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Animals AT Play

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COVER: Enchanted by its frozen toy, a young Japanese macaque carries around a snowball it has made—a delightful example of animals' capacity for play. Photograph by Mitsuaki Iwago.

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Animals AT Play

BY STUART L. BROWN

KONRAD WOTHE

It looks like a fight as a pair of two-year-old lions from the same pride in Kenya confront each other (right). But although they seem to snarl, their teeth are not exposed, and their body language is more balletic than aggressive. They are merely playing at fighting. In Sumatra an orangutan hanging upside down to take a drink decides that the river is entirely too much fun just for drinking.

Adults and young, alone and together, mammals and many birds play—but why? Do they gain anything from these exuberant displays, or do they do it just because it feels good?

JONATHAN SCOTT, PLANET EARTH PICTURES

THE END SEEMED VERY NEAR for Hudson, a Canadian Eskimo dog tethered near the shore of Hudson Bay east of Churchill, Manitoba. A thousand-pound polar bear was lumbering toward the dog and about 40 others, the prized possessions of Brian Ladoon, a hunter and trapper. It was mid-November 1992; ice had not yet formed on the bay, and the open water prevented bears from hunting their favorite prey, seals. So this bear had been virtually fasting for four months. Surely a dog was destined to become a meal.

The bear closed in. Did Hudson howl in terror and try to flee? On the contrary. He wagged his tail, grinned, and actually bowed to the bear, as if in invitation. The bear responded with enthusiastic body language and nonaggressive facial signals. These two normally antagonistic species were speaking the same language: "Let's play!"

The romp was on. For several minutes dog and bear wrestled and cavorted. Once the bear completely wrapped himself around the dog like a friendly white cloud (top). Bear and dog then embraced, as if in sheer abandon (bottom). Overheated by his smaller playmate's shenanigans, the bear lay down and called for a time-out (far left).

ALL BY NORBERT ROSING

Every evening for more than a week the bear returned to play with one of the dogs. Finally the ice formed, and he set off for his winter habitat.

This behavior has been witnessed repeatedly in Churchill but has not been reported elsewhere in the Arctic. Throughout the region, polar bears occasionally kill and eat sled dogs. Why should the Churchill bears behave so differently? Although he has not seen the phenomenon, biologist Ian Stirling of the Canadian Wildlife Service says that the fall fasting of these Hudson Bay bears slows their metabolism so much that "they can almost be hibernating on their feet." Perhaps that saved the dog's life. But why would the bear play rather than attack? This is an open question, and it fascinates me.

For years I have been intrigued by play behavior, especially how it has evolved over eons among mammals and birds. New and exciting studies of the brain, evolution, and ethology, or animal behavior, suggest that play may be as important to life—for us and for other animals—as sleeping and dreaming. Play is key to an individual's development and to its social relationships and status. Playful individuals often become adept at hunting and at winning mates. Among mammals and birds, abundant play and complex play are associated with more developed brains.

An ostrich feather tickles the fancy of silver-backed jackal pups on the Serengeti. Adults sometimes play catch with grass rats they have killed before eating them. These jackals usually mate for life. The females have as many as six pups per litter, and some first-year offspring remain with their parents to help raise a subsequent litter. In these close-knit families, play is important to socialize the pups and especially to teach them reciprocal bonding—the give-and-take that some maladjusted humans never learn as children.

But defining play is fraught with controversy. "No behavioral concept has proved more ill-defined, elusive, controversial, and even unfashionable," renowned naturalist Edward O. Wilson has written. After spending long hours observing animals, eventually I came to my own conclusions. I think of play as spontaneous behavior that has no clear-cut goal and does not conform to a stereotypical pattern. To me the purpose of play is simply play itself; it appears to be pleasurable.

Play also has benefits. It clearly aids in the healthy development of young animals, both physically and mentally, and is probably a boon to animals that continue to play into adulthood. Conversely, if young are prevented from playing or maltreated so that their play is abnormal, their development may also be abnormal.

This dark side of play—the implications of its absence—is what sparked my interest in the subject in humans. As a psychiatrist I have long studied the development of abused children who became violent adults. My first case was explosive.

STUART L. BROWN, a physician turned television producer, resides in Telluride, Colorado, where he continues his study of play behavior. He is on the board of the Jane Goodall Institute.

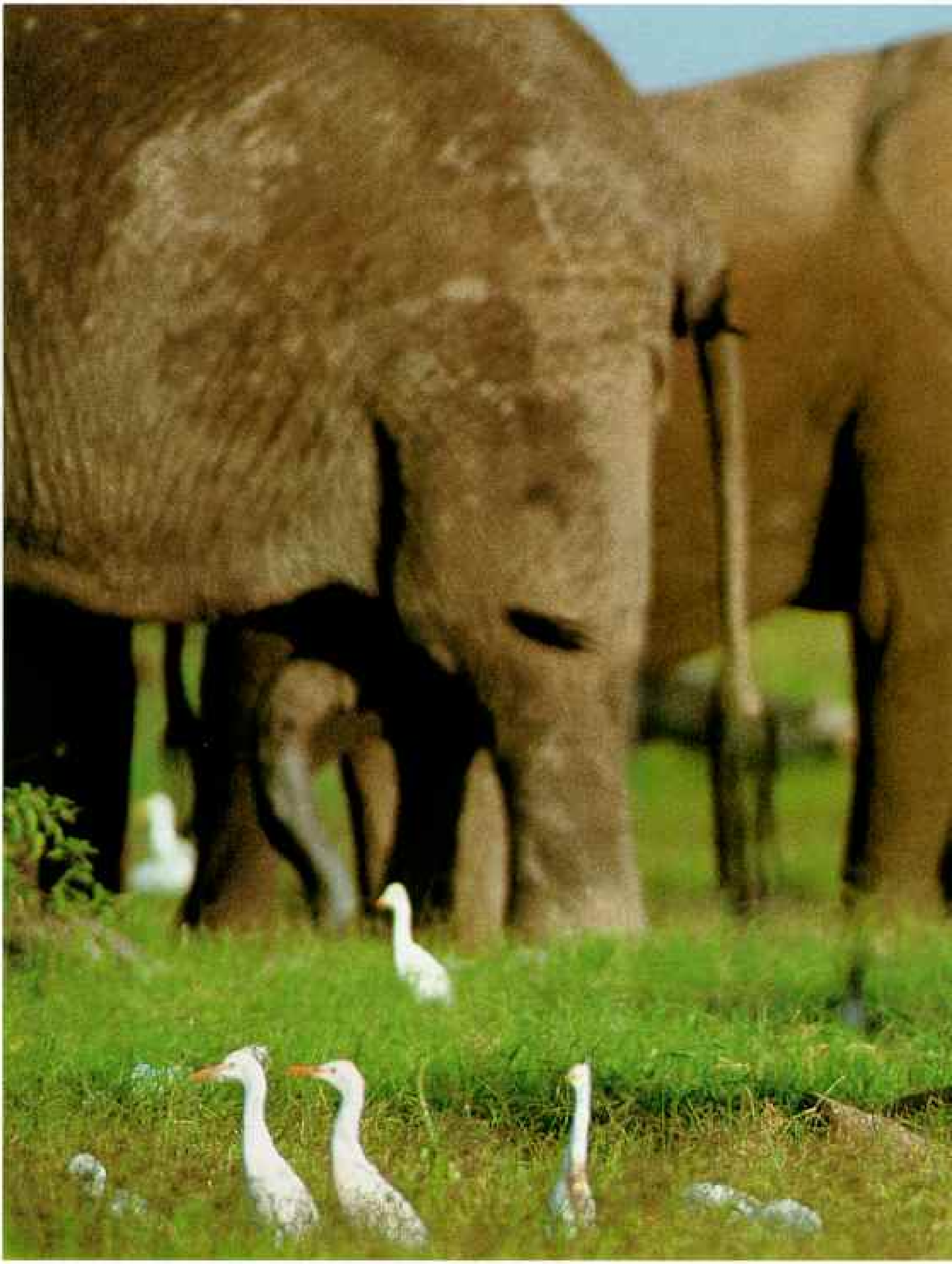
On August 1, 1966, I was at the Department of Psychiatry at Baylor College of Medicine in Houston, Texas, where I was on the faculty. At about noon I was hunched over a radio, listening to a fusillade of gunshots broadcast live from the University of Texas in Austin. A 25-year-old student named Charles Joseph Whitman had hauled an arsenal of firearms to the top of the

PATRICIA G. MOEHLMAN

university's 27-story tower. He began firing at anything that moved on the campus below. By the time a policeman and a volunteer stormed the tower and fatally shot Whitman, 13 people were dead and 31 wounded.

Governor John Connally ordered a full investigation. What had made Charles Whitman tick? I was charged with part of the behavioral study, and my team began interviewing everyone who had known him. Beneath Charlie's Mr. Clean image—he had been a Marine, an Eagle Scout, an altar boy—we found a history of violence and brutality, with Charlie and his mother often abused by his father.

But another, more subtle revelation emerged from our interviews—the absence of a normal play pattern. Charlie's teachers recalled a frightened little kid who never played spontaneously, who often slumped against a wall in the schoolyard while the



- Tons of fun in the making, two elephant calves in Kenya's Amboseli National Park grapple playfully amid the safety of a family group. Calves make mock charges, push one another, roll, gambol, and use their trunks to wrestle. They also play more elaborate games. In Ngorongoro Crater the author watched a six-month-old male repeatedly hide in high grass, then ambush buffalo calves as they

MARTYN COLBECK, OXFORD SCIENTIFIC FILMS

walked by in the open. The elephant seemed to enjoy this hugely; the buffalo weren't so sure.

Adolescents and adults also play. Elephants seem to realize that winning or losing doesn't count—the play's the thing. When animals of unequal size spar in play, the larger one often kneels to adjust its height to the smaller one.

others had fun. Outside school, Charlie's father controlled him so completely that the boy had virtually no time to play, even by himself.

After the investigation I began thinking more and more about Charlie's lack of play. The next year I helped conduct a study of 26 convicted murderers in Texas. The profiles of 90 percent of

GERTRUD AND HELMUT DENZAU

these young men showed either the absence of play as children or abnormal play like bullying, sadism, extreme teasing, or cruelty to animals. Another examination, of 25 drivers who had either killed someone else or died in a crash—most were driving drunk—found that 75 percent of them had had play abnormalities.

I wasn't thinking that problems with play are the cause of criminal or antisocial behavior. But the fact that it turned up so often in such individuals began to haunt me. It made me realize what a powerful, positive force play is. Play is an important part of a healthy, happy childhood, and playful adults are often highly creative, even brilliant individuals.

I began to wonder if this phenomenon is limited to our own species. What about animals? Is play also important to their makeup? During my homicide study I contacted Jane Goodall and asked her about the importance of play for the chimps she has

studied since 1960 in Tanzania's Gombe National Park. She replied that chimps are among the champions of play among nonhuman primates and that the capacity for play in youngsters seems inexhaustible. But she also hinted at the dark side of play, citing one youngster named Gilka. Having fewer and fewer opportunities to play—her mother, Olly, was timid and began to avoid other families—the once gay and lively Gilka became increasingly lethargic. Goodall added that when the frequency of chimps' play decreases, during weaning for example, it is a sure sign of depression. Orphaned infants may stop playing altogether.

The positive aspects of play were impressed upon me by Bob Fagen, an expert on animal play and on brown bears. I spent a week with Bob and his wife, Johanna, watching bears at their study site, Pack Creek on Alaska's Admiralty Island. Partly supported by a National Geographic Society grant, they have worked there for ten years, compiling the longest and most intricate study of animal play in the wild.

Bob describes three general play patterns. The most common form, play-fighting and chasing, involves pursuing, wrestling, and hitting with no threat involved—we've all seen our puppies and kittens do this. Another type consists of kicking, leaping, and twisting in midair, as lambs and foals do apparently when feeling exuberant. The third kind is object play—playing with rocks or sticks or even toying with another animal.

As we watched two juvenile bears tussle in a wrestling match, Bob described how play benefits growing animals. It helps them master their bodies as they learn how to coordinate their movements. Play also helps animals discover how their world feels (mud is squishy, rock may be crumbly) and how it can change (a gravel bar may build up in a stream after several years). Perhaps most important, it promotes flexible behavior, making the player a jack-of-all-trades—resourceful and able to deal with the unexpected.

"I believe that play also teaches young animals to make sound judgments," Bob says. "Play-fighting, for instance, may let a bear learn when it can trust another bear and, if things get too violent, when it needs to defend itself. Play is a rehearsal for the challenges and ambiguities of life."

The following photographs celebrate animals at play, many of them in rare form.

National Geographic EXPLORER will air "Play: The Nature of the Game" on January 8 at 9 p.m. ET on TBS Superstation.

Rearing up on a rock ledge in Israel's Negev desert, a young male ibex invites two companions to play. Stimulated by his display, the pair began a game with each other, thumping their bodies together and knocking horns. These ibex play-fight as if in preparation for later combat, when they will compare their strength and establish their social status. Ibex, mountain sheep and goats, chamois, and their relatives all exhibit antic play, living up to the name of their subfamily, Caprinae, from "caper."

Less complex play

SOLITARY PLAY
Many mammals and birds play when alone. Solitary games include spontaneously leaping and twisting the body—like this young bighorn sheep—as well as boisterous kicking.

PLAY-FIGHTING
This social behavior involves facial signals and body postures saying, "No harm will come." An animal may play carefully with a weaker opponent to prolong the fun.

OBJECT PLAY
Sticks or rocks often become toys for mammals and birds like keas, New Zealand parrots. Keas toss rocks in the air and sometimes drop them on roofs—a wake-up call to the humans inside.

SOCIAL PLAY WITH OBJECTS AND LANDSCAPE
One young wolf uses a stick to entice another into a play chase. Repeated over the same ground, play teaches animals texture—how their habitat feels.

COMPLEX SOCIAL PLAY
Tickling games with its mother help a young chimpanzee develop intricate and creative play behavior. Chimps chase, wrestle, pirouette, turn somersaults, play tug-of-war, and make toys of objects.

More complex play

The Rewards of Play

More intricate and complex in some species than in others, play behavior imparts important benefits. Animals that play gain physical strength, endurance, and skills used in hunting and fighting. They can learn flexibility, inventiveness, and versatility—traits that help them survive and succeed later in life. Play also promotes social bonds. It may regulate development—for example, active and prolonged play may hasten weaning in kittens. From lessons learned in play-fighting, a young animal may also enhance its reproductive chances by gaining social status.

FACIAL SIGNALS
Different species convey emotions with relatively similar expressions. For both the mountain gorilla and the red fox (above), relaxed, open-mouthed grins invite play. Wide-open mouths with rigid muscles show fear. Exposed teeth can signal anger.

ILLUSTRATION BY BOB ZIERING

CRAIG R. SHOLLEY

◆ Nip and tuck, juvenile gray wolves play a furious game of chase around a Minnesota lake. When wolves play, their ears are usually upright. The flattened ears of these two brothers suggest aggression, but photographer Jim Brandenburg, who has observed wolves for more than 25 years, says, "Sometimes fights can develop, but this time they just played tag for nearly two hours." Such tireless play helps build the stamina wolves need for long chases to bring down moose and other prey.

Among adult Grevy's zebras in Kenya (right), a playful bite now may soon signal competition when these stallions vie for dominance. In Rwanda a form of primate laughter called chuckling (above) animates a young mountain gorilla named N'Gee—short for National Geographic—by the late Dian Fossey. He's playing with his mother, Papoose. Adult gorillas play not only with their offspring but also playmates of all ages.

R. AMMANN (BELOW); JIM BRANDENBURG, MINDEN PICTURES

MITSUAKI IWAGO

- Like every human child from Duluth to Murmansk, a young Japanese macaque has learned what to do when snow falls. Here in Joshinetsu Plateau National Park near Nagano, juvenile macaques often make snowballs and carry them around as play objects. While adults don't make snowballs, they are not above playing with those made by the young, says photographer Mitsuaki Iwago. He also saw two young macaques rolling a snowball together, and another young one standing on top of its creation. But, in answer to a universal question, no one has ever reported seeing a macaque throw a snowball.

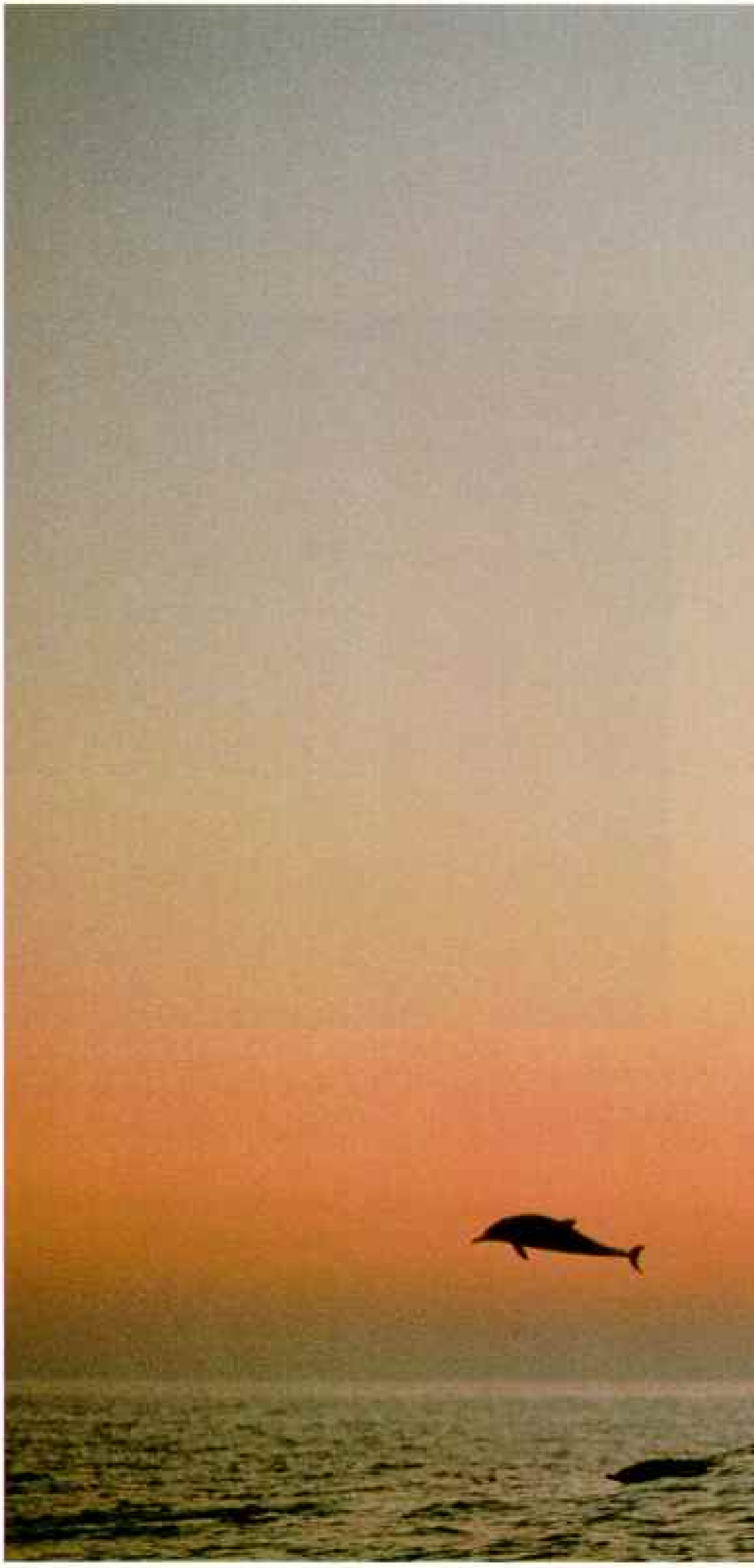
KONRAD WOTHE (LEFT); FRITZ PÖLKING

- Romping with mom reinforces bonding and a sense of security. Hoping to start a tussle, a three-month-old leopard cub swats its mother in Kenya's Masai Mara National Reserve. Wild or domestic, all cats toy with other cats of all ages, as well as with prey both dead and alive, inanimate objects, and virtually anything they can get their paws on.

  Hanging upside down from a branch, a young ring-tailed lemur plays with its mother in Madagascar. At play these extremely sociable primates hang from trees, kick or grab one another, and stage pileups on the ground. Their troops include dominant females with a retinue of males and offspring.

◆ Play for the sake of play: Among the most vivacious of animals, a dolphin leaps near the bow wave of a freighter in the Pacific. Known for their antics in captivity, dolphins in the wild sometimes seek out human companions, such as surfers and scuba divers, to play with.

Dolphins' superb swimming and navigational skills almost always prevent them from colliding with ships they surf with. But in other species play can be costly. Falls or falling rocks can injure or kill intrepid climbers like ibex. Play can expose the young to predators—yellow baboons, for example, attack juvenile vervet monkeys playing too far from adult supervision. Or, as a merely irritating price of play, uproarious offspring may scare off prey that adults have been patiently stalking.



BOB TALBOT

BOTH BY A. T. HOFFETT

STURE TRANÉVING

◆ Leaping in unison, Eurasian cranes in Sweden perform a maneuver usually seen in a courtship dance. But young cranes like these leap as a form of play. Other feathered gamesters include gulls, terns, frigatebirds, birds of prey, and parrots. Young New Zealand keas dive-bomb one another both in flight and off branches and even play tug-of-war and keep-away.

Bathing in snow on a Welsh hillside, a raven (left) rolled onto its back and slid downhill for about ten feet. Then it stood up, walked back to its starting point, and repeated the trick several times. Its mate later joined in. Ravens also play during flight. In Alaska during a storm that sent the wind screaming up the sheer face of a tall cliff, two ravens were observed repeatedly and deliberately flying into the updraft and getting blasted end over end.

...BOTH BY RICK MCINTYRE

◆ If there were animal Olympics, this juvenile grizzly bear would go for the gold. On a schussable snowbank in Alaska's Denali National Park, he slid to the bottom, ending with this four-point landing.

A Denali female and her cub each exhibit the classic play face—mouths open, few teeth displayed. "Play is important throughout animals' lives. And it begins with this kind of relationship," says Bob Fagen, who has studied bears in Alaska for a decade and has observed them tossing around salmon, sticks, and logs. They also play a game with ravens. "A raven will hop up to a sitting bear, which chases it. The raven flies away, circles back, and lands near the bear. Again the bear chases, the raven flies, and on it goes."

- Why do animals sometimes seem to toy with their prey? In Masai Mara a female cheetah chased and captured a young impala but did not immediately kill it. After watching the attack, the cheetah's six-month-old cubs began repeatedly circling the impala, darting at it, and knocking it down. Was this play? Or were the four cubs simply too young to suffocate the impala with a neck bite—

FRITZ PÖLKING

the cheetah's standard method of killing—as their mother finally did after two hours?

"This is a very difficult issue—we don't know why they do this," says zoologist Tim Caro of the University of California at Davis. "I think the cubs are deadly serious. And it's clear that their mother has provided them with a hunting opportunity."

◆ The habitual character of every creature to leap, recognized by Plato in the fourth century B.C., animates a high-spirited young mountain goat in Montana's Glacier National Park. Such jumps, with twists like this one and many other variations, are the most common and widespread acts of play. Wild goats, antelope, and horses make spectacular leaps, as do dolphins and killer whales. Desert mice leap by moonlight, and even hippos occasionally do an underwater back flip.

SUMIO HARADA

- Object play is much more interesting when the object is alive—although the owners of these tails seem none too happy about it. In the Galápagos, "Sea lion pups are inveterate pranksters, always on the lookout for a new toy," says naturalist Tui De Roy, who photographed a pup (below) that repeatedly intercepted a marine iguana in a tide pool. "The sea lion would drag the iguana a short distance, release it, let it swim nearly to shore, and then grab it and drag it back out into the pool."

Although adult chimpanzees kill and eat infant baboons, innocence prevails in youth, when young chimps and baboons often become playmates. Chimp play runs the gamut—chasing, wrestling, sparring, play-biting, thumping and kicking, head butting, and tickling. New research shows that baboon play has environmental overtones: The more it rains and the greener the habitat, the more playful baboons become.

JANE GOODALL

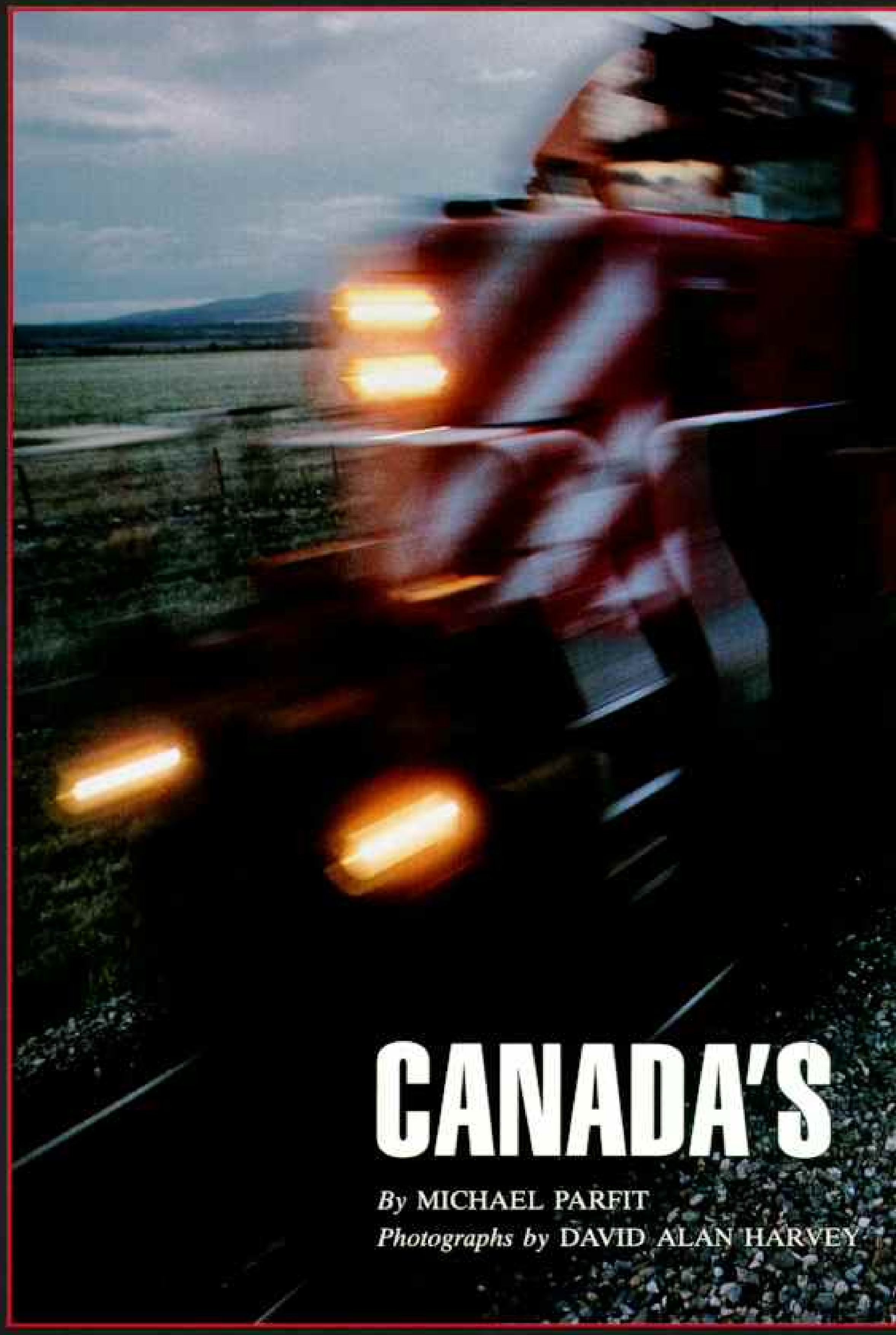
TUI DE ROY

◆ The happiest bear in the frozen north juggles a rare toy, a tire from an equipment cache near Churchill. After besting a rival bear for the tire, this comedian later draped it around its neck. Said photographer Norbert Rosing: "I was laughing so hard my vehicle shook."

On Alaska's North Slope in November 1993, the village of Kaktovik suffered some bizarre vandalism. Dozens of lights illuminating

ROBERT RODING

the village airstrip were destroyed—knocked out by polar bears. Tracks in the snow showed the bears were methodically moving from one light to the next. On another occasion witnesses saw them punching the lights one by one. Was this aggression, or were the lights just playthings glowing irresistibly in the night? Will any scientist ever know? Sometimes animals seem to play even with them. □



CANADA'S

By MICHAEL PARFIT

Photographs by DAVID ALAN HARVEY

HIGHWAY OF STEEL

Waved on by a conductor west of Calgary, a freight train hurtles across the country the Canadian Pacific railway helped build and still ties together.

BILL BELL, the locomotive engineer on the Canadian Pacific Extra 3091 train, out of Regina, Saskatchewan, is whistling "Moon River." This shows he's feeling cranky. "Always whistle 'Moon River,' " he told me once. "Calms you right down."

He has good reason to need calming. Right out of the yard, as the train started southeast down the branch line known as the Tyvan Subdivision, his second engine overheated, rang the alarm bell for five minutes, then expired for the day. "I hate using one unit," he said. "No pizzazz." Then his brakeman, who was inexperienced, nearly jammed a switch. Now, on our way home, pulling loaded grain cars, he has the throttle all the way to position eight, but though the engine roars and sways,

A harvest moon shines on Saskatchewan wheat, a cash crop ever since the railroad brought early settlers to the prairie a century ago. Heading for Vancouver, engineer Pat Wells drives a train loaded with wheat, an export worth two and a half billion dollars (U. S.) a year.


CP Rail
5694
CP Rail
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"We have a very gratifying job. I hear guys saying all the time, 'Where else do you get paid to see scenery like this?'"

BARRY KENNEDY
Locomotive engineer, Canadian Pacific Rail (CPR) System

Safely through the mist-shrouded Rocky Mountains, a train winds toward the prairie with imports and manufactured goods. "Insane recklessness" was how one politician described the plan to build this transcontinental railroad. Yet once the government-supported line punched through western peaks in 1884, it reshaped the nation and opened the interior to development.

"I remember going to the CPR station when it was so jam-packed it was elbow-to-elbow people because there were so many trains."

LARRY ZABOYSKY
Hotel manager, Moose Jaw, Saskatchewan

we can barely manage 21 miles an hour. "Now we suffer," he says.

I'm not suffering. North American commerce doesn't get much more basic than trains and grain. And here I am, in a big old locomotive, hauling grain west across the plains of Saskatchewan, one of the great wheat-producing regions of the world. And this train is part of the most romantic and legendary of North American railroads: the Canadian Pacific, the steel spine of Canada.

"No one who has not lived in the west since the Old-Times can realize what is due to that road—the C.P.R.," wrote Father Albert Lacombe, a missionary who helped pacify Indians while it was being built. "It was Magic—like the mirage on the prairies, changing the face of the whole country." So I'm here listening for the echoes of that old magic—to watch the grain move from the prairie to the sea, to feel the thunder of engines and the roll of steel wheels under my feet, and to understand the strength and the trouble in a very old partnership between farmers and railroaders that's as undervalued, yet as fundamental to North American life and business, as the bread we eat.

"THIS IS RATED some of the best farm dirt in America," Bill Bell says. He's stopped whistling. He must be feeling calmer. He is the good host, telling me about the landscape he has worked in for 21 years. "There's that Saskatchewan gumbo," he said, pointing at dried mud beside the rails. "It looks hard as cement, but if you throw a seed of grain on it—*bluiee!*"

The train rocks along the Tyvan Sub. The cab is a small room with a power-control console on the right and seats for conductor and brakeman on the left. The engine roars and whines, wheels screech on curves, and there's a spit and hiss of pressurized air. In the lowering sunlight the ties are in shadow, but the wheel-polished rails catch the sun like water and seem to float out ahead of us, free of the ground.

"The Lord said, 'Let there be Wheat,' " the humorist Stephen Leacock once wrote, "and Saskatchewan was born." Sun, rain, dirt, and farmers here produce 55 percent of all wheat planted in Canada—an average of about 16 million tons a year: 30 tons a minute. Much of this is exported—with an increasing tonnage going to the United States. But since the U. S. also produces wheat, this set off a heated dispute between the two countries over trade limits and subsidies. That battle is a microcosm of the volatile and contentious world grain market, in which

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The work of MICHAEL PARFIT and DAVID ALAN HARVEY appears regularly in NATIONAL GEOGRAPHIC. They collaborated once before, on "Powwow: A Gathering of the Tribes" in the June 1994 issue.

Afternoon's last sun slants past a farmer visiting old friends in a Moose Jaw hotel. Rail passengers once stayed here, but as their numbers dwindled, the hotel turned residential. Since 1990 the track that services the city has carried only freight trains.

virtually every wheat-producing country—including Saudi Arabia, which farms grain at incredible expense—uses massive subsidies to lower the price it charges overseas.

Against this background of vast cargoes and international disputes, the area of the Tyvan Sub looks simple: fields of wheat still green, fields of yellow canola or mustard, a straight dirt road every mile. In the charmed warmth of the late afternoon sun, the circle of life through which we move seems welcomingly small. Maybe it's because we can't see far around the curve of the earth. As we rumble along in our train from town to town, this landscape that has no edge is nevertheless close and intimate. Wind blows in silver waves across the grain and washes up against groves of trees around storage bins and old farmhouses, and it seems that this land of wheat and farmers has been here for all time.

"FIFTY-SEVEN FOURTEEN, two cars back to a bump." The conductor is calling out directions from behind the train. Bill Bell eases off the throttle. There's a slight shudder of a connection, then he gives it a notch of power to pull forward. Another car—another hundred tons of grain—has joined the train.

As we get moving again, Bell reflects on the land and its people. "Family names out here are Ells, Fhalman, Shniders," he says. "Most of them are in the fourth generation. They're snap-crackle good farmers here."

Bell's family name belongs here just as

surely as these. His grandfather, son of a railroad man in England, came here as a young man and worked on steam engines for the CPR. Bell's father worked for the railroad for 42 years. From the age of six Bell himself went out Saturdays with his father in the steam locomotives, up and down some of these same lines. His father would put a can of beans up on the boiler, they'd cook hot dogs in the firebox, and they'd haul grain.

The dream that made this world of grain was a dream of rails. Grain is the railroad's biggest single commodity, but the farmers couldn't have reached the prairie without the railroad, and then, without the railroad, there would have been no way to market the abundant grain the prairie can produce.

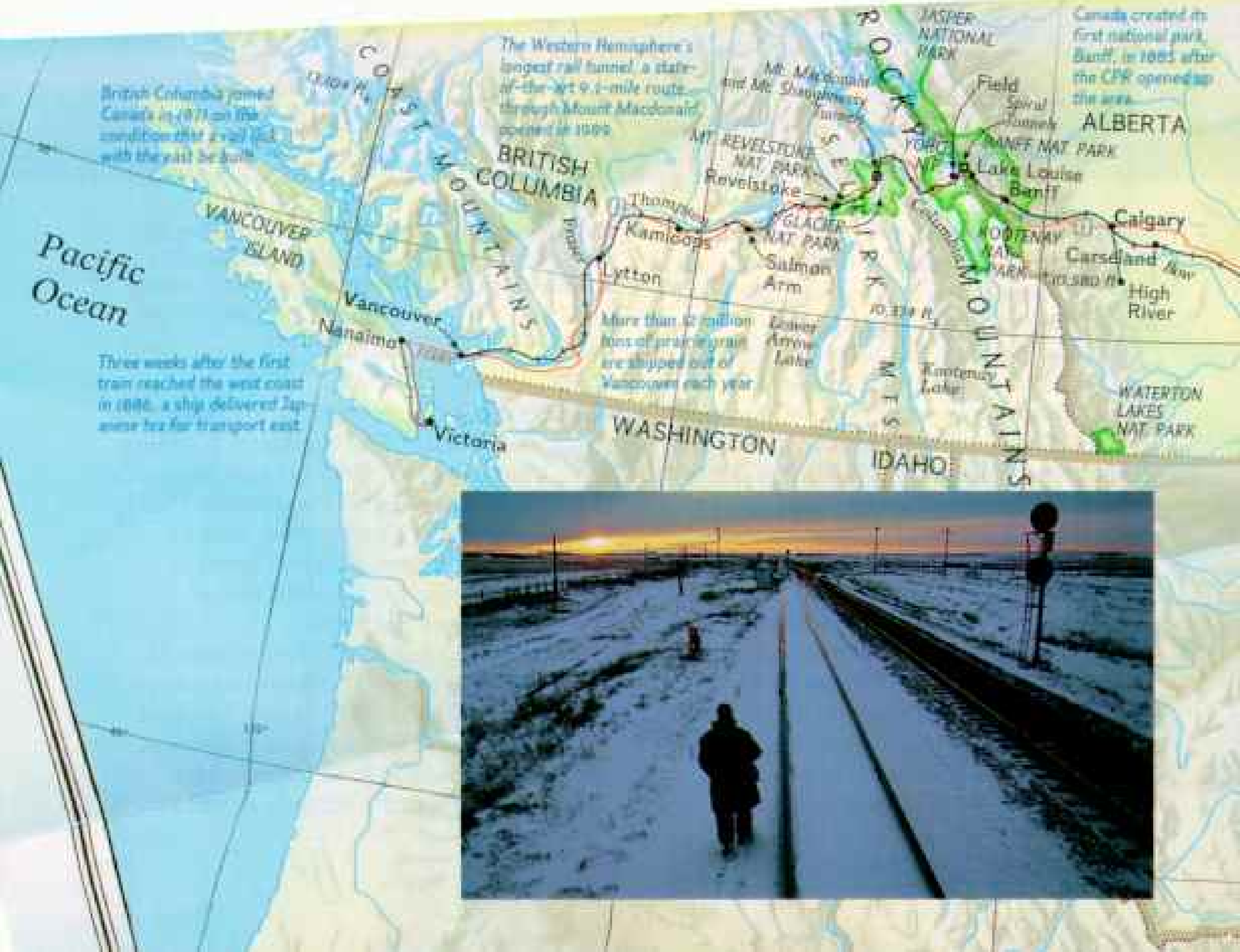
The idea itself—of a railroad from coast to coast—is older than Canada, but it began to take shape just after nationhood in 1867. Soon it became the single most important thread in the fabric of Canadian identity.

"Every nation rejoices in at least one epic moment from its past, as much myth as history," wrote Pierre Berton, author of two best-selling books on the CPR, "the Spanish Armada, the storming of the Bastille, the Boston Tea Party, the Long March, the Voortrek. Ours is unique, less violent but equally dramatic: the construction of a line of steel to unknown shores to create a nation."

The story of the CPR is almost as frequently told to Canadians as the legend of King Arthur is told to Britons: A grandiose dream born long before Canada became a nation, a series of backroom political intrigues, a web of desperate financial maneuvers, and an ordeal of construction across ancient granite, endless prairie, and walls of rock, carried to triumph in 1885 by a young general manager named William C. Van Horne. The final spike—made of iron, not gold, since Van Horne did not like elaborate ceremony—was driven 27 miles west of Revelstoke, British Columbia, on November 7, 1885.

"All I can say," Van Horne remarked

Half a continent, largely unexplored, waited beyond Winnipeg when the CPR began to lay tracks west. A challenge then as now, winter on the prairie sends a conductor to check a frozen switch (bottom).



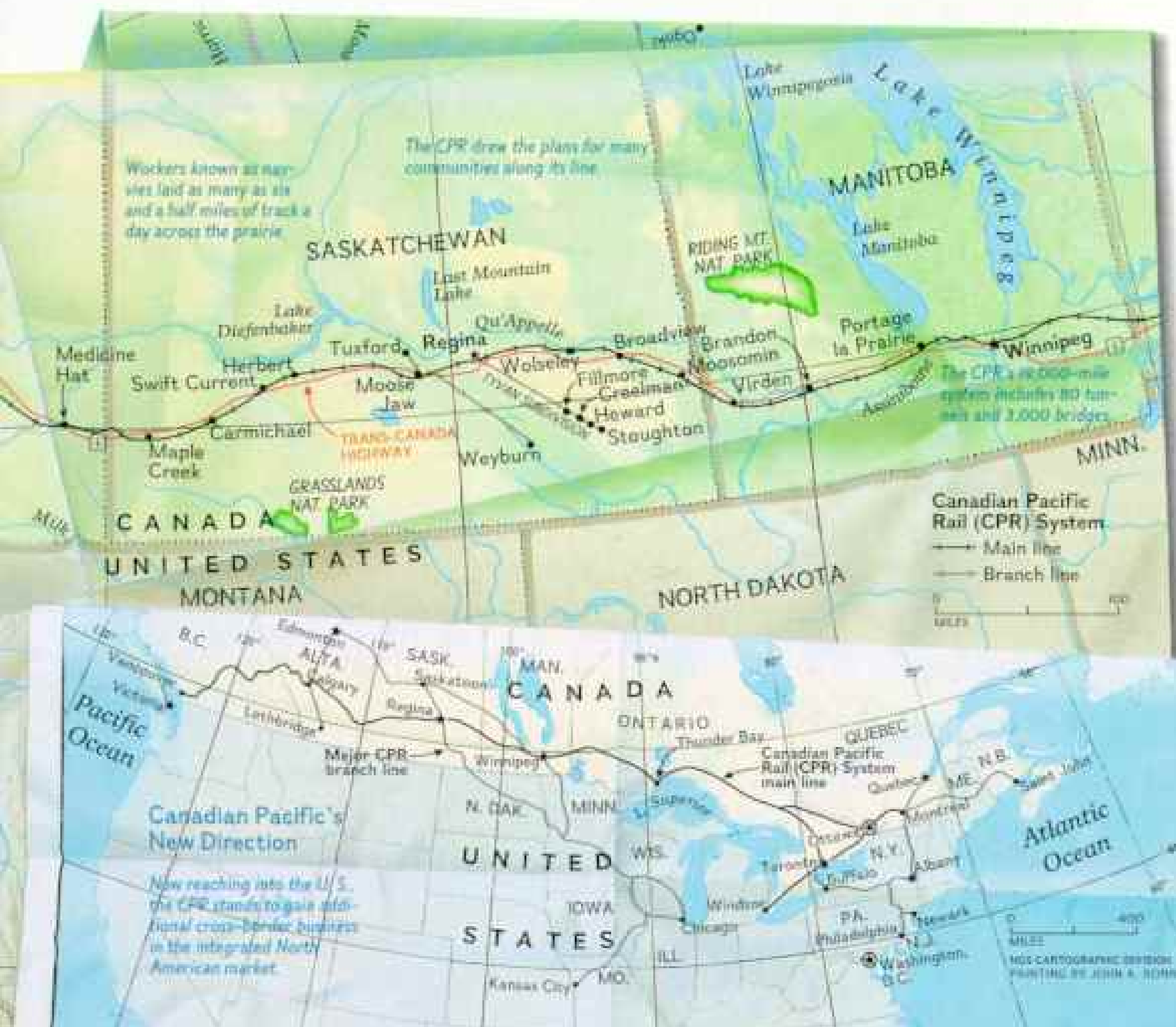
when asked to speak that day, "is that the work has been well done in every way." He had been similarly terse in a speech the previous month: "We were under the inspiration of a national idea, and went forward."

BEFORE I RODE THE TRAIN, I flew my small Cessna over the route of the main line from Vancouver to Regina. The farm fields lay, vast and widespread, across mile after mile of prairie; if I were to climb to the edge of space, I would have only seen more. But the rail was almost invisible from as low as a thousand feet. Compared with all the things the rails made possible—the cities, the reservoirs, the highways, and the great grid of farmland—the track seemed utterly insignificant. The scratch it drew across the landscape looked like a faint line on a big bold canvas, just a sketch drawn by a pencil among much brighter things.

But that pencil drew Canada. This insignificant line made Winnipeg king and Regina queen, led the stampede to Calgary, carried climbers to the Selkirks, founded industrial trade on Lake Superior, made fortunes in Vancouver, and brought the checkerboard to the prairie. Its link with grain is not just a handclasp; it is a weld.

On the Tyvan Sub our stops prove the link and give me a hint of trouble. Bill Bell brings the train to each little town along the track—Heward, Creelman, Fillmore. The towns are tight low clusters of white clapboard houses nestled in trees, each with a wide dirt Main Street, a few false-front businesses, a ball-park, and curling and hockey rinks. At each we pause, either to drop empty cars or pick up full ones. At each stop one or more grain elevators tower over the train and over the whole prairie: The plain white or steel sides of the Saskatchewan Wheat Pool or United Grain Growers elevators or the wonderfully gaudy, orange-and-yellow elevators of the Pioneer Grain Company.

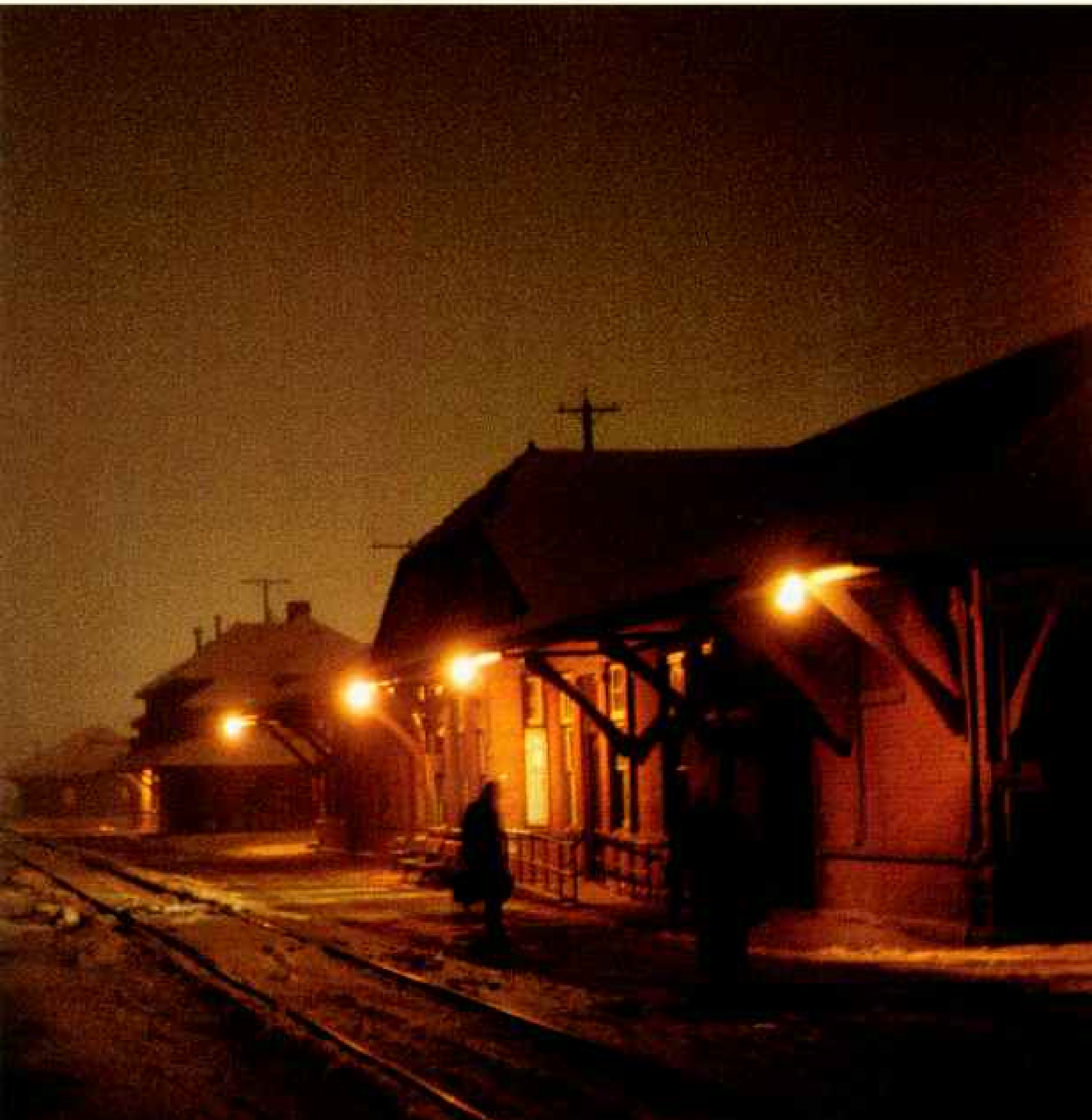
In every prairie town the elevator has



"It's hard to plan a social life working for the railway. Sometimes we can hop right on a train and go home. Other times we wait 12 hours."

DON MOULDING
Locomotive engineer

A pause in the rhythm of the rails comes with a crew change in Swift Current, Saskatchewan. At the end of their run, the engineer and the conductor make tracks for the station, where they can arrange for rest in the bunkhouse and a wake-up call before their return to Medicine Hat. A new crew will take 5872 on to Moose Jaw. Time at home depends on train schedules, seniority, and personal preference.



always been the symbol of commercial success. But when we get to Heward, there is no elevator. The last of three was shut down in 1985. And as we lumber northwest past the next town's single Saskatchewan Wheat Pool elevator, Bell stares out the window with a knowing melancholy on his face.

"Poor old Creelman," he says. "There's a town that's sinking into the sunset."

I know. I'm fond of Creelman. As well as riding the rails here, I've been up and down the highway that parallels this stretch several times, trying to get to know this piece of the railroad. I've been to the annual Sports Day in Fillmore, where the curling rink was full of baseball players eating steak. I've sat in a library reading about Heward with a librarian who thinks she talks too much only because she gets to talk so little. And I've sat in Nicolina's Cafe in Creelman with May Allan and Thelma Beckstead, talking about old Charlie Loucks, who used to run the barbershop and pool hall next door. May, who dropped by Nicolina's to pick up five tapes from the movie co-op, is the town secretary. Thelma called herself "just an old farmer."

"If a lady went in there," Thelma said, nodding in the direction of the pool hall, "Charlie'd cut her hair, but he wouldn't let a lady play pool."

Charlie died in 1985, and the pool hall has been closed since. That's how it is all along the Tyvan Sub. There isn't a single business left in Heward, and Creelman is down to the café and a general store, where once there were two groceries, service stations, and implement dealers. The town recently lost its high school, which has been consolidated with Fillmore's, though Creelman students picketed the district school board.

"Creelman's changed terrible much," Thelma said.

What's happening here? Mostly it's low grain prices, increased farming efficiency, and the high cost of equipment; you have to have a bigger farm to survive, and bigger farms mean fewer people per square mile.

"Fifty years ago there was a family with eight children living on every quarter section," Eliford Mott, a Creelman farmer, told me. (A quarter section is 160 acres.) "Fifteen years ago my father, uncle, and I made a living off 11 quarters. Now those same 11 quarters will support only one family."

We sat at the dining-room table in his house in Creelman while his son, Josh, put graduation gift thank-you notes in blue envelopes. They were like good-bye letters; Josh wasn't likely to live here again. He was going to Saskatoon to study auto-body repair.

"There's not enough people here driving cars and having accidents," his father said, "to make an auto-body shop viable."

Josh can't come back to the farm either. His parents are too young to give it up.

Bill Bell is succinct about it. "With only income for one on the farm now," he says, "the others need to get gone."

At the Creelman crossing, Bell blows the whistle: Long, long, short, long. There are no cars to warn. We rumble slowly out of town.

THE PARTNERSHIP between rail and farm is a conspiracy to attack distance. To each community the prairie may be intimate, but its dominant characteristic is expanse. From Winnipeg on the east to Calgary on the west is 839 rail miles; the whole Canadian prairie covers 275,000 square miles. Distance itself is the enemy here; the train must conquer it to make the system work.

A few days after riding with Bill Bell, I catch CP Extra 5741 West at Moose Jaw, a big town with a railroad yard right through the middle of it, about 130 miles west of Heward, Creelman, and Fillmore. Grain cars from places like the Tyvan Sub are gathered in the yard, assembled behind four or five engines, and sent west across the miles.

I stand waiting for a train on the edge of the yard. The air is full of the patient rumble of engines, the hiss of pressurized air, and the squeak of steel wheels on rail. This yard is huge; 15 sets of rails, which all seem full of cars; but the size of the operation it represents is amazing: I imagine the grain like a river, threshed off the fields and flowing to the elevators, pouring in a golden cascade down dozens of branch lines to gather at other yards like this in Regina, Swift Current, Medicine Hat, Lethbridge, or Calgary. There it becomes a Mississippi of grain, rolling down the long, thin pencil line to the coast.

On engine 5741, the machine that drives all this enterprise, Duane Weekes eases the throttle back. The engines awake from a purr to a growl. This is called lifting the train, a feat of raw power. The speedometer climbs slowly to 0.5 mile an hour. We feel gentle

Totems of the Old West, trackside grain elevators put places like Tuxford, Saskatchewan (above), and Carseland, Alberta (below), on the map. This picture is changing as the railroad closes less profitable branch lines and grain companies centralize storage. "When you pull an elevator out, the town dies," notes CPR manager Jim Russell.

thumps as the slack—spaces in the couplings between each car, which can add as much as 3 percent to the length of the train—stretches out down today's 5,000 feet—78 cars and 8,481 tons of grain.

"AMY? HELLO AMY? Have you had your supper, Amy?" Duane holds his cellular phone hard to his right ear, talking to his four-year-old daughter in Moose Jaw. The throttle's in position eight, and we're 30 miles west of town, roaring and rattling along at almost 50.

"We're away from home for 3,800 miles a month," Duane says after hanging up. "We miss a lot of Kodak Moments with our kids. I'm paid really well for the time I'm away from home, but I earn every penny of that. You never get that time back."

The cellular phone is evidence of the changes in railroading.

"Used to get to the end of the road, and the guys would go to the pub for the night," one engineer told me. "In the morning they'd throw the conductor in the caboose to sober up and drive the train home. That doesn't go on anymore." Crew jobs have been replaced by automation: Where once a crew of five took a freight train across the rails, often there is only the engineer and a conductor. The caboose has been replaced by an automatic sensor on the last car, known as a rear-end device or, for unprintable reasons, a "Fred." And the pub has been replaced by the golf course. "Nice day for nine," I once heard on the train's radio, and on another train an engineer spent a couple of minutes on the radio setting up a foursome. Every crew book-in office has flyers for golf tournaments posted on the wall.

One thing hasn't changed from the very beginning though: Railroading's hard on the family. You are subject to call at almost any hour, and freight trains run on only one schedule: Probably Late.

"Your wife always asks the same questions," Duane says. " 'When are you going to go to work, and when are you coming

In the tangle of tracks at Calgary's Alyth Yard, computers sort through locomotives, flatcars, hoppers, and other units to assemble the trains that haul western wealth—grain, sulfur, potash, and petroleum products—to market.

Up but nowhere near running, a 200-ton locomotive receives an overhaul at the Ogden Diesel Shop in Calgary. Every five years or one million miles it gets the same treatment, which can keep it rolling for 20 years or more.

back?' We never have the answers." He opens a small refrigerator in the cab and drinks one of two dozen bottles of water provided by CPR, which crews call "rail ale."

"We have a lot of good ideas on how to make this railroad work," he says. He's also a union representative. "But on a lot of issues the company and the government don't consult with us. They tell us we don't see the big picture. We *are* the big picture. Railroading is getting the train from here to there as quickly as possible. We know how to do that."

Maybe someone *should* be listening; things are not working well right now. A few miles later familiar alarm bells sound: Another engine problem. This time the number four locomotive is overheating. The conductor, Grant Vierling, opens the engine's access doors to try to cool it, and we rumble on.

This railroad is having power problems. Its diesel-electric engines, which the crews call "the power," are struggling. Almost every time we encounter another train, I see access doors open on one or more units. Almost every train I've ridden has lost an engine while I've been aboard. About a week ago, coming into Medicine Hat on a train pulled by two units, we lost both engines about four miles out. The engineer decided to coast in; it was all downhill, but his brakes were limited. I will not soon forget coming into the Medicine Hat yard at a very fast 15 mph, unable to see more than a hundred feet around a curve of grain cars ahead, with the conductor standing beside me saying: "This is *hairy*." The engineer brought the train to a smooth stop right in front of the craft and antique shop that occupies part of the station. He smiled. "That," he said, "is fuel efficiency."

Engineers are getting used to this sort of thing. They accuse management of cutting back maintenance in a shortsighted attempt to save money. Management responds that increased business has forced the company to use all available engines, and new units are on order.

But the power problems are symptomatic.

"What a change trucks have made to the industry. They float down our gravel road with 60 head of cattle straight to the meat packer."

BILL DUNN
Rancher, High River, Alberta

Both the CPR and the Canadian National, its government-owned half sister, are running as hot and stressed as the power. Both have emerged from lean years to see dramatic increases in business and profit, part of a North American railroad renaissance that has some executives talking about a "new golden age." Yet the CPR, which owns lines reaching to lucrative U. S. markets, claims that unions, taxes, and regulation make it hard to compete with U. S. carriers, and it lobbies provincial and national governments for change. But by the close nature of its partnership with the farmers, any move to change operations has its effect on the prairie.

One of those decisions—to make it easier to close less profitable lines—could eventually kill the Tyvan Sub. It's easier and cheaper to fill a whole train at one time than pick it up in bits and pieces, as Bill Bell did. To encourage this efficiency, the CPR offers discounts for grain trucked to "high throughput" elevators that can handle 50 or more cars at a time. For Terry Hanson, another farmer at Creelman, the discount makes it almost three dollars a ton cheaper to have his wheat trucked about 30 miles to Weyburn than three miles to the Fillmore elevator. The problem is that if more farmers are attracted to the Weyburn elevator, the railroad could justify killing the Tyvan Sub. Not long ago Bill Bell presided over the final moments of such a line. When he picked up carloads of old rails that had been pried from the track, a group of farmers stood there with signs that said things like "Good-bye to our line."

"Will you truck it to Weyburn?" I asked Terry Hanson.

"No!" he said. "There's a principle there. I want to maintain my services on this line. It's only cheaper as long as this line exists to compete."

Ironically, as the railroad is pushing high-quantity loading, the farmers are going in the opposite direction. They're cutting their big wheat fields into smaller chunks, diversifying into specialty crops like lentils, spices, peas, or canary seed because these crops offer higher prices per acre.

The general push for what appears to be the efficiency of consolidation is widespread across Canada. It is labeled with a curious word, which has different meanings in other places. The word for making the kind of decisions that kill towns like Fillmore, Creelman, and Heward is "rationalization."

THE TRAIN PASSES a small railside building, and a couple of minutes later an authoritative male voice comes on the radio, talking to us: "CP detector, mile 49.5, Swift Current Sub," the voice says. "Total axles 341. No alarms."

It's a computerized scanner, which can detect overheated brakes or other potential

Cowboys start young in High River, where contestants at a springtime rodeo are all kids. A generation ago ranchers herded their stock to the rails and loaded them into cattle cars. Today trucks pick up cows at the ranch and deliver them directly to customers.

disasters. But the automated voice sounds so human that crews sometimes have persuaded new employees to throw bottles of rail ale out on the embankment beside the scanner for that poor thirsty guy in the hut.

We reach Swift Current at 10 p.m. A ballpark is lighted brightly against the day's last twilight. Duane and Grant leave the train. They'll wait here for a few hours, then drive an eastbound home to Moose Jaw. I stay with the westbound train, and two Pauls get on: Paul Hickson is the new engineer, and Paul Taylor is the conductor.

By midnight, darkness is complete. Small towns pass quietly: a light on an elevator, a closed café. They make almost no disturbance in the deepening lake of prairie night.

At about two in the morning the CP Extra 5741 meets an eastbound carrying containers, cars, and lumber. "That's a hot one," Paul Taylor says. He's not talking about power problems this time; he means that to compete with truck lines the railroad must move these cargoes faster than grain. We roll slowly onto a siding to wait for the other train. Paul Hickson and I go out on the engine's walkway.

"If you look up there and a little away from it," Hickson says, "you can see Andromeda."

The engines murmur in idle. In the distance a sodium-vapor lamp high on a Pioneer elevator at Carmichael glows against orange paint. Farther away a beacon flashes on a tower. There's a farm light to the northeast,

"I had a hard time with a wolverine when we stopped for repairs one night. He was convinced he was going to eat my boot."

PAT WELLS
Locomotive engineer

and, beyond it, flickers glow up from a storm below the horizon. There's a smell of cut hay and diesel smoke.

In the silence I think of two more things about the prairie. Pierre Berton described the first days of the coming of the line to the young towns: "The sharp, spring air was pungent with the incense of fresh lumber and ringing with the clamor of construction . . . lasting friendships were forged among the soiled tents on the river bank . . . every man was young and strong and in love with life."

And I remember sitting around a dining-room table near Creelman with Dennis Smith and his family. At the table were his wife, Judy, and his pretty younger daughters: Janelle—at 15 all braced and blushy—and Amber, 13, who was still on the happy, sharp edge of childhood. The family was neither bitter nor resigned; they seemed to share a kind of calm resolve common in families who survive on the prairie for generation after generation, adapting, as Wallace Stegner has written, "to the terms the land sets." We talked about Creelman's small post office. Hours have been cut, but the government has promised it won't be closed.

"So it'll be there for a little while yet," Judy said.

Amber sneaked a wicked grin at me. "Like everything else," she said. "A little while."

ON CP EXTRA 5741 I hear the whistle of the oncoming train. The lead engine rounds a bend a mile away, and the broad beam of its headlight hits Paul Taylor, who's standing down on the grass to check the other train as it passes. Weird shadows shift and jiggle as the light moves. Paul's shadow dances wildly, and in the shadows in the long grass I cannot tell light from wind;

Straight as an arrow shot at Banff, the railway cuts through a wild realm where crews can see more than two dozen bears during a single run.

it looks as if the dazzle of the CPR itself is blowing the prairie grass before it.

The locomotives roar past. The doors are open on the second unit.

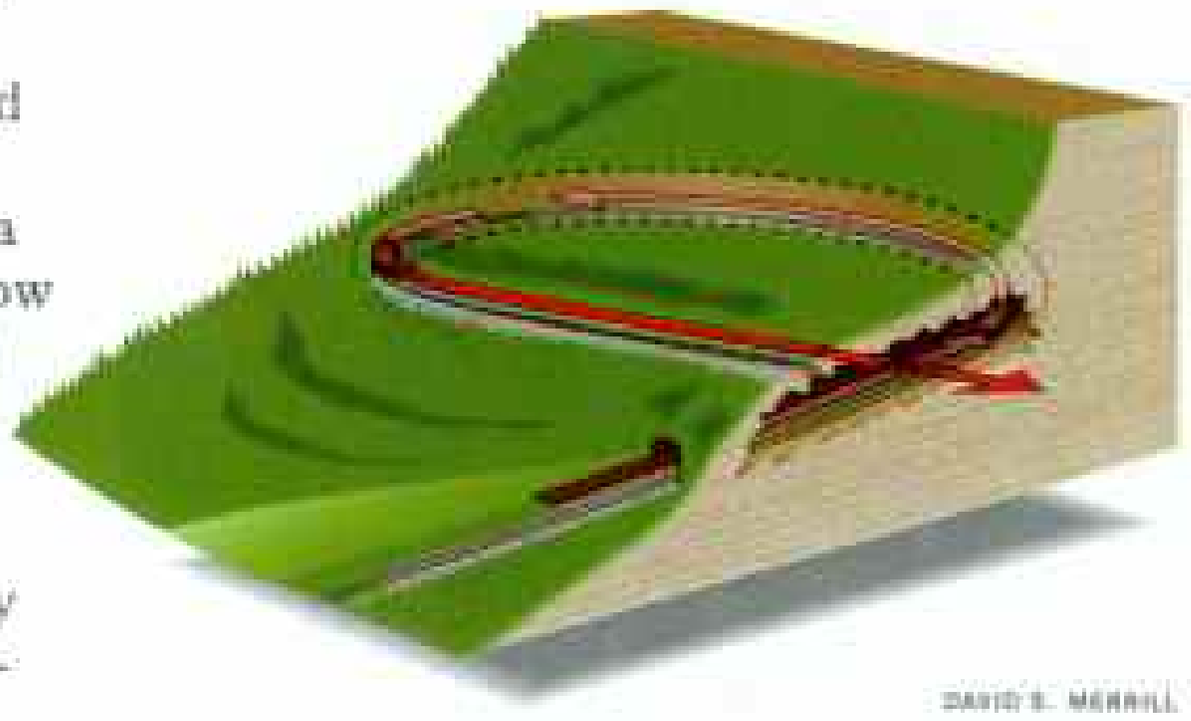
I've been on the prairie so long that when I see a cloud with darkness under it west of Calgary, I think it's the shadow of heavy rain. But it's a mountain. Suddenly we are going up long grades between walls of forest and sedimentary stone. Both the scene and the railroad have changed.

For the farmers and the grain the mountains of the Canadian West are just more distance to conquer. By the time the grain gets here, all the gathering is done, and it's time for the long haul. All that stands between it and the sea are two walls of rock—the Rocky Mountains and the Selkirk range—the canyons of the Thompson and Fraser Rivers, and the toughest 125-mile stretch of track on this railroad: the notorious Mountain Sub.

WE CLIMB SLOWLY out of Calgary along the Bow River between groves of cottonwoods, passing an entire town where no one lives at all: a set for the television series *Lonesome Dove*. Entertainment rather than wheat sustained the railroad through here for years: CPR opened the northern Rockies to tourism and made Banff and Lake Louise famous worldwide. There are no more CPR passenger trains; that's all over now. We creep upgrade through Banff and Yoho National Parks like a moving ghost town ourselves, passing both tourists and bears by the tracks.

After descending through the two extraordinary Spiral Tunnels, in which the train completes two-thirds of a circle inside a mountain, I get off at the town of Field and sleep in the clean, quiet CPR bunkhouse. Field has changed too. The town, deep in a canyon, was once a railroad village, but now it caters almost completely to tourists. Bill Bell, who was here in the sixties, remembered it as a "cow-kickin', slam-bangin' town," but now it seems almost peaceful. The people I talk to in Field have the softly polished exterior of professional public servants. It is a long way from the prairie.

"The older guys," jokes Wayne Tetrault, "they get scared of the hills over here." Wayne is the locomotive engineer on CP Extra 9015, which I join in Field. This is the beginning of the Mountain Sub.



DAVID S. MERRILL

More than a mile long, a grain train follows a trio of locomotives leaving one of two Spiral Tunnels in the Rockies as its last cars, at bottom, approach the tunnel entrance. Spiraling reduces the steepness of the grade, but mountains still punish equipment. A few miles west, the crew of another train fixes a jammed brake.

"If you do everything right in the first part of the hill, it goes pretty smooth. But if anything goes wrong, you can be in trouble in a second."

BARRY KENNEDY
Locomotive engineer

Wayne's 31. He's like all the young crew members I've met along this stretch of track—cocky, cheerful, focused on his train. It's true that when you get enough seniority here, you usually choose other subdivisions, but Wayne knows that it's not fear: Other runs are simply quicker and easier than the Mountain Sub.

But there is plenty here to scare you. This 125.7 miles of track consists of an initial downgrade, a tough upgrade through two tunnels, and a long, winding downhill haunted by the memory of one of the railroad's most costly wrecks.

Right away we talk about disasters.

"I once hit a pile of snow near here," says the conductor, Frank Bonanno. "I thought we were going to bite the weeds."

Railroaders take a certain satisfaction in remembering old wrecks, like the time a train hit a Ferris wheel east of Calgary. (The Ferris wheel was being hauled to a county fair. No one was hurt.) But for some reason, as we cross the Columbia River and start up the long grade on the other side, we don't talk about the wreck that happened one night in November 1977 just on the other side of the hill, when a train run by Timmy Hamm, Clarence Thacker, and three other men bit the weeds big time.

I have talked to both men and remember their story—a coal train without brakes plunging down 20-mph track at 50, 60, 70, 85 mph; the hammer and scream of wheels; the expectation of death; and the bloom of light at the end, when the train came apart just behind the lead locomotives, plunged into a river, and burst into flame. I remember Thacker's description of how the locomotives, freed from the wreck, glided to a stop in the eerie light of the fires, and how, after a

Light at the end of Spiral Tunnel No. 1 means a successful passage. Numerous trains careened down the mountain and crashed before this route opened in 1909.

while, he heard the supervisor estimating damage over the radio. "In excess of three million dollars," the super said, and Thacker, alive beyond any expectation, leaned over the side of the locomotive and threw up.

But now we don't talk about it, maybe because everyone who works on the railroad knows that, as Timmy Hamm said to me: "This can be anybody's train. You just happen to be the person who's called for it, and there you are."

The trouble that calls for us is not the hill, but the power.

Our last two engines are running with the doors hanging open, but that doesn't help. As we emerge from the Mount Shaughnessy Tunnel, a poorly ventilated, mile-long hole in the Selkirk Mountains, three of our four engines, cooked in the tunnel, switch out of action. The train, with the last surviving unit pouring its smoky heart out in futile effort, comes to a roaring halt. We're stuck.

These power problems are getting absurd. Ten days ago Wayne stalled inside this same tunnel with a coal train. The place filled up with diesel smoke so fast he had to disconnect his units from the rest of the train and drive out to open air just to stay alive. I happened to be in the railroad's offices in Revelstoke at the time and overheard the engineer on the radio. The two men on the crew knew they would have to go back in that place sooner or later, and the engineer was discussing the train's emergency gas masks.

"I've been reading the literature on these masks," he said, a little plaintively, "and it says 'Use in a well-ventilated place.' "

Well-ventilated does not describe this tunnel. We're lucky we didn't get stuck in there ourselves. As Wayne and Frank work to get the train inching forward, I look back. Clouds of smoke pour from the tunnel's mouth. It looks like the gates of hell.

"Where are you, Wayne?" asks a voice on the radio, the engineer of a train behind us.

"Stalled," Wayne says. "Got four on the head end, and three of them died."

"Only three?" the voice says sardonically.

I remember what another engineer said when one of his engines gave out: "The leaders of the company now are ivory-tower people. The power's falling apart; the tunnel isn't working. Yet they've got these big projections."

The Canadian Pacific's history has always been full of contention; if this were an Old West family, it'd be riven by feuds, subterfuge, and gunplay. Today the issues are the killing of branch lines, the subsidies, the railroad's attempts to streamline. A CPR handout itself acknowledges the rough edges of its own reputation: It shows a farmer staring at a flat tire on his tractor: "@?@!*/ the CPR!" he says.

But the day-to-day partnership between rail and farm has power of its own. It may be running with its doors hanging open, but it's still going up the track. There's something sustaining about the value of the work itself. If I come back here in ten years, I'm sure Dennis Smith and Terry Hanson will still be farming, and Bill Bell, Duane Weekes, and Wayne Tetrault will still be working on the railroad. Ten days ago when Wayne was involved in the smoky stall in the Mount Shaughnessy Tunnel, he eventually put on one of those masks and drove back into the smoke to help pull the train out. This was loyalty not to his bosses but to his train—and, in a way, to his partnership with Bill Bell and the people of the Tyvan Sub.

"I guess you do it," he says now with a shrug. "Whatever it takes to get the train going again."

For all the railroaders I met from the Tyvan to Vancouver, that was always the bottom line.

THE WHEELS KEEP MOVING, and the grain rolls west. The scanner calls in our progress: "Total axles 384, no alarms." It's a different voice out here. In the mountain region someone decided that the scanner took too much radio time to give its reports, so the automated voice was speeded up. Now the authoritative thirsty guy in the hut chirps out reassurance as if he's been breathing helium.

Finally, on the afternoon of the fourth day after leaving Moose Jaw, I ride with the grain into Vancouver.

The last miles are fast. It's double track: no meets and 50 mph. The prairie could be half way around the world; this is an utterly different landscape: mountains, forest, and water. We pass a cedar-shingle yard, kids fishing under a bridge, and a huge sulfur terminal surrounded by heaps of yellow. The tall skyline of the city shows up ahead. At last

Living alone in Revelstoke, British Columbia, conductor Shane Astra bikes, hikes, fishes, and hunts on his days off. In Calgary, engineer Barry Kennedy comes home to an armful of activity—his children. "Sometimes I don't see them for three days at a time," he says. "No way could I trade this for nine-to-five though."

A hissing stream of wheat fills the hold of a ship in Vancouver's harbor. Just offshore, freighters wait to take on grain and other commodities delivered by rail, an indispensable link between Canada's heartland and the increasingly important markets of the Pacific Rim.

we coast into the yard of one of the many tall grain terminals on the shore of Burrard Inlet.

The engineer, David Partridge, backs pieces of the train into three different sidings. He has to talk on one radio frequency to his conductor and on another to a yard engineer he calls Long Country. He has to trust the radio voices completely; as he backs up blind, he looks serenely ahead. This is incredibly hectic compared with the steady running of a train cross-country, and I wonder how long before he starts whistling "Moon River." It turns out he's having a great time. In the middle of it he grins at me and says, "See what we have to go through?"

Soon each car will be pushed into the terminal, and an operator will open its hatches with a pneumatic crank called a sidewinder. Grain will pour out in a sudden smooth golden rush, and the car will creak as its coiled springs rise. In 12 minutes the car will be empty. The grain will be cleaned and graded. The chaff, seeds, and even dust will be siphoned off and turned into feed pellets. The clean grain will be stored and eventually run across a high conveyor into a ship. Today the ship is the *Pisces Pioneer*, a Hong Kong vessel taking on 33,000 tons of soft white spring wheat, bound for Chile. I can see dust where the conveyor dumps grain into the hold.

I get off the train. I look around at the tall Vancouver skyline, at ships waiting in the harbor. Behind it all I see the Tyvan Subdivision: Heward, Creelman, and Fillmore. I miss it. I miss Nicolina's, Eliford and Josh Mott, Dennis and Judy Smith and their kids, that spirited next generation of the land.

You can't see many things on the prairie, but everything you can't see goes down deep. When I started, I thought the tough side of the tracks was the challenge of the mountains. I was wrong. On the prairie the mountains are in the ground: the hard terms set by the land and the railroad.

The dream sketched out over a century ago by the pencil line of the tracks has come true more grandly than the dreamers imagined. Now the dream is aging, and the power that drives it is ragged. But the dream runs deep. The people of the prairie reach down into the earth with that calm resolve of generations and take hold among the invisible mountains. With strength of arm, will, and history, they bring up life. Then a train comes by, run by people who have also been doing this for generations, and takes the life to the world. □

THE WRECK OF THE C.S.S. ALABAMA

Avenging Angel of the Confederacy

By MAX GUÉROUT
Photographs by ROD M. FARB

"AIDE TOI ET DIEU T'AIDERA—God helps those who help themselves."

I found these French words buried 180 feet deep on the dark and violent bottom of the English Channel, carved on the brass ring of a steering wheel lying in the scattered wreck of a Confederate ship, the C.S.S. *Alabama*.

The *Alabama* was built in England and never set anchor in a southern port, but almost single-handedly she drove the Union flag from the high seas during the desperate years of the Civil War. In a tireless, 22-month rampage through three oceans, she burned or captured 64 merchant vessels and a Union warship.

Off the coast of Normandy in France, where she had finally limped to Cherbourg harbor for dry-dock repairs in June 1864, the *Alabama* was cornered, shattered, and sunk by the U.S.S. *Kearsarge* in one of the century's most romanticized naval battles. It was the last gunnery duel in the era of wooden ships, when

With a French motto whispered in brass, a ship's wheel ring found near a half-buried propeller identifies the Confederate raider Alabama—sunk off France in 1864 and lost for 120 years. French and American volunteer divers and archaeologists now struggle to salvage her remains.

VICTOR BOSWELL (ABOVE)

PHILADELPHIA MUSEUM OF ART, ALFRED C. HOWLAND, U. S. NAVAL ACADEMY MUSEUM (BELOW)

men glared at each other at point-blank range with unsure weapons and—with overtones of chivalry—took mercy on survivors and honored each other's officers.

The *Alabama* stirred passions long after the Civil War ended. In 1872, following a historic international arbitration in Geneva of the *Alabama* Claims, Great Britain was forced to pay 15.5 million dollars to the United States as compensation for the destruction of ships and cargoes by the *Alabama* and other British-built Confederate raiders.

Alabama had the "grace of a swan," wrote her captain, Raphael Semmes—but she preyed like a raptor on Union merchant ships. She was finally defeated by the U.S.S. Kearsarge, a Union man-of-war that sank her off Cherbourg, France. Some 15,000 people lined area bluffs (lower left), hoping to glimpse the battle that raged several miles offshore. Édouard Manet, said to have watched the fight from a boat, painted Alabama's famous death (upper left). She lost 21 men. Wounded survivors made a votive model of her (above) for a local church. "It is inaccurate," says Claude Jennet, who restored it. "But it was built from the heart."

For 120 years the *Alabama* was considered lost. The water was too deep, the currents too wicked, to consider salvage. But in October 1984 the French Navy minesweeper *Circe*, under command of Bruno Duclos, discovered an unknown wreck seven nautical miles offshore. French minesweepers, still clearing World War II debris, had been looking out for the *Alabama* for years; a search of the battle area had become part of their training.

Duclos launched a small, remotely operated underwater vehicle to take photographs and finally dispatched scuba divers to the seafloor. An iron chimney stood in the semi-darkness. Coal was scattered about, as well as 19th-century English china made in Staffordshire. They had found the wooden hull of a warship of the industrial age.

As excitement mounted on both continents, the French Navy called on me to confirm the wreck's identity. Was the *Alabama* really within reach? And whose ship was she now?

Britain, France, and the United States all had a stake. The U. S. had assumed other assets of the defunct Confederate States, and some Americans wanted the *Alabama* as a symbol of southern honor. The British wanted *Alabama* artifacts and a replica of the ship for a dockside development in Liverpool. But the wreck was situated well within today's 12-mile limit of French territorial waters, and the people of Cherbourg had developed an emotional attachment to the *Alabama* and her cause. The battle seemed as much a part of French history as American.

TO MANAGE the project, the C.S.S. *Alabama* Association was formed, headed by Ulane Bonnel, then president of the French Commission for Maritime History. In the summer of 1988, while waiting for the diplomatic debate to resolve, we began our evaluation of the wreck under a permit issued by the French Ministry of Culture and Communication, together with such American experts as William Still and Gordon Watts of East Carolina University.

The cold, murky, and hazardous waters of the English Channel allowed us a dive season of only two to three weeks in early summer. The current ran from three to four knots, like a swift river that changed direction four times in 24 hours. Divers could work only at slack tide, which lasted about an hour, and then for only two 15-minute periods.

Retired French Navy captain MAX GUÉROUT is chief archaeologist for the C.S.S. *Alabama*. ROD M. FARB, a photographer based in Cedar Grove, North Carolina, is currently working on his third book about shipwrecks.

NORTH AMERICA

SOUTH AMERICA

AFRICA

EUROPE

North Atlantic Ocean

South Atlantic Ocean

Great Britain

Southampton

Liverpool

Site of wreck June 19, 1864

English Channel

Cherbourg

FRANCE

Azores

Terceira I.

Sept. 5, 1862

Washington, D.C.

UNITED STATES

Crownsville

Galveston Jan. 11, 1863

Mobile

Jamaica

Route of the C.S.S. *Alabama*

(Bahia) Salvador May 11, 1863

Apr. 23, 1864

Cape Town

Off Brazil, *Alabama* transferred crew and arms to a captured Yankee ship and commissioned it as a new Confederate raider.

Vessels captured by the C.S.S. *Alabama*

- Burned or sunk (53)
- Ransomed or sold (11)

0 2000

MILES AT EQUATOR

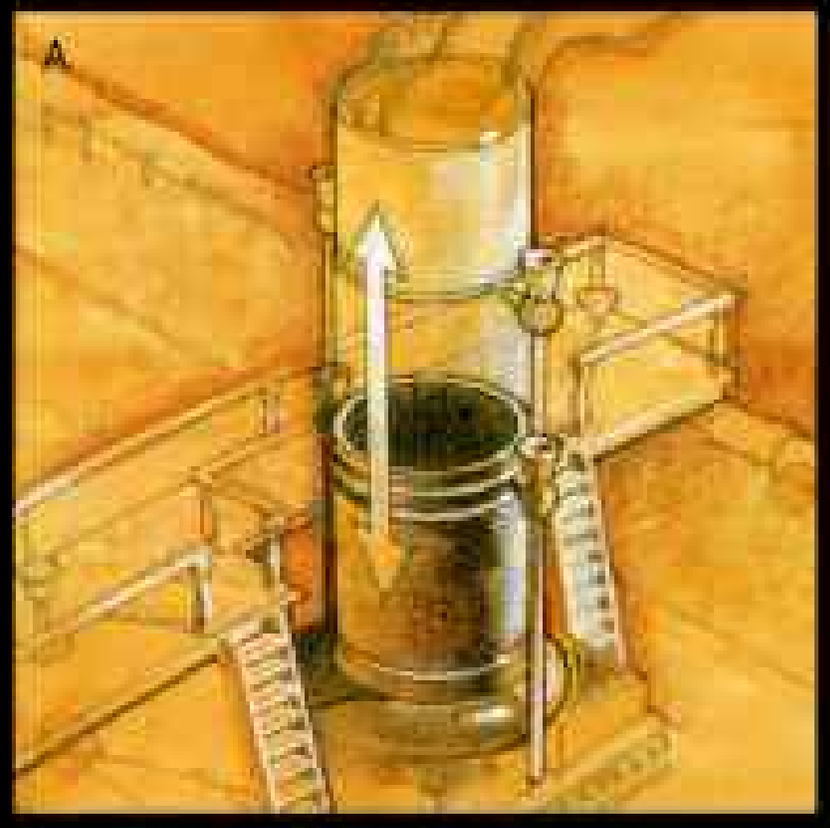
NGS CARTOGRAPHIC DIVISION

PAINTING BY GREGORY MANCHESS

C.S.S. *ALABAMA*
Rebel With a Cause

When the *Alabama* was commissioned in 1862, her orders were to "attack, subdue, scuttle, and take" Union merchant ships. She obliged. Over 22 months and 67,000 nautical miles she destroyed or ransomed 64 vessels. Insurance rates soared, further withering northern commerce. By the time *Alabama* reached Singapore in 1863, Union ships had flocked to neutral ports like cowering birds, and "there was no such thing as flushing them," wrote Semmes.

A bark-rigged steam sloop, *Alabama* cruised under sail to conserve coal. Crew lowered her funnel (A) and hoisted her propeller into a well in the hull (B) to reduce drag. She would approach an enemy ship disguised with a false flag, board it, take supplies and prisoners, and leave it in flames.



ASIA

JAPAN

North Pacific Ocean

Singapore

EQUATOR

Dec. 24, 1863

Sumatra

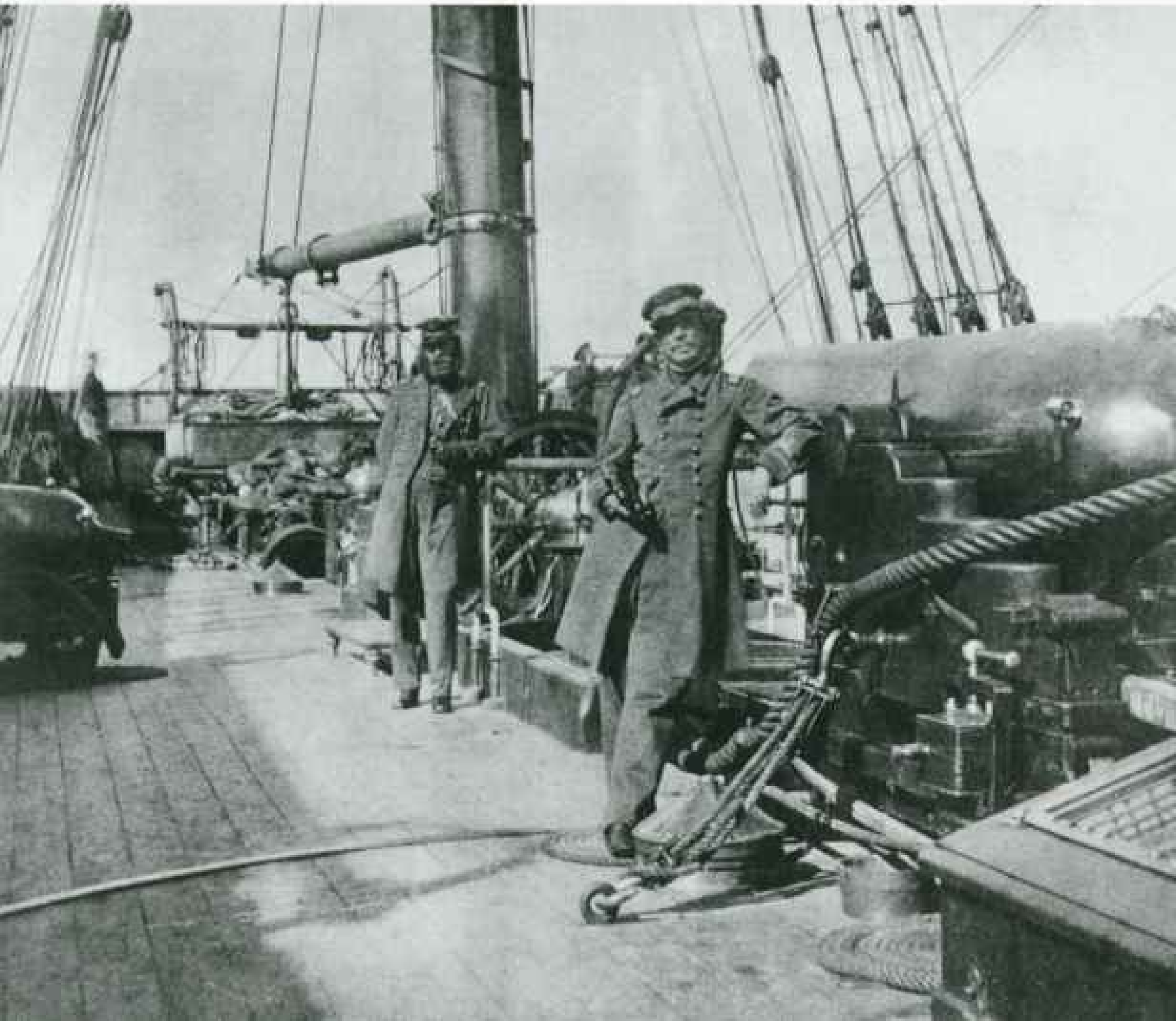
Indian Ocean

Laden with Japanese tea and silk, the New York clipper *Contest* — a magnificent prize — was burned off Sumatra.

B

Semmes always took his victims' chronometers, unloading 75 of the valuable instruments in Cherbourg before his final battle.

ROLLIN-HASSELBANK, GEORGE EASTMAN HOUSE (BELOW)



The work was difficult and frustrating, but slowly the outlines emerged. The *Alabama* rested at a 30-degree angle to starboard, square against the tide that had whipped sand and shell debris through her for more than 120 years. Protective dunes had built up on the starboard side, but entire sections of the ship had been torn away.

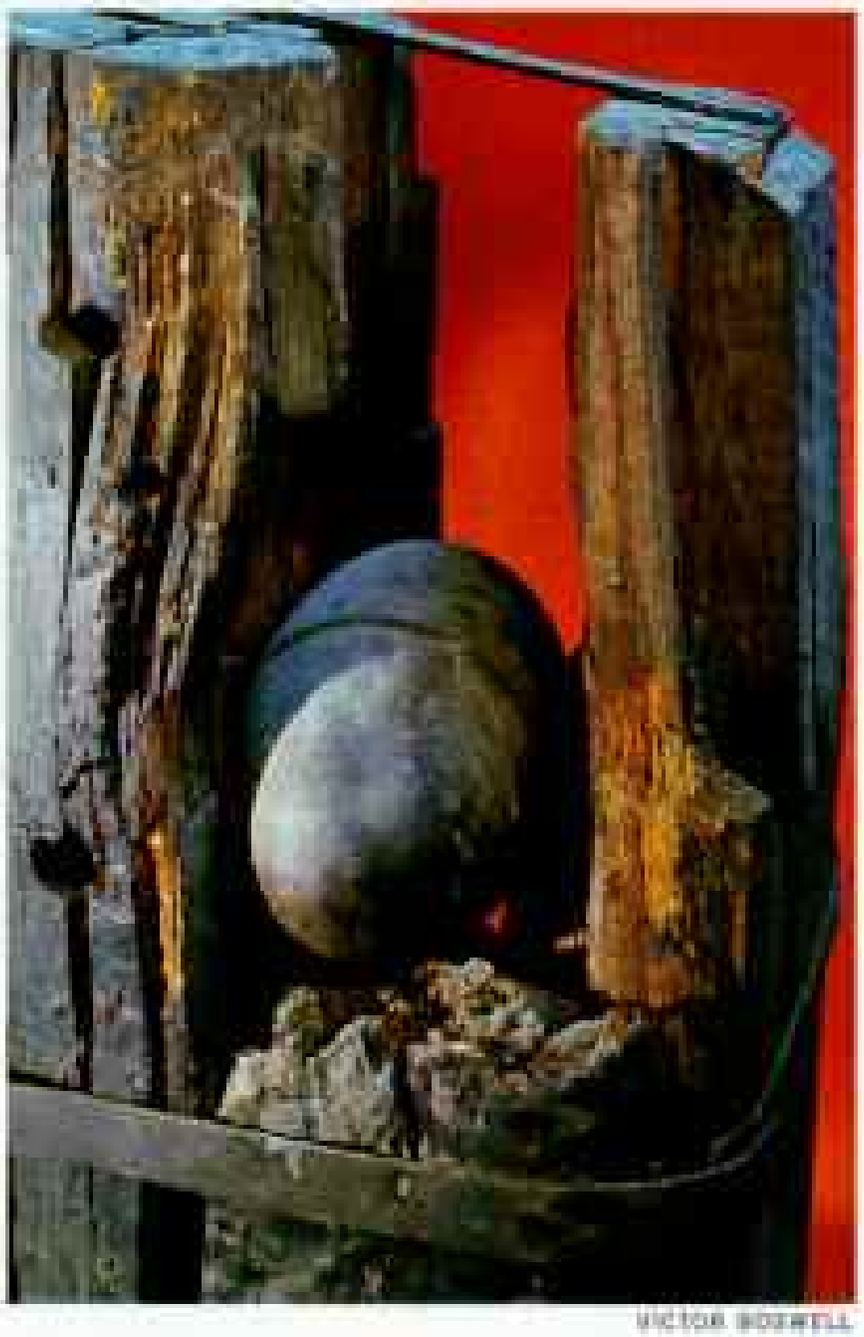
And the scene changed each day, randomly, as artifacts and objects appeared and disappeared in the sand with the shifting tides. The sand had created a stark beauty: Slowly, wood and metal objects had been scoured and molded into graceful, streamlined figures.

Our divers were remarkably skilled volunteers from two local diving clubs—the Sports Association of the Naval Dockyard (ASAM) and the Cherbourg Swimming and Diving club (CNP). Jean Olive of ASAM custom-built our 26-foot stainless-steel dive boat, *Asam III*, from leftover material.

But at nearly 200 feet, scuba diving can be difficult. Nitrogen narcosis, brought on by increased pressure of nitrogen in the brain, blurs perceptions. I would ask the divers precise questions: "What was the diameter of that pipe?" And I would get answers ranging from eight to thirty inches.

The *Circe*'s navy divers had brought up a copper kitchen chimney and brass strips that formed tracks for a pivoting cannon. We salvaged cups and saucers, a teapot, an iron pulley, and various tantalizing machine parts. We identified the capstan and the anchors, and finally we found the wheel with the ship's motto.

After two weeks I could sketch a site plan and profile of the wreck, matching it against the original ship's plans we had received from England. Not every piece fit the puzzle. Mechanical technology and metallurgy grew in bursts of imagination in the mid-1860s, and the *Alabama* was built in secret, its specifications purposely obscured. It was launched in a hurry, just one step ahead of outraged Union diplomats in England.



VICTOR BOSWELL

The Kearsarge and her 11-inch Dahlgren cannon (top left) easily bested Captain Semmes (left, foreground), who fought with a weary crew, damp powder, faulty fuses, and a peeling hull. Even so, the outcome might have shifted had a dud Alabama shell that lodged in the Kearsarge's rudderpost (above) exploded. A trophy of war, it was later sent to President Lincoln.

IN 1862, TO COUNTER a northern blockade of ports that was strangling the Confederacy, southern strategists envisioned a fleet of swift cruisers that would destroy Union shipping on the high seas, punish Yankee traders, and perhaps lure Union ships away from southern ports in pursuit.

The *Alabama*, built at John Laird Sons and Company near Liverpool, became the most potent of the dozen or so cruisers. She rolled into the Mersey River as No. 290 and was christened the *Enrica*. Britain was officially neutral, but many of its citizens backed the Confederacy because their mills were dependent on southern cotton. The British could not legally build a Confederate warship because that would violate international rules of neutrality, so *Enrica* was spirited away from Liverpool, ostensibly as a commercial vessel. She even carried a party of "ladies and gentlemen" as a ruse during what were supposed to be sea trials.

Instead of returning to the shipyard, *Enrica* dropped off her passengers downriver and headed for the open sea—a swift and powerful cruiser whose technology was on the cusp of change from sail to steam. She was built of the finest oak, with a bottom sheathed in copper. She was rigged as a three-masted sailing bark but powered by coal-burning boilers and twin horizontal steam engines. She was capable of 13 knots. For better streamlining, her funnel could be

telescoped and her propeller lifted free of the water to avoid drag while the ship was under sail.

"I think she was the most beautiful ship that ever touched the sea," wrote the man who would be her executive officer, Lt. John McIntosh Kell of Darien, Georgia.

Off the island of Terceira, in the Azores, *Enrica* was outfitted for war, taking on a waiting load of stores, coal, and guns. The technology of naval armament, too, was in transition. She took on six traditional, fixed, 32-pound cannon that fired solid shot and two pivot guns. One of these, a 110-pound

PAINTING BY GREGORY MANCHESS

rifled Blakely gun, was a shell-firing artillery piece of the future.

Also waiting in the Azores were the ship's new officers—including Capt. Raphael Semmes, a small, austere, wiry man who pomaded his brown handlebar mustache with such panache that his men called him "Old

Battle's bloodiest moment: After a shell explodes at a gunport on the Alabama—killing or wounding nearly half the 22-man gun crew—mangled bodies are removed, and First Lieutenant Kell, center, yells for replacements.

Divers grip corroded wreckage of the Alabama, which lies nearly 200 feet deep in frigid waters. Sediment clouds vision, and raging currents and the threat of nitrogen narcosis limit dives to 15 minutes. Shifting sands reveal copper coins and a galley cupboard stacked with china. "It's quite moving to find details of daily life," says Joë Guesnon (above, at left).

Beeswax." Semmes was born in Maryland, made his home in Mobile, Alabama, and had a special distaste for New England Yankees. Kell, the "luff," or first lieutenant, was by most accounts fair-minded, tall and erect, with a full beard calculated to underline his authority.

On a Sunday morning, in international waters, the Confederate ensign of Stars and Bars was hoisted over the ship renamed C.S.S. *Alabama*, and a brass band broke into "Dixie" as the men cheered. The ship's crew of 120, recruited largely from the original complement of the *Enrica*, was a diverse group—mostly English but including a few Canadians and a Portuguese steward named Antonio Bartelli. They were interested more in high wages and prize money than in flag and country.

"Now, my lads . . . ," Semmes told them at his first muster, "we are going to burn, sink, and destroy the commerce of the United States. Your prize money will be divided proportionately. . . . Any of you that thinks he cannot stand to his gun, I don't want."

WITH THIS MIXED ship's company, most of them "incorrigible young rascals" from Liverpool, as Lieutenant Kell called them, the *Alabama* steamed off into the North Atlantic and notoriety. She eventually sailed 67,000 nautical miles, sacking whatever Union merchant vessel or whaling ship came her way.

"We lived almost entirely on our prizes," wrote Kell. "When we had all we wanted, we set fire to the captured ship and sailed away to look for another."

Northern newspapers fumed and damned the *Alabama* and other Confederate raiders as "pirates" and "plunderers," acting outside the rules of warfare. Semmes, who scrupulously observed current "prize laws," vehemently denied the accusations.

Steaming toward Galveston, Texas, in early 1863, the *Alabama* encountered her first enemy warship, the U.S.S. *Hatteras*, an iron side-wheel steamer. With Semmes shouting "Give it to the rascals!" she sank the Union ship in 13 minutes, dropped off the Yankee prisoners in Jamaica, and steamed off to South America.

Gideon Welles, President Abraham Lincoln's secretary of the Navy, sent 18 warships in pursuit, complaining, "It is annoying when we want all our force on blockade duty to be compelled to detach so many of our best craft on the fruitless errand of searching the wide ocean for this wolf from Liverpool."

In May 1863, about the time that Robert E. Lee was marching his army toward Gettysburg, the *Alabama* stopped for repairs and resupply in the port of Bahia in Brazil. Then she took once more to sea, adding to her growing list of victims. When they anchored in Saldanha Bay, near Cape Town, in South Africa, the crewmen discovered they were regarded as heroes; an admiring Boer even took Kell on an ostrich hunt. But the crew's conduct ashore enraged Semmes, who complained to Kell that they were "faithless in the matter of abiding by their contracts, liars, thieves, and drunkards."

In Asian waters her reputation for swiftness preceded her. When she tied up at New Harbour, near the British colony of Singapore, awed Malaysians called the *Alabama kappal hantu*, or ghost ship, because she would appear out of nowhere. Eighteen American merchantmen were anchored in New Harbour, but about half changed their registrations within days, for fear of attack.

When Semmes intercepted the bark *Martaban*, with a load of rice, she was flying the British flag, but Semmes knew she was a Yankee. Her captain, Samuel Pike, had the unmistakable Yankee brogue, and although he produced English registry papers, he could not come up with the *Martaban*'s bill of sale. When Pike refused to yield, Semmes declared that he was "not to be humbugged by any sham papers" and ordered the bark burned. Many ships that flew the Union flag never returned to U. S. registry after the war, and some historians say the merchant fleet of the United States never fully recovered.

The *Alabama* left the Indian Ocean early in 1864 and steamed back toward Europe. At home the South had been defeated at Gettysburg and Vicksburg, and Union gunboats were patrolling the Mississippi.

"We are like a crippled hunter limping home from a long chase," wrote Semmes in his diary. Much of her gunpowder had deteriorated, and the ship, Kell observed, was "loose at every joint, her seams were open, and the copper on her bottom was in rolls" when she pulled into Cherbourg harbor on June 11, 1864, hoping to dry-dock for an extensive overhaul.

On June 13, ominous news: The U.S.S. *Kearsarge,* a black-hulled, 1,030-ton Union warship, in fighting trim, was steaming for Cherbourg. Her captain, John Winslow, was ill with malaria and out of favor with his superiors but anxious to redeem himself. He remembered Semmes from the Mexican War, when they had been on the same side, had even roomed together. On June 14 the *Kearsarge* appeared off Cherbourg.

Raphael Semmes had three options: He could attempt an escape, but the *Alabama* was in serious disrepair. He could abandon the ship at the French wharf, rationalizing that it had served its purpose. He could fight.

Some historians argue that Semmes' decision to face the *Kearsarge* was a *beau geste*, a chivalrous gesture. "Semmes could at least strike a blow for the honor of the Confederate Navy," writes John Taylor in his new book, *Confederate Raider: Raphael Semmes of the* Alabama. Others maintain he misread the hopelessness of his position and sacrificed his men and his ship frivolously. But on that day Semmes was spoiling for a fight.

"Mr. Kell . . . ," Semmes told his lieutenant, referring to the Stars and Stripes, "I am tired of running from that flaunting rag!"

The *Alabama* took on tons of coal. The crew scrubbed decks and polished brasswork, sharpened swords and cutlasses. The wharf rats from Liverpool, who had never even seen the American South, prepared to risk their lives for it, singing:

We've homeward bound; we've home-
ward bound,
And soon shall stand on English
ground,
But ere that English land we see,
We first must fight the Kearsargee.

The *Kearsarge* lurked outside the Cherbourg breakwater to wait for reinforcements. In Cherbourg there was talk of the Union vessel's use of heavy chains, slung over the sides to protect the hull and engine parts. The chains were held in place by wooden slats, making the hull look normal from a distance. But the *Kearsarge* had thus become an armored warship. If Semmes heard the reports, and there is strong evidence that he did, he chose to ignore them.

Instead, Semmes exhorted his crewmen: "The name of your ship has become a household word wherever civilization extends.

OLIVIER PUIG, ARCHÉOLYSE INTERNATIONAL

VICTOR BOSWELL

Bits of Alabama *history—bone buttons, nails, brass screws, a thimble (top)—were found in a water glass, perhaps tossed there from a sailor's pockets. Each artifact suggests a tale. The gimballed oil lamp recovered this year (left) may have lighted the captain's cabin. A cream pitcher encrusted with mineral deposits (above) might have teetered on mess tables. A tarnished 40-reis coin (right) was likely acquired when the* Alabama *anchored off Brazil.*

The ship's diverse crew—American, English, Welsh, German, Portuguese—were both rowdy and refined. They had a library, gave lectures, formed a glee club, performed plays. Chess and backgammon went "full blast," wrote Alabama *Lt. Arthur Sinclair in his memoirs, though cardplaying was prohibited. For relief from battle drills and ship's chores men would fish, swim, sail, and tally their prize money—a "favorite amusement." At night fiddles, guitars, and voices wailed. "Your musical bore has no conscience, and likes an audience, willing or unwilling," wrote Sinclair. The crew capped the evening by singing "Dixie" or "Bonny Blue Flag." At eight bells all fell silent, and men went on watch or to their hammocks—and dreams of home.*

C.S.S. Alabama

A commodious ship, the sleek 220-foot-long Alabama was appointed in England with Staffordshire china, a freshwater condenser, and four ornate flush toilets. Divers found one filled with mussel shells (above); another was restored for display, its brass handle intact (below). Ensconced in lead, the ceramic bowls depict boating scenes set in romantic landscapes.

VICTOR R. BOSWELL

Shall that name be tarnished by defeat?"

"Never!" a hundred voices sounded.

For days newspapers had trumpeted the impending naval duel, and thousands of onlookers had arrived. Many other people had come to inaugurate a new casino in Cherbourg that weekend. English textile tycoon John Lancaster and his family had come over in their luxury yacht, *Deerhound*. When word spread that the *Alabama* had steamed to meet her fate, churches emptied in Cherbourg, and 15,000 spectators lined the coastline.

On that warm Sunday morning, June 19, the *Alabama* slipped out of port, escorted by an armored French frigate, a flotilla of small craft, and a small boat thought to be carrying

National Geographic, December 1994

painter Édouard Manet, who later painted a scene of the battle.

Winslow unlimbered the guns of the *Kearsarge* and waited. As he was about to read the scriptures for religious services, the lookout bellowed, "She's coming out, and she's heading straight for us!"

As the *Alabama* closed in, her crew sanded the decks so they would not become slippery with blood. Winslow pulled the *Kearsarge* two more miles out to sea to avoid being in French waters and to make sure he could cut off the *Alabama*, lest she try to escape, wounded, back to France.

And then the two ships were on each other, though they remained more than a quarter mile apart. After 15 minutes of ineffective firing, a shell from the *Alabama* ripped through the bulwarks of the *Kearsarge* and exploded on the quarterdeck. Another tore into her sternpost, shaking the ship's timbers violently, but failed to explode.

On that hinge the battle seemed to turn, and Semmes soon realized something was wrong. "Our shell," he later wrote, "though apparently exploding against the enemy's sides, were doing him but little damage."

Shot smashed the *Alabama*'s steering apparatus. A shell exploded near the aft pivot gun, killing or wounding almost half the gun crew. A shell fragment ripped into Semmes' right hand as he stood on the quarterdeck, but he stayed at his post. Seamen were now stripped to their waists, drenched in sweat and black with powder. The ships were enveloped in smoke and circling each other, as one sailor remembered, "like two flies crawling around on the rim of a saucer."

The spectators in Cherbourg could not see the two ships but could hear the dampened sound of guns and see the clouds of smoke that floated over the Channel.

A shell passed through the *Alabama*'s starboard side after 45 minutes of battle, collapsing a coal bunker. Steam pressure fell. Water rose almost up to the furnace fires. Kell rushed below to find water pouring through holes the size of horses.

A few minutes after noon Semmes gave up his ship, ordering Kell to haul down the colors. "It will never do . . . ," he told him, "for us to go down and the decks covered with our gallant wounded."

After some of the injured men had been sent to the *Kearsarge* in a lifeboat, the cry went out: "Abandon ship! Abandon ship!"

Clutching pieces of spar or wooden scraps, the men leaped into the chill water, paddling to avoid the vortex of the sinking ship. The captain's steward, Bartelli, dutifully helped Semmes take off his boots, then perished. He could not swim but had told no one.

The *Alabama* settled swiftly into the English Channel, stern first. Semmes, Kell, and all the officers but one were rescued; Dr. Llewellyn, the assistant ship's surgeon, drowned. Kell was pulled into one of the *Deerhound*'s lifeboats, and on reaching the yacht, he found his captain already there, "stretched out in the sternsheets, as pallid as death."

Nine men were killed in action and 21 wounded. Twelve more drowned. The *Kearsarge* lost only one, Seaman William Gowen from New York, who died in Cherbourg's naval hospital. He was buried in the city cemetery along with James King of Ireland and George Applebee from New Brunswick, seamen from the *Alabama*.

The *Deerhound* reached Southampton that night. Semmes was lionized in England, and he swore till his death that he was ignorant of the chains on the *Kearsarge*'s hull.

The British press rhapsodized, "Fathoms deep in Norman waters lies the good ship *Alabama*, the swift sea rover—just so many tons of broken up iron and wood. . . ."

I FINALLY SAW that pile of iron and wood on June 19, 1988, the 124th anniversary of the battle, from a three-man research submarine loaned to us by the French company Intersub. On our first descent, with pilot Henri Sallis at the controls, we were lowered into the water by crane and, guided by sonar buoys, arrived on a desolate bottom of sand and gravel, strewn with mussel shells. The normally blue sonar screen flashed with red and orange shapes, leading us, and we floated silently toward a blurred, algae-covered mass that coalesced into . . . the unmistakable two-bladed propeller of the *Alabama*.

For two hours I strained against the porthole, elated, almost hypnotized by the forms in the searchlight, matching shapes in my head against what I had seen of the original shipbuilder's plan. Crabs and lobsters peered back from the rubble.

On October 3, 1989, France and the United States signed a historic agreement to form

the Joint French/American Scientific Committee for the C.S.S. *Alabama*, composed of two delegates from each country, plus experts from both sides of the Atlantic. Named from the U. S. were Dean Allard, director of U. S. Naval History, and Edwin Bearss, senior historian of the National Park Service; from France, Robert Leque Mont, director of underwater archaeological research for the French government, and Eric Rieth, a university professor of archaeology.

For the next four summers we struggled to make sense of the chaos. With experience, the divers could make 20 to 25 accurate measurements each dive. Jean Olive shot a daily videotape that proved invaluable as the underwater archaeologists sought to understand the mechanics of such artifacts as a steam propulsion system.

The French national electric company, Electricité de France, became our first industrial sponsor, and in 1992 it loaned us a remote-controlled caterpillar submarine used to clean refrigeration pipes of nuclear power stations. Adapting it for archaeology, we attached a vacuum hose to the vehicle and found that it could lift sand and debris from the site for 45 minutes straight.

During the 1993 season we brought up Brazilian coins—40-reis pieces—confirming the *Alabama's* sojourn at Bahia. Joë Guesnon, a diver with the Cherbourg club, found

a sperm whale tooth left from some seaman's scrimshaw hobby. We separated a jumble of needles, glass, chalk, nails, bullets, and a thimble, welded together over time. Kitchen items, ovens, oarlocks, lead weights used for depth soundings—the gadgetry and tools of industrial seamanship—came up piece by piece. Among the prized artifacts were three of the ship's four porcelain flush commodes, decorated with idyllic scenes.

After many arduous attempts, we at last raised the Blakely cannon from the seafloor. Still, we have only tokens of the great ship. The bulk of *Alabama* will never see the surface again; it would be impossible to lift her in one hour—the window the tide offers—and still preserve her archaeological integrity.

A tilted smokestack and silenced cannon bristle in Alabama's grave. This year divers managed to raise her huge Blakely cannon (below), still loaded with an unfired round; it swung like a three-ton fist in the current. Semmes rejoiced that his sunken ship was "safe from the polluting touch of the hated Yankee!" Yet he is honored by the zeal of his countrymen who toil with the French to resurrect Alabama's artifacts—and her memory.

In 1993 the United States Navy provided a grant to finance the conservation treatment of 47 artifacts now at a conservation laboratory in Crownsville, Maryland. Others are being treated in France, thanks to the generosity of Electricité de France.

Frenchmen, like Americans, have always cheered the underdog. Perhaps this is why Cherbourg took the *Alabama* and Capt. Raphael Semmes to heart, made them part of their folklore. Every family seems to have its story, its worn newspaper clip, of the battle. From the city cemetery, by the obelisk that memorializes the dead seamen, you can look over the rooftops of Cherbourg to the breakwater and out into the haze of the ocean and still feel the reverberations of that fateful day.

"God helps those who help themselves," and Raphael Semmes helped himself to the commercial fleet of the United States of America. But in the end, nothing became the *Alabama* as much as her death. Honor, sense of duty, courage. Whether we're Frenchmen, Americans, Britons, or those who revere the memory of the Confederacy—these qualities still touch our hearts. □

Buenos Aires

By JOHN J. PUTMAN

Photographs by STUART FRANKLIN

Making up for lost time

Proud and expansive, Argentina's capital glows with renewed vitality after years of political and economic strife. The energy peaks at dusk as drivers streak along Avenida 9 de Julio, touted as the world's widest street.

The plangent strains of tango, born in the lower-class barrios of Buenos Aires, lured Nicole Nau and Ritsaert Klapwijk all the way from Europe. They met in the city, married, and now dance professionally as Ricardo & Nicole. The duo performs under the sensuous gaze of Carlos Gardel, a tango-singing, swoon-inducing idol of the 1930s who popularized Argentina's national dance.

"I never believed," a broker said, "that I, or my son, would see the changes being made now."

THE PRESIDENT IS 64, just below average height, trim; the great sideburns that reached down to his jawbone when he took office, and were his trademark, have now been discreetly clipped back. But it is the eyes you remember: brown, quick, questing.

"My father was a traveling salesman," he said, "and I worked side by side with him, helping him go from door to door. And when he was able to open a small store, he sent me to the stores of competitors to look at the prices. If sugar was priced at 20 cents a pound, for instance, he would sell it for 18."

The president smiled at the memory. We talked in the Casa Rosada, the "pink house," the presidential mansion by the Plaza de Mayo, the main square of Buenos Aires.

Carlos Saúl Menem is an unusual President of Argentina: Not only was his father a peddler, but both his parents were Syrian immigrants, Muslims, in this traditionally Spanish and Catholic country. And Mr. Menem comes not from this great and sophisticated capital city but from La Rioja, a sere and impoverished province 500 miles to the northwest. He likes to race cars, play soccer, party late; he proclaims himself a fatalist.

Yet Mr. Menem, a lawyer and former governor of La Rioja, now nearing the end of his six-year term, has made dramatic changes in Argentina and Buenos Aires. These changes are helping sweep away the errors and tragedies that marked a half century of Argentine life. Those included military coups d'état, deadly violence, and economic policies that led to corruption, failed public services, and a currency without value.

"What I feel I can pride myself on since my election in 1989 is changing the mentality of the people, making them understand that the road we had been following was leading us to complete disaster.

"Politicians have been discussing economic reform for 40 years," Menem said, "but not one of them had the courage to implement change. I get my strength from my mind. God gave man this fundamental tool. With it you are able to control your body and your spirit and to overcome any hurdle. I never give up. I never lose courage.

"My goal is for Argentina to grow constantly to the year 2000, to take again our place among the best ten countries in the world, to regain the time and space that have been lost."

It was dark when I left the Casa Rosada; car lights were switching on as I walked up the Plaza de Mayo toward the old cathedral. How much history had transpired here, I thought. The Casa Rosada itself had risen on the ruins of an old Spanish fort. Across the way in the Cabildo, the city council hall in Spanish times, the revolution began in May 1810; the month gave the plaza its name.

Here in the 1940s and '50s the "shirtless ones" by the tens of thousands had cheered President Juan Perón, and here the military in 1955 seized his power and exiled him. And here too in the 1980s the Mothers of the Plaza de Mayo marched, demanding an accounting of their children, kidnapped and murdered by another military regime.

I thought too of others I had talked with in this huge and complex city. A union leader jailed six years by the military, recalling the terror of the past: "What happened to us was like a quiet river that overflows one day and surprises even the people who are camping peacefully beside it."

"I never believed," a broker said, "that I, or my son, would see the changes being made now. All my life I have seen my country go only down, down, down."

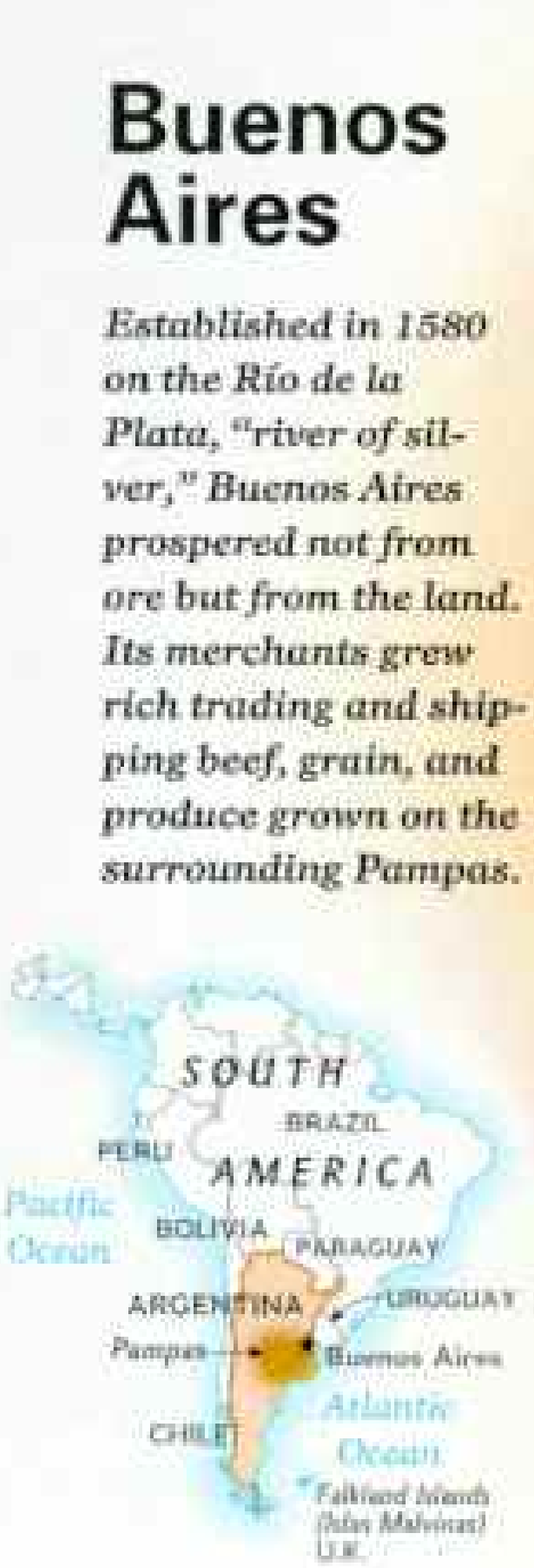
Clearly, many hopes are vested in the president from La Rioja.

JOHN J. PUTMAN, formerly a Senior Assistant Editor, has written 22 stories for the magazine. STUART FRANKLIN, who lives in Oxford, England, photographed Shanghai for the March 1994 issue.

Piety and patriotism fill La Boca district during a procession honoring the Virgin of the Martyrs. Religious banners share allegiance with the flag of Italy, a country prominent in the city's ethnic mélange.

Buenos Aires

Established in 1580 on the Río de la Plata, "river of silver," Buenos Aires prospered not from ore but from the land. Its merchants grew rich trading and shipping beef, grain, and produce grown on the surrounding Pampas.



I TOOK A TABLE in La Biela café, in the fashionable Barrio Norte. As lunchtime approaches, the café earns its name, "the connecting rod," spinning with the coming and going of politicians and businessmen on the make, beautiful women, schemers and plotters, shoeshine men, and gaunt beggars. But now at midmorning it was quiet.

I opened the morning paper, turning to the shipping pages. There is a special pleasure in being in a port city and reading that yesterday arrived the *Prosperity*, Liberian flag, from New York, and the *Jan Dlugosz*, Polish flag, from Japan, and departed the same day the *S. Caboto*, Italian flag, for Genoa. The notices hold the scent of the sea, a hundred miles down the broad estuary known as the Río de la Plata, the "river of silver," which can also be translated "river of money."

The first Spanish settlement here was attempted in 1536; besieged by Indians, the settlers were reduced to eating snakes, rats, their shoes, even the flesh of dead companions, before abandoning the place. In 1580 the Spanish tried again; this time the port of Nuestra Señora Santa María del Buen Aire—Our Lady Holy Mary of the Good Air—was firmly rooted, the Indians subjugated.

But Spain fixed its gaze on the riches of Peru and Mexico rather than on this remote backwater. The *porteños*, port dwellers, of Buenos Aires dabbled in contraband; a taste for the illegal, it is said, became a characteristic.

In time, with independence and commercial links with Britain, Buenos Aires flourished. From 1880 to the 1930s the port sent out the bounty of the vast Pampas that stretch to the west: hides, beef, wool, wheat, corn, grains.

The money flowed in. "Rich as an Argentine" became a saying. Porteños visiting Europe brought back architects to create for them great houses and streets as in Paris, an opera house like Vienna's; they ordered English tweeds and French silks. At the same time, hundreds of thousands of Spanish and Italian immigrants poured in seeking their fortunes. The great city swelled and swelled until, Argentines said, it was like a monster—a head too great for the size of the nation-body.

The metropolitan area now sprawls over 1,500 square miles and holds 11 million people—a third of the country's population. The central city bespeaks the golden age: Paris-like streets, sidewalk cafés, thousands of shops—simple and elegant—schoolgirls dressed in plaid skirts and dark blue sweaters and stockings, *porteros* minding the entrances to countless apartment houses.

Only the occasional *ombu* tree, its branches spreading over 50 yards and its huge roots twisting and writhing across the surface, reminds you that you are in South America.

In such a splendid city, drawing on the bounty of such a productive land, it is difficult to imagine things going bad, but they did. "The problems came," said Professor Roberto Cortés Conde of the Universidad de San Andres in suburban Victoria, "after the Second World War. Argentina, under Perón, adopted policies to close our economy to the world, to protect our industries from foreign competition, and to enable the government to intervene strongly in the economy. The idea was to isolate Argentina from world shocks such as depression and the two World Wars. Perón believed there would be a third.

"And so, while in the 1950s and '60s much of the world moved ahead, we lagged behind. Our infant industries remained infant industries, subsidized by the government. Inflation began its climb. In a way the government began to cheat the people, and the people to cheat the government."

"I feel it to be as eternal as air and water," Jorge Luis Borges, Argentina's poet laureate, wrote of Buenos Aires. The metropolis is home to 11 million people—one-third of the Argentine population. A bulge in the Riachuelo, lower left, became part of the region's first port and inspired the name residents use for themselves: porteños.

The smell of money is back in the air of the Microcentro financial district since President Carlos Menem wooed foreign markets, privatized industry, and cut price supports in a drive he calls "major surgery without anesthesia."

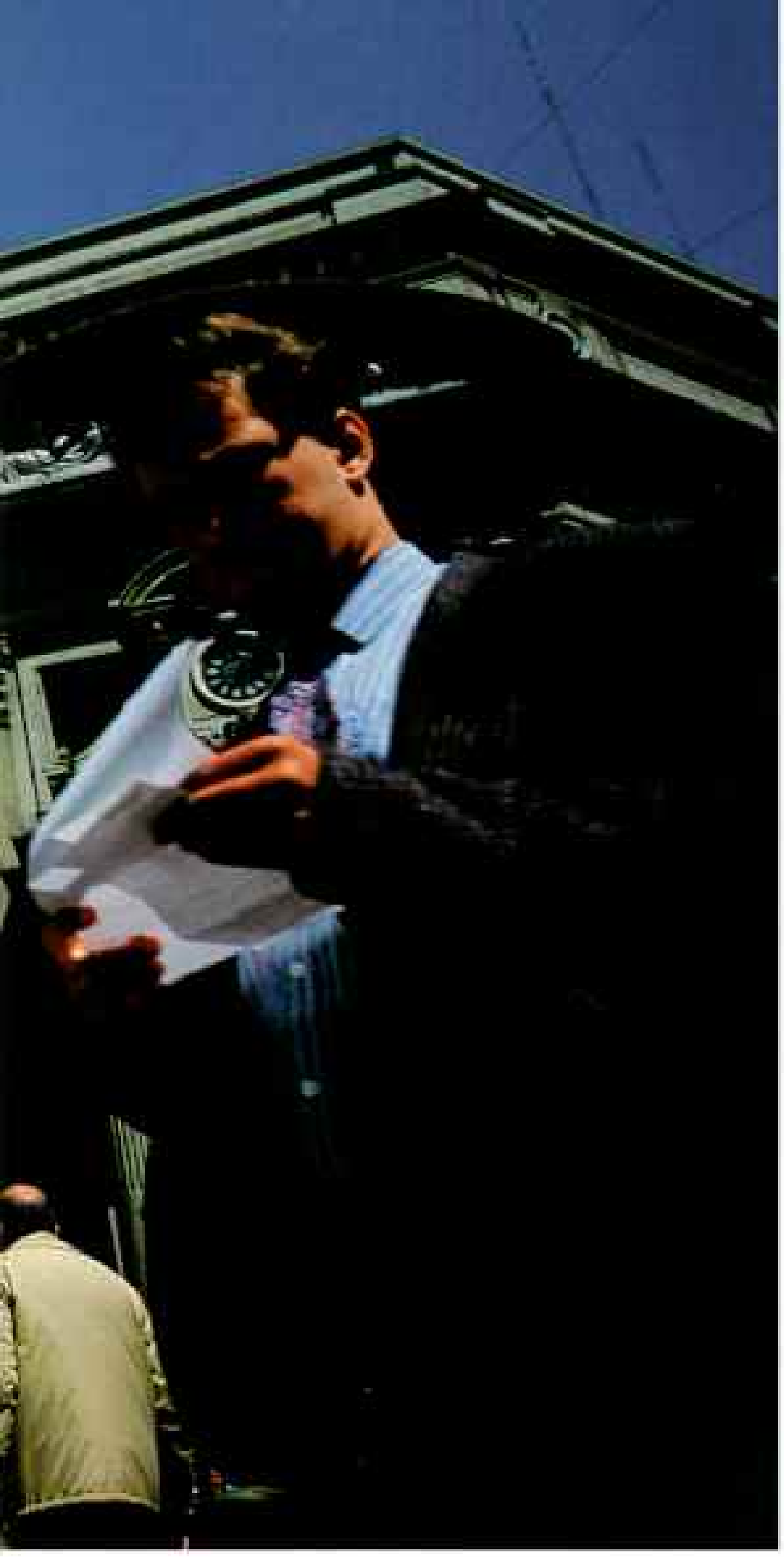
In Buenos Aires, people took to speculation and illegal tricks to make money; corruption flourished; public services eroded. In time grass grew tall in the city's great parks, around the noble statues, while rats overran the zoo.

The crash came in 1989—inflation reached 5,000 percent a year. Crowds broke into grocery stores for food. "People became convinced our system was wrong; they became ready for change," said Domingo Cavallo, now the economic minister.

At that moment Carlos Menem, the peddler's son, came into the presidency. He ordered change. It quickly began and continues under Cavallo and his team of technocrats.

They opened the economy to the world and began to sell off nationally owned industries: the airline, the oil company, the telephone service, and the electrical and gas systems. They removed price controls and laws that made it difficult to bring goods in or take money out. They pegged the peso to the dollar and backed every peso with a dollar in the nation's central bank.

Foreign investors came; business quickened. Trade in the stock market jumped from



one million dollars a day to 50 and 60 million, and on a few days a hundred million.

Companies from the U. S. are among those profiting from the new play in Argentina. Citibank, in the country for 80 years, now buys and sells Argentine stocks for U. S. clients. Philip Morris and IBM have increased their investment, while other companies have stepped up activities: Motorola, Burlington Northern, J. P. Morgan, Mobil, Texaco.

Every day Americans deplane at Ezeiza airport: seed salesmen, tax-law experts, and executives of consumer-product companies.

"Amway is doing very well," said a U. S. Embassy trade officer. In just four years, he added with satisfaction, "U. S. exports to Argentina have jumped from about 860 million dollars annually to 3.5 billion dollars."

The city is handsome again. The parks are neat and freshly mowed, having been "adopted" by companies such as La Nación, the great old conservative newspaper, and the Banco de Galicia, founded a century ago by immigrants from that part of Spain.

And change is in the air. Warehouses at the port, no longer needed in this age of containerships, are being converted into trendy flats and shops. Rail tracks in the Retiro area may be cleared to build riverside skyscrapers. Sidewalks are torn up to bury new telephone cables—inconvenient for the stroller but promising First World, not Third World, service. Modernity nips at the heels of the dowager city: New hotels and glittering shopping malls are capturing trade from aging favorites.

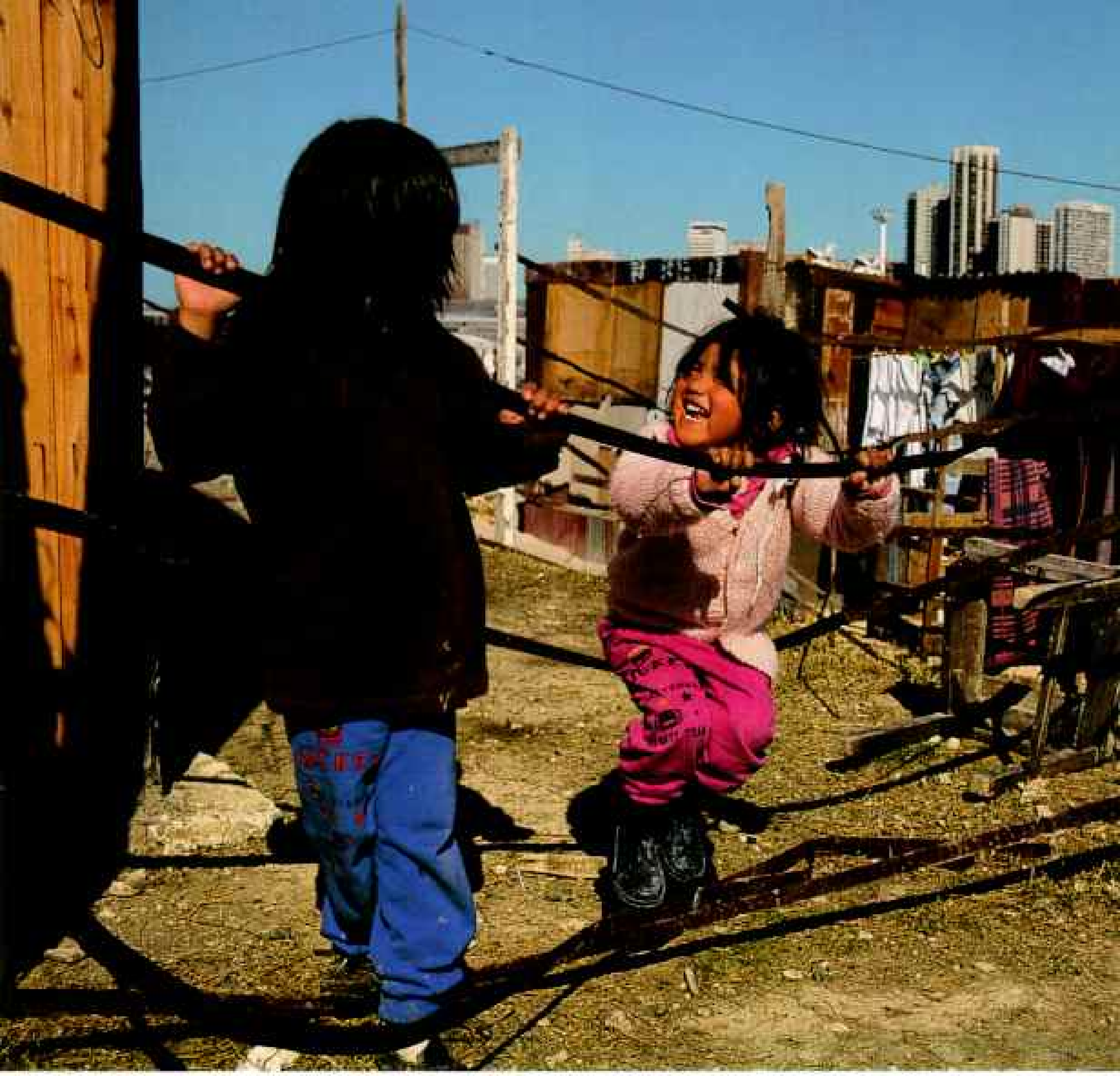
ECONOMIC REFORM, however, exacts a price: Jobs vanish. In preparing to privatize the railroad system, the government cut that workforce from 130,000 to 20,000. I found this harsh reality reflected as I sought a closer look at the character of the porteños.

In a calm neighborhood in Palermo—little traffic, shady trees, a park—I talked with Salvador Sapochnik, a psychoanalyst. He was tall, quiet-spoken, and wore a gray double-breasted suit. Buenos Aires, it is said, has more psychoanalysts and psychiatrists than any other city in the world—testimony, perhaps, to a certain complexity in the porteño psyche.

"We haven't Anglo-Saxon characteristics," Dr. Sapochnik said. "We are emotive, sociable; we like people, and we are very curious about everything."

What he sees often these days, Sapochnik said, "is depression, related to an economic situation. Middle-class people with a sudden change in fortune. A man will say his wife has sent him; he doesn't believe in psychoanalysis; he is a gentleman. He thinks if he had money again, everything would be OK. But his wife is worried. And, sooner or later, he always explains: 'I have no work.' "

One day I visited Jorge Helft, an art collector and impresario. His house and gallery across the street are filled with a treasure of modern Argentine art; it is critical, ironic, bitter. A life-size sculpture of a comically ugly man addresses his mirror admiringly—his



name, Narcissus. In another work a man climbs a curtain, fleeing . . . a mouse. A Communion cup on an altar holds not the Blessed Sacrament but false teeth.

"We are a surrealistic society," Jorge said. "People don't know what we are or what we are about. If you look for local color, for sombreros or Indians, you will not find it. This is a European city transplanted to Latin America—but we are not totally European, we are Latin American. This leads to confusion. Our great writer Jorge Luis Borges writes about dreams, labyrinths, unreality."

Dr. Sapochnik was right, I mused; this is not an Anglo-Saxon society.

It *is* a society of immigrants. Along with the floods of Spaniards and Italians had come Irish, Swiss, French, Arab, and Armenian immigrants. I went one night to the Armenian community center to help welcome the first consul from the newly independent Republic of Armenia, formerly part of the Soviet Union. There were priests with great beards, well-dressed families, food of the homeland: grilled lamb, cucumbers, yogurt.

Argentina's well-established Jewish community numbers 300,000; their immigration began around 1890, from Russia, Poland, Turkey, Syria, Lebanon, and Africa. Ninety percent of them now live in Buenos Aires, and they were grievously shaken last July when a massive bomb blast demolished the six-story Jewish community center on Calle Pasteur, killing a hundred of its occupants. President

The young can still laugh in Villa 31 in Retiro, a slum swollen with job seekers from the hinterlands. Such hardscrabble residents were the fervid constituency of Juan Perón, a president whose memorial remains a shrine 20 years after his death. Perón and his wife, Eva, were an incandescently charismatic team loved by the working class, loathed by the rich.

Menem denounced the act, attributing it to foreign Muslim extremists spurred by events in the Middle East.

Despite this atrocity—and a similar bombing at the Israeli Embassy in 1992—the Jewish experience in Argentina has been generally positive, says Rubén Beraja, a banker and Jewish community leader. "The fundamental root of this is the Constitution of 1853. It is pluralistic and respectful of mankind. It enabled us to win a space within the society."

Larger currents of immigrants have come more recently from Korea and—often illegally—from the neighboring countries of Paraguay, Bolivia, Uruguay, Peru, and Brazil. I discovered the reason one day in the dirt lanes of a slum named Villa 21-24, in Barracas. Porteños call slums *villas miserias*, villages of misery; the military, with its taste for order, assigned them numbers. Padre Juan Gutiérrez, 41, the parish priest, led me to an old British-built railroad warehouse, abandoned and later seized by the community.

"We broke in and repaired it," Padre Juan said. Inside, children and old people ate at long tables; in the kitchen bubbled polenta and meat sauce in great cauldrons.

We stopped at the house of an illegal immigrant family. From inside came Paraguayan sounds: from a radio, the traditional harp music of that country, and from the family, the soft syllables of Guaraní, the most widely spoken language. The man of the house introduced us to a new arrival. "He came

yesterday, looking for work. They're paying only five dollars a day in Paraguay." The newcomer shook our hands vigorously, his eyes shining with anticipation of a better life.

He might not find it. The slum holds 20,000 squatters. Most are from the Argentine provinces; some represent the second or third generation in the slum. Others arrived more recently, having slid downward from the lower middle class. "Most of the men work," Padre Juan said, "but are underemployed. Low wages. Jobs without guarantees."

The priest had helped set up a local council in the slum to buy 60 hectares (about 150 acres) of the city-owned land on which it sits. Pride of ownership, he thought, would spur improvements. "We'll start infrastructure work soon," he said, "put in electricity, try to stop the flooding problem." The flooding comes when storm winds shove waters of the Río de la Plata back up into its tributaries.

It seemed a race against decline. Claudia, a social worker, said, "The lack of work produces a lack of hope. And now cocaine has started; before it was only marijuana. It is a source of work now, buying and selling drugs."

The wee hours find a clutch of typically nocturnal porteños just hitting their stride at a card game in the Jockey Club, a palmy male sanctum with a $40,000 initiation fee. Induction into the upper crust starts early: At an agricultural fair, two porteñas fuss over a fledgling horsewoman. Though the city's English colony has thinned, a British patina has not.

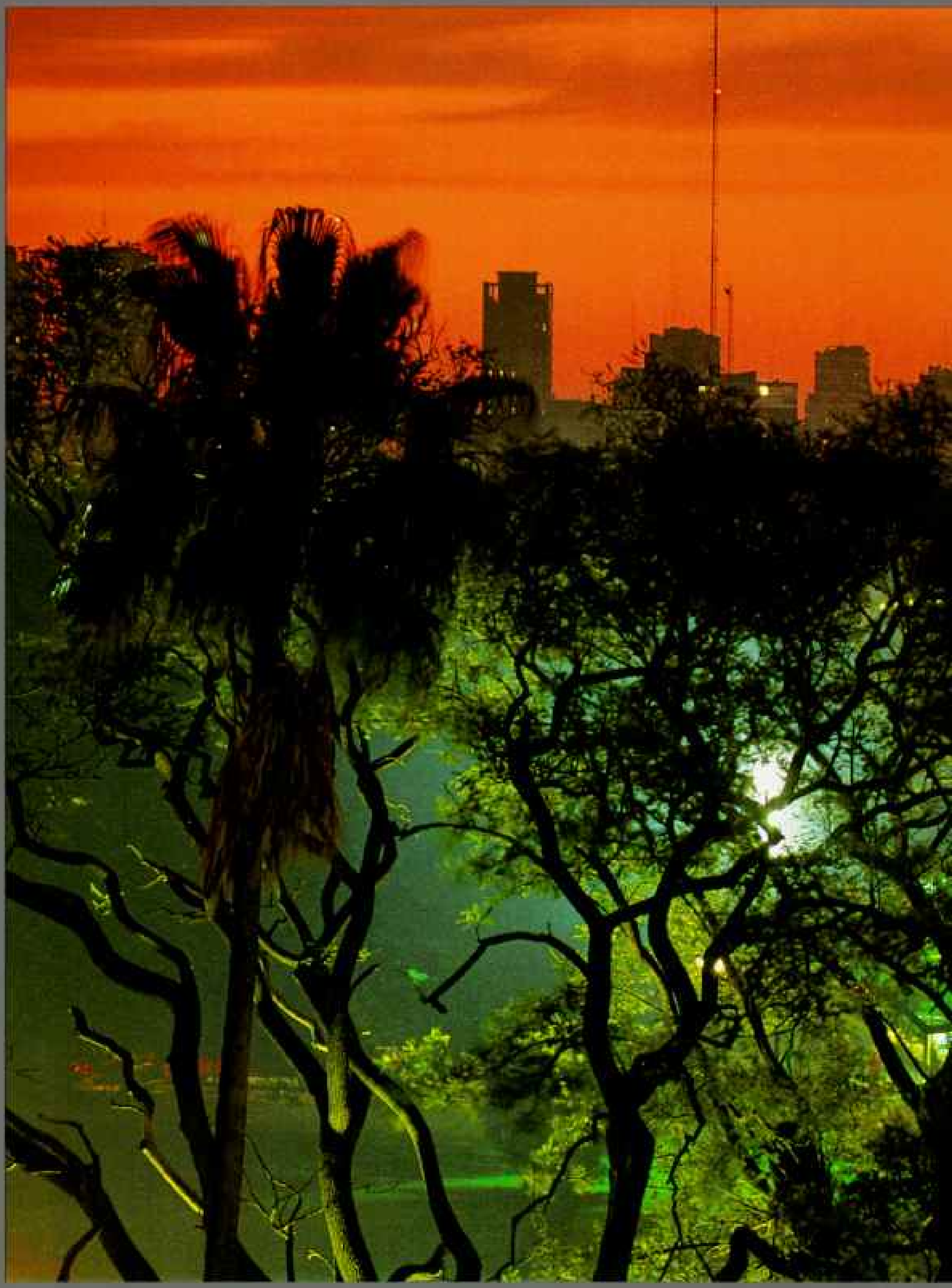
I NEVER HAD a boring day in Buenos Aires; there was too much to see. Some mornings I would jog along Avenida del Libertador, named for Gen. José de San Martín, who liberated Argentina from Spanish rule. Often I shared the sidewalk with the *paseadores*—professional dog walkers, each uncannily controlling as many as 20 dogs of varied breeds and sizes, all cheerfully moving down the great boulevard toward a park.

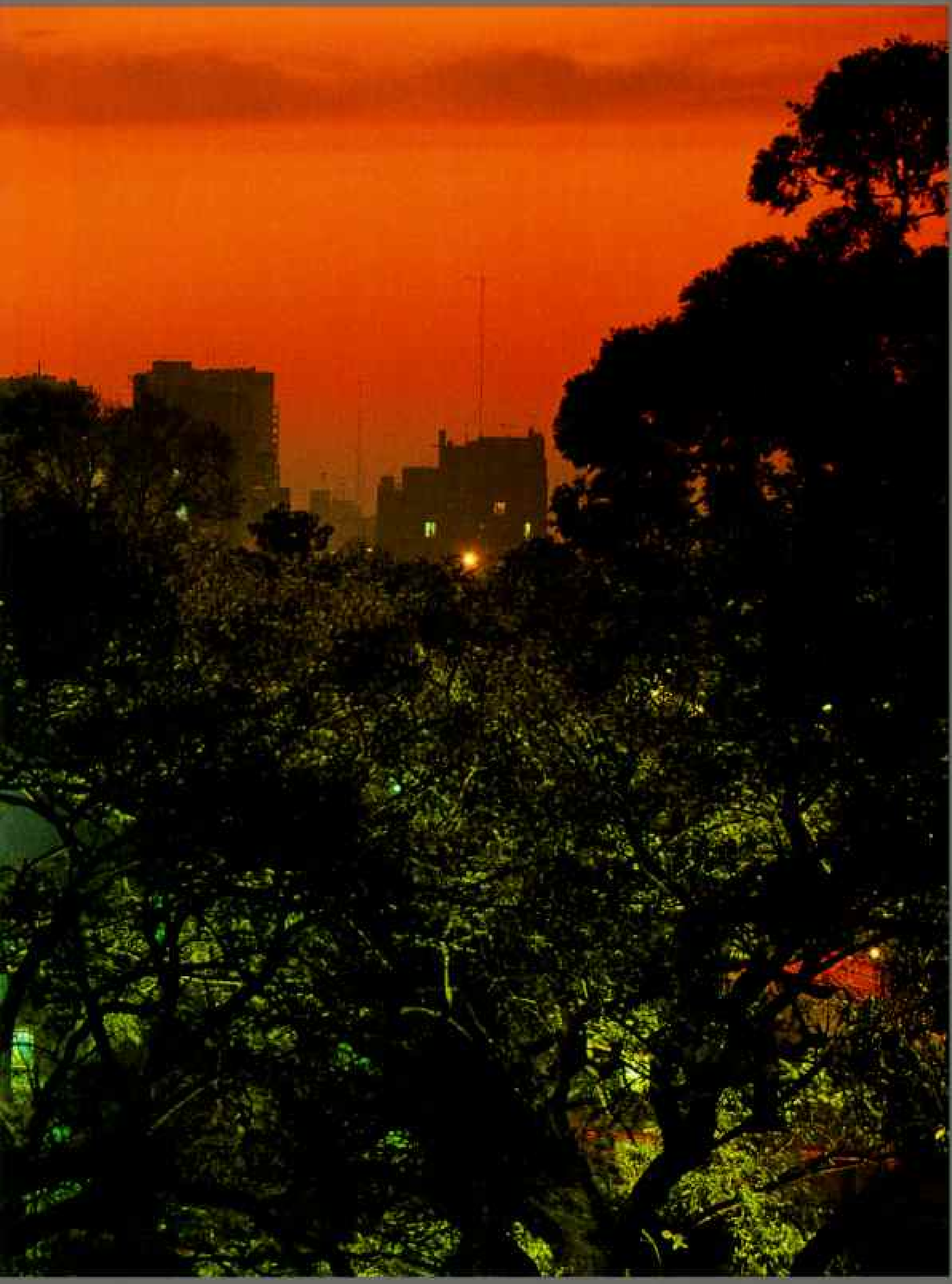
Along the eight-lane thoroughfare leading downtown from the north, morning traffic jams to a halt: private cars, school vans, brightly painted *colectivos*, the privately owned buses that serve as the city's main public transit. I would study the faces of drivers and passengers. How was it, I wondered, to live in this busy and crowded city?

Facundo Suárez Lastra, a former mayor and city councilman, had recently commissioned a poll to answer that question. The responses: "You live vertiginously at great speed" . . . "People are very upset" . . . "Everybody is very nervous." Respondents noted inefficiencies in city services, the bad conditions of the streets, and the flooding when it rained. One summed up: "We are overpressed." Yet, Facundo said, almost all said they preferred to continue living in the city. Here was life—as browsing through statistics confirms.

In the federal city of three million, the core of the metropolis, there are 42,000 taxis, 1.8 million private cars, 11,000 buses, 23 miles of subway, and six train lines. There are 35,000 police—one for every 85 people—and 66 hospitals, 19 universities, 13,000 restaurants and bars, 3,000 barber and beauty shops, and 140 funeral homes. And each year, 80,000 births.

I met Emilio Alzaga, 84, at the Jockey Club, which is housed in two fine old mansions on Avenida Alvear. There are rooms for snooker, bridge, poker, fencing, looking up one's genealogy, wagering on (and watching via television) races at the hippodrome, and many other activities. There are bars on every floor, and female guests must be escorted. In this anachronistic ambience, with cigar smoke and the click of chips and the slap of masseurs' hands, it seems the golden age persists.





Beneath a sanguine sky, the city of "good air" peeks over a stand of jacaranda trees. Porteños have breathed easier since 1983, when elections broke a long chokehold of dictators, depression, and mayhem.

But Emilio, whose family name is among the oldest in Buenos Aires, insisted that change has come even for the oligarchs—the great and fabulously wealthy landowners who controlled Argentina's destiny for decades.

"I am not a rich man," Emilio said. "The cattle industry is bad; I make only enough to pay taxes." And there is the long-term problem. "Unlike in England, where the eldest son inherits, in Argentina you must divide the inheritance equally among the children, so land is broken up each generation. My father's land was divided between me and my brothers. I have 1,200 hectares [3,000 acres], my father had 10,000. Once my family had 200,000.

"Now the strategy has to be for the children to come together in a corporation, holding the land together, and if one sells, he must sell to a sibling. And they will need to go into new crops: raspberries, asparagus, high-value things. Which is to say, in the future, one has to change absolutely."

Spirits were up following the dress rehearsal for Mozart's Don Giovanni at Teatro Colón, an opera house that rivals the Met in New York and Milan's La Scala. Colón's set designers were consulted by organizers of a charity ball, held at a hotel, which took as its theme a Venetian carnival. In no other Latin American metropolis are the trappings of European culture so ardently applied.

ARGENTINA'S OLIGARCHS were long envied—and scorned—by its common men, who struggled to rise from poverty. They came off the ships, lived in *conventillos*, long-galleried tenements, and pursued jobs, money, a foothold.

Some found wealth; more found Chacarita, the cemetery of the common man in Buenos Aires. It is walled, crowded, and covers 250 acres. Many tombs here belong to fraternal associations—volunteer firemen, for instance, or typographers—or groups of families whose forebears came from a particular town or region in Italy. The chambers beneath each tomb are lined with hundreds of drawer-like vaults, each bearing a small silver vase, a faded flower.

In these catacombs you can hear the slosh of water as workers clean and quarrel. Above, in the chapels, priests said final rites as wooden coffins came and went. Then to the tombs.

Maneuvering the coffins down stairs, the workers cried, "Careful of the head!" "Look out for the feet!" Their cries, the scraping of the coffins against walls, mixed with the sobs of the bereaved. Nothing, I thought, comes from nothing; present, future, past are corded tightly together.

It is fitting that in Chacarita lies Juan Domingo Perón, President of Argentina from 1946 to 1955 and again in 1973-74, hero of the common man. His tomb is a little house of gray stone. There were fresh flowers by the door.

A woman came, bearing a single flower to add to the others, along with a prayer. She said her name was Mercedes and that she had come to Buenos Aires from Spain in 1947.

"In those days there were jobs and money, not like today. I worked at everything: cook, seamstress. I married, had children. Those were good times. I came today to visit my daughter's grave. I brought flowers, and I saved one for Perón." She hurried away, turning up her collar, for it was cold that day and the sky now and then spit rain.

A gray-uniformed cemetery worker told me that in 1987 people went through the skylight of the Perón tomb, cut the hands from the corpse, and fled with them into the night. To this day, no one knows who or why.

Perón, a general, shaped Argentine history with those hands. He embraced the working class. Empowering trade unions, he gave workers political muscle and a share of the national wealth, and he set them against the

rich. He quarreled with the Catholic Church and drew more and more power to himself. The army, fearful of that power, in 1955 moved against him; he was sent into exile, ending up in Spain. The years that followed were filled with turmoil. Perón, allowed to return in 1973, was elected president but died in less than a year. He was succeeded by his third wife, Isabel. Then the army stepped in again.

The generals and the admirals in 1976 called their rule the Process of National Reorganization. The *Proceso* would be remembered instead for its *guerra sucia*—dirty war—against terrorists and dissidents, in which thousands of citizens were kidnapped and killed, and for the attempt by the military in 1982 to seize the Falkland Islands, or Malvinas, from the British. The defeat was a humiliation. The military yielded; in 1983 constitutional government returned under President Raúl Alfonsín.

When Alfonsín passed the president's colors to Mr. Menem in 1989, it was the first change from one democratically elected government to another in a half century.

Hired to pamper pets, a professional exerciser leads a double handful of perros on an outing from the well-to-do homes of Barrio Norte. Some dog walkers discipline those that misbehave by leaving them home for a day, denying them a romp in the park.

Porteños' mania for dogs rivals that of Parisians—a minor yet telling detail here in the self-proclaimed Paris of South America.

WITH TIME, memories of the dirty war are fading, civil rights lawyer Ramón Torres Molina told me. "It is known that 10,000 persons disappeared. Some estimate 30,000. Only 20, more or less, have been identified, discovered in a cemetery in La Boca, down by the river." Ramón himself had been jailed for seven years. Ramón survived; other stories are not yet ended. In an old-fashioned office on Avenida Corrientes, a wallboard holds scores of photographs of young women—smiling, some pretty, all now dead, murdered. It is the office of the Grandmothers of the Plaza de Mayo.

Some of the young women in the photographs had small children with them when arrested during the dirty war; others gave birth while in jail. In time the women were killed and their children taken by the jailers or given to friends or sympathizers of the regime.

"They took the child from my daughter five hours after it was born," said Estela Carlotto, chairwoman of the Grandmothers. "She never saw it again. My daughter was killed two months later. They gave me her body, but they never gave me the child, and I am still searching. He would be 15 years old.

"We believe the number of stolen children may be 500. We are determined to find them."

A genetic bank has been established: Relatives of stolen children can have their blood analyzed there and stored for future DNA fingerprinting, to establish that a child belongs to one family and not to another.

"The blood will be kept until the year 2050," said Mrs. Carlotto, "until the last of the stolen children has probably died."

At army headquarters on Calle Azopardo, I talked with Gen. Martín Antonio Balza, chief of staff. He is 60, tall, rangy, the son of a Spanish Basque immigrant. He fought in the Malvinas as commander of field artillery and after the Argentine surrender was briefly held as a prisoner of war by the British. His responsibility now is restructuring the army: reducing it in size, cutting costs, changing the culture.

"We can do nothing about the past," he said, "but we can do a lot about the future. The most important thing we learned in the Malvinas war"—and he raised his voice—

"is no more in political business! No more in politics!"

ON MY LAST NIGHT in Buenos Aires, I went to a tango bar. The dance and songs, invented here in the last century, are popular again; there are scores of clubs going. I chose a club down one of those crumbling little streets in the San Telmo district. It held no more than 40 customers and was so tiny and so jammed that it seemed as if everything took place in your lap.

"I was deceived," a woman sang. "Now I sing tango. I sell caresses, and I sell love to forget the man who deceived me."

The owner and the singer, both portly, danced belly to belly, she sliding around him gracefully, he sweating. The musicians, a pianist and an accordion player, were Uruguayans from across the river. The pianist wore rubber boots; it had rained that day. Members of an engagement party called out for favorite tangos: *"Gira!" "A Media Luz!" "Caminito!"*

Twice a male singer came in from the street, his hair black-dyed and combed back, his head large, the eyes far apart. The writer Borges had called this city a labyrinth; if so, here was a Minotaur for that labyrinth. The man sang: "You see that everything is a lie. Never expect anyone to help you, never expect a favor." The crowd sang along, nodding.

Cynicism and pessimism have long been currents in this city, hopes having so often been dashed. Perhaps now, after a half century of bitter lessons, I reflected, things might be put right. Mr. Menem, the president who trained his mind and believes in fate—or whoever replaces him in the coming election—will have a great opportunity.

It was early morning when I left the club. The streets were empty, the taxi moving fast, other clubs still full. In Buenos Aires the night does not end until dawn. □

America's Poet

FREETHINKER, PATRIOT, HUCKSTER, AND REVOLUTIONARY WHO DECLARED THE BODY SACRED AND ITS APPETITES WORTHY OF POEMS, WALT WHITMAN CELEBRATED A REPUBLIC OF EQUALS, FROM PEDDLERS TO PRESIDENTS. HIS MASTERPIECE, LEAVES OF GRASS, WAS UNAPPRECIATED IN HIS DAY, BUT A CENTURY LATER WHITMAN'S VOICE STILL SINGS OUT—AS FRESH AND VIBRANT AS THE ROAR OF CITIES, THE BOOM OF SURF.

Walt Whitman

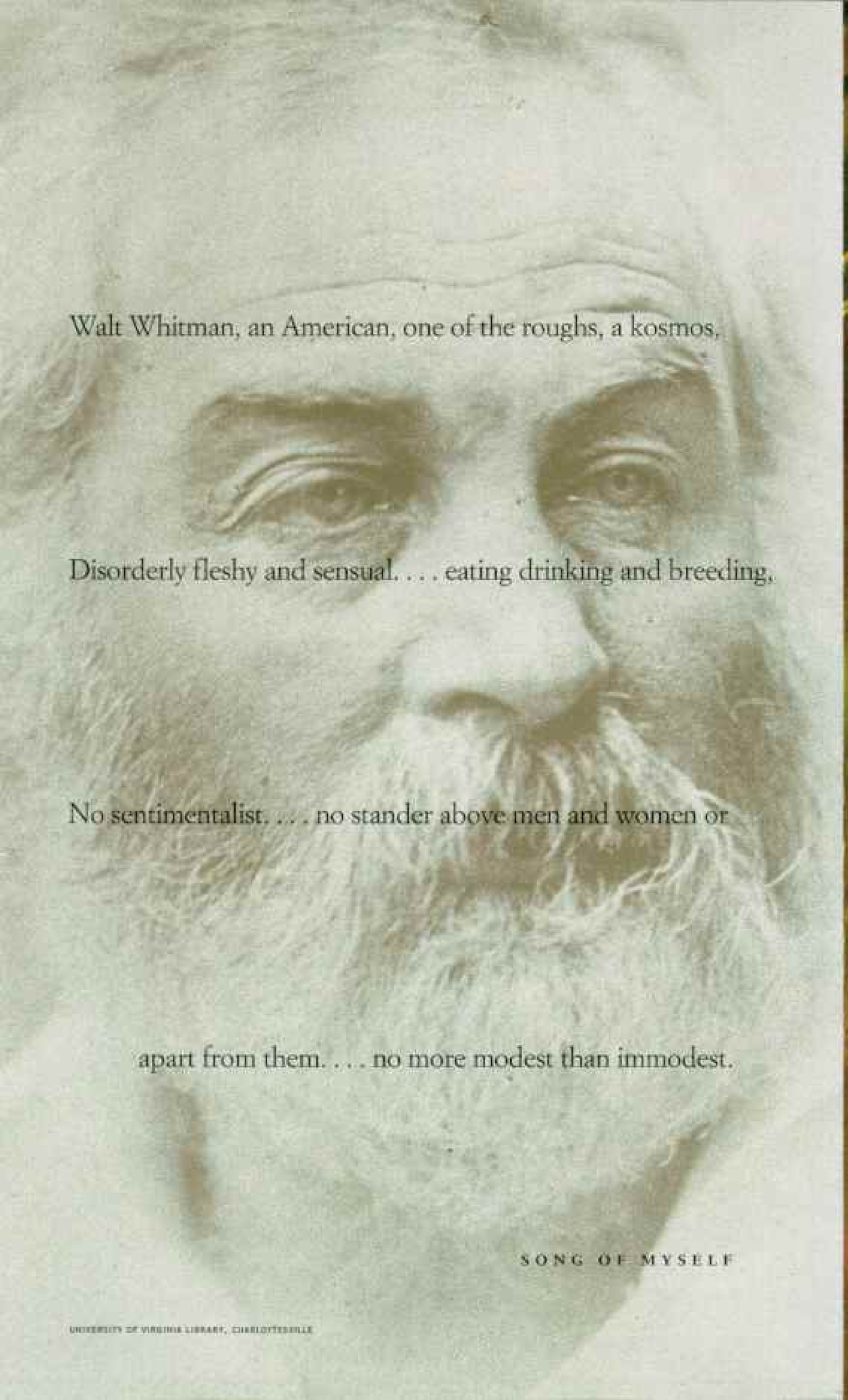
By JOEL L. SWERDLOW
NATIONAL GEOGRAPHIC SENIOR WRITER

Photographs by MARIA STENZEL

You sea! I resign myself to you also—I guess what you mean,
I behold from the beach your crooked inviting fingers,
I believe you refuse to go back without feeling of me,
We must have a turn together, I undress, hurry me out of
sight of the land,
Cushion me soft, rock me in billowy drowse,
Dash me with amorous wet, I can repay you.

SONG OF MYSELF

Bucking stormy seas, a lifeguard rides the surf off Montauk, New York—Walt Whitman's youthful swimming grounds. Sprinting on New York beaches, Whitman hurled lines of poetry at the waves.



I believe a leaf of grass is no less than the journey-
work of the stars,
And the pismire is equally perfect, and a grain
of sand, and the egg of the wren,
And the tree-toad is a chef-d'oeuvre for the highest,
And the running blackberry would adorn the
parlors of heaven,
And the narrowest hinge in my hand puts to scorn
all machinery,
And the cow crunching with depress'd head
surpasses any statue,
And a mouse is miracle enough to stagger sextillions
of infidels.

SONG OF MYSELF

Washed by a summer sun, orchids sprout on the dunes at Montauk. Whitman's oft amended *Leaves of Grass* grew as lushly—from a collection of 12 poems in 1855 to 397 in the 1892 final edition.

Trailing sunrise in its wake,
New York's Staten Island Ferry
exudes a gritty charm that
entranced Whitman, America's
first urban poet. Ferries, he wrote,
"afford inimitable, streaming,
never-failing, living poems."

I am with you, you men and women of a generation,

or ever so many generations hence,

Just as you feel when you look on the river and sky, so I felt,

Just as any of you is one of a living crowd, I was one of a crowd,

Just as you are refresh'd by the gladness of the river and the

bright flow, I was refresh'd,

Just as you stand and lean on the rail, yet hurry with the

swift current, I stood yet was hurried,

Just as you look on the numberless masts of ships and the

thick-stemm'd pipes of steamboats, I look'd.

CROSSING BROOKLYN FERRY

Whoever you are, now I place my hand upon
you, that you be my poem,
I whisper with my lips close to your ear,
I have loved many women and men, but I love
none better than you. . . .

Old or young, male or female, rude, low,
rejected by the rest, whatever you are
promulges itself,
Through birth, life, death, burial, the means
are provided, nothing is scanted,
Through angers, losses, ambition, ignorance,
ennui, what you are picks its way.

TO YOU

"Strangers like to talk to us," says retiree Cecilia Sargent, who frequents New York's Central Park with her husband, Henry. The voices of passersby—tradesmen and idlers—echo in Whitman's poems.

Mardi Gras

"Stranger," Walt Whitman says in *Leaves of Grass*, "if you passing meet me and desire to speak to me, why should you not speak to me? / And why should I not speak to you?"

I never listened. Despite a passion for books, I read Whitman and other poets only under duress. I received a C in college English and never took another literature course after my freshman year. *Leaves* still sits on my bookshelf. This passage—which I underlined during a homework assignment—shines like a beacon, a voice I heard long ago but did not answer.

Whitman did for poetry what Miguel de Cervantes did for the novel, Bertolt Brecht did for theater, and Pablo Picasso did for painting: He redefined the rules. In terms of style and subject matter most 20th-century poets in the United States—and many throughout the world—are his grandchildren. Poems from *Leaves of Grass*, furthermore, are required reading in America's schools and have been translated into dozens of languages.

These translations line bookshelves in the old farmhouse in which Whitman was born. I have come to West Hills, Long Island, looking for clues. Who was Whitman? What have I been missing?

Schoolchildren's pennies helped buy this house in 1951, saving it from bulldozers. The house has Dutch doors and ax-cut beams—all from the hands of Walter Whitman, Sr., a carpenter and sometime farmer. By the time Walt was born in 1819, the Whitmans had lived on Long Island for nearly 200 years. Patriotism pervaded their household. One of Walt's five brothers was named George Washington Whitman, another Thomas Jefferson Whitman, and another Andrew Jackson Whitman.

The house is now on a four-lane highway, diagonally across from the Walt Whitman Mall. Inside the mall five teenagers are eating pizza. "Do you know about Walt Whitman?" I ask. Four have heard that Whitman is a "cool" poet, but one responds, "I thought he was the guy who owns the mall."

When I settle into my motel room, it is time to confront poetry once again. In the 30 years since freshman English, I have attempted to read poems only once. In 1984 someone I loved had a fatal illness. His girlfriend found solace in poetry and recommended a particular collection. I glanced at a page, liked it, and for a week walked around with the poems in my hip pocket. Their physical presence provided comfort, but I never read more than a few lines.

Now I select a Whitman poem entitled "Out of the Cradle Endlessly Rocking," which literature professors consider one of Walt's best. "Out of the mocking-bird's throat, the musical shuttle, / Out of the Ninth-month midnight, / Over the sterile sands and the fields beyond, where the child. . . ."

My eyes drift over the next few pages, looking for something to happen. By "the lilac-scent was in the air" I feel sleepy, and at "Low hangs the moon, it rose late" I reach for the remote control.

I feel guilty, but I enjoy a good movie on television.

Photographer MARIA STENZEL discovered Walt Whitman in college while majoring in American studies. Her most recent GEOGRAPHIC article was "America's Beekeepers," in the May 1993 issue.

A poetic shot in the dark, the first edition of *Leaves* appeared in Brooklyn to yawning indifference. Critics deemed it an oddity, remarkable primarily for its saucy engraving of the author (left, at bottom) and its "grotesque" style.

PHOTOGRAPHED AT WALT WHITMAN HOUSE, CAMDEN, NEW JERSEY

LIBRARY OF CONGRESS

ALTHOUGH the Whitman family moved to Brooklyn just a few days before Walt's fourth birthday, he retained his love for the Long Island countryside —"Sea-beauty! stretch'd and basking!" As a young man he often went swimming, clamming, and fishing. He walked the deserted beaches at Coney Island, where he says he recited Shakespeare and Homer to the waves.

I follow Whitman to the beach. It is easy to see why he spoke to the sea. Waves are always alive, ever ready to listen and talk back. Yet few of us walk along a deserted beach reciting poems. Young Walt clearly perceived life—and himself—in heroic proportions. Walk with me, Walt, and tell me what inner voices you heard. What was awakening inside you?

No answer can be found. The influence of his family seems limited. His mother read primarily religious publications. His father was rough and heavy drinking. Three of seven siblings suffered crippling emotional problems. Nor was school important: He quit at age 11. Yet Walt, borrowing books whenever possible, read *Arabian Nights* and novels by James Fenimore Cooper and Sir Walter Scott—all of which left him "simmering, simmering."

The most important influence on Whitman was a daily journey that began on the ferries that shoelaced Brooklyn and Manhattan. In Whitman's day those ferries—which ran until the 1920s—carried millions of passengers each year.

A few short blocks from the Manhattan ferry landing, Whitman patronized Fowler and Wells, phrenologists who charted the shape of skulls to determine personality and talents. Whitman, Fowler and Wells concluded, had "friendship and sympathy," as well as "indolence and a tendency to the pleasures of voluptuousness."

Whitman worked near Fowler and Wells as a newspaper reporter and editor, after jobs as a schoolteacher and printer's apprentice failed to hold his attention. His journalism—coverage of fires, crimes, local politics, and slavery, which he called a "fearful crime"—was solid but forgettable. Whitman also wrote undistinguished short stories and a temperance novel, *Franklin Evans*. His first poems, published in several New York newspapers—"But where, O Nature, where shall be the soul's abiding place?"—were sophomoric.

Several newspapers fired Whitman for poor work habits—he is "so lazy that it takes two men to open his jaws when he speaks," said one colleague—and for challenging powerful interests on issues such as labor conditions and government corruption. Between 1842 and 1845 he worked for at least ten newspapers in the New York area.

New York's busiest street was Broadway. It stretched for about three miles from the ferry landing to 14th Street. Along the way were theaters, opera houses, hotels, restaurants. "I swim in it as in the sea," he wrote.

Whitman attended the opera often and loved to sing works by Rossini, Bellini, Mozart, and Verdi. His principal passion, however, was talking to men whose work gave them time to kill. He sat with Broadway stagecoach drivers, men with nicknames like Balky Bill and Old Elephant, and stopped to chat at the firehouse just off Broadway near Canal Street.

Nearby at Engine Company 24 and Ladder Company 5 the firefighters welcome conversations with passersby, as they did in Whitman's time. On the day I visit, black-and-purple bunting covers the front of their firehouse. Flowers, candles, and handwritten notes spill

Child of a changing century, Whitman was born on his family's farm on Long Island (above left) in 1819 but spent his childhood migrating to and from Brooklyn, where his father, a homebuilder, scrambled for work. Whitman's restored birthplace (above) draws thousands of poetry pilgrims every year.

across the sidewalk. One week earlier two of their men died while putting out a fire; another was critically burned.

Dave Schleifer, a firefighter, takes me to the kitchen. It is spotless and looks like home for a family large enough to need an extra-long table. The men had been fixing dinner when the fatal call arrived. Dave shows me two inch-long, thick masses of rubber, all that remains of one dead firefighter's boots. Heat also reduced a helmet into a melted chin buckle.

"What does it mean to be brave?" I ask.

"To do what you have to do when other people are counting on you," he replies.

Outside, amid the flowers, somebody has left a poem by Whitman: "I understand the large hearts of heroes, / The courage of present times and all times; / . . . I am the man. . . . I suffered. . . . I was there."

I SWIM BACK INTO BROADWAY'S SEA, looking for Whitman in the crowds. Six feet tall. Thick chested. One hundred eighty pounds. Baggy trousers tucked into boots. Hands in pockets of calico jacket. Swagger. Shirt unbuttoned to expose muscular neck and hairy chest. Beard prematurely whitening. Freshly scrubbed face. Large, heavy-lidded eyes. Those eyes were key to his conversations. He asked questions, let you float up into sky-blue irises, and listened. You felt important. I am jealous of people who walked these same streets and got to meet him.

Whitman told no one when, at around age 30, he began writing *Leaves*. The Bible, classics, opera, patriotism, his experiences as a journalist, and love of nature all contributed to the song flowing from his fingers. Many people write from torment and misery. Walt's principal inspiration was what made him happiest, the people he said he "absorbed." He made his poems, more than anything else, a personal conversation.

Why did Whitman suddenly listen to his own voice? Most artists struggle, producing failed efforts with glimmers of future greatness. Whitman's transformation into a genius appears effortless. It seemed simply to happen. Whitman himself could offer no explanation. "I just did what I did because I did it—that's the whole secret," he said later. Photographs show that around this time his eyes become lighter, more inviting.

In 1855, after about five years, Walt published *Leaves of Grass*, setting some of the type himself. Twelve poems filled 83 pages. Whitman listed no author but ran a small picture of himself, jaunty, hand on hip. The absence of an author emphasized Whitman's belief that the voice in *Leaves* is Everyone.

Before Whitman, serious poems followed strict rules of rhyme and meter and generally addressed grandiose, romantic subjects. No poem in the original *Leaves* rhymes, and most focus on mundane concerns like earning a living. "Blacksmithing, glass-blowing, nail-making, coopering, tin-roofing, shingle-dressing," says "A Song for Occupations." Woven throughout is the proclamation that American democracy represents a new and irresistible force: "Unscrew the locks from the

doors! / Unscrew the doors themselves from their jambs! / . . . I speak the password primeval. . . . I give the sign of democracy."

Whitman's ambition matched his audacity. He wanted the citizens of this democracy, the so-called common people, to incorporate *Leaves* into their daily rhythms.

Disappointment came quickly. Whitman's mother, with whom he still lived, found the book "muddled." Few bookstores would carry *Leaves* because of its content. Whitman said that poor people are as valuable as the rich and that women are the equals of men. Even worse, in an age that covered naked piano legs out of modesty, he praised the human body. Whitman, said one critic, "brought the slop-pail into the parlor."

Lured by Whitman's praise of phrenology, Fowler and Wells offered *Leaves* in its stores. Although few copies sold, Walt was not discouraged. He was, in brother George's description, "stubborner than a load of bricks."

Whitman, in the meantime, mailed *Leaves* to Ralph Waldo Emerson, America's premier poet. Whitman had no reason to expect an answer. The two men had never met and had no friends in common.

"I rubbed my eyes a little to see if this sunbeam were no illusion," Emerson wrote back to Whitman from Concord, Massachusetts. "[*Leaves* is] the most extraordinary piece of wit and wisdom that America has yet contributed."

Never overly modest, Whitman wrote unsigned reviews of his own work, which various newspapers published. "An American bard at last!" read one; another proclaimed, "We announce a great Philosopher—perhaps a great Poet." But he achieved some of his fame because he was so easy to parody. In 1857 the London *Examiner* offered its version of a Whitman poem: "The teapot, five coffee cups, sugar basin and cover, four saucers and six cups."

THE *Leaves* that people ignored or mocked are now worth about $40,000 each. I stand in a Long Island bank vault with Barbara Mazor Bart, executive director of the Walt Whitman Birthplace Association, which stores its treasures here while constructing a visitors center. I have returned to read one of the fewer than 150 known survivors of the original 795 copies of *Leaves*.

Skimming Whitman's preface, I find a summary of his philosophy:

"Love the earth and sun and the animals, despise riches, give alms to every one that asks, stand up for the stupid and crazy, devote your income and labor to others, hate tyrants, argue not concerning God, have patience and indulgence toward the people, take off your hat to nothing known or unknown or to any man or number of men, go freely with powerful uneducated persons and with the young and with the mothers of families. . . . re-examine all you have been told at school or church or in any book, dismiss whatever insults your own soul, and your very flesh shall be a great poem."

Also in the preface are instructions about how to read *Leaves*. Go out in the open air, Whitman says. That night, I follow his advice, selecting "Song of Myself." You try it. Fold back the magazine, go outside, and read aloud with me.

"I celebrate myself, and sing myself, / And what I assume you shall assume, / For every atom belonging to me as good belongs to you.

"I loafe and invite my soul, / I lean and loafe at my ease observing a spear of summer grass.

"My tongue, every atom of my blood,

From dandy to dreamer: Whitman reinvented himself during the writing of *Leaves of Grass*. Foppish fashions in the late 1840s (above)—perhaps from his newspaper days in Louisiana—gave way to working-class dress in the 1850s (facing page). Whittling his byline, Walter became homespun Walt.

PHOTOGRAPHED AT WALT WHITMAN HOUSE (ABOVE); NEW YORK PUBLIC LIBRARY, BERG COLLECTION (FACING PAGE)

form'd from this soil, this air, / Born here of parents born here from parents the same, and their parents the same, / I, now thirty-seven years old in perfect health begin, / Hoping to cease not till death."

The words are nice. They have melody. But I do not understand what I am reading, and I feel silly. Something keeps me going. "Creeds and schools in abeyance, / Retiring back a while sufficed at what they are, but never forgotten, / I harbor for good or bad, I permit to speak at every hazard, / Nature without check with original energy."

Please excuse me. I cannot read aloud anymore. The poem mentions houses and perfumes and then describes 28 young men. They are swimming. A young woman watches through a curtain. She finds them attractive. And then? An unrelated scene begins.

Even though I am discouraged, Joseph Brodsky, poet and winner of the 1987 Nobel Prize in Literature, tells me that reading aloud is indeed the best way to find Whitman. "Poetry *is* meant to be read aloud," he explains. "It's much more engaging than reading silently. You hear not only content, you hear the entire euphony of the words. Nothing beats the spoken word even if you are speaking to yourself."

According to Brodsky, who teaches at Mount Holyoke College, I went off course by expecting the poem to provide a story or drama that would keep my attention. Instead, he says, I should realize that poetry offers things available nowhere else: condensed scene, emotion, and story; a glimpse of something greater than ourselves; a stop sign that keeps us from rushing from moment to moment. "Poetry," he concludes, "is a mental accelerator that, if mastered, can cure anguish or cause joy."

But Brodsky also says that throughout history only about one percent of any given population reads poetry.

"If poetry offers so much that's special," I ask, "why is this percentage so low?"

"People get too busy. They get convinced that other pursuits are far more rewarding. They've been robbed. They should give poetry another try."

Brodsky wants to help by "putting poetry in places where people kill time." Andrew Carroll, a 24-year-old native of Washington, D. C., is working with him on the American Poetry & Literacy Project. They have placed 10,000 collections of poetry—which include Whitman's most familiar verses—on bedside tables in American hotels. "Books get stolen every day," Carroll says. "That's great. The poetry becomes part of people's lives."

One woman found the book and then walked through nearby woods, reading poems out loud. Each poem, she said later, "touched a part of my soul that had not been touched in a long time."

Carroll has confidence that comes from not knowing what is considered impossible. "We want to get poetry into every hotel and hospital room, jail, school library, and nursing home in America," he says.

WALT WOULD BE HAPPY, but as I have learned, it can take more than a book and a motel room to get you to read poetry. I need the English teacher played by Robin Williams in the 1989 movie *Dead Poets Society*. He ordered students to rip the introduction from their poetry textbooks. "Learn to think for yourselves," Williams said. He told them that poetry can stimulate romance and captured Whitman's passion on the blackboard: "I sound my barbaric YAWP over the rooftops of the world."

"The movie is quite realistic," says Sam Pickering, the real teacher Williams was portraying. "I was 24 years old in 1965, teaching 15-year-olds at the Montgomery Bell Academy in Nashville, Tennessee. I was full of excitement. One of my students later used his notes for the movie screenplay."

I have reached Pickering by telephone in Perth, Australia, where he is on sabbatical from the University of Connecticut. Something in his voice *(Continued on page 134)*

Towed by a plane, an underwear ad hails a turbather on Long Island. Whitman's odes to sex and homoeroticism shocked many 19th-century ears—but not all. "My moral constitution may be hopelessly tainted," one female admirer wrote of *Leaves of Grass*, "but I confess that I extract no poison from these 'Leaves'—to me they have brought only healing."

O my body! I dare not desert the likes of you in other men
and women, nor the likes of the parts of you.
I believe the likes of you are to stand or fall with the likes
of the soul, (and that they are the soul.)
I believe the likes of you shall stand or fall with my poems,
and that they are my poems.

I SING THE BODY ELECTRIC

New York's skyline muscles into a sunset over the East River (below). The city's blunt vitality, exalted by Whitman, survives today in shop-front jam sessions (far left), in lunchtime stampedes, and in the sass of immigrants like Guatemalan can collector Maria Rivera, who declares, "I don't read poems, but I do sing."

What hurrying human tides, of day or night!

What passions, winnings, losses, ardors, swim thy waters!

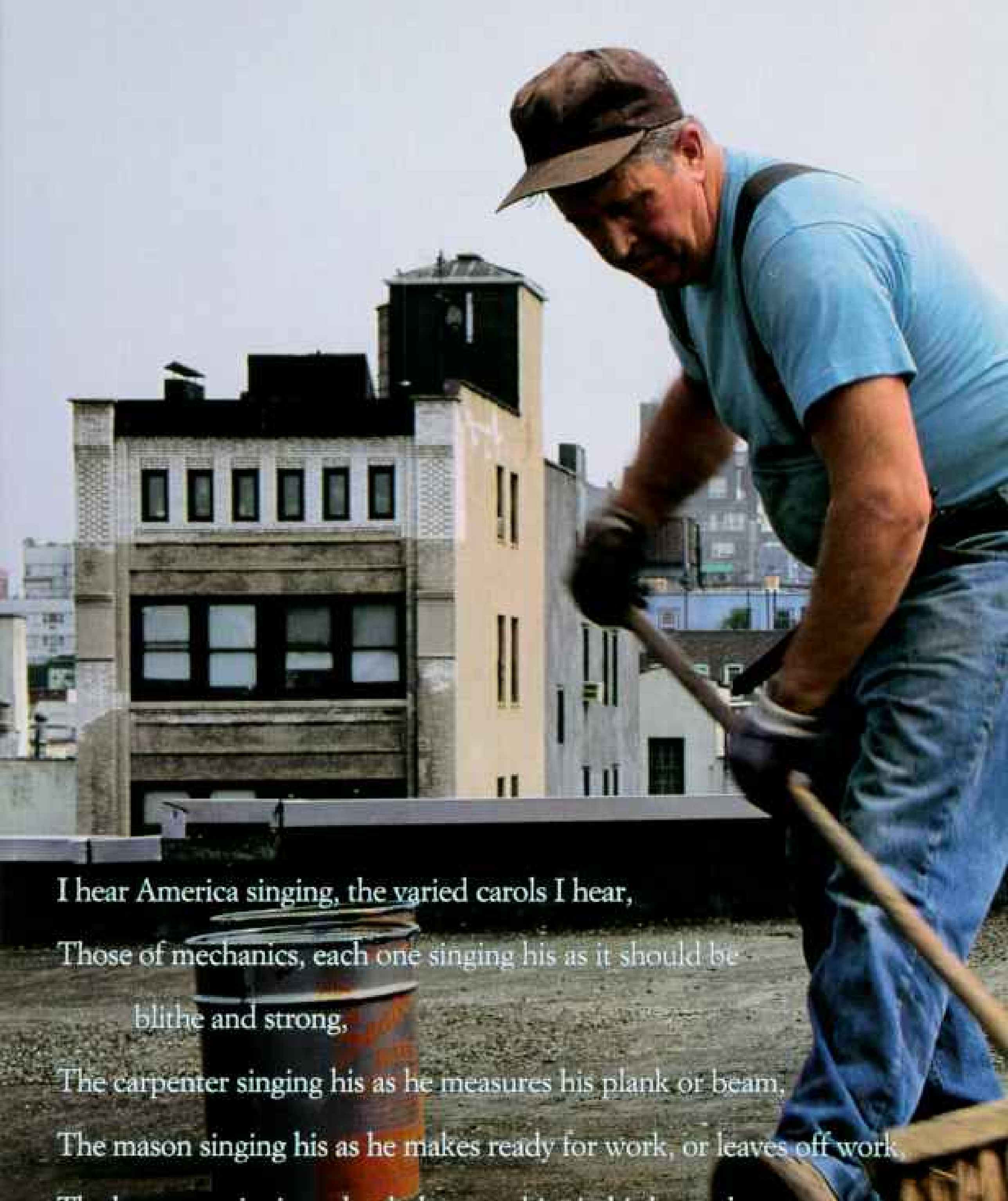
What whirls of evil, bliss and sorrow, stem thee!

What curious questioning glances—glints of love!

Leer, envy, scorn, contempt, hope, aspiration!

Thou portal—thou arena—thou of the myriad long-drawn lines and groups!

BROADWAY



I hear America singing, the varied carols I hear,

Those of mechanics, each one singing his as it should be

blithe and strong,

The carpenter singing his as he measures his plank or beam,

The mason singing his as he makes ready for work, or leaves off work,

The boatman singing what belongs to him in his boat, the

deckhand singing on the steamboat deck,

The shoemaker singing as he sits on his bench, the hatter

singing as he stands.

I HEAR AMERICA SINGING

"All it comes down to is experience," says Brooklyn roofer Jim Kelly, at left, whose Whitmanesque tally of jobs covers "shingle roofs, metal roofs, hot rubber roofs, copper roofs, tarpaper roofs, and gravel roofs." Whitman himself shunned hard labor, opting for a bookish career at 17.

"Whitman embraces everyone," says New York Ph.D. candidate Kerri Jackson (right), a historian who embodies the poet's ideal of sexual equality. At a Brooklyn street fair (below)—the kind of event Whitman loved—babies do the embracing.

There was a child went forth every day,

And the first object he looked upon and received with

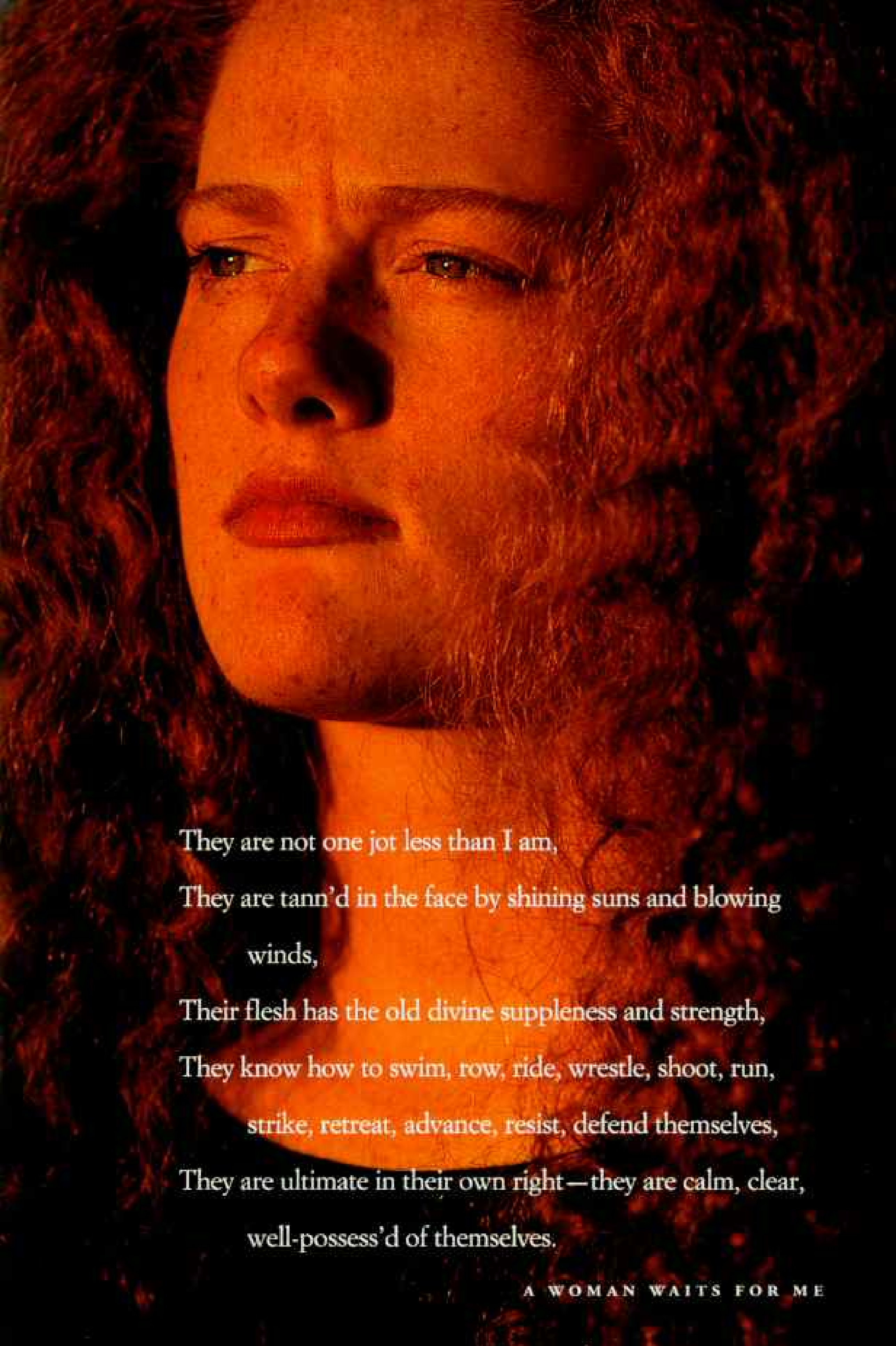
wonder or pity or love or dread, that object he became,

And that object became part of him for the day or a certain

part of the day. . . . or for many years or stretching

cycles of years.

THERE WAS A CHILD WENT FORTH



They are not one jot less than I am,

They are tann'd in the face by shining suns and blowing winds,

Their flesh has the old divine suppleness and strength,

They know how to swim, row, ride, wrestle, shoot, run, strike, retreat, advance, resist, defend themselves,

They are ultimate in their own right—they are calm, clear, well-possess'd of themselves.

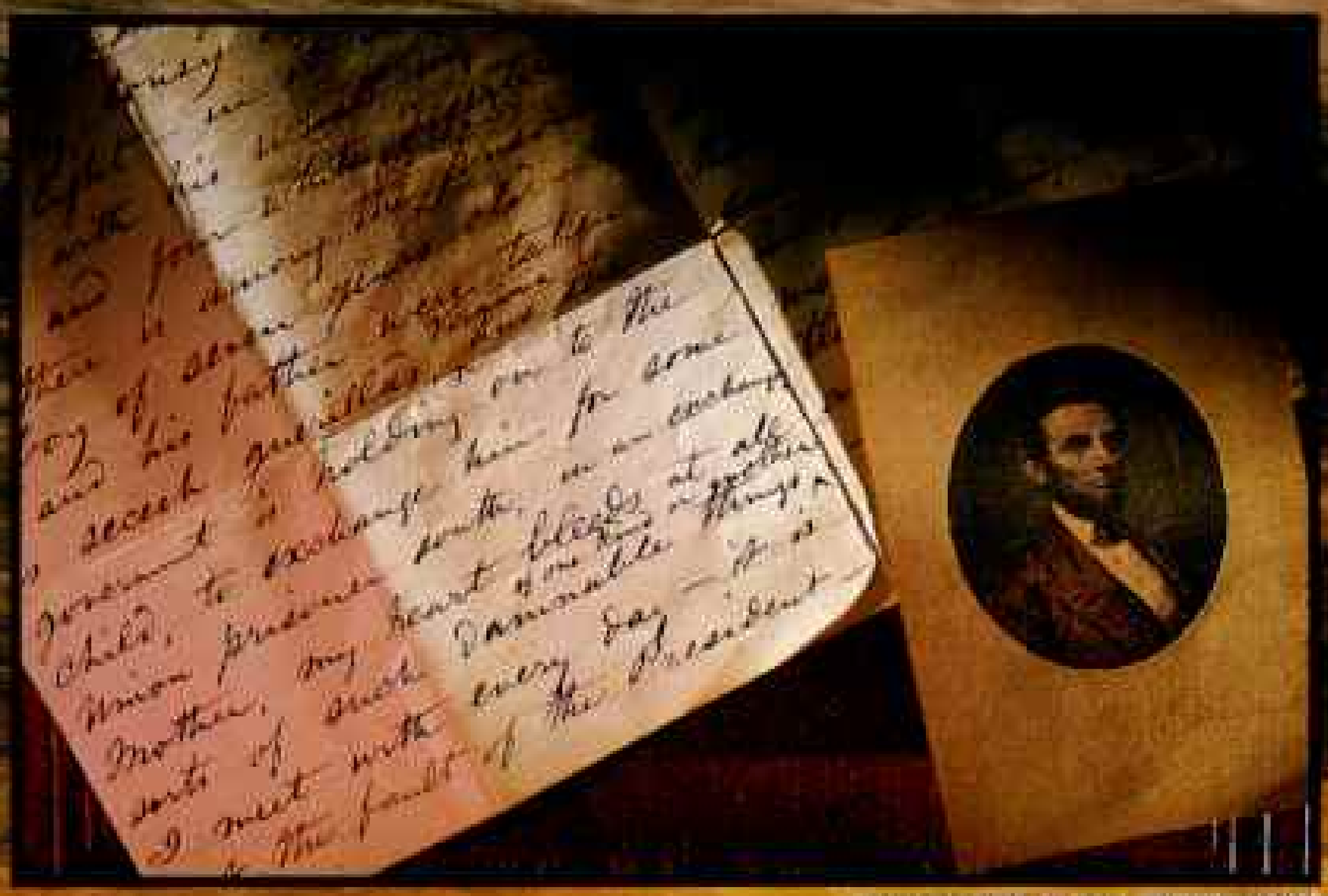
A WOMAN WAITS FOR ME

The White House crowned under an early morning snow in Washington, D. C., where Whitman lived during the Civil War. Horrified at the nation's dismemberment, he visited the capital's hospitals, comforting the wounded of both sides. "Life," he wrote, "would have no charm for me, if this country should fail."

. . . the White House of future poems, and of dreams and dramas, there in the soft and copious moon—the gorgeous front, in the trees, under the lustrous flooding moon, full of reality, full of illusion—the forms of trees, leafless, silent, in trunk and myriad-angles of branches, under the stars and sky—the White House of the land, and of beauty and night.

THE WHITE HOUSE BY MOONLIGHT

Speed blurs foliage—and the Hudson River—near Albany, New York, on the rail route used by Lincoln's funeral cortege. Enshrined in Whitman's letters and in personal mementos (inset), Lincoln was the poet's great democratic muse; his assassination ultimately dimmed Whitman's shining vision of America.



PHOTOGRAPHED AT WALT WHITMAN HOUSE

Over the breast of the spring, the land, amid cities,
Amid lanes and through old woods, where lately the violets
peep'd from the ground, spotting the gray debris,
Amid the grass in the fields each side of the lanes, passing
the endless grass,
Passing the yellow-spear'd wheat, every grain from its
shroud in the dark-brown fields uprisen,
Passing the apple-tree blows of white and pink in the
orchards,
Carrying a corpse to where it shall rest in the grave,
Night and day journeys a coffin.

WHEN LILACS LAST IN THE DOORYARD BLOOM'D

(Continued from page 121)
creates the image of a man constantly looking around for fun.

"Did you jump on your desk like Robin Williams does in the movie?" I ask.

"Yes. I did it to help them learn to look at things in a different way: If you jump on a desk in class, you must be very sure you have something to say. I also taught one class from entirely under my desk where they could not see me. It worked, although after about 20 minutes my back got sore."

NATIONAL ARCHIVES

Pickering tells me that at age 53 he prefers Tennyson's "rhythmic sleep-inducing 'Lotos-Eaters' " to Whitman's "yawp." He describes his daily routine: "I don't work. I'm a great wanderer. I walk the streets of the city or go into the bush carrying a magnifying lens. I get to know every tree, flower, and insect so I can celebrate them and help others celebrate."

He anticipates my next sentence and admits, "Yes, that does sound like Whitman."

"What advice do you have for people who want to find Whitman?"

"Remember that he made poetry celebrate things that aren't normally considered poetic. Take time to notice the world around you. See that the ordinary is extraordinary."

I mention my C in freshman English. "I got a C too," he says. "But I did not give up."

PICKERING'S ADVICE is fun to follow. A list of objects visible from my front steps feels like the beginning of a Whitman poem. Instead of reading the newspaper while waiting for someone, I chat with strangers. We discuss topics, such as potholes and family visits, that are unimportant yet all-important. The next day I find myself at a crowded snack counter. Rather than ignoring the conversations around me, I listen as fragments float by. Such moments, I suspect, bring me closer to Walt.

Patch Adams, a 49-year-old clown, shows me that actually finding Whitman requires much more work. Adams greets me at his home in Arlington, Virginia. He is six feet four inches, with a handlebar mustache turned up at right angles and a long ponytail. He wears a brown velveteen jacket; one yellow and one orange sock; a purple shirt; baggy, green pants that—he soon shows me—can be easily pulled up to his chest, thus becoming shorts; and a square hat with a secret pocket containing his fake nose.

Adams's medical school diploma is somewhere in the basement, along with more than 12,000 books. "I'm pretty zealous about joy, and Walt showed me the way," Adams says. Although he is physically imposing, his soft voice makes me lean forward.

"Whitman," Adams continues. He lets the word trail away as though nothing more need be said. "How many of these other writers discuss joy?" he finally says. "Everyone else describes the size of the problem. Whitman is a neon sign for solutions. I try to spread his dust everywhere."

Adams wears his clown suit as we fly to Morgantown, West Virginia. About 200 health-care professionals join him in the ballroom of the West Virginia University student union for a workshop on joy. In one activity Adams has us sit, close our eyes, and make our bodies touch at least four strangers. Then we think of things that make us happy, hold them in as long as possible, and shout them out. The room soon sounds like one of Whitman's poems.

Much of Adams's message resembles Whitman's: Your body is nice. Only you can

"One of the first things that met my eyes in camp, was a heap of feet, arms, legs, &c. under a tree in front a hospital," Whitman wrote after visiting the wounded near Fredericksburg (above left). Whitman's brother George survived that battle, as well as the slaughter at Antietam (above).

diminish yourself. Be curious instead of judgmental. Challenge accepted wisdom. But most important, he says, take what Whitman calls "the open road."

"That open road lies in front of everyone," Adams says. "Delight in your piece of it. Pursue your dreams. Find your road and take it."

Adams begins to recite Whitman's "Song of the Open Road": "Afoot and light-hearted I take to the open road, / Healthy, free, the world before me, / The long brown path before me leading wherever I choose." His voice becomes a whisper, sucking us toward him. "Henceforth I ask not good-fortune, I myself am good-fortune, / Henceforth I whimper no more, postpone no more, need nothing." For me this is the moment of discovery. To be Whitmanesque, I realize, is not to be poetic. It is taking your road and appreciating what you encounter along the way.

Adams's face reveals what is missing from my own reading of Whitman. Whether reading silently or aloud, you must participate. You cannot enter this territory as a tourist. Reading Whitman is not like reading a novel or seeing a movie. You cannot sit passively as a story sweeps you away. Rhythm and feeling must come from both you and the poet. Bring your hopes, frustrations, and fears. You are part of the art.

In many ways my search has ended. I have found *Leaves*, which is so personal, so intense, I have also found Whitman. No one can tell where the man ends and the creation begins. He talks to me. Other times he is me, talking to other people.

Some evenings I read Whitman for only five minutes. Even then, he leaves me simmering.

ALTHOUGH FEW PEOPLE in the 1850s gave *Leaves* five minutes, Walt devoted most of his time to new poems. He continued his Broadway jaunts, adding an evening stop at Pfaff's beer cellar on Broadway just north of Bleecker, near what is now called SoHo. New York's literati gathered at Pfaff's long table, arguing and singing while waitresses served beer and sweetbreads. Poetry contests, during which authors competed for cheers and applause, often continued until dawn.

Whitman sat quietly off to the side, hat on and shirt open. Other Pfaffians considered him a genius—many followed Emerson's lead and wrote glowing reviews—and encouraged him to recite poems in progress. Walt also went to working-class bars to be among the people for whom he believed he was writing.

The building that held Pfaff's now includes a small food store. I explain what used to transpire in the cellar. Salesclerks are not interested. "Want to buy anything?" they ask. Our conversation is finished.

Whitman was walking along Broadway one midnight not far from Pfaff's when shouting newsboys announced the Confederate attack on Fort Sumter that began the Civil War. Whitman, realizing that his beloved American democracy faced mortal danger, resolved to suffer alongside the nation by forsaking "fat meats, late suppers," and all drinks but water and milk.

In December 1862, 20 bloody months after the war began, Whitman read in the newspaper that George Whitman—an officer of the 51st New York Regiment—had been wounded at Fredericksburg, Virginia. Although Walt often felt distant from his family—"Being a blood brother to a man," he once said, "don't make him a real brother"—he was always strongly loyal, and he immediately set out to find his brother.

LIBRARY OF CONGRESS

Aged by war, Whitman posed in 1869 with his companion Peter Doyle, an ex-Rebel trolley driver in Washington. Ailing, the poet later retreated to Camden, New Jersey, where one of his former residences (facing page) sheltered the homeless until it burned down last September.

I RETRACE HIS STEPS, traveling south from Washington, D. C.—Walt went by boat and train—passing farms, low hills, and small towns. Between Washington and the Confederate capital of Richmond, nature offers only one major barrier: the Rappahannock River. As we near the river, the flow of the land shows how geography dictated military strategy. The Union Army tried to take the easiest crossing, which is at Fredericksburg.

Union commanders established headquarters in Chatham House, an estate overlooking the Fredericksburg crossing. When Whitman arrived, he learned that his brother had suffered only a superficial cheek wound. But Walt saw the results of Maj. Gen. Ambrose Burnside's decision to send his men charging uphill against Confederate forces entrenched behind a stone wall.

"Battle pits" held some of the 1,300 dead Union soldiers. Thousands of wounded blanketed the snow. Many had been outside for five days. The fortunate lay on pine needles. Surgeons, who treated arm and leg wounds with amputation, were still sawing. Mounds of arms and legs next to sprawling catalpa trees marked their outdoor surgery.

Today, even in December's cold, the area is popular with tourists. They admire the catalpa trees and the view from the manicured lawns of Chatham House. Then they stroll into town to buy Civil War bullets at 75 cents each.

What Whitman saw, however, changed him forever. He accompanied the wounded to Washington, which already had more men in hospitals than the entire city population in 1850. He rented a room and found part-time work as a government clerk, doing what is now performed by photocopy machines. Two years later he found a full-time clerk's job—receiving, in effect, a government grant from officials who admired his poetry. "I take things very easy," Whitman wrote to one brother. "The rule is to come at 9 and go at 4—but I don't come at 9, and only stay till 4 when I want."

Whitman's rented room had a bed, pine table, and small metal stove. He made tea in a tiny kettle, owned one bowl and one spoon, and ate off pieces of brown paper, which he burned afterward. During free hours he visited Army hospitals. Wounded and sick soldiers often lay on dirty blankets next to pails of bloody bandages. Open sores and wounds festered. Men groaned and screamed. Some joked, barely noticing that others, boys as young as 15, were dying.

Whitman walked among these men, in his words, like a "great wild buffalo." Gray suit. Wide-brimmed sombrero. Immaculate shirt with flower or green sprig in lapel. Army boots with black morocco tops. Mostly he talked, sometimes throughout the night. The men, he wrote to his mother, "hunger and thirst for attention; this is sometimes the only thing that will reach their condition." For many homesick, lonely soldiers, Whitman's companionship and good cheer probably achieved more than the doctors did.

Whitman had no official status. Civilian organizations, which had learned from British experience during the Crimean War, helped meet the military's nursing needs. Their volunteers were mostly middle-aged and elderly women. Like them, Whitman was exposed to typhoid, pneumonia, diarrhea, and other infections. Psychological risks were also real. Whitman began to suffer sleepless nights, faintness, and "distress in my head." He was unable to write and put on 30 pounds.

YEARS BEFORE ABRAHAM LINCOLN'S rise to power, Whitman wrote longingly of a "Redeemer President" from "the real West, the log hut, the clearing, the woods, the prairie." Then, as if in answer, Lincoln appeared. The two men never met. During the capital's hot season, however, Whitman stood at the corner of Vermont Avenue and L Street as Lincoln, accompanied by 25 or 30 cavalrymen with sabers drawn, rode on horseback from the White House to Soldiers' Home, where the President slept. "None of the artists or pictures have caught the deep, though subtle and indirect expression of this man's face," Whitman wrote. "There is something else there. One of the great portrait painters of two or three centuries ago is needed." Whitman nonetheless tried to capture Lincoln in words: "He has a face like a hoosier Michael Angelo, so awful ugly it becomes beautiful."

I wander Washington's streets looking for houses where Whitman lived and hospitals where he worked. Only one building, now the site of the National Museum of American Art and the National Portrait Gallery, still stands. Until 1888 it was the Patent Office, where the public could view models displayed in 12-foot glass cases. Whitman admired its neoclassic style, reminiscent of the Parthenon in Athens, and called it "the noblest of Washington buildings."

During the war wounded soldiers lined its marble floors. One room on the third floor is just as Whitman saw it. Marble columns and arches stretch along a 28-foot ceiling. In this room Whitman attended Lincoln's Second Inaugural Ball on March 6, 1865. "Tonight," he wrote, "beautiful women, perfumes, the violins' sweetness, the polka and the waltz; but then, the amputation, the blue face, the groan, the glassy eye of the dying, the clotted rag, the odor of wounds and blood, and many a mother's son amid strangers."

If Walt were alive today, we would probably find him with those dying "amid strangers" at facilities such as those that care for people with AIDS. The sounds: televisions, shouts, coughs, rustling of sheets, voices. The smells: staleness, medicine, tobacco. In patients' rooms are sunlight, clocks, nail clippers, candy, photographs, crackers, puzzles, cookie tins, books, tissues, shoes, hand lotion, and *TV Guides*.

Curtains separate beds. In the hallway are young people who have stopped caring about their appearance. Two men ask for cigarettes. Many patients lie in bed all day, open eyes staring. Others watch movies all night. Frankie, fading from life, is chin-to-chest asleep in a wheelchair near the nurses' station.

She holds a teddy bear and wears a baseball cap with rhinestones.

Among the most regular visitors are volunteers who loved someone lost to AIDS. When I ask, "Why do you stay involved," the near-unanimous answer is "I don't know."

Upset after one late-night visit, I find myself doing what Walt did. I walk alone outside and turn to the stars "so bright, so calm, so expressively silent, so soothing."

NEW YORK PUBLIC LIBRARY, BERG COLLECTION

AFTER THE WAR Whitman stopped his regular hospital visits. His sleeplessness and distress resembled what is now called post-traumatic stress disorder. He was 46 years old and looked like an old man. "I would try to write, blind, blind, with my own tears," he later said.

Around this time Alfred, Lord Tennyson, the British poet laureate with whom Whitman corresponded, wrote "Charge of the Light Brigade"—"Flash'd all their sabers bare, / Flash'd as they turn'd in air. . . . / When can their glory fade? / O the wild charge they made!" Whitman, in contrast, said war is "nine hundred and ninety-nine parts diarrhea." He wrote that "the real war will never get in the books."

To tell true stories that capture war's brutality, Whitman turned to prose—most notably *Specimen Days*. One example: "After the battles at Columbia, Tennessee, where we repuls'd about a score of vehement rebel charges, they left a great many wounded on the ground, mostly within our range. Whenever any of these wounded attempted to move away by any means, generally by crawling off, our men without exception, brought them down by bullet. They let none crawl away. . . ."

Whitman also added new poems to *Leaves*, revised old ones, and continued to be an unembarrassed self-promoter. When he was scheduled to read a poem at the Dartmouth College commencement in 1872, one anonymous newspaper critic compared him to Homer and Shakespeare. You guessed it: Whitman wrote the story.

In 1873 Whitman, only 53, suffered a stroke and moved to Camden, New Jersey, to live with brother George and his wife, Louisa. George Whitman was a pipe inspector at the Camden Tool and Tube Works. Camden was an industrial suburb of Philadelphia, home to an unrelated Whitman family, famous since 1842 for manufacturing Whitman's Sampler chocolates. Walt never met them.

In the next few years Walt had more strokes and began to have trouble walking. Painful tubercular infections had invaded his bones. He sought to cure himself at nearby Timber Creek. The creek is now hidden among houses and highways, but I find where Whitman removed his clothes, covered himself with mud, and wrestled with oak and hickory saplings. "After you have exhausted what there is in business, politics, conviviality, love, and so on—have found that none of these finally satisfy, or permanently wear—what remains?" Whitman asked. "Nature remains."

THE WRITINGS of a lifetime earned Whitman only a few thousand dollars. Low sales for *Leaves*, however, did not end his problems with censorship. In 1882 the Boston district attorney ordered him to delete "A Woman Waits for Me," "To a Common Prostitute," "The Dalliance of the Eagles," and lines from other poems. Whitman refused.

"Never has such a beautiful old man appeared among men," observed a visitor to Camden, where Whitman—crippled by strokes—entertained laborers and luminaries. In 1892 he died peacefully in his Mickle Street home (above), amid an unruly whorl of letters, manuscripts, and poems.

"The dirtiest book," he said, "is the expurgated book."

During his lifetime, censors and critics focused on "I turn the bridegroom out of bed and stay with the bride myself" and other heterosexual lines. "I never read his book—but was told that he was disgraceful," Emily Dickinson wrote to a friend. Whitman's letters and poems, however, indicate a physical attraction to men. This has received considerable scholarly attention, reflecting, in large part, the intimacy of Whitman's writing. Readers feel they know him.

This interest in Whitman's sexuality is unusually intense. Who did Michelangelo or Mark Twain love? Few people know or care, yet Whitman's private life can stimulate bigotry. I wander into a bar on Camden's waterfront, much like those that Whitman frequented. It is dark at noon, and full of men with no pressing engagements. As I leave, the bartender stops wiping glasses. "You're not going to say Whitman's a faggot, are you?" he says. "I like his poetry, and I don't like people saying he's a faggot."

In Walt's day controversy over censorship brought him much needed attention, and he continued to reach the literati. *Leaves* "tumbled the world upside down for me," said Robert Louis Stevenson shortly after the publication of *Treasure Island*. Vincent van Gogh, then painting his apocalyptic *Starry Night*, read a French translation of *Leaves*. Whitman sees "a world of healthy, carnal love, strong and frank—of friendship—of work—under the great starlit vault of heaven," van Gogh told his sister. "It makes you smile, it is all so candid and pure."

But the people Whitman was writing for—ordinary people—did not read him. "O Captain! My Captain!" written after the death of Lincoln, was one of the few Whitman poems to become popular in his lifetime—"O Captain! my Captain! our fearful trip is done, / The ship has weather'd every rack, the prize we sought is won." It is also one of only two in *Leaves* that rhyme. Rather than enjoy its success, Whitman thought it too conventional, saying, "I'm almost sorry I ever wrote the poem."

I bequeath myself to the dirt to grow from the grass I love,

If you want me again look for me under your bootsoles.

You will hardly know who I am or what I mean,

But I shall be good health to you nevertheless,

And filter and fibre your blood.

Failing to fetch me at first keep encouraged,

Missing me one place search another,

I stop some where waiting for you

SONG OF MYSELF

Mirrored beech leaves shimmer in Timber Creek, a New Jersey stream haunted by Whitman in the fading summers of his life. Living his poetry, the old man lolled in mud, tallied dragonflies, belted out songs.

Whitman's eyes stayed seductive. No angst or anger appears in later photographs. He remained optimistic. The last line in Whitman's final revision of *Leaves* is, "the strongest and sweetest songs yet remain to be sung." As his body declined—"the strange inertia falling pall-like over me"—he lost his roar but not his wisdom. "Have you learn'd lessons only of those who admired you, and were tender with you?" he asks. "Have you not learn'd great lessons from those who reject you, and brace themselves against you?"

Despite his celebration of human equality, Whitman was a man of his times. He never advocated treating newly freed slaves as full citizens. He also maintained a lifelong belief that the shape of our brains determines our character. When he died at age 72 in 1892, his brain was sent to the Anthropometric Society in Philadelphia in hopes that they would discover what made him special.

Initial analysis showed that Whitman's brain was smaller than average. Then a laboratory assistant accidentally dropped it, and the brain was thrown away.

By the 1880s Whitman had realized that *Leaves* would never attract a mass audience in his lifetime. He placed his faith in the future. The real test, he said, would come in a hundred years.

The hundred years have passed. Whitman's influence has been extraordinary. His persona—confidant, companion to the neglected, singer of human decency, advocate of equality, lover of nature—is part of our national landscape. "He is far more important than most Americans realize," Roger Asselineau, Sorbonne professor and author of *The Evolution of Walt Whitman*, explains as we sit in a café on Paris's Left Bank. "Students see in Whitman a metaphor into which they can read what they need. Equality for women. Sexual freedom. Freedom of expression."

Whitman, however, wanted to be in our hip pockets and on our nightstands. In this he is clearly still a failure.

The loss is ours. Go outside and read aloud. Adventure waits. You may also find a piece of yourself you didn't know was missing. □

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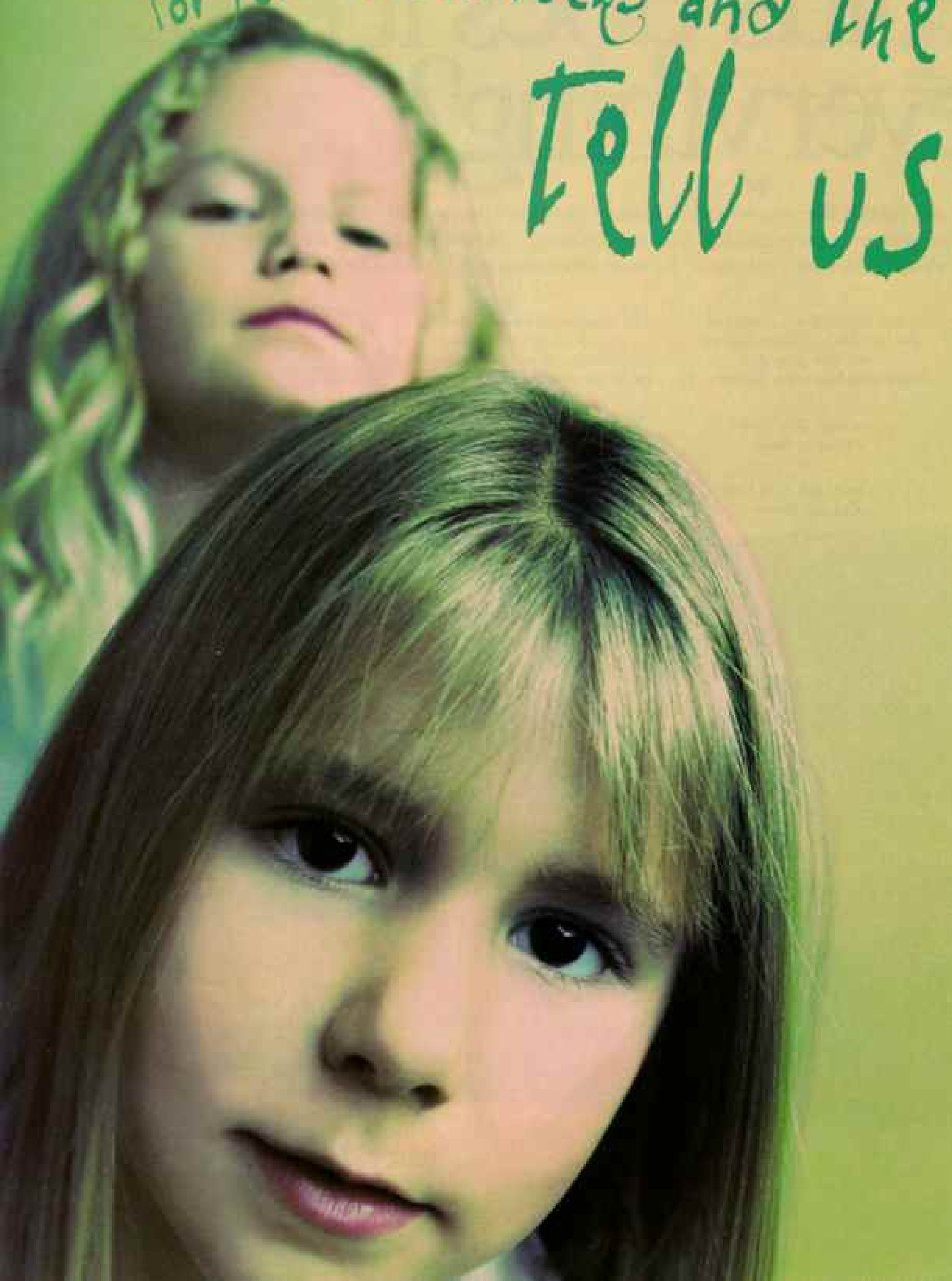

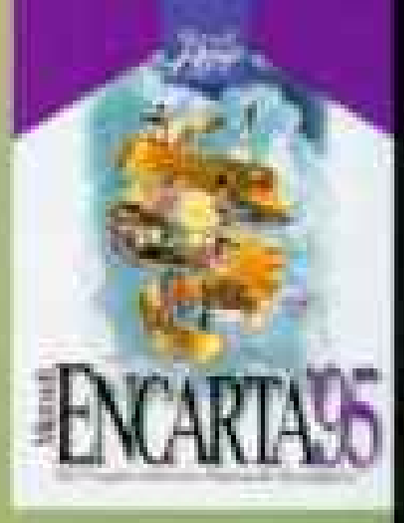

Three Bears, about Sartre

"C'MON DAD, tell us about Sartre and existentialism and his belief in the inescapable responsibility of all individuals for their own decisions and his relationship with Simone de Beauvoir," we pleaded as he tucked us in for the night.

"Oh all right," he said as he loaded the Microsoft® Encarta® multimedia encyclopedia into our personal computer and called up Sartre. This Encarta thing is crammed with 26,000 articles, 9 million words, 7,000 pictures, 800 maps, 100 video clips, 9 hours of sound, and all kinds of stuff about your favorite existentialists.

We click the mouse and we hear Martin Luther King, Jr. or Fidel Castro speak. (Castro is kinda hard to understand.) We can see the Berlin Wall being torn down or the propagation of a nerve impulse. We can rock out to Belgian guitarist Django Reinhardt or the Navajo Corn Grinding Song. Alas (a word we learned from our Microsoft Bookshelf® reference library), if we told you every single cool thing Encarta does, we'd be up all night and there'd be no time for Dad's bedtime stories about Sartre and the existentialists.

After he kissed us goodnight, Dad said Sartre was fond of saying, "Man is condemned to be free." We told him he was free to keep us up as long as he wanted with stories about Sartre. He chuckled, turned out the lights, and said, "I think you two have had enough existentialism for one night."

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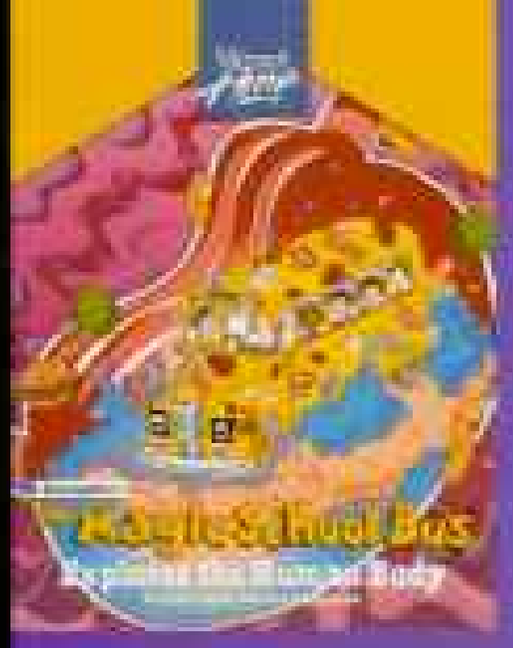
The Magic School Bus
Inside the Human Body


L. INTESTINE
LARGE INTESTINE
The large intestine is about 6 feet long and 2 inches wide.

I brake for large intestines.

MOM SAID IF I WAS GOOD AND ATE ALL MY VEGETABLES I could go on a field trip with Ms. Frizzle in The Magic School Bus down Arnold's throat.

I ate every last turnip and joined Ms. Frizzle and the class in Scholastic's The Magic School Bus™ Explores the Human Body. My dad used some big words and called it "an interactive science adventure from Microsoft that explores how the human body works."

I haven't had this much fun on a field trip since Danny Kennedy got stuck in the bathroom at the museum. We drove all around Arnold's body. We saw the four chambers of his heart. We saw what Arnold ate for lunch. We saw a white blood cell turn into a police car and fight off germs. We even got to play a learning game in every part of Arnold's body we visited.

Have you ever played a game in somebody's liver? It's pretty cool, but not as cool as where Ms. Frizzle is taking me in her Magic School Bus next week. She's taking me on a trip through the universe (courtesy of Scholastic's The Magic School Bus Explores the Solar System). I wonder how many turnips Mom is going to make me eat for that one.

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Standing left to right: James Mullins, Harriet Quail, Martha Sumrall, Dorothy Dobson, Donald Harmon, Richelle Dombroski, Drexel Sammons, Terry Lindquist. Seated left to right: Barbara Ames, Barbara McLean, Anna Sparks, Lou Taft. Not pictured: Lori Eder.

THE PRESIDENT'S REPORT ON THE

Education Foundation

LAUREN GREENFIELD

Wilderness Comes to the School Yard

Where is the wilderness? The 108 teachers who attended our Workshop on Wilderness in Portland, Oregon, went in search of it last summer—and made some eye-opening discoveries in the process.

Of course, in this magnificent corner of the country, they didn't have to travel too far from Portland to discover breathtaking natural areas. At Haystack Rock along Oregon's rocky shore (above) teachers Eileen Anderson of Maine, Michael Papritz of Washington, and Marci Smith of Texas picked up ideas on how to make the most of hands-on outdoor projects with their students. In 12 whirlwind days the teachers also visited Mount St. Helens, and I was privileged to travel with them to Mount Hood.

It was an unforgettable experience for the teachers, who came from all 50 states, Puerto Rico, Washington, D. C., and Canada. But as one of our co-directors, environmental consultant Jeff Harvey of Sacramento, California, observed, "When they get back to their classrooms, less than 10 percent of these teachers will be able to get to a major wilderness area with their students."

That's why we encouraged the group, especially the teachers from urban areas, to find the wilderness that is right under their noses.

In Portland, a city of more than 400,000, the teachers visited Forest Park, one of the largest urban parks in the country, where they exchanged ideas on how to use their own local and state parks for teaching geography. They also spent a fascinating day at the Bull Run watershed, source of Portland's water supply and an example of tightly controlled land management.

"Teachers anywhere can help their students see the importance of preserving natural systems," says Jeff. "Take a corner of the backyard or a small section of the school yard. Don't mow it for a while, and watch how an ecosystem develops and changes."

The Society's Geography Education Program sponsored the workshop through generous grants from the National Park Service, the Arthur Carhart National Wilderness Training Center, the Henry M. Jackson Foundation, and Westvaco Corporation. Thanks to this program and others like it, we're helping teachers and their students find the wilderness—from their backyards to the outback.

Gilbert M. Grosvenor

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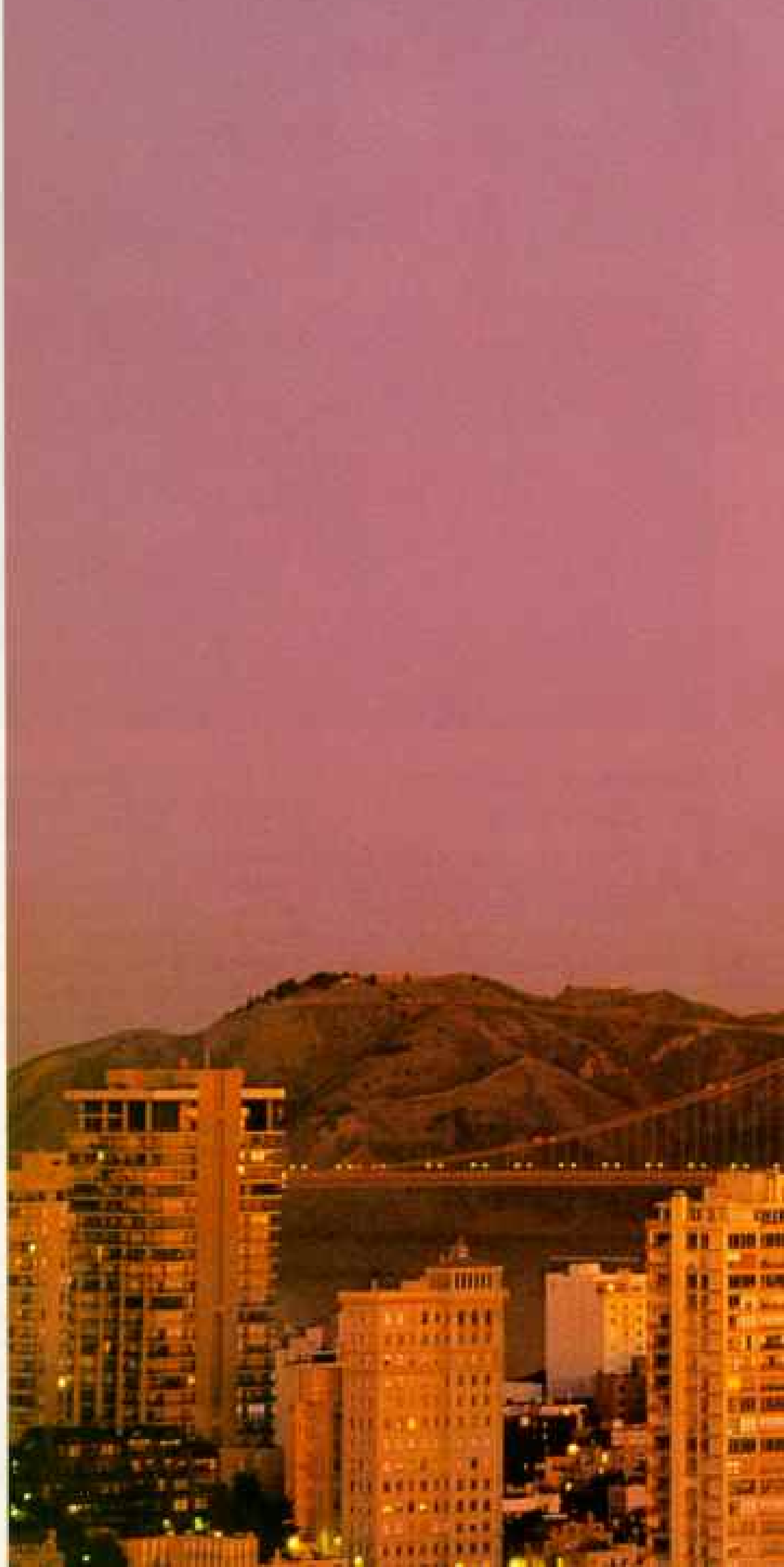

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Soviet Pollution

"Lethal Legacy" in the former Soviet Union (August 1994) is an eye-opening article. In the United States it has taken years of fighting by concerned citizens and environmental groups to establish basic laws that protect humans and the environment that sustains us. I hope readers will appreciate all that has been done by these hard-working folks to prevent such a legacy from occurring right here at home.

MORGAN JURDAN
Amboy, Washington

That the environmental and social devastation was done in the name of industrialization and progress, by those who surely must have known better, is more shocking than I can express. I am grateful to live in a comparatively unspoiled country like New Zealand, where rivers still run clean and fresh. But then, how much am I not being told, just as everyday Soviet people were unaware?

ANDREA COX
Auckland, New Zealand

I see a new purpose for the former Soviet people: cleaning up their country. If they focus on that task with help from the world, they can salvage a livable country.

CHARLES C. MCCLOSKEY
Garden City, New York

My best friend, an engineer with a large American oil company, is working at a Russian-owned natural gas plant in Siberia near the Arctic Circle. Regulations prohibit releasing even clean water since liquid damages the permafrost, so they run water through a flare pipe with enough natural gas to vaporize the stream. As the vapor hits the frigid air, it freezes and falls.

My friend's co-workers also bragged about the plant's stringent environmental regulations. She asked to be shown the safety devices. Came the reply: "Oh, we don't have any equipment. We just pay the fines."

NAOMI B. ORBECK
Colorado Springs, Colorado

Page 82 states that "facing the hard task of nation building, Latvians lost interest in saving churches." During the past three years, much has been done to save the churches throughout Latvia following 50 years of communist rule. The refuse has been removed, roofs and windows repaired, and grounds cleaned up. They are used for services by the community, something that was totally impossible before.

RUSINS ALBERTINS
Naperville, Illinois

In late July, as I read this article, our TVs were warning that the winds were coming from the Ohio Valley so that those Canadians who were in the path and had a sensitivity to air pollution should stay inside their homes and avoid exertion. The areas warned included Toronto, Hamilton, and the entire Niagara peninsula. Ironic, isn't it?

EWART W. BLACKMORE
Stoney Creek, Ontario

Chornobyl

The Chornobyl accident was caused by both bad operation of the reactor and bad design, both of which have been improved. There is a better shutdown rod system, and the "void coefficient" has been reduced to make the reactor more stable. Western countries have provided a multimillion-dollar simulator to train operators. A report in Brussels on June 10, 1994, noted that inexpensive improvements can further enhance safety.

Mike Edwards suggests that working at Chornobyl or returning to live there is reckless. This is contrary to data coming now from reliable sources. Even if people return to the most radioactive area, where I have measured two milliroentgen per hour, their dose will be only about 50 rem in five years, which would add about one percent to their cancer probability. And contrary to earlier reports, leukemia rates have not risen in Belarus or Ukraine, according to experts from there who spoke at the Health Physics Society meeting in San Francisco in July.

RICHARD WILSON
Professor of Physics, Harvard University
Cambridge, Massachusetts

Only massive aid from the West can safely shut down RBMK plants like Chornobyl and upgrade those that can be made safe. Complete closure is out of the question because of the desperate need for power. The recent announcement of a major aid package from industrialized nations is encouraging, but more is needed. The Western nuclear power industry must assume its share of the burden. It is either help the East or risk losing this important industry to public reaction to an accident.

THEODORE M. BESMANN
Oak Ridge National Laboratory
Oak Ridge, Tennessee

In the aftermath of the tragedy in the U.S.S.R., Fidel Castro offered Cuba's medical resources and skills at a former boys camp outside Havana called Tarara, if the U.S.S.R. would arrange for transportation. My most recent tour in Cuba included a visit to Tarara. Since 1986 nearly 15,000 patients, most of them children, have filtered through. The

White-tailed Sabrewing *Genus: Campylopterus* ***Species:*** *emiliae* ***Adult size:*** *Length, 14 cm* ***Adult weight:*** *Approx. 9g* ***Habitat:*** *Montane forest on the island of Tobago and in northern Venezuela* ***Surviving number:*** *Unknown*

Photographed by Roger Neckles

WILDLIFE AS CANON SEES IT

A white-tailed sabrewing alights on a lobster claw heliconia to feed on nectar. After Hurricane Flora destroyed much of Tobago's hillside forests in 1963, this hummingbird was not seen on the island for a decade, but today rare sightings occur in the few patches of forest that survived. In Venezuela, extensive deforestation threatens the sabrewing, along with five other bird species that share its range. To save endangered species, it is vital to protect their habitats and understand the role of each species within the earth's ecosystems. As a global corporation committed to social and environmental concerns, we hope to foster a greater awareness of our common obligation to ensure that the earth's life-sustaining ecology survives intact for future generations.

pathologies range from major malignancies to myriad dermatological states. Intensive medical care when necessary has been available at University of Havana medical centers. The medical results have been exemplary. No fees were charged by the Cuban health ministry.

DON SLOAN, M.D.
New York, New York

Interestingly, England's idyllic Lake District, featured in the same issue, was the recipient of a high radioactive fallout from Chornobyl.

ANN MARIE JUDSON
Lemoyne, Pennsylvania

England's Lake District

Thank you for the timely warning about the crush of tourists in the English Lake Country. My grandfather came from nearby Ulverston, and I had thought about going there and hiking. Fresh from revisiting Mount Desert Island, Maine, I understand about being overrun with tourists. I don't want to be part of the problem. Maybe the best favor we can do to beautiful places is to stay home and read about them in the NATIONAL GEOGRAPHIC.

ARTHUR L. JOHNSON
Potsdam, New York

The district's astonishing beauty directly shaped my past seven years. In 1987 I chose as a geography project the glacial effects that created the mini-lakes known as tarns. Two weeks of December solitude filled me with awe and produced a straight A project. The payoff: the university of my choice, Lancaster, close to the southern border of the Lake District. The view from my room . . . incredible.

DANIEL M. RIDER
Bradford on Avon, Wiltshire, England

The thousand-plus members of the Arthur Ransome Society (TARS) around the world would have appreciated mention of their idol's contribution to the popularization of the Lake District. Five of Ransome's 12 Swallows and Amazons books featured a fictional lake that was an amalgam of Windermere and Coniston Water. With the reissue of the books in paperback by Random House in England, a whole new generation is being introduced to the Lake District and to the children whose adventures take place there. Swallows and Amazons forever!

ROBERT K. BARCUS
Spokane, Washington

More than a century ago social reformer and art critic John Ruskin, whose house still stands beside Coniston Water, exerted his considerable influence to protect the land and scenery of the Lake District. How? By a vain effort to keep out trains that would bring noise, smoke, and dirt.

One suspects that the present campaign to control visitors arriving by car on the M6 motorway is as doomed to failure. The real challenge is to find creative ways of providing tranquil beauty to an ever expanding number of people. And don't think the folks running Yellowstone and Banff aren't watching.

ERIC BENDER
Kirkland, Quebec

Lions of Darkness

I found the photographs very unsettling. They captured the victim animals at their most private and vulnerable moments—those of their terror and death. I am outraged at your assumption that I want to see these struggles.

NANCY EMOND
Leverett, Massachusetts

My daughter Alana Eliegood, age four years nine months, looked over my shoulder as I was reading my August issue. She was so interested in the pictures of the lions that I had to read all the captions to her with minor deciphering of difficult words. She now understands that a night in the life of a lion is not exactly as it is for Simba in the movie *The Lion King*.

SHELLY L. LEONARD
Bloomington, Illinois

NASA "Can Do" Project

On page 66 you show students scraping the inscriptions on old gravestones to obtain lichen. Tough lichen pulls off part of the rock with it when scraped. Many stones are already unreadable due to weathering and acid rain. A gravestone's purpose is to memorialize a person who once lived, not to provide a culture colony for even the brightest of students. If lichen is forming in the area, some is clinging to nearby rocks or trees. I shudder at the sanction this one picture may have given people about how to treat gravestones.

JOY SMITH STARR
Oakton, Virginia

Killer Jellyfish

I was scuba diving off the central coast of Vietnam in 1968 when I noticed a translucent symmetrical cross-shaped body that seemed to pulsate. I moved to let it pass and suddenly experienced the most excruciating pain on my right shoulder, then my right leg. I almost passed out but managed to swim to shore. Bright red welts similar to those in your article marked my shoulder and leg, painful evidence of the venomous tentacles that had brushed my unprotected skin. I had no idea until now what had ruined my dive 26 years ago, and no idea that it could have killed me as well.

ROBERT L. FISHER, JR.
Litchfield, Connecticut

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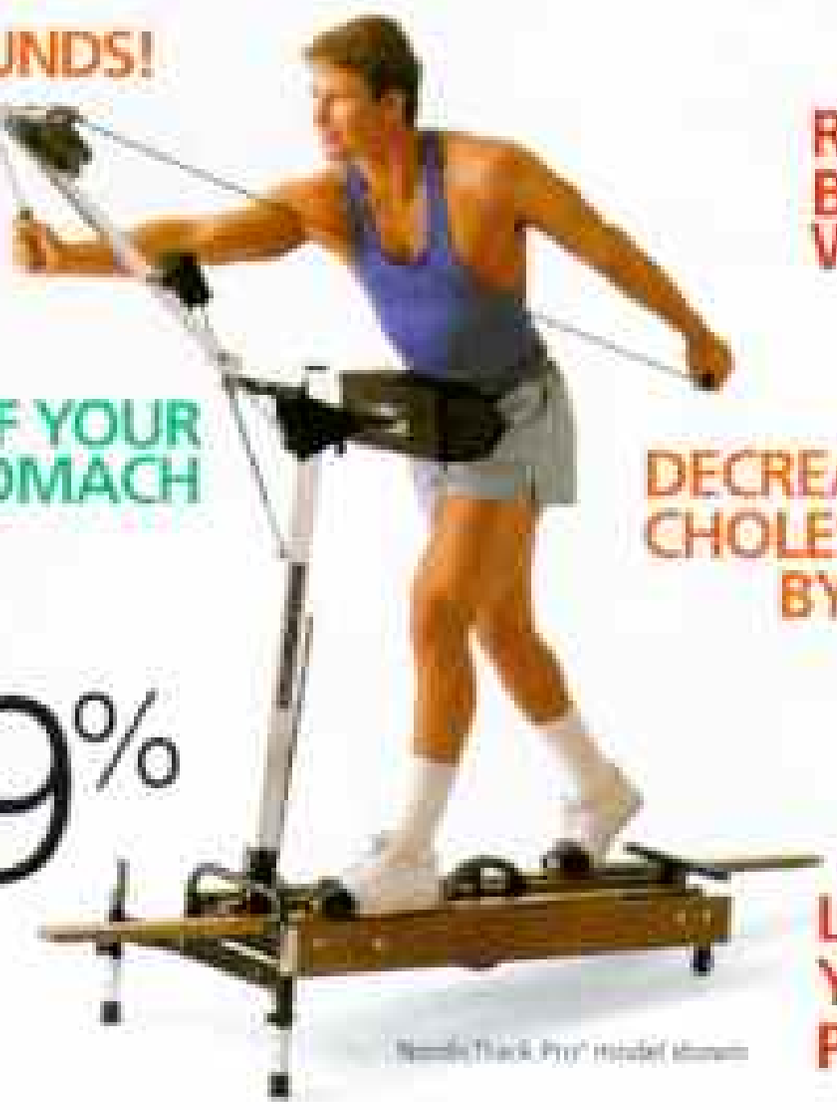

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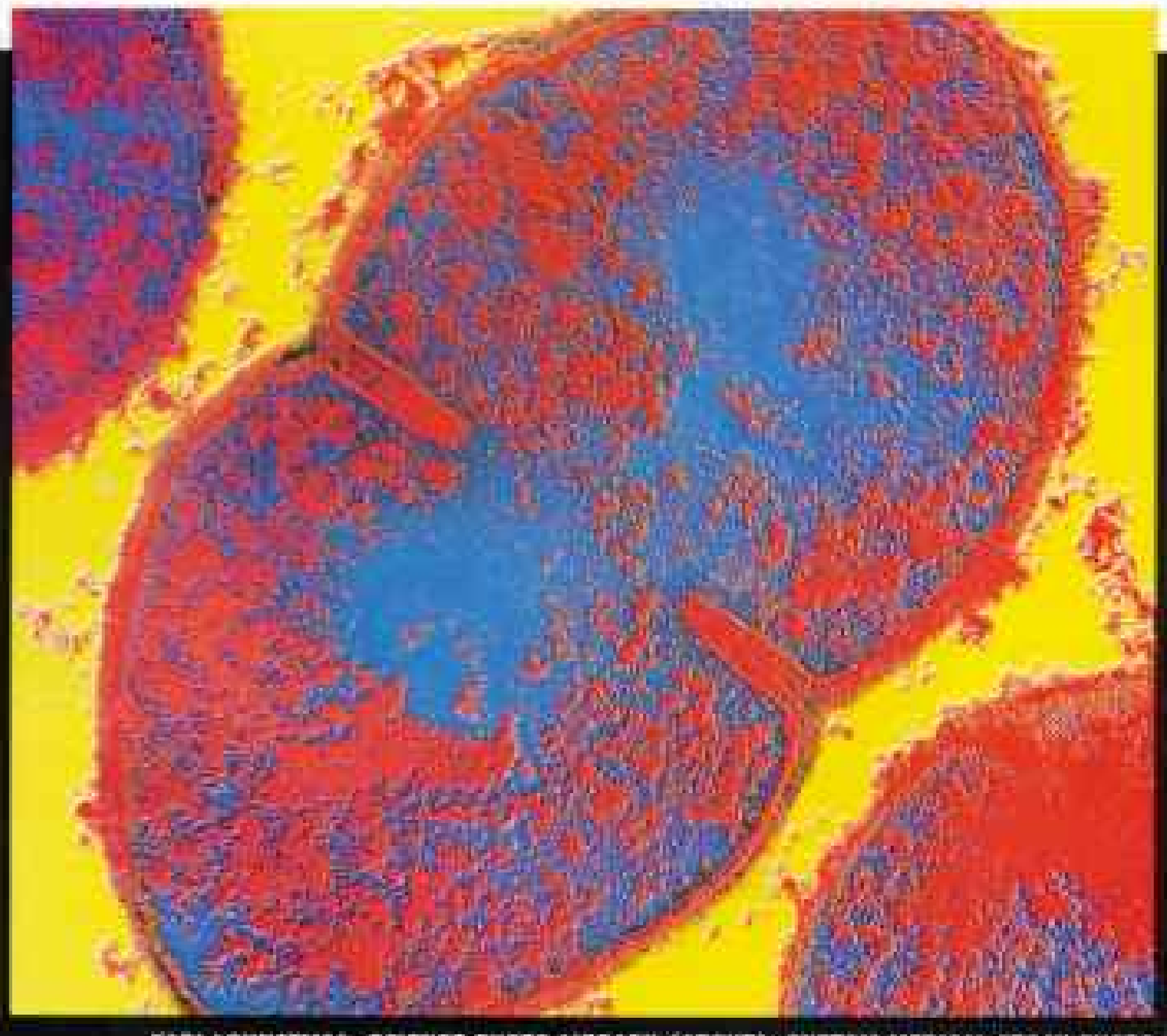
Geographica

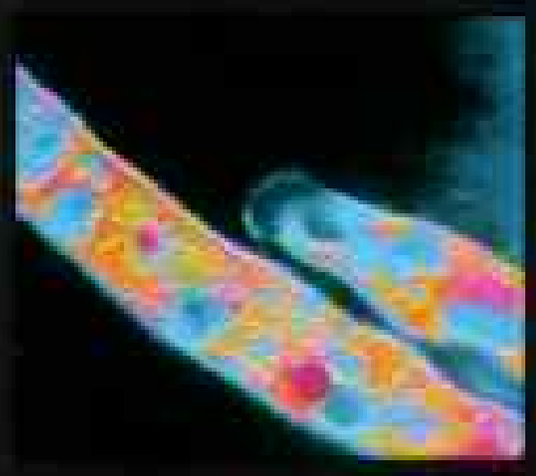


KARI LOUNATMAA, SCIENCE PHOTO LIBRARY (ABOVE); CUSTOM MEDICAL STOCK PHOTO

Bacterial Diseases Surge Around the Globe

Cholera engulfs Rwandan refugee camps and rages through southern Asia. Streptococcal bacteria (above) cause a flare-up in Britain of a "flesh-eating" disease called necrotizing fasciitis. New microbe strains produce a wave of infections in U. S. hospitals, while tuberculosis bacteria (below) spread disease among immigrants and inner-city drug users. *E. coli* bacteria (inset) poison hamburgers in the Pacific Northwest.

Years after the advent of antibiotics, bacterial diseases are as virulent as ever. Doctors at the U. S. Centers for Disease Control and Prevention (CDC) see several reasons: The complacency of medical workers who thought antibiotics had wiped out such illnesses as TB, a globalized food supply, increasing migration from war-torn nations, and the ease of international travel. Many bacteria mutate into new strains that resist weapons that once slew them. Only one antibiotic, vancomycin, fights certain strains of staphylococci and pneumococci; mutations could render them immune. "We're perilously close to being unable to treat some common diseases," says Mitchell Cohen, head of the CDC's division of bacterial and mycotic diseases.



New Guinea Rain Forest Yields a New Kangaroo

Tim Flannery trudged through the rain forest of Irian Jaya, the Indonesian half of New Guinea, trying to keep up with a Dani tribal hunter and his dog. Suddenly the dog barked and dashed off. By the time Flannery, an Australian mammalogist, caught up, the dog had killed a fluffy black-and-white animal (below)—a species of tree kangaroo formerly unknown.

Flannery had suspected that such a creature existed ever since he spotted a tribesman wearing an unusual fur hat in 1990. The dog, Flannery says, proved to be "the best tracker of us all," making its way through the undergrowth of the dense mountainous forests that rise from the seacoast.

The new species, as yet unnamed, is the tenth identified in the genus *Dendrolagus*, or tree hare. The animal weighs about 22 pounds, has a white star on its forehead, white bars on its muzzle, and a white belly. "It looked at first like a small panda," Flannery says. Though the Dani hunt it, he notes, another nearby group, the Moni, "feel the animal is their ancestor and revere it."

TIM FLANNERY, AUSTRALIAN MUSEUM

National Geographic, December 1994

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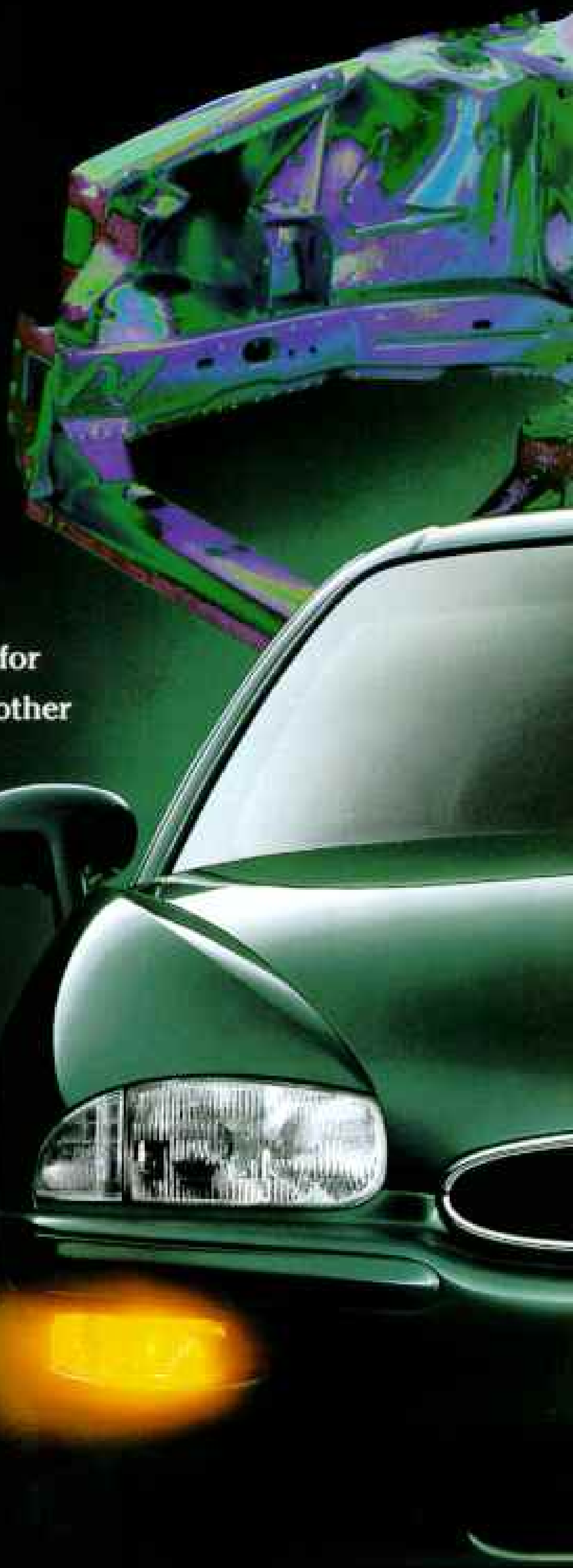

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Geographica

Home Emerges at Lake's Bottom

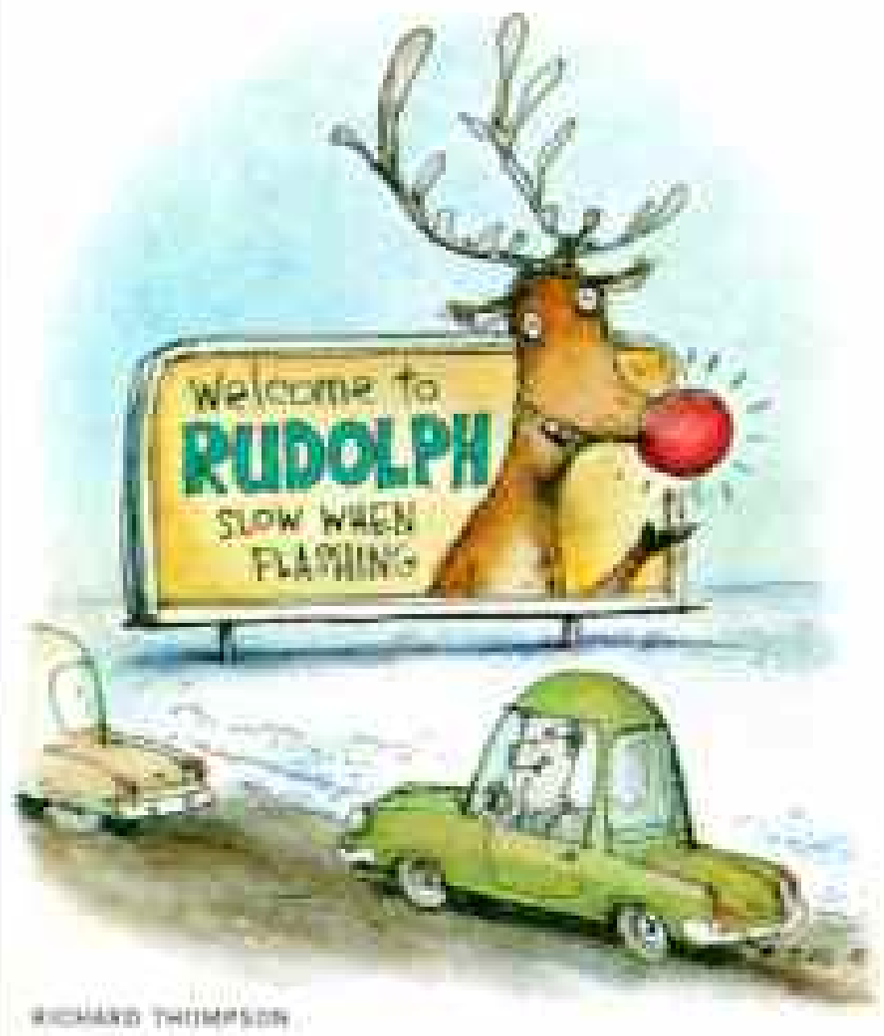
Antonio Toni went home last summer to show his sons and daughters "the place where their daddy was born." It wasn't easy: Toni's central Italian village, Fabbriche di Careggine, has been under water since 1947.

A regional electric company drowned the Tuscan village when it built a dam to tap the Edron River for hydroelectric power. The 146 residents, including 16-year-old Antonio Toni, had to move. In Toni's case, that eventually meant to Australia, where he lived for 18 years before returning to Italy in 1972.

About once a decade, however, ENEL, the national electric company, performs maintenance on the 312-foot-high dam after draining the reservoir into the Edron. Then, like the enchanted Brigadoon, Fabbriche's 32 homes and a church emerge briefly (upper right) before water flows in again.

Toni, now 63, enjoyed "a little vino and some cheese" in his old home with his wife, two daughters, two sons, a sister, and a niece. "We made a nice picnic," he says, "but everything is gone."

BROOKS WALKER



RICHARD THOMPSON

A Christmas Geography Query: Where Is Prancer?

On the night before Christmas, according to the Clement Moore poem, Santa's reindeer fly across the sky. On any day of the year, however, they can be found as U. S. place-names. There's Dasher (Georgia) and Dancer Peak (Texas), Vixen (Louisiana), Comet (Virginia) and Cupid Lake (Minnesota), and the Donner und Blitzen River (Oregon). But alas, there is no Prancer. There is, however, a red-nosed rhapsody of Rudolphs—in Ohio, Wisconsin, Tennessee, and Texas.

Actually, the nation boasts a wassail bowl full of other place-names that evoke holiday cheer: Santa Claus, Indiana, and Merry Christmas Creek, Alaska; Elf, North Carolina, and Mistletoe, Kentucky; North Pole, New York, and North Pole, Oklahoma; the little town of Bethlehem, New Hampshire, and the big city of Bethlehem, Pennsylvania. All these turn up in a computerized search of the Geographic Names Information System, a database compiled by the U. S. Geological Survey and the Board on Geographic Names. The database, available as a CD-ROM from the Survey, provides a complete, standardized list of names of the nation's geographic features.

Anticancer Drug Rises From the Ocean's Depths

Sea mats—colonies of tiny marine animals that mimic plants—are notorious for fouling ship bottoms and pier pilings. But the pests possess a chemical

BUGULA NERITINA, DOMINICK MERDOLA, CALBIOMARINE TECHNOLOGIES, INC.

compound that may kill cancer cells.

For 30 years George R. Pettit of Arizona State University has sought marine life that could yield anticancer drugs. "I've never seen a marine invertebrate with cancer," he says. Since algae, mollusks, and sponges have survived for eons, they "must have potent chemical defenses," he reasons.

A compound in sea mats, bryostatin 1, doubles the life span of mice with leukemia and lymphoma and also stops the growth of melanoma cells. Human testing has begun in the U. S., coordinated by the National Cancer Institute. Meanwhile, Pettit is testing other promising compounds from sponges, mollusks, even a marine worm.

National Geographic, December 1994

The McCooeys

ALTHOUGH THE McCOOEY BROTHERS AND THEIR SISTER
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Geographica

Beowulf Bests Dragons in Cyberspace

Beowulf—king of the Geats, slayer of the monster Grendel in his youth and a fire-breathing dragon in his old age, star of the great Old English heroic poem—has gone on-line.

The British Library, owner of the sole manuscript of the earliest European vernacular epic, has digitized all of its 70 folios, created electronic facsimiles of the whole, and made backlit fiber-optic and ultraviolet images to clarify hundreds of obscured sections. The full facsimile requires an enormous six gigabytes of disk storage, says Andrew Prescott, a library curator. Some of the images, however, are available to the public via personal computer.

Electronic imaging enables readers to see the thousand-year-old manuscript better than if they held it in the library. Erasures made a millennium ago (top right) are visible, as are letters, such as this "h" (right), partly covered by paper when the manuscript was repaired after an 18th-century fire. Hair follicle patterns of the sheepskin vellum on which scribes copied the text also show up. Sections of the manuscript are available on Internet, says the University of Kentucky's Kevin Kiernan, editor of the Electronic Beowulf.

Fiber-optic backlighting

Ultraviolet scan

ALL BY KEVIN KIERNAN

Original manuscript

The Newfoundland Pony Fights for Its Survival

Strong, durable, able to withstand ferocious winters, the Newfoundland pony was once a major working animal in Canada's easternmost province. Early this century some 10,000 ponies pulled plows, hauled logs for fuel and timber, and tugged passenger carts and sleighs.

Now fewer than 200 ponies remain. They have been replaced by snowmobiles and all-terrain vehicles, and thousands have been shipped to a horsemeat slaughterhouse since the 1970s. "We have a breeding population of 25, with only six working stallions," says Andrew Fraser, a retired veterinarian who has championed this venerable Canadian pony family.

Averaging only 12½ hands high—about 50 inches—at the withers and weighing 700 pounds, the animals are descendants of British mountain and moorland ponies imported in the early 17th century. A heavy September-to-May coat helps them cope with Newfoundland winters. "Their gentle disposition made them excellent for riding by young and old," says Fraser. Actress Elizabeth Taylor recalls riding a Newfoundland pony at the age of three.

Fraser has founded Newfoundland Pony Care Inc. in St. John's to buy and care for surviving animals and promote breeding. The group won support this year when the Newfoundland House of Assembly, recognizing the pony's contributions to the province's past, unanimously voted to designate it a "heritage animal."

—Boris Weintraub

SHAWN HENRY

National Geographic, December 1994

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They faced Everest without oxygen. But not without Rolex.

For explorers like Stephen Venables and Robert Anderson, a reliable timepiece is more than a convenience; it's a necessity. Braving the remote heights of Mount Everest without the aid of bottled oxygen, they needed to time their ascent with extreme caution. Their goal was to reach camp before sunset, when high winds and poor visibility make the mountain even more perilous. The timepiece they depended on was Rolex.

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The Twinlock winding crown protects movement from the elements.

To the Oyster case, we add the Twinlock winding crown. Designed according to the same principle as a submarine hatch, the Twinlock keeps dust and moisture from reaching the movement. One of the final additions to the case is the scratch-resistant synthetic sapphire crystal. Together, the case, winding crown and crystal protect the Rolex movement under even the most adverse conditions.

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After undergoing a series of grueling tests at Rolex, Oyster timepieces are sent to an independent Swiss Institute, the Contrôle Officiel Suisse des Chronomètres. There, each watch must successfully undergo fifteen days and nights of rigorous testing before it is awarded the prestigious red seal that signifies it is an Official Swiss Chronometer.

Only officially certified Swiss Chronometers carry this seal.

The extraordinary process that goes into making a Rolex helps explain why explorers find it valuable in any environment, from the frozen icescapes of the Arctic to the burning deserts of the Sahara. While there are many things explorers may need, a Rolex timepiece is one thing they can't do without.

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NATIONAL GEOGRAPHIC MAGAZINE

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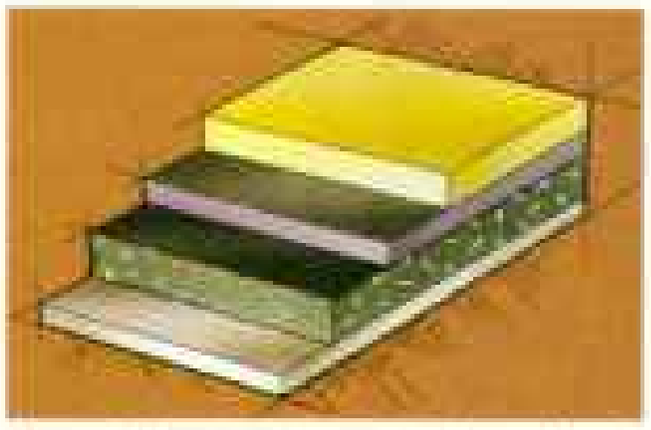

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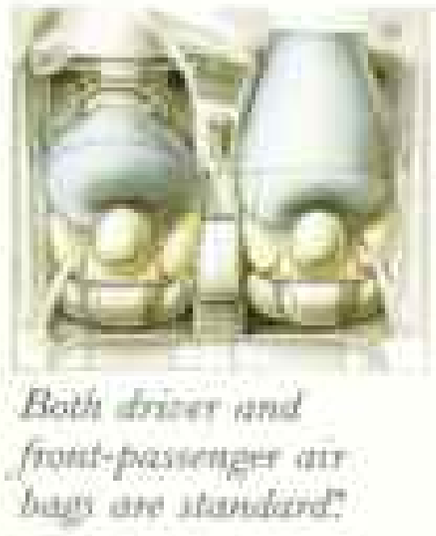

*Both driver and front-passenger air bags are standard.**

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Key to 1994

This past year the GEOGRAPHIC took readers inside the English Channel Tunnel and along the flooding Mississippi, from the streets of Shanghai to the steppes of Siberia.

A 1994 index for NATIONAL GEOGRAPHIC, TRAVELER, and WORLD magazines, books, and TV programs will be available in February for $4. Slipcases for your 1994 magazines are available now for $12.95. An index covering 1989-1993 costs $6. The *National Geographic Index 1888-1988* sells for $26.95. To order, call 1-800-447-0647 or write to National Geographic Society, 1145 17th St. N.W., Washington, D. C. 20036-4688.

For a free copy of the "Report of Programs" covering all Society activities from January 1993 through June 1994, send your request to National Geographic Society, P. O. Box 2895, Washington, D. C. 20077.

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MARCH

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DECEMBER

On Television

CARR CLIFTON, ALLSTOCK

BARBARA GERLACH, DRK PHOTO

Tough Little Guys for a Big Bad Land

Dakota settlers called this place of fluted peaks and plunging canyons the Badlands—a hundred-mile-long corrugation in the rolling grasslands of the Great Plains (above). This arid world of extreme temperatures provides refuge for such animals as the coyote and the swift fox. They and more than a hundred other vertebrate species survive here thanks largely to prairie dogs (top right).

The role of prairie dogs and their double life—one above ground, one below—are portrayed in EXPLORER's "Life in the Badlands."

Prairie dogs are rodents that live by the thousands in sprawling "towns" that attract other animals. Burrowing owls and rattlesnakes use their tunnels, while coyotes and golden eagles prey on the plump squirrel-size creatures.

Using a specially built underground set, producer Mike Birkhead captures their hidden lives. As the film shows, females practice infanticide to ensure the survival of their own young.

Prairie dogs have been widely eradicated by ranchers. Yet if the dog towns disappear, so too may the many other animals that depend on them for shelter, food, and even the occasional dust bath—as one bison proved by rolling over a mound occupied by a huddled cameraman.

EXPLORER's "Life in the Badlands" airs Sunday, December 18, at 9 p.m. ET on TBS Superstation.

Tracking Distant Seagoers to Earth's End

With trumpeting calls and a showy dance, a wandering albatross seeks a mate on the remote Crozet Islands (below).

The wind-pummeled Crozets—halfway between Africa and Antarctica—are breeding grounds and nurseries for seagoers such as albatrosses, seals, and penguins. Where the visitors go when they leave the islands has long intrigued observers. Now "Mystery of the Ocean Wanderers" assembles clues.

French scientist Henri Weimerskirch clipped a satellite transmitter onto a wandering albatross and discovered that it rode the winds for 12 days and 5,000 miles on a round-trip to Antarctic waters to feed.

Other pelagic migrants such as king penguins and elephant seals may also have precise destinations and a fail-safe internal compass to bring them home again.

EXPLORER's "Mystery of the Ocean Wanderers" airs Sunday, December 25, at 9 p.m. ET on TBS Superstation.

E. PARER-COOK

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lighting that slowly dims after you enter the car. Intermittent wipers, dual sport mirrors, and even a steering column that adjusts to your preferred driving position are standard, too.

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American Heart Association

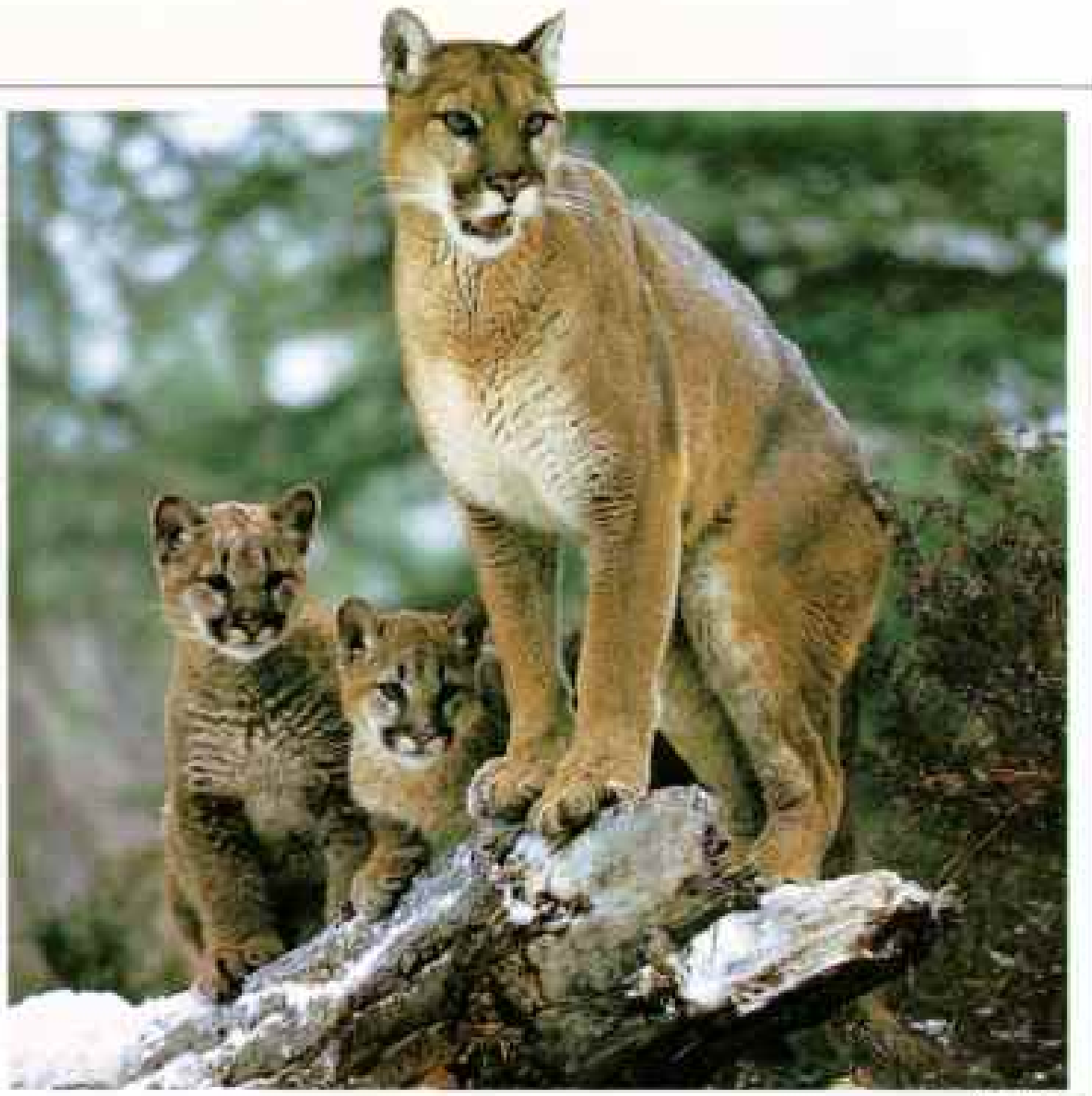
Earth Almanac

Mountain Lions Increase; So Do Human Conflicts

"Your comings and goings defined the boundaries of the unpeopled," wrote Wallace Stegner of the mountain lion on the edge of civilization in 1981. Now the big cats are multiplying, and they are crossing that border into the not-so-wild West—risky for both cats and people.

Mountain lions once ranged most of North and South America (GEOGRAPHIC, July 1992). But by 1950 the few thousand in the U. S. faced extinction, largely from bounty hunters. Since then, hunting of lions and their main prey, deer and elk, has been restricted. Wildlife sanctuaries have expanded. Although the total rebound is hard to estimate, some 9,000 to 12,000 lions now range California, Colorado, and Idaho—the top three states in lion population.

But as development spreads, so do conflicts. Last April a California woman was killed by a mountain lion while she was running in a recreation area. It was only the 11th such fatality documented since 1890, but attacks have increased since 1970. In turn, many lions have become roadkill in southern California. Of 32 lions radio collared during a five-year study, 25 perished: A third were hit by cars; the others were shot or died of disease.



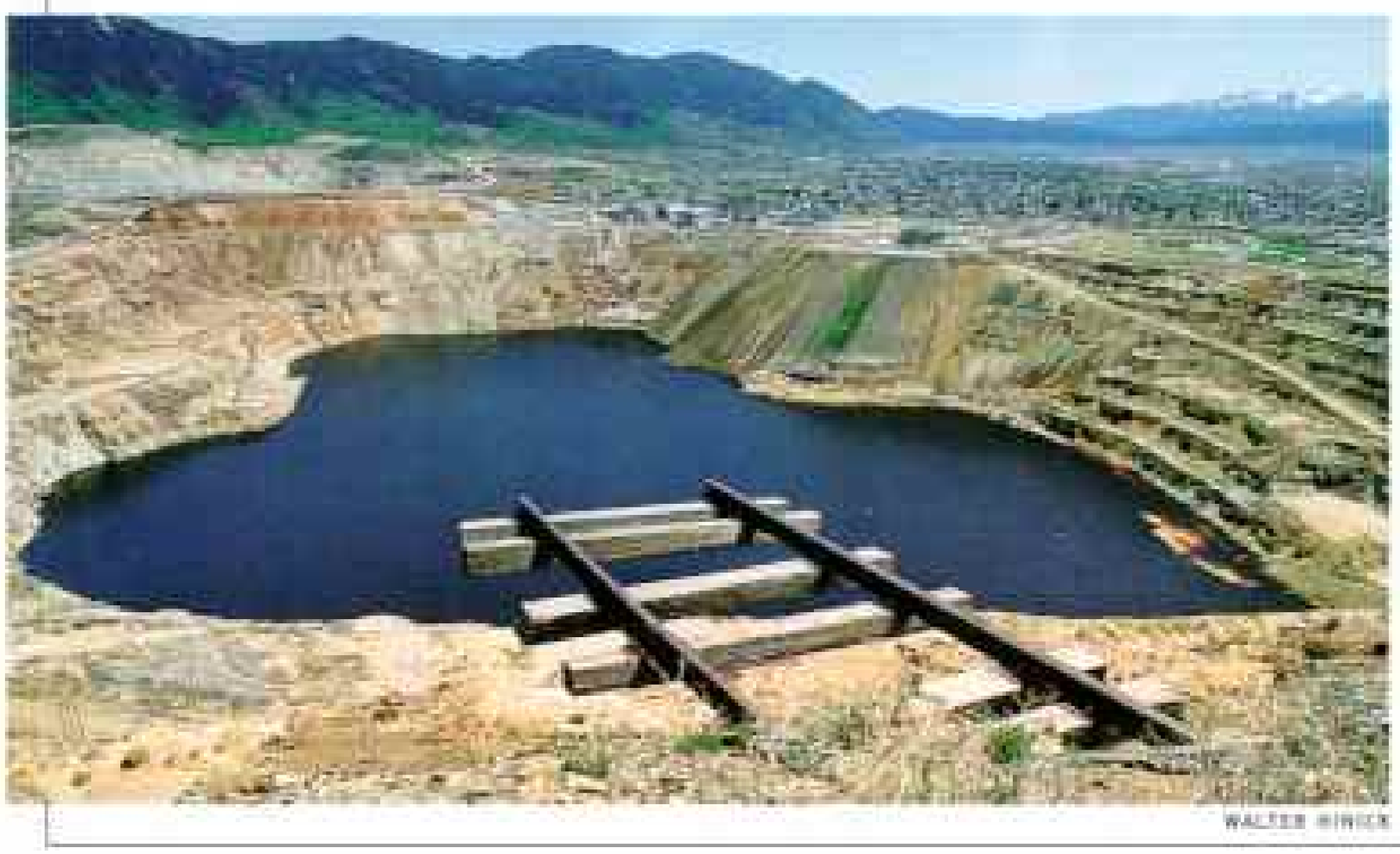
ART WOLFE

Cleanup Boom Rescues Butte From Economic Pit

It nearly swallowed a town, this copper mine called the Berkeley Pit, worked for 27 years before it was closed in 1982. Since then, 24 billion gallons of toxic water laced with 28 chemicals has accumulated in central Butte, Montana. Nearly 4,000 jobs disappeared from the town, along with civic pride. "The joke was, 'Would the last person out of town please turn out the lights?' " says Bill Rautio of the chamber of commerce. The pit and its surroundings make up the nation's largest polluted area.

In 1987 the U. S. Environmental Protection Agency designated the pit and three nearby sites a Superfund area. Created to finance cleanup of the nation's worst toxic sites, Superfund passed Congress in 1980 and is due for renewal by year's end. In Butte, Superfund is enforcing private industry's cleanup of the pit and other areas. More than a hundred million dollars has been spent, plus millions more in taxes paid into Superfund.

Butte has bounced back, advertising itself as an ideal pollution laboratory. A dozen cleanup firms have come to stay, helping cut unemployment from 20 percent in 1985 to less than 5 percent today. And two years ago, for the first time since 1920, the population went up, not down.



WALTER BIBIKOW

National Geographic, December 1994

Ford designers from left to right:
Susan K. Westfall, David Hilton, Gary Braddock, Soo Kang, Paul Arnone, Aaron Walker

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Earth Almanac

KJELL B. SANDVED, THE BUTTERFLY ALPHABET

Silence of the Bees: A Hawaiian Whodunit

Ah, nature. What an idyllic picture. A lovely orchid growing in a private botanical garden above Kaneohe Bay on Oahu in Hawaii. Honeybees burrowing into its blossoms, energetically pollinating.

Except that the bees are all dead.

The problem is that this orchid simply doesn't belong in Hawaii. *Dendrobium stratiotes* is native to the Moluccas and other islands in Indonesia. There it is pollinated by a bee small enough to enter and exit the blossoms. But when the orchid was transplanted to Hawaii, its blossoms proved a fatal attraction for non-indigenous honeybees. Seeking nectar, they crawl in—but are too large to back out. The flowers become death traps where the bees dehydrate or starve.

"It's the most perfect mismatch I've ever seen in nature," says photographer Kjell B. Sandved.

Although almost 900 alien plant species threaten to choke or crowd out Hawaii's native flora, cultivated orchids rarely go wild, and neither has this species. "Good thing," says Sandved, "or the price of honey would really have jumped."

Canadian Connection for the Appalachian Trail?

Backpackers eager to go the extra mile on the Appalachian Trail may have that option by the year 2000. A proposal has been unveiled to add a connecting trail into Canada.

Three to four million people a year hike at least a little of the 2,155-mile trail from Georgia to Maine. About 180 of them traverse the whole route, most ending atop Maine's Katahdin. But they may be able to keep going along a new 250-mile section through New Brunswick and Quebec, terminating on Mont Jacques-Cartier on the Gaspé Peninsula—the northern end of the Appalachian range.

Espoused by Canadian and American officials, the plan was launched on Earth Day last April 22 by former Maine governor Joseph E. Brennan. Three state and provincial parks offer public access, but much of the route would cross private land. Proponents hope that owners will grant free access and that hikers will be headed north by Earth Day 2000.

Queerest Fish in the Sea? The Massive Mola

It's ponderous and lethargic—but which end is the front? Divers may do a double take with molas, or ocean sunfish. Their German nickname, *Schwimmenderkopf*, means "swimming head." The truncated "tail"—called a clavus—is nearly useless for swimming.

In many ways molas are larger than life. They are the heaviest of all bony fish—the largest known mola measured nearly 11 feet long

MIKE JOHNSON

and weighed 4,928 pounds. In one female 300 million eggs were found, 6 to 15 times the number carried by most species. Tough skin, as much as six inches thick, armors molas against most enemies but is little protection against Monterey Bay sea lions, which prey on them in late summer.

—JOHN L. ELIOT

National Geographic, December 1994

On Assignment

ROD M. FARB

Rusty and encrusted after 131 years under the English Channel, the cast-iron Blakely cannon from the C.S.S. *Alabama*—a massive, shell-firing, pivoting gun—looked beautiful to Capt. MAX GUÉROUT (above), who writes about the long-lost Confederate shipwreck in this issue. "For three years we planned to recover that cannon," he says. Poor visibility, 180-foot depths, and fierce currents off Cherbourg, France, limited Guérout's volunteer divers to 15 minutes of bottom time per dive during a three-week summer season. Last June a shipboard crane finally pulled up the 3.2-ton cannon—and Guérout's spirits.

Born in a Parisian suburb, Guérout has lived his life on the sea. He was an officer in the French Navy for 29 years. In his spare time he specialized in underwater archaeology, investigating shipwrecks throughout the Mediterranean. His career honors include being named a chevalier of the French Legion of

EMORY KRISTOF

Honor and a laureate of France's Académie de Marine. In 1988 Guérout retired from the navy and became the chief archaeologist of the C.S.S. *Alabama* Association.

"It was a challenge," says freelance photographer ROD M. FARB (left) of diving on the wreck. "The conditions there are horrendous. Even in summer the water temperature is only about 49°F, and it's so dark sometimes you can't see a thing." The author-photographer of two books on shipwreck exploration, Farb began diving at the age of 13 in his hometown of Mobile, Alabama. "When I was growing up, the *Alabama*'s Capt. Raphael Semmes was remembered as a minor deity," he recalls. "He came back here to live after the *Alabama* sank. Mobile County even has a Semmes Elementary School."

"I have always loved shipwrecks," says Farb, who has a graduate degree in biology. "They're like time capsules with the clock stopped at the moment of sinking." He is currently at work on a book about the wreck of the U.S.S. *Monitor* off Cape Hatteras, North Carolina. When not underwater Farb is a photographer for the University of North Carolina at Chapel Hill.

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Geoguide

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IN A MOST UNLIKELY ENCOUNTER A SLED DOG NEAR CHURCHILL, MANITOBA, RECEIVES A WARM AND PLAYFUL EMBRACE FROM A POLAR BEAR. THE CAPACITY FOR PLAY AMONG ANIMALS INCLUDES A SEEMINGLY ENDLESS ARRAY OF CAPTIVATING AND USEFUL BEHAVIORS. THE MAP OF THE WORLD AT RIGHT HOLDS CLUES TO A HIDDEN MESSAGE FOR YOUNGSTERS, WHICH THEY CAN SOLVE BY COMPLETING THE FIRST ACTIVITY BELOW.

Animals AT Play

• Children can decipher a secret message and sharpen their knowledge of the world at the same time by playing a game that uses some of the creatures in the article "Animals at Play." Here's how: First, make a list of these animals: orangutan, elephant, ibex, gray wolf, mountain gorilla, Japanese macaque, ring-tailed lemur, dolphin, Eurasian crane, raven, grizzly bear, mountain goat, and marine iguana. Next, find out where each animal lives by reading the captions for the photographs in which each animal is shown. Then, write the names of the places next to the appropriate animals. Next (using an atlas), locate each of those places on the world map above, and write the letter you find printed there next to the name of the animal on the list. Finally, arrange the animal names in alphabetical order. Their location letters from the map will reveal a message.

• Pet owners can see many of the animal behaviors described on pages 14 and 15 by watching their cats and dogs. What kinds of play do pets display? How might such play benefit them? What is the difference between an animal's fear face and its play face?

• When animals give invitations to play, they use nonverbal cues—a wolf's bow, a cat's jump, a dog's roll onto its back. What nonverbal gestures can you think of that humans use to show playfulness—such as winking or grinning?

• Wolf cubs spend hours chasing and frolicking over the same ground, getting a feel for their habitat. Human youngsters also chase and frolic over home areas—woods, a backyard, a city park. Can you map a favorite play area—with landmarks such as hiding places or trees for climbing?

NORBERT ROSING

USE THE GEOGUIDE PAGE ALONG WITH THE ARTICLE "ANIMALS AT PLAY" IN THIS ISSUE TO HELP CAPTURE THE INTEREST OF YOUNG READERS AND STIMULATE DISCUSSION WITH THEM. GEOGUIDE IS FEATURED FOUR TIMES A YEAR.

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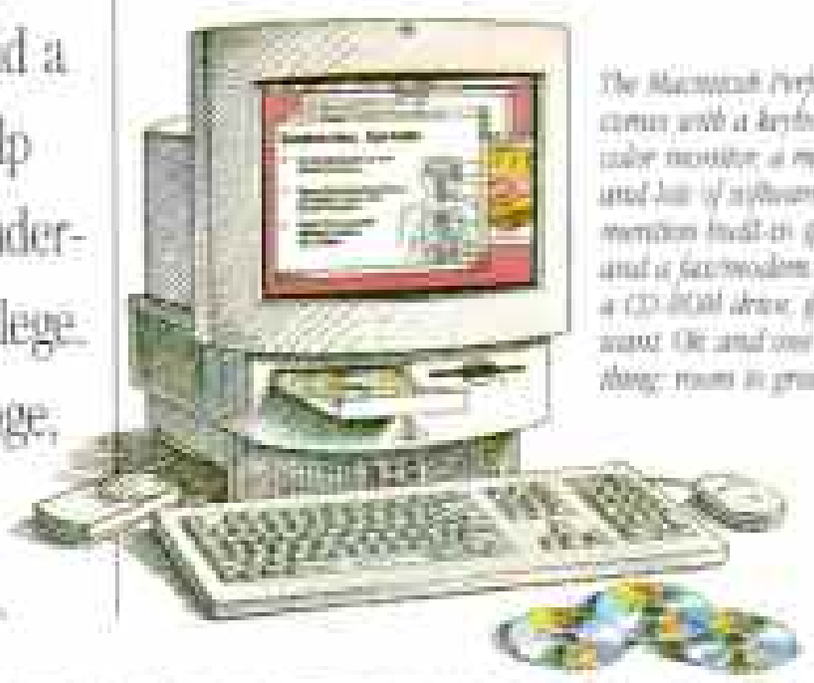

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