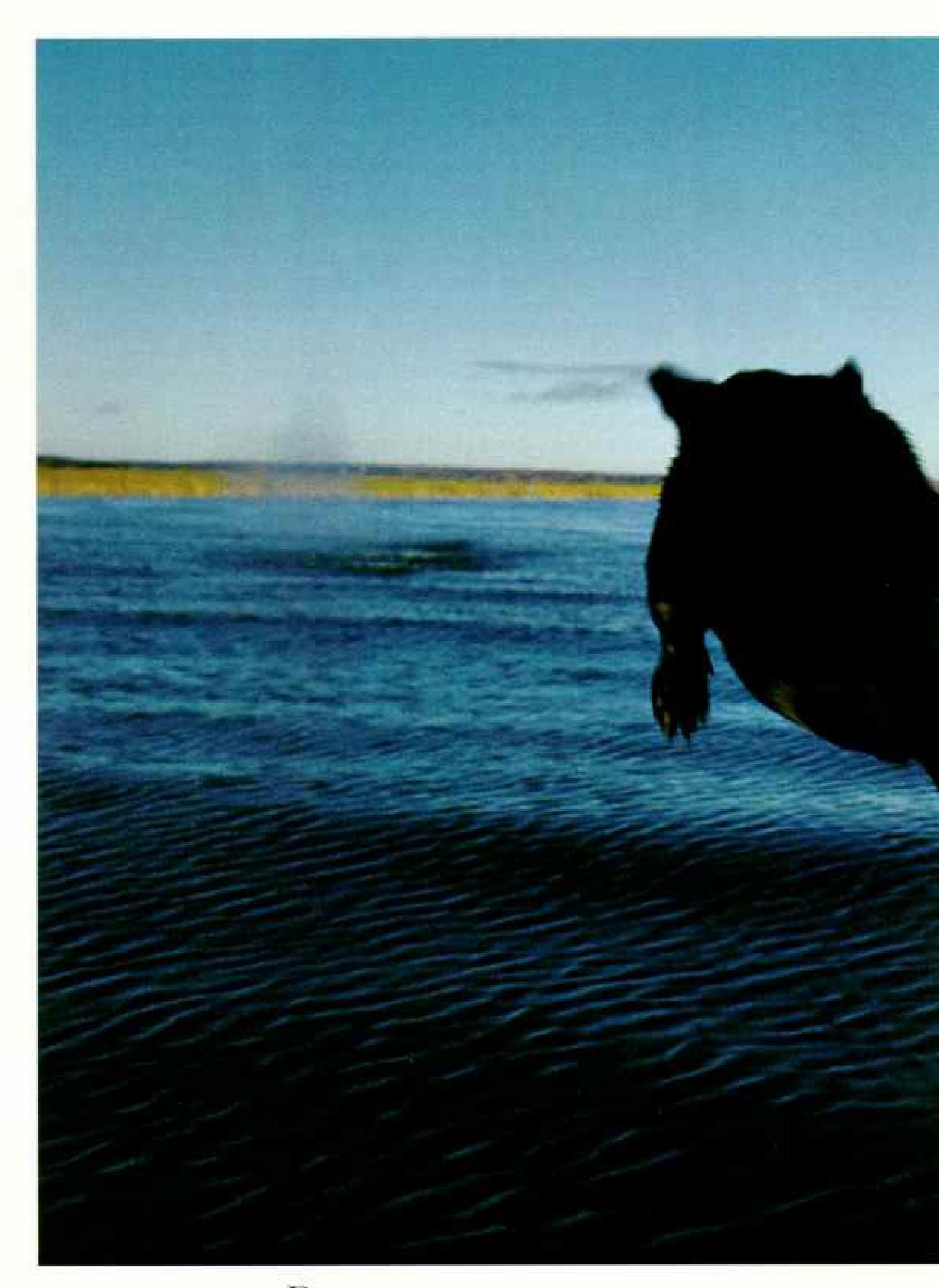
The Leagields offer pony rides and an antique fire engine, as well as golf, tennis, and a swimming pool. "People are just looking for relaxation and fun," says Ted. "Right from the beginning we were less fishing and more family oriented. You can't bring Aunt Bessie up and plant her in a cabin all day." Many other resorts have begun to turn away from a fishing emphasis to activities designed to lure a greater variety of visitors—and for shorter, but more frequent, vacations.

All through the lake country I met people who are trying to make a go of the resort business, a way of life that represents a dream to some but comes with all the demands of reality for those who live it.

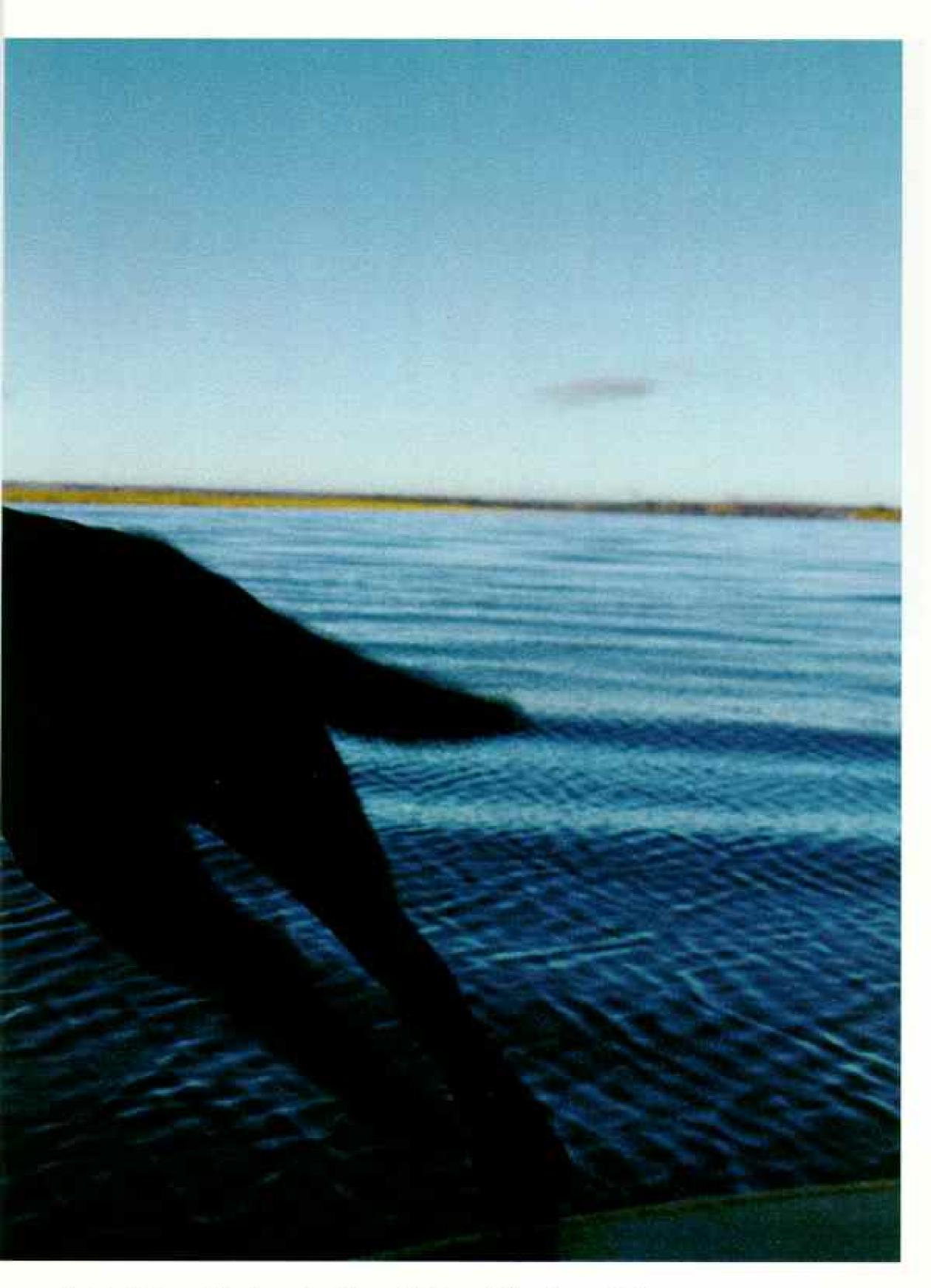
Anne and Ed Davis own and run Boberg's Resort, a small place started by Anne's father in 1924. Now in their 60s, the Davises don't expect their children to carry on the tradition. "They'd have to work too hard," Anne said.

"Our dad used to say, 'A resort isn't a business; it's a way of life," adds Carl Boberg, Anne's brother. "And that's what it is. It's a family way of life, but financially it's a disaster—compared to what the real estate is worth today."

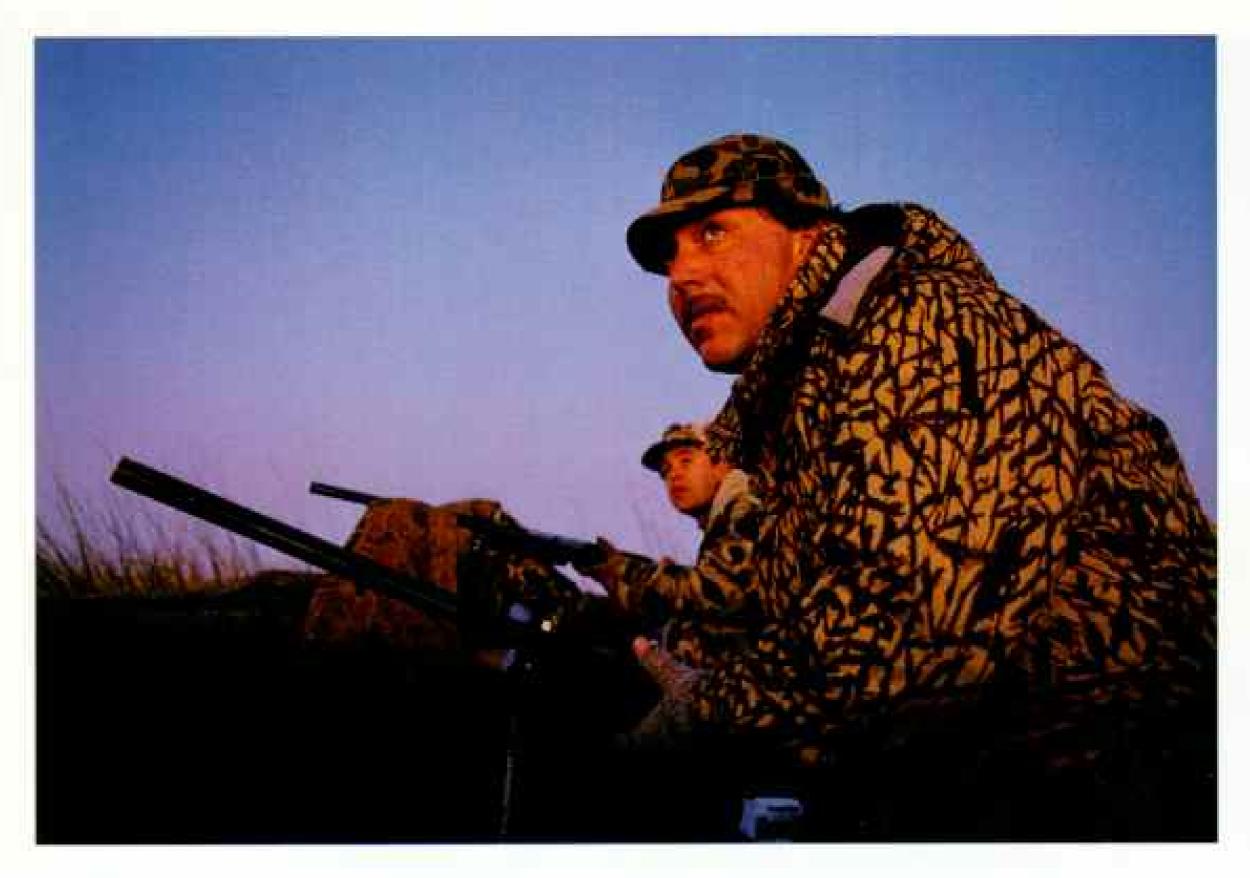
It's been estimated that almost half of Minnesota's resort business is in the Brainerd area. "That ribbon of highway out there," said Carl,



Bounding into Leech Lake, Liza, a Labrador retriever, earns her keep as she heads toward a shotgun-downed scaup. "I don't use a



duck call," says Liza's master, Franz Plattner. "When I was a kid, I learned to call with my mouth from an old Indian guide."



Boyhood friends and hunting buddies,
John Ringle (foreground) and Franz
Plattner scour Leech
Lake's horizon. After spending ten years in the Minneapolis area, Plattner returned to his hometown of Walker. "I missed the hunting and fishing," he says. "Here it's right in your backyard."

nodding toward the front of the house that sits hard on the edge of Highway 371, "that's where all the money comes up. Tourists. Our dad used to call them 'foreign aid.' "

Across Gull Lake from Boberg's are some of the biggest resorts in the state. Cragun's, Madden's, and Grand View are large, upscale corporate-retreat-type places catering to people who might never have seen the inside of a fishing boat but crave creature comforts, golf, and tennis.

"Today people want to be comfortable, and they want to be entertained," says "Dutch" Cragun. "Why shouldn't they have on vacation what they have at home? It's not a luxury any more."

It's hard for anybody in the small-resort business to make a living, but for some it's the living itself they're really looking for. Ken and Marnie McMillan run Kenadian Acres, a comfortable and quiet eight-cabin resort on Wasson Lake. In their early 50s, both children of steelworkers, the McMillans taught school in Michigan before moving to Minnesota almost 20 years ago. They raised three kids in what they think is the best kind of environment. But it wasn't easy.

"We didn't come up here with the idea of making a great living, just a good life-style," says Ken, a quietly intense man who until recently continued to teach during the off-season. "Neither of us had ever even stayed at a resort before."

"We knew at the end of the year we weren't going to have any money," adds Marnie, a bright-faced, cheerful woman. "We were always broke at Christmas. In 18 years we've taken a real vacation twice. We've been away from the place maybe six weeks in all that time. But we just didn't want to go back to the city. We've grown to love this way of life.

"We can hear wolves howl here," Marnie said. "And we call to them."

SUPPOSE when most people think of Minnesota weather, they think of snow, and maybe blizzards. But there are other kinds of storms, and they can come up with dramatic and sometimes tragic speed. The thunderstorms that sweep across the lakes can carry tornadoes in their midst.

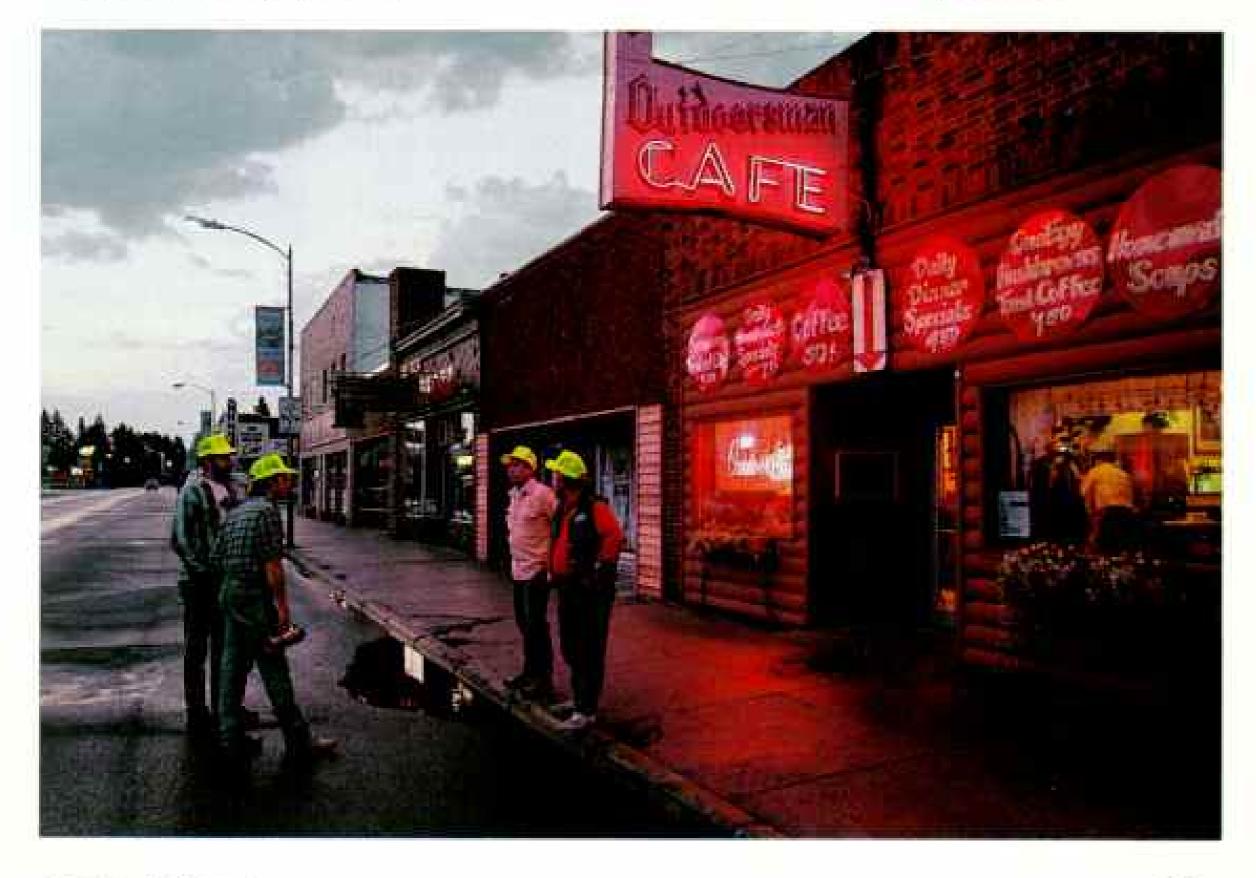
For two weeks last summer dark-clouded rumblings had been part of my days and nights, with lightning so bright and intense that it appeared not so much in the distance as in your face. A tornado tore up trees, destroyed boats and property, and killed a child. The large, relatively shallow lakes can turn from calm to tumultuous far too quickly for safety.

Al Maas is a much respected biology teacher at the high school in Walker. He is also a highly regarded muskie fisherman, a solidly built man with a face reddened by the sun and wind and bearded as all fishing guides up here seem to be.

I fished Leech Lake with Al a couple of times. We were sitting in his boat one blustery August day, drinking the last of the coffee from our thermoses. The wind got stronger, the water chopping up and thumping at the boat that somehow felt smaller now, more vulnerable than when we had put in at dawn.

"Tve lucked out at times," he said, looking out at the vast sweep of water surrounding us. "Tve come off this lake at times when I shouldn't have made it. And I've lost friends who didn't come off lakes when they should have." Ten years ago, two of them were his sons, 19 and 21, who drowned while duck hunting when their boat capsized in a sudden early November storm. Their bodies were not recovered until spring. "We had the quality years with those boys, I guess," he said. "But a double-header. You don't anticipate that."

Skull session follows
breakfast in Walker
as men get ready to
head out to Leech
Lake for a muskellunge fishing contest.
Canny, strong, and
often 25 pounds big,
"the muskie is a fish
that ought to have an
exclamation point
after its name," says
the author.



Minnesota Memoir

HE CABINS my family stayed in varied over the years, but they were always what is now called rustic. In the early years there wasn't always an indoor toilet or shower. Trips out to those facilities were short adventures in the dark. After a rain the boat would need bailing with a coffee can. A few translucent fish scales and crinkly pieces of dead worms glistened on the seats. In years when the entire family could be there together we would gather at night to play cards and tell jokes and laugh until tears came. Everyone in the family loved to compete for a chance to talk and be funny except my father. He had a keen sense of humor; he just didn't use it as much.

The resort I had most wanted to stay at during my recent wanderings was Oak Grove, the seven-cabin resort on Gladstone Lake where my family had last stayed. But it isn't there any more. I could barely find where it had been.

Gladstone had always been a private lake with no free public access, which helped keep it less busy, more peaceful. This made it, eventually, more desirable. Other resorts on the lake had been sold off slowly over the years for the cabins and the land, leaving only Oak Grove. Now it too was gone.

I went in search of the owners, Jack and Beulah Szabo, to ask them why. When I found them, just up the road from where the resort had stood, they welcomed me as if I were family. "I knew who you were the moment you got out of the car," said Jack. Like a seldom-seen cousin, I remembered him too. Small resorts tend to make you feel like relatives, if only distant ones.

Beulah was remembering the old days as we sat at the kitchen table. "We had one couple that arrived, and the woman was wearing white gloves," Beulah laughed as she poured coffee for us. "I knew they wouldn't stay here when she got out of that car wearing white gloves."

"God, Bill, I couldn't afford to build up; I couldn't do anything," Jack told me with the gravelly voice of a cigarette smoker. "I'm 58. It was gonna cost me \$25,000 for a new septic system they said I had to have. Three years ago I heard the DNR was looking for a public access on the lake. When we had a chance to sell, we jumped. The DNR tried to sell the cabins, but they couldn't, so they just bulldozed 'em down and took her away.

"We sure don't miss the work," Jack said as I was leaving. "But we miss the customers. People make friendships up here that last. They sometimes get old and sick, but they want to come back to the lake one more time."

"Yes," I said. "I know."

Ten years ago my mother, my sister, my younger brother, and I had gone out on that lake in a boat together. My father stayed on the shore, frail, his eyesight and energy gone, his days on the lake now over. The late afternoon sunlight was golden on the water and on our faces. As my brother tilled the boat in small, slow circles, we scattered the ashes of my older brother in that calm cove where he used to catch sunnies in five feet of water. The folks would return two more years, and then they too were gone.

Before the summer was over, my wife, Ani, and our three-and-a-halfyear-old son, Anthony, came to Minnesota. We took Anthony to Gladstone. As he played in the tall grass that had overgrown the banks, I walked again over the barren site of Oak Grove. The sun was low and warm. A pontoon boat with a family aboard crept slowly along the opposite shoreline.



With playful wonder,
Anthony, the author's
three-and-a-halfyear-old son, dabbles
in the water of Gladstone Lake, family
vacation spot for
three generations
of Allards. The old
resort here is gone,
but memories of



summers past lap
the shore like waves.
Change has not silenced the haunting
cries of loons. Nor
has it diminished
the timeless joy
of a child gazing
at fish—speckled
and glittering—rising into view.

The toe of my boot uncovered bits of red siding from the walls of the cabins embedded in the dirt, a few scraps of shingles from the roofs.

"Papi," said Anthony, "what are you doing?"

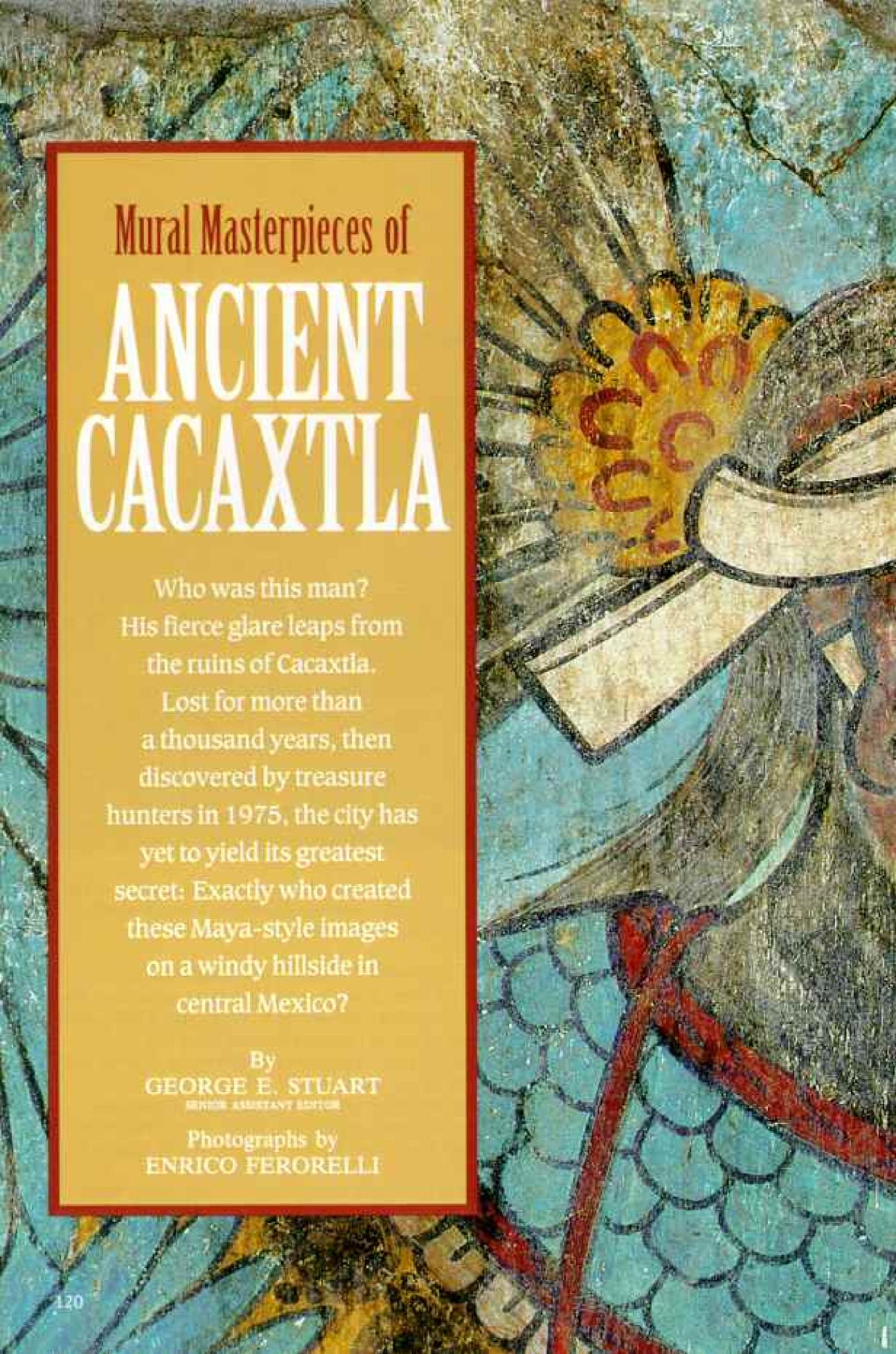
"Just looking," I said.

Anthony bounded away toward the lake through grass that almost reached his shoulders. He was a deer, he said. I know, I replied, and followed him to the water, thinking about the feel of clamshells and small stones beneath the soles of my feet and the sight of minnows darting off in swift dark fleets before my eyes when I waded in the shallow and seemingly endless water of my childhood.

Anthony reached the lake and knelt there at the edge, dipping his hands, palms down, into the water where they made small ripples on the surface. The sun was down now, Salmon-colored clouds hung low against the horizon.

With the persistence of his age he turned to me to ask again, "What are you doing, Papi?"

"Remembering," I said, "just remembering." He didn't ask me what, and I'm not sure I could have told him.





HE JAGUAR WARRIORS are the obvious winners in the violent encounter with the soldiers dressed as birds. Clothed in tailored pelts arrayed with lavish insignia of rank, grimacing with exertion, they drive flint-sharp lances into the bodies of the bird men, who are unarmed. Many of the vanquished already sprawl in grotesque poses of abject disarray, their blood falling in vivid droplets from hideous wounds. Some, disemboweled in the action, clutch in vain at their exposed entrails. Gazing upon the frightful scene, one can practically hear the cries of triumph mixed with the moans of the disgraced-even across the chasm of time, for more than a thousand years have passed since the lurid spectacle was painted.

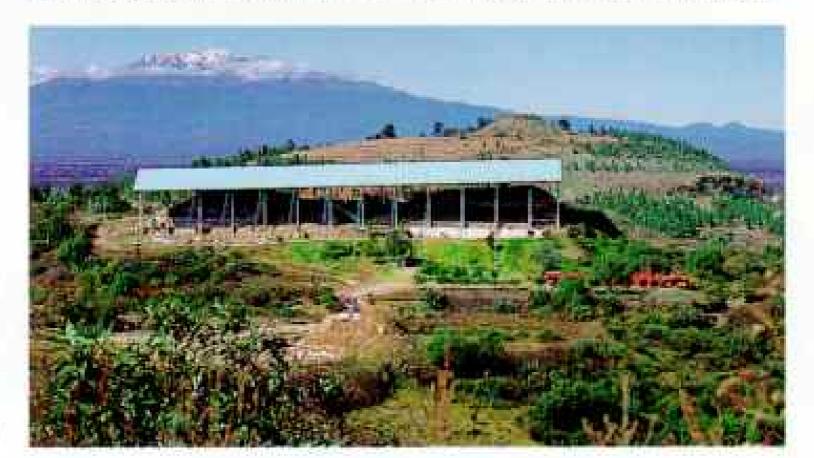
When I first heard about the murals found at Cacaxtla, a small archaeological site some 80 miles east of Mexico City, the news of their miraculous preservation and rich content seemed far too good to be true. Now more than 15 years of excavation have revealed many additional murals, each seemingly more magnificent than the last. They have provided us with a unique window into the sometimes violent world of the elite warrior merchants of seventhto-tenth-century highland Mexico and the tumultuous times in which they lived and died.

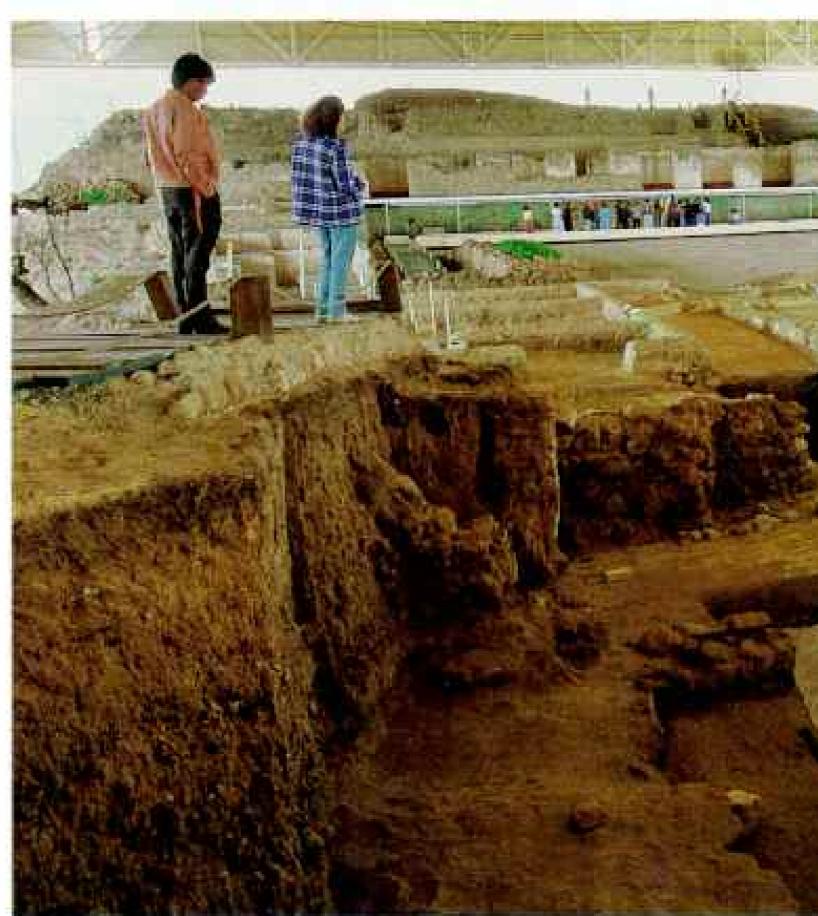
Many things in that world seem strange to us. For example, war was most often waged not only for territorial gain but also for the procurement of captives for sacrifice. Given the 1,100-year cultural gulf between the Cacaxtians and us, it is not surprising that the painted scenes are often not what they seem at first glance. The "battle" between the jaguar and bird warriors, as it turns out, may not be a battle at all but a postwar sacrificial ceremony performed on a public stage.

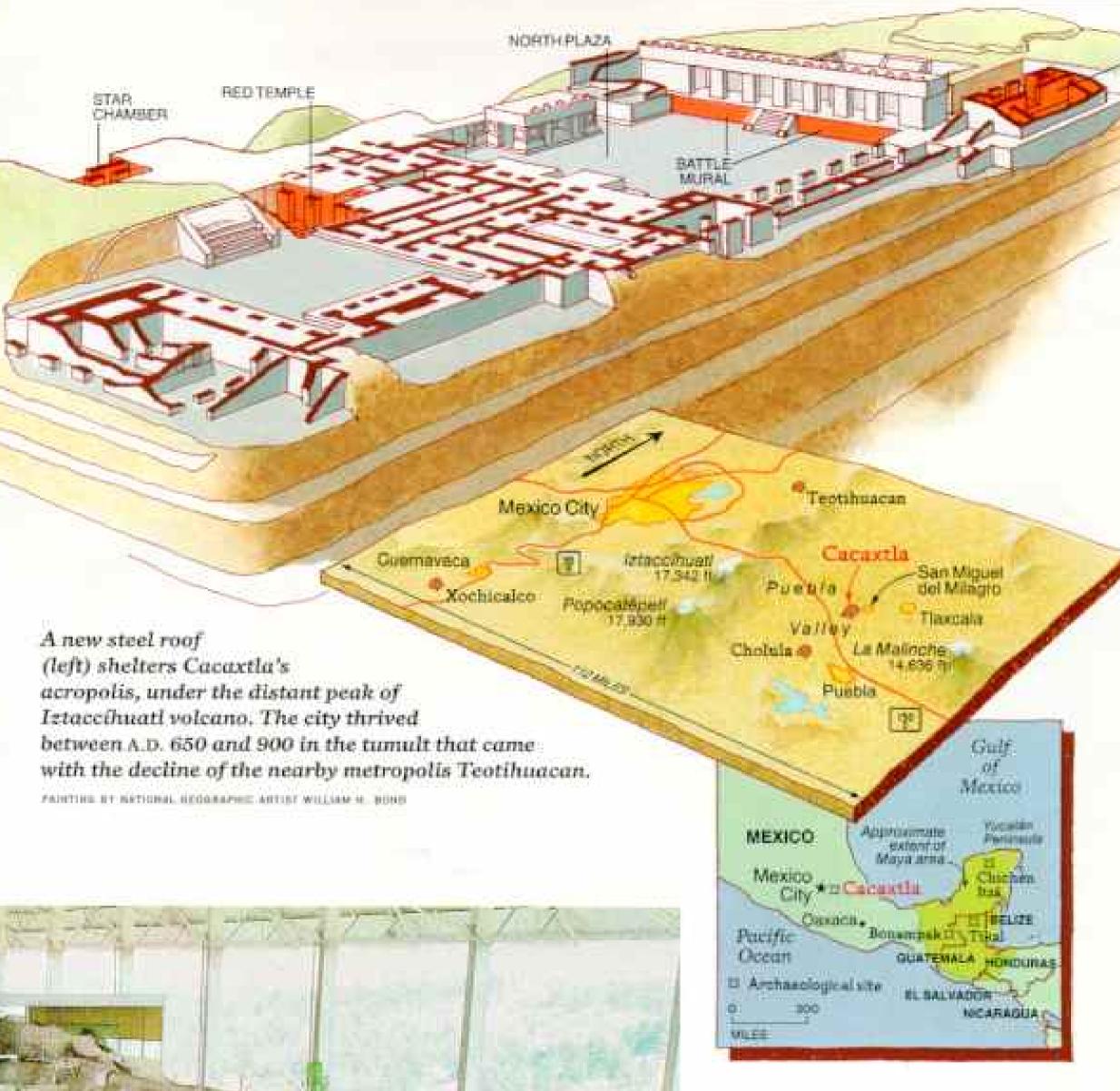
The name Cacaxtla (pronounced Kah-Kahsh-tlah) is an old one. In the language of the Aztec, who later dominated this area of central Mexico, it means "the place of the cacaxtli, or merchant's backpack."

The site lies a short distance southwest of the historic city of Tlaxcala, renowned as the home of the powerful army that joined Hernán Cortés in the autumn of 1519 to help him conquer the Aztec. Even then Cacaxtla lay in ruin, abandoned and all but forgotten.

The site occupies a
low area between
two broad, gentle hills that
rise from the
Puebla Valley.
The hill immediately west of
Cacaxtla is
named Xochitecatl. It honors a







Peeling away layer after dusty layer (left), archaeologists have found remains of plazas, altars, rooms, and doorways. Stairs lead to a sunken chamber named the Red Templein part for the color of its entrance murals. Scholars have found at least eight stages of construction, some buried in the ancient Mesoamerican tradition. This suggests that bursts of building accompanied changes of rulers. Most historians believe the builders were Olmeca-Xicalanca, a little-known group of warrior merchants originally from the Gulf coast region.

Indian legend, was sacrificed to the mountain gods. A gigantic ruined pyramid occupies the windswept summit. On the opposite hill sprawls the flourishing town of San Miguel del Milagro, named in the early 17th century to celebrate the miraculous appearance of Saint Michael the Archangel to a 16-year-old Indian boy.

Despite the unusual bulk of Cacaxtla's main mound it covers an area the size of four football fields and rises more than 80 feet—the ruins

long lay in relative obscurity among the many ancient sites in the vicinity of San Miguel. That all ended in the late summer of 1975, when diggers from the town secretly tunneled into the mound in search of treasure. Almost immediately they encountered a smooth stucco surface, the wall of a buried building. On the morning of September 13 their tunnel reached the jamb of a doorway and the first hint of the surprises to come.

The diggers had happened upon a huge mural showing a man dressed as a giant bird, nearly life-size against a bloodred backdrop (page 129). His talon feet rested on a magnificent grinning feathered serpent rendered in blue, with yellow belly scales and beard. The bird man embraced a long bar-shaped object that ended in a blue dragon head with a pointed tongue. An intricate border of whimsical water creatures-turtles, snakes, and little animals peeking from shells-framed the fantastic scene. And in this first of many startling discoveries at

Maya symbol of royal power, the skin of a jaguar adorns one of two portraits outside a chamber. Blue drops from the warrior's lances suggest blood turned to water—evoking rain and fertility.





# After a battle, bloody gifts for the gods

Blood and guts spill from warriors dressed as birds; they writhe at the feet of enemy jaguar soldiers in Cacaxtla's largest and goriest scene. Scholars say the mural, divided by a

staircase and overlooking a plaza, depicts the brutal aftermath of a Mesoamerican battle, when the gods were traditionally repaid through human sacrifice. Of dozens of

Cacaxtla, the portrait appeared as fresh and brilliant as it did on the day it was painted.

Overwhelmed by their unexpected find and realizing the impossibility of removing it intact, the treasure hunters reported it to municipal authorities. Soon the news reached Mexico's National Institute of Anthropology and History. And the rest, as we say, is archaeology.

Since 1975, institute scientists and their colleagues from the National Autonomous University of Mexico-archaeologists, architects, art historians, and conservators-have converged on the huge mound at Cacaxtla, which they refer to with due reverence as the Gran Basamento, the Great Foundation. To date the archaeologists have uncovered at least eight major stages of construction. Each contains its own pattern of stucco-covered adobe building walls, corridors, and paved courtyards-enough to indicate that the Gran Basamento served as a combination palace and administrative center for a vigorous and aggressive nobility. Scientists date its heyday between A.D. 650 and 900.

In 1978 I visited Cacaxtla for the first time, in the company of the late art historian Marta Foncerrada de Molina, who early on





life-size figures in the original piece (reconstructed in a sketch, above), only 17 are mostly intact. A detail (below) shows the eclectic content that has fueled speculation

as to the artists' origins. While the style of the paintings is lowland Maya, the accompanying hieroglyphs point to a blend of other Mesoamerican influences. Yet imitators of

the Maya could not have rendered such authentic images, believes art historian Beatriz de la Fuente: "The people who made the paintings were Maya."



had turned her full attention to the wonders emerging from the acropolis dig. By that time institute archaeologists Diana López and Daniel Molina had cleared much of the northern end of the summit. Low broken walls and doorways defined the floor plans of buildings skillfully constructed of adobe and mud, often arranged to create open courtyards. My first impression was one of dazzling whiteness, for the builders had used lime stucco as a finishing coat, and much had survived to glow in the bright sun of the crisp, clear morning.

Marta led me gingerly along the board path laid over the stucco pavement to a long wall, the face of a wide platform almost six feet tall. It lay hidden behind a protective curtain of new canvas, except for one part where white-smocked conservators worked patiently at details of a huge polychrome panorama -the painting of the savage encounter between the jaguar warriors and the bird soldiers, discovered shortly before and almost two-thirds intact (drawing, above). Marta took me to a spot well away from the workers, pulled the canvas aside with a flourish, and revealed the victorious captain of the jaguar soldiers, dressed to kill.

Firmly postured on clawed feet, the life-size figure wore

HAPMAEL DOWNS, MATISMAN, WISTITUTE OF ANTHAOPOLOGY AND NUSTURY, COUNTEST CITIBANK, N.A., MEXICO

black body paint, barely visible behind a wide collar of jade beads and a heavy belt of carved faces securing a jaguar skin around his waist. A light red war shield, trimmed in darker red and yellow with dangling blue feathers tipped in yellow, hung from his left wrist. His upraised arm brandished an atlatl, or spear-thrower, loaded with a flint-tipped dart. It pointed to one of the most wretched figures I have ever seen in ancient art on what may have been the worst and last day of his life.

The captain of the bird soldiers wore a knee-length skirt, a richly decorated textile in red and blue, trimmed in feathers and fringe. Over it hung the familiar quechquemiti, the triangular shawl of the Mexicans, equally adorned. Both upraised arms bore wings of blue feathers, costume companions to the large sightless bird-head helmet. The bird captain's mouth was open in what I took to be a scream, for his right hand grasped a dart that lay imbedded in his face.

"Surprised? I knew you

would be," Marta declared as proudly as if she had painted the images herself. Indeed I was. In 30 years of travel among Mesoamerican archaeological sites, I had never beheld the vivid reality and preserved detail I witnessed here. After seeing the paintings, another of my colleagues remarked: "Cacaxtla tells us what we have lost in so much of Mesoamerican civilization."

As Marta and other art historians had seen almost at first glance, the Cacaxtla murals contain an extraordinary

The first mural unearthed at Cacaxtla showed a bird man, plumed and painted black. Archaeologists soon were thrilled by the find of some of the best preserved Mesoamerican paintings yet uncovered.



potpourri of elements—details
of costume and ornament,
hieroglyphs, gods, animals,
and plants—that normally
appear either in the Mexican
highlands or in the distant
Maya lowlands, but hardly
ever together in one place
and never so blatantly as at
Cacaxtla. Most unusual of all,
the astonishing images of the
acropolis appear in the style of
the Classic period Maya, who
lived at least 500 miles away.

EARLY 15 YEARS after Marta unveiled the battle mural to me, I. returned to Cacaxtla. Much had changed. The entire summit of the Gran Basamento now lies in the shade of a gigantic roof erected by the state of Tlaxcala to shelter the fragile adobe of the ruins and their murals. The painting I had but glimpsed before, now thoroughly cleaned and consolidated, contains more than enough to gladden the heart of any iconographer.

Amid the figures drift isolated hieroglyphs; some surely identify individuals depicted. Clearly not of Maya form, the hieroglyphs appear with strings of dots—the usual highland way of writing numbers —attached to pictures of objects or animals.

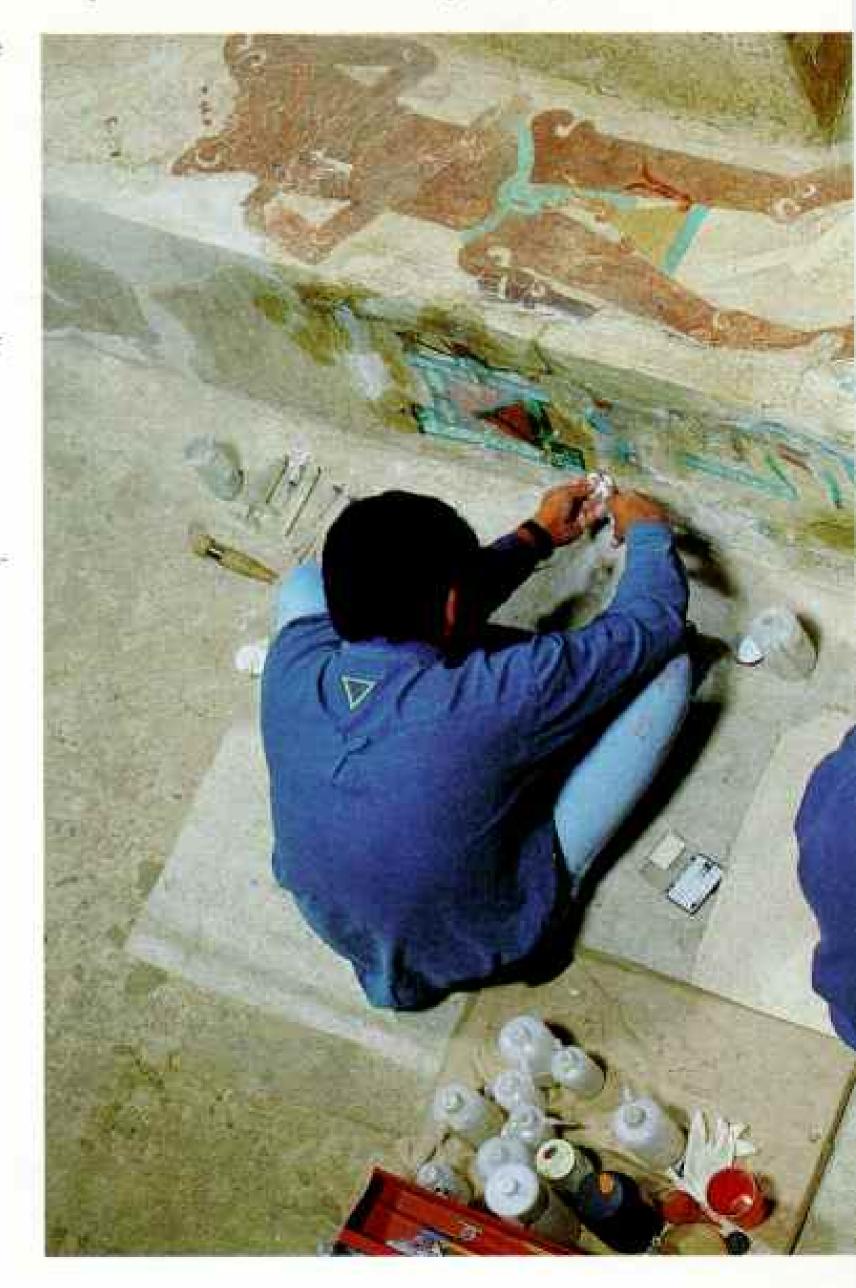
The name of the jaguar captain, for example, is represented by three dots joined to a deer antler, or, for want of the Cacaxtlan pronunciation, Three Deer Antler, perhaps a calendar number and sign derived from his birth date.

War icons, not unexpectedly, appear in the scene as well—a screech owl, blood glyphs, and a disjointed and blood-spotted human femur. But dominating the whole are the Venus symbols, an entire family of elements that in one way or another represent the celestial body intimately associated with the grandiose rituals of Mesoamerican war and sacrifice. To the Maya, Venus was xxx ek, the dread "wasp star," whose appearance controlled the scheduling of military raids.

John Carlson of the Center for Archaeoastronomy in College Park, Maryland, specializes in the Mexican and Maya Venus lore, and for almost a decade, with the help of a National Geographic Society research grant, he has cast his net far and wide for evidence." His pursuit of Venus has taken him from the ruins of the Classic period metropolis of Teotihuacan near Mexico City to the abandoned fortress city of Xochicalco in the state of Morelos, and to the distant reaches of Oaxaca and the Maya area as well. In the Cacaxtia paintings he has found his nirvana.

"The place is crawling with Venus symbols," he told me. "I'm just thankful they found Cacaxtia in my lifetime. Now I simply can't imagine Mesoamerica without it."

\*See "America's Ancient Skywatchers," March 1990.



What John has seen in the battle mural and elsewhere are representations of Venus that range from the Teotihuacan and Oaxaca forms of the eyed half-star to the distinctive trapeze-and-ray insignia that decorates war helmets all the way into the distant Maya heartland.

These and other icons, identified by generations of scholars, he has woven into a cohesive theory of Mesoamerican war iconography. It involves not only Venus but also Tlaloc, storm god of ancient Teotihuacan. The icons combine in many ways, John says, to form the key element in what he and his colleagues half-jokingly call the Mesoamerican "star wars."

"That's exactly what they were," he explains, "wars regulated by Venus's appearances. We've known that for a long time, but I see it best right here. It's what Cacaxtla was all about."

A jaguar-bird encounter is that some of the vanquished bird men wear blue body paint, the traditional mark of sacrificial victims. "The scene is not of a hattle," says Mesoamerican art historian Ellen Baird of the University of Nebraska at Lincoln, "but of its aftermath and attendant sacrifices. Blood—the ways in which it was obtained, and the need for obtaining it seems to be the central theme."

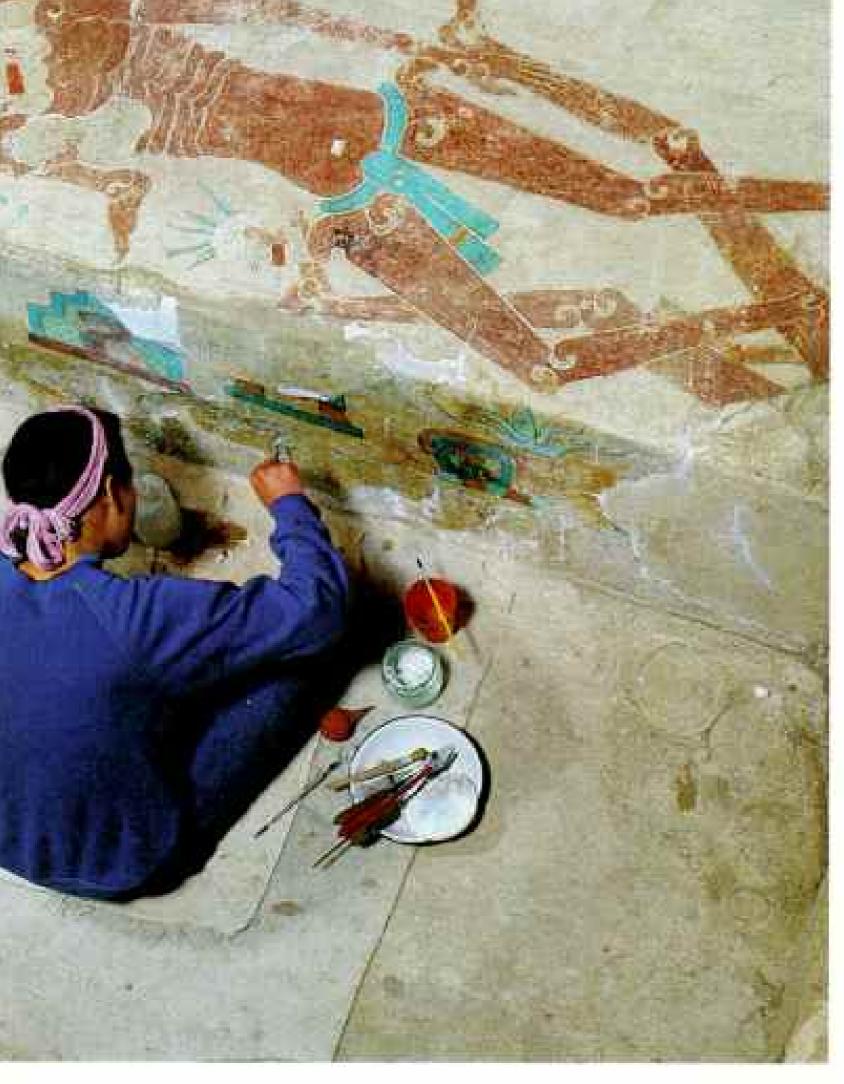
Blood and its symbols pervade the mural, and for good reason: The Cacaxtlans and other Mesoamericans believed that it held the soul and that it formed the supreme metaphor for water, essential for the nourishment of the earth.

John Carlson agrees with



Beneath bony figures of captives painted across the floor of the Red Temple (left), conservators restore hieroglyphs for conquered towns (above and below).

"I try to put myself in the place of the people who created them," says conservator Diana Magaloni. Her chemical analyses of one temple mural show that artists used colored powders—such as yellow ocher, hematite, and carbon—and created long-lasting paints by mixing them with juice from the nopal cactus.





His arms crossed in defeat, his calves covered with white bands, the bird captain is being prepared for sacrifice. So say scholars who have pored over this patch of the battle mural (see reconstruction on pages 125-8). Archaeoastronomer John Carlson believes that the captain is depicted as being inside an actual room where Cacaxtlans made sacrifices timed to appearances of the planet Venus.

Carlson reached this conclusion after noticing that a pair of barefoot blue dancers (below and far right) on columns flanking a small inner chamber had something in common with the doomed captain. All had a backdrop of five-pointed half stars—symbols for Venus. By Carlson's reckoning, the captain met death after being led past these Cacaxtlan grim reapers.





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Baird and points out something else he sees: The scene appears to show two stages of the same episode, divided by the central stairway into sequential east and west sets—a characteristic convention of Mesoamerican art. Carlson speculates that at least part of the ritual of mass sacrifice took place in the North Plaza, just in front of the images frozen in the painting.

He may be right. When archaeologists uncovered the floor, they found remains of burned, dismembered children—evidence that the plaza functioned as a kind of Cacaxtla "killing field" for the recurring cycle of sacrifice.

The buildings surrounding the North Plaza once formed an

elegant architectural symphony of precise corners and paneled moldings punctuated by intricate bas-reliefs and stucco latticework. Most of that has long since disappeared, leaving only the lower walls intact. These show that most of the rooms facing the plaza bore a simple decoration-a band of deep, dark red along the bases of the interior walls. In view of the events that must have been seen from those rooms, the decor seems grimly apt, as if a tide of human blood had risen to flood them, then subsided.

NSTITUTE archaeologist Andrés Santana recently uncovered another set of paintings that echo the Cacaxtla themes of captive humiliation and sacrifice. In the Red Temple, not far from the North Plaza, emaciated prisoners sprawl on the floor, deliberately painted there so they could literally be walked upon. Between the legs of one wretched man, the Cacaxtla artists painted a graphic icon of conquest-a pyramid in flames. On the step below the bodies, they added a hieroglyphic list of conquered towns.

The trail of sacrificial death that began with the images facing the North Plaza may well have ended at what I consider the most unearthly of Cacaxtla's special places. It lies in a deep excavation pit near the floor prisoners and on the same level, according to architect Sergio Vergara's careful measurements. There, two damaged columns flank the doorway of a shallow room. On them appear companion figures, a woman and a man, both barefoot, painted blue, and dressed in short jaguar-skin skirts (left). There the reality ends. Both supernatural figures have feathers sprouting from their upraised arms, and enough

remains to show that the man
has the goggle eye of the storm
god Tlaloc and that his upraised
scorpion arms end in jaguar
paws. In one he holds an eyed
half-star Venus symbol, a motif
that also borders the portraits.
And both individuals wear huge
Venus symbols on their belts.

John Carlson calls this the Star Chamber. He believes that Venus Woman and Scorpion Man guard a room where the most prominent captives, including the bird captain of the mural, were prepared for sacrifice and put to death.

By a staircase leading to the Red Temple, I found conservators Rogelio Rivero, Tatiana Falcón, and Diana Magaloni. Rogelio and Tatiana crouched over one of the floor captives, trying to make sense of his badly faded head area—and probably trying to avoid looking at his expression. Diana's special interest lies in the chemistry of pigment and ancient painting techniques, and she's having a field day at Cacaxtla.

"The murals were buried intentionally," she told me, 
"and, fortunately for us, with 
great care. Whoever did it 
placed a layer of fine sand between them and the rough fill. 
By exposing them, we automatically assume the responsibility 
for their safekeeping."

Diana's analyses of the physical characteristics of the murals have yielded a wealth of new information. In her samples she has not only detected five basic colors-white, red, yellow, blue, and black - but also determined the formulas used throughout the acropolis. "You want to paint a jaguar-skin tunic?" she asks. "Grind up 14 parts yellow other, add three parts ground charcoal and one part powdered hematite red. and mix the whole batch with nopal cactus juice."

The stairwell murals where

Diana was working provide a blessed balance to Cacaxtla's images of conflict and sacrifice. Here paintings such as a fantastic cascade, a blue toad, tall plants of cacao and corn, and an old man with his merchant's backpack (right) convey messages of water, fertility, and trade, the crucial trio of prosperity for the ancient Cacaxtlans and their neighbors.

The discovery of these gentler images at Cacaxtla lets us see a kind of sensible Mesoamerican balance between seeming opposites. In the grand scheme of their murals, the anonymous artists of the acropolis simply painted the visible code of the great cycle of life, death, blood, water, fertility, and life again.

A TITS APOGEE, the acropolis must have presented an awesome sight. The great white pile rose in giant horizontal terraces interrupted by massive vertical buttresses of masonry and stairways. Columned buildings with shaded portals looked outward from all sides and at all levels. Atop the mass lay the ornate buildings, all carefully oriented with homage to the cardinal directions so crucial in the cosmic plan.

Along the base of the acropolis stood the cuexcomates, the circular storage containers for corn like those still used today. Low on the east side, in the direction of the rising sun and the dawn appearance of Venus, lay the ball court, vital setting for the ritual contests between human impersonators of the sun and Venus and other characters of the cosmos.

Away from the complex, cornfields and the mud-andthatch dwellings of the commoners dotted the landscape.

Natural drainage gullies still nearly surround the acropolis. Their potential use for defense must have been obvious, and vital, to the Cacaxtlans, for at some point they labored mightily to construct deep dry moats linking the ravines. The resulting fortifications converted Cacaxtla into a virtually impregnable fortress.

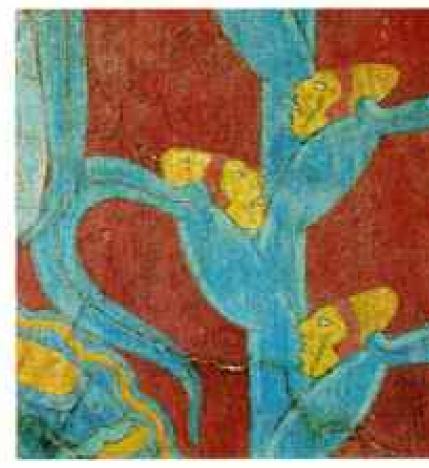
"The defenses make perfect sense in the context of the times," explains Angel García Cook, an archaeologist with the institute. He has worked on ancient patterns of trade and population in the area of Tlaxcala and nearby Puebla. "Between A.D. 650 and 900, the whole land, from the highlands beyond Cacaxtla all the way to Maya country, was in social and economic turmoil."

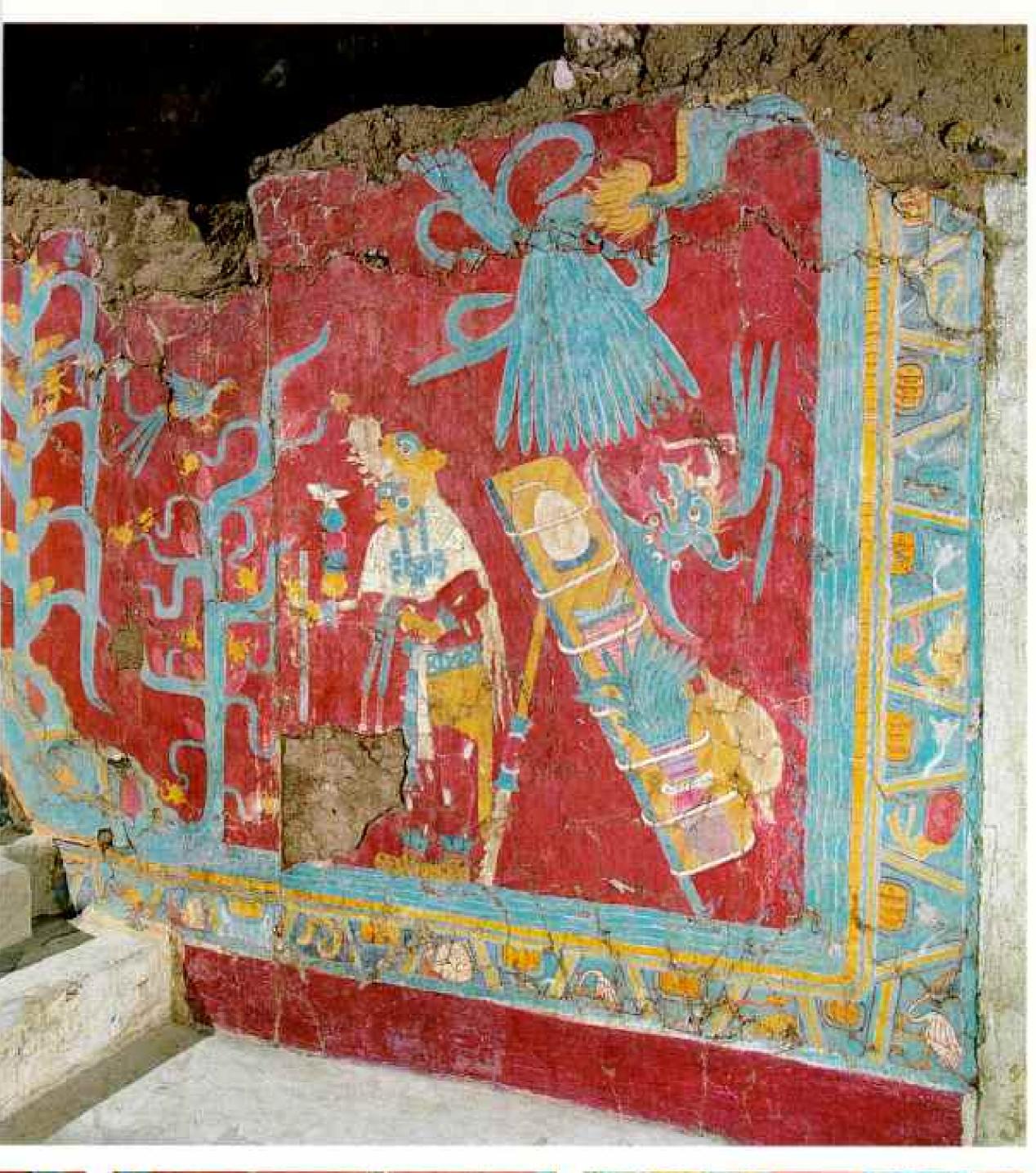
Archaeologists mark the beginning of this time of trouble with the decline of Teotihuacan, across the western ridge from Cacaxtla. In a kind of chain reaction of collapse all over Mesoamerica, other city centers from Oaxaca to the Maya area followed suit. From the chaos emerged new groups with new values, opportunists with a talent for trade and war. The Cacaxtlans were one of these groups, but their exact ethnic identity eludes us.

From the mixture of elements in their paintings, we surmise that the Cacaxtlans were at some time close neighbors of the Maya but illiterate in the Maya hieroglyphic system. At the moment, the most likely candidate appears to be the Olmeca-Xicalanca, a little-known people

Ears of corn rendered as human heads, a big blue toad, and creatures climbing up a cascade lend fantasy to a mural leading to the Red Temple. For a community of traders, the dominant image seems apt: An old merchant heads uphill; his backpack, resting against a lance, bears quetzal plumes and a sea turtle shell from the faraway Gulf coast.



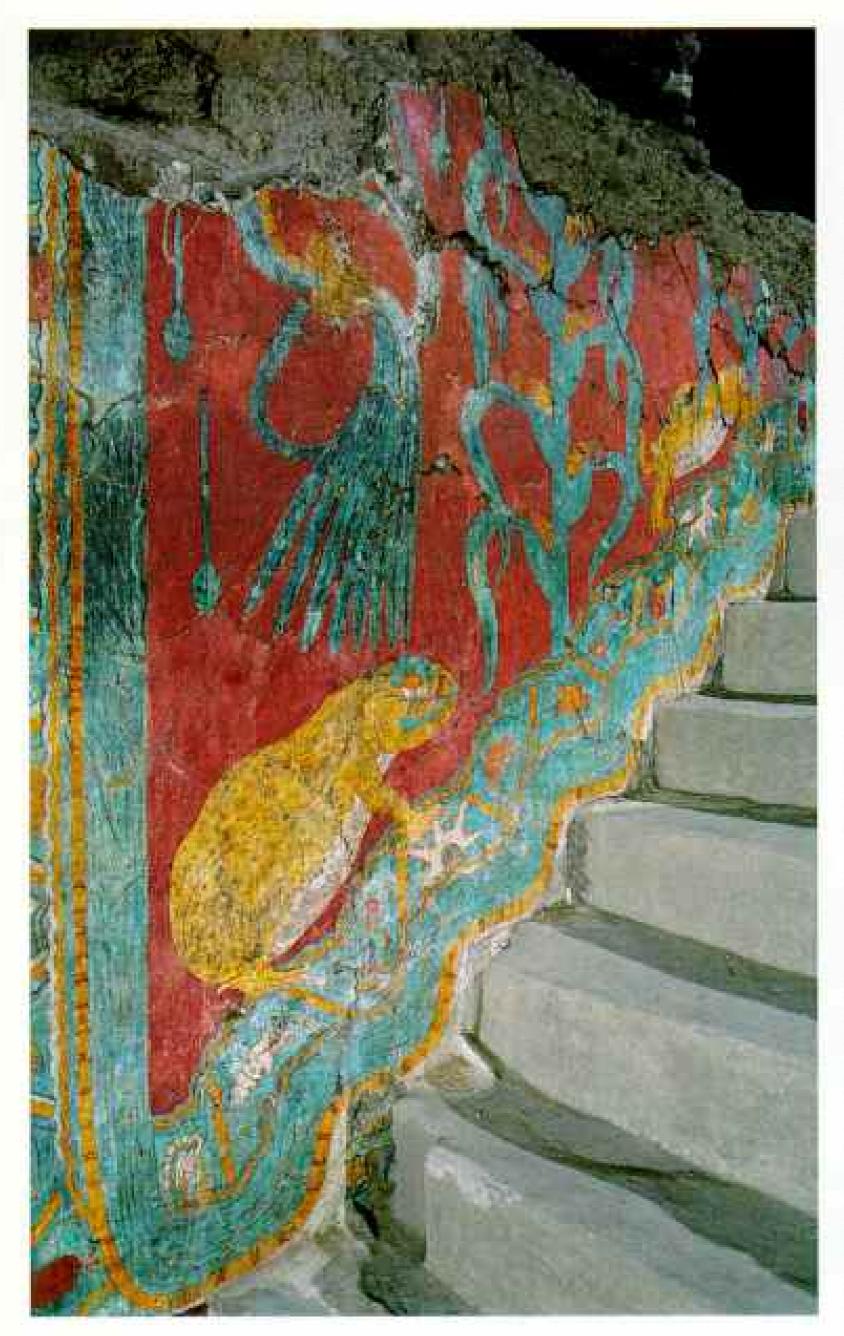












Cloaked in a jaguar's skin, a toad grasps a five-pointed half-star in a mural at the Red Temple's entrance. Scholars have turned to Mesoamerican mythology to understand the image, concluding that it evokes themes of warfare, fertility, and the underworld. In Cacaxtla's murals "nothing is there by chance," says art historian de la Fuente. "Everything has a profound meaning that says something about its creators."

Maya region of the Gulf coast.
Archaeologists place the
Olmeca-Xicalanca in the general area around A.D. 650. A late
16th-century history of the province of Tlaxcala mentions them
as having come to the highlands
from the Gulf coast area, in or
near Maya country, and even
identifies their capital as Cacaxtla. But while archaeologists
agree in placing the OlmecaXicalanca in the vicinity of
Cacaxtla, they differ on the time

and the length of their presence at the site itself.

Whatever their identity, the builders of Cacaxtla chose their spot well. Located in what Angel García Cook calls the Teotihuacan Corridor, they were able to control much of the trade between the Gulf coast and the local highland cities.

On the trails that converged on Cacaxtla walked processions of armed warrior merchants. They left carrying backpacks laden with obsidian, textiles, and pumice for grinding corn. They returned bearing cacao, quetzal feathers, and, as frequently as the calendar or circumstances demanded, with prisoners destined for humiliation and death on the heights of the acropolis and, perhaps, immortality in the commemorative murals.

ERFECT AS CACAXTLA must have seemed in terms of plan, organization, and defense, the city did not survive beyond the tenth century. Andrés Santana estimates the date of the latest paintingironically, the bird man mural that drew attention to Cacaxtla in the first place - at around A.D. 790. After that something happened, most likely a change in the ebb and flow of trade, a subtle force against which even the most formidable defense became irrelevant. At any rate, the site was subsequently abandoned and its people moved on, secure in the knowledge that their paintings, so reverently buried with each renovation of their acropolis, would endure.

"We owe them a great debt,"
says Maestro Mario Ríos Reyes,
director of the Tlaxcala office
of the National Institute of
Anthropology and History. "I
can't think of an archaeological
site here or anywhere else that
has given us more of itself than
Cacaxtla."





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A FORD
LATELY?

THE PRESIDENT'S REPORT ON THE

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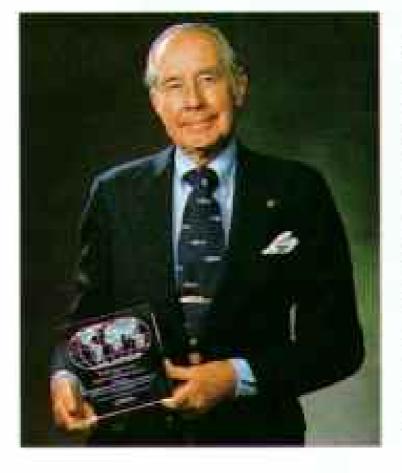
PETE SOCIA (ABOYES: NATIONAL COGRAPHIC PHOSOGRAPHER VICTOR N. BURWELL, JH.

# Top Geography Students Happy to Get a Bee

EEZ stand for?
While you're mulling that one, consider the fact that eighth grader Lawson Fite, 13, of Vancouver, Washington, came up with the answer in less than 12 seconds to seal his victory in this year's National Geography Bee on May 21.

It was the end of a long road for Lawson. Nearly six million youngsters nationwide participated in their school bees, and 57, representing U. S. states and territories, came to our Washington, D. C., headquarters for the finals. In the four years since we started the Bee to increase geography awareness, the number of participants has doubled. America is waking up to geography!

As TV cameras covered the event live on PBS, Alex Trebek of Jeopardy/ posed that final question. Got the answer yet? The initials stand for exclusive economic zones, offshore areas 200 nautical miles wide whose resources are claimed by coastal nations. More than a few of



us had to admit we were stumped.

Lawson (top, center) won a \$25,000 scholarship. Runners-up Geoffrey Hatchard of Pennsylvania, left, and Michael Sherback of Massachusetts won \$15,000 and \$10,000, respectively.

By the way, Lawson says he might like to be a cartographer. We'll watch for your resume, Lawson.

It was our pleasure to welcome as a speaker at the finals W. Graham Claytor, Jr. (above), president of Amtrak, the National Railroad Passenger Corporation. Amtrak has cosponsored the Bee for three years, and I was proud to present him with the Society's Chairman's Award in recognition of Amtrak's contributions to geography education.

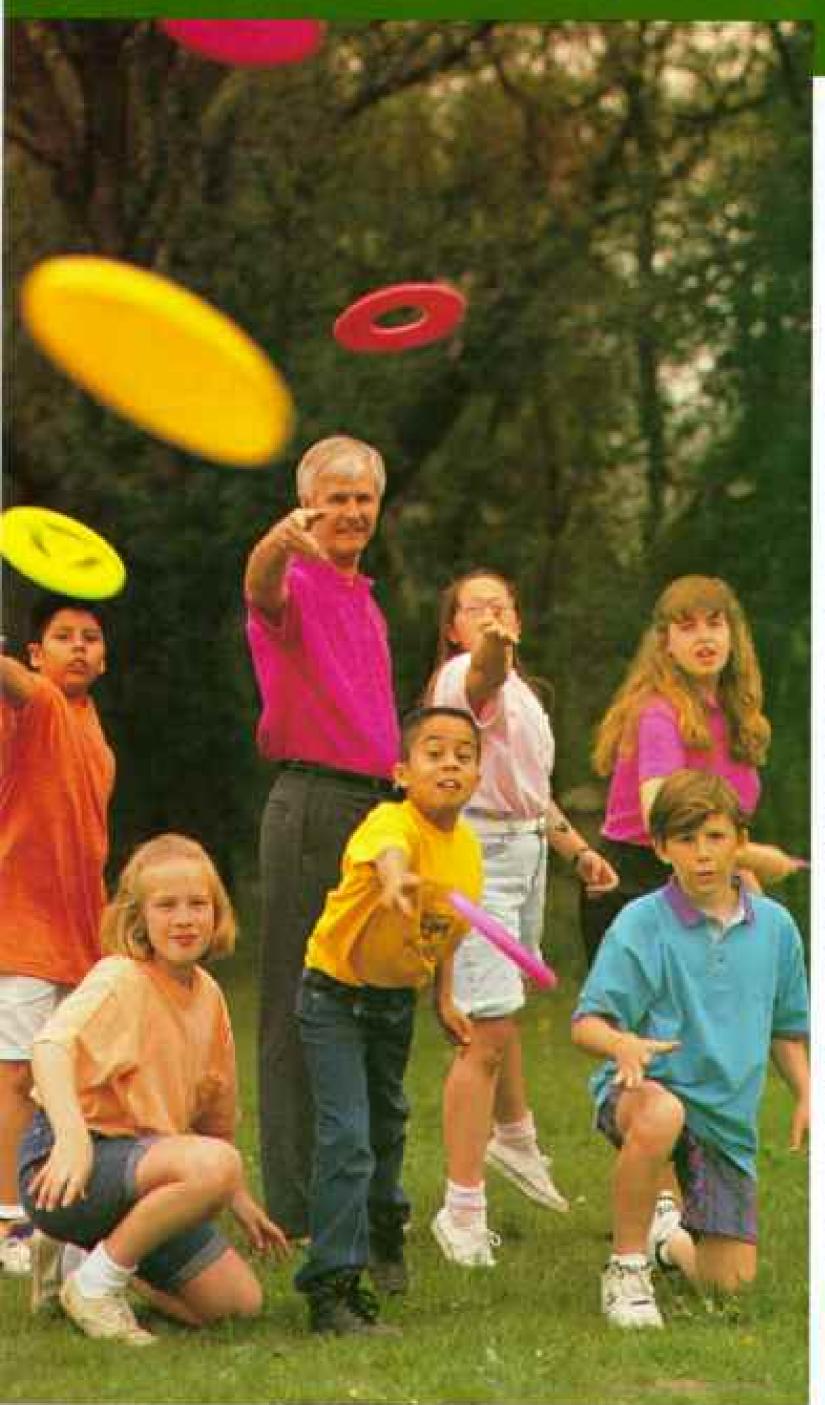
Amtrak is the fourth organization to receive the award, following Canon, Citibank, and the Phil Hardin Foundation of Mississippi. That's great company, representing great contributions to our mission.

## Geoguide Premieres in This Issue

hew feature appears in our pages this month—Geo-guide, sponsored by Delta Air Lines. Four times a year the series will provide educational guides to help adults explore geography with youngsters. Each Geoguide will be based on an article or map supplement in the same issue. This month's Geoguide focuses on the dolphin story beginning on page 2.

Sitteet Abrowers

# Welcome To Mr. Burtch's Science Lab.



This isn't recess. It's Bob Burtch's fifth grade science class.

Bob, who teaches at J. B. Nelson Elementary School in Batavia, Illinois, believes in the theory that fun is at the heart of effective learning.

"I'm very much a hands-on type of teacher," he says. "I want students to play, to explore, to create and to use their critical thinking skills."

That's why his students have taken to the school's playing fields to participate in a program Bob calls "Frisbee Physics."

Their initial task is to determine which type of flying object travels farthest. In the process, Bob shows them how to collect data on flight distances, make observations about differing flight characteristics, and analyze the different flying objects to determine why some fly farther than others. In short, he introduces them to the techniques that are common to all scientific investigation.

"The study of science is nothing more than the study of how to make wonderful discoveries," says Bob. "Once my students realize that, science becomes something they're always enthusiastic about."

We at State Farm are enthusiastic about honoring Bob with our Good Neighbor Award for his innovative approach to teaching. We are also delighted to make a contribution of \$5,000 to J. B. Nelson Elementary School in his name.

Bob Burtch. Thanks to him, his students are learning how serious learning can also mean serious fun.



ETRTE FARM INTERANCE COMPANIES Home Officer Beautington, Bloods

Good Neighbor Award

# Forum

#### India's Wildlife Dilemma

Readers might take heart from pioneering conservation efforts by villagers around Ranthambhore National Park (May 1992). In a nearby town in June locals cooperated with police to locate and arrest a poacher who admitted killing eight tigers and one leopard in the park in the previous year.

The wildlife giant Fatch Singh Rathore (page 13) inspired the work of India's Ranthambhore Foundation and its supporters abroad. Replicate the idea of rural partnerships and social entrepreneurship in a thousand other vulnerable global sites and you obviate the need for summits in Rio or elsewhere!

Peter Lawton Ranthambhore Trust Leatherhead, Surrey

This excellent article does justice to the wildlife survival issue, incorporating views from both sides. I have visited some of the sanctuaries and can vouch for its veracity.

Pravin Maheshwari Cleveland, Ohio

I wish you had given more attention to India's population explosion. Projecting the 1990 population of 853 million to the year 2025 leads to more than 1.4 billion mouths to feed. It is difficult to see how even the basic necessities of this expanded population can be met without further encroachment on the besieged nature reserves.

LEON KOLANKIEWICZ Yorba Linda, California

Until thoughtful people and institutions unite to encourage a reduction in the world's population, the quality of our lives will remain threatened by the elimination of our few wild places.

> IRVIN S. NAYLOR York, Pennsylvania

#### The Gift of Gardening

William S. Ellis captured the inner joy that a gardener feels when the first lily sprouts through a pond not long ago covered with ice, or when a prairie sunflower refuses to allow chilly October nights to chase its prolific yellow blooms away. He gave me one of the most valuable gifts any gardener could want; inspiration.

LISA M. STROUD Cary, North Carolina





Your article made me think of my uncle, W. C. Niemeier, a resident of a nursing home. His window-box vegetable garden is loved by residents, staff, and visitors.

> S. Frutchley Gentryville, Indiana

The Buddha taught how truth can be found in the blossoms of a flower or the stirrings of the smallest insect. We are neither nature's master nor servant. Nurturing and cherishing the world so that it nurtures and cherishes us back is the lesson we take from gardening.

Montreal, Quebec

I bow to none in my admiration of gardening as a hobby and therapeutic device. When it comes to food production, however, let us be realistic! Those long aisles of fresh and processed food in our grocery stores are not and never will be filled with the produce of hobby gardens. If those characters who sneer at "dangerous chemicals" and "wasteful irrigation" did not already have full bellies, they would not be able to play around with their mulches and manures and organics. Leave food production to the professionals. That way we will all have enough to eat.

MILTON G. MITCHELL Department of Economics University of Wisconsin, Oshkosh I would point out a German contribution of importance to every American: the kindergarten. It was the idea of German educator Friedrich Fröbel, who wanted every child to get in touch with nature. In his model kindergarten in Bad Blankenburg about 1840, every child had his own little patch. Later Dr. Daniel Schreber in Leipzig developed the idea of setting up family gardens to promote better physical and mental health. Today people in most large German cities have access to quarteracre plots, called Schrebergartens, usually on the outskirts of town.

> J. C. Frölich Hannover, Germany

#### The Great Eclipse

I was impressed by your story in the May issue on the eclipse of July 11, 1991. Six months later it was my privilege to observe another eclipse, which began at sunrise in western Yap. At Falo Island, Chuuk State (Truk), the eclipse was annular about 8:45 a.m., January 5, 1992. Eclipses often occur in pairs about six months apart. Sometimes they barely reach totality; at other times there are varying extents of annularity or totality. Since the July eclipse was near the greatest possible totality length, the eclipse in January was very annular, though still impressive.

> Samuel A. Cox West Chester, Pennsylvania



at nearly 20 miles per hour When a startled employee asks why, Dodge says, "I might as well, because someone else is

going to do it when these curs get on the road."

Dodge's first safety test for tires is rather unscientific. He throws them off the top of a four-story building Chrysler introduces the first enclosed rubber engine mounts. Before that, vibration would shake up even the sturdiest of drivers.



- 1931

Chrysler introduces Floating Power, a refinement of its earlier enclosed rubber engine mount idea. (Incidentally, Floating Power was so popular that it was licensed to other carmahers.) - 1936 -

In a dramatic demonstration of the structural

integrity of the 1936 Dodge, W.E. Blandenhurg strups himself in the car and rolls it down a steep embankment. Incredi-

bly, the car lands right side up. Even more incredibly, Blandenburg gets out, smiles for the cameras, gets back in, and drives away.



1949

1946 ---

Jeep introduces the

first station wagon to

use an all-steel body

Which makes travel-

ing safer

for hids,

Before Splask-Proof ignition was introduced by Chrysler, a little water could stop a 4,000-pound car.

1937

Good news for backseat drivers: Chrysler introduces the first safety padding on the back of front seats

POSSIBLY THE ONLY TIME ANYBODY GOT AHEAD BY PLAYING IT SAFE.

 $\pm 1923$ 

Dodge introduces the first allsteel closed car body in the U.S. (Quite a bit safer than the wood-framed car bodies that preceded (t.)

1424

The first four-wheel hydraulic brakes on a U.S. production car appear on the first Chrysler. Fifteen years later, all U.S. cars have hydraulic brakes.



1934

In an era when all cars carry
their engines well
behind their front
axles, Chrysler's
Airflow is the first
to place a third of
its engine mass
ahead of the
front axle. The result
is better weight distribution, safer handling
and shameless imitation by
other carmakers.

With its all-steel body attached to a steel sheleton, the Airflow further refines the art of frame design. As the first car body to provide a majority of the car's strength, it paves the way for modern unit-body construction. Before Chrysler
devises the Safety Rim wheel, a
blowout would often cause the
tire to separate from the wheel,
forcing the hapless driver to

- 1941-45 --

stop his car on steel rims.

Chrysler spends the war years building tanks and bombers. Vehicles that were decidedly unsafe for the competition. 1949 -

Realizing that the dashboard isn't exactly the best place for exposed metal that won't give in an accident.
Chrysler-creates the first pudded dashboard.

- 1950 -

Chrysler introduces the first four-wheel, self-energizing disc brakes Chrysler designs the first forced air-cooled brakes, because overheated brakes aren't reliable.

1959 -----

The first automatic dimming electronic rear-view mirror reduces headlight glare.

- 1960 -----

Chrysler becomes the first to offer high-beam dimmers that automatically switch headlamps to low beam when an oncoming vehicle is detected.

-1963

The first airfoil wiper arms heep the blades pressed firmly against the windshield at high speeds.

1966 -

Firm in the belief that seat belts can be made even safer, Chrysler offers the first shoulder harness.

Chrysler introduces the first separate, self-contained rear heater-defroster system. (Even when Chrysler engineers are looking backward, they're still looking forward.)

1968

Chrysler creates the first rearwindow washer system. It gives Chrysler owners greater visibility of what's behind them. And it gives Chrysler engineers greater visibility as creators of safe vehicles.



The first quartz-halogen driving light greatly increases nighttime driving safety. Years later, other car companies see the light and introduce their own quartzhalogen lights.

- 1969 ----

- 1971 ----

Why did Chrysler engineer the first automatic tailgate locking system? Because a station wagon full of screaming kids can cause you to lose your mind. And your memory.

-1971 -

Continuing

tion of brake

a 40-year tradi-

refinements, Chrysler intro-

wheel-slip control brake sys-

tem. This technology was the

forerunner of modern ants-

lock healing systems.

of safe car repair is:

Always disconnect

the battery first.

Chrysler makes it

easier than ever for

mechanics with the

first battery quick-

disconnect feature.

1972 -

One of the most-ignored rules

duces the first four-wheel,

Jeep introduces the first U.S. vehicle to offer full-time fourwheel drive. After all, why should improved traction and handling be a part-time affair?

- 1988 ----

Chrysler becomes the first U.S. manufacturer to install a driver's air bag as standard equipment. Other carmakers are forced to play catch-up.

Chrysler convertibles become the first convertibles to offer driver's air bags as standard equipment. A little extra air couldn't hurt, could it? Not content to simply create
the entire minivan category,
Chrysler is the first to offer a
minivan driver's air bag.
(Which proves that, an occasion, reinventing
the wheel isn't
such a bad
idea.)

— 1992 — Chrysler
creates the first
built-in, fold-down
child seat. It heeps children
firmly in their seats, and our

Tough off-road conditions could inadvertently deploy an air bag. Chrysler responds by deploying its engineers. The result? The Jeep Grand Cherokee, which is the only sport-utility vehicle

competition squirming in theirs.

with a driver's air bag ... and it's standard.

<del>- 1993</del> -

Chrysler draws on

79 years of safety innovation to create the first car to combine standard dual air bags and anti-lock brakes with options like traction control and a built-in fold-down child seat.

- 1989 -

Chrysler offers the

first four wheel antilock

urban cowboys, rejoice!

brakes on a four-wheel drive

vehicle: Ranchers, surfers and



At a time when it has become fashionable for car companies to hop on the safety bandwagon, we thought you'd like to know who built the bandwagon. And when it was built. In the car business, you lead, follow or get out of the way. ADVANTAGE: CHRYSLER

So it was, as shown at sunset from a San Diego vantage point in Earth Almanac, also in the May issue.

While viewing a total eclipse in 1970, I discovered what I believe to be the real reason for such expressions as "fantastic" and "awe inspiring." During the last minute or so of light, a very rapid, yet discernible, diminution occurs across the entire sky, as though God was turning a dimmer switch. This never occurs in one's normal existence, even during a severe thunderstorm, and the mind's alarm system apparently senses that something profound is occurring.

David E. Russell.

Jacksonville, Florida

#### Georgia Fights for Nationhood

It is vital to become informed about the independent republics of the former Soviet Union. Most Americans knew far too little about the Soviet Union. They know even less about the Georgians, Kyrgyz, or Moldovans. There is a whole world of new nations we should be talking to. Please continue to publish more of this.

> TIMOTHY HENDEL Miami, Florida

My own experience with the monster Joseph Stalin occurred in Lithuania in 1944, when I was five years old. My parents placed me, my sister, and four brothers in a horse-drawn wagon and fled from the approaching Russian army.

While native Joseph Stalin exhorted his accomplices to "break the wings of . . . Georgia," the Georgian soul was not broken. Perhaps another returned native son, Eduard Shevardnadze, can help the enduring people of this beautiful country again find the humanity he speaks of.

Joseph K. Valaitis Brecksville, Ohio

## DNA Profiling

"The New Science of Identity" was delightful. I have been following DNA fingerprinting since reading *The Blooding* by Joseph Wambaugh. Your article states that offspring inherit roughly half their DNA from their mother and half from their father. This would indicate that half the DNA of each parent is not transmitted, which poses a question. Are we the product genetically of *all* our ancestors, or are we the result of random selection in the pairing of chromosomes?

Those who believe the first hold that we are like a great river with infinite numbers of streams feeding in. The latter premise contends that because of the limited number of chromosomes in the pairing process, some ancestors are going to get "bred out" in subsequent generations. If this is true, then a lot of genealogy is rather empty. You might think you were descended from Charlemagne, but not a trace of his genetic material has survived.

JOHN ELLIS HALE Kentfield, California We inherit a geometrically smaller proportion of DNA from each preceding generation. The more time passes, the more likely random pairing or recombination of chromosomes will alter the genetic balance.

Your story on DNA and the Rydls was wonderful. Real-life stories added humanity to the facts. I'm a close friend of the Rydls' older daughter, Katerina, and remember all they've been through. I last saw Jirka months ago when he took Katerina and me to the mall. He died February 24. Thank you for providing the final chapter in Jirka's life.

Shannon Leonard Eugene, Oregon

The labs mentioned are high caliber, but there are few of them. The geneticist Eric S. Lander was quoted in *Nature* (June 15, 1989); "At present, forensic science is virtually unregulated—with the paradoxical result that clinical laboratories must meet higher standards to be allowed to diagnose strep throat than forensic labs must meet to put a defendant on death row," Although DNA profiling makes it into newspapers regularly, I have seen nothing about regulating it.

SID DAVISSON Fremont, Ohio

The National Research Council has just recommended the establishment of quality assurance and control programs to monitor lab work and ensure that techniques are reliable. It suggests a mandatory accreditation program be initiated under the U.S. Department of Health and Human Services in consultation with the Department of Justice.

There are very significant problems with DNA testing, especially when it is the only evidence, other than circumstantial, and results in a life sentence or the death penalty. In tests ordered by the Orange County coroner's department at three of the leading DNA labs in the U.S., two labs misidentified one out of 50 samples (see Champion, August 1990, a publication of the National Association of Criminal Defense Lawyers).

Our law office recently represented a mother in a paternity case. The purported father had hired a DNA lab, whose report indicated that he was not the father. A second laboratory found that the test was not conclusive. After obtaining a court order to retest, it was determined the gentleman was, in fact, the father. If the mother had not demanded the retest and been able to afford both it and the legal fees, justice would not have been served.

> Thomas J. Althauser Baltimore, Maryland

Letters should be addressed to FORUM, National Geographic Magazine, Box 37448, Washington, D. C. 20013, and should include sender's address and telephone number. Not all letters can be used. Those that are will often be edited and excerpted.

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# Geographica



RHEND RAIL MAGNISH

## Murder, Fire, and Fear in an India Wildlife Haven

In an otherwise grim picture of the status of India's wildlife (National, Geographic, May 1992), one bright spot stood out: Nagarahole National Park, where dedicated warden K. M. Chinnappa barred poachers and provided a haven for wild animals.

That haven is now partly in ruins. In March a planter's son, carrying a shotgun and apparently bent on poaching, was shot to death in the forest. Though park guards carry only buckshot and he was killed by a large slug, nearby residents blamed Chinnappa and his staff.

The following day some 300 men descended on park headquarters, carrying the corpse and demanding, in vain, that Chinnappa be turned over to them. They set buildings ablaze, burned a vehicle belonging to wildlife researcher Ullas Karanth, and attacked several guards. Then they set the forest on fire, igniting a blaze that burned for four days and destroyed 13.5 square miles.

Chinnappa, fearing for the lives of his family, asked for a transfer out of the park. Other park officials abandoned their posts and took refuge in nearby towns. Karanth suspended his research. Baznars soon offered wild animal meat for sale.

"A national treasure has been destroyed," Karanth says. "It's like the Taj Mahal being desecrated."

# Biologist Sees the Future and Calls It Hog Heaven

Learn Clement Markert admits that the Chinese Meishan pig (below) is, well, "arresting looking, like a Shar-Pei dog, only more so." But if Markert's latest experiment succeeds, the Meishan will mother a breed of superpigs.

The Meishan is the world's most fertile pig breed, with litters of 15 to 25 compared with the 8 to 12 produced by U. S. pigs (Geographic, September 1978). What's more, Meishans become sexually mature at three months; it takes U. S. pigs twice as long. But Meishans grow slowly and produce too much fat and not enough pork.

Markert, a North Carolina State

University biologist, plans to breed Meishans with domestic pigs to produce hybrids. But rather than rely on conventional breeding techniques. which could take 25 years and might never succeed, he will manipulate the genes in the fertilized eggs of hybrid females, a method that works with mice. This approach may enable him, in only five years of successive breeding. to produce a porker with the best traits of each: lean, meaty pigs, quick to reach sexual maturity and produce large litters.



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# Geographica

### The Miracle of Birth in Zaire's Mountains

arolyn Field went to Zaire's Kahuzi-Biega National Park to see its gorillas (Geographic, March 1992). But Field, two guides, and six other visitors to the park in the Mitumba Mountains saw more than they could have hoped for: the birth of a gorilla. Field's photographs are among the few ever taken of a lowland gorilla birth in the wild.

Field, an Australian nurse, and her party were on the trail when they encountered a large silverback who made several false charges at them before he entered a clearing. There a female sat next to a tree.

"She was squatting and all of a sudden she bent over, picked up the baby covered with blood, and put it to her breast," Field recalls, "I've seen human mothers deliver babies before; she had the same expression. Next she picked up the umbilical cord, guided the placenta out, and ate the placenta and cord. Then she ate the blood-covered leaves on the ground and took off."

The ecstatic guides, none of whom had seen a gorilla birth before, said the male is known as Mahese, the mother as Pole-pole. The guides named the baby Gabi.

## Police Recover Stolen Herculaneum Artifacts

T talian police have recovered nearly all the 300 jewels, statues, coins, and other artifacts stolen from a storeroom at Herculaneum, the Roman seaside town destroyed by the same eruption of Mount Vesuvius in A.D. 79 that buried the larger city of Pompeii.

In February 1990 armed thieves bound and gagged six unarmed guards and seized the precious objects, which had been uncovered during excavations at Herculaneum. beneath the modern town of Ercolano (Geographic, July 1990). Police found the artifacts last November in a midnight raid at a farmhouse less than ten miles away. There were no arrests.

Although some objects were



damaged, including a small bronze statue of Bacchus (below), they are being restored and soon will be on view in a museum at Herculaneum. says Baldassare Conticello, its archaeological superintendent. He speculates that thieves hoped to sell the items to unscrupulous collectors but were thwarted because all objects had been well documented.



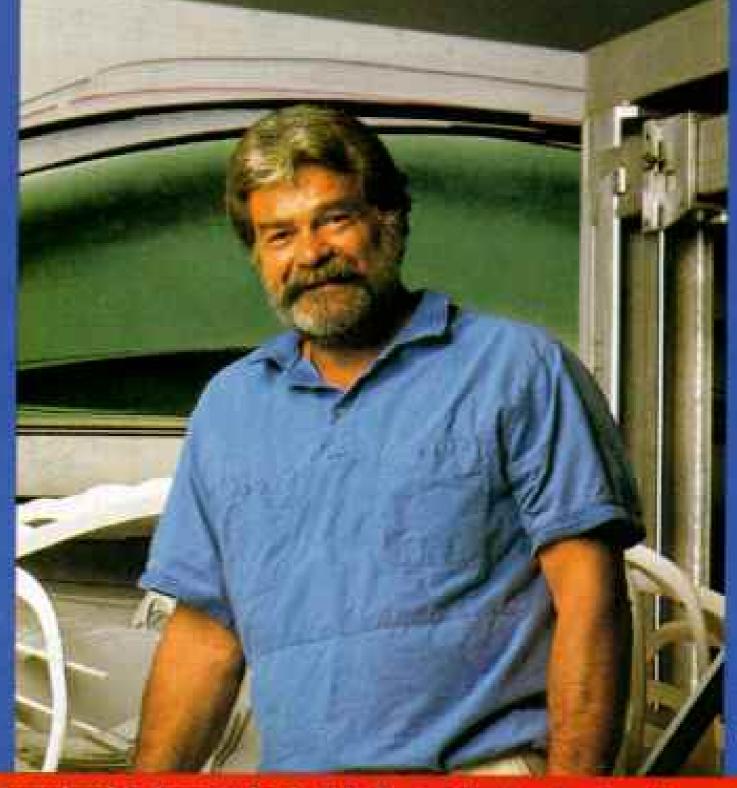
PHETE SHE, CONTRACTO

# Drilling to the Bottom Layer of Ocean Crust

n international team of scientists has drilled almost a mile and a quarter into the ocean crust, the deepest scafloor hole ever drilled. They have reached what appears to be the bottom layer of crust; far beneath it is magma that pours through rifts and creates new seafloor as it cools (Geographic, December 1981).

Using the ship JOIDES Resolution, the Ocean Drilling Program team deepened a hole called 504B that scientists have been coring since 1979. The hole, ten inches in diameter, is 125 miles south of the Costa Rica Rift in the eastern Pacific.

Scientists had predicted that the latest coring would reveal the start of a different layer. They were right, says Henry Dick of Woods Hole Oceanographic Institution, one of the team's co-leaders: Approaching 6,550 feet, rocks were found to have larger crystals and to be denser and less permeable. The team expects to eventually find extinct magma chambers. Rocks at the bottom of the present hole are still cooling: at 350°F, they are "just right to cook the Thanksgiving turkey," he says.



Al Gerstenberger: Ford Designer

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# Geographica



PUBLIC ARCHIVES OF NOVE ECRTIS

## Recalling Black Pioneers Who Sailed to Africa

It was a reverse exodus: In 1792 a flotilla of 15 ships carried 1,196 free blacks from Nova Scotia to Africa, where they helped create a new society in Sierra Leone.

Blacks in New Brunswick and Nova Scotia are marking the bicentennial of that voyage with banquets, a run, and a museum exhibit that includes a copy of the original roster listing the names of household heads who sailed in 1792.

The voyagers had been among 30,000 Loyalists – backers of the British in the American Revolution – who arrived in Nova Scotia from New York in 1783 (Geographic, April 1975). Most of the 4,000 black Loyalists were free; the rest were slaves or indentured servants. But the black Loyalists found it hard to

obtain promised land grants. When the London-based Sierra Leone Company offered to resettle them in its West African colony, \$40 families accepted. The settlers helped found a port city, Freetown (above).

"Our ancestors, relatives of those who sailed, stayed in Canada," says Clifford Skinner, president of the Black Loyalist Association of New Brunswick. "We're celebrating both those who went to Africa and those who stayed."

### Peopling the Americas: a New Site to Debate

he argument over when humans first settled the Americas (Geographic, October 1988) has taken a new turn with a claim that a cave in New Mexico was inhabited 35,000 years ago, much earlier than the accepted

arrival date of 12,000 years ago.

Richard S. MacNeish of the Andover Foundation for Archaeological Research reported early this year that Orogrande Cave holds hearths, butchered bones, stone tools, and even a human palm print, which he dated from 2,000 years ago to as far back as 35,000 years ago. Since then, he says, he has found six more palm and finger prints. Work on the hearths has revealed burned logs surrounded by rocks, indicating human presence, he says.

But some experts remain skeptical. They say the cave's stratigraphic layers may have been mixed up, making MacNeish's finds younger than he thinks. There may be other interpretations of his discoveries, they add. "So far a lot of things are suggestive but none are definitive," says Russell Graham of the Illinois State Museum.

# Ha! Ha! No Joke, It's Simple Geography

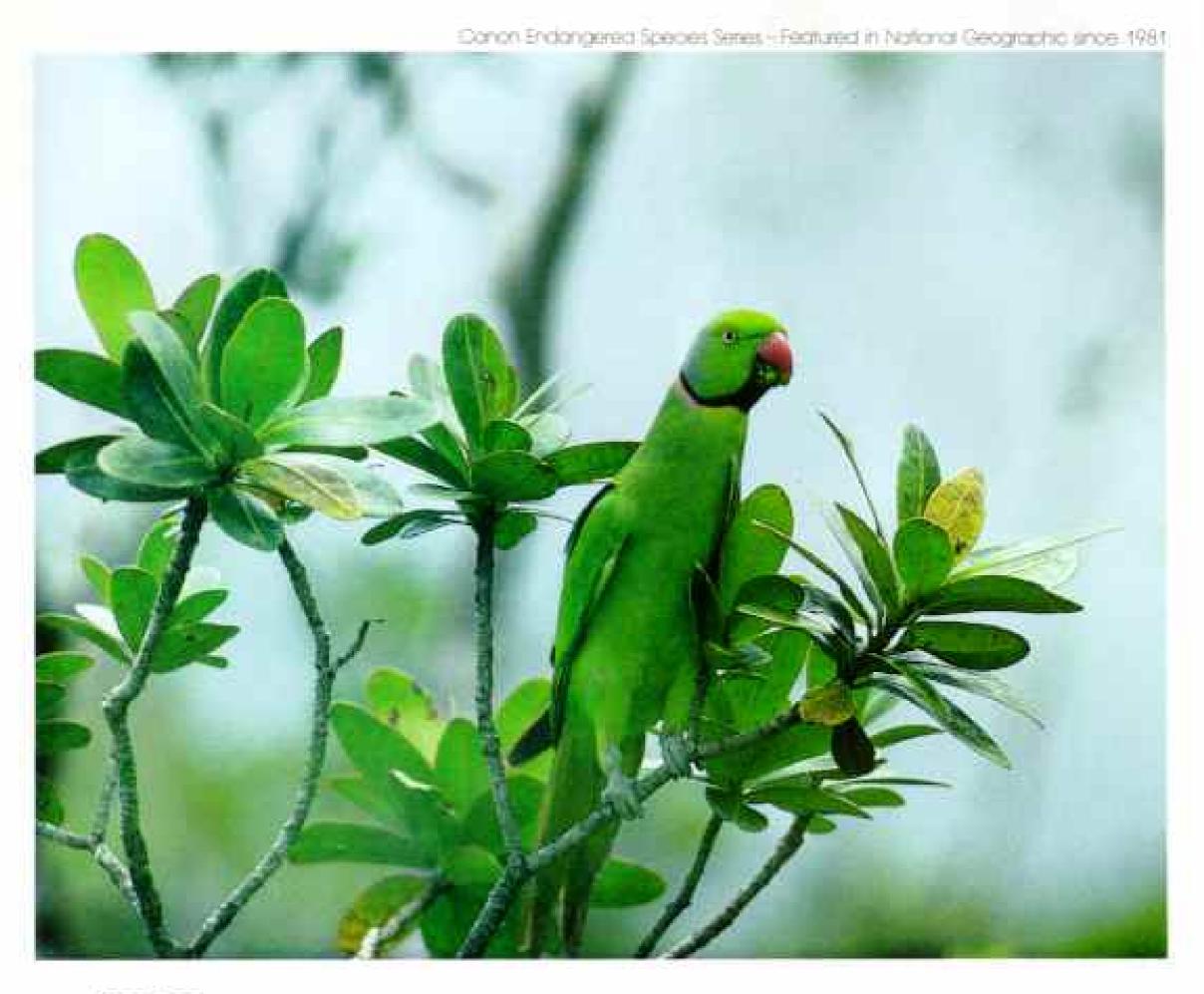
Tho's laughing around Bayou Ha Ha in the state of Louisiana? What's the joke on Haha Rock, an islet in Ontario's Georgian Bay? What's the punch line on Ha Ha Mountain in Newfoundland?

Funny as it sounds, there's nothing to laugh at. All these places derive their names from an old French term for a sunk fence—a ditch and retaining wall designed not to mar the view of the landscape. Over the years, says Alan Rayburn, a Canadian Goographic columnist, "ha-ha" came to mean any unexpected barrier, a dead end. "On large-scale topographic maps where a ha-ha occurs, you can see the barrier that gave the site its name," Rayburn says.

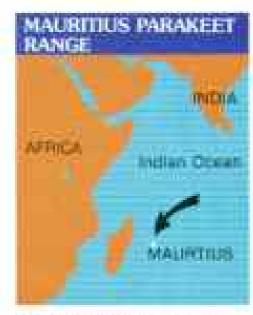
The U.S. Geological Survey's database of placenames lists dozens of hahas. But almost all, like the well-known Minnehaha—laughing water—originate from Native American languages, rather than French. Ha! Ha!

BUCKLED THUMPSON

-BORES WEINTRAUM



### WILDLIFE AS CANON SEES IT



### Mauritius Parakeet

Genus: Pattacula Species: echo Adult size: Length, 37 - 42 cm Adult weight: 200 - 250 g

Habitat: Native forests on the island of Mauritius

Surviving number: Approx. 6 Photographed by Stanley A. Temple The Mauritius parakeet's slide toward extinction began over two centuries ago with the clearing of the island's native forests. Today, the few remaining birds inhabit only a tiny patch of protected forest around the island's Black River Gorges. Much effort has gone into studying and trying to save the parakeet over the last 20 years, but the species is still dangerously close to extinction. To save endangered species, it is essential to protect their habitats and understand

the vital role of each species within the earth's ecosystems. Color images, with their unique ability to reach people, can help promote a greater awareness and understanding of the Mauritius parakeet and our entire wildlife heritage.









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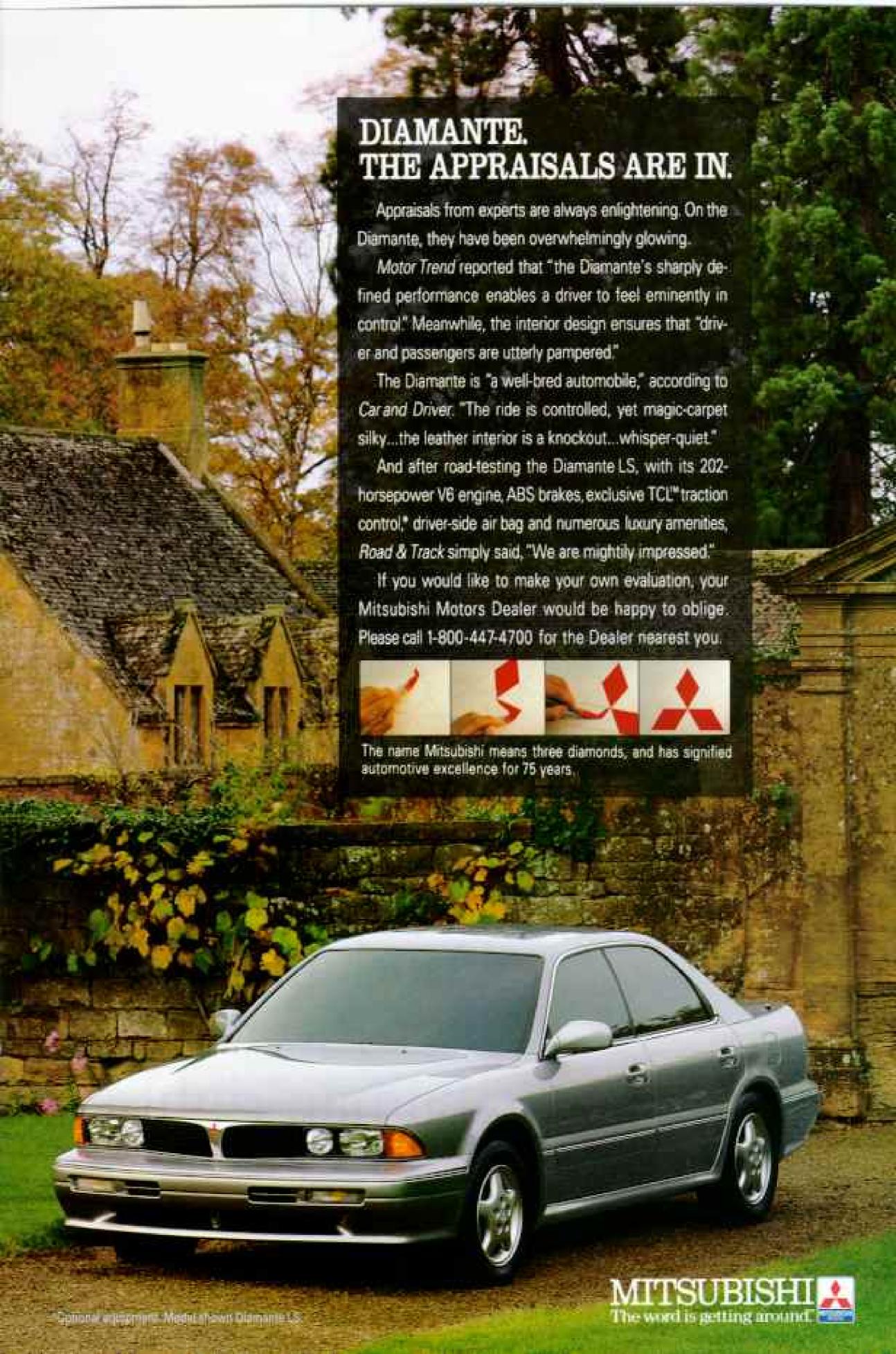
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simply fun to drive.

And the connection is perfectly logical. This is the new Civic EX Sedan from Honda. Most luxury cars stop you with their good looks. That, however, is where we start. Extensive wind tunnel testing drew the shapely lines of the near perfect form. The car is naturally good looking.

You may notice it looks longer. We've increased the wheelbase and length. Which improves the ride and adds room inside.

A close look reveals fewer gaps and tighter seams. The windows fit flusher than ever. Again, to

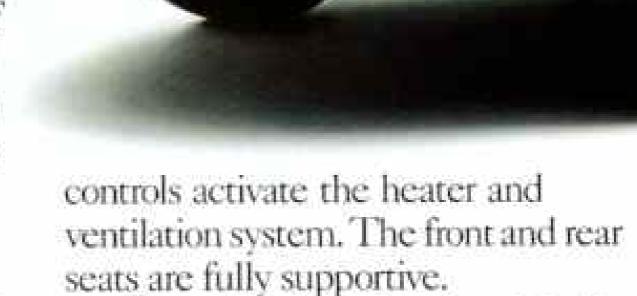
cut aerodynamic drag and noise.

The whole body construction is amazingly strong. Mainly because of Honda computer-aided design and innovative building techniques. You want a body like this to last. So we've upgraded the corrosion safeguards.

The stronger body provides a stiffer, more solid platform for the improved suspension system. Which will provide you with an incredibly smooth ride and superior handling.

While driving, you'll appreciate the large glass area of the windshield and side windows. And you'll also become subtly aware of the many considerations given to you and your passengers in our new design.

The larger instruments are easy on your eyes. And new pushbutton



Everything's plush and posh inside. Rich carpeting adds to your comfort and helps quiet the noise from outside.

## ou can relate to.

into your

grasp. The cruise

control is at your fingertip.

Within the steering wheel an airbag

(complementing the seat belt) waits

diligently to serve. Like in all luxury

cars, gold plated circuits help assure

And speaking of quietness, we replaced all of the mechanical cables with silent electric wires to power the instruments. Even more, we sealed off about everything else we could.

The steering wheel is thick and falls comfortably

anti-lock disc brakes.

Right next to the brake pedal is the accelerator, which assumes a new meaning. An extraordinary engine propels the car like nothing before. The engine knows to breathe more air as it works harder to produce more power. Just like you would.

As you step on the accelerator, the engine computer commands valves

That lets in more air and fuel from the electronic fuel injection system. The

injection system. The final result is more

horsepower when you need it. And more efficiency at slow speeds.

The complete process is called variable valve

timing. You'll like what it does.

This superbly designed engine is matched to a five-speed manual shift with a smooth hydraulic clutch that never needs adjusting. A four-speed automatic transmission is available.

If you are thinking about buying an expensive new luxury car, why?

Another feature that will help you in driving is at your foot, Four-wheel

The new Civic Sedan



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### The Nikon for people who care more about pictures than cameras.



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It's called the Nikon N5005," and

dealers, has book for this symbol. For more about the N5005 and henefits of the exclusive Nikon ManerCont. call 1-500-NIKON-33.

See the N3003 of right above you can see graphic evidence of the many miracles you can perform simply by setting everything on automatic and using the built-in flash. The 28-70mm autofocus zoom Nikkor lens was used for this shot. It's just one of

a wide variety of legendary Nikkor lenses that you can choose from.

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You see, the N5005 allows you to look for pictures instead of looking for the instruction booklet.

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be into it enough to use one.

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### Geoguide

Geoguide is designed to help adult readers of National.
Geographic capture the interest of younger readers through discussion of a feature in the magazine. The questions and activities below are keyed to the article "Dolphins in Crisis," which begins on page 2. Geoguide will be published four times a year.



STEPHEN DAWNING PAINTINGS OF BANKS HAVENING

THIS HECTOR'S DOLPHIN WAS ENTANGLED IN A GOLL NET INTENDED FOR CATCHING FISH OFF THE COAST OF NEW ZEA-LAND, ALONG THE EAST GOAST OF SOUTH AMERICA, THE FRANCISCANA (UPPER LEFT) FALLS VICTIM TO NETS MEANT FOR SHARKS. BECAUSE DOCPHINS BREATHE AIR, THEY DIE WHEN THAPPED UNDERWATER.



DOLPHINS IN CRISIS

FOUR OF THE MOST ENDANGERED DOLPHINS AND PORPOISES

- Dolphins and porpoises inhabit rivers and oceans throughout the world—fresh water and salt, deep water and shallow, cold water and warm. On the map above, locate where four of the most endangered species live. Why might these places be dangerous to dolphins and porpoises?
- Pollution increasingly threatens dolphin and porpoise habitats. What is a habitat? What are their habitats? Does pollution hurt your habitat?
- Dolphins and porpoises often become entangled in nylon nets.
   To sense how it might feel to be

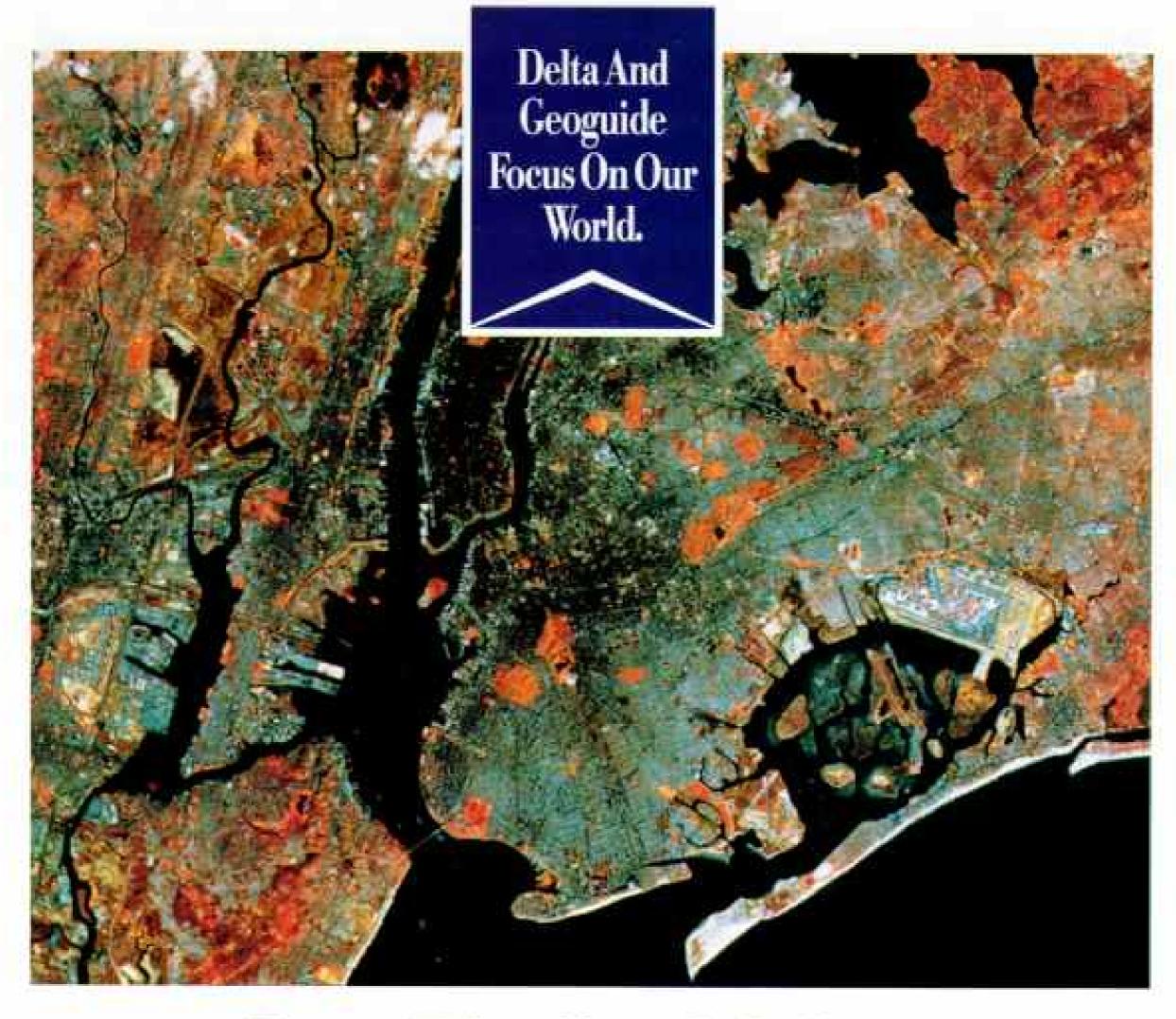
A PROGRAM IN HAWAII ACQUAINTS CHILDREN WITH BOTTLENOSE DOLPHINS. THE MAMMALS' BEST PRO-TECTION MAY BE THROUGH EDUCATING PEOPLE.

- trapped in a net, take a rubber band and stretch it across the back of your hand, looping the ends around your thumb and little finger. Without using your other hand or mouth, try to free yourself from the rubber band.
- In what ways are wild animals important to people? Why is it important to preserve dolphins and porpoises? Are laws alone enough to save them? What might you do to help save these marine mammals?

RAQUITA (PROCOENA EINES)



PLIF HICKLIN, MINDICK PICTORES



### Does This Look Like A Big Apple To You?

From 438 miles up, New York City doesn't look much like its nickname: The Big Apple.

The data for this striking image was transmitted by Landsat 4 in 1982. Sensors on board the satellite register surface radiation and can detect features on the earth as small as a baseball diamond.

The vertical band you see in the image is the Hudson River, dividing New Jersey on the left, and Manhattan and Long Island on the right.

New York is just one of more than 300 cities that make up Delta's world. And yours,

To help young people gain a new perspective on the world, Delta is proud to sponsor National Geographic's Geoguide. We hope it will prove to be a useful educational tool to enrich their knowledge and expand their horizons.



### LeSabre for 1992. Ladies and gentlemen, start your comparisons.

	'92 Buick LeSabre Limited	'92 Toyota Cressida Sedan
Engine	3.8-litre V6	3.0-litre Inline 6
Drivetrain	Front Drive	Rear Drive
Passenger Room	109.2 cu ft	89.0 cu ft
Trunk Room	17.0 cu ft	12.5 cu ft
Anti-Lock Brakes	Standard	Optional
Driver Air Bag	Standard	Not Available
M.S.R.P.*	\$21,100	\$25,558

### All new, all Buick

When you compare the 1992 LeSabre Limited to its import competition, one thing stands out — the value built into this new Buick.

In key areas — from engine capacity to trunk capacity, from passenger room to a driver air bag — Buick LeSabre gives you more. Yet LeSabre asks less of you in return. Thousands of dollars less.

So go ahead and start your comparisons. We're confident you'll end up behind the wheel of a new Buick LeSabre.

For more information on LeSabre quality and value, call 1-800-531-1115, or visit your Buick dealer and take a test drive today.







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### On Television



BALFA BARRERA, ACTIN AMERICAN-STATESMAN

### Wild Animal Pets: Good Intentions, Tragic Results

he newspaper ad said. "Chimp for sale. Perfect pet. Or trade for classic car." Investigators from Primarily Primates, a nonprofit care facility in Texas, found harried owners who had chained their chimp to a bare basement floor. Moved to a sanctuary, Koko did not know his kind and fled from another chimpanzee.

Koko's story is part of "Born Wild," a film that probes the exoticpet trade. Producer Richard M. Lewis took up the topic after reading of a lawsuit brought against the city of Austin by the owner of Josie (above), a pet Bengal tiger. Josie died after her forced removal from

the owner's yard. "The stories of wild animals kept as pets very rarely have happy endings," Lewis says.

Regulations are inadequate in most states. Owners misled by unscrupulous breeders and dealers may care for their pets for a few months, but then be overwhelmed by breakage, odor, and expense. Captive chimps may end up in medical labs. Large cats have been sold for "canned" hunts-shootings in enclosures - or poisoned and skinned for their pelts.

"Humans lose their dream of communing with the wild animals," says Wallace Swett of Primarily Primates, "but the animals lose their lives."

"Born Wild" airs Sept. 20 on EXPLOR-ER, TBS SuperStation, 9 p.m. ET.

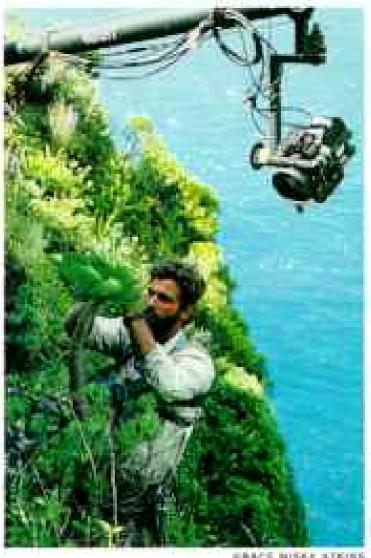
### Paradise Revisited: Video Club Presents "Hawaii"

angling from the tallest sea cliffs in the world, Ken Wood of the National Tropical Botanical Garden delivers pollen to an endangered Brighamia plant, one of numerous species found nowhere else on earth but Hawaii. To help ensure its survival, Wood and a colleague will pollinate many of the 150 or so Brighamia left on these cliffs.

Long before humans brought sugarcane and pineapple, pigs and cattle, and imported "weeds" like blackberry to the islands, air and sea currents carried in plants, birds, and insects. Over millions of years these plants and animals evolved in isolation. Today more than 90 percent of Hawaii's flora and fauna are unique. Yet extinction rates are alarming. At least half of all native bird species have already disappeared.

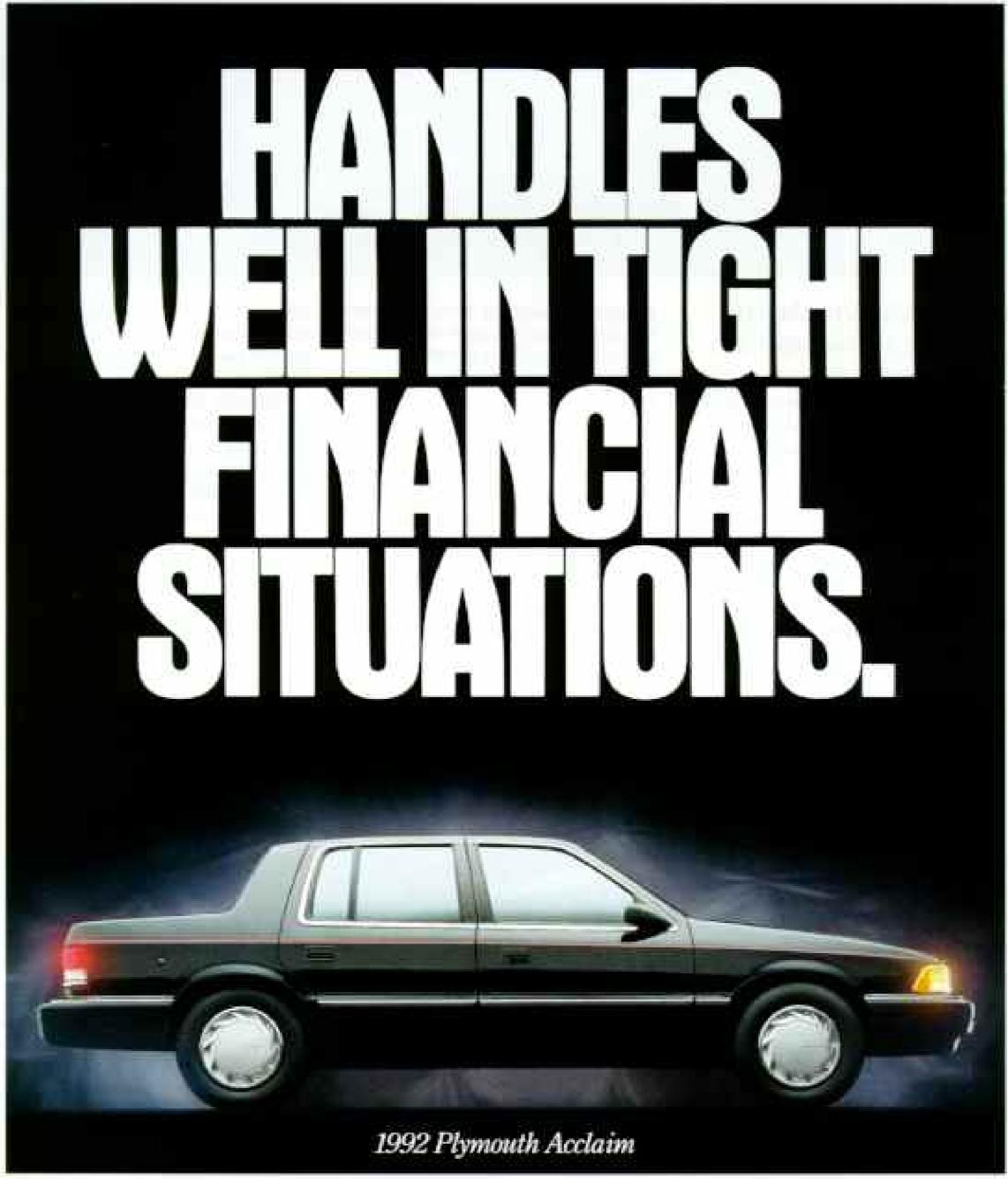
The film "Hawaii: Strangers in Paradise," which inaugurated the 1991-92 season of National Geographic Television Specials, brings home a natural side of Hawaii that tourists rarely see.

"Hawaii"; a fall selection of the National Geographic Video Club; U. S. and Canada only (1-800-343-6610).



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The 1992 Plymouth Acclaim is America's best-equipped six-passenger car for under \$12,700. Equipped with a standard driver's air bag, it costs \$2,900 less than Accord. Yet it has more interior space and rear passenger room. Acclaim also offers greater available power than Accord. Plus our Owner's Choice Protection Plan: a 7 year/70,000 mile powertrain warranty, or a 3 year/36,000 mile bumper to bumper warranty. No other car maker in the world offers you this level of flexibility in choosing warranty protection. Visit your Chrysler-Plymouth dealer today. Or call 1-800-PLYMOUTH for purchasing or Gold Key Plus/leasing information.





THE RESIDENCE TO THE

### **Earth Almanac**



Att and the

### Industry's Wheels Are Turning to Recycle Cars

the assembly line, might be quite taken aback today. Prodded by environmentalists, automakers are coming up with new ways to disassemble cars for recycling at the end of their life span.

Actually the metal in automobiles, about 75 percent of their total weight, has been recycled for decades. Bodyworks are shredded and melted to make new steel, while parts are salvaged. But the remaining 25 percent—plastic, rubber, upholstery, and glass, collectively called "fluff"—piles up in landfills.

Plastic, which makes up about 8 percent of the average car, may

soon rise to 12 percent. Thus automakers worldwide are using fewer types of plastic and are identifying the plastic elements.

In some new
BMW models
(above) plastic
components
(green) can be
readily removed,
sorted, ground
up, and used
again. Other
parts, colored
light blue, such
as trunk linings,

are made of already recycled materials. Dark blue indicates metal components that can be shredded.

A crucial goal: finding markets for the coded plastic parts. "This will complete the recycling loop," says William Steinkuller of the Automotive Dismantlers & Recycling Association.

### Clipping the Wings of the Wild-Bird Trade

Saved from cages—and possibly death—these wild red-lored Amazon parrots from Mexico were confiscated recently by federal agents at a Brownsville, Texas, flea market. The agents arrested the smugglers, who were selling birds, including yellow-headed Amazons,

for as much as \$125 each. Every year more than 100,000 wild birds mostly parrots—are brought illegally across the border into the U.S.

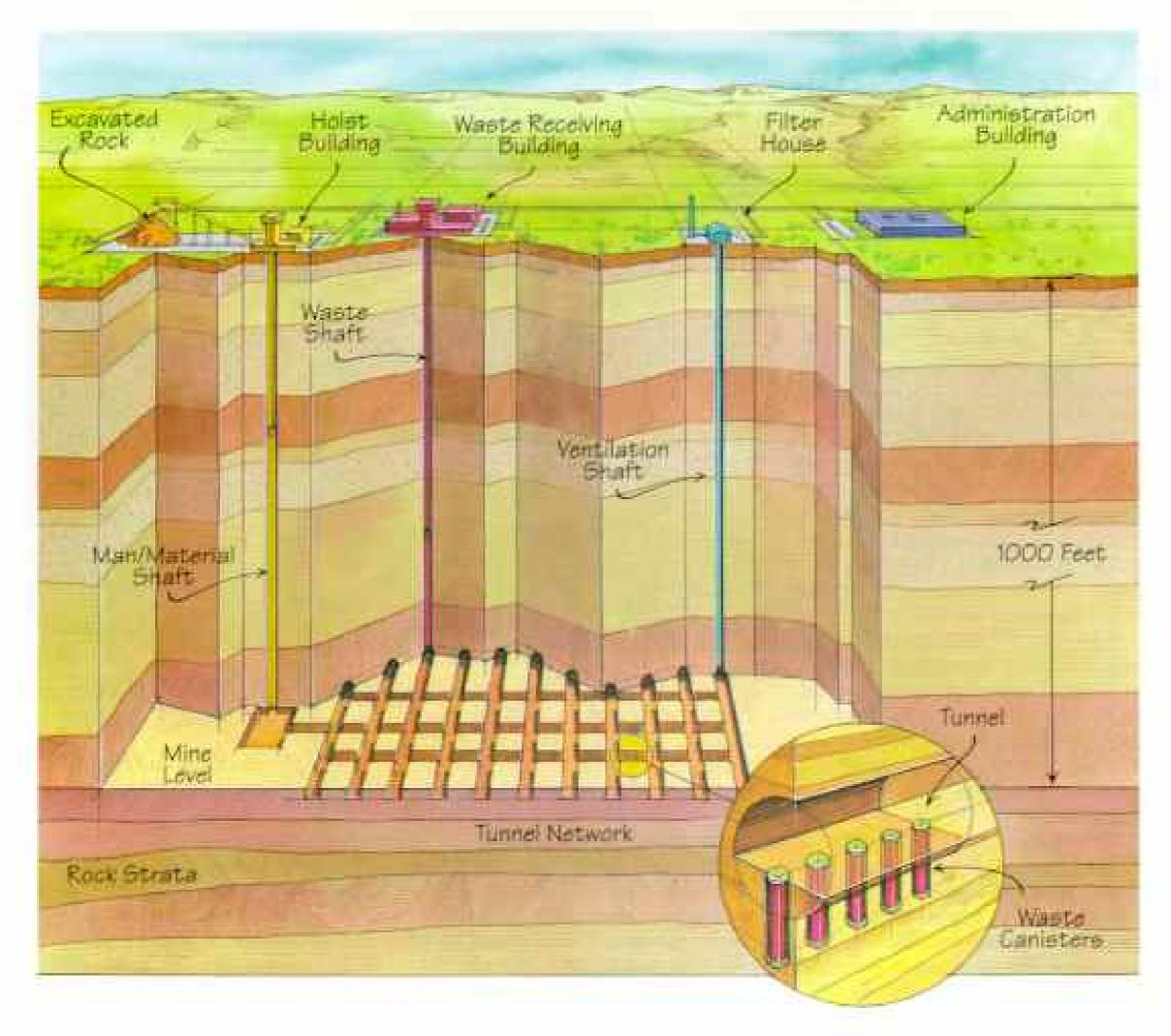
Globally the problem is staggering: Between 5 million and 20 million birds a year are plucked from
their habitat to supply the world pet
trade, draining native populations.
About half a million enter the U. S.
lawfully, but hundreds of thousands
more are imported illegally. At least
half these captives die in transit,
cruelly stuffed into hubcaps, spare
tires, even panty hose.

But efforts to control the trade are gaining. New York and New Jersey have outlawed the sale of imported wild birds, and several bills before Congress would do the same nationally. More pet stores are selling

> captive-bred birds instead of wild ones. And all the major airlines refuse to carry wild-bird cargo, "That's encouraging." says Stuart Strahl, a New York Zoological Society ornithologist who has studied Venezuclan parrots. "We feel that the airlines' action has served as a catalyst for other protection efforts."



CHARLES MERCHAN



## To Most People, It's A Complex Diagram. To Scientists, It's A Clear Summary Of Safe Nuclear Waste Disposal.

More than 30 years of scientific study have confirmed and reconfirmed how to safely, permanently dispose of the used fuel from nuclear electric plants: isolate it geologically.

According to the National Academy of Sciences, 
"There is a strong worldwide consensus that the best, 
safest long-term option for dealing with high-level waste 
is geologic isolation." The used nuclear fuel (in the form 
of ceramic pellets) would be sealed inside layers of steel;

put in carefully engineered structures at least 1,000 feet underground, within dry rock formations that have a long history of geologic stability; and monitored closely.

Also agreeing on the safety and feasibility of this solution are the Environmental Protection Agency and the American Physical Society. For more information on the conclusions of these and other independent authorities, please write to the U.S. Council for Energy Awareness, P.O. Box 66080, Department WA04, Washington, D.C. 20035.

### Earth Almanac

### Manatee Population Still Slashed by Speedboats

ary observers counted 1,856 manatees in Florida waters. Previous yearly totals for these endangered marine mammals were only about 1,200. But Robert Turner, manatee coordinator for the U. S. Fish and Wildlife Service, still worries. "We had perfect weather conditions, and we were simply able to count more manatees than in the past," Turner says. "This does not mean they're increasing. Each year more manatees are killed."

Last year 174 of these roly-poly sea cows were found dead, 53 from watercraft collisions. Ninety percent of all manatees bear scars from boat propellers (above right). Dead females leave helpless offspring, which may explain why 53 dead culves were also found.

In response the Florida Manatee Sanctuary Act has been beefed up. Thirteen counties must develop speed zones for key waterways and follow strict plans for marinas. New state and federal manatee sanctuaries are being created. And many Florida drivers are buying special license plates depicting manatees to help pay for protection programs.



MERCH IS TUTTLE, BAT COMBERVATION INTERNATIONAL

### The Bat Has Friends: A Decade of Conservation

Ambassadors for misunderstood mammals, Merlin Tuttle and Zuri, a straw-colored flying fox from Kenya, have done much to change people's beliefs about bats. This year Bat Conservation



ROBERT RETTREE

International (BCI), founded by Tuttle, celebrates its tenth anniversary. For most of those years Zuri has starred in Tuttle's countless lectures and TV appearances, demonstrating that bats are not evil creatures but beneficial.

"Attitudes have changed dramatically in ten years," Tuttle says. "It used to be common for magazines and newspapers to run stories about bats with such titles as, 'Family Terrorized by Hundreds of Shrieking Bats,' There was even an article in Austin, Texas, our headquarters, titled, 'Bat colonies sink teeth into

city." Today headlines such as those are rare.

With more than 13,000 members in 55 countries. BCI (Box 162603, Austin, Texas 78716) has educated millions, including cave explorers and bat-cave owners, and has fostered legislation to protect bats. It has helped create national and international bat sanctuaries. One of them, Bracken Cave near San Antonio, is home to 20 million Mexican free-tailed bats, the world's larg-

est known but colony.

Tuttle has written three articles for NATIONAL GEOGRAPHIC, and BCI recently presented its Distinguished Achievement Award to the Society both for its success in reversing old stereotypes about bats and for supporting bat projects through research grants.

### What's Killing Off the Allegheny Wood Rat?

whiskers a-twitch, the Allegheny wood rat has a nose for trouble. These squirrelsize rodents range from Indiana to Tennessee to the eastern seaboard. Mysteriously, they have vanished in New York and now are fading fast in New Jersey and Pennsylvania.

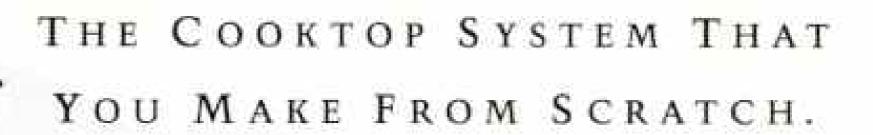
To find out why, biologists fitted 29 wood rats from West Virginia with transmitters and freed them in the mountains of New York a year ago. Three died from a raccoon



OHR R. WACGERSON

roundworm. Dedicated pack rats, wood rats often plunder campsites and cache gloves, socks, and plastic bags. "We found that they also collect raccoon feces in their mouths, so possibly they ingest the parasites," says New York State biologist Laura Sommers.

-JOHN L. ELIOT



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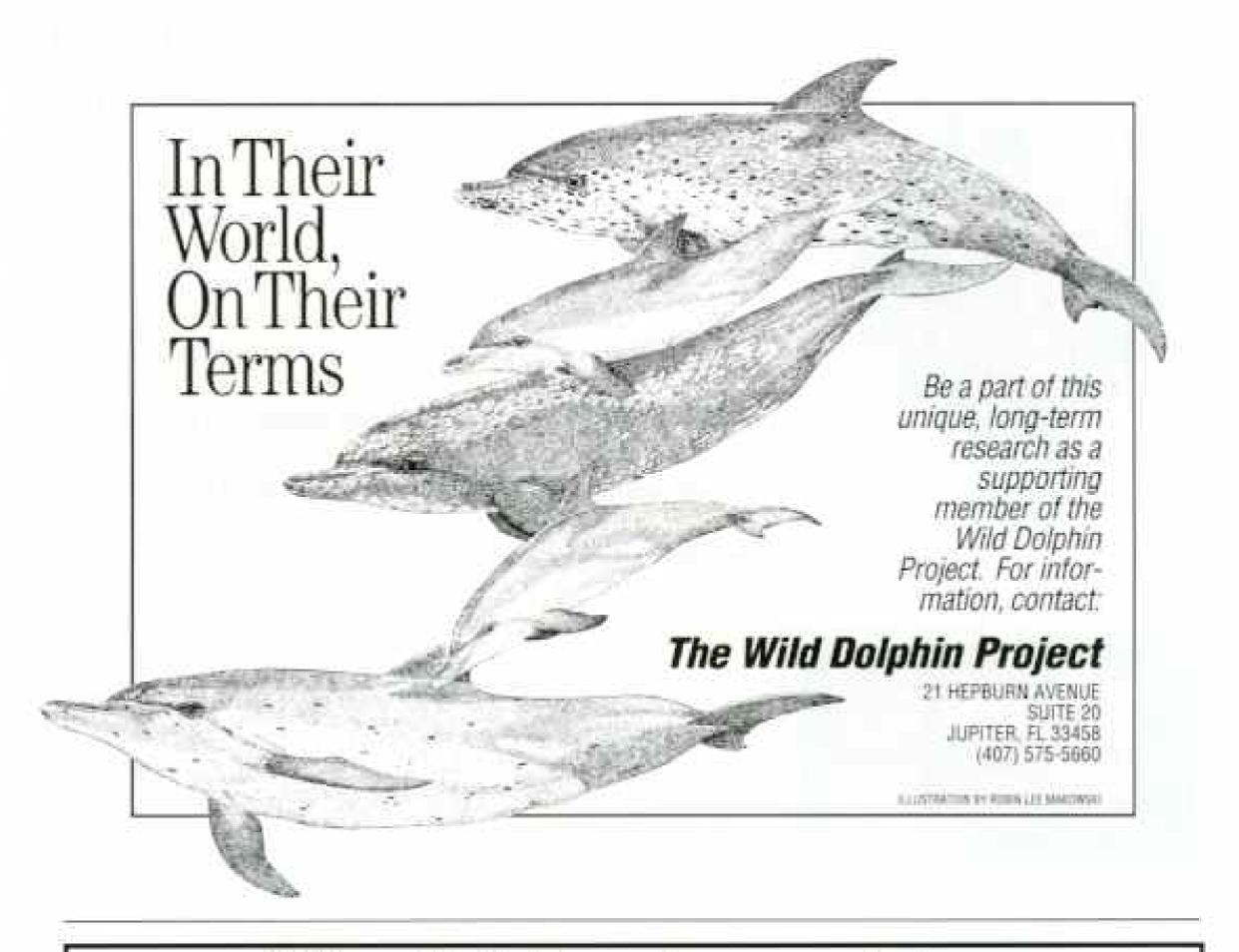
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Stomphongs in thought to be an automomical calendar tracking solar and limar cycles. Constructed between \$100 and \$500 B.C., it may have been designed for practical purposes: for example, to determine planeting time.

### To The Ancients, Being Able To Anticipate Change Was Of Central Importance. We Couldn't Agree More.

The only thing certain about life is that it will change. Yet many insurance companies seem to ignore this fact.

Mutual of Omaha, however, has a history of concern for our changing world. We recognize that change is the constant. And although changes may seem erratic, by looking at how changes occur over time, a pattern emerges.

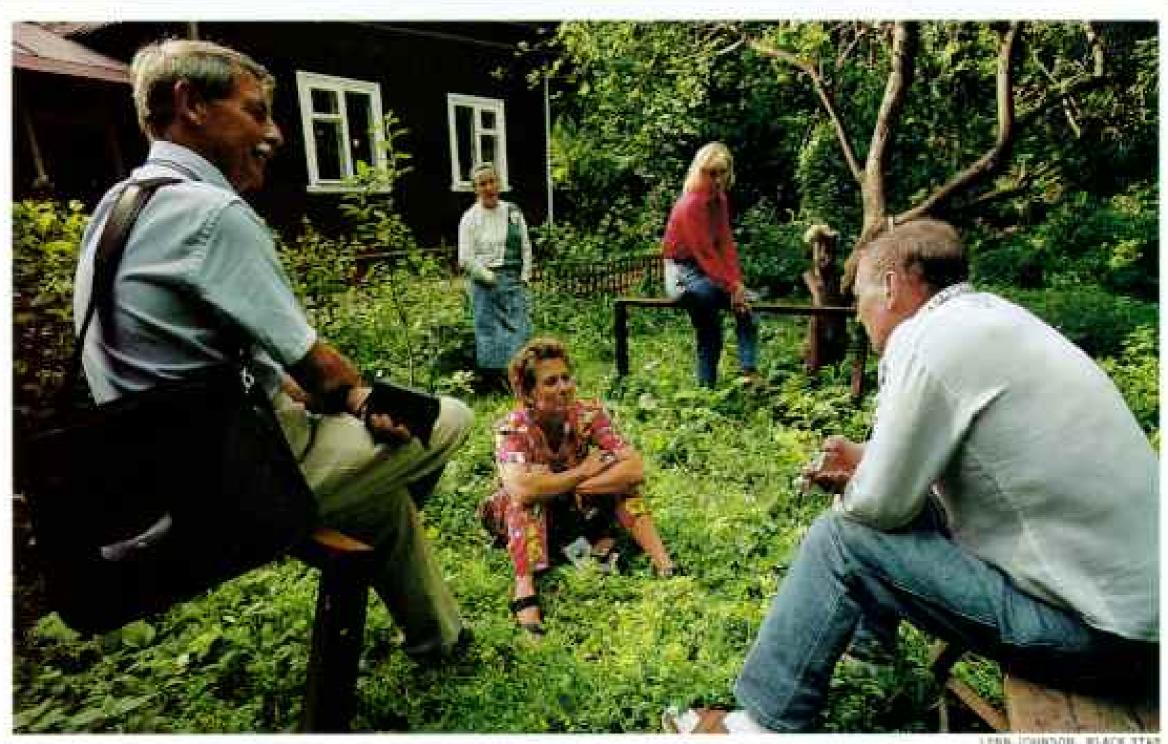
This is why Mutual of Omaha takes a different approach to insurance. We offer protection that is individually tailored to evolve and change as your needs do. It anticipates change. Yet prepares for the unexpected.

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Protecting You In Ways No One Ever Thought Of Before."

### On Assignment



oetry is life's blood to the Russian people," says Assistant Editor MIKE EDWARDS (above, at left). "Out of the blue, they quote their own poems or, in a pinch, Pushkin's." His observation comes after a dozen visits to the former Soviet Union during his 20 years on the staff. Recently he met with Pushkin disciple Yevgeny Yevtushenko at his dacha near Moscow. Edwards was joined by Illustrations Editor Susan Welchman, center, and driver Valentina Galanina and interpreter Ludmila Mekertycheva.

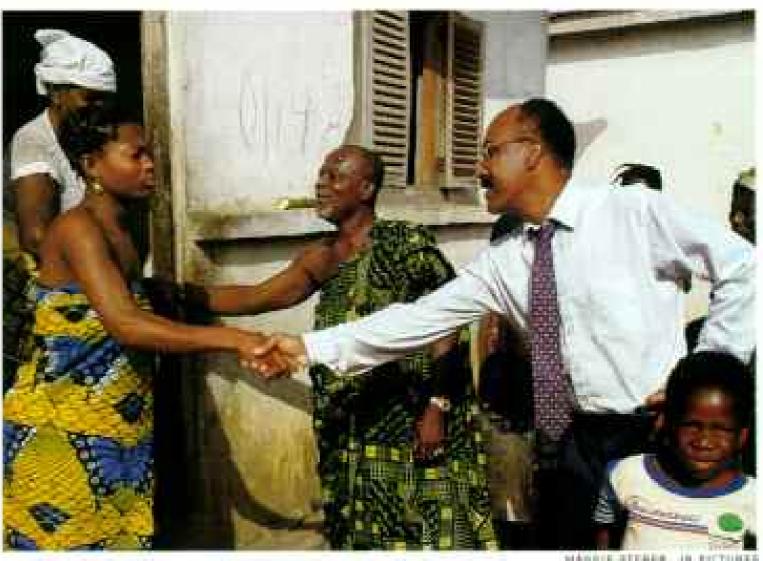
With an eye toward future articles, Edwards studied at Harvard's Russian Research Center last year.

Touring African slave ports was an emotional experience for historian COLIN PALMER (right): "I realized I could be meeting distant relatives but would never know it."

Formality prevailed when Fedu Abado, center, introduced Palmer to townspeople of Komenda, Ghana, and later when he translated for

a chief in Elmina. "I must have made a good impression," says Palmer. "Suddenly Chief Condua began to speak to me in English-he has a degree from a British university. We talked about Marcus Garvey and Jamaica, where I was born."

Currently a visiting scholar at Stanford's Humanities Center, Palmer has just completed Passageways: A History of Black America (Harcourt Brace Jovanovich, 1993).



MAGGIE STEBER, JB PICTURE



Mother asked why I charged Jack's ticket to my credit card. And I told her it's a Private Issue. She said, "I understand completely, but don't tell your father."



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