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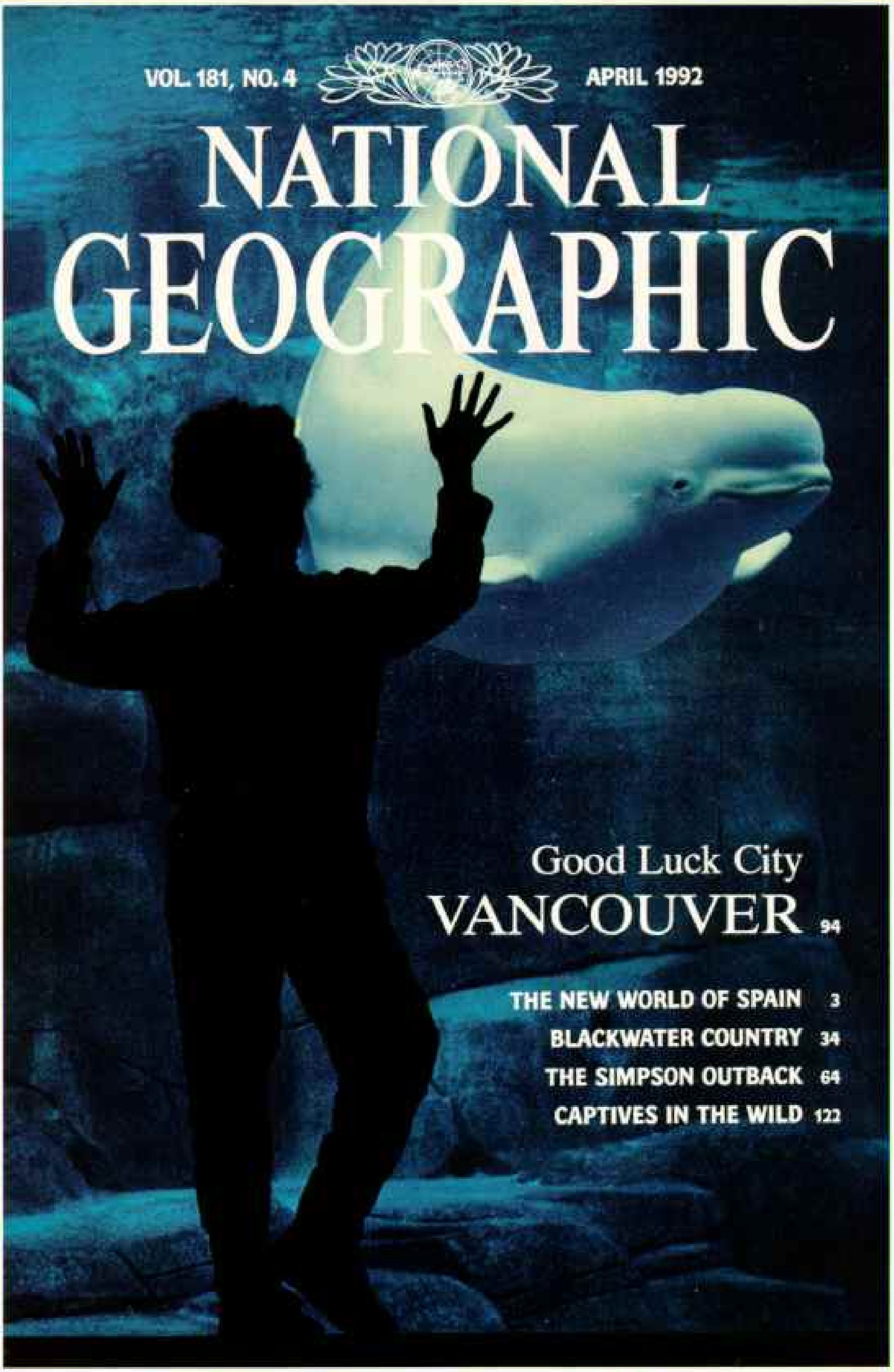
NATIONAL GEOGRAPHIC

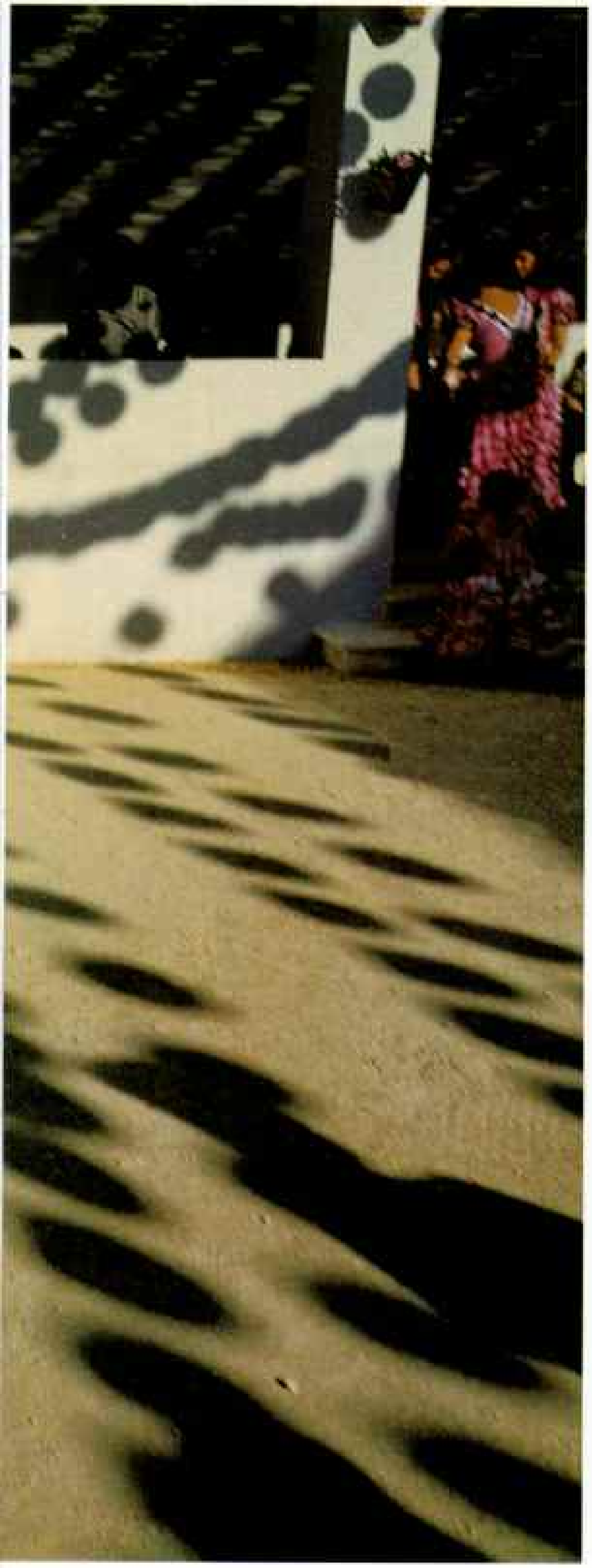


Good Luck City
VANCOUVER 94

NATIONAL GEOGRAPHIC

APRIL 1992

COVER: At Vancouver's acclaimed aquarium, a beluga whale, a transplant from Hudson Bay to a city of newcomers, makes friends through the glass walls of its new home. Photograph by Annie Griffiths Belt.



The New World of Spain

In a bid for independence a toddler wearing Andalusian riding attire cuts across a courtyard during the annual horse fair at Jerez de la Frontera. Spain marks such celebrations in traditional style as it moves with the times in the unified European Community.

By BILL BRYSON

Photographs by

DAVID ALAN HARVEY

Bacchanalian abandon is awash in a flood of suds at Amnesia, one of the wildest and most popular discos on the Balearic island of Ibiza, some 80 miles off Spain's east coast. Twice a week international vacationers looking for new ways to party cram the dance floor to frolic in several feet of bubbles. Many begin their day with dinner and drinks, make a round of the discos from midnight till noon, then sleep on the beach.

Today's uninhibited revelry was unthinkable during the almost four decades of strict authoritarian rule by Generalissimo Francisco Franco. Since his death in late 1975 Spain has loosened up, becoming a more tolerant, democratic society.

Neither dust nor distance discourages pilgrims from completing the annual Pentecostal trek to the shrine of El Rocío in the southwestern province of Huelva. From as far away as Barcelona more than half a million participants set out on foot and horseback, by oxcart and jeep, taking statues of the Virgin Mary from parish churches to meet the Blanca Paloma, or "white dove," the Virgin of the shrine.

Faith, which has kept this pilgrimage alive since the 15th century, still brings Spaniards to baptisms, weddings, funerals, and festivals of the Roman Catholic Church. But as Spanish society becomes more secular, fewer attend Mass regularly.

Two currents eddy and mingle in modern Spain: old customs like the afternoon card game that gathers friends together and new aspirations sweeping into even the most remote villages.

IN 1957, when José Luque's father opened a beachfront hotel in a depressed and slumbering fishing town called Marbella, many people urged him to have his brain examined.

"It was," recalls his son, "like someone today building a hotel in the middle of the Sahara. At that time no one came to the south of Spain for a holiday. Just to give you an idea, it was the first building on this stretch of the Mediterranean coast to have an elevator."

Back then the 12,000 residents of Marbella had little work and less money. "There were almost no televisions, or telephones, or refrigerators, very little electricity," says David Searl, an American who has lived in the area for 26 years. "There was nothing along the seafront from Algeciras to Almería [map, pages 12-13], and you could get a glass of wine for just a few cents."

Things have changed. Today Marbella is one of the most glittering resorts in Europe, the haunt of princes, sheikhs, and movie stars, with a summertime population of 150,000 and more Rolls-Royces, or so it is said, than any other city but London. The Luque family's quiet and comely Hotel El Fuerte—once the only building of consequence for miles—stands all but lost amid a cluster of high-rise hotels and apartment blocks hunched together along the beach like passengers in a rush-hour subway train.

For 50 miles in either direction the once empty coastline has become a more or less continuous sprawl of hotels, villa developments, golf courses, marinas, gas stations, shopping centers, and the glossy offices of real estate developers. Five million visitors a year pour into Marbella and the nearby resorts—two million more than visited the whole of Spain in 1957, when Señor Luque built his hotel.

"They call this area the Costa del Sol, but nowadays it's really more the Costa del Concrete," says David Searl a little wistfully. "Of course, it's easy for outsiders to complain that this was a paradise that has been spoiled, but for the people who have always lived here, who now have jobs and the refrigerators and indoor plumbing that once they could only dream about—well, naturally they see it in a different way."

Much the same story could be told of the whole of Spain over the past three decades. Few countries have undergone a more profound transformation in a single generation. Until well into the 1960s Spain was one of the poorest countries in Western Europe. Now it has the ninth largest economy in the world.

For 36 years, under the iron rule of Generalissimo Francisco Franco, it was a one-man state, ruthlessly run, repressive, often absurdly backward. (Censorship was so severe that newspapers had to employ retouchers, called *retocadores*, whose duties included painting tank tops onto photographs of boxers to spare the public the shocking sight of a bare male chest.)

But from virtually the moment the aged Franco drew his last breath in 1975, the nation raced to embrace democracy. Concepts once quite foreign in Spain—free elections, free markets, free speech—are now taken for granted. Once nearly every principal square and thoroughfare in the country bore Franco's name. Today the names have reverted to the originals almost everywhere, and Franco is a fading memory.

"A generation has grown up that never knew Franco," one Spaniard told me, adding with an expansive smile, "and thank goodness."

An almost feverish dynamism appears to have

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swept the country. Suddenly everything is happening in Spain—the Summer Olympics in Barcelona, a world's fair in Seville, a galaxy of cultural and artistic activities in Madrid arising from its selection as European City of Culture for 1992, and celebrations marking the 500th anniversary of both Columbus's voyage to the New World and the unification of the country under King Ferdinand and Queen Isabella, ending nearly eight centuries of Moorish domination.

Everywhere there are new museums, new offices, new airports, new railway stations, entire new neighborhoods.

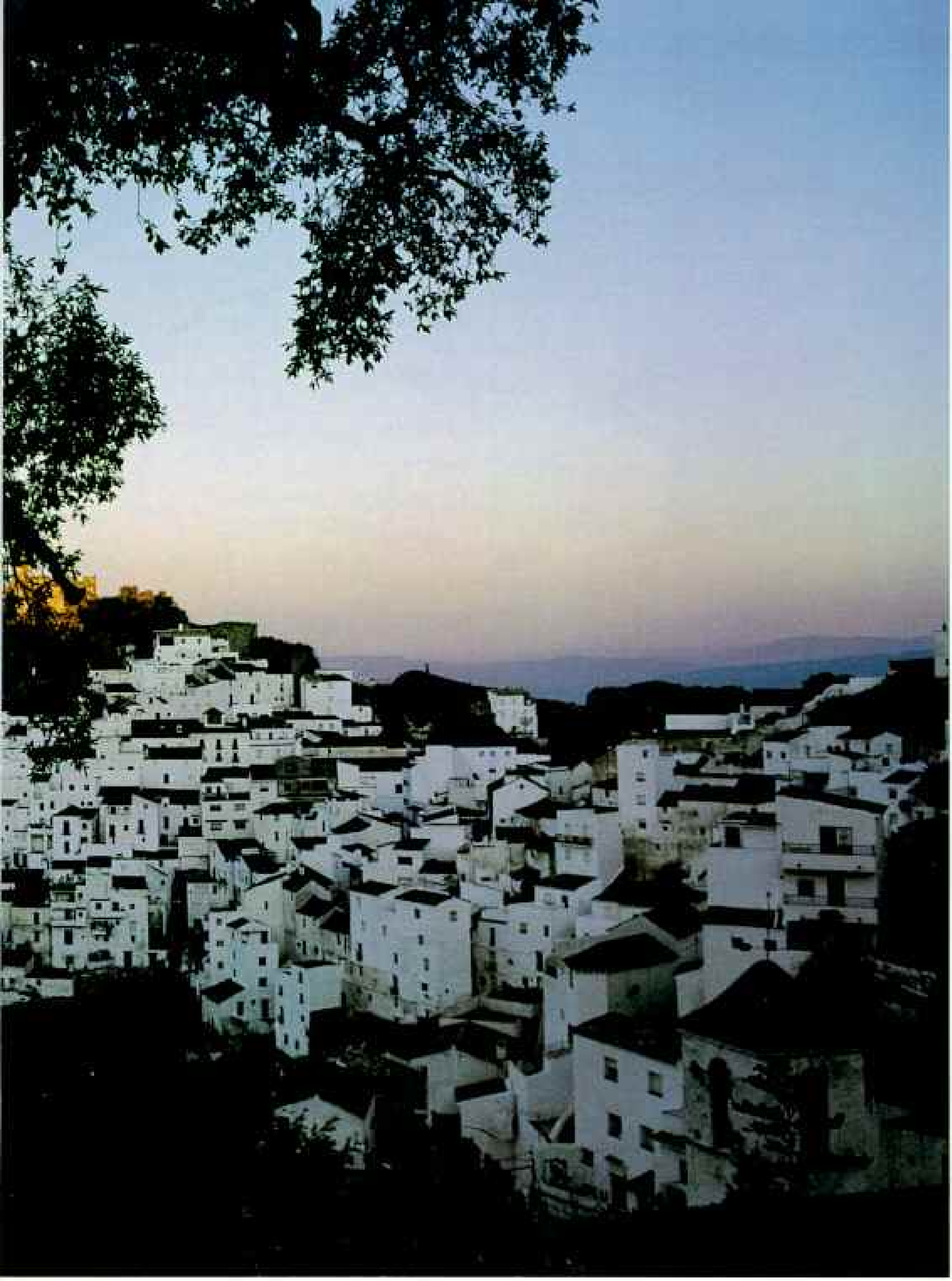
"EVERYTHING HAS CHANGED—everything," my cab driver told me as he nonchalantly shot the car away from the curb at Madrid's Barajas International Airport and hurtled us into the endless stream of traffic heading into the city. He jumped from lane to lane as if dodging invisible gunfire and, like most Madrid drivers, appeared unacquainted with his brakes.

"When I first came to Madrid in 1954," he shouted back to me over the buffeting rush of hot air pouring through the open windows, "there was no traffic. There were hardly any traffic lights. It wasn't necessary. No one had cars. Now you can't move for traffic."

When I noted that we were indeed moving, and at a breathtaking rate, he grew sulky and insisted that this was an unusual day. I soon learned that most Madrileños take a secret pride in the awfulness of their city's traffic, as a kind of proof of their arrival in the modern age. The quickest way to make a Madrid native peevish is to suggest that the city's traffic is no worse than London's or New York's.

What is remarkable amid all this new hustle and change is how well the Spanish have managed to hold on to what was good from their past. Spain is still much the country it always was: A nation of proud, courteous, and immensely

Jumbled stacks of houses flank cobbled streets still trod by donkeys beneath a church and a Moorish fortress in Casares. Surrounded by olive and orange trees, this quiet farm village rests in mountains just nine miles from busy Costa del Sol beaches.



An 18.5-billion-dollar-a-year business, tourism earns some 10 percent of Spain's income. Most of the more than 50 million visitors head for Mediterranean resorts, but overbuilding, pollution, and a strong peseta are eroding their appeal.

The mosaic of Spain

One of the oldest nation-states in Europe, Spain hears the echoes of countless conquests in the voices of its ethnically and geographically diverse regions. In the name of national unity, Franco allowed only Castilian to be spoken in public. But at home native speakers nurtured the Galician, Basque, and Catalan languages, which, along with various Spanish dialects, survived a ban of almost 40 years. Responding to demands for increased local autonomy, the 1978 constitution divided the country into 17 regions with unprecedented power and responsibility.

Often quarrelsome, Spain's voices concurred in supporting entry into the European Community (EC) in 1986, creating a bonanza of new opportunities. By the end of the decade Spain's economy ranked among the Continent's most dynamic.

easygoing people who clearly place a higher value on the rudiments of civilized life—conversation, family, friendship, good food, especially good food—than on the accumulation of raw wealth. Even on weeknights most Spanish cities still buzz at three in the morning, the bars and cafés filled with the animated talk of people who have evidently forgotten that they must work in the morning and that morning is near. "Thinking of tomorrow is an alien concept in Spain," one Spanish friend told me.

IN THE MOST frantically nocturnal city in Spain, Seville, where the natives seem to be genetically indisposed to sleep, this year's world's fair, Expo '92, will stay open each day until 4 a.m. Otherwise, it is feared, the locals would hardly come.

For the freshly arrived visitor, the notion of tucking into dinner at an hour normally associated with pajamas and healthful slumber takes some getting used to. Sitting very late one night amid the crowded, platter-heaped tables of the Taberna de Antonio Sánchez in Madrid, rosily suffused with good food and wine, I asked my dinner companion, kindly white-bearded Carlos Martín, how on earth anyone ever managed to go to work in the morning in such a lively and seductive country.

"Oh, they *go* to work," Carlos explained cheerfully, reaching for the Rioja bottle, "but whether they do much work when they get there is another question."

Yet clearly someone is doing the work. Ramón Tamames, a leading economist, told me he thought it not at all improbable that within a decade, perhaps a little more, Spain will have overtaken Britain, tied Italy, and be within striking distance of France in national wealth.

This paradox of a nation that works all day, plays all night, and never appears to rest is easily explained. Spain is a nation of paradoxes. No country I know of is more agreeably confounding, more replete with contradictions, more predictably unpredictable.

Spain has been unified for 500 years, yet in language, culture, outlook, and geography it could hardly be more fragmented. Many inhabitants scarcely consider themselves Spanish at all. Tell a Catalan that you are doing an article on Spain, and he will likely reply, with only a hint of irony, "Then what brings you to Catalonia?"

AREA: 504,782 sq km (194,897 sq mi). **POPULATION:** 38,500,000. **CAPITAL:** Madrid, pop. 4,846,000. **GOVERNMENT:** parliamentary monarchy. **RELIGION:** Roman Catholic. **LANGUAGES:** Castilian; Catalan 17%, Galician 7%, Basque 2%. **LITERACY:** 95%. **LIFE EXPECTANCY:** 77 years. **ECONOMY:** Industry: tourism, motor vehicles, steel, industrial machinery, food processing, chemical products, electronics, footwear. Export crops: fruits and vegetables, olive oil, wine. **PER CAPITA INCOME:** $12,500

Millions of Spaniards do not speak Spanish as a first language, and a significant few do not speak it at all. In Galicia most natives speak Galician, a language closer to Portuguese than to Spanish. In Catalonia the lingua franca is Catalan. And in the Basque provinces a small but determined minority speaks a pre-Indo-European tongue whose origins have bewildered generations of linguistic scholars.

Throughout its long history Spain has been washed over, in whole or in part, by invading hordes of Phoenicians, Celts, Greeks, Carthaginians, Romans, Vandals, Visigoths, and Moors, and each of them has left something distinctive to one or more regions of the country in architecture, music, culture, gastronomy, outlook, even appearance—from the voluptuous, raven-haired natives of Andalusia in the south to the freckled, Celtic-descended blonds of Galicia and Asturias in the north.

As the writer and thinker Antonio Gala told me: "Spain is not a country, but a country of countries. Diversity is sometimes a problem for us, but it is also our glory."

PERHAPS NO PLACE better captures the confident new mood of Spain, as well as a measure of its divisiveness, than Barcelona, capital of Catalonia. Already one of the most beautiful and vibrant cities in Europe, Barcelona in recent years has seemed intent on becoming the finest urban environment in the world. Upwards of seven billion dollars in government and private money has been lavished on the city in preparation for the Olympic Games. By the time of the opening ceremonies on July 25, Barcelona will boast an expanded airport, two dozen new hotels, 864 acres of new parks (almost doubling the amount of green space in the chronically overcrowded city), a new coastal highway, two and a half miles of new beaches, 200,000 new trees, new sewage and drainage systems, a new Olympic sports complex, a new National Theater of Catalonia, a new conference center, and new housing for 8,000 people.

In marshaling this activity, Barcelona has been lucky to have as mayor an urban planner of rare vision, Pasqual Maragall. Genial and shuffling, the 51-year-old Maragall looks more like an academic than a politician—not surprising since a university professor is what he used to be.

Catching up with him during an inspection tour of renovation work on the 15th-century Gothic mansion that houses the local archives—yet another of the city's projects, this one costing some 600 million pesetas, or six million dollars—I asked Maragall whether all this wasn't a lot of effort and expense for one fleeting Olympiad.

"Oh, the Olympics are merely a pretext," he explained cheerfully. "The games will be over in 16 days, but Barcelona goes on forever. Our aim all along has been to promote the long-term good of the city. The Olympics have provided a focus, but in a sense they are quite peripheral."

One day I asked José María Carandell, an open and loquacious Catalan writer and playwright, the difference between Barcelonans and Madrileños. "The people of Madrid are more ambitious, more eager to make money, but also more generous," he told me. I had by this time learned that most people in Spain have emphatic, and often engagingly scurrilous, opinions about the people of every other region, so I was surprised to hear Carandell praising the denizens of Barcelona's historic rival.

"Oh, yes, Madrileños are very generous, I admit it. We Catalans on the other hand are stingy—not just with our money but even with our words. The only thing we are not stingy with is our architecture. We spend *fortunes* on buildings, which is why we have so many beautiful ones," he told me.

He reflected a moment and added: "We are also, I think, more cosmopolitan. Catalonia has always looked toward Europe. We are physically nearer to Europe and we belonged to Charlemagne, not to the Moors. It has always made us more European than the rest of Spain."

So do Catalans feel un-Spanish? "It is Spanish not to want to be part of Spain. In that sense, Catalonia is very Spanish." Carandell smiled at the paradox. "But it is easy," he added with sudden gravity, "to exaggerate the situation. Spain is not like Yugoslavia. It is not in danger of breaking up. Spain is indissolubly unified—politically and economically, if not always emotionally."

One very visible divide between Catalonia and the rest of Spain is language. Menus, signs, billboards, and the other printed ephemera of daily life are now given almost exclusively in this curious language that seems strikingly more akin to French than to Spanish. In Catalan, for

A stabbing finger makes a retired fisherman's point during a debate in Galicia, where high unemployment has driven away many younger workers. Galicia-born tycoon Mario Conde, making a point at a Madrid reception (below, at right), left the region as a teenager when his father took a job elsewhere. Head of a leading bank, 44-year-old Conde is one of the self-made successes reshaping Spain's business and economy.

Sweeping sorrow away in the joy of Easter, Carmela Goncet de los Reyes offers sherry—Spain's noble fortified wine—to revelers outside her parish church in the village of Castilleja de la Cuesta near Seville.

Village tradition on the last day of Holy Week mixes solemn rites and wild-eyed rivalry between two local parish churches. To limit the chance of fights, each church has an appointed time to parade its statue of the Virgin through the streets to shouts of ¡Guapa! ¡Guapa!— *Beautiful!*

The partisans of each then make time to eat, to drink, to carouse, and to send the sober restraints of Lent spinning into the next season of repentance.

example, "please" is *si us plau*, closer to the French *s'il vous plaît* than to Spanish *por favor*.

Catalan is spoken by seven million people, but its survival has only recently been assured. Since 1716, when King Philip V's Decree of the New Plan imposed Castilian as the official language, Catalan, along with other minority languages in Spain, has suffered long periods in which it was not allowed to be taught in schools, used in courts, or even, sometimes, spoken in public. The 16 years since Franco's death have marked the longest period of linguistic peace in Catalonia in almost 300 years.

"The freedom to write in one's own language is refreshing, but there is a price to be paid," says Carandell. "Three-quarters of the people in Catalonia were never educated in Catalan, so although they may speak it perfectly well, they are not always comfortable reading it. The Spanish are not great readers generally. You will notice that there are not so many bookshops and libraries here. Less than one person in ten even takes a newspaper. So you have a double problem: First you must get people to read, and then you must get them to read in Catalan."

Is it difficult then to make a living as a Catalan writer? "You must be a hero," Carandell says with a sudden and fatalistic smile.

ALTHOUGH BARCELONA has carved out a role as the most cosmopolitan of Spanish cities, Madrid is the citadel of wealth. This city of nearly five million in the middle of the high meseta, or tableland, that spreads across central Spain is the home of most of the country's banks and international businesses, as well as the seat of government, and there is, after Barcelona, a palpable sense of wealth and power in the air. People look richer, busier, more intense, more distracted. The city seems to exist in a perpetual rush hour.

In Madrid, too, you become aware that not everyone has benefited equally from Spain's rise to wealth. At night along the Gran Vía, once the city's swankest thoroughfare, drug dealers peddle their wares openly on the shadowy side streets, and the ragged homeless—mostly young, often painfully so—beg for coins or lie huddled in darkened doorways.

One man who has managed in the most extraordinary way to reconcile these two extremes—to accumulate wealth and use it to help the city's swelling army of down-and-outs—is Luis de Lezama.

Lezama looks every inch the successful businessman he is. Impeccably dressed in a tailored suit that perfectly conforms to the abdominal contour one equates with a successful restaurateur, he moves purposefully through the Taberna del Alabardero, superintending business with a genial but meticulous air, checking the fish stock, consulting with waiters, exchanging banter with the half dozen chefs creating gustatory miracles in a steamy kitchen not much larger than a bread box. Lezama owns two other establishments in Madrid and still others in Seville, in Puerto Banús near Marbella, and in Washington, D. C. All are expensive, highly fashionable (King Juan Carlos is a regular customer), and, by all accounts, excellent. His success is clearly deserved.

And here is the thing: Luis de Lezama is a priest—not a former priest, but a priest. He still fulfills regular parish duties in a little town called Chinchón, near Madrid. In the mid-1960s he worked for three years in a poor and neglected district of Madrid. "Many young boys were living on the streets or in cardboard boxes," Lezama recalls. "It seemed natural to try to do something for them. One must do something," he says simply.

With no experience in running a business, Lezama borrowed money from three friends to open his first restaurant in 1974. All the employees—waiters, chefs, bartenders—were street kids whom he had befriended. The *taberna* was an instant success. Lezama repaid the loan in a year and began opening other establishments, always endeavoring to employ young people who had never before had either hope or opportunity.

One such was Agustín Alvaro, a young man who was given about as poor a start in life as one can get: Abandoned by his mother in a Madrid doorway when he was just eight days old, raised by the elderly couple who lived there, orphaned again at ten when his adoptive parents died. With no one to look after him, he spent the next five years in and out of institutions or living mostly on the streets.

"I was a lost cause," he recalls. "I had practically no education, I was frequently in trouble with the police, and I behaved like an outcast. But fortunately then I met Father Lezama."

Lezama gave the youth a job and, because he

Garbed in black on the road to piety, Luis Martinez Resino hurries to a Holy Week procession. His cofradía is one of more than 50 Seville brotherhoods of religious laymen who sponsor pasos, or floats, dedicated to Christ or the Virgin. Some nazarenos, as these men are called, are severely pious. Others participate more for a sense of tradition—or simply to join in the year's biggest celebration.

was a minor, became his official guardian (hence Alvaro took the priest's name and now calls himself Agustín Lezama). Recognizing his young ward's intelligence, Lezama sent him to school in Lausanne, Switzerland, to prepare him for a career in the restaurant business. Today Agustín, now 25, speaks three languages, manages the company's accounts, and comports himself with a poise and polish that seem miraculously incompatible with his street-urchin past. "If I hadn't met Father Lezama," he says, "I would still be on the streets, probably a thief and a drug addict. I have no doubt of that."

Over the years, and without a peseta of government assistance, Father Lezama has employed—saved, actually—a hundred young people like Agustín, most of whom have gone on to successful careers in other Spanish restaurants.

IF SPAIN is arguably the most forward-looking country in Europe today, it nonetheless remains almost fanatically attached to tradition, as I discovered when I ventured to an obscure corner of Andalusia to watch perhaps the most arresting of all Spanish annual events: the great Rocío.

El Rocío is both a place and a fiesta. For 51 weeks of the year El Rocío is virtually a ghost town, a collection of empty white buildings standing forlornly around dusty, unpaved streets on a lonely highway 50 miles southwest of Seville. But each spring it becomes, overnight, a city of more than half a million people as pilgrims on horseback and wagons stream in from vast distances to view a simply decorated wooden Madonna—the Virgin of El Rocío—and take part in an annual rite that is one-half boisterous

party and one-half earnest religious observance.

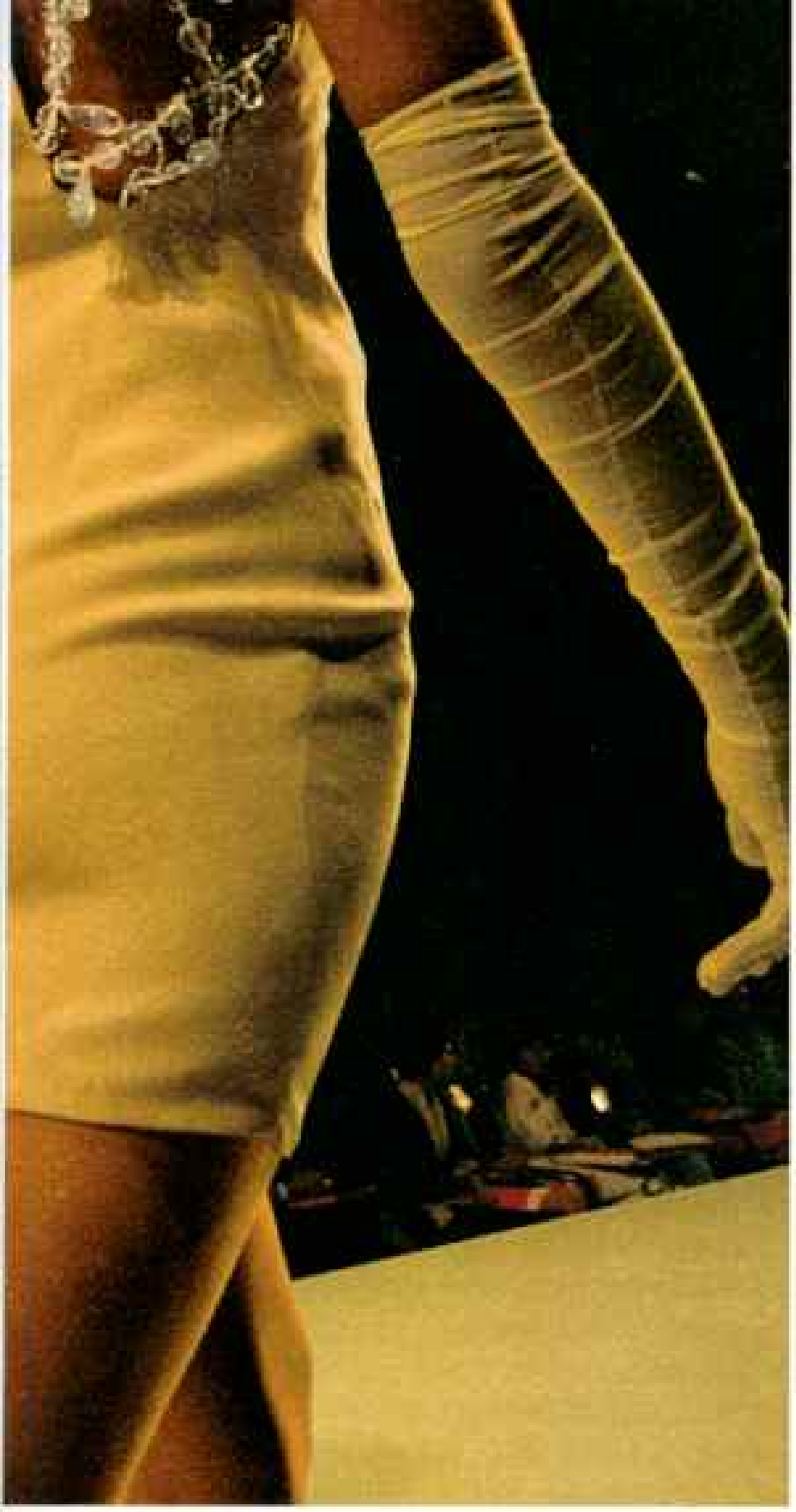
I arrived in late evening in mid-festival. The place had the feel of a Wild West town at the end of a long cattle drive. In the darkened streets riders on horseback were silhouetted against the pale glow of moonlight. Dust hung thickly in the air, and the streets swarmed with people, drinking in groups or drifting from house to house, where music and light flowing through the open doors and windows announced yet another party.

Wandering into one, I found myself after a time sitting with a glass of Manzanilla in the company of Javier Hidalgo, the handsome and urbane scion of a famous sherry-producing family in the nearby town of Sanlúcar de Barrameda. Hidalgo belongs to one of the 72 brotherhoods that form the core of the annual Rocío pilgrimage; he has made the trip to El Rocío since boyhood and cannot imagine life without it.

"It is hard to explain its appeal," he said. "It is a profound religious experience—the Virgin of El Rocío has great significance. But it is also a big party, a kind of annual reunion, a chance to see your friends and family. And as you can see, it is rather lively. I have not slept in four days."

There is scarcely a hamlet in Spain that does not have a similar annual event, albeit on a smaller scale, combining an almost hedonistic abandon with the gravest respect for tradition.

Tradition surfaces too in that quintessentially violent and cultic of Spanish pursuits: the bullfight. "It is the spice of Spanish life," a young *torero*, or bullfighter, named Martín Pareja-Obregón told me, long after the season had



ended for the year and other toreros were off on vacation. "Spain without bullfighting would be like paella without salt. You could eat it, but it would have no flavor."

"Outsiders seldom grasp the essence of bullfighting," one longtime aficionado explained to me. "They think of it as a sport, but it's not a sport at all. It's an art." (If you wish to read about the latest *corridas* in the newspapers, you turn not to the sports pages but to a special section.)

"It's not like going to a soccer match," my friend went on. "It's more like going to the ballet. You go to appreciate a performance, to watch the subtlety and skills of the toreros."

THE GREATEST THREAT to Spain's unity is found in the dark mountains and steep, drizzly factory towns of the Basque country. For centuries the mountains of northern Spain have acted as forbidding barriers—parts of the Picos de Europa in Asturias were not explored until the 1930s—and nowhere is this more true than in the three small, hilly, and exceptionally beautiful Basque provinces of north-central Spain.

Great strides have been taken within the past decade in Spain's garment industry; Madrid hopes soon to rival Milan as a fashion capital. The Salón Cibeles show (left), held each spring and fall, attracts buyers from all over the world. Though not about to change their habits, nuns give bridal wear a glance as they pass a Seville boutique.

Separatism has for decades been an emotive, and often violent, issue in the Basque country. As of early 1992 the Basque terrorist organization ETA had killed nearly 700 people in the name of political independence. Though the levels of violence have fallen since 1980, separatist sentiment persists, fueled partly by years of recession in what was long one of the most prosperous and productive regions of Spain. In a single decade 150,000 jobs disappeared as the region's traditional heavy industries of shipbuilding and steelmaking shrank in the face of world competition. It was a painful blow.

"The whole issue of separatism is so politicized that it is hard to know the truth," says Luis Núñez, a sociologist by training and now a journalist on the Basque nationalist newspaper *Egin*. "If you say you are for separatism, many people think you are from ETA, but, of course, it is possible to support ETA's goals without supporting its methods."

As in Catalonia the most visible reminder that this is in effect a separate country is the language. But unlike thriving Catalan, the number of Basque speakers has shrunk. "I fear the long-term trend is one of irreversible decline," Núñez says. Basque has fared worse than Catalan partly because it was suppressed especially harshly by Franco and partly because, unlike Catalan, immigrants from elsewhere in Spain find it all but impossible to learn, with its strange vocabulary and complex structure.

Some 700,000 people speak Basque, and the most recent survey showed a small rise in the number of speakers, but Núñez is dubious. "People boast of speaking Basque when they know only three words," he says. "You see, the loss of the language is almost an obsession here. People equate it with their national identity, and they are very fearful of losing that."

So just how strong are nationalist sentiments? "The only way to find the answer would be to hold a referendum, but the government does not dare. All that can be said for certain is that the feeling we are a separate nation is very strong. Most people here, whatever their political views, harbor a deep resentment toward the Spanish state."

I asked why this should be. "Well, for one thing," Núñez said, "almost every family knows someone who has been tortured by the police."

"Surely you are exaggerating?" I suggested.

"Oh no," Núñez mildly replied, "it is quite true. I myself was tortured twice. Once I was detained for 43 days without being charged. Such things have long been a fact of life here."

Several times I heard similar stories of police brutality, or at least profound insensitivity: Of elderly people clubbed with riot sticks because they were inadvertently caught up in a passing demonstration, of innocent people hounded into exile, of a young man shoved against a wall and questioned roughly by plainclothes police merely because he was carrying a copy of *Egin*.

"This is a police state," Josu Cerrato, a politician in a working-class neighborhood of Bilbao, told me. We were sitting in a bar in Erandio, one of the most impoverished districts of one of the most dismal cities in Western Europe. Tucked between steep hills, Bilbao is a nightmarish sprawl of gray apartment blocks and dark, smoky factories.

"There are more than 500 Basques in prison for political reasons and 1,500 more in exile," Cerrato went on. "That is a very high number for a small country. So Basque nationalism is not simply an issue for a small extremist fringe, as the government would have you believe. It is something felt by most people here."

The government denies the charges of brutality. "It is true that under Franco, Basque prisoners were often treated severely," Agustín Valladolid, a spokesman for the Ministry of the Interior, told me back in Madrid. "But that is no longer the case, I assure you. In 1990, 25 policemen in the Basque country were accused of brutality. One was convicted, and that was for punching an unruly prisoner in the face, which is not acceptable behavior but is clearly not torture. The other 24 policemen were exonerated."

Valladolid is convinced that terrorism is a diminishing threat in Spain. "One is always concerned about security at a world event. But we are satisfied that our extensive arrangements will prevent any disruption of the Olympics, the Expo in Seville, or other public events."

IF THE GOVERNMENT is at pains to play down the risks facing tourists this year, it is understandable. Spain can scarcely afford to alienate its visitors. Tourism is Spain's biggest industry, accounting for almost a tenth of the gross domestic product and slightly more of total employment. Spain receives over

Once punishments were served here; now refreshments are. Madrid's Plaza Mayor, built as the city's centerpiece in 1617-19, was the site of public tortures during the Spanish Inquisition. Since then the square has been home to bullfights, plays, canonizations, and political rallies. Today thirsty visitors gather at its courtyard cafés to drink in history, chat with friends, and listen to the soft strumming of guitars.

50 million tourists a year—far more than the population (38.5 million) of the entire country.

"From 1960 to 1988, tourism grew at such a phenomenal rate that many people thought it would never end," José Antonio Aldecoa, head of the Tourist Information Service, told me. The worry now is that it may have. Insensitive overdevelopment of the Mediterranean coastline, an abundance of jerry-built hotels, and the sheer crush of overcrowding have acted as barriers to many discerning visitors.

Worse, the rise in the value of the peseta since Spain joined the European Community in 1986 has ended, possibly forever, Spain's days as a cheap destination. The results have been worrying, as I discovered during a visit to Palma de Mallorca, capital of the Balearics. I arrived on an evening flight in July, a time when the resort would normally be booming, but the airport was eerily quiet and the cab drivers lounging on their cars outside seemed almost startled to have a customer. "It's dead here this year," my driver griped as we sped through the amber light of sunset into town.

Along the Paseo Marítimo, the road around Palma's handsome harbor, the cafés and restaurants were mostly empty. Waiters stood with white cloths over their arms, waiting to attend customers who were clearly not coming. At one end of the street the Reina Constanza Hotel stood dark and empty, its balconies festooned with sheets and tablecloths bearing uncharitable messages directed at the owners, put there by employees who had been thrown out of work when the hotel abruptly closed a few weeks earlier. At the other end of the street another large

hotel was being converted into apartments.

The striking thing, in a country that relies so heavily on tourism, is how untouched so much of Spain remains. It was in Belchite, an almost wholly forgotten town bombed to destruction during the Spanish Civil War, that I came across the amiable figure of retired local farmer Cristóbal Izquierdo. Five feet and one inch of leather and sinew, he led me on a brisk tour through the ruined streets, scrambling over piles of rubble, darting into cellars, pointing out what remained of the local sights: the hospital, the bank, the church where he was baptized in 1924, the houses of his family and friends. Most buildings were roofless shells, left in ruins above the plains of Aragon as a reminder of the war.

"This is where we hid, my family and I," Izquierdo announced at one ruined structure. "It was the summer of 1937. I was 13 years old. For two weeks the bombing didn't stop." How many townspeople died? I asked. "No one knows. Hundreds. You see that bombed-out church? At least 200 people were hiding in the crypt when it took a direct hit. They all died. They're still down there. After the battle the authorities

"Since I was born, I've dreamed of fighting bulls," confesses Leocadio Dominguez (right), an apprentice torero practicing on a farm in southern Spain. Martín Pareja-Obregón fights professionally but won time off with a friend at the Seville Fair (below) after a bull gored his arm. "I chose this profession because I thought it was the most beautiful thing I could do with my life," he says.

couldn't cope with all the bodies, you see, so they just sealed the crypt with concrete. Over there, in what used to be a large pit for storing olives, 200 people hiding, a direct hit, all dead.

"You know the terrible thing about our war," he said suddenly at one point, "was that it wasn't one region of the country against another, it was neighbor against neighbor. You didn't know who your enemies were. For younger people it's as if it never happened, but for my generation it will never be forgotten."

After the war the government built a new town a few hundred feet from the old Belchite. Today it is a sleepy but relatively prosperous community, with white houses and neat, tree-lined streets. "But everything is different," Izquierdo said with an air of resignation. "Back then people would stop and talk in the street. Everyone knew everyone. Now people are too busy, and no one knows anyone else."

The other big change in Belchite, and in the Spanish countryside generally, is in employment. In 1937 virtually everyone in Belchite worked in farming. Today only a few do. In an almond grove not far away, I found two men moving steadfastly from tree to tree, knocking the spindly branches with sticks to let the almonds fall onto a cloth spread at its base.

"There's no future in farming now that Spain has joined the Common Market," one of them, named Paco (he declined to give his last name), told me. "Four years ago I got a hundred pesetas a kilo for almonds, and life was hard. Now I get 50 pesetas a kilo, and life is impossible. We can't

In rhythm with the tides, the women of Naya, a fishing town in northwest Spain, visit the sea each morning to harvest clams while their sons and husbands fish the cold Atlantic depths offshore.

Carrying her rastrillo, *or netted rake, and a*

basket bearing her initials, one worker starts home in the driving rain that characterizes Galicia, Spain's wettest region, where rain falls an average of 150 days a year. Galicia accounts for a third of Spain's annual fish catch and half its shellfish.

compete with other European producers. Their farms are bigger, they have better climates, more rain, better equipment. The government tells us we need bigger farms to be more competitive, but how can someone like me buy a bigger farm when I can't live off what I have already?"

THE COUNTRY suffers from too many farmers working uncompetitively small plots of land. "We still have 1.5 million farmers, which is far too many," the economist Ramón Tamames told me. "To put it in perspective, Spain has only about one-tenth as much farmland as the United States but half as many farmers. The land simply cannot support that many people."

A possible remedy is tourism, converting unneeded farmhouses and barns into holiday cottages, as has been done with great success in Britain and France. One place trying harder than most to attract new tourists is the lovely and historic city of Seville, capital of Andalusia, the fertile and fragrant but traditionally poor region that spreads across much of southern Spain, covering an area larger than Austria.

Much as Barcelona has used the Olympics as a focus for its redevelopment, Seville is banking on Expo '92—or the 1992 Seville Universal Exposition, to give it its formal title—as its bridge to a prosperous future. Expo fills 530 acres of an island in the middle of the Guadalquivir River, with pavilions from more than 150 countries and organizations, an ornamental lake, parks, and an ingenious bioclimatic cooling system for public areas designed to thwart Seville's punishing summer heat. Over its 176-day run (from April 20 to October 12) the organizers expect attendance of 40 million. After the fair the site will be divided between a science park and a new campus for the local university.

But, as in Barcelona, the real purpose is to give the city a permanent economic leg up. At the time of my visit Seville wasn't so much a city as a construction site, as thousands of workers hustled to give it a new airport, new railway station, new high-speed rail link to Madrid, 30 miles of new roads, a new riverside esplanade, and 14 new hotels. Curiously, though Seville has been memorialized in at least ten operas (notably *The Barber of Seville*, *Carmen*, and *The Marriage of Figaro*), it never had an opera house. Now it has one.

"Seville is about to become world famous again," Camilo Lebón Fernández, a professor of economics at the University of Seville and an adviser to Expo, told me. "And if you look around you at the wealth of the city's history and architecture, I think you will agree that it deserves to be."

Quite so. But tourism, particularly beach tourism, has its costs. "It puts a huge strain on the Mediterranean, not just in terms of extra waste and sewage but also indirectly," says Xavier Pastor, the youthful and articulate director of Mediterranean projects for the environmental group Greenpeace. From a backstreet office in Palma de Mallorca, he and his colleagues monitor one of the world's most threatened seas.

"To give you an example right here in Palma," Pastor goes on, "every year sea grasses wash onto the beaches. Ecologically, this is a good thing because it helps prevent erosion. But the leaves are thought unsightly, so they are cleared up. As a result the beaches erode. To counteract this, sand is pumped onto the beaches from the seabed, and this kills the marine life. So at great expense we disrupt a natural cycle simply so that tourists can have pristine beaches. It's a little crazy, don't you think?"

The problem doesn't stop there. The Mediterranean is also threatened by industrial pollution, oil spills—more than 700,000 tons of crude oil finds its way into the sea each year—and overfishing.

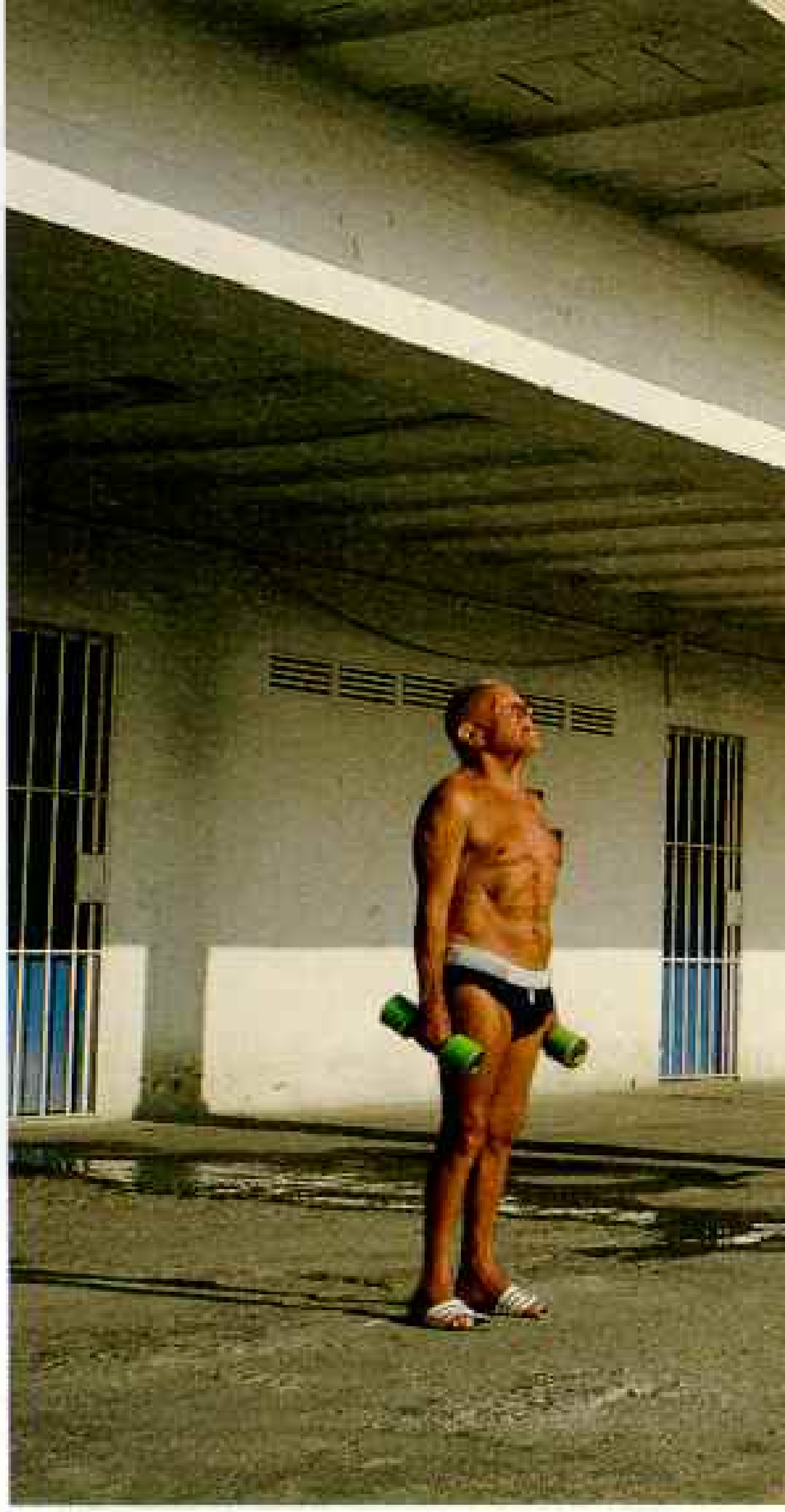
The Spanish government is often accused of foot-dragging on environmental matters. The oft voiced charge raises the hackles of the secretary for the environment, Vicente Albero.

"Frankly, I think there is a measure of hypocrisy with the European Community on this," he says. "They are very good at issuing directives but not so good at providing the funds to implement them. We spend nearly as much on one of our national parks as the EC budgets for its main environmental program for the whole Mediterranean region. So, yes, we do sometimes feel a little hard done by."

Señor Albero is not alone. Complaints about the inequitable distribution of funds—whether from the EC to Spain or from the Spanish government to the 17 regional *autonomías*—are as common in Spain as tapas bars.

"It is all very well spending billions of pesetas on Barcelona for the Olympics and Seville for its Expo, but what about us?" Alfonso Eiré López, a director of the Galician newspaper *A Nosa Terra*,

Fish-hungry Spaniards eat 80 pounds of seafood per person per year, more than twice the European average. To meet the demand, Spain launches Europe's largest fishing fleet, from ports such as Cabo de Cruz in Galicia (below). In Berneo, a Basque fishing town on Spain's north coast, women unload and process the catch, diminished in recent years as Spain complies with increasingly stringent international regulations.



Getting in shape is a lifelong passion for 75-year-old Carlos Leblanc, a retired salesman and soccer coach, who greets each day with a two-hour workout at the Barcelona Sports Club. "I hope older people like me will inspire the next generation," he says. "Young Spaniards don't get much exercise." Another source of inspiration: the Olympic athletes Barcelona will host for the 1992 Summer Games.

told me one day, echoing a complaint I was to hear often in Spain.

We were talking in his office in the Atlantic port city of Vigo, where tourism plays only a small part in the local economy.

"It's too hard for tourists to get here," Eiré explained. "There are no express highways to Galicia, no high-speed rail lines. Soon a new bullet train will take people from Madrid to Seville in three hours. But to travel the same distance from Madrid to Vigo will still take 12 hours. We are simply forgotten here."

Situated on the westernmost edge of Europe, Galicia seems a long way from anywhere. Away from its cities it remains a region out of another time, a place where women in black trudge along the ragged margins of highways bent double beneath bundles of twigs, where men with weathered faces and an apparent infinitude of time on their hands fill the public benches in every village plaza, where a visitor's passing car still draws stares. It could hardly provide a starker contrast with the wealth and hustle of Madrid and Barcelona.

Galicia has its bright spots, like the resort village of La Toja, with gleaming villas buried in groves of hibiscus and grand hotels preserved from a more gracious age, but far more typical is the fishing community of Finisterre, near the end of a winding coastal highway.

Finisterre is the last town in Spain, a mile or so short of the headland where a lighthouse marks land's end. Like Vigo, Finisterre commands a setting that should have endowed it with fame. Instead it wears an air of hopelessness, its habitations threadbare, its rocky shoreline clogged with plastic refuse. Dogs roam in packs, and litter drifts through the streets, shuffled along by sea winds.

This is a region where the weather can change with brute swiftness—where a sea and sky of summery blue and mountains of the richest green can be drained in an instant of all color, like a television set being switched to black and white, as Atlantic mists race in.

For many young people in places such as Finisterre, life offers the prospect of a hard, dangerous, and almost certainly poor existence on a fishing boat or of economic exile to a richer region. As one man told me: "People don't want to leave Galicia, but often they have no choice."

THROUGHOUT modernizing Spain there is an extensive reliance on foreign technology. And much of what the country produces—automobiles, chemicals, pharmaceuticals, processed foods—is in partnership with foreign investors.

In native-owned industries, inefficiencies often abound. The nationwide telephone system

can most charitably be described as quirky—crossed lines and ponderous echoes are more the norm than the exception—and Telefónica de España, the monopoly that runs the enterprise, is not noted for its responsiveness. At the time of my visit 380,000 Spaniards were waiting to have a phone installed.

The postal system is said to be even worse. Anecdotes abound of letters arriving weeks late or not at all. At Madrid's Rastro, a sprawling Sunday flea market, you can find boxes and boxes of post cards, all bearing breezy greetings to loved ones in places like Tulsa, Manchester, and Uppsala. How these hundreds of cards ended up in a street market, rather than at their intended destinations, is a question to which no one seems able to supply an answer.

Claims by the authorities that things are getting better tend to be received with derision. "It used to be that when you wanted to mail a parcel, you had to stand in four lines at the post office," one person put it to me. "Now you only have to stand in three. That's progress all right, but I don't think we're quite ready to break out the champagne, do you?"

The economist Ramón Tamames is as aware as anyone of what Spain needs to do to catch up. "We need to spend much more on research, education, training, infrastructure—on many things," he says. "In many areas we have a long way to go.

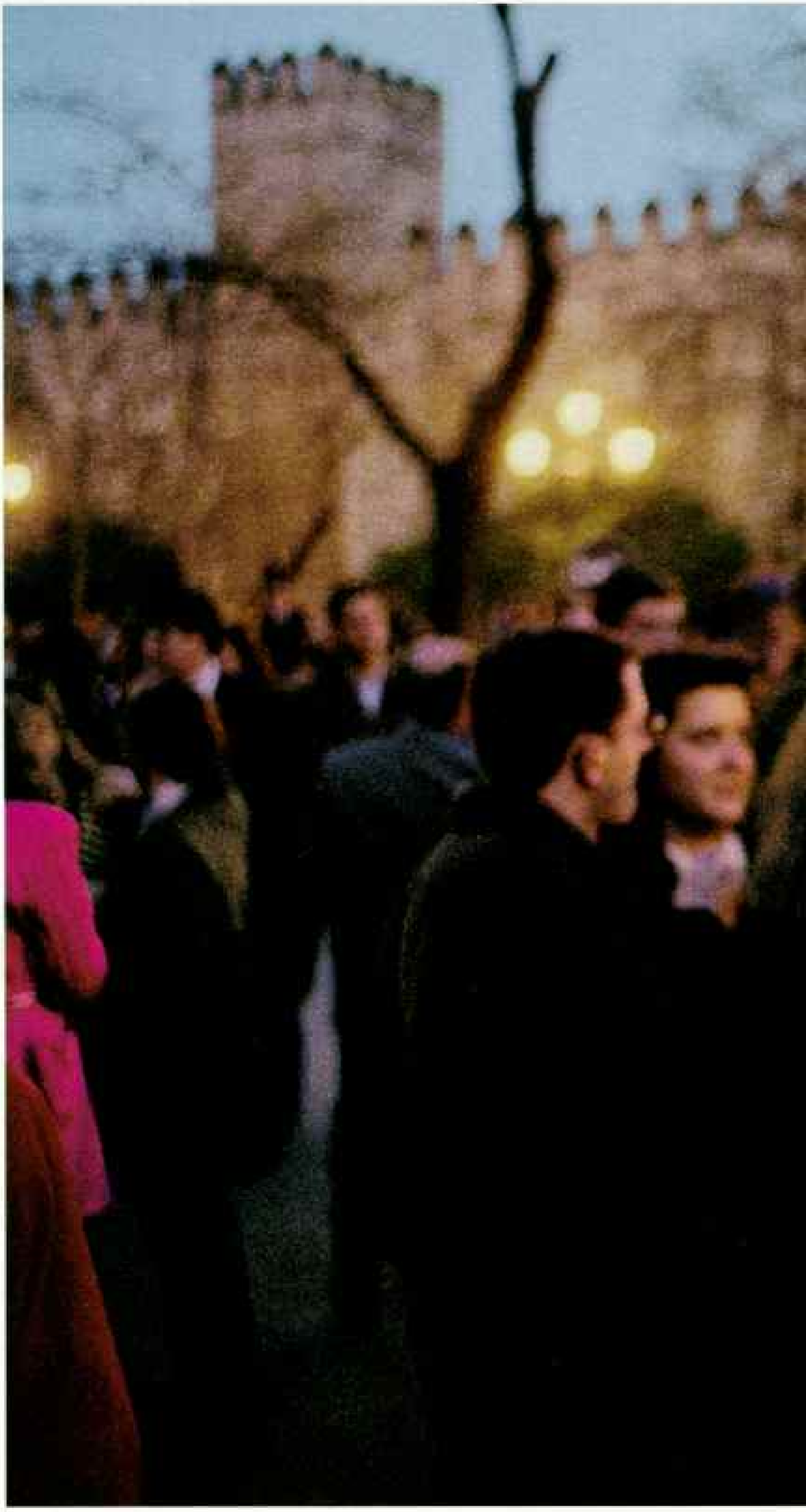
"But the important thing," he adds quickly, holding up a cautionary finger, "is that we *will* catch up. Of that I have no doubt."

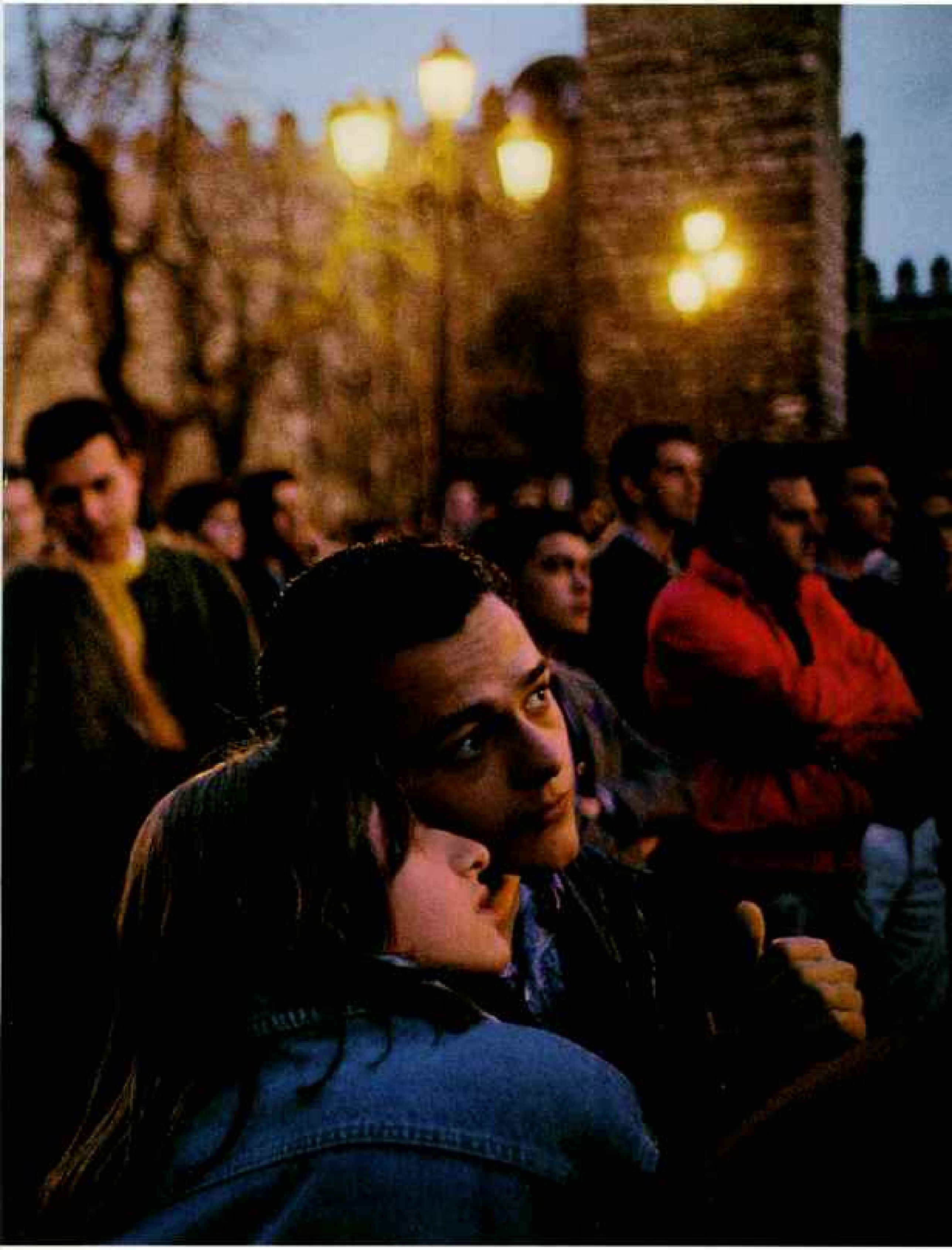
Under the fortress walls of the medieval Moorish-style Alcazar—on a plaza before Seville's Gothic cathedral—a couple waits quietly as floats commemorating the life of Christ pass by.

During these Holy Week festivities the discos close, and, for many, concerns of the instant give way to reflection on matters much older and deeper.

Islamic forms and Christian observances have been interwoven through Spain's fabric for more than a thousand years—and the diversity of its peoples and languages is older still. Can Spain abide in character within a united Europe?

¡Por supuesto! *Of course!* □



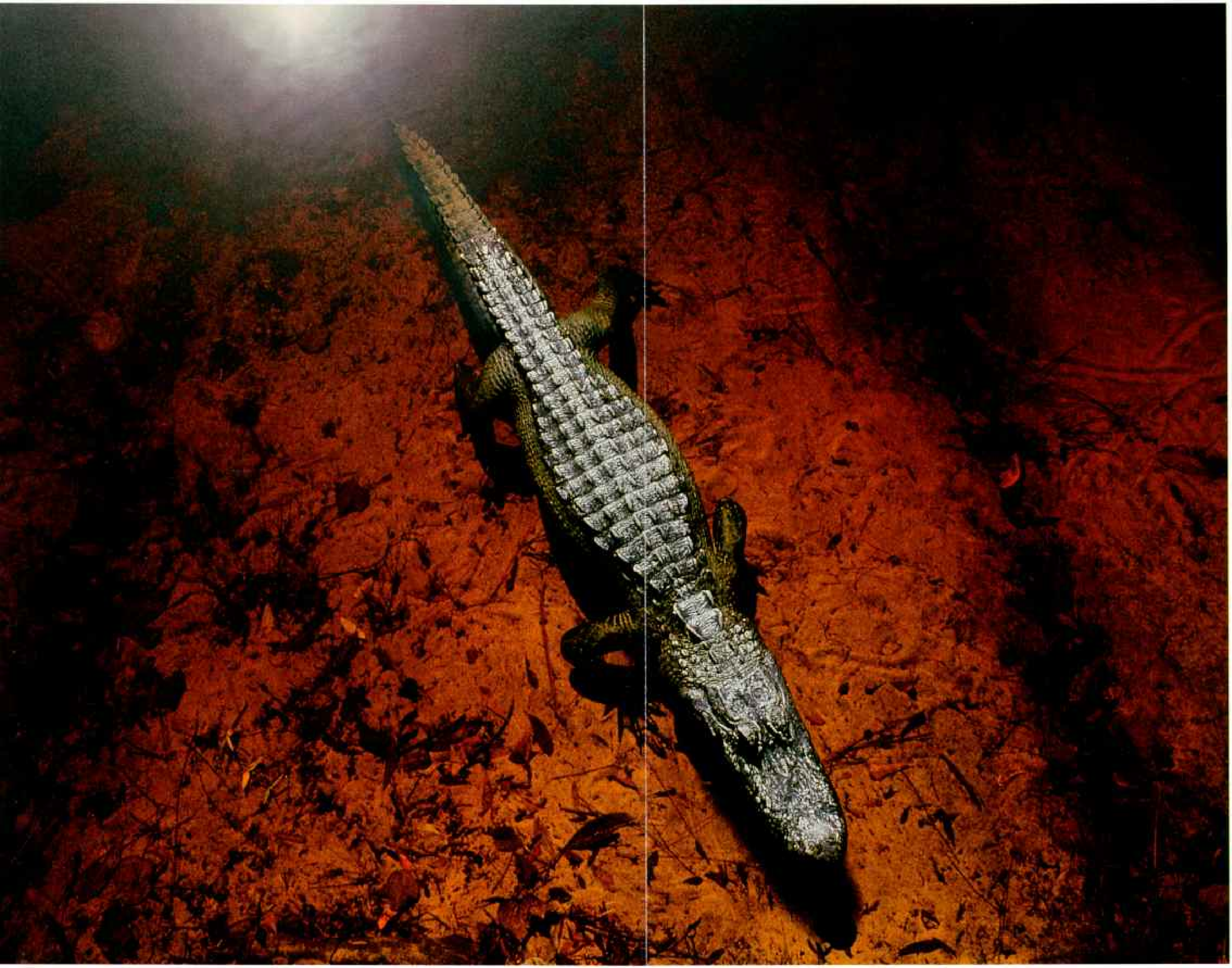


BLACKWATER COUNTRY

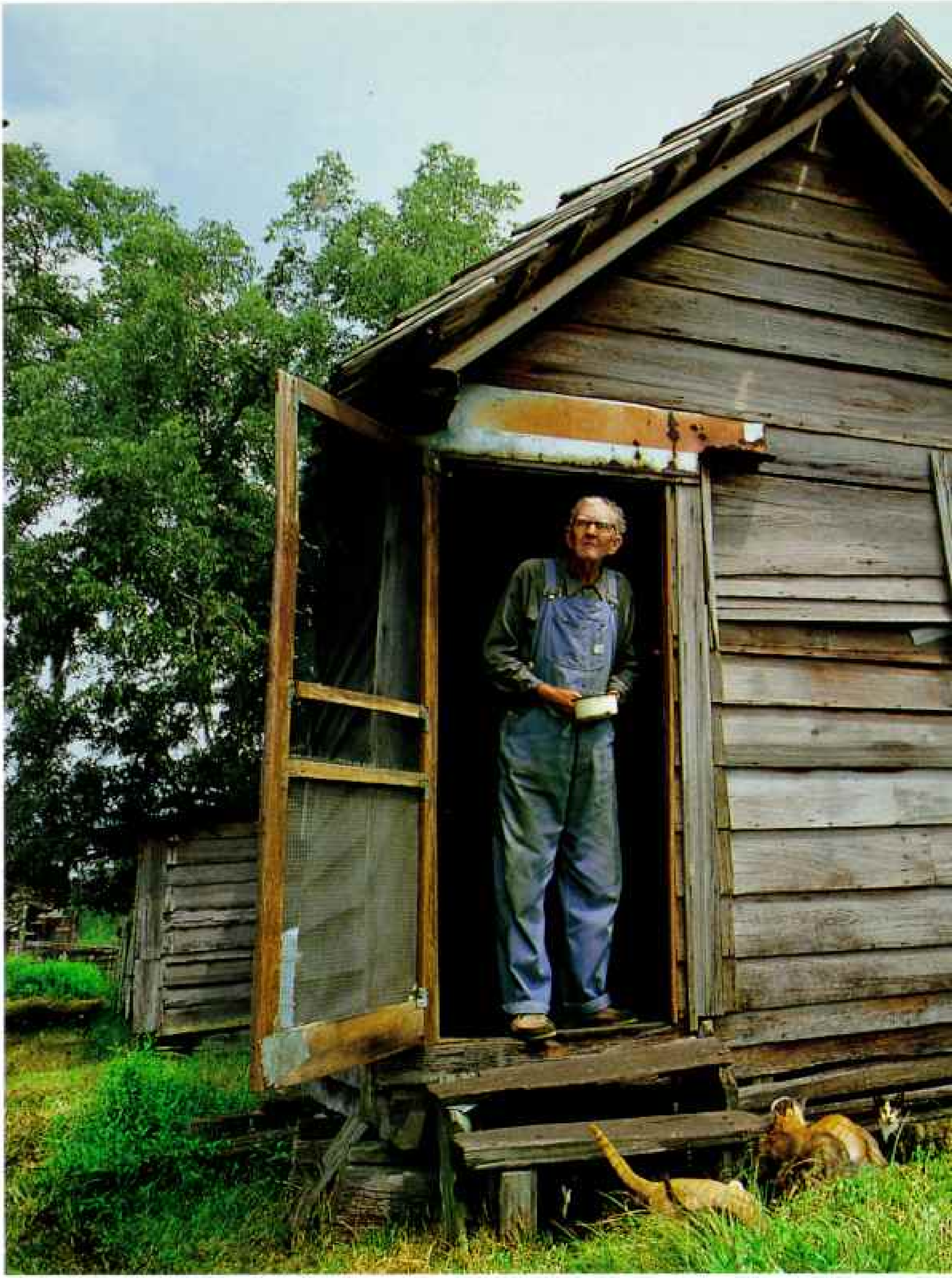
By
RICHARD
CONNIFF

Photographs by
MELISSA
FARLOW

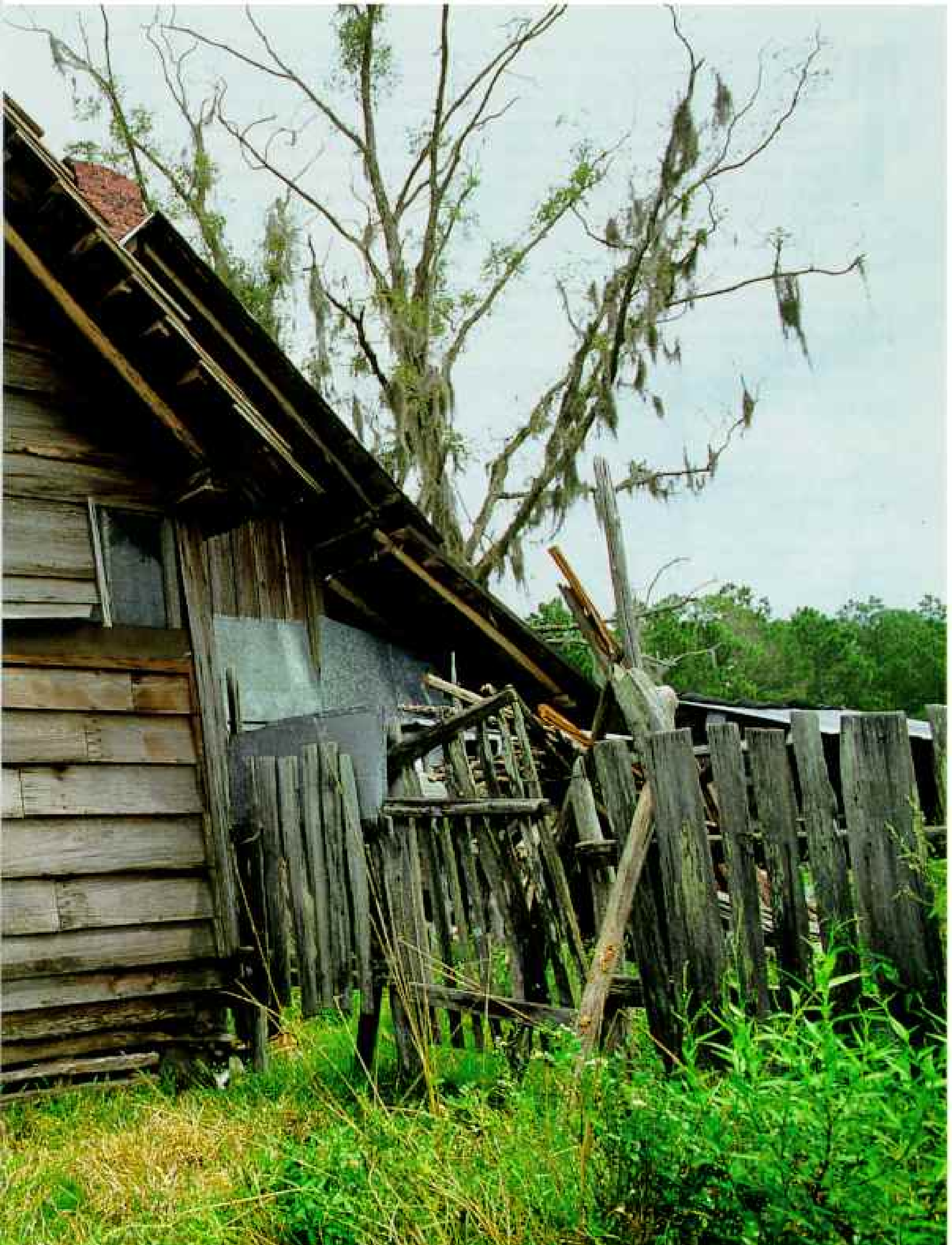
The Okefenokee Swamp in Georgia and Florida is still alligator heaven—but beyond lie troubled waters. Pockets of development threaten its offspring rivers, the cypress-lined Suwannee (above) and winding St. Marys.



Splitting the silence of the placid St. Marys, motorboats thunder from new communities along the river. Sea captains in the early 1700s sent boats upstream to fetch river water; natural acidity kept it drinkable on long voyages.



William McKinley Crews is a swamper to the bone. At 81, he's lived almost all his life in this house, on this farm, pushed up against the Okefenokee's southern end. A bachelor, he remembers the black-haired beauty who lived



on the same side of Moccasin Swamp: "I ought to have married her." Crews has no electricity, no running water—just four cows and 14 cats ("I'd rather have a cat than a rat"). They're the closest he's got to family.

THE DOORS WERE OPEN at Swift Creek Methodist Church on a gray Sunday morning in September, and in the cemetery across the dirt road, among cedars and worn gravestones, a visitor could hear the voices trailing behind the emphatic lead of the piano: "Yes, we'll gather at the river, / The beautiful, the beautiful river." It was a scene out of an older South: the small, tin-roofed, clapboard circuit church, with a table lined with supper dishes under a vault of live oaks out back. "Gather with the saints at the river / That flows by the throne of God."

A breeze lifted grizzled hanks of Spanish moss, and rain began to slant down, sending two teenagers sprinting out to cover the food. Inside, a woman introduced herself and asked her fellow Smith descendants to stand up. Bryans followed—"Come on, get up!"—and Hunters, with the same people sometimes rising for different families. They were assembled here from scattered points around Florida and Georgia for their annual homecoming, on land a few miles north of the Suwannee River where their forebears farmed, logged, hunted, dipped turpentine from the pine trees, and gathered honey a century or more ago. The same land now supports a phosphate-mining operation that has turned the swamps and forests for a hundred square miles into a shambles of sand heaps and clay-settling areas. But here on this knoll, life appeared as it once was.

In this blackwater corridor where Florida and Georgia meet, kinship still shapes daily life, sometimes to the point of clannishness, and remnants of a pioneer culture coexist oddly with satellite-dish television. It is a region that often seems to be hanging on to the 19th century while peering into the maw of the 21st.

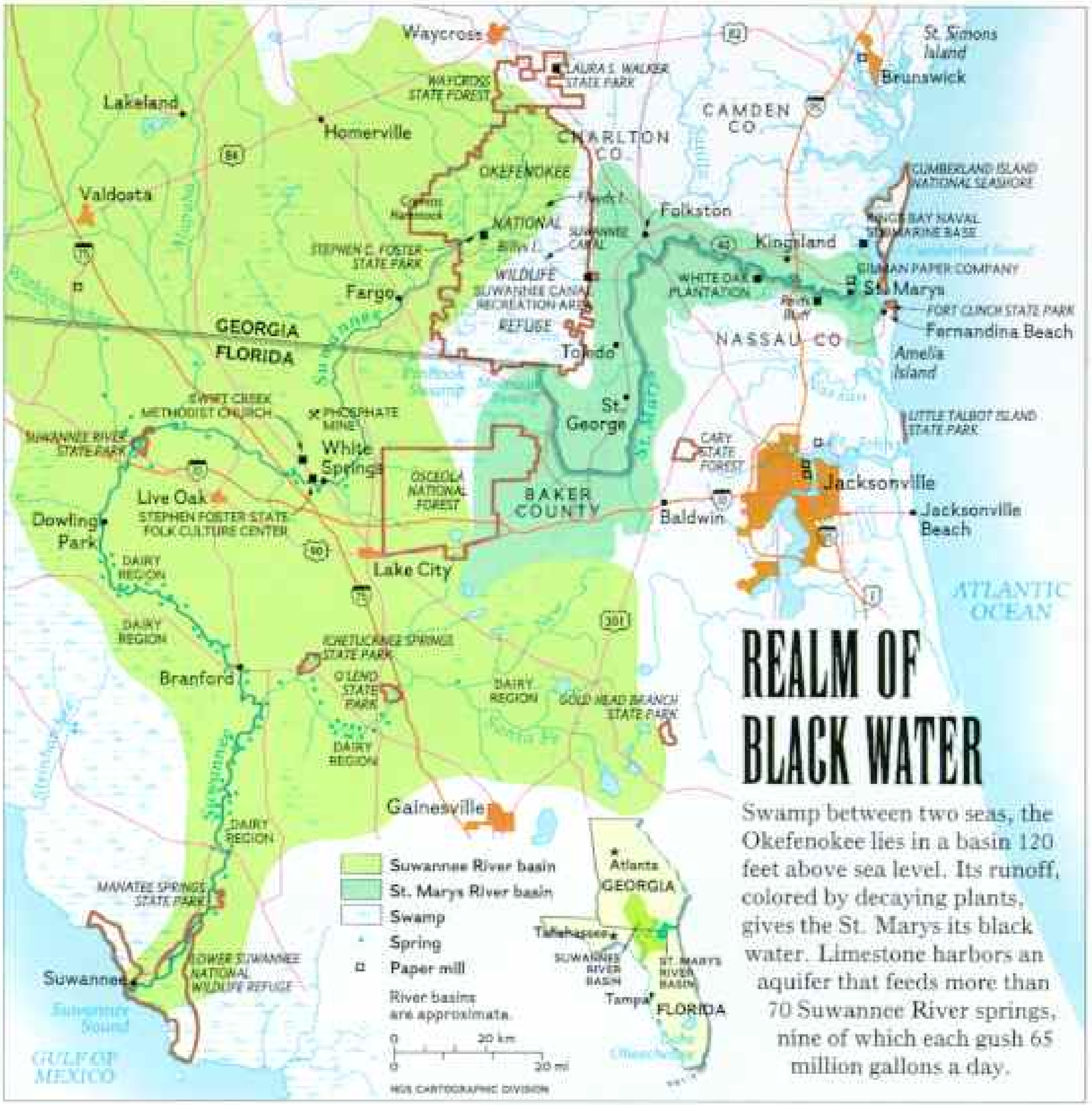
The area in question starts north of Jacksonville, where Cumberland Sound meets the Atlantic Ocean and Trident submarines from a naval base cohabit with manatees and dolphins. It follows the winding, placid length of the St. Marys River up along the Florida-Georgia border to its headwaters in the Okefenokee Swamp. From there, where tannic acid released by decaying vegetation gives the water its characteristic color—tea brewed strong enough to float a horseshoe—the corridor follows the Suwannee River southwest. The river zigzags through pocky Florida limestone, picks up clear water from unfathomable, jade-colored springs, and empties finally in a grassy estuary on an untouristed stretch of the Gulf Coast, roughly midway between Tallahassee and Tampa.

The headlong suburbanization of south Florida has only begun to arrive in the corridor. Tree plantations still dominate the landscape, as they have since the 1950s: straight, purple-washed trunks of slash pine stand in rows like soldiers on parade to be clear-cut on roughly a 25-year rotation for the paper industry. They provide at least a semblance of natural forest. But the possibility that much of this land, particularly along the rivers, may someday end up either under government protection or as subdivisions and septic-tank drainage fields has fostered a debate about the future of the area.

Environmentalists look at the blackwater country as one last chance to do it right, to buy

The South rises every June at the Tatum family reunion in Waycross, Georgia. As many as a thousand Tatum blood kin—among them Ted, in a Confederate battle shirt—converge for a weekend of music, food, and more music.

Connecticut writer RICHARD CONNIFF contributes to many national publications; he reported on Chicago for the May 1991 GEOGRAPHIC. This is the first coverage by MELISSA FARLOW, a staff photographer for the *Pittsburgh Press*.



REALM OF BLACK WATER

Swamp between two seas, the Okefenokee lies in a basin 120 feet above sea level. Its runoff, colored by decaying plants, gives the St. Marys its black water. Limestone harbors an aquifer that feeds more than 70 Suwannee River springs, nine of which each gush 65 million gallons a day.

up large tracts of land at relatively low prices and establish a preservationist ethic before this region becomes yet another outpost of Disney World. Many locals, on the other hand, feel they have done well by the countryside for a century or more, and they don't like being told now what they cannot do with it. It is thus a peculiar debate, in which both the reality of a paper company dumping sludge alongside the St. Marys and the prospect of the federal government offering to protect the river by labeling it wild and scenic can seem to local communities like equally threatening intrusions from the outside world.

It is also peculiar because environmental alarm has become so pervasive that one hears it even from the targets of other peoples' worry: The same paper company that is dumping sludge and building a country-club subdivision on the banks of the St. Marys also proclaims its concern for the river and spends lavishly to breed rare and endangered species, including the Florida panther, which once wandered here. The phosphate-mining company that has converted the countryside around Swift Creek Methodist Church into a vast moonscape asserts the virtues of its program to restore the wetlands, and a corporate spokesman has the delicate sensibility to complain about the unsightliness of a paper-company clear-cut near his administration building. It is a debate in which almost everybody preaches conservation while also avowing his right to do as he pleases on his own property. The contradictions and the jockeying for moral high ground make one yearn at

times for escape, a purpose for which the Okefenokee Swamp has long been well suited.

SOMETHING ABOUT THE OKEFENOKEE has always lent itself to myth. Maybe it's the black water itself, which brims up around the swollen bases of the cypress trees like coffee rising just above the rim of a saucer. The decaying vegetation seems to give it added surface tension, a quality almost of oiliness; rainwater seems to bead up on it. Pockets of methane send chunks of peat boiling up under the bow of one's boat. The larger floating batteries of peat may become the foothold for grasses, sedges, shrubs, and ultimately small trees, which sometimes sway when a person steps nearby—hence the swamp's Indian name, said to mean "land of trembling earth."

The cypress trees too hint at myth. In an area left intact when loggers were cutting their way through the swamp early in this century, the cypress knees poking up from the water are knobby and wartlike. The trunks rise without branches to their feathery crowns, straight except for a faint Gothic wobble and the slightest twist to the vertical grooves of the bark. Elsewhere the scrubby undergrowth is so dense, says a swamper, "A dog has to step backward to bark."

The Okefenokee has always lent itself to myth too because of the kind of people it has attracted. Hardly anybody knows the swamp these days as well as Bill Cribbs, a descendant of one of the first white families to settle there in the 19th century. Now 44, he grew up on the western edge of the swamp and went on to teach biology at Valdosta State College, an hour up the road. He dresses, even for the classroom, in khaki and what an older relative calls a "Frank Buck bring-'em-back-alive" pith helmet. In his wallet he carries two spare Coleman lantern mantles.

If he is engagingly eccentric, Cribbs is also a bridge between the old swamp families, who have faded away or been nudged out since the Okefenokee became a national wildlife refuge in 1937, and the modern-day rangers, tour guides, and researchers for whom being a swamper is a day job. Cribbs's background suits him both for dipping snuff, like the old-timey people, and for offering short, spontaneous lectures—one moment about why surface-to-volume ratio makes snuff faster than chewing tobacco as a delivery system for nicotine and then, a moment later, about how slime molds reproduce.

True to appearances, Cribbs was ready to drop everything for a swamp trip, and out on the water one day I inquired at random about a shrub. "Poor man's soap," Cribbs replied.

"Let me show him," said Mary Olive, his wife, tearing off a couple of leaves.

"Get a bunch," he advised. "Do it right."

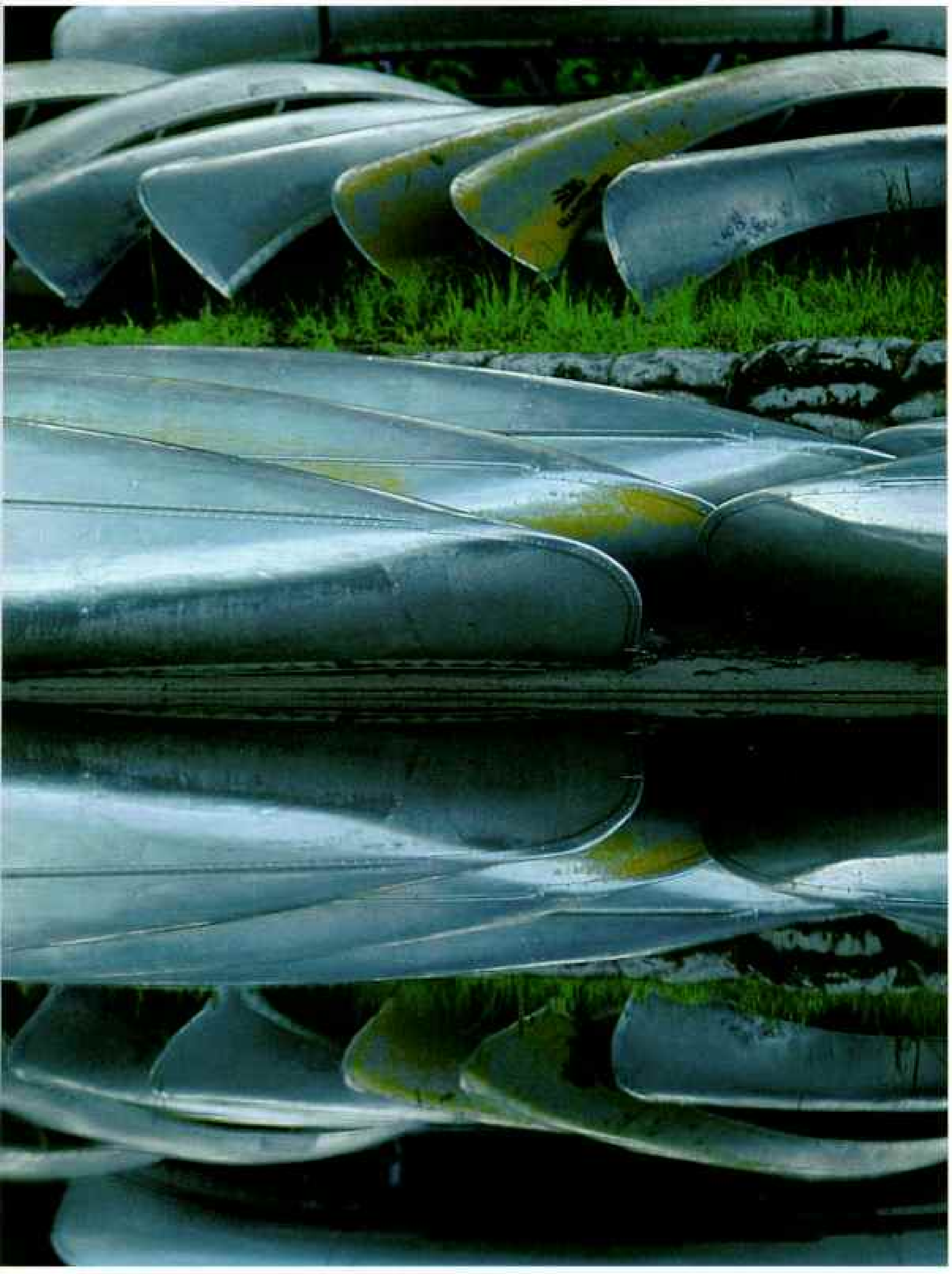
"I may not *can* do it right," she said uncertainly, crushing a few more bunches between her hands and rubbing them together. Gradually the leaves yielded up a lather, and she held out her palms. "Hands a mother could be proud of."

"*Clethra alnifolia,*" said Cribbs. "Used by swampers for washing their hands on a fishing trip."

Cribbs's great-grandfather Dan Lee moved to the Okefenokee Swamp with his bride in the 1860s to farm and to herd cattle on Billys Island, family members remaining there until a cypress lumber company forced them out early in this century. At the landing for Billys Island, a rusted strand of wire cable from a log skidder still hangs from a cypress, leftover from 1926 when the *(Continued on page 49)*

Fire and water mark the cycle of life in the Okefenokee National Wildlife Refuge, where rafts of buoyant peat (opposite) carry grasses, sedges, and small trees. Controlled woodland burns (above)—set on a three-year rotation—clear undergrowth and limit wildfires that could destroy nearby homes and farms.

Restful waters await canoes at the Suwannee Canal Recreation Area visitors center. Some 400,000 people a year visit the swamp, many coming to explore the area's 120 miles of boat trails—including the old Suwannee



Canal, dug in the 1890s by Atlanta lawyer Capt. Harry Jackson, who planned to drain the swamp for farmland. His company underestimated the magnitude of the task and dug less than 20 miles of canals, then went bankrupt.

A gas-lit card game enlivens the night in a cabin on Floyds Island, once shaken by lumber trains. "Now the only way here is canoe," says Bill Cribbs, a Valdosta State College biology professor, who takes students on overnight trips through the Okefenokee. Cooking chicken and rice (below), he stands on a cushion to keep from sinking into the peat. Visitors may glimpse rare or endangered species in the refuge, including the wood stork, bald eagle, and red-cockaded woodpecker.

merchantable timber ran out, and you can feel the spirits of loggers arcing through the air and splashing down in their old swimming hole. Underfoot, visitors sometimes find fiber-tempered potsherds and bits of flint from 4,000 years ago, when Indians were already using the site as a boat landing.

Given its ancient appearance, perhaps the most surprising thing about the Okefenokee is that people have been retreating here for so much of its history. The swamp is not in fact primordial but in the geologic scheme of things practically newborn. According to current thought, the saucerlike basin that harbors the swamp was formed in one of the last great transgressions of the Atlantic Ocean over southeast Georgia, before the area gradually rose above sea level during the Pleistocene. The most ancient peat, indicating the buildup of swamp vegetation on the Okefenokee's sandy bottom, dates from less than 8,000 years ago; the oldest human artifact is roughly half that age. The image of "green slimy things and quagmires and quicksand" is misplaced, said Cribbs. "In all my travels over the years, I don't think I've seen a dozen snakes." It occurred to him later to add that he had been bitten by three of them, and that the rattler probably wasn't as bad as the cottonmouths.

THE BLACKWATER COUNTRY has always been a place to get away from unfortunate situations in more civilized precincts, giving it an outlaw cachet. According to popular myth, Billys Island takes its name from Billy Bowlegs, a Seminole who supposedly hid out there in the mid-19th century. Civil War refugees were among the early white swampers, and even now one hears people say, "My grandfather killed a man and run to the swamp, but they declared he done it in self-defense," or, with less particularity about mitigating circumstances, "Their daddy came here; he got off the chain gang."

But if it was easy to disappear into the piney woods, getting a living from them required hard work at a shifting assortment of occupations. The turpentine trade was one. It has nearly died out now but hangs on in one or two places near the swamp, where the trunks of the pine trees are cut with deep streaks in a chevron pattern reaching four or five feet up from the ground. On the raw pink faces, a layer of gum builds up like candle drippings. It runs down into a sort of bread pan, where a man working as many as 8,000 faces must keep up with the flow, scooping it into a bucket for processing. The turpentine crews consisted largely of black men, and one old song attests to the meagerness of their lives:

Got no home, Lord, Lord, but a
tintop hut;
Saturday whiskey like to rot my gut.
Mister Hoover, Mister Hoover,
can't you spare me a dime?
Starvin' broke 'cause I work in the
Teppentime.

The same land that yielded turpentine supplied the sawmills. It also remained open range until the 1950s, and many people had leases to run piney cattle and hogs (Cribbs recollected an old swamper's complaint that his newborn razorbacks were so skinny he had to tie a knot in their tails to keep them from slipping through the slats in his fence). Bee leases are still common, and many locals count on the late spring honey flow, when a hive can yield 200 pounds of tupelo or gallberry honey in little more than a month. Fishing and hunting deer with packs of dogs are also still popular.

As late as the 1960s, when penalties became more severe, some swampers survived on the illegal trade in gator hides. Moonshining also persisted into recent decades, until "autumn leaf"—said to make you turn color and drop to the ground—could at last no longer compete with store-bought bottled in bond.

This makeshift way of life has seldom won much respect from the outside world, and even now people who live around the swamp cringe inwardly at the possibility of being held up to ridicule. Some early writers wallowed in the supposed backwardness of the people. "Here," a visitor to Billys Island once wrote, "we found a family of persons who in many ways can be compared only to animals."

Sitting in her tidy living room on the edge of the swamp, watching *Matlock* on the television, Roxie Crawford, an 84-year-old great-grandmother, expressed a modest urge to tear out the hair of one such writer. Crawford grew up in the swamp, and it was, she said, "good, free, fresh, healthy living. I know we kind of murdered up the English language, but that's the way we was raised." She was also unabashed about the time she used to put in at the still: "I had eight head of kids. I had to feed 'em somehow."

Billowing water vapor veils the Gilman Paper Company mill on the North River, two miles upstream from the St. Marys. Millions of dollars have been spent for pollution-control devices, and manatees safely winter where the plant discharges warm water into the river. But many locals condemn pulp-sludge dumping on company land. The plant employs 1,100 workers, and 1,500 independent

woodcutters feed its appetite for pulp.

"This is in my blood, I guess," says one contractor, Robert Cowart (left), who wipes away the sweat of hard work after felling a pine on White Oak Plantation.

The St. Marys River estate of Gilman Paper owner Howard Gilman is home to his captive breeding program for the Florida panther (right) and 11 other endangered species.

Backward glance at antebellum times, the Mr. and Miss St. George pageant brought out the belle in Heather Walters (left). Turpentine was south Georgia's version of King Cotton; now only Nellie Reed, reading her Bible (below), and a few others live in the turpentine town of Toledo.

Blackwater families tended to be large ("They didn't have no radio or television back then," said one swamper) and, in time, became intermingled with neighboring families. Because the distances between families could be large and the means of travel limited, a boy going to court a girl often brought along a brother to visit with her sister. Double marriages yielded double first cousins. A concern even for "dog kin"—defined by Cribbs as people you know you're related to but you're not sure in your mind how—is also widespread. The essential question about anyone is still, "Who's he kin to?" They might still talk dirt about one another, Mary Olive Cribbs explained, "But *you* darned sure better not."

ONE MORNING, I went on a boat tour down the St. Marys River with a Folkston, Georgia, man named Carl Glenn, Jr. The shoreline was thick with cypress and oak, and on the insides of sharp bends, banks of fine white hourglass sand had built up. With the exception of one or two places where enterprising owners had obliterated the shoreline with bulkheading and a clutch of trailers or allowed a pine plantation to wipe out the naturally forested buffer zone, the St. Marys seemed forgotten by the modern world.

Not far from the mouth of the river, Glenn beached his boat on the Florida side, at a sandy cliff called Reids Bluff. From the top, among the live oak trees and the longleaf pine, the view belonged to a landscape by one of the luminist painters. The river appeared at the upper left-hand corner, snaked its way lazily to the foreground, then swept past, wide and black against the brilliant white cliff face, before bending away again and out of sight at the upper right. Nestled in this crook of black water was a broad marsh, ending a mile or more away in a hazy line of trees.

Glenn, who runs a boat concession in the Okefenokee, was going on about the dangers of development: The opposite shore might still look like what it had long been, the sleepy bailiwick of a single major employer, the Gilman Paper Company. But in fact Camden County has almost overnight become the fastest growing county in Georgia, and fourth fastest in the nation. Created in 1978, the Kings Bay Naval Submarine Base will have tripled the county population by the year 2000, when ten Trident submarines will be based

Eighty-five years of summer storms have thundered on retired turpentine camp manager Bruce Thompson, a regular on the porch of Shirley's Cafe in St. George, Georgia. Says grandson Orival, a deputy sheriff, "Grandpa's earned the right to just do a lot of nothing."

there. Glenn pointed to the distant line of trees where it was possible to see one result: the beginnings of a Gilman Paper Company subdivision called Osprey Cove, with a first phase of 270 homesites, built around a riverfront marina and a Mark McCumber golf course.

Beyond it, along Georgia Highway 40, a Wal-Mart and Piggly-Wiggly infrastructure has blossomed to serve the influx of newcomers. Names associated with old blackwater families are turning up in outlandish new contexts: "Deborah Thrift of Kingsland, formerly of Blackshear, has achieved the position of independent sales director for Mary Kay Cosmetics. . . . she thanks all her customers . . . for allowing her to be a part of their lives."

On Reids Bluff itself, which the Nature Conservancy has described as one of the area's last big stands of original longleaf pine, Glenn pointed out neon pink surveyor's ribbon hanging from the branches. The site is a 15-minute drive from Jacksonville, and the owner, another paper company, has drawn plans for a subdivision much like Osprey Cove, in the best possible taste and with a view to that elusive goal of our time: "to protect our property rights . . . while at the same time preserving the most sensitive environmental features."

Glenn turned back to the boat. "They'll start at the mouth of the St. Marys," he said, "and come slam up to the swamp."

As others see it, the mouth of the St. Marys River in fact offers two alternative futures, both about equally dreaded. Cumberland Island, on the Georgia side, was taken over by the federal government in 1972 and kept in its natural state. Amelia Island, on the Florida side, was unprotected and has been built up over the past two decades into a sprawling resort. "I remember when there was nothing on it, and now it's all gone," Glenn remarked—a comment worthy of Yogi Berra, superficially absurd and yet shot full of wisdom. Either way, many local people say they lost. Instead of being free to go where they want and do as they please, the choice now is between the rules of the National Park Service on Cumberland Island or the rules of the country club communities on Amelia, where condo villas built on the dunes tend to have signs warning trespassers to stay off the selfsame dunes because they are "environmentally sensitive."

THE ARGUMENT now is whether the St. Marys itself faces a similar choice. Sitting on a sandy bank one evening, chewing on a blade of grass and watching eddies form on the lustrous black surface of the river, a retired truck driver named Bruce Cribbs (kin to Bill) lamented the rate of riverbank development. "I say the river ought to be preserved," he said.

"I do too," a friend named Dean Woehrle

RANDY OLSON

replied. "But I don't want some jerk in Washington telling me when I can go on the river, when I can fish, what size motor I can use." He was referring to the National Park Service, which is studying whether to designate the St. Marys a wild and scenic river, to help protect it from the growth fostered by the submarine base. The Park Service is soft-pedaling the effects of designation as more symbolic than practical, and its study team has endorsed legislation that would prevent property from being taken by condemnation. But to local people it still sounds ominous.

Jackie Carter's family was losing land to federal condemnation at the edge of the Okefenokee in the early 1970s, about the time he was returning from Vietnam with his gait rearranged by a hand grenade. The possibility of federal protection sounds good to him only insofar as it alarms the public into actually doing something about the rapid changes in their rural way of life. Carter, 40, is sleepy eyed, with a thick mustache and a helmet of lanky hair going gray at the sides. As chairman of the Charlton County Commissioners, he is passionate about, if at times also puzzled by, the task of representing an insular, clannish community along the St. Marys as it faces the sudden onslaught of outside interests.

Not long ago, for instance, everyone in

Stephen Foster never saw the "Swanee" River (he wrote "Old Folks at Home" in Pittsburgh), but his musical legacy lives at the Stephen Foster State Folk Culture Center. There the Makleys, led by mother Elroyce, strumming her Autoharp, have sung in the Florida Folk Festival since 1972.

Folkston thought a local man had euchred an outside developer by selling him a cow pasture at the ungodly price of a thousand dollars an acre. The developer promptly broke the pasture into one-acre lots and sold them to families from the Kings Bay submarine base at $5,000 to $10,000 apiece. "They thought they'd swindled him," Carter remarked, "but doggone if he didn't show 'em what could be done."

What could be done, however, was to create a "double-wide city," a mobile-home community, with the strength of its ties to the local culture indicated by the axles hidden under every home. Another developer came up from Florida to take advantage of the county's feeble land-use laws and threw in a subdivision along 2.5 miles of the St. Marys River, where the waterfront trailers now sag on their pilings and stray dogs bunch up on the sandy road.

Families in mobile homes produce fewer tax dollars than those in site-built houses while requiring more services, according to the county tax appraiser. And in three or four years, at the current rate, the county will have as many mobile homes as houses. Though it still thinks of itself as remote and rural, Carter said, Charlton County is in fact becoming a bedroom community for Jacksonville and Kings Bay, both less than 45 minutes away. Another Folkston man put it more bluntly: By "trying to hang on to 1920 and keep government out," he said, the county was in danger of being turned into "a trailer park and junkyard" for anyone unwilling to conform to the rules in more restrictive communities.

CARTER DROVE ME OUT one afternoon to a site 500 feet up the road from the Folkston grade school, where trucks hired by Gilman Paper Company began to arrive a few years ago without notice, dumping sludge on company land at the rate of about 200 loads a day. The county fought Gilman unsuccessfully in court and the legislature, and for Carter the continued dumping

shows how outsiders with lawyers and slick lobbyists can take advantage of a community where education and income are limited.

The paper company has asserted that the sludge, consisting of wood fiber, lime, and other by-products from its mill in St. Marys, is harmless, despite minute quantities of heavy metals and dioxin from the pulp-bleaching process. "Do you realize that the sludge contains less dioxin than a lot of the foods you eat?" company president Bill Davis asked. He characterized the dumping as recycling, the equivalent of putting grass clippings back on one's lawn. "If we don't haul the sludge away," he said, "we shut the mill down."

But neither the explanations nor the implied threat of losing a major employer has done much to ease the sense of outrage in Charlton County. When Gilman recently applied for permission to expand the dumping to a wetlands area it owns along the St. Marys, it provoked more than 600 letters of protest. The outrage has a sharper bite because company owner Howard Gilman has cultivated a reputation as an environmentalist; his White Oak Plantation on the St. Marys is one of the nation's most highly regarded centers for captive breeding of rare and endangered species.

"His panther-breeding program is going to do a lot of good," Carter conceded. "But in return how much harm has he done in real life out here?" Driving among the three-foot-high heaps of sludge at a site with feeder streams running through it to the St. Marys, Carter wondered about the cumulative effect of contaminants on water quality. "It's like this," he said, picking up a cakey, gray crust of sludge. "When you can find a minute amount in any handful, what do you get when you put in tons and tons of it?"

IF THE SLUDGE DUMPING, the double-wide cities, and the talk of wild-and-scenic-river designation all induce a queasy sensation among the locals that they're losing control of their lives, what's the answer? One possibility is that the federal government, whose methods at both Cumberland Island and the Okefenokee have sometimes made enemies, will serve as the bogeyman to scare landowners into more palatable schemes for preservation. Carter has suggested, for example, that the four counties bordering the river in two states form a commission to control development locally without intervention from Washington, D. C. Fear and uncertainty about federal restrictions may also induce property owners to sell or swap sensitive land with less intimidating private groups like the Nature Conservancy.

Huge chunks of land have already gone that route along the Suwannee River, where an unsuccessful federal bid for wild-and-scenic-river designation started things moving two decades ago. The Suwannee River Water Management District, a public agency, has acquired 20 percent of the frontage on its namesake river and aims to own fully half by the end of the century. The money for land acquisition is in part a by-product of Florida's rapid development: Since 1981 a cut from the documentary stamp tax paid on land transfers has gone into a state Save Our Rivers fund. Florida has also been more willing than Georgia or almost any other state to float bond issues and allocate general spending for land acquisition, because it has seen how quickly development can eat up the countryside and threaten the water supply.

In addition to the river frontage being saved in this fashion, the Nature Conservancy has focused its efforts on a rich chunk of land called the Pinhook Swamp directly south of the Okefenokee and midway between the Suwannee and the St. Marys Rivers. The conservancy aims to acquire a 12-mile-wide wildlife corridor extending the Osceola National Forest to the Okefenokee as the heart of a single ecosystem. If captive breeding succeeds, this land will serve as a site for reintroduction of Florida panthers. It may also sustain some remnants of the blackwater way of life because of a growing consensus among environmentalists that, in this country as abroad, land conservation works best when it benefits local people. "We're trying to show people that they can continue to fish, hunt, do some logging, that we're not locking up the land," said George Willson, who is directing the Pinhook acquisitions for the Nature Conservancy. "We're trying to protect some of the opportunities the old people had, for their children."

What is a little daunting to contemplate, out paddling anywhere on these swamps and rivers, where the cypress and the tangled oak branches and the changing autumn colors are reflected crisply on the black water, is how difficult the questions of conservation and development have become: How much land is

enough to protect a way of life? When does a little development become too much?

OUT AT THE MOUTH of the Suwannee River, around the saw grass islands dotted with palm trees, oysters are so thick that people can scoop them up with buckets—and once did. "We didn't know what tongs was," one woman said. The local oyster trade boomed in the 1980s, reaching a peak harvest worth more than a million dollars in 1986. Then state and federal officials traced some food poisoning cases to Suwannee Sound shellfish and shut down the oyster beds. They traced the contamination back to the town of Suwannee, at the river mouth, the only major development on the Suwannee's final 20 miles.

There, over the past 30 years, developers have cut lagoons in the marsh and piled up the dredgings alongside to support roughly 700 houses. Ramshackle trailers subside into the earth next to pricey new vacation homes perched so high up, to conform to modern floodplain regulations, that some of them have elevators. Many houses have two boats out front; the owners would not be there if they did not love the river. But every house, with only two exceptions, also has a defective septic system. This is still, after all, a marsh, still a floodplain. A sign on the way into town advertises "Sea Walls, Boat Sheds, Fill Dirt." A sign on the way out says "We Pump Septics."

Cows make more than milk—waste from dairy cattle (opposite) totaling 44,000 head adds to the human waste that has ruined the Suwannee River oyster industry. "The town of Suwannee has 700 septic tanks, and two meet standards," says Suzanne Colson, once an oysterer (above) and now a water activist.

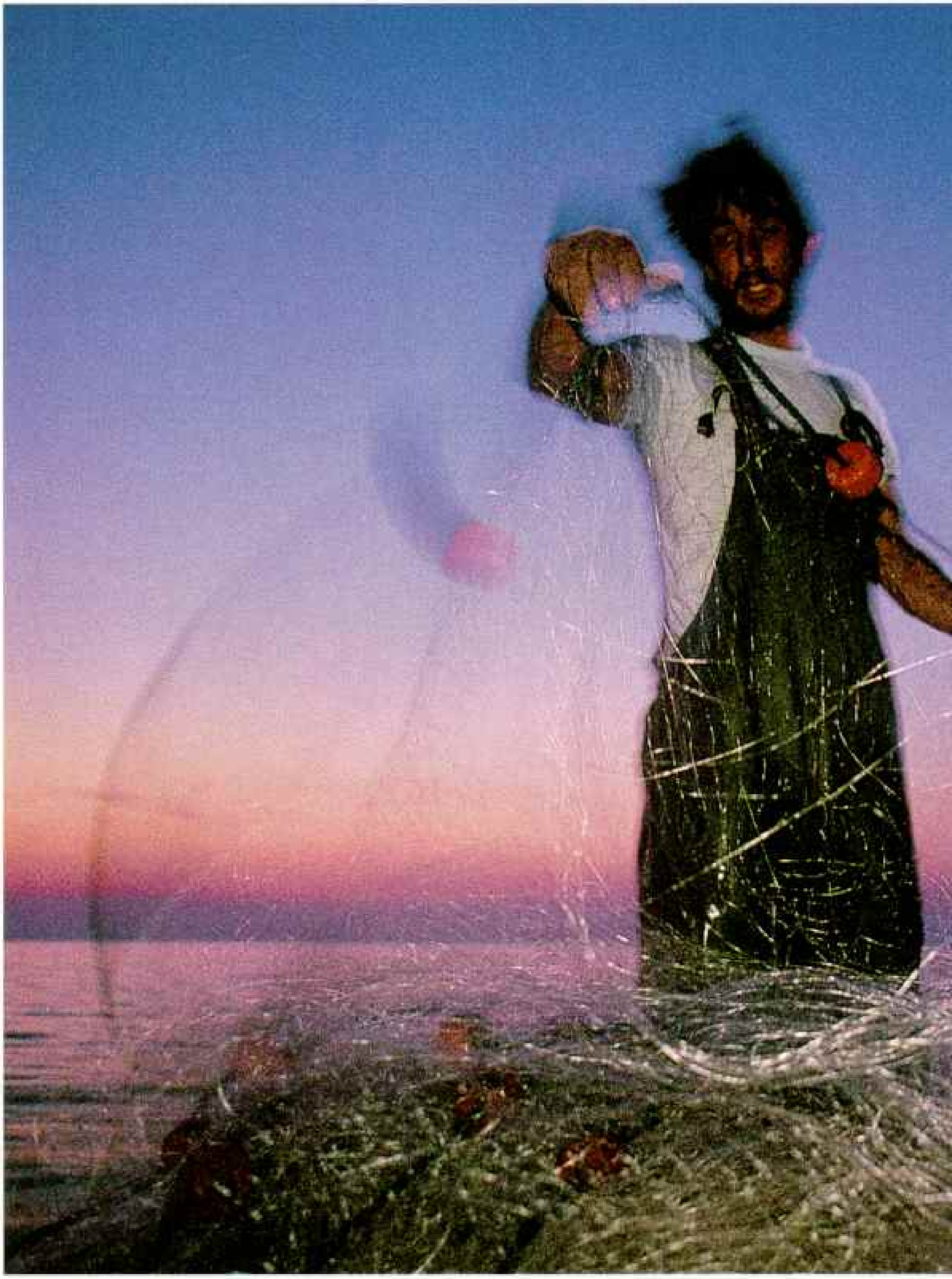
Suzanne Colson married into a local family and moved to Suwannee in the 1970s to work with her husband in the oyster trade. Out of personal inclination and professional self-preservation, she also became a leading voice against development. Now 45, with thin lips and an abrasive manner, she has endeared herself to almost no one.

"My whole town, my whole county doesn't like me," she said, driving around Suwannee one morning, "because I don't want septic tanks in the floodplain." With the oyster beds shut down, Colson began working as a waitress, victim of what she sees as a shortsighted view of property rights: Putting houses in the wrong place has not merely cost the oystermen their livelihood; it is also going to oblige the government to spend roughly nine million dollars on a wastewater treatment plant to alleviate the problem.

Colson pointed out a sign on the edge of town saying "Land Sale Today," where the same developer who built most of Suwannee hopes to put in another 500 houses. On the entire Suwannee, even with all the land already acquired for conservation, 38,900 building lots have been platted, more than 5,000 of them on the river itself. The water management district governing board, of which Colson is a member, considered alternatives to septic tanks, such as anaerobic toilets, in the areas where flooding occurs on average every ten years. But the impassioned outcry about property rights, both from developers and from couples who love the river and dream of retiring to it, shook the board's resolve.

And who could help but sympathize with a couple's argument that the wastewater from a single retirement home would be nothing compared with what flows out of the phosphate mine upriver? Who could dispute the developer's case that a subdivision was less destructive than the big dairy farms going in upstream?

The way a river is thus nickeled and dimed to death left Colson fed up. If the oystering is over, she said, "Don't buffalo us. If it is, tell us 'We're going to build condos and subdivisions, and we'll have you all as cleaning people.' I *know* how to do that. I've done it, and I don't want to do it again. I thought we'd escaped that."



Shell game over, oysterer David Colson and a partner net for mullet in the Gulf of Mexico. Says Suzanne Colson (no kin other than their shared plight), "The oysters are the canary in the coal mine. The fish will be

contaminated next. And then, what good is the water?" A federally funded program is teaching local oysterers intensive aquaculture techniques that enable them to grow and harvest oysters in the area's few untainted beds.

Airborne tide of fresh water, rain rolls off the Gulf. The porous land gulps it like an afternoon iced tea; the swamp sucks it up. But sooner or later the waters end up in the lazy rivers that reach from sea to sea.

DEEP IN THE OKEFENOKEE, heading out toward Cravens Hammock with an alligator drifting across in front of the canoe, Bill Cribbs was delivering one of his spontaneous lectures. "Lem Griffis had a fish camp," he said, remembering a Fargo man, one of the last of the old-time swampers, "and one of his customers once asked him if the water was pure. Lem said, 'Pure as gator piss.'

"Now here's something you don't see too often, but it's a good indicator of pure water. Back up." He sculled the boat into position and drew up a branch with a cheesy yellow sphere attached to it. "It's a freshwater sponge. It's an animal. Every one of those cells that broke off there will become a separate animal. It's an excellent sign that the water quality is as good as it can get. It's the only freshwater sponge in the swamp—*Spongilla fluvialis.*" But even here, in the heart of the Okefenokee, he said, contamination by sulfur dioxide and mercury of unknown origin is becoming an issue.

That evening at Cravens Hammock I pushed the canoe out on the open water and drifted in the darkness thinking about how complicated life can be. When they debate the future of the blackwater country in terms of parts per quadrillion of little-known chemical contaminants or try to fathom computer-modeled estimates of sulfur dioxide pollution, it sometimes seems as if local people have not merely eaten of the tree of knowledge but swallowed it whole and are deep in the throes of indigestion. Environmental alarm has spread among them, with a dyspeptic quality that is utterly out of character with the blackwater way of life. It seems incongruous that on the Suwannee River, the river of Stephen Foster's

"Old Folks at Home," a sensible person could fret her life away. And yet Suzanne Colson has no oysters, and the knowledge of the way small effects have accumulated in other places suggests that there is plenty of reason to fret.

There is reason to fret even about something as elemental and good as milk. The dairy farms are coming north, not merely because land is cheap in the blackwater country but also because environmentalists are forcing them out of south Florida, where their runoff had polluted Lake Okeechobee.

And environmentalists in the north are now resisting them with the mathematics of development: If a cow produces as much waste as 22 people, wouldn't a proposed 10,000-cow dairy near the Suwannee River produce more than the Gainesville metropolitan area? It is somehow surreal: Cave divers in neoprene suits walking out into pastures and disappearing down duckweed-clotted ponds into passages thousands of feet long to show people that in this limestone landscape the dairy waste flows directly to a vast, multilayered system of caverns, that the caverns flow to rivers, that the caverns and rivers together affect the aquifer on which much of the rest of Florida depends.

It is as if the Suwannee River, the symbol of bucolic simplicity, were a huge M. C. Escher puzzle, in which everything doubles back on itself and connects in time with everything else. The scale of things—10,000 cows on one farm! 39,000 platted lots!—is too large.

Back on Cravens Hammock, Bill Cribbs had found a stick of resinous fatwood—the old swampers called it light'ard (or lightwood)—and set it up as a torch to guide me back to the landing. In the blackness of the swamp, there was something comforting and homey about the flickering orange flame and the rills of black smoke curling up among the dimly lit trees. Heading toward it, I thought that it is not enough any more merely to escape to the Okefenokee.

What we need is to find our way back somehow to another time. □

THE SIMPSON

By JANE VESSELS
NATIONAL GEOGRAPHIC SENIOR STAFF

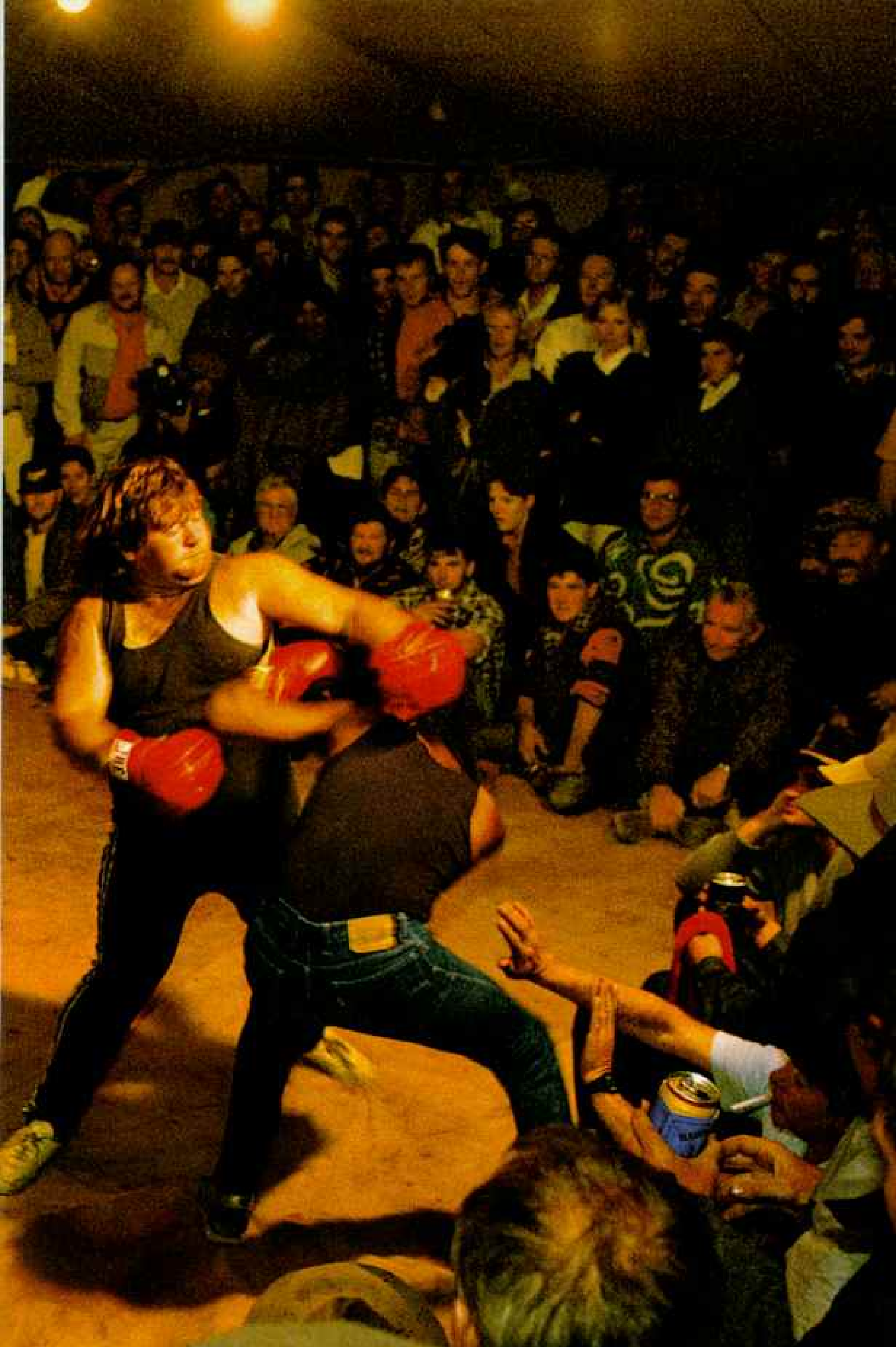
Photographs by MEDFORD TAYLOR

OUTBACK

On Anna Creek cattle station Stretch Halstead and his horse Boss Hog embody the qualities of all who live on the edge of Australia's Simpson Desert: hardy, tough boned, coolheaded in dry times.

More than a thousand parallel sand dunes define the Simpson Desert, southeast of Australia's center. "People ask if the cattle eat sand," says Molly Clark, who runs Old Andado homestead as a guesthouse, "but rain can make this look like a wheat field."

"A supervised barroom brawl" is one man's description of the action when locals take on members of Fred Brophy's Boxing Troupe at the annual horse races in Birdsville, Queensland. This round the 30-dollar purse went to the challenger, at left.



SLIGHTLY OFF CENTER of the center of Australia the parallel sand dunes of the Simpson Desert angle so precisely north-northwest to south-southeast you can use them as a compass. There are more than a thousand of these ridges of talcum-fine sand the color of paprika, and they can run for 200 kilometers and tower 35 meters. In the broad swales between them hover scattered clouds of smoky greens and yellows—the cane grass and spiky spinifex and gnarled mulga trees that survive year after year on rainfall that wouldn't make a mug of tea.

Then again, the continent's driest desert can flood. When distant rains push into and over normally barren riverbeds, dormant seeds and tubers rise in ephemeral meadows. "I've seen this country purple with flowers," a woman told me, gesturing toward a landscape that looked like Mars.

Straddling the Northern Territory and the states of South Australia and Queensland, the Simpson was one of the last areas of Australia to be mapped and had no official name until 1929, when the South Australia branch of the Royal Geographical Society of Australasia sponsored an aerial photographic reconnaissance. The society's president, philanthropist and hardware magnate A. A. Simpson, said that "he would not object to having his name attached to so inhospitable a region."

The desert had been mapped, in effect, long before by Aborigines, who learned how to exploit the bounty of its sporadic rains. And until the turn of the century the Wangkangurru people actually lived in the dune fields—drinking from claypans during wet times, then falling back on a line of shallow wells.

But like most of the desert's Aboriginal groups, the whites who first brought cattle here in the 1860s settled on the periphery of the dunes, as if around a great sandy lake.

Today this Simpson Desert border community is a world of vast cattle stations and a few small towns founded on the cornerstones of outback society: a racetrack and a pub. Only about 1,500 people live along this asymmetrical circuit of some 2,500 kilometers (1,553 miles)—roughly the circumference of Arizona. Everyone you meet in this story will know one another, know of one another, or have some acquaintance in common. Maybe some of them aren't getting along, maybe "they're having a bit of a drama." But, as one man swore, punctuating his oath with a beer, "Even if people aren't speaking to each other, they'll help each other out of trouble." The pub crowd nodded: "Too right."

This is a land where you work hard and don't always get much to show for it. "But you're out here for the way of life," said one cattleman, bouncing his baby daughter. It's a land where you recognize people by their hats as much as by their faces. "It was too stiff when I bought it," said a young ringer (as cowboys are called) of his weathered headgear. "So I dropped an anvil on it, then I drove a car over it." And it's a land of dirt roads where people drive hundreds of kilometers on modified cattle trails—for a party.

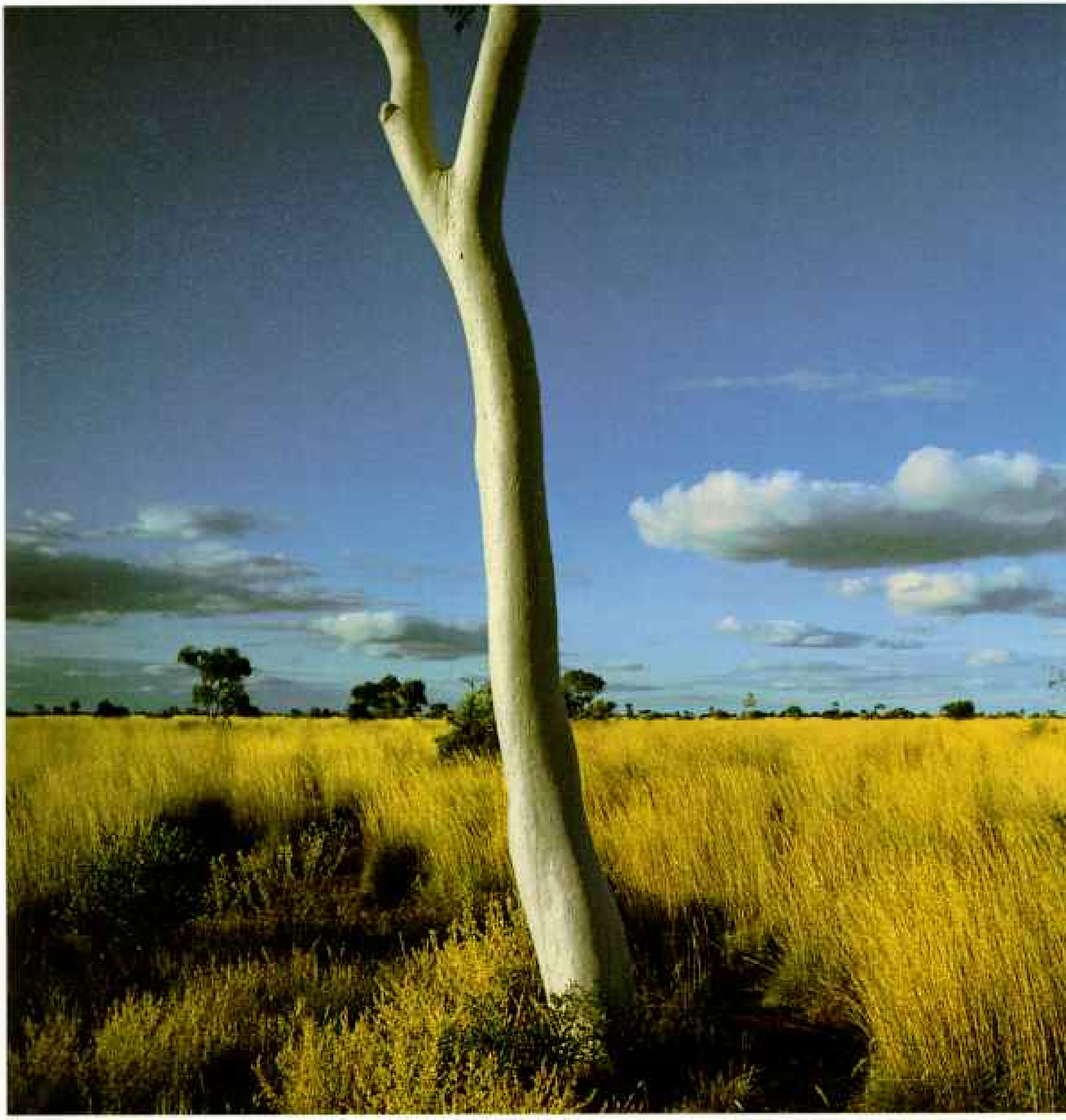
There are three main thoroughfares around the Simpson—the Oodnadatta Track on the west, the Birdsville Track on the east, and the Plenty Highway on the north. In four-wheel-drive trucks, photographer Medford Taylor and I followed these rough highways, which are often cursed as "mongrel."

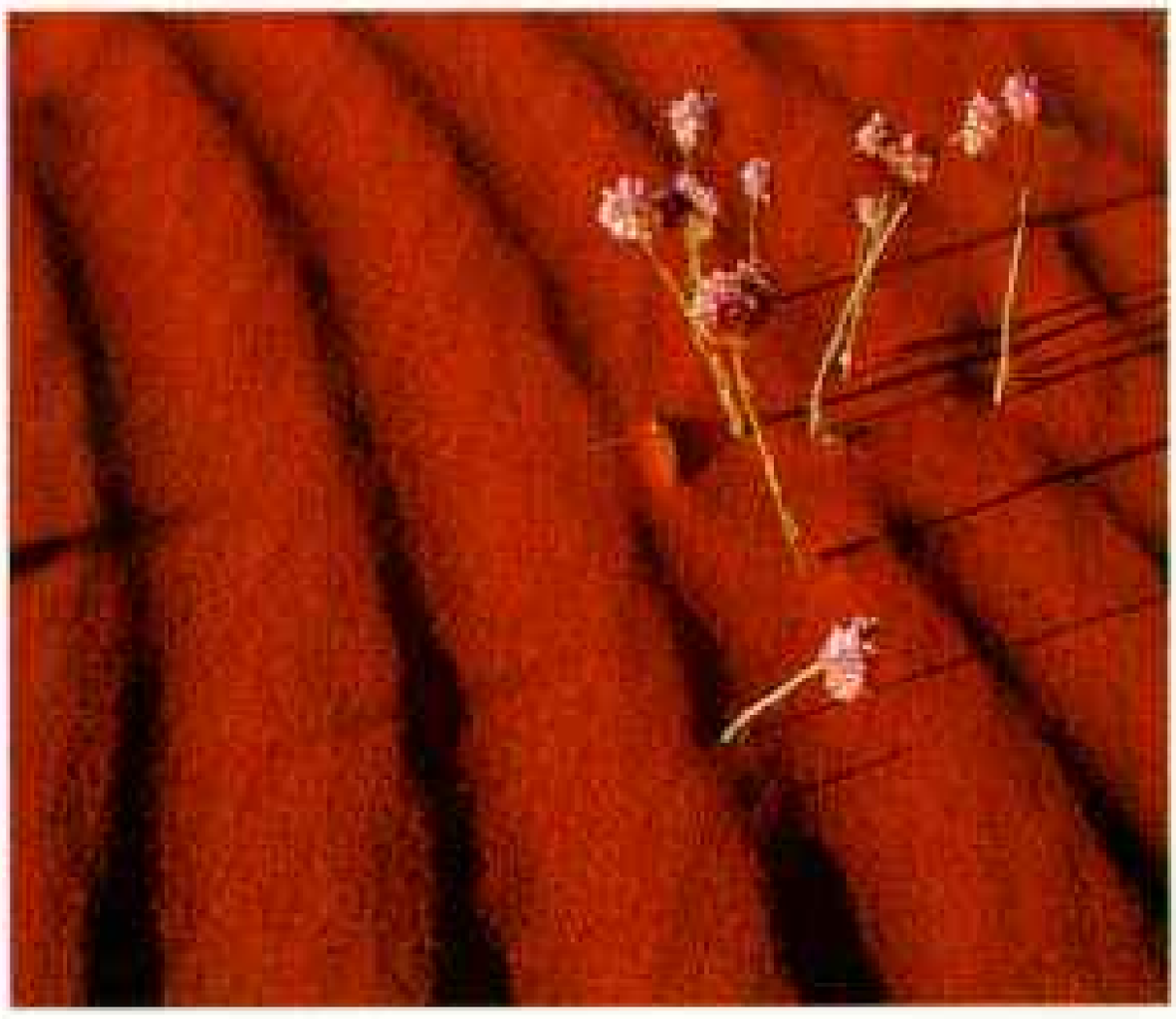
Driving any road here is a good way to get into trouble. Carrying two spare tires is prudent, especially in summer, when road temperatures can exceed 60°C (140°F) and tires just explode. Not carrying water is suicidal.

Yet I was assured that the roads have been improved tremendously in recent years, mainly to accommodate the giant multitrailer trucks called road trains that now take cattle to market. I asked Stuart Nunn, the manager of Anna Creek Station, whose homestead lies off the Oodnadatta Track, if he still felt as if he lived very far out. "Not really," he said. "Now you can jump in a car in the morning, and 12 hours later you're in Adelaide. It used to take two days."

Anna Creek is the largest cattle station in the world—31,000 square kilometers in northern South Australia, five times the size

The goanna got away, and Edna Stewart of Oodnadatta settled for a less traditional store-bought meal. Residents of this largely Aboriginal town of about 150 people are working to forge a modern Aboriginal culture and to be a model of self-determination. Pervasive alcoholism hobbles their efforts.





of the nearest U. S. competitor. Stuart, 40, grew up here; his father managed the station before him. Blindfold Stuart, take him to any spot on this Belgium-size property, and he will know where he is.

Stuart works for Kidman Holdings, the country's largest landholder, which owns the Anna Creek lease. (All pastoral land here is leased from the state government.) Kidman, with four stations around the Simpson Desert, is the region's top cattle producer.

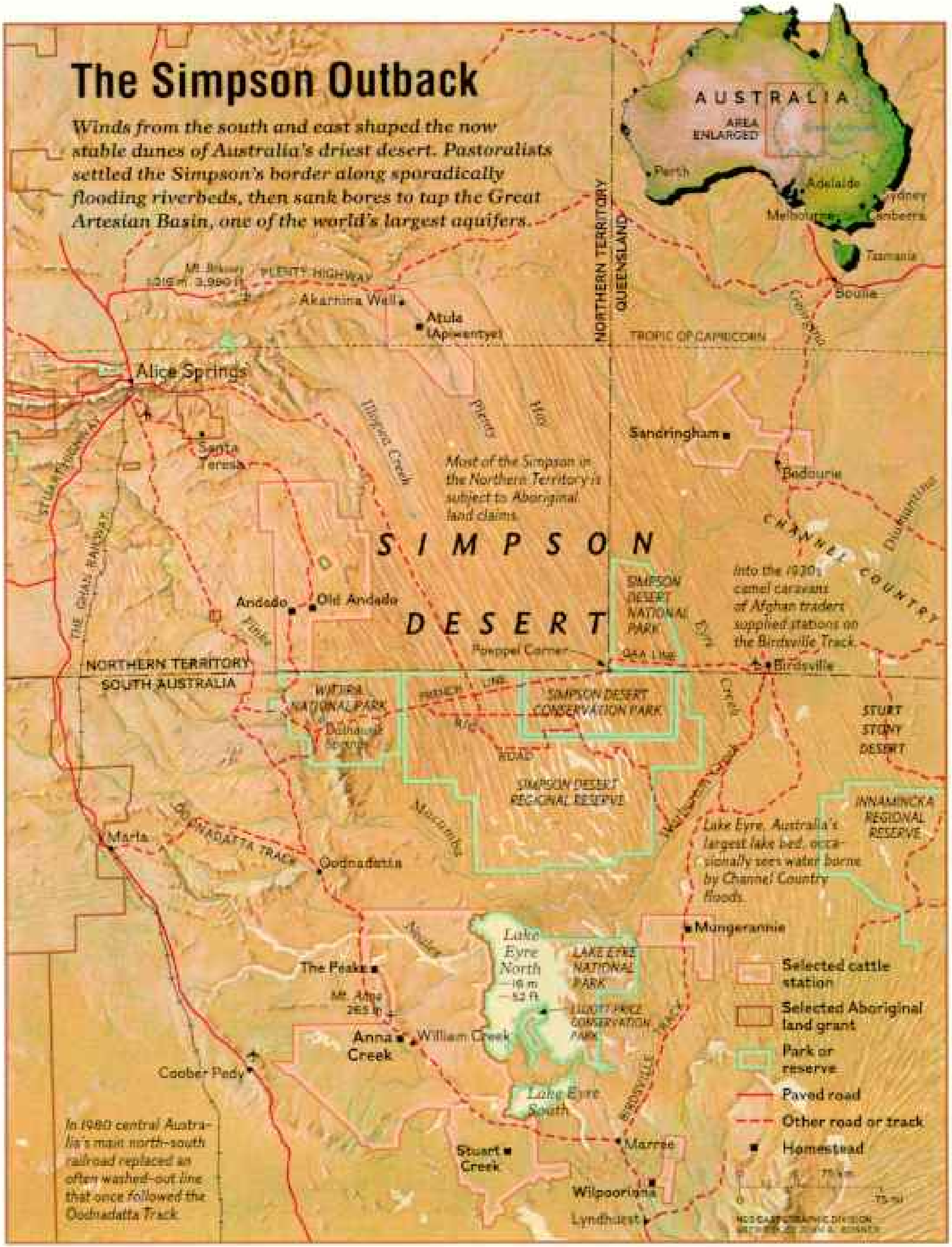
WHEN I ARRIVED at Anna Creek in May 1991—the start of winter in the Southern Hemisphere—it hadn't rained for two years. A half inch fell in May 1990, but "that's nothing to talk about when you're trying to feed cattle," said Stuart's wife, Pam.

The yearly average at Anna Creek is five and a half inches, one of the country's lowest, and much of the station grows nothing but rocks. If good summer rains create feed, Anna Creek can carry 30,000 head of cattle. This season Stuart was running 8,000—the rest had been shipped to market or to other Kidman stations on the Simpson Desert's wetter, northeastern side.

In the scrub behind the Nunns' house stands an old tombstone: "Sacred to the memory of Benjamin Daggett who was accidentally shot in the kitchen." He was buried by "friends and fellow workmen" on April 22, 1883. Things are quieter in the stockmen's kitchen nowadays. The cook, Pam Moreton, won't even let the ringers smoke. "And they have to shower before tea."

Tea is the evening meal in the outback. Along with breakfast, lunch, and a midmorning snack called smoko, Pam prepares it

"This country is marginal," says Gaynor Cleary, manager of Atula Station (top). "If it rains, it's great; if not, it's horrid." Flooding in summer 1991 raised a sea of cattle feed around Atula's ghost gums. Floods also greened Queensland's Channel Country (left); most of the water flows south from the state's tropics. Scant desert rain coaxed now dried billybuttons from a dune (center). "Splendid country" when explorer John McDouall Stuart reported it perfect for cattle in the 1860s, the Finke River (far left) is usually dry.



for Anna Creek's station hands and floating cast of ringers.

"I was a vegetarian before I took this job," said the petite Englishwoman, a former opal miner, who knows how to do justice to Anna Creek beef. "I love to ring the bell and call the guys in." Pam knocked a wrench against a tube of iron pipe. The young men left their hats on the step and filed through the back door. They don't object to her rules because she is a great cook (a previous cook's specialty was creamed corn on toast) and she's a good listener. "It can get lonely out here," she said.

The station has all the modern conveniences: a solar-powered microwave repeater

telephone; a fax machine; a 240-volt diesel generator to power freezers, air conditioners, and televisions.

YET ANNA CREEK may be the most old-fashioned station in Australia. While many cattlemen are mustering herds with planes and helicopters, Stuart Nunn believes in horses. "It might be a little bit slower," he said, "but you win in the long run. Our fuel costs would be out of proportion if we used all vehicles." He does make judicious use of motorbikes, and in 1981 he replaced camel-drawn tucker wagons with flatbed Toyota trucks.

The station has 500 stock horses, running free in paddocks the size of Delaware until they're mustered for work. If head stockman Richard Nunn, Stuart's younger brother, doesn't know them all by name, it's a good bet he knows them by sight.

Cattle musters once took weeks, months, when the mob had to be walked to railheads. Today it takes a few days to gather the cattle and push them to one of dozens of strategically placed yards, where they are loaded onto a road train and trucked south to Adelaide.

Eight hundred cattle—the breed is a shorthorn Brahman cross—had just been yarded for the night when Medford and I pulled up to a camp on the southern end of the station, an outstation called Stuart Creek. A blackened billycan in the fire held boiling water for tea, the strongest drink served on muster. The ringers were "having a feed" of what they eat at virtually every meal: grilled beef on white bread.

Nine white and Aboriginal ringers were working this muster. The "plant" of 32 horses had been hobbled to limit their grazing range. Two motorbikes, the Toyota tucker truck, and one ringer's yellow baseball cap were the only clues that this was the late 20th century. The night was cold and the fire felt good. The ringers lit hand-rolled cigarettes with pieces of kindling and played an Australian version of mumblety-peg called knifey.

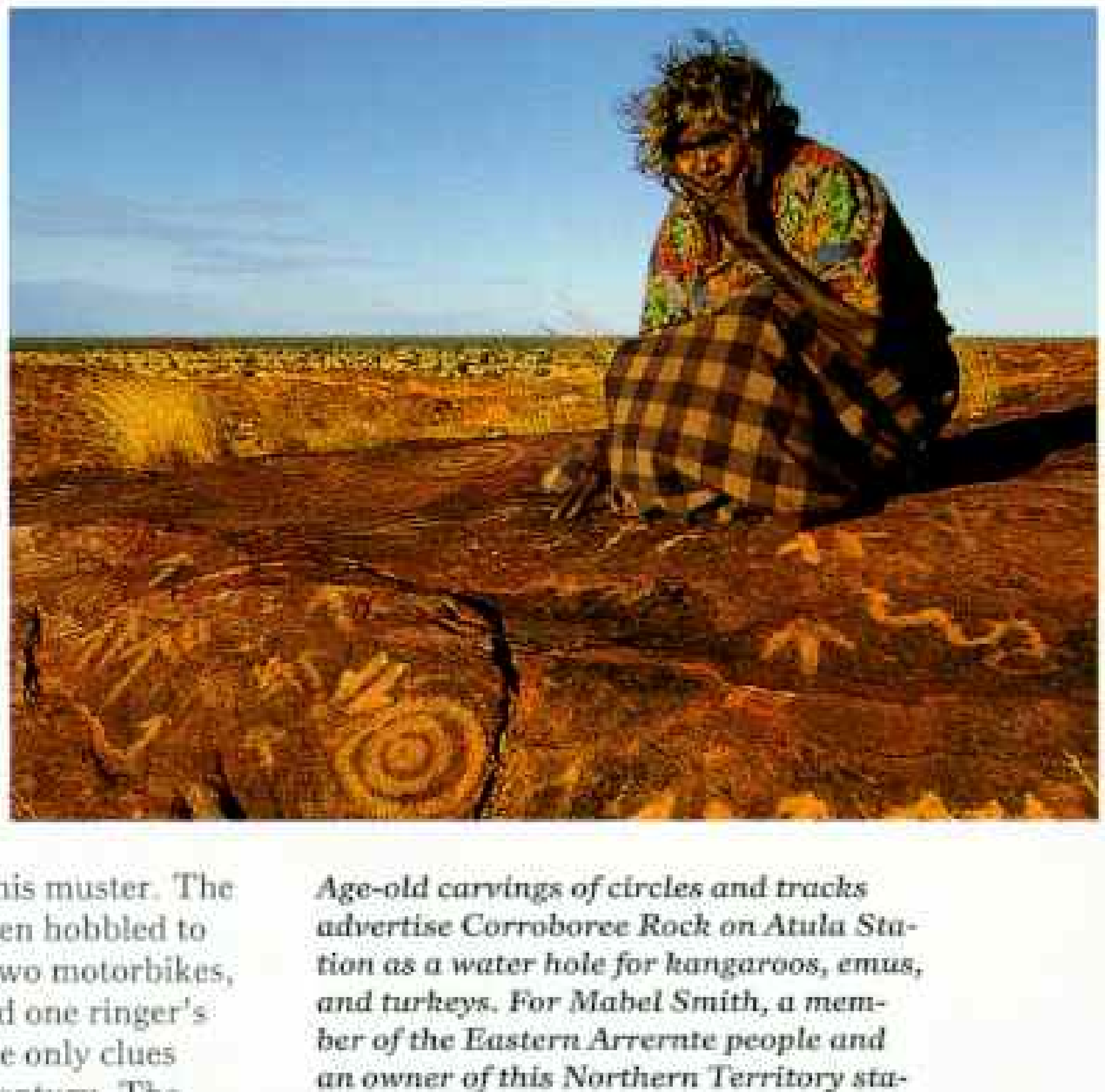
In the cattle yard—an old one made of gumwood and wire—cows bellowed for their calves. "It's good when they're singing out like that," said ringer Jamie Kop. "If they're sleeping, that's when you start thinking. A bird's only got to swoop down on them, one will jump, and the whole lot takes off. It's a funny sound when that wire breaks."

The cows were still sobbing at dawn as we ate breakfast.

The beauty of man and horse working together was a joy to watch that day as Bobby Hunter, who oversees Stuart Creek, led the drafting. While ringers held the mob in a circle, he rode through it as if through water to cut out 95 "fats" he judged ready for market. The rest would "go bush."

But before they got their freedom, they were walked to a branding yard, where the "clean-skins" among them were singed with the Anna Creek anchor, and the males were castrated.

The day had grown hot and the air so still



Age-old carvings of circles and tracks advertise Corroboree Rock on Atula Station as a water hole for kangaroos, emus, and turkeys. For Mabel Smith, a member of the Eastern Arrernte people and an owner of this Northern Territory station, the outcropping holds memories of gatherings for song, dance, and debate.

it was difficult to breathe without inhaling the pervasive flies. Moments like these gave me all the hint I wanted of the Simpson summer, when temperatures stand in the 40s (100s) like a stubborn bullock. "Is there ever a breeze then?" I asked Richard Nunn. "Yeah, like from a heater, and it's dusty."

WHAT'S A BLOKE TO DO when the muster is done? Go to the pub. Seventeen kilometers southeast of the Anna Creek homestead, the broad red carpet of the Oodnadatta Track rolls right to the door of the William Creek Hotel. The population of William Creek has risen to 11, "But I think we're still the smallest town in South Australia," said Chris Brown. He's the publican and operates the hotel, along with his wife, Heather, and business partners Andrew and Jenny Saunderson.

Local residents are the pub's most regular customers, but what keeps this century-old place in business is a new wave of tourism. "Four-wheel drive has changed the outback," said Chris. Those who no longer find the perimeter roads challenging are crossing the Simpson itself, on lines bulldozed by unsuccessful oil-exploration crews in the 1960s and '70s. "Three jarring days of 20 kilometer-an-hour driving" is how one man described the trip.

William Creek does its heaviest trade in fuel, food, and drink during the winter, when as many as 150 people a day come by. If the six rooms aren't always full, it's because most overnighters use the campground. Road traffic can never be said to be heavy though. When Jenny grabs her three-iron and calls, "I'm going to have a hit," she's driving golf balls straight down the track.

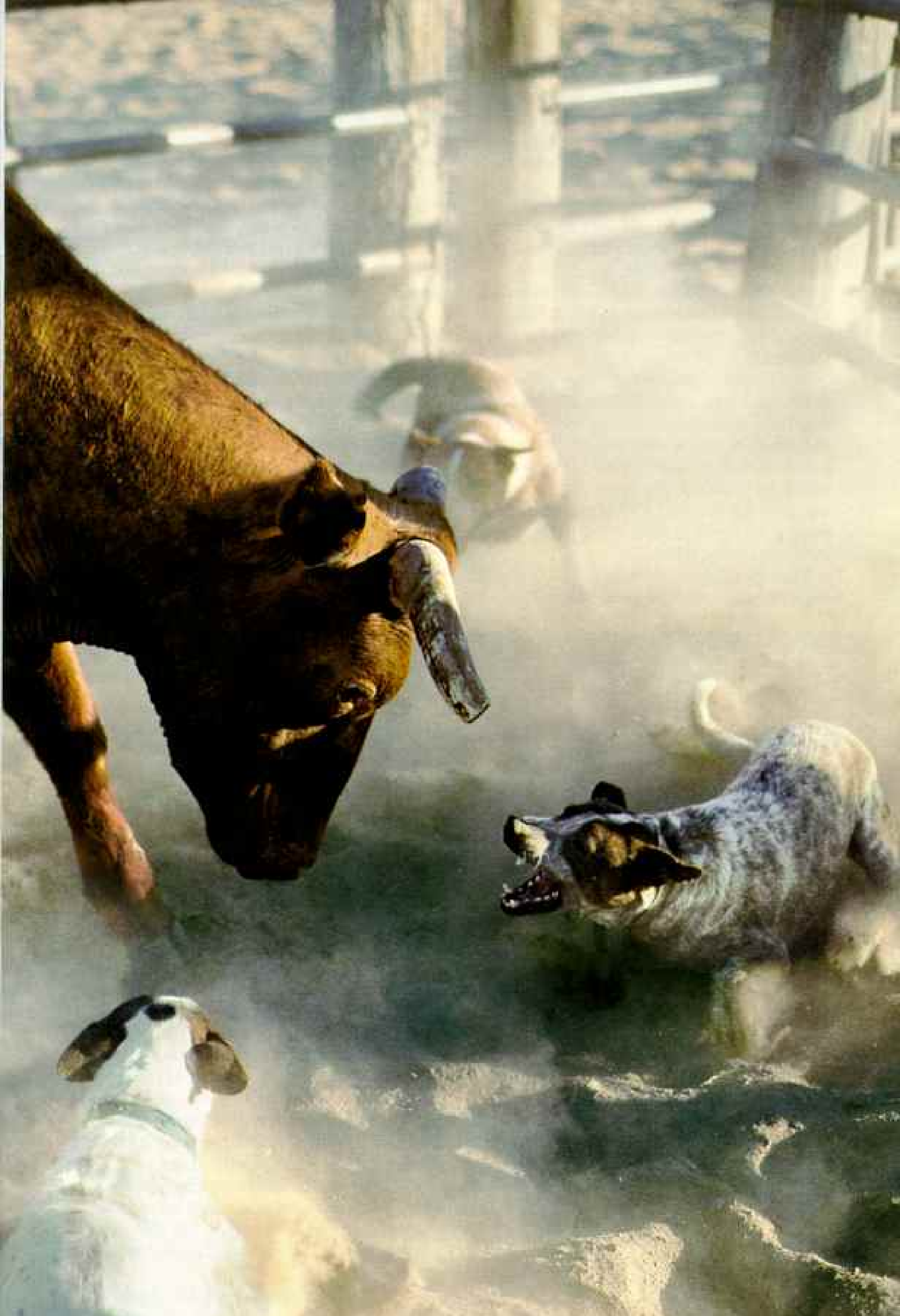
Walking the back fields at William Creek one morning—fields of scrub and stone that meet the horizon with scarcely a vertical blip—I met Gordon Litchfield, who owns Wilpoorinna Station, a five-hour drive south of here. He gave me a cup of coffee from his campfire pot and introduced me to the horses he was taking to that weekend's races and gymkhana at Oodnadatta. A gymkhana features stock-horse races that test mustering skills and also field events such as the ladies' bullock tail throw. The Anna Creek crew had been preparing for it all week.

When I arrived in Oodnadatta (later than planned; a tire blew out in a ditch), I was stunned by the number of people I knew. All had passed through the cattle station or William Creek, including a mob from Oodnadatta who had driven five hours to William one Sunday because their own pub was closed. "It's one big family out here," I was told.

Oodnadatta is an old Aboriginal word that probably means "blossom of the mulga tree" but may mean "rotten ground." The town is half a kilometer long and holds a population

"This branding went well," reflected one ringer, or cowboy. "No one got hurt." In a good season on Anna Creek cattle station—the world's largest—a dozen-plus ringers bunk at the homestead of the Belgium-size property. Working the 40°C (100°F) summers here, "you're so dehydrated you can't even raise a sweat."

Australian cattle dogs herd a shorthorn bullock in a drafting pen on Sandringham Station in Queensland. Maneuvering cattle through a series of gates, ringers isolate the "fats" ready to go to market.



of about 150, mainly Aborigines. At one end of the paved main street is the vividly painted Pink Roadhouse; at the other end is the police station. In between lies the pub of the Transcontinental Hotel. All three were hopping on race weekend.

I got a room at the Trans, but no key. "A guy carried it off, and he won't be back for six months," said manager Lillian Lockwood. "I wish a key cutter would come through town." Lillian's husband, Norman, kicked open a locked door to admit Medford to his room, cheerfully saying, "Not a problem."

The races are serious fun. They raise money for the Royal Flying Doctor Service of Australia; its airborne doctors and nurses provide medical care in the outback. About 300 people from town and away attended, catching up on news from different stations, drinking beer and rum-and-Coke, sitting in the small grandstand mostly to talk, then moving up to the rail for the races.

There's betting to be done on the Thoroughbreds and ribbons awarded for the gymkhana races. This year complaints from a national animal welfare society led to the cancellation of the children's rooster chase, and the ladies tossed broomsticks instead of bullock tails. I lost.

Reports from the second dance of the weekend filtered into the Pink Roadhouse the morning after with bleary survivors searching for coffee. ("The band quit playing at 3:30 when the guitar player broke a string and the singer lost his voice.")

The roadhouse itself will pop your eyes. Why pink? "To be different, to make people laugh," said owner Adam Plate, who passed through here in 1974 with his wife, Lynnie, intending to stock a camel farm—"a hippie sort of thing." Instead they became shopkeepers, put down roots, had four children.

Oodnadatta was born in 1890 as the railhead of a line running up from Adelaide and began declining when the rails were extended to Alice Springs in 1929. After the line closed in 1980, the South Australia government thought Oodnadatta would become a ghost town. But it didn't anticipate tourism and failed to take into account Aboriginal attachment to land and family.

Several Aboriginal groups live here; some were drawn to the area in the late 1800s to work on cattle stations or on the camel trains that once carried goods beyond the railroad. In 1919 influenza decimated the Aborigines—along with their languages and cultures.

Today Oodnadatta embodies both the tragedy of modern Aboriginal life—the despair and violence of severe alcoholism—and brave efforts to forge a new culture. "Aborigines want to pursue life as *they* see it, not necessarily the European life-style," said Selwyn Hausman, adviser to the Dunjiba Community Council, which represents Aboriginal interests in Oodnadatta.

With the goal of self-determination, the council has obtained grants and loans to buy houses, the hotel, and a store. No able-bodied adult gets "sit-down money," as welfare is

A long day of pushing cattle ends by the campfire, where Anna Creek ringer Steven Miller lights a hand-rolled cigarette with kindling (opposite). By dusk the men are eating: beef on a plate of white bread. "You grow up quicker out here," says 17-year-old Lightning Tiedeman (above, at left). "You have to take care of yourself."

known. The town participates in the federally funded Community Development Employment Program. To receive $158 Australian ($126 U. S.) each week, a resident must help repair houses, for example, or work in the store. Longer hours earn more money.

To fight alcoholism, the Dunjiba council has sent recovering alcoholics to programs in Alice Springs run by Canadian native people to teach others how "life can be great without grog." Sports competitions are being created to fill the void left by long-lost ritual ceremonies and dances.

One day at the races an Aboriginal man asked for my notebook, "to write a poem": *Faces and the places for a dollar smile. Drinking beer and cheap wine. Friends with money and with silly causes.* He didn't want to sign it, and I never saw him again. He was not old, but he looked it, and it's probable that between alcohol and anger he will die young. But perhaps the changes coming into Oodnadatta make it possible that he will live to write more.

MEDFORD AND I headed north over roads that were really creek beds, rock fields, and paths worn between water holes by cattle. Several sand dunes into the desert we reached Old Andado homestead. The jarring tracks told us a lot about the woman we were going to visit, Molly Clark.

Old Andado is Molly's business as well as her home, a 45-square-kilometer cattle station in the Northern Territory where paying guests can savor solitude and see how the pioneers lived. There's a telephone now, of course, but Molly winces when it rings, and as she answers, her soft voice can't quite conceal a sigh. Fifty years in the bush without having to answer a telephone, and now this solar-powered touch-tone device. But these days people think it's a bother to raise her by radio. After a conversation, Molly slips the phone back inside an empty potato chip bag. "Dust," she said. "That's the problem with having modern appliances in the outback."

Molly, 69, is part of Simpson history; her life illustrates the blows the desert can inflict, the price you may have to pay to live here. Veteran station managers, Molly and her husband, Mac, moved here with three young sons in 1955 and "worked their insides out" for two decades to build a new homestead

and acquire full ownership of the lease on 15,500-square-kilometer Andado Station.

They struggled through an eight-year-long drought that ended in March 1966 with four and a half inches of rain. "Within weeks it was a paradise," she said. "There were grasses we'd never seen before. During the drought the government told us to shut down, that the land had been grossly overgrazed, that so much seed had blown away it would never come back. We said we aren't going, we know this land." They had 600 cattle left.

They put their land smarts to work, and the herd grew. But in 1978 Mac died after his small plane crashed; a year later a car accident killed one son. Then came an order to

Student plus teacher equals school on Anna Creek, where third grader Olivia Nunn, daughter of the station manager, and Louise Edwards display paintings of the author and photographer. "Air lessons" link Olivia with other students—now by speakerphone instead of radio. Riding lessons follow (left). At 12, she will join her brothers at a city boarding school. "We miss them," says their mother, "but they need the social interaction."

destock Andado for three years for the national tuberculosis and brucellosis eradication program. "We had 10,000 cattle in 1980, and we had to get rid of them," said Molly. "By 1983 we were broke."

She sold the lease, moved to Alice Springs, then a town of some 18,000. She didn't like it: "I hate feeling fettered." So in 1986 she acquired the pastoral tourist lease around the original Andado homestead. "I don't expect to make much money. I don't want too many people to find me; you'd lose the feeling of isolation."

There aren't many straight lines in her corrugated iron house. And, except that the floor is no longer dirt, it looks much as it did in 1922, when camels hauled it in pieces 320 kilometers from Oodnadatta, and George McDill—who first stocked Andado in 1909—set it up for his new bride.

"Eleanor McDill's life didn't consist of anything but work," Molly tells me as she arm wrestles a bowl of potatoes into mashed submission. "She never went anywhere. If visitors came out in a camel wagon, maybe once in four months, good Lord, it was a red-letter day. Today if women have a problem, they can get into a car and get out. But Mrs. McDill, she'd have looked funny trying to take five kids on a camel to Alice Springs."

The glow of the wood-burning stove is the strongest light in the kitchen. Molly hasn't had time to turn on the diesel generator; she's spent the afternoon in the laundry room cranking guest sheets through a wringer.

If Molly's venture took double the work that it does, I think she would find the strength. And that seemed true of everyone I met in the Simpson outback. "I never get tired of looking at this country," she said.

JUST OVER the Tropic of Capricorn, 70 kilometers north of Alice Springs, the Plenty Highway begins its eastward arc across the top of the Simpson. Clay, sand, rocks, even a fleeting one-lane strip of bitumen—this track's surface changes constantly. But, not a problem, the road had recently been graded. Even more startling than the quality of the road was the greenness around it. We had entered a land of rain—as much as eight inches a year. Five hours out of Alice Springs a small white arrow indicated that a right turn and 42 kilometers would bring us to the homestead of Atula Station.

Atula, also called Apiwentye, is owned by Aborigines—Eastern Arrernte, or Aranda, people whose families lived in the area long before it was first taken up as a pastoral lease. The lease was bought for the traditional owners in 1989 by the Aboriginal and Torres Strait Islander Commission.

The managers are Tom and Gaynor Cleary. The property, 60 kilometers wide, follows the Plenty River 125 kilometers into the Simpson. "When we came here," Gaynor said, "I was wondering when we were going to stop driving. All I could see were a few goanna lizards galloping across the road."

When Tom and Gaynor married, it caused "a bit of a nine-day wonder." His mother was Aboriginal, his father white; both Gaynor's parents were white. If there's any wonder today, it's their tenderness toward each other, undulled, perhaps even honed, by

three decades on cattle stations. When I took a botanical walkabout with Tom to learn what was good cattle tucker (bluebush, woolly oats) and what could "kill them on the spot" (spotted emu bush), he bent down to gather some tiny purple flowers. "Gay loves these."

There is a peacefulness to Atula. I sensed it with Gaynor in the evening when we fed an orphaned calf, and when Tom put out bits of meat for the butcher-birds, whose flutelike song drifts through the coolibah trees.

Head stockman Gordon Cavanaugh is Arrernte, and I asked him if it felt different to work on an Aboriginal-owned station. "Yes," he said. "We're with our own people and help one another like family. And we can carry on tribal law and teach the kids." The young men are, in turn, teaching Gordon, who has spent most of his career on horseback, to muster on a motorbike.

Between the highway and the homestead, houses are being erected to make a small community called Akarnina Well, where the station's traditional owners can live. I spent many hours walking with one of them, Mabel Smith, 70-something, who gave me a glimpse into the old Aboriginal ways.

Bush tucker is her preferred diet. Stick with Mabel and you'll never go hungry. She has walked this country since the days when they had "no billycan, only kangaroo water-bag." She knows where to find the bush bananas and wild onions and the best places to hunt kangaroo, emu, and turkey. She uses a long crowbar to dig for goannas and the spiny echidna, a mammal that resembles a hedgehog.

One afternoon, when our clothes were beaded black with flies, Mabel took me to a valley she had known well as a child.

In Aboriginal belief this valley is linked to the perentie, the largest lizard in Australia. During the creation period called the Dreamtime, it is said, the giant perentie ancestor sang the valley's features into existence on a walk through the northern Simpson.

We climbed one of those features, a broad rocky hill. Mabel, barefoot and far in the lead, paused to tell me that these rocks could be

"Something different," is what city-raised Louise Edwards hoped for in her year-long teaching job on Anna Creek. "I didn't know this world existed," says the Adelaide native, taking a break in the stockmen's kitchen. "Sometimes they thought I was a bit weird—and I thought their views on women went back 50 years—but people here accept each other for what they are. It's quiet, but there's always something happening—and we play a lot of canasta."

"My father and my uncle taught me," says Stuart Nunn, who was raised on Anna Creek and follows in his father's footsteps as the station manager. As a teenager he worked musters that lasted months when cattle had to be driven long distances to railheads. Today only a few days are needed to move cattle into strategic pens, from where they are trucked to market in huge multitrailer road trains.

sharpened into knives. Then suddenly she whispered: "Perentie."

Yellow dots on gray skin made the lizard nearly invisible against the rocks. At this cool time of year it should have been resting in the caves to our backs. But on this day it had come out to sun its half-grown body—longer than my leg. Perentie teeth are sharp, but I wasn't worried, knowing Mabel's deftness with a rock. She was holding one but decided to spare the beast. She would wait "until next year, when this perentie is bigger."

CROSSING into southwest Queensland, Medford and I picked up an old stock route that once led drovers to the Birdsville Track. Grilling a gift of beef from Atula as we camped that night, I heard a car pass in the distance and counted it the eighth we'd met that day.

This is the Channel Country, a flatness laced by the braiding channels of the Georgina and Diamantina Rivers that periodically overflow with rains borne from Queensland's northern tropics. Rainfall here is the highest in the Simpson region—11 inches a year on average. Fields of lilac pussytails and golden grasses were witnesses to the wet summer past. So too, as we pushed south, was a road crew, healing the mauled track with heavy machinery. Recent showers were not making their work, or our driving, easier.

The trick to getting through flooded sections of a dirt road is to head straight down the middle, where the earth is most compacted. The boggy ground is to the side. Medford, a seasoned country boy, knew this. Rushing to reach Birdsville before nightfall, he was long down the trail when my truck stuck fast, listed to port, and gurgled.

It was 3:30 in the afternoon. I shoveled mud and hauled buckets of rocks in a hopeless quest for traction. At 4:30 I saw it was time to gather firewood. The closest trees were a half hour's walk away. I was dragging a second load to my campsite, an island of rocks in a soggy field, as the sun smeared the sky with a lingering peach kiss.

It was a beautiful night, and the outback had taught me to carry everything I needed. I was just three hours beyond Boulia, population 300, and only an hour from Bedourie, population 60. Someone would come along and pull me out. No worries.

It happened at 7:30 p.m., sooner than I'd expected, because two young guys driving home to Sydney after a charity road rally wanted to catch a rugby game on the Bedourie pub TV. They had a heavyweight pull strap, but a small car. Close behind came a stronger vehicle driven by a young man reporting to Bedourie for his new job as diesel mechanic for Diamantina Shire. Together they popped my wallowed truck like a champagne cork.

In a thanksgiving at the pub, I was told by the shire's 28-year-old retiring diesel mechanic that I couldn't leave "without meeting the sister," as nurses are called here. "She's been my mother," he said. So, a little later than you normally call on a stranger, I was sitting in Elizabeth Lowson's living room as if she'd been expecting me all day.

This is a second life for Elizabeth, a long way from the Melbourne suburb where she raised her children. Bedourie never had a nurse until she opened a clinic in 1990 under the auspices of the Uniting Church in Australia Frontier Services. "They asked me if I would be willing to look after Bedourie's spiritual health as well," she said, "so people come to me to talk."

What do they talk about? A man is lonely, his wife spending weeks in a city so their child will be born in a hospital with all medical facilities; a husband and wife are fighting physically, their children seeing all, the neighbors concerned. The alcoholics, even if they don't want to talk, take comfort from her presence—expressing alarm when she's overdue from a trip. The isolation seems to give an extra edge to every human hurt. But it also pulls people together, Elizabeth said. "It makes us rely on each other." She smiled: "I haven't been so happy in years."

"ARE THERE REALLY a hundred people living in Birdsville?" I asked cattleman David Brook as we stood in Australia's most famous outback pub. "Well . . . maybe 80," he answered. Most are stockmen and their families—a congenial mix one resident described as "white, black, and brindle." But with a boom in tourism, and the business possibilities it offers, the population may once again reach

Quaffed as "stubbies" or "tinnies," beers at the William Creek pub settle a dusty day of branding for Stuart Nunn, left, and Anna Creek staff. Ringers also come to use the solar-powered phone outside on the Oodnadatta Track. A new wave of outback tourism keeps the hotel-pub afloat.

"Going bush" for the weekend, 6,000 people drive or fly by private plane to the September races in Birdsville, normally home to 80. Mail comes weekly, the grocery truck monthly—16 hours from Adelaide—road conditions permitting. Says hotel publican David Stodart: "Nothing is difficult after you've lived here."

the number proclaimed on the town sign.

How Birdsville became a fashionable destination is unclear, but as many as 40,000 people a year visit this five-block-long island of bitumen, many just to have a drink in the pub. "We used to have time to speak to everyone who came through," said David Brook. "No longer."

If you want rowdy, come in September when 6,000 people drive or fly by private plane from all over Australia for the Birdsville horse races. If you want to enjoy the real outback, come in mid-June, as I did, for the Birdsville Social Club Incorporated Gymkhana. There will be at least two hundred people in town then.

It was a Saturday of horse trials and foot races and another chance for me to do poorly in the ladies' broom throw. At the dinner dance I was reminded, as I studied my "Season's Greetings!" napkin, that "we use all leftovers out here."

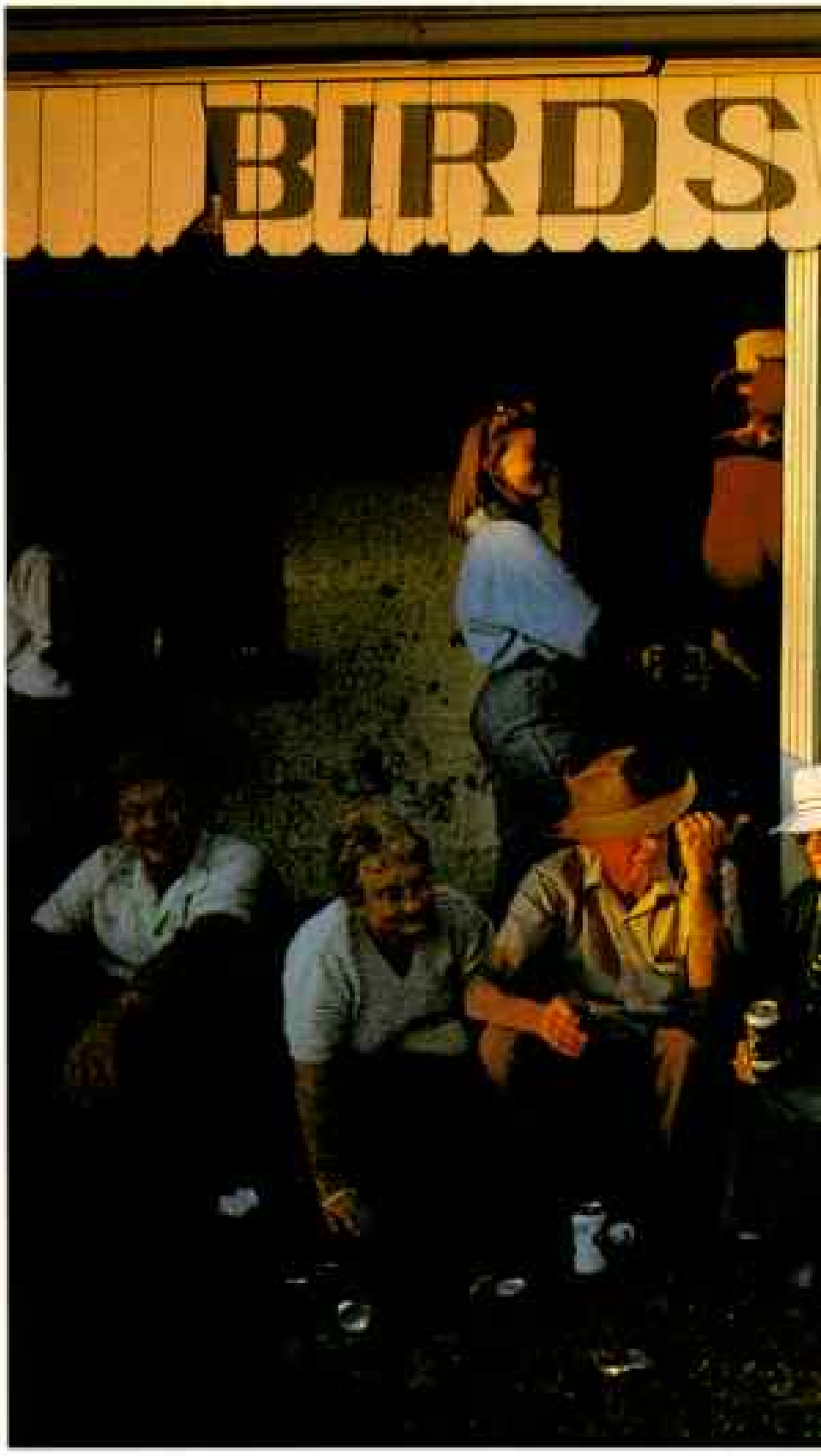
There's a wholesomeness to Birdsville that would have the old cattlemen "dying with one leg in the air"—as people say of a shocking situation. In a week of living in the ten-room hotel—mostly with my door open so that Bono, the orange pub cat, could come and go at his pleasure—I saw the pub lively but never rambunctious.

I saw only one man drunk during the day, and I think he was from Bedourie. It was an afternoon when a cool breeze came through a pub window held ajar by a pool rack, and Sister Anne Maree Jensen, a Catholic nun and pilot who flies Father Chris Schick here to say Mass once a month, was telling me about the 250,000-square-kilometer parish they serve. The overindulged man approached and nodded toward the priest: "Is that guy your husband?" he asked Sister Anne Maree.

"No."

"Why not?"

"Well," she said with great kindness, "it's a complicated story."



One reason for Birdsville's relative decorum is its policeman, Sgt. Bob Goad, who arrived in 1982, locked his gun in a safe, and proceeded to shock people by arresting them for disorderly behavior.

A by-the-books man in his mid-40s, Bob is solely responsible for an 80,000-square-kilometer patrol, much of it in the Simpson. These days his main concern is monitoring road conditions—for the well-being of the tracks as well as the drivers. "It's very hard to convince outsiders that if they use unsuitable roads, they will tear them up. I hate to see the desecration."

Floodwaters that had inundated the Channel Country in February 1991 were still causing problems in the desert. Fifty kilometers west of town, Eyre Creek—which hadn't seen water since 1977—had cut off a line crucial to crossing the Simpson. Surveying the

area by plane, Bob thought he might be able to find a detour. Medford and I joined the expedition.

Riding with Medford was an Aboriginal stockman named George Flash. Blind in one eye and not seeing much out of the other, he warned Medford of every gully.

I rode with town mechanic Peter Barnes, driving wizard and scout. "I reckon it'll be easy," he said as we jolted north between dunes on a route that hadn't been driven since 1983.

As we approached the creek, the landscape grew greener. A perfume of clover and chamomile rose around us. Eyre Creek was not only full, it was running. Even George Flash seemed amazed at the sight. Peter waded thigh deep until he found a bottom he thought we could handle. We all made it across and continued to forge a bypass until we finally hit the main track. The Simpson was open.

Bob had recently accepted a promotion transfer with the Queensland police. "It's one of the hardest things I've ever done," he said at camp that night on a claypan. "I'm missing this country already. Every sand dune I crossed today I thought, I'll never see you again, you bastard."

I FELT WISTFUL MYSELF making the last leg of the journey down the Birdsville Track. There's a sadness to the history of this stretch of country, and the relative ease with which one can now pass through it has a piercing irony.

On the eastern side of the track is the Sturt Stony Desert, a relentless horizon of rocks named for explorer Charles Sturt, the first white man to contemplate "the steel shod

appearance of this desperate region." He was so optimistic he would find a great inland sea that he was carrying a boat. The Channel Country was dry when he arrived in 1845, and it's remarkable that only two members of his party died.

The sun was setting when I pulled into Mungerannie, a 6,000-square-kilometer cattle station owned by Kevin and Mary Oldfield. They also run a roadhouse and offer campsites beside a marsh, where Medford and I cooked over our last open fire. The sounds of the night seemed benign, I thought, knowing of a traveler on the track in 1930 who believed he was listening to birds. "Imagine our consternation," he wrote, "when we found it was not cockatoos but thousands of mosquitoes."

We awoke to true birdsong and a cheery hello from our only neighbors, two young long-haired Melbourne fellows on vacation. They were hauling a trailer solely to carry beer. "We're figuring on 13 cans a day," one said. He meant for each. We saw them later; the weight had bent the trailer hitch.

Mary Oldfield came down from the homestead to fuel up our trucks. Kevin, who also does contract mustering for absentee owners on the track, had been away in his plane for two weeks. Mary and her infant son had been in bed with the flu; her daughter, 11, had been minding the store. Now the boy was scooting again, and Mary had the radiant look of a person who realizes she's not going to die. "This is my first cigarette in 36 hours," she said, "and I'm a heavy smoker."

Unexpectedly, Kevin landed his plane and taxied to the pumps for fuel. After a round of hugs and kisses, I asked Mary how she coped with illness and children and business while Kevin was away. She looked at me with great tolerance and said, "You just keep going. You've got no choice."

It had rained on the southern half of the track, but I drove straight down the middle of each pond. Once we hit the bitumen, everything seemed too rushed. People in passing cars stopped returning my waves. That's when I knew I'd left the outback. But you just keep going. You've got no choice.

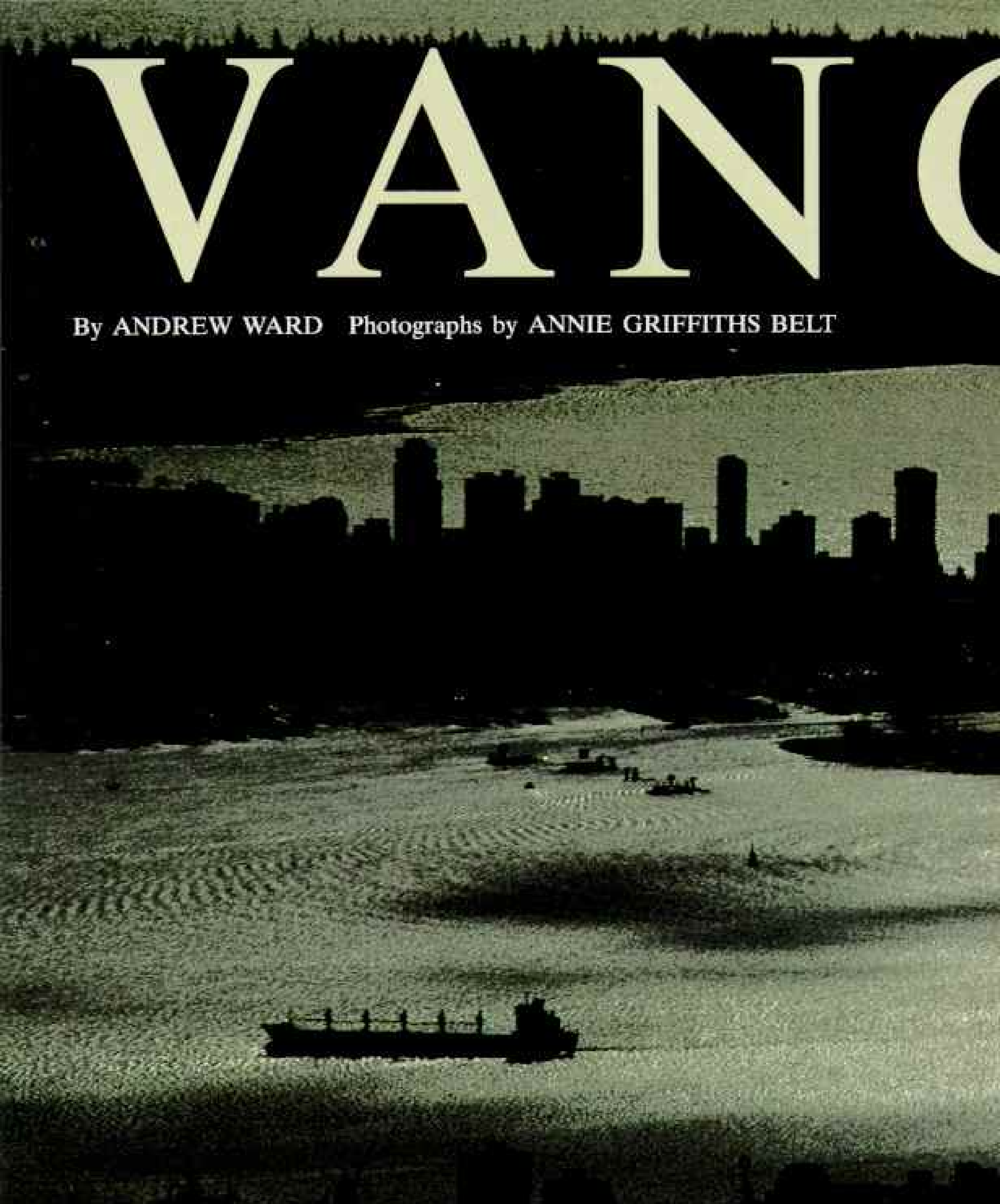
And then I was on a plane, being served impeccably arranged fruit on immaculate white china. I looked at it and laughed, and turned to share my thought with Medford, who looked up and said exactly what I was about to say to him: "No dirt."

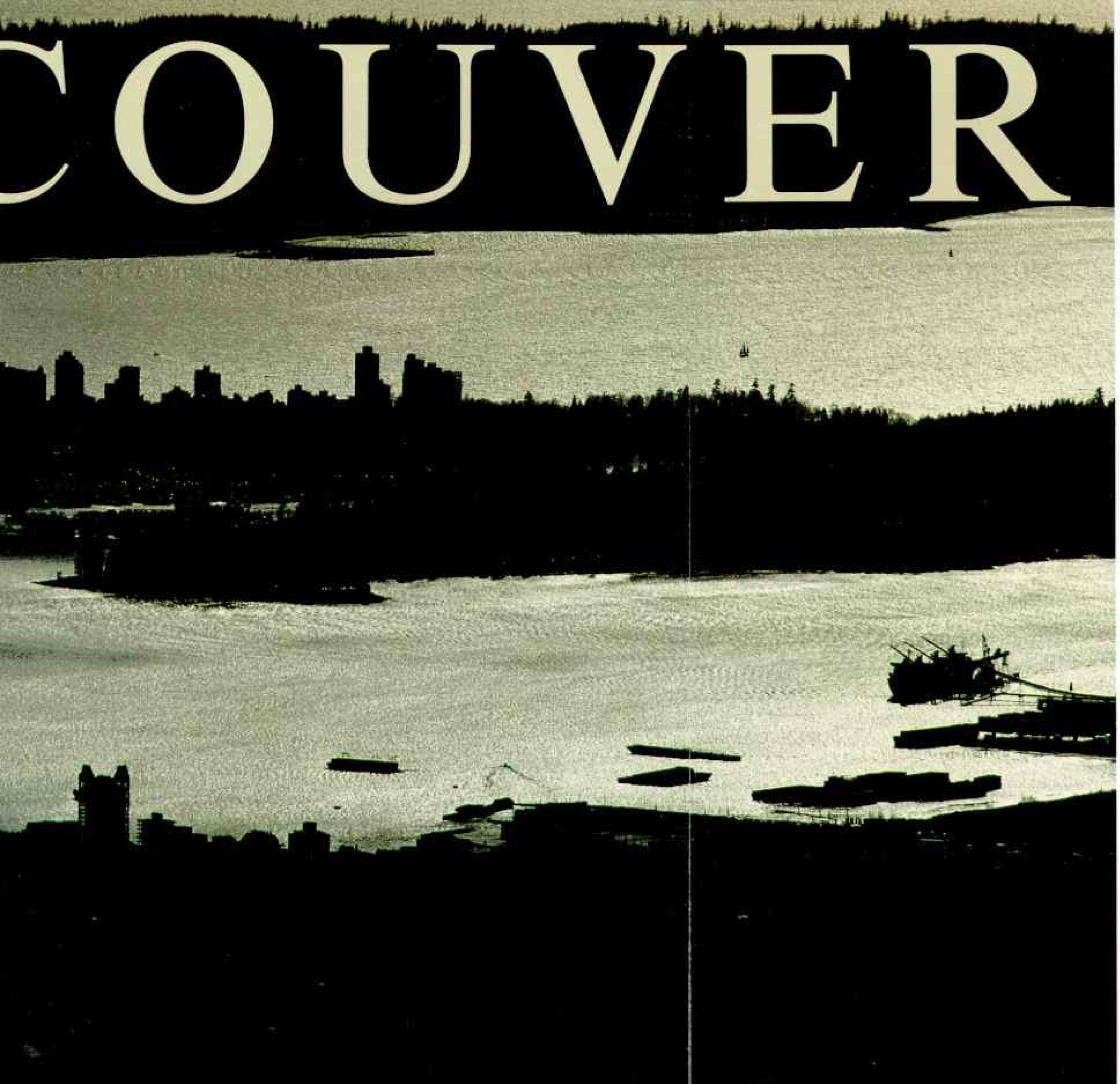
Which is to say, we missed it. □

Another white ribbon for Champion Rider hung in the Anna Creek quarters of head stockman Richard Nunn (above, at right) after the races and stock trials at Marla (opposite). The winter race season is a down-to-earth social whirl in this red country, which, writes one resident, "creeps into your heart through its beauty, and harshness, and challenge."

VANC

By ANDREW WARD Photographs by ANNIE GRIFFITHS BELT





Good Luck City

Beckoning with rugged beauty and relaxed west coast ways, Vancouver has long been a promised land to Canadians. Today the city has new admirers—Pacific Rim investors and a host of prosperous immigrants from Asia. Pretty as always, Vancouver is richer and busier and more exotic than ever.

Underwater attraction, Allua (left) and four other beluga whales charm visitors at the renowned Vancouver Public Aquarium. The whales are natives of Hudson Bay.

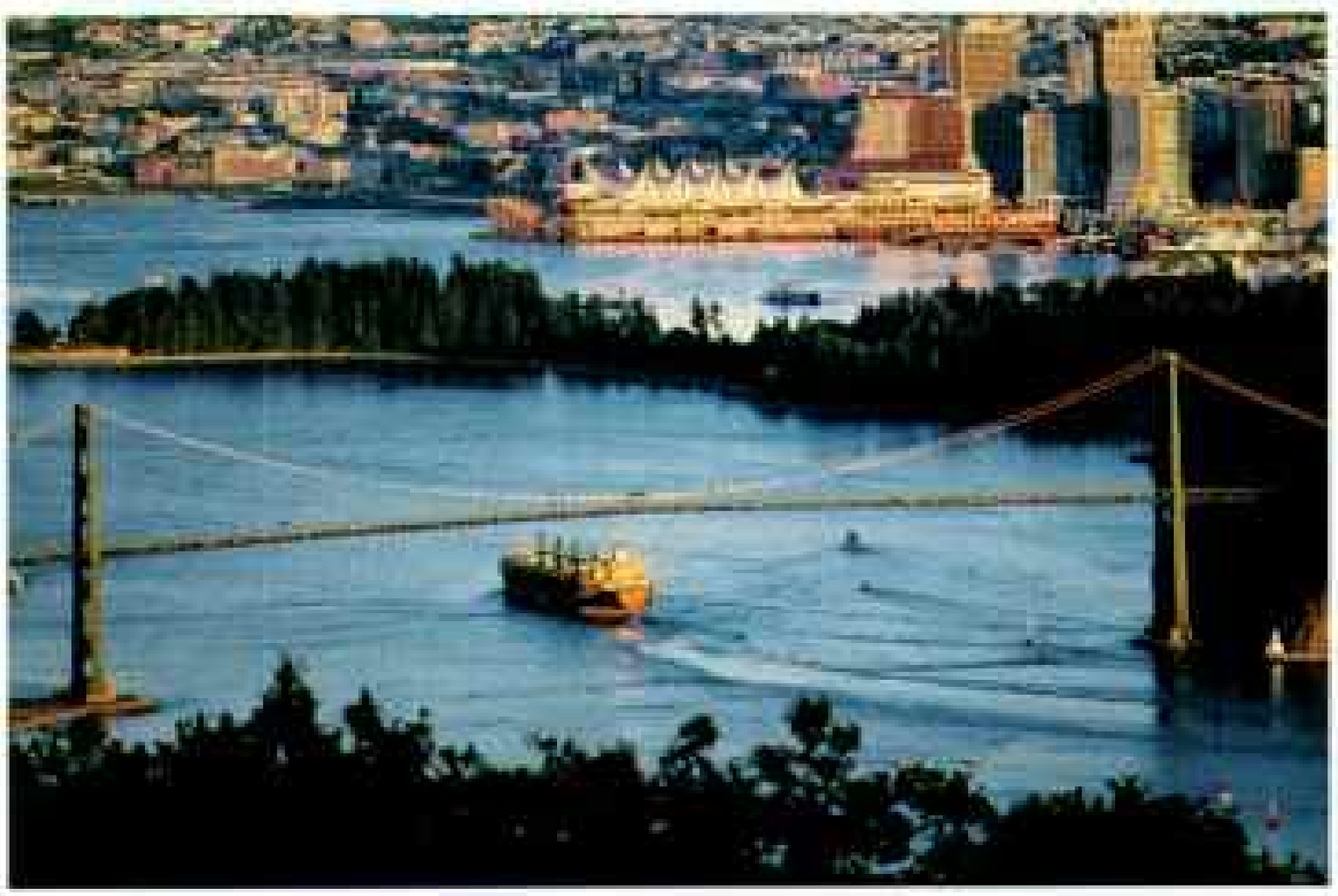
Vancouver's largest ethnic community is rooted in Chinatown, where dancer Eve Seto sits out a rain delay during the Chinese New Year parade.

ABOUT 80 YEARS AGO in British Columbia when Chief Ed Sparrow (right) was a boy, he would listen as the elders of his tribe reminisced about the hunting. They talked about how they used to trek from the Musqueam Indian Reserve at the mouth of the Fraser River through four miles of dense old-growth forest, until the firs and hemlocks that rose hundreds of feet into the Pacific mists opened out onto a small meadow where white-tailed deer gathered to graze.

Today that same route would take you across 31 streets of the city of Vancouver (map, page 102), through the yards and parking lots and over the rooftops of almost a thousand of its houses and shops and office buildings. Beyond the reserve itself the trail would not pass a single survivor of the great trees beneath which Ed Sparrow's ancestors paused to rest as they toted home their prey.

"Used to be a lot of game around here, eh?" Ed told me in the ambiguous interrogative of the Vancouver patois as we sat in the kitchen of his reservation house. "Then all the houses went up, and I don't know where it went."

Vancouver has grown so quickly that its municipal history has only just passed beyond the span of a human lifetime. Look into Ed's eyes, set like rusty nailheads in a face as flat and weathered as a boat-shed door, and you can very nearly see all the way back to the Musqueam canoes that greeted Captain Narvaez in 1791 when he sailed up from Mexico and became the first European to lay eyes on Vancouver's Point Grey.

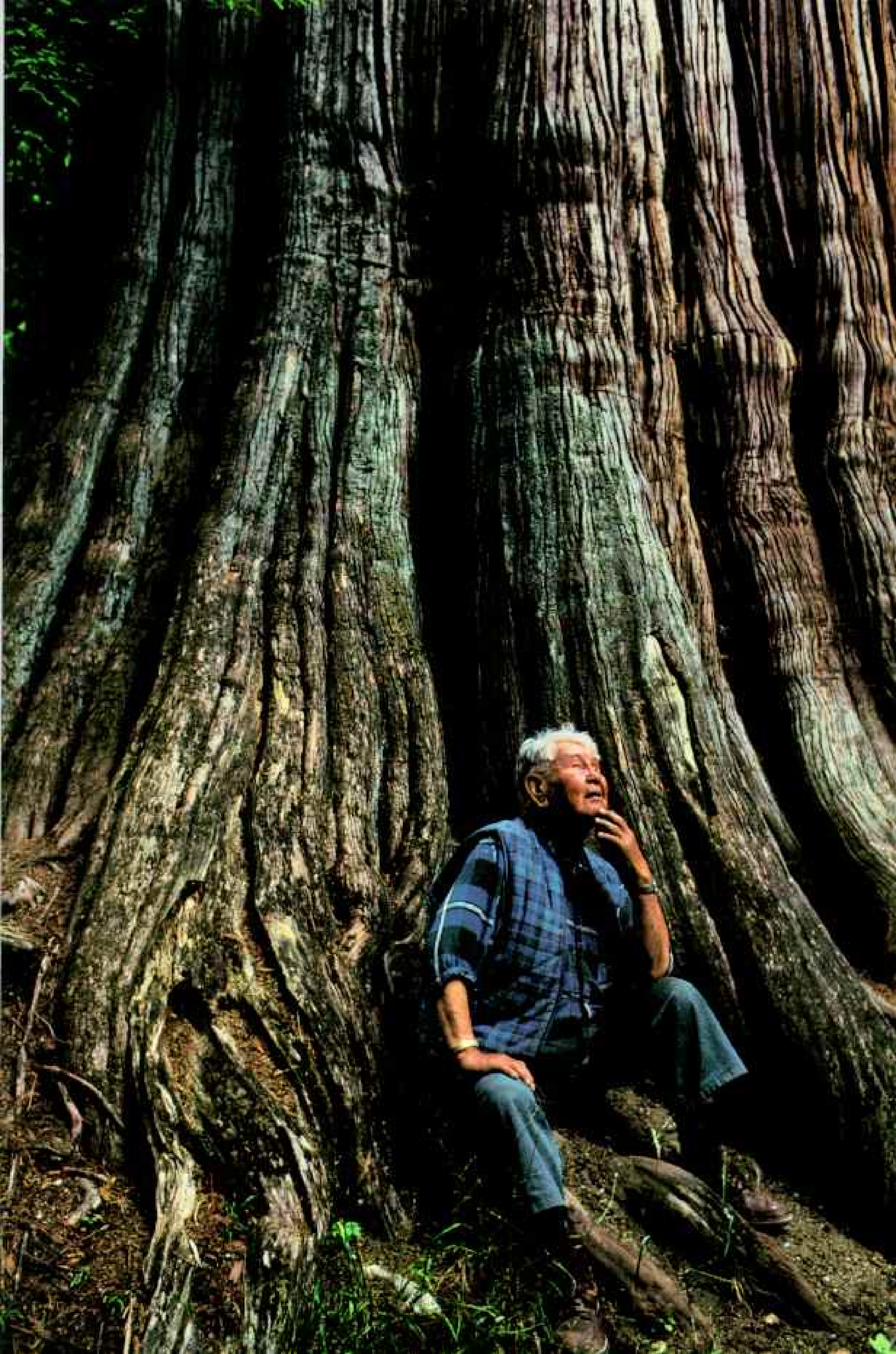


Front door on the Pacific, Vancouver's deepwater port is Canada's busiest. Cruise ships dock beneath the distinctive "sails" of Canada Place, at top.

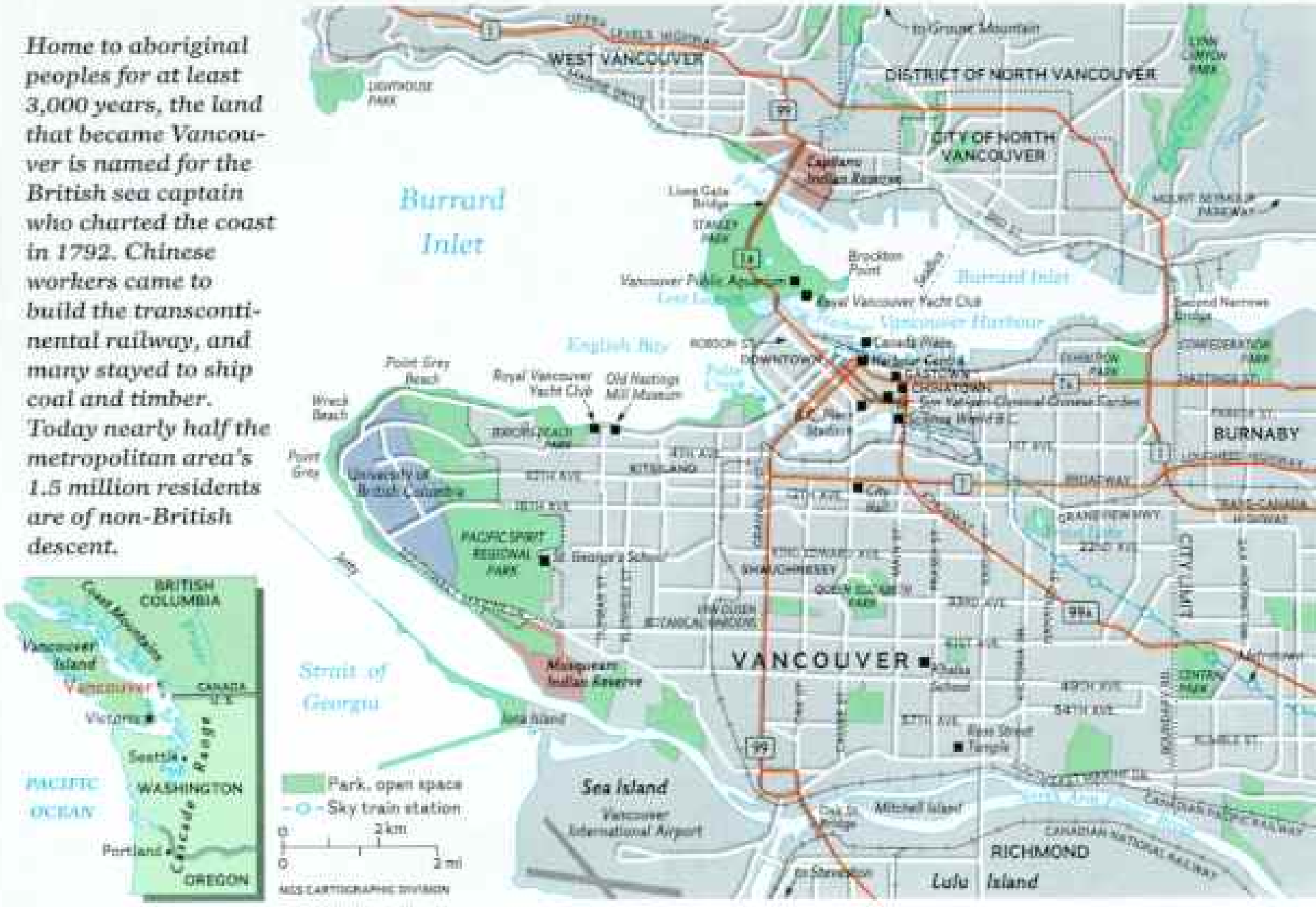
Only 11,000 years ago—the merest geologic twinkling—Vancouver's peninsula rose from below sea level, emerging from its frigid burial beneath a mile of ice. North of the peninsula stretches Burrard Inlet, encompassing both the broad waters of English Bay and the narrow cul-de-sac of Vancouver's splendid inner harbor. To the south the Fraser River disgorges its silt into the Strait of Georgia, at the river's mouth, where the Musqueam lived on the bounty of its waters.

"I had a taste of it, eh?" Ed told me, piling his thick hands on the curve of his cane. "Nothing fancy. We just steamed the mussels in their shells."

Now and again the serenity of Ed's ancestors was interrupted by Kwakiutl and



Home to aboriginal peoples for at least 3,000 years, the land that became Vancouver is named for the British sea captain who charted the coast in 1792. Chinese workers came to build the transcontinental railway, and many stayed to ship coal and timber. Today nearly half the metropolitan area's 1.5 million residents are of non-British descent.



Haida raiders who paddled down the Strait of Georgia in their 50-foot canoes and carried off Musqueam as slaves. But the rest of the time they and the neighboring Tsleilwaututh and Capilano passed the seasons weaving elegant baskets and carving mortuary boxes, worshiping the Great Spirit and taking shelter from the rain in the smoky gloom of the 1,500-foot longhouses they fashioned from the cedars of the vast coastal forest.

Some whites argue that these tribes with their widespread hunting grounds and seasonal camps were too transient to lay claim to what has become Vancouver. But if that is so, ask the Musqueam, then what should they make of European explorers like Capt. George Vancouver himself, who claimed the entire Strait of Georgia without even leaving his ship?

Seattle-based novelist and essayist ANDREW WARD is a featured contributor to the *Washington Post*. This is his first article for the GEOGRAPHIC. In the past 12 years ANNIE GRIFFITHS BELT has photographed numerous stories for the magazine, most recently "Baja California" (December 1989).

The whites who followed Vancouver came in waves of boom and bust. First a few hapless gold prospectors settled along the inlet; then someone saw the forest for the trees. The Hastings Mill set up shop, and mill hands, sailors, and dockworkers assembled in the muddy shanty settlement of Gastown, named in honor of a barrel-chested barkeep named "Gassy Jack" Deighton.

In 1886, the year of Vancouver's incorporation, the town was entirely leveled by a great conflagration that rose from a stump fire like the wrathful ghost of the falling forest. But with a transcontinental railway approaching and markets begging for British Columbia's gargantuan timbers, Vancouver rose so rapidly from its ashes that within a decade it was already known as the "San Francisco of the North," the "Liverpool of the Pacific," an "Occidental pearl set in a silver sea": part melting pot, part fleshpot, with a chronic hankering after respectability.

Within a hundred years the downtown has converged like a cluster of crystals into a dense crown of skyscrapers surmounting a

megalopolis that now nearly reaches the Washington border. And yet, nestled against the slopes of the Coast Mountains and protected from the Pacific by the 280-mile-long bulwark of Vancouver Island, this instant city still sustains a mysterious intimacy in a setting of dramatic magnitude.

On a rare sunny autumn afternoon I decided to walk the tide-lapped perimeter of Stanley Park. Like the icons the tribes once carved of the animals with whose spirits they communed, it is a kind of civic totem, a microcosm of the wilderness Vancouver displaced. Vancouverites ferociously protect their park's spectral groves and tend its coastline so vigilantly that I did not find a speck of litter along the five and a half miles of beach.

Commuting to a hike, wilderness lovers Charles and Doris Clapham routinely hitch a ride on Vancouver's SeaBus, a ferry across Burrard Inlet that links downtown with mountains to the north. "We call this 'green' hiking," says the environmentally conscious Clapham, a retired mathematician who can reach his favorite trail by public transit in about an hour.

"We keep this harbor clean," said Boat Master John Talbot as he steered his launch out one morning from the harbormaster's dock, searching through the drizzling fog for a freighter called the *California Venus*.

Thirty-three years out of Lancashire, England, John is a burly man with thick brown eyebrows and a deadpan delivery.

"Do you still see any wildlife in these waters?" I asked him.

"Oh, sure," said John. "Killer whales true and false, eagles, seals, salmon, ducks. And we pull out the odd cadaver, don't we, Joe?"

Boatman Joe Szafranski nodded. "Well, every now and then some poor fella jumps off the Lions Gate Bridge."

The only job today, Joe assured me, was to seal the discharge valves on a couple of newly arrived freighters. From my hotel room I had seen the freighters anchored in English Bay, tended by tugs like a complacent herd of monstrous cattle. According to Joe's manifest, the *Fuhwo Venture*, the *Dynamic*, and half a dozen other ships were waiting at anchor to enter the inner harbor and load up on their share of the year's 60 million to 70 million metric tons of coal, grain, sulfur, potash, lumber, and other commodities by whose measure Vancouver remains the largest Pacific port in all the Americas.

The *Venus*'s Japanese crew had the giddy look of men pent up too long as I followed Joe down to the engine room, where he sealed the bilge valve with a lead crimp and a string.

"Some of the men get a little goofy after six months at sea," he said as we regained the deck and leaned over the rail to see that there was not the faintest trace of oil in the gush from the ballast valve.

From the inner harbor Vancouver's silhouette is a variegated cliff of skyscrapers, hazy against the clouds that drape the Fraser River. The largest buildings are generally broad in the beam, and none of them exactly soars, not even the ersatz Space Needle atop Harbour Centre. The scalloped roof of Canada Place, a convention center, is intended to evoke the sails of a clipper ship, but on a more typical Vancouver day suggests a circus tent sagging in the rain.

To the rest of the dominion, southern British Columbia is a kind of California, with a climate as temperate as Canada's gets. Despite a closer physical resemblance to San Francisco, Vancouver aspires to a kind of Angeleno glamour. Robson Street, with its cafés, boutiques, couture and hair salons, is Canada's Rodeo Drive, and it seems as though somewhere in Vancouver you can sit down to just about any of the world's cuisines: Cambodian, East African, Hungarian, even American Southwest.

Vancouver may be the raciest of Canada's cities. But just as the strip joints on Granville Street and the prostitutes who ply East Hastings testify to a profligate streak that has persisted since the rough-and-tumble of its pioneer days, the hedged gardens and sturdy mansions of Shaughnessy and the serene promenades of Vancouver's parks express a desire for formality and stability that is as English as the weather. A Tory aesthetic still dominates the cityscape, and such outposts as the Royal Vancouver Yacht Club, delicately lifting its skirts over the site of a Chinese pig farm, attest to the enduring influence of the British Empire.

But among Vancouver's skyscrapers questions of proprietorship have begun to echo as plaintively as the horns of the ships in the harbor. In the short history of the city, Vancouverites have hardly had the time to catch their breath, let alone indulge in a full-fledged identity crisis. But now they wonder not only who they are, but whose.

Vancouver's downtown has been under absentee ownership for its entire existence—first by British and eastern Canadian investors, then by Americans after the Second World War. Until recently, however, the city's Anglo-Saxons could stroll along Hornby and Nelson with a proprietary swagger, reassured by the familiar sounding names of the streets and buildings that Vancouver was their city after all.

Cultural literacy comes easy to second graders at St. George's School, a British-style boys school whose rolls have recently filled with Asian students. Many are from prominent Hong Kong families who would rather move than face 1997, when their city will revert to China. "The families at our school are very success oriented," says headmaster Steve Hutchison. "These boys fit right in."

But today more and more of the signs you see downtown are in Chinese and Japanese. Thousands of investors from Asia are buying not only skyscrapers but also homes, and they are transforming whole neighborhoods with their traditions and magnified wealth.

What is left of old guard Vancouver blusters about these incursions, but apparently the descendants of the very people who built this city—Occidental and Oriental alike—have awakened to discover that they have created a giant they can no longer control: a ravenous beast that has swamped the canoes of the Musqueam in its roiling wake, shaved away the trees, befouled the fog with its breathing, and now crooks its monstrous finger at the Pacific Rim.

Even the most enthusiastic local boosters of the global village sometimes find themselves gazing at the mountains and the bay and entertaining a peculiarly northwestern suspicion that prosperity may be a curse in a region that once offered so many riches that money could not buy.

VANCOUVER REAL ESTATE has become so valuable that much of the working waterfront may be crowded out by development. The Canadian Pacific Railway intends to develop its 82-acre Coal Harbour rail yard east of Stanley Park into 2,250 residential units and more than two million square feet of commercial space.

But even that won't be downtown Vancouver's largest development. On 204 acres—the equivalent of 50 city blocks—along the north shore of False Creek, Hong Kong billionaire Li Ka Shing and his associates envision 12.2 million square feet of residential and commercial space on the site of Expo '86.

For a section of one of the most valuable properties in North America, they paid the province of British Columbia 145 million 1988 Canadian dollars, a bargain even by Canadian standards. By Hong Kong standards, it was a steal.

Combine those relative property values with Hong Kong's anxiety about its reversion to the People's Republic of China in 1997. Add Vancouver's reassuring stability and its evocative resemblance to Hong Kong itself. Bind it all together with Canada's investor-immigrant category that offers fretful Hong Kong capitalists Canadian citizenship after

five years in exchange for a government-approved investment of $250,000 or $350,000 (U. S. $302,890), according to the province. And the result is a recipe for a major influx of Hong Kong Chinese.

Unlike the coolie ancestors of the Chinese Canadians, many of the Hong Kong Chinese are well educated, technologically sophisticated, and conspicuously prosperous. If the available houses aren't grand enough, developers will often extensively remodel them for the Hong Kong market or even raze them and erect among Vancouver's austere little clapboard and stucco cottages châteaus as august as their lots can accommodate.

But ostentation isn't everything, as Mr. Joseph Ip will tell you. A dapper, balding man, Mr. Ip is one of Vancouver's leading masters of *feng shui*, the ancient Chinese art—he would say science—of geomancy, on which building designs must be predicated if they are to attract Hong Kong buyers.

Feng shui, literally "wind and water," ascribes prosperity or woe to the particular *chi*, or cosmic breath, of the space that people occupy, be it a house, office, or entire city.

"Vancouver stands at the meeting of two bodies of water," Mr. Ip told me with pedagogical authority, leaning over a city map. "Makes Vancouver a good-luck city. But only more buildings will ensure prosperity."

I accompanied him on an inspection of a new office in Chinatown that investment consultant Vince Lam, who came to Vancouver from Hong Kong 20 years ago, was having renovated.

"Doorways represent the mouth," Mr. Ip said as we stepped with Mr. Lam out into the hallway. "The mouth should be bigger so it can get more benefit."

Mr. Lam swallowed and called over his engineer, a beefy, chain-smoking Hungarian Canadian named Joe Handja. "Joe? You got that? The door has gotta be bigger."

"No problem," said Joe, giving the heavens a grateful glance.

"And the door must be moved over," Mr. Ip said. "It rests under the beam. That's no good. This is why the previous owner failed in his business."

"Whatever you say," said Joe solicitously. "I can do anything," he told Mr. Lam with a grin. "You know that."

"Yeah," said Mr. Lam, looking pained. "I just don't want to see the invoice."

LOOK FOR THE OLD GUARD in Vancouver, and you're apt to find not idle, aristocratic families that boast generation upon generation of substantial wealth, but people like the Craigs. Doug Craig is a retired advertising man whose grandfather was a butcher and whose nephew, Lloyd, is the president of one of Canada's largest credit unions.

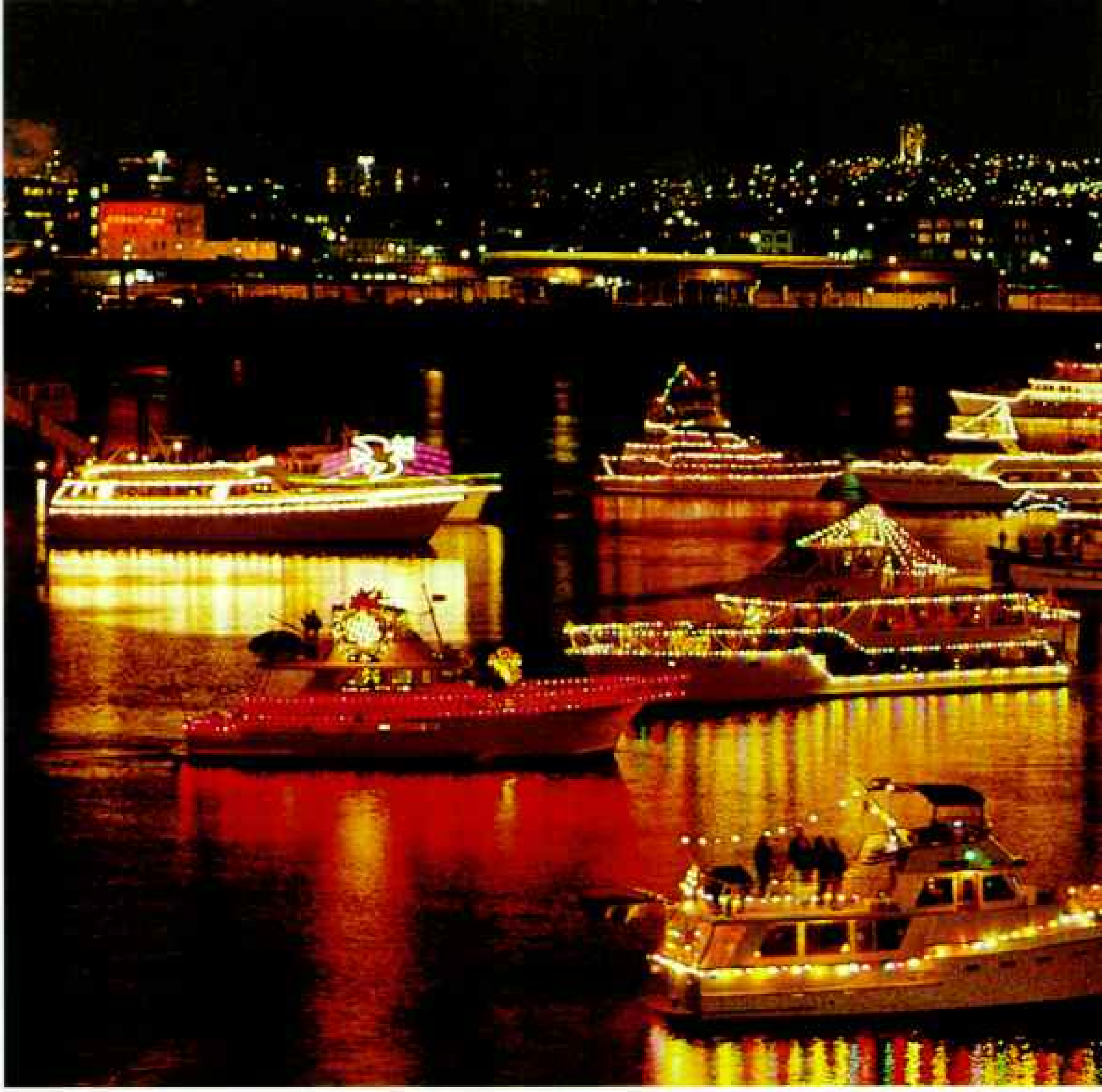
Doug looks back with longing at a Vancouver that was for him like a small town. "We used to be a WASP city," he told me, leaning back in the sofa of his stepmother's parlor. "But today the foreign elements don't mix as well.

"I'm not a racist," Doug hastened to add. "But I'm *aware;* let's put it that way. I'm very aware. The early immigrants were more

The "Asian invasion" is most visible in neighborhoods where modest homes are razed to make way for "monster houses" (below)—the million-dollar mansions favored by some immigrants. Recent demand has nearly doubled home prices and sent taxes through the roof.

Rod Hourston (left) gets along fine with his new neighbors, though they live half the year in Taiwan. "I kind of miss the old neighborhood, kids running back and forth," he says.

"I miss it too," says his son Greg, an airline agent. "No way could I afford a house like the one I grew up in."



docile. They didn't jump ahead in a queue. The new immigrants are a little brassier.

"I belong to a pretty good golf club, and we have a lot of Asians. We also have some who were born here: super people—doctors, lawyers, everything else, most of them quite well to do. They're *members* of the club.

"The new breed, they belong, but they play with each other, and they talk their own language. Consequently they're not *true* members. It's not the same as it once was, let me put it that way," Doug says sadly.

His nephew, Lloyd, an intense, muscular man, demurs. "My personal view is that this city is one of the best cities in the world to live in, and if Canadians and Vancouverites think they're going to keep it to themselves forever, they're crazy. The world is getting smaller. You can't expect this city to remain cute little Vancouver very long.

"I have a 15-year-old and a 17-year-old," Lloyd says proudly, "and in their school there are lots of East Indians and a lot of Orientals. And I swear my kids don't know the difference. One kid from Korea has been in the country for three years, and now he knows English well enough to get on the honor roll."

"Well," says Beth Craig, Doug's stepmother, "if our people were as industrious as they, perhaps we might get somewhere."

The Chinese were among the province's first immigrants, drawn up from California by the Fraser River gold rush of 1858. In the

Festival afloat, the 12-day tour of "carol ships" along Vancouver's waterfront serenades the city with Christmas music. Lights also adorn spherical Science World, adjacent to the 204-acre Expo '86 site recently bought by Hong Kong developer Li Ka Shing and associates. Vancouver's economy has been buoyed by Asian investors.

"Some of our most important clients are Asian," says Maria Leone, owner of a boutique that caters to customers such as Grace Lok (left). The jacket, a Versace made of polished silk, sells for $4,690 (U. S. $4,059).

early 1880s, some 17,000 Chinese peasants arrived, most of them hired to build the transcontinental railway. At least 600 died blasting tunnels and laying track, and many of the survivors straggled into Vancouver and took any jobs they could find.

This influx alarmed local European immigrants. They pressed for legislation limiting not only immigration but also the rights of the immigrants themselves. Nonetheless, so impoverished and war-torn was their native province of Guangdong that thousands of Chinese settled in Vancouver and endured the periodic boycotts and anti-Asian riots that interrupted the city's otherwise narcoleptic history. Gradually, with diligence and patience—they would not get the vote until 1947—the Chinese turned a tidal swamp into the core of what has become one of the largest Chinese communities in North America.

For elderly immigrants from Hong Kong (the oldest was a Portuguese Chinese named Maria Rozario who immigrated in 1990 at the age of a hundred because she had always wanted a place to garden), Vancouver's Chinatown relieves the pangs of homesickness. A stroll along Pender, between Carrall and Gore, is as close to an Asian experience as North America can provide.

Actually, nobody strolls through Chinatown. Making my way among the weekend crowds was more a series of feints and transfixed pirouettes. The immediate refuge from all this bustle is the exquisite Dr. Sun Yat-sen Classical Chinese Garden on Carrall Street. Completed in 1986 at a cost of 5.3 million

Canadian dollars, with both craftsmen and materials imported from China, it is the first garden of its kind in the Western world. It seems almost monochromatic after the dazzle of Chinatown: all contemplative muted greens and stony grays, with water walkways leading from pavilion to pavilion among the gnarled trees and natural rock sculptures that keep the city and the century at bay.

IN THE 1980s the province of British Columbia jumped through hoops to lure restive Hong Kong capitalists to Vancouver. The newspapers were full of stories about an entire condominium project selling out exclusively on the Hong Kong market in three hours; of millionaires who toured the city for 20 minutes, bought ten luxury houses, and flew back to Hong Kong; of workaholic Hong Kong children displacing native Canadian students from the best schools and universities.

As a result, the normally gregarious Hong Kong Chinese became so wary of the media that during my first weeks I had a hard time finding one who would level with me about life in Vancouver. It wasn't until I ducked in out of the rain in neighboring Steveston that I finally stumbled upon my man.

Alfie Chan owns a little suburban eatery called Alfie's Barbecue, where I was the sole customer one blustery afternoon.

"What can I do for you, my friend?" Alfie asked, pushing up his heavy black glasses on his small nose. I ordered a salmon steak, and as it was sputtering on the grill, Alfie leaned out his window for a while, watching two dogs tussling on the sidewalk.

I asked him what it was like moving from Hong Kong to a place where the only spectacle the street afforded was a couple of mutts in the rain.

"Oh, I miss the kind of life like we have in Hong Kong," he said, handing me my plate with a flourish. "You can go out and get a drink, get a meal, go shopping any time of day or night. But in Vancouver," he said, "bedtime is always too early."

Does life in Vancouver take a lot of getting used to?

"Yeah," he said, "but more for the rich older people. Back in Hong Kong they had servants. Here they don't have anyone to help out. I got a neighbor—first time he had to wash his car he drove it into his garage and closed the door so nobody would see him.

"First time I had to mop my own floor, there were tears in my eyes," he said with a laugh.

"Well," I said trepidatiously, "I guess a lot of people assume all of you are—"

"Millionaires?" Alfie cut in, sitting behind the counter. "Well, the truth is complicated. Some of us are millionaires. People see us put

Spires of snow rise from the slopes in March, when the ski areas above Vancouver resort to sculpture contests, races, fireworks—anything to prolong the ski season. One highlight of Grouse Mountain's Spring Carnival is the Slush Cup, in which ski jumpers try to clear a 40-foot-wide pond of slush; only one in 20 succeeds. "It's even colder than it sounds," says an organizer. "I wouldn't do it, personally."

Free-spirited Vancouver spends 15 percent less time at work than the average Canadian city. "Look around and you'll see why," says artist Rose Ann Janzen, who prefers to paint her nude subjects at Wreck Beach (below), the city's popular "clothing optional" beach. Thirty minutes from downtown, snowboarder Kevin Wood (left) soars through the air on Mount Seymour.

down a lot of cash for a house, they figure we're all rich. But for a lot of us there isn't much left over."

Was that the way it was with him?

"Yeah. I bought a house, bought this business. I got nothing left over. I got to work. My wife got to work. I made ten times more money in Hong Kong than I make now."

Then why did he come to Vancouver?

"Nineteen ninety-seven," he said, tapping the ash off his cigarette. "For myself I would stay there. But I'm not going to gamble with my kids. My oldest son is nine years old now. How would I feel if instead of his asking me what college he was going to, he was telling me that he was going to have to join the Chinese Army?" Alfie shook his head.

"I'm almost 40, and sometimes I wonder if maybe I made a mistake. I told my son maybe we should go back. My son"—Alfie rolled his eyes in imitation—"say, 'Why?'

" 'Because here it is white man's country,' I tell him. 'In Hong Kong it is my country.' And then he say a very penetrating thing. He say, 'Why we come here in the first place?'

"You see, my sons want to stay here. They like the sports. They like the school, which is easier here than Hong Kong. They like the beauty of the open spaces. And now my wife's whole family is here.

"So if I go back," Alfie said with a sigh, "I go back by myself."

As I departed, even the dogs had left the street, and Alfie gave me a wan wave through his rain-streaked window.

LINDA SAUNDERS is head of the English as a Second Language program at Eric Hamber Secondary School on the west side of Vancouver. An exile from Vietnam-era America, Linda has seen Vancouver change. In ten years Hamber has gone from being primarily Caucasian to primarily Chinese.

"Forty-five percent of the children in Vancouver speak another language at home," Linda told me as her first class of the day filed in.

A kind of ambivalent homesickness permeated each of Linda's classes of newly arrived

Chinese students. "Some of their fathers are what we call 'astronauts,'" Linda tells me. "They buy a house to establish residency, bring the children here, then return to Hong Kong or Taiwan, sometimes leaving an older sibling in charge. The amazing thing is how well most of the children bring it off. But it puts terrible, terrible pressure on them."

Not that those whose parents stay with them in Vancouver aren't also under the gun.

"My conferences are often about how they don't feel their children are progressing fast enough," Linda said. "How can they get them to work harder? That sort of thing. I try to encourage them to be supportive and patient. These kids are contending with so much. And all at a time when life is hard enough just being an adolescent."

Linda's students save their truest feelings for their writing. She showed me a sheaf of essays her class had written on life in Canada:

"Canadians are helpful but not very smart. Canada would be a perfect place if Canadians could do everything faster because they are really very slow."

"Canada is beautiful and people are kind, but money is most important. . . . Canada would be perfect if everybody used 24 hours a day to work. Because if everybody just work eight hours a day and used time for enjoyment that would be wasting your money."

"When you live in Canada, you . . . would think freedom and peaceful living are more important than just making money."

Waterlogged half the year, Vancouver gets 45 days of fog, 168 days of rain, and 80 days without measurable sunshine—mostly between October and March. "At least we don't have to shovel it," quips a member of the city's lifeguard crew.

"When the sun shines, business goes to the ballpark," says Al Kilburn (left), cellular phone company executive and fan of the minor-league Vancouver Canadians. He even sits with his chief competitors. "Vancouver does business in a pretty laid-back way," he explains. "It drives 'em crazy in Ontario."

SOMETHING OBVIOUS I had never understood about havens like Vancouver is that they are filled with people who need one. Vancouver has been so remote from the rest of the world's tribulations that driving through its quiet little neighborhoods, you might assume that everyone there has lived quiet little lives.

But in Vancouver's row houses and bungalows I kept inadvertently meeting refugees from the most terrible perils of the 20th century. There was Michael Tatarniuk, an elderly Ukrainian nationalist, who barely escaped execution by the Gestapo only to be hounded out of his country by the Stalinists. Now he is a retired pharmaceuticals clerk studying history in a small home full of Ukrainian bric-a-brac.

There was Anna Terrana, who as a child survived the bombing of Turin during World War II and is now the executive director of the Italian Cultural Center on Grandview Highway. There was Demos Nicolas, who fled the Greek civil war, arrived in the winter shivering and penniless in a summer-weight suit, and ended up running his own restaurant. And I suppose I should include Eckehart Priebe, a German Messerschmitt pilot shot down over England, who moved to Vancouver in appreciation of his humane treatment as a prisoner of war in Canada.

Along these tidy streets live Jews who survived the Holocaust, Vietnamese who braved the currents and sharks of the South China Sea to escape their homeland, Chinese who trekked through the mountains to Hong Kong to escape the Red Guards. And all of them, it seemed, were convinced that no one else in this sheltered city could possibly understand what they had been through.

In a nation that officially encourages its immigrants to sustain their individual cultures, Vancouver's immigrant groups have sometimes had a hard time leaving their homeland's strife behind them.

The Chinese community, for example, was torn between the emperor and Sun Yat-sen (who twice came to Vancouver to raise funds) and later between Chiang and Mao. The German community was swayed by the same winds that blew through Europe in the 1930s and '40s, and for years the Russian community was divided among the liberals, tsarists, and communists.

Perhaps because Sikh separatism in Punjab is so recent, Vancouver's Sikhs have had the most difficulty distancing themselves from their home country's troubles. The first Sikhs came to log Canadian forests in 1904, and within four years their population reached 5,000. Today a full-fledged Punjabi market thrives on Main Street, and there are five major temples in the area. In the wake of the Indian government's attack on Sikhdom's Golden Temple in Amritsar in 1984, the community was shaken by furious demonstrations, assaults, even an attempted assassination.

At the height of the turmoil Ujjal Dosanjh, a moderate Sikh lawyer who has since been elected to the provincial assembly, was beaten with an iron bar. But five years later he believes that the community, like the 80 stitches he received for his trouble, can heal.

"Back then I wouldn't have believed it was possible," he told me as we drove to temple one Sunday morning. "But I think people have come to understand that fighting over Punjab in Vancouver can have no positive effect there, only a negative effect here."

Vancouver's dark side lurks east of City Hall, in Canada's poorest neighborhood. "It's bloody tragic out here," says John Turvey (above), director of the Downtown Eastside Youth Activities Society, which helps young people like this Indian couple (facing page) stay out of trouble. Turvey also launched Canada's first needle exchange, which allows addicts to swap dirty syringes for clean. Funded by the city, the program has nearly eliminated needle-spread infections.

Ujjal and I pulled up in front of the Ross Street Temple, an onion-domed Vancouver landmark. As we left our shoes in a plywood hive, I read a sign outside the inner sanctum that forbade circulating propaganda and "creating tension and disturbance in the congregation."

Women wearing *salwar* sat to the left with the children, and on the right of the aisle we joined the men, many elderly sirdars in beards and turbans and saffron scarves rocking slightly to the hymns of the imported temple singers with their pump organ and *tabla* (drums).

The congregation was so peaceable, everyone nodding sweetly to one another at the singers' epigrams, that as Ujjal and I departed it seemed to me that Punjab's passions might not last any longer here than the Indian tiles by the doorway that are peeling away in the Vancouver drizzle.

It kept striking me that if you published a guidebook to the places of worship and celebration in Vancouver and immigrants began to visit one another's churches and temples and community centers, they might be surprised to find the same thread running through their prayers and songs. Homesickness is a part of it, but something more seems to resonate.

"Do you feel at home in Vancouver?" I asked almost every immigrant I met, and five of them answered me in almost precisely the same way. They each recalled returning to their old countries to search for the ancestral homes that still cradle their dreams, hoping to uncover, after the pain of assimilation, some reinforcement of their besieged identities.

But in the old country everything had changed. They felt crowded, disoriented; even the food tasted wrong. And it wasn't until their planes were bringing them back, and through their porthole windows they glimpsed the mountains and the bay, that they finally understood that Vancouver was, after all, their one true home.

THE SMOKE among the sunken tables at the Quilicum West Coast Indian Restaurant on Davie Street is more tobacco than alder wood. But the ambience is otherwise pure longhouse, with log posts and the throb of tribal drums and chants playing over speakers hidden in the ceiling's gloom.

Here I dined on barbecued oysters and caribou stew with Len George, son of the late actor Chief Dan George (of *Little Big Man* fame) and by marriage a great-grandnephew of Gassy Jack Deighton.

Len is chief councillor of the Tsleilwaututh tribe, the "people of the inlet" now officially known as the Burrard Indian Band. I had hoped he would close the circle for me, somehow connect what's been lost in Vancouver to what's been gained.

Len is an imposing man with long graying braids and a benign, lunar face. I told him about the communities I'd visited and wondered again at how instantaneously the city had annihilated his people's world.

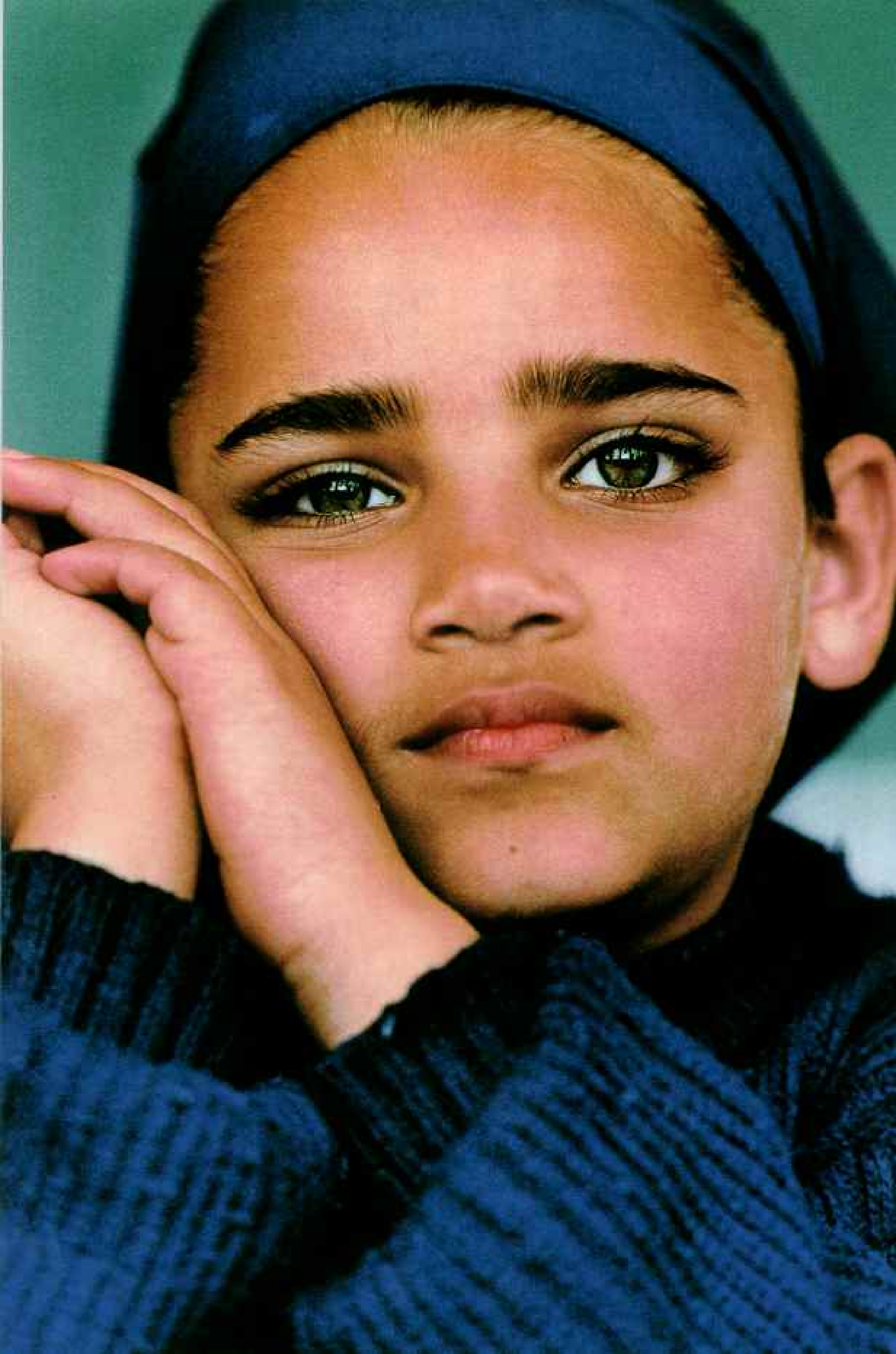
Speaking in a high, husky voice all the more commanding for its soft-spokenness, Len gently reproached me. As far as he was concerned, the same system that displaced the Musqueam and the Tsleilwaututh has been chasing people off their land all over the world.

"The Ukrainians went through the same thing," he said. "And the Irish are still fighting land claims that go back a lot further than ours.

"What's really been lost," he continued, folding his arms on the table, "is our relationship with nature, the Great Spirit, whatever you want to call it."

Len slowly shook his head. "God, the Great Spirit, has never gone anywhere. He spoke to us through the wind, through the water, through the animals. The places

Songs and stories fill the classroom of Hardyal Singh Bains (above), a former college professor who retired from India's Punjab to Vancouver, where more than 50,000 Sikhs make their home. He answered the call to teach language, religion, and music at the Khalsa School, the first Sikh school in North America. First grader Amandeep Kaur Mann (right) is one of his prize students.



where we got our spiritual values—they're all still there."

But how do you sustain such a relationship in the middle of Vancouver's financial district?

"By becoming what I call hunters of the city," Len replied, "just as we were once hunters of the forest. A hunter never went out unprepared. He cleansed himself first, and he made offerings to his prey, promised to put something back into the earth. We fed our children and our families, and what we had left over we shared with our neighbors, expecting nothing in return.

"The economic philosophy of that was that the more you gave out, the more you got back," he said, setting his large hands by his plate. "We have to approach the city with the same kind of respect.

"The hunt is still there."

Chastened, but still doubtful, I took another walk along the seawall at Stanley Park near Lions Gate Bridge. What the financiers of east Asia are accused of planning for Vancouver can be no worse than what Vancouver

Going with the flow, a longshoreman leaps onto a mountain of barley being pumped aboard a cargo ship in the Port of Vancouver, which adds more than half a billion dollars to the local economy each year. His job: to spread the grain evenly so it won't shift on the high seas. A huge increase in Pacific Rim trade has this port, like the city, scrambling to keep up.

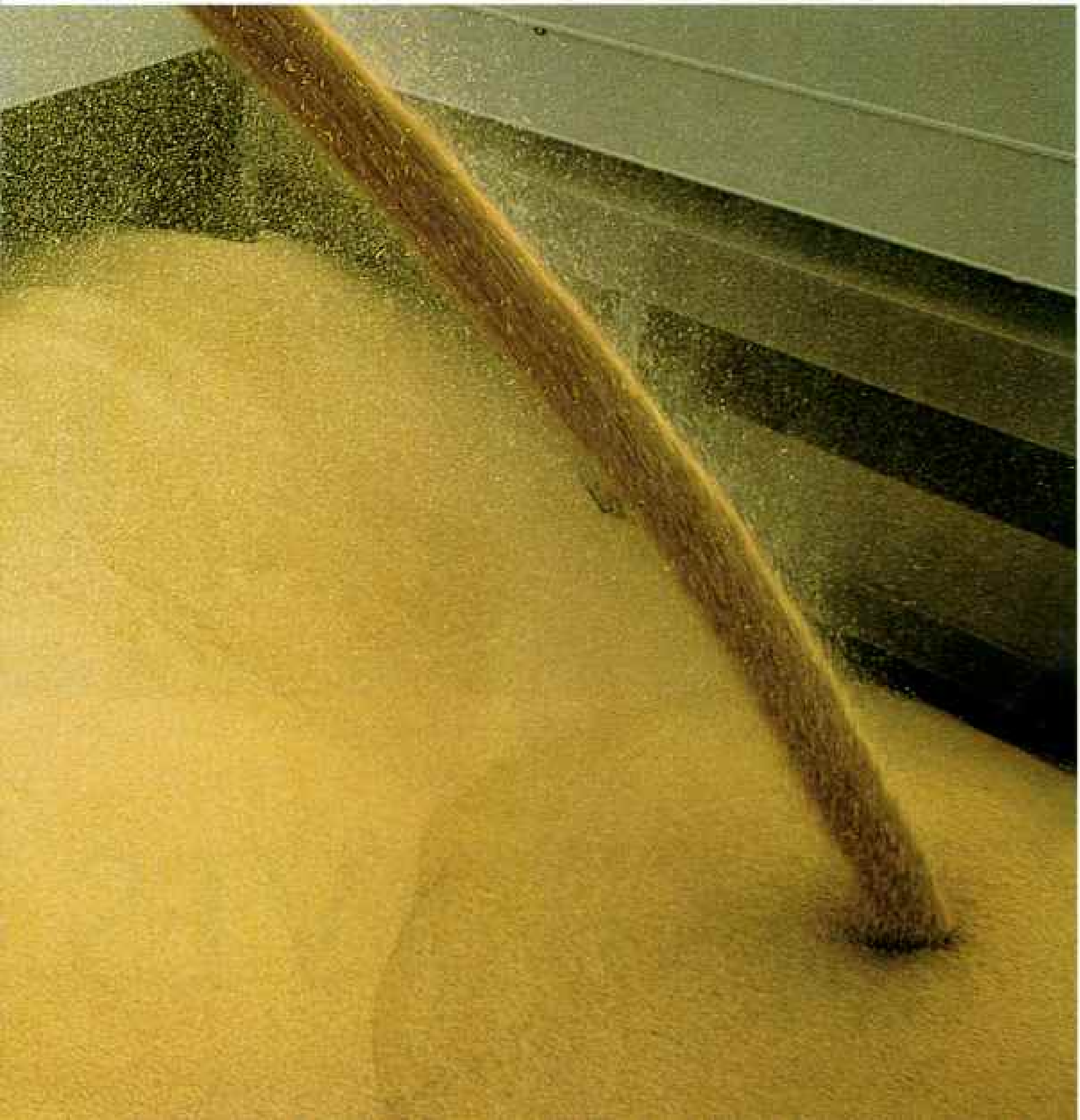
did to the forest and the Indians. But if the Hong Kong Chinese are going to be in charge for a while, will they, like Mr. Ip, continue to believe that "only more buildings will ensure prosperity"? Or will they be more like the sons of Alfie Chan, who cherish the gardens and tides and summits?

The sun appeared out of the clouds, almost as inexplicable after weeks of rain as a diamond emerging from a puddle. Its splayed beams glanced along the gunmetal ceiling, and the downtown's mirrored skyscrapers seemed to jubilate.

Like the English, Vancouverites emerged into their park, folding their umbrellas, toweling their bench seats dry with their handkerchiefs, unfastening their collars, removing their hats. On a rise by the playing field at Brockton Point a bearded man pulled off his suit jacket and brought forth from a satchel a bright blue bagpipe.

I sat at the water's edge and listened to the piper's skirl behind me. His song gave me the usual Celtic tribal chills up my spine, and I realized that even if all the Greeks and Italians and Chinese and Sikhs and Germans and Anglo-Saxons of Vancouver still lived in their homelands, their old songs would fill them with the same persistent longing.

Because, just as Len George said, it's not merely the old country those songs evoke, nor even the Old World. It is the natural world from which we all spring and whose spirit still hovers in the mists of English Bay. □



They seem the picture of health, these lionesses hunting in an extinct volcano.

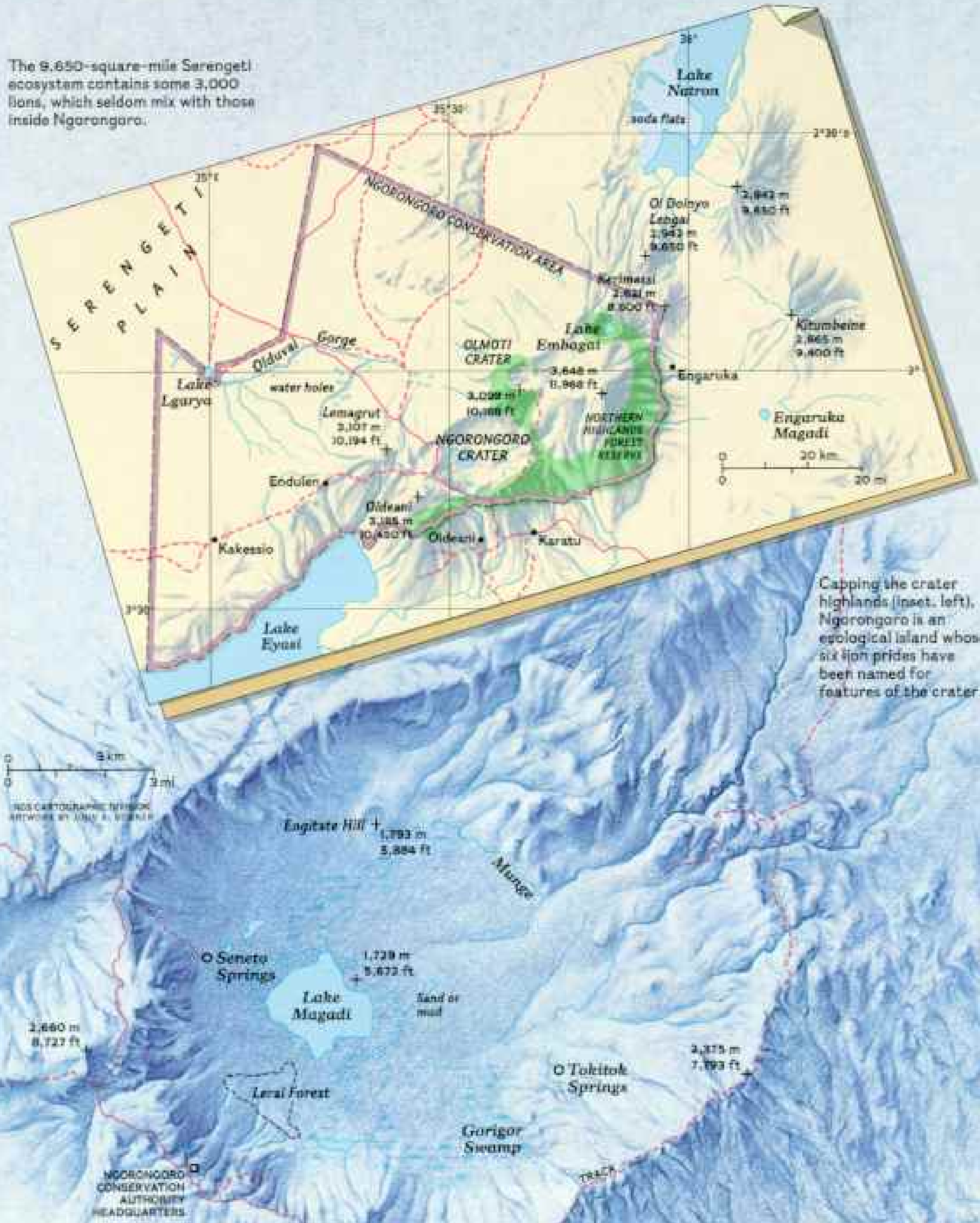
CAPTIVES

But cut off within its walls, they are threatened by an unseen foe—inbreeding.

IN THE WILD

Article and
photographs by
CRAIG PACKER

The 9,650-square-mile Serengeti ecosystem contains some 3,000 lions, which seldom mix with those inside Ngorongoro.



Capping the crater highlands (inset, left), Ngorongoro is an ecological island whose six lion prides have been named for features of the crater.

Ngorongoro Crater

Natural isolation chamber, this 2,000-foot-deep Tanzanian caldera concentrates prey. Thus its hundred-square-mile floor is ideal for lions and harbors about a hundred. But the lions have become marooned. The author and his colleague and wife, Anne Pusey, trace the population's recent history and its genetic diversity.

IT WAS only midmorning, but the January sun was so intense that the six lions had already melted for the day. Stretched out on the short grass, they looked like flood victims. Suddenly an impressive black mane appeared out of the yellow wreckage, but the lion was facing the wrong direction. We wanted to photograph his face before he collapsed back into a deep sleep.

I craned out the window of the Land Rover, pointed my camera, and whispered to my colleague and wife, Anne Pusey, "Quick—make a noise." She cupped her hands and bleated like a wildebeest calf.

The male looked hungrily toward her and gave me his profile. "Got it!" The photograph provided us with our first clue to a scientific mystery that would take us ten years to solve.

Ngorongoro Crater, one of the world's largest calderas, lies at the eastern edge of Tanzania's Serengeti Plain. The crater floor, while providing a life of plenty for the most densely packed lion population in Africa, is really only a small island of lion habitat. Anne and I suspected that the well-fed appearance of the lions might conceal the genetic vulnerabilities of a small population subjected to repeated inbreeding.

Close inbreeding can cause a significant reduction in reproduction and infant survival. A major goal for people who manage captive-breeding programs is to minimize the incidence of inbreeding within their study areas. Many wild populations of large vertebrates are also at risk, because they have become isolated as a result of habitat fragmentation. Here was a population that appeared to be naturally isolated, so it could provide important insights into the long-term consequences of inbreeding.

But what was the precise history of the crater lions? To answer this question, we needed to construct their family tree over at least five generations. We would have to track down every lion that had lived in the crater for the past quarter century.

On our first day in the crater, in January 1979, Anne and I were armed with a set of lion identification cards from an earlier pair of researchers, Jeannette Hanby and husband David Bygott. They had carefully cataloged and named each lion they saw on the crater floor from 1975 to 1978. Each ID card consisted of a series of closeup photographs on one side and a stylized drawing of the lion's face on the other; the drawing emphasized markings on the individual's face, including scars, ear notches, and the whisker spots on either side of its muzzle.

Whisker spots are less conspicuous than other markings, but they are the Morse code of lion identification, a permanent signature on each individual as unique as a fingerprint. Notches and scars accumulate with age, but whisker spots never change and are distinct in even the smallest cubs.

Although identifying drowsy lions is often tedious, individual recognition is essential for unraveling the life history of any animal. Lions live in complex social groups—prides—and lead complex social lives. A lion pride usually consists of about six adult females, their dependent offspring, and a "coalition" of two or more adult males. At maturity, daughters either stay with their mothers or form a new pride nearby; sons form coalitions that disperse to neighboring prides. Males compete intensely—even fatally—against other coalitions to gain mating rights in a pride and are rarely able to withstand challengers for more than two years. Consequently, although females may live 17 years, males are lucky to live 12.

THE CRATER HIGHLANDS of northern Tanzania make a dramatic impression on even the most jaded traveler. Ngorongoro is more than ten miles across and 5,000 feet from the floor to the tops of nearby peaks. To drive into the crater, visitors must descend a rocky track that drops 2,000 feet in about two miles. Halfway down, sprawling constellations of black stars scattered across the plains below finally become recognizable as wildebeests and zebras, the principal species in a remarkably high density of large herbivores.

A RESEARCH PROJECT SUPPORTED IN PART BY YOUR SOCIETY

Our intense interest in the crater lions derives from this geography. Although a number of game trails run in and out of the crater and the lions sometimes do scale the heights, to leave the crater for significant periods would be to leave the largest larder in Africa. Other parts of Africa may boast larger herds of prey, but those regions lie within ecosystems where animal migrations impose an annual routine of feast or famine on the lions. In contrast, the rich volcanic soil, moderate rainfall, and seasonal flooding in the crater allow grazers to remain resident year-round. As a result, the hundred-square-mile area supports the highest density of large carnivores in Africa. However, even though the crater lions are densely packed, the breeding population is in fact rather

CRAIG PACKER, an associate professor of biology at the University of Minnesota, has studied East Africa's lions since 1978. This is his first article for the magazine.

small. Nearly a hundred lions live on the crater floor, but only about 30 of these are adults.

When we took over from the Bygotts in 1979, we had two reasons to believe that the crater lions were inbred. First, records indicated that no new lions had entered the crater in the previous four years. Second, and even more important, was a report suggesting that the number of crater lions—and therefore the genetic richness of the group—had been devastated by a plague of biting flies in 1962.

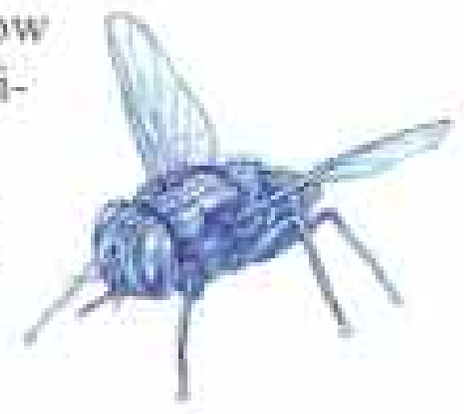
During 1961 and 1962, according to Henry Fosbrooke, then conservator of the Ngorongoro Conservation Area, exceptionally heavy rains permitted the biting fly *Stomoxys calcitrans* (inset) to breed constantly for more than six months. By May 1962 the crater had switched from heaven to hell for the lions. Most lions became emaciated and covered with festering sores. Many sought shelter by climbing trees or hiding in hyena burrows, and eventually they became so ill they were no longer able to hunt. By the time the rains finally abated, Fosbrooke estimated that the population of at least 70 lions had been reduced to about ten.

But what happened next? Had a large number of unrelated immigrants resettled the crater, or were today's lions all descended from Fosbrooke's few survivors? With such a small number of ancestors, the population might indeed be seriously inbred. How could we link those earlier records with our own? The biting fly plague occurred so long ago it seemed impossible to trace the current population back that far.

In 1970 a Canadian scientist, John Elliott, had begun a three-year study of the crater population. He reported that lion numbers had recovered to their former level by 1972 and that the lions were distributed in three prides. However, none of the five prides identified by the Bygotts in 1975 were clearly descended from Elliott's three prides.

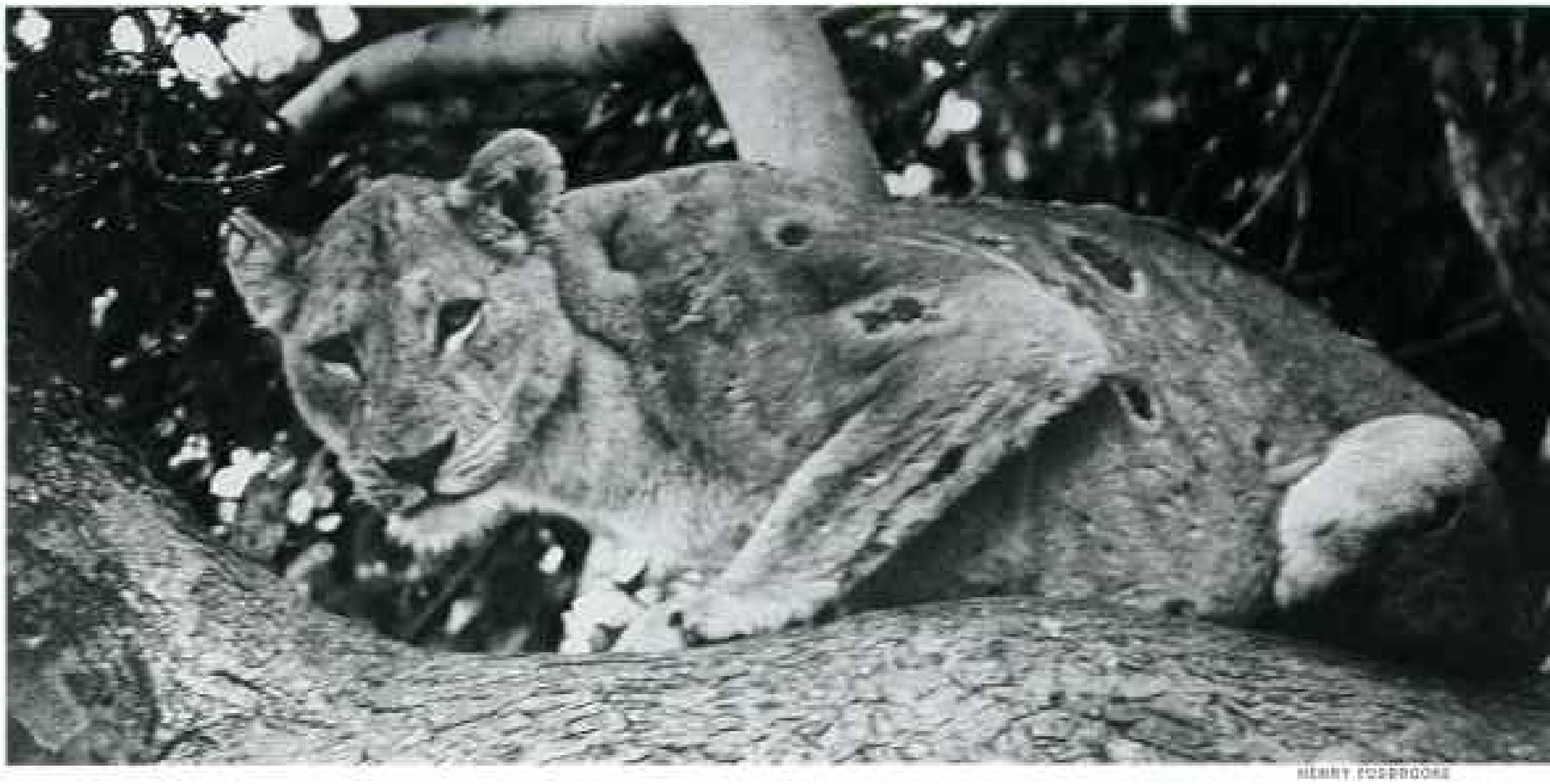
The Bygotts had sent photographs of whisker spots to Elliott, but he was unable to recognize any of their animals because his records were based on the blotches on the lions' noses. Unfortunately, nose blotches change with age, and distinctive blotches in Elliott's era had become obscure three years later.

We were stymied. However, by 1985 our studies led us to conclude that the crater lions really were isolated: Every lion in the population had been born on the crater floor. Transient males might show up for short periods but were soon evicted by large coalitions of crater-born males.



STOMOXYS CALCITRANS (TOP), TWO AND A HALF TIMES LIFE-SIZE

Leveler of lions, bloodsucking flies torment males during a relatively minor 1990 outbreak. In 1962 heavy rains made the fly population explode—a catastrophe for the lions.



HENRY FOSBROOKE

Sore-ridden 1962 fly victims fled to the trees in desperate attempts to escape their tormentors. The besieged lions died by the score; a population of 70 was reduced to a handful.

In addition, the level of inbreeding in the crater had been raised by the unusual success of a single coalition of six males. These males controlled virtually the entire crater floor for eight years, from 1976 to 1984, and hence fathered most cubs in the population. Consequently, sons of these males dispersed to new prides composed largely of their own sisters and cousins.

In 1984 we invited Steve O'Brien at the National Cancer Institute and his colleagues from Washington's National Zoo to conduct genetic studies of the crater lions. Because of his research on feline leukemia O'Brien had surveyed the genetics of several different cat species. In the course of these surveys he discovered that cheetahs from all over the world are nearly identical in their genetic composition. Such a low level of genetic diversity probably results from an extensive history of extreme inbreeding.

We assessed the genetics and reproductive physiology of the crater lions by comparing them with the nearby Serengeti lions. Our long-term studies of the Serengeti population had shown that close inbreeding is almost nonexistent in that vast area. Our team collected blood samples from dozens of lions in both populations, immobilizing each lion with a dart gun and drawing a small amount of blood while it peacefully dozed. At the same time, a number of the males were electro-ejaculated.

Analysis of the genetics of the crater lions' blood enzymes suggested extensive inbreeding. The lions' estimated genetic diversity was much lower than that of their Serengeti counterparts. In addition, the semen samples from the crater males showed that they had levels of sperm abnormality twice as high as the Serengeti males, another indication of inbreeding.

More eager than ever to reconstruct the crater's recent history, I visited Henry Fosbrooke in 1986 to look at photographs of the survivors of the 1960s biting fly plague. Now in his 80s, Fosbrooke is still an active conservationist. His house is on the rim of Duluti Crater near Arusha, Tanzania, and on a clear day you can see Mount Kilimanjaro through one window and have a splendid view of Lake Duluti through another.

The weather was hazy when I visited, but his photographs were remarkably clear. "Here are the four females that repopulated the crater," he said as he handed me a pile of contact sheets. I was delighted to discover that I could not only pick out the whisker spots of each lion but I could also discern the pride's composition; several identifiable individuals could often be seen in the same photo. But were these the sole founders of the crater population?

FOSBROOKE'S LIONS represented the beginning of the crater story, and we knew every lion that lived there from 1975 onward. Then I suddenly realized that tourists and

A lion who's who

Which lions survived the flies? How was the crater repopulated, and with how much genetic diversity? Only by tracking down the identity of every lion since the plague of flies could Packer and Pusey answer those critical questions.

In 1979 they began using lion identification cards (right) with pictures of individuals at various ages, noting field marks such as whisker spots and ear notches (above) that can pinpoint lions. They contacted preceding researchers who had photographed or drawn the same lions or their forebears. They also solicited photographs taken by tourists, receiving hundreds to help fill in the gaps.

Eventually their catalog put faces on more than 500 individuals, most now dead. And their detective work determined that all of today's crater lions descend from only 15 lions that either survived the flies or invaded Ngorongoro shortly thereafter.

Captives in the Wild

filmmakers had been photographing the crater lions daily since the road into the crater was completed in 1959. Thus, distributed over the entire world was a complete photographic record of the lions' recovery from the *Stomoxys* plague.

Here was the problem: In 1975 there were five sets of breeding females and three coalitions of breeding males. The goal was to trace the origins of these eight groups and their connection to Fosbrooke's survivors. Our method would be to assemble and organize all the lion photographs we could find.

BY EARLY 1988 we had received several hundred tourist photographs from around the world. John Elliott sent in his records, and Harvard University biologist Dick Estes supplied a large batch of lion photographs taken from 1963 to 1965. A population reconstruction seemed possible after all.

In the meantime, Steve O'Brien furnished us with the results of a second genetic survey. Disturbingly, it revealed a striking lack of genetic variability in the crater lions' immune defense systems. This loss of genetic variability could render a population especially susceptible to an epidemic.

DNA-fingerprinting studies by Dennis Gilbert have shown that mating success among male lions is highly unequal. The crater population contained many adult males, but only a few fathered most of the offspring. The breeding population was even smaller than we thought. The time had come to pull together all our materials.

First, we looked at Elliott's ID files. In addition to nose flecks, he had also recorded ear notches and whisker spots. Now much of the period between 1972 and 1975 made sense.

Next, we focused on Estes' and Fosbrooke's photographs, covering 1963 through 1966. Fosbrooke's founding pride consisting of four females had large batches of cubs in 1963 and 1965. Daughters from both batches eventually established their own prides, and several survived until the Bygotts' era. Thus two of Elliott's three prides originated from Fosbrooke's group of four females.

Then it was time to go over the photographs from tourists and professional photographers. This was unexpectedly rewarding. Several pictures from 1959 included one of Fosbrooke's founding foursome. Because female lions associate only with their close female kin, all four must have been born on the crater floor and managed to survive the biting fly plague. Estes' earliest photographs showed that a single male was resident with these females, and he too had been photographed in 1959. Another survivor! This lion had fathered the 1963 cohort of cubs but was evicted by a pair of males in late 1964. These latter two males did not match up with any of the many males photographed in 1959, so they must have entered the crater from elsewhere. In late 1964 Fosbrooke first photographed a group of young males on the crater floor. They would have been small cubs at the time of the plague and thus could not have survived the disaster. They too must have been immigrants.

But to get a precise idea of the genetic composition of the contemporary lion population, we had to account for *all* the lions. We were nowhere near completion. We had a good grip on the population in 1963-66, 1970-72, and 1975 onward, but there were numerous missing links

JOAN ROOT

Since a mother will carry only her own cub, maternity is certain (opposite). This photograph also recorded the whisker spot patterns of both. In 1968 scientists used an inflatable lion (above) to test the reactions of real cats to it. Two males look askance after upending the intruder. To Packer and Pusey the results of the experiment didn't matter—but knowing the date of the photograph did. They had been searching for one pride's resident males at that time. Here they were.

Mating pairs have too many common ancestors. After the 1962 plague of flies, seven males entered the crater. But since 1969 no new males have contributed to the gene pool.

between these periods. The most serious gap was in the late sixties, and we began searching for more photographs. Then we recalled a conversation we had had with Jane Goodall.

Jane and filmmaker Hugo van Lawick had spent most of 1968-69 in the crater conducting research for their book *Innocent Killers*. Jane told us, "There was a French-Canadian scientist who was studying the lions while we were there. I was impressed that he could identify every lion in the crater by the whisker spots." Unfortunately she could not recall his name.

I phoned everyone who might have known this early lionologist, but no one could help me. Then while reading George Schaller's book on the Serengeti lions, I noticed a passage on the crater lions in which he cited "P. DesMeules, personal communication."

But how could I find P. DesMeules 20 years later? All I knew about him was that he must have been a scientist. If he wrote a scientific account of his research, it would be found in any university library. I went to the library and immediately struck gold: nearly a dozen citations to P. DesMeules, including one for a Canadian wildlife journal in 1968. I literally ran to the stacks. The paper was by Pierre DesMeules of the Canadian Wildlife Service. "Current address: Box 1, Ngorongoro Crater, Tanzania."

I had my man, but where was he now? A second paper revealed that he had become the senior scientist for Parks Canada in the Quebec region. The park service advised that he had recently retired, and his former secretary told me he now lived near the small village of Sacré-Coeur de Marie.

I called and introduced myself. DesMeules confirmed that he had lived in the crater from late 1968 until the beginning of 1970. He had identified every lion on the crater floor, and he had several thousand photographs of the crater lions.

Four days later we shook hands in a small village in southern Quebec amidst the autumn foliage. I turned my back on the brilliant colors to examine the bonanza of black-and-white photographs of some 60 lions that had all died more than a decade ago.

And what photographs! DesMeules had recorded the whisker patterns on both sides of each lion's face. I could confirm all the links between Elliott and the Bygotts and fill in many more gaps. By the next day I was sure that three groups of females had survived the biting fly plague. One group died out. The other two groups founded the three Elliott prides and hence all five of the Bygott prides. Fosbrooke's group of four females were the ancestors of all six current prides.

The females were now sorted out, but the males were still unclear. I would eventually discover the origins of one large

coalition from DesMeules's photographs. But there were two gaps left: the origin of a coalition of nine males that had already left their natal pride by the time DesMeules arrived and the identity of the fathers of one other set of females.

Back to Africa. Our dearest friend in Nairobi, Barbie Allen, renewed our request for pictures from wildlife photographers, but now over a much narrower time interval: early 1968. When filmmaker Joan Root sent us photographs from January 1968, we struck gold once more. Joan had gone to the crater to film some experiments, and the "experimental subjects" turned out to be the pride for which we needed to know the identity of the resident males. From Joan's photos we could see that the two males were the survivors of the coalition first seen by Fosbrooke in 1964. These two were later resident in several other prides and thus were the male ancestors for many in the subsequent population.

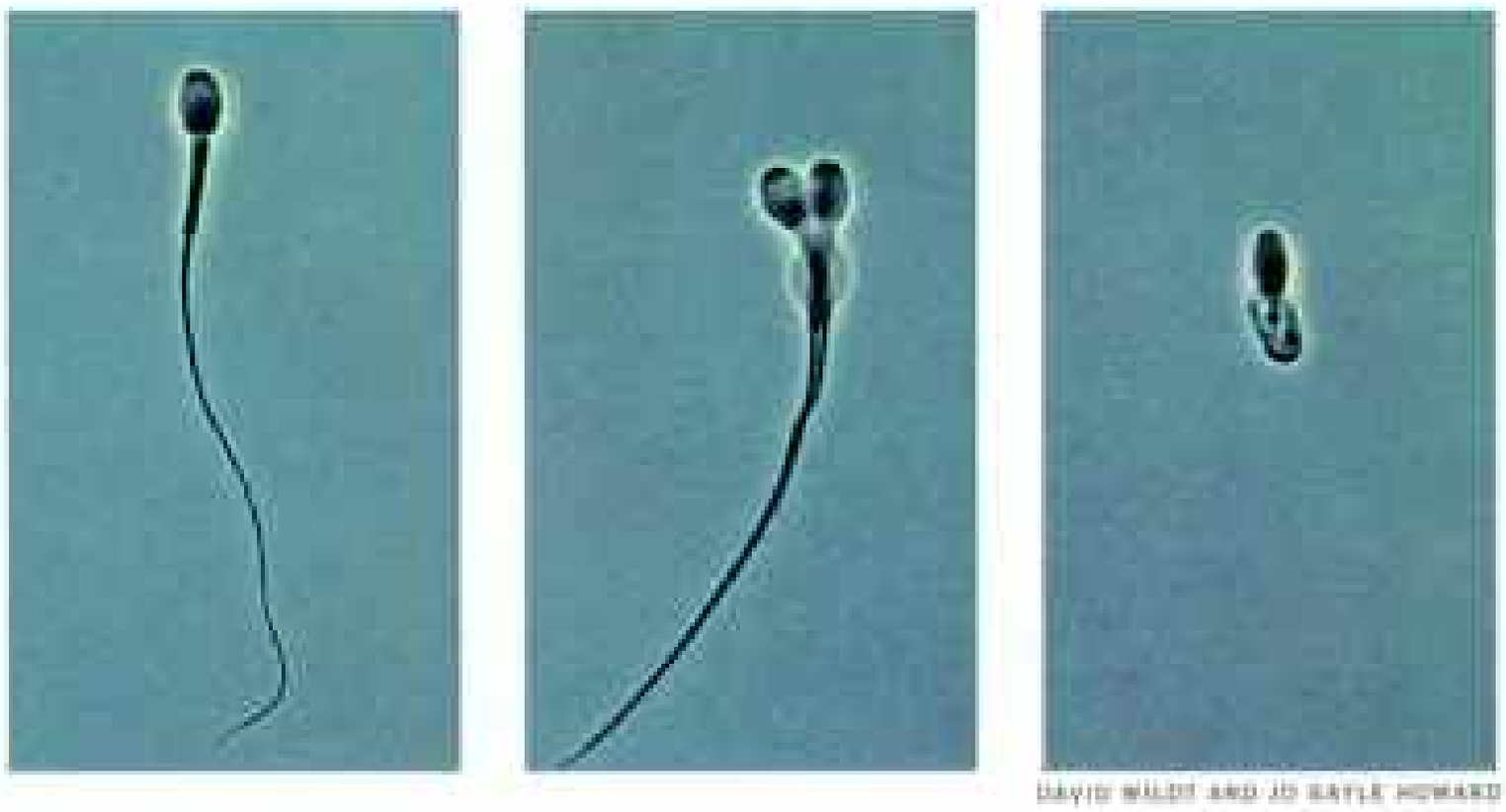
During the same trip Joan had photographed the remnants of Fosbrooke's original group of four females. They had had one last batch of cubs in 1967, and these included the coalition of nine males first seen as subadults by DesMeules. Our quest was over.

WE NOW KNOW that the entire crater population is descended from 15 animals. Eight of these had survived the plague; the rest were males that may have entered the crater from the Serengeti. The plague removed so many adult males from the crater that fresh blood was able to enter. Once the residents resumed breeding, they had several large sets of sons that monopolized the crater prides and kept further immigrant males out. Thus the current crater population has been subject to close inbreeding since 1969, about five lion generations.

With complete reproductive records of the population since 1963, we could test whether inbreeding has lowered the productivity of the population. We now estimate that the crater lions have lost about 10 percent of their genetic diversity over the past 20 years. Our estimates of this decline are closely correlated with a reduction in reproductive rates in the crater lions, although it is too soon to be certain of a direct link. If inbreeding has indeed caused this reduction, then reproductive rates in the crater population will continue to decline in the future unless new males are once again able to enter the crater.

The crater lions also show somewhat lower genetic diversity than can be attributed solely to the effects of the *Stomoxys* plague. The crater has been naturally isolated for millennia, and its lions may have undergone several cycles of isolation, decline, and repopulation. It is possible that the previous population was highly susceptible to the depredations of the biting flies precisely because they were already quite inbred.

I visited Henry Fosbrooke again in October 1990. When I told him that I suspected the crater lions had been through previous periods of inbreeding and genetic decline, he led me into his large library and said, "You should read these." They were accounts of big-game expeditions that went into the crater in the early twenties. During two weeks in 1922 one hunting party bagged seven adult lions and badly wounded another three. The last expedition was in 1924, when five more lions were killed. Considering that there are never more than about 30 adult lions in the crater and that most of the wounded animals probably died as well, the breeding population must have been severely reduced. Our genetic assays more than 60



DAVID WILDT AND JO GAYLE HOWARD

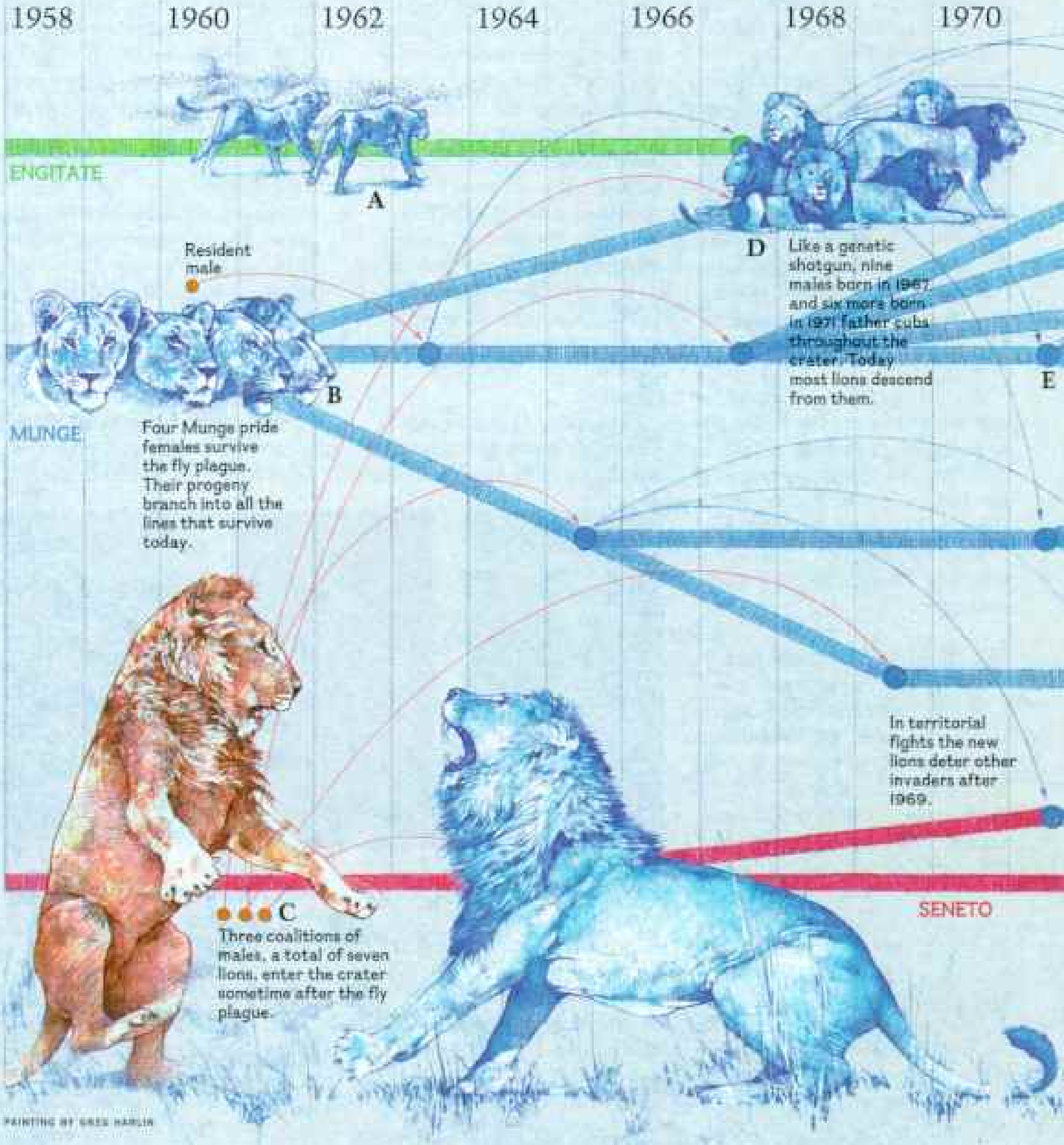
Ominous telltales, sperm from crater males (middle and right) show abnormalities when compared with a normal sample. Reproductive physiologist David Wildt and his colleagues at Washington's National Zoo found structural deformities in more than half the sperm of each male tested, strong evidence of inbreeding. The continuous decline of genetic diversity since 1969 is perhaps linked to a falling reproductive rate.

A troubled family tree

*So many lions were wiped out by the flies in 1962 (**A**) that a population crisis resulted. With very few lions remaining, the group's gene pool was greatly reduced. But the crisis gave Packer and Pusey a benchmark to reconstruct the lions' family history from then until now.*

Here, each thick colored line represents a pride—a basic family unit of females and their cubs. Thin arcing arrows stand for males that leave one pride, move into another, and mate with its lionesses. Large dots indicate the birth of cubs.

*Four key females (**B**) of the Munge pride (blue) repopulated the crater. Five of the six current breeding prides (far right) are*



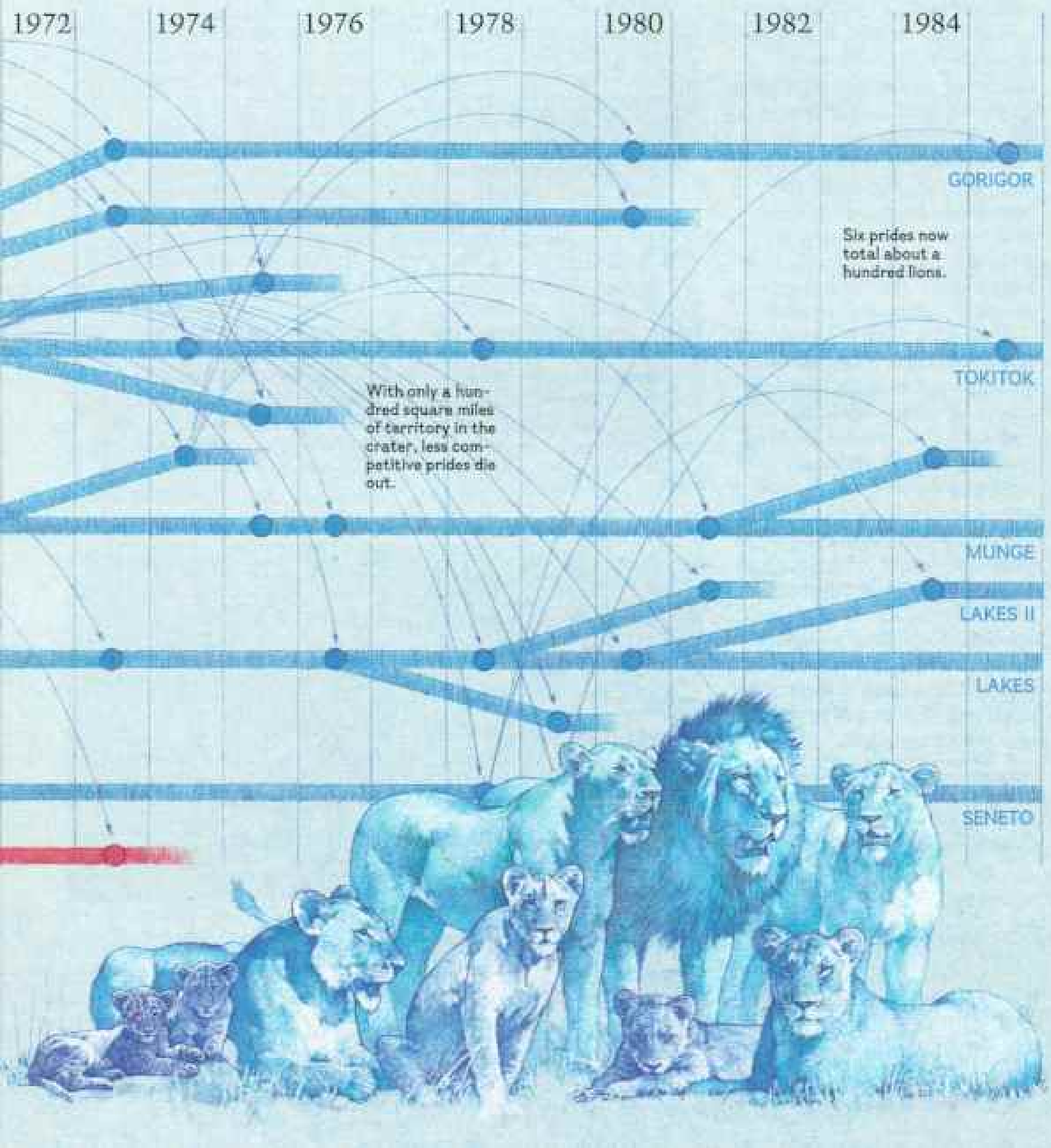
PAINTING BY GREG HARLIN

direct offshoots of these lionesses. The sixth pride stems from a second, early group of females in the Seneto pride (red) that bred with Munge males. The Engitate pride (green) died out.

*After the fly epidemic, seven new males from outside (**C**) invaded the crater, infusing new blood. Since 1969 no more interlopers have arrived, and inbreeding has continued for five generations.*

*Two groups of males, nine born in 1967 (**D**) and six in 1971 (**E**), reigned as kings of the crater, spreading their seed in bursts of mating. However, only a few males—perhaps four of the 15—fathered most of the offspring, making the inbreeding worse.*

Today's hundred lions have only half the estimated genetic diversity of Serengeti lions. Other scientists have found that the lions' immune systems have been genetically weakened, leaving them more vulnerable to disease.



years later may well have revealed the results of this onslaught.

THE SERENGETI and Ngorongoro were declared wildlife sanctuaries in the late twenties to protect the lions from further hunting. Ngorongoro Crater became a world heritage site in 1979 in recognition of its special significance as a microcosm of African savanna. The popular appeal of charismatic carnivores such as lions has often led to the conservation of habitat that sustains a host of other species. But living at the top of the food chain inevitably means that predators often end up in small, threatened populations.

The history of the crater lions may represent the future for many other large vertebrates. Increased human habitation around Africa's national parks has formed virtually impermeable boundaries, and recently many species have become isolated in small populations, making them even more vulnerable to environmental catastrophe. Add to this the effects of close inbreeding, and many small populations may well be caught in a downward spiral.

Perpetuating these populations will require more than just protecting them from hunters and poachers. The crater lions are conspicuous and have therefore proved surprisingly easy to monitor. The fates of most other small populations will run their course undetected. □

"Crater of the Rain God," an EXPLORER film, will air Sunday, April 12, at 9 p.m. eastern time on cable network TBS.

GENETIC EROSION
A Global Dilemma

By STEPHEN J. O'BRIEN
CHIEF, LABORATORY OF VIRAL CARCINOGENESIS
NATIONAL CANCER INSTITUTE

The Ngorongoro lions are isolated geographically, but they are not alone in their genetic impasse.

Around the world, wildlife populations are shrinking into fragmented islands amid a sea of human expansion. Only 30 to 50 Florida panthers cling to survival. Before a captive-breeding program began, the black-footed ferret was down to 17 animals. In India fewer than 250 Asiatic lions remain.

Before conducting genetic studies for Craig Packer's lion project, I examined the genetic history of the cheetah, whose range once spanned the globe. I was amazed to find that every one of today's 20,000 cheetahs is genetically almost identical. They descend from survivors of a near-extinction catastrophe that resulted in generations of close inbreeding 10,000 years ago.

These and other species share something important with the Ngorongoro lions—a population bottleneck. It creates a shrinking gene pool that leaves fewer and fewer mating partners. What are the genetic implications?

The animals become part of a high-stakes poker game—with a crooked dealer. After beginning with a 52-card deck, the players wind up with, say, five cards that they are dealt over and over.

As they begin to inbreed, congenital defects appear, both physical and reproductive. Often abnormal sperm increase, infertility rises; the birthrate falls. Most perilous in the long run, each animal's immune defense system is weakened.

Thus, even if an endangered species in a bottleneck can withstand whatever human development may be eating away at its habitat, it still faces the threat of an epidemic that could well be fatal to the entire population.

A trio of males patrol their crater territory. Ironically, they are strong enough to deter what their population most needs—the entry of outside lions with new genes.

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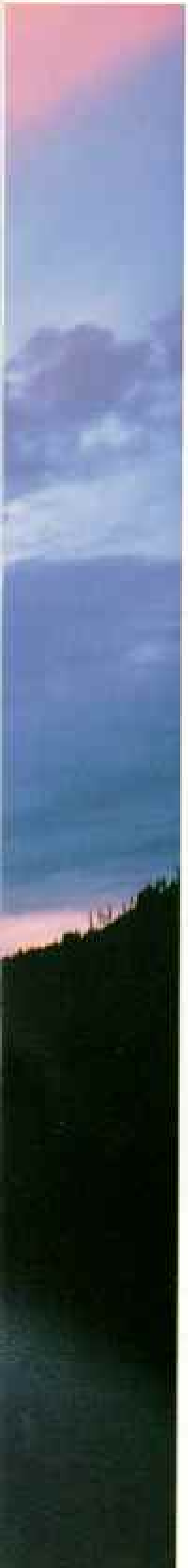

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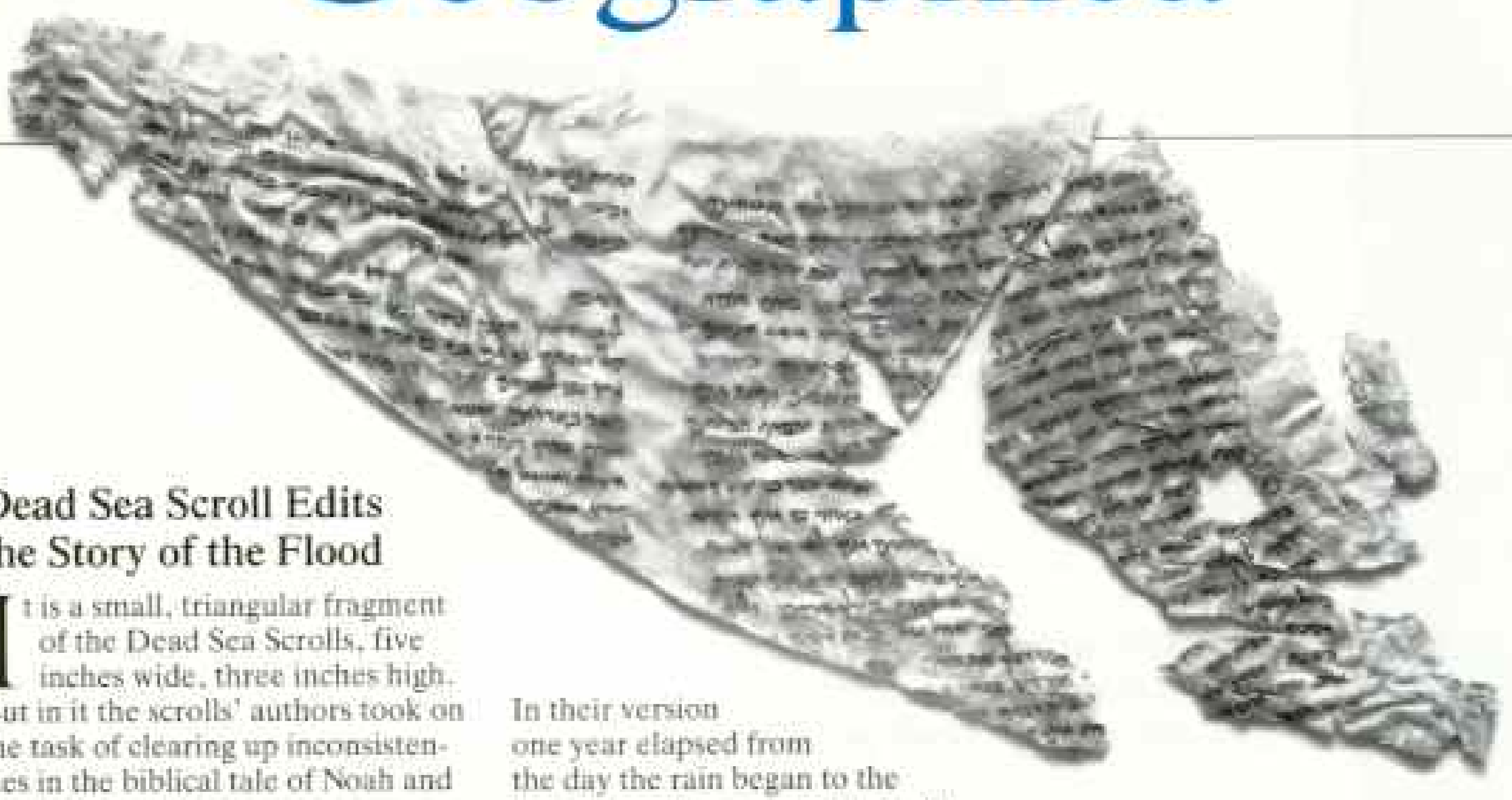
Geographica



BIBLICAL ARCHAEOLOGY SOCIETY

Dead Sea Scroll Edits the Story of the Flood

It is a small, triangular fragment of the Dead Sea Scrolls, five inches wide, three inches high. But in it the scrolls' authors took on the task of clearing up inconsistencies in the biblical tale of Noah and the flood.

That is the view of Robert Eisenman of California State University at Long Beach. He and Michael Wise of the University of Chicago translated the fragment, which appears in a two-volume facsimile edition of previously unpublished Dead Sea Scrolls. Its publication by the Biblical Archaeology Society occurs during a lengthy dispute among biblical scholars over access to the texts and the pace at which they are translated and made public.

Eisenman, co-editor of the edition, says inconsistencies in the Genesis account arose because it was pieced together from two sources. Among the problems for biblical scholars is the tale's chronology: Some passages emphasize events that occur over 40-day cycles; others stress the year-long duration of the flood.

The authors of the scrolls—members of a Jewish sect who hid their writings in caves near the Dead Sea about 2,000 years ago (National Geographic, December 1958)—edited the account by imposing a 364-day calendar on the biblical text and inserting the day of the week on which each event took place, Eisenman explains. In their version one year elapsed from the day the rain began to the day the earth was completely dry again. This enabled the members of the sect to emphasize the importance of such annual religious rituals as sacrifices, feasts, and fasts.

Small Animals Help Plant a Big Flower

Tramping through a jungle in Borneo, Smithsonian Institution biologist Louise Emmons came upon an unexpected sight: the rarely seen cantaloupe-size fruit of the *Rafflesia keithii* plant. Its flower (below left)—also seldom seen—is only slightly smaller than the world's largest, *Rafflesia arnoldii*, which can unfold to three and a half feet (Geographic, July 1985). How the seeds of these wondrous plants are dispersed has been a matter of speculation. Emmons, noting that the fruit had been nibbled, set up a blind to learn what was eating it.

It turned out to be the very species of treeshrew, *Tupaia tana*, that Emmons had gone to Borneo to

BOTH BY FRANS LANTING, MINDEN PICTURES

study. As she watched, the small animal climbed up to the fruit and ate the pulpy flesh. Later a plantain squirrel also had a go at it.

Emmons, whose research was aided by the Society, concludes that treeshrews and squirrels excrete tiny *Rafflesia* seeds as they race up and down the vines that play host to the parasitic flowers.

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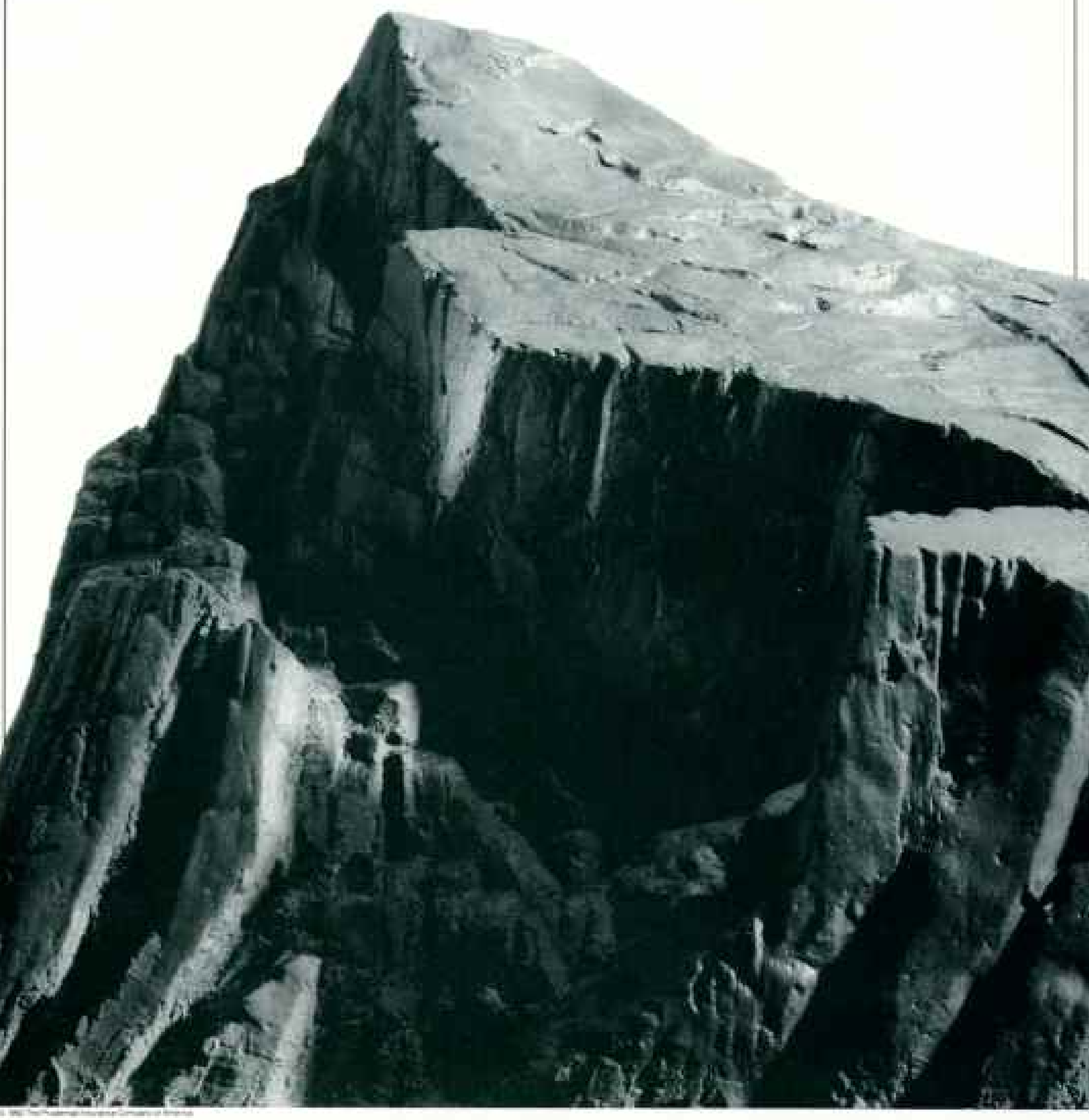

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Geographica

Bolt From the Blue More Likely to Hit Men

It seems a deadly form of sex discrimination: When the National Weather Service tallies up the deaths caused by lightning each year in the United States, an overwhelming number of the victims are male. Of 74 lightning-related deaths in 1990, females numbered only seven.

Little research has focused on the causes of the disparity. But it's acknowledged that men tend to be outdoors more than women, at work or at play, and are thus more vulnerable to a strike. Examining lightning fatalities from 1968 through 1985, the Centers for Disease Control found that 85 percent were male and that a third of them died on the job. The victims included farm laborers, construction workers, nurserymen, and a land surveyor.

Since 1959 Florida has led the nation in lightning deaths and injuries. Apart from those killed at work, many are struck while fishing from boats, others while at the beach or on the golf course.

"There's probably that old macho ego," says Roger Tanner, a weather researcher. "A male may not be cautious and take cover readily."

PAINTING BY RICHARD THOMPSON

Haida Spirit Rides On in a Bronze Canoe

Some fantastic characters are riding in a canoe in Washington, D. C., just five blocks from the U. S. Capitol.

They include mischievous Raven, who is steering; Grizzly Bear, Bear Mother—his human wife—and their two cubs; Beaver, Eagle, Dogfish Woman, and Mouse Woman; an unhappy man called the Ancient Reluctant Conscript; and, towering serenely yet ominously above them all, a shaman chief, or kilstlaai.

The canoe and its passengers make up a bronze sculpture, the "Spirit of Haida Gwaii," installed last fall in the courtyard of Canada's new embassy. Five years in the making, it was created by Bill Reid, whose people, the Haida, live on British Columbia's Queen Charlotte Islands (GEOGRAPHIC, July 1987).

Haida Gwaii—"islands of the people"—is the Haida name for their land. Most of Reid's riders are figures from mythology. The others, like the Ancient Reluctant Conscript, are the product of his imagination.

Reid has been a leader in reviving almost extinct Haida artistic traditions, including totem pole and canoe carving.

MICHAEL LUTZKY, NGS

Recipe for Instant Fish: First, Add Some Water . . .

The locals around Northcliffe in the southwestern corner of Australia gaped as the "mad Yank" borrowed their fire truck and dumped more than 700 gallons of water into an empty, dried-out pool bed. Ten minutes later, ichthyologist Tim Berra began hauling out dozens of tiny salamanderfish.

Berra, who teaches at Ohio State University, was researching salamanderfish biology and behavior. He wondered where the fish—found only in this part of Australia—went during the summer months when its isolated pools evaporate.

When he dug beneath the surface, he found salamanderfish wriggling in damp sand just above the water table. He suspects that the two-inch-long fish uses its wedge-shaped skull and flexible spine to burrow underground when a pool is about to go dry. There it waits until rains return.

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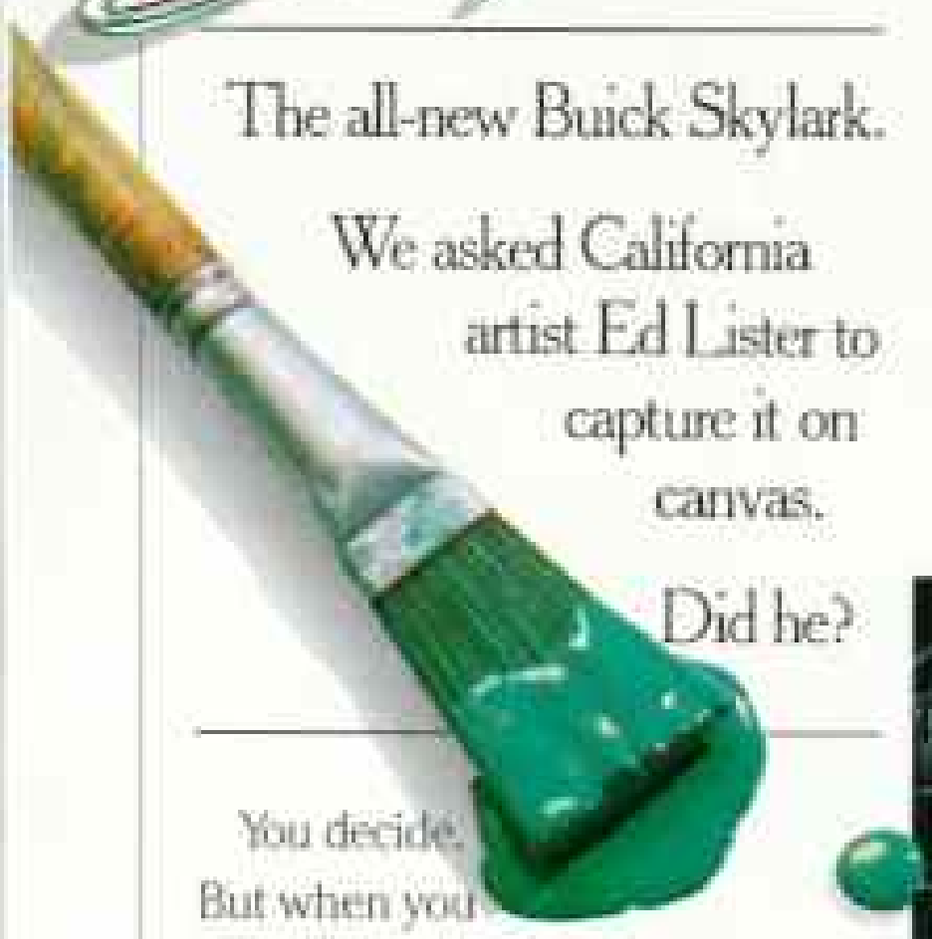

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Geographica

A Bloom of Algae as Big as Britain

A startling sight appeared below the windows of a Lufthansa jet last June: a milky-white splotch in the Atlantic Ocean the size of Great Britain.

What the travelers saw was a bloom of algae off the southern tip of Iceland. Scientists from England's Plymouth Marine Laboratory were already out studying the event, which occurs annually in the North Atlantic. Their detailed study of the massive bloom will shed new light on the phenomenon and, perhaps, its effect on global climate.

The bloom, 560 miles by 220 miles, consisted primarily of a single-celled plant plankton called *Emiliania huxleyi*. As algae reproduce, they absorb dissolved carbon dioxide from the ocean. But unlike other plankton species, this one reduces the ocean's ability to absorb

PSEUDO-COLOR IMAGE, NOAA/NATURAL ENVIRONMENTAL RESEARCH COUNCIL, U.K.

atmospheric carbon dioxide. The result, the researchers were surprised to learn, is that an *Emiliania* bloom may add to the planet's carbon dioxide supply. Algal blooms have proliferated in the last few years, and some scientists fear they may contribute to global warming.

Can Seal Pup Biology Help Save Infant Lives?

Each year 7,000 babies in the United States die from the mysterious killer called sudden infant death syndrome (SIDS), the leading cause of death

KEVIN SCHAFER, PETER ARNOLD, INC.

in children between one month and a year old. Marine biologist Michael Castellini of the University of Alaska thinks clues to identifying infants who are at risk for SIDS may be found in the biology of northern elephant seal pups.

Elephant seals, young and old, normally experience periods of apnea—breath holding—while sleeping. Castellini has found that seal pups also have erratic heartbeats during such periods. It is at least six months before seal-pup heart rates stabilize during apnea. To date there have been no documented cases of seal pups falling victim to a SIDS-like malady.

Healthy human infants also experience apnea, and a significant percentage of SIDS victims had a history of unregulated heart rates. With the seal parallel in mind, Castellini suggests monitoring for heart-rate fluctuations during apnea to see if the combination of the two makes an infant susceptible to SIDS. "Past studies for predicting SIDS risks have looked at the heart rate only during normal breathing," he says.

Marian Willinger of the National Institute of Child Health and Human Development says Castellini's idea "shows promise. But," she adds, "it is just one of many things we're looking into."

Park Service to Mark the Road to Freedom

Tales from the Underground Railroad (GEOGRAPHIC, July 1984) are heroic history at its spellbinding best. Now the National Park Service is pondering how to commemorate the Underground Railroad and the thousands of slaves who found their way to freedom along this far-flung, clandestine network of people and hideaways. There were two principal routes: One went up the Mississippi and Ohio Rivers, then on to Canada; the other ran through the mid-Atlantic states. There were also many less traveled paths.

CHARLES T. WEBBER, CINCINNATI ART MUSEUM

Therein lies the problem facing the Park Service: how best to mark the routes? Jim Stewart, a senior planner for the agency, says there won't be a trail but rather a museum, historic sites, or commemorative plaques. "Something will be done," he says. "What form it will take is the question."

—BORIS WEINTRAUB

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Forum

Return to Pearl Harbor

I've read hundreds of articles and dozens of books about Pearl Harbor, but nothing presents so clear and graphic a summary as your December 1991 article. I recall very well where I was that fateful December 7—working for one of the so-called war plants, Bell Aircraft Corporation in Buffalo, New York, producing airplanes, mainly for the Russians for lend-lease. Everybody knew that we could not stay out of the war in Europe forever and that a war with Japan was probably inevitable too. That Sunday with the plant going full blast the loudspeakers came on announcing the attack.

HARRY M. ZUBKOFF
Silver Spring, Maryland

This superb piece makes indelible in the mind of this ad-libber at CNN the fateful pictures from that day of horror.

BERNARD SHAW
Washington, D. C.

As the 19-year-old private who received General Marshall's warning message to General Short, I must correct certain facts on pages 69 and 75. The message was marked "Urgent," but the RCA Honolulu office put it in an ordinary telegram envelope. It was delivered during the attack about 8:45 a.m., not 11:45 as you indicate. Being extremely busy with operational messages and expecting only personal messages from RCA, I put it with others in my drawer for delivery later.

Around 10:30 a.m. my phone rang and a voice said, "This is General Marshall and I want to speak to General Short." I redirected his call. Around 11:45 a Morse code message came from Washington: "General Marshall is standing behind me and wants to know who is operator S, and where is the message he signed for from RCA?" The bottom dropped out of my stomach as I leafed through my drawer and found the cable addressed to the commanding general. The time stamp of receipt by RCA in Honolulu was 6:33 a.m., not 7:33 as the historical records indicate. My question is: "Why, if General Marshall could call us by commercial telephone after the attack, didn't he call before?"

W. B. STEVENS
Naples, Florida

We are forwarding such letters disputing the historical record to historians at the U. S. Army Center of Military History.

I am glad to be straightened out on the saga of the little suicide sub. The news media at the time gave the impression that the pilot had a last-minute change of heart about glorious suicide and beached himself deliberately, opting for life, though with disgrace.

WILLIAM H. GRUNWALD
Santa Cruz, California

You mention Don Ross but do not credit him with winning the Medal of Honor.

DAVID B. BLEAK
Moore, Idaho

World War II Map

Your map of the campaigns of World War II is excellent and a timely reminder of how difficult it is to overcome racism and nationalism once they are let loose. It omits, however, freedom's first success, the liberation of Ethiopia from Italian rule by Haile Selassie's guerrillas and the Allied army of South African, Indian, and British troops. Had the Allies lost the war, it is clear from Nazi records that Hitler planned a Nazi colony located in central Africa.

This was a true world war in which people set aside arguments in order to unite against great evil. In Italy in 1944 British Field Marshal Alexander had under his command Algerians, Americans (including a Negro division and the Japanese-American infantry regiment), Basuto, Belgians, Batswana, Brazilians, Mauritians, Newfoundlanders, New Zealanders (including Maori), Palestinians (including Jews), and many more.

E. G. NISBET
Saskatoon, Saskatchewan

The Pacific theater was illustrated with three pictures of the Marines, four of the Navy, and only one representing the Army. The perception persists to this day that the Marines and Navy fought the war nearly alone in the Pacific with some back-up from the Army. Comparative battle deaths suggest otherwise with the Army losing the most men.

FRANK W. SPRINGER
West Chester, Pennsylvania

Ibn Battuta

As a child growing up in Pakistan, I remember my grandmother reading me stories about Ibn Battuta, the great Muslim traveler. Educated in a Western system, I never came across his name in history books and never knew until now whether Ibn Battuta's tales were fact or fiction. I applaud your efforts in focusing on such material. Knowledge, irrespective of its origin, is always worth attaining.

IMRAN N. HAQUE
Raleigh, North Carolina

I enjoyed the article but was offended by the picture on page 47 of a bare-breasted African woman.

I agree that the female figure is beautiful, but ignoring a woman's head—which includes not only her face but her mind—sends a dangerous message.

MARILYN HORN
Hawthorne, California

Anyone dealing with the whimsical Muhammad ibn Tughluq (page 30) could expect to find the going bumpy, but this does not make him a Mogul. The first Mogul emperor was Babar, of Mongol ancestry, who did not establish suzerainty at Delhi until 1526.

Muhammad came to be known as the "mad Tughluq," and in some places in India today this sobriquet is awarded to the concocter of any hare-brained or outlandish scheme.

P. RAGHAVA REDDY
Wallingford, Connecticut

The author mentioned Mevlana and then called him a Turkish Sufi. To me the correct spelling of his name is Moulana Jalleldin. Also known as Balkhi, he was a prominent 13th-century Persian poet and philosopher. At the time of the Mongol invasion he migrated with his family to Asia Minor. His writings are in Persian. His tomb is in Turkey, but his burial place is in the hearts of millions of Iranians and other Persian-speaking people.

MANOUCHER ASKARI
Peekskill, New York

Rain Forest Canopy

I was brought up in Brazil, and I recently spent six months in the Amazon as a volunteer in one of the cited projects, the Smithsonian's "Biological Dynamics of Forest Fragments." I witnessed scientists, from entomologists to botanists, deeply engrossed in their specific work and closing themselves off from participation in the rain forest's preservation. Because politicians, at least in Brazil, are more concerned with keeping their pockets stuffed with money, the question is who will see to rain forest preservation?

DIANA KOHLMANN
Wasenweiler, Germany

Dr. Wilson's article is a much needed tool to motivate governments around the world to reduce and ultimately ban the destruction of the extravagant diversity of tropical rain forests. Queensland's forests spread over nearly a million hectares and are now totally protected as a world heritage site. Cape York Peninsula remains mostly in its primeval state, and on your map it should be marked not red but green.

FRANCIS LAWRENCE
Mawson, Australian Capital Territory

No mention was made of one of the most innovative researchers in the field, Dr. Donald Perry. His pioneer work on gaining access to the canopy using a crossbow and mountain-climbing equipment and

his latest invention, the Automated Web for Canopy Exploration, are truly unique. Located at the Rara Avis reserve in Costa Rica, AWCE is a radio-controlled elevator that runs along a cable 150 feet above the jungle floor. My elementary school students got to know Dr. Perry after contacting him for guidance; he proved most generous in sharing his time and knowledge.

ELLEN BEELER
Vidya School
Tomales, California

Pittsburgh

As a native Pittsburgher who remembers the smoke and smog of the 1930s and '40s, I enjoyed your excellent article, but I must correct your announcement of the demise of Union Electric Steel on the map (page 132). We are alive and well, and while we are small, compared with the huge steel plants of the Pittsburgh past, we continue to melt, forge, and machine. We are recognized as a world leader in the production of forged, hardened steel rolls for ferrous and nonferrous flat-rolled products.

JAMES G. PARK
Union Electric Steel Corporation
Pittsburgh, Pennsylvania

How are indoor pictures of a barber shop, produce market, child's party . . . a pictorial view of current Pittsburgh? Where are photographs of condominiums along Mount Washington, the incline, tunnels, bridges, boats and barges on the three rivers, a cultural center, homes built on hillsides in old neighborhoods, and the new Carnegie Science Center along the Ohio?

GRACE C. RICHARDS
Pittsburgh, Pennsylvania

You failed to note something that is sacred to all Pittsburghers and is still thriving, the great Kennywood amusement park.

FEDELE MUSSO
Jupiter, Florida

I was born and raised in Munhall, and the mention of the 48-inch rolling mill brought back a lot of memories. My father and husband worked at that mill. I used to take my father's lunch to him on my way to school. There was a long access tunnel under River Road and the railroad tracks, and I gave Dad's lunch to a guard at the end of the tunnel. The steam engine in the mill was background sound that we all went to sleep to and woke up with.

MRS. BERNARD LELAKE
North Las Vegas, Nevada

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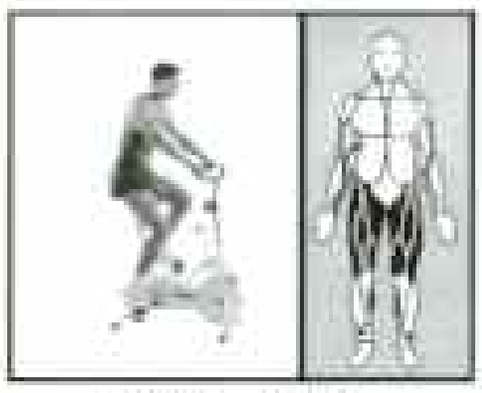
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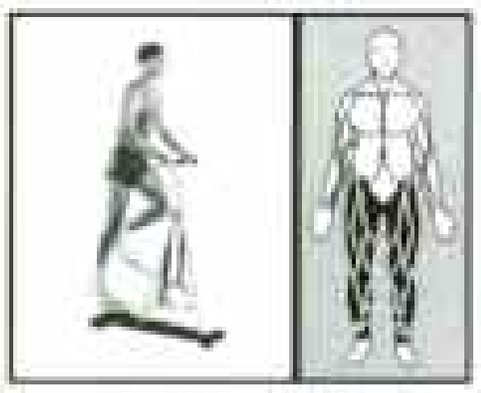
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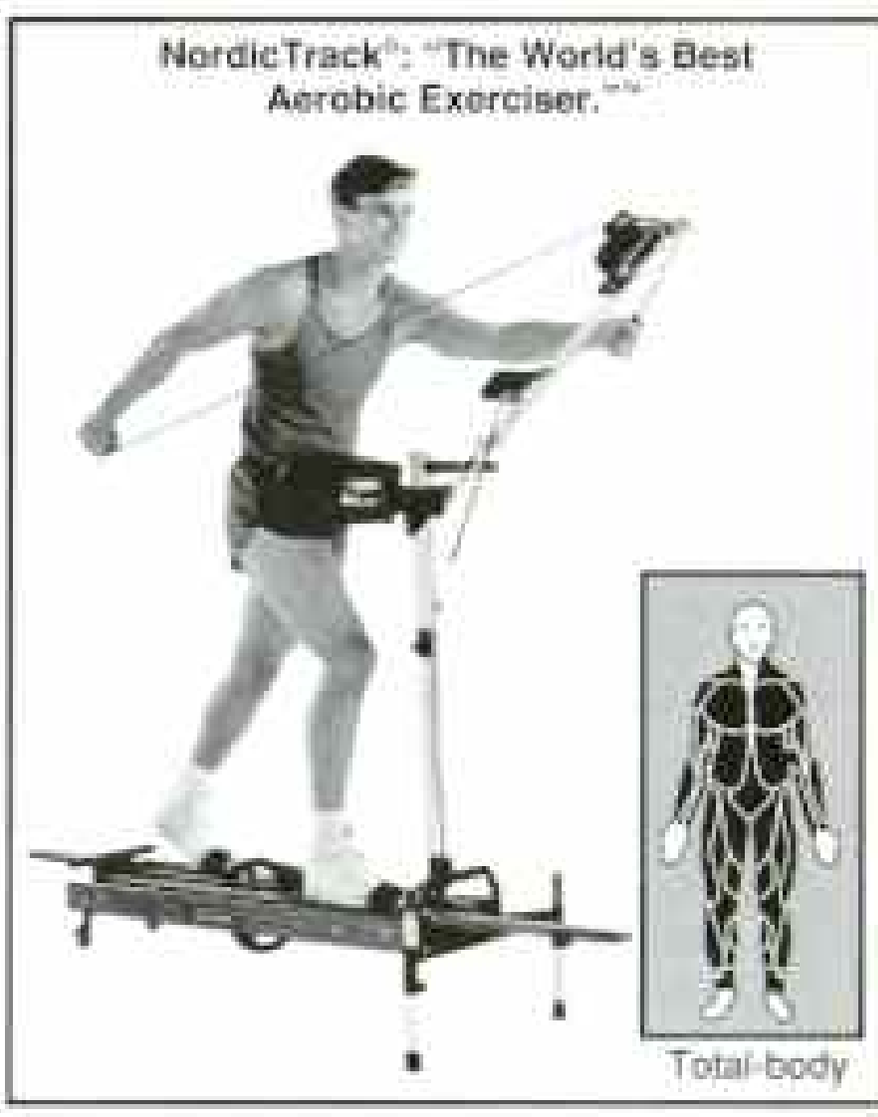
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On Television

SUSAN MCCARTNEY

Crater and Delta: Life and Death for African Wildlife

At once a paradise and a prison for its lions and other animals, Tanzania's cliff-walled Ngorongoro Crater "concentrates the essence of wild Africa under extraordinary circumstances," British filmmaker Richard Matthews says.

Matthews calls the plight of one young hyena the saddest scene he saw in six months inside the hundred-square-mile caldera while filming "Crater of the Rain God."

"The hyena—alone and lost—dashed across the sunlit savanna. Out of the grass emerged other hyenas from a clan whose territory it had breached. The defenders brought down the interloper"—lethal evidence of the struggle to survive in crowded Ngorongoro.

The struggle has comic moments. Lured by the remains of a hippo, a lioness swims—reluctantly—to a mud bar. "No doubt about it," Matthews says, "these big cats detest water."

One predator with no aversion to a watery hunt is the elusive Pel's fishing owl of Botswana's Okavango Delta. Recalls Botswanan Tim Liversedge, who made the film "Savage Paradise," "As a boy I read a description of fishing owls that said: 'A very large and rare owl . . . reputed to eat fish and make a noise like the cry of a lost soul falling into a bottomless pit.' "

His film reveals for the first time the fishing, breeding, and parenting behavior of this nocturnal bird. Daytime in the world's largest inland delta brings a new menagerie: the rapacious African fish eagle; the giant kingfisher; the horrific giant water bug.

To capture it all, Liversedge devised camera stations "to observe delta activity by day and night, in the air and beneath the surface."

"Crater of the Rain God," April 12, and "Savage Paradise," April 19, will air on Explorer, cable network TBS, 9 P.M. ET

MARK STOUFFER

Four Alaska Families Brave Winter and Wilderness

Meet the Korth family, the Haydens, the Wilsons, and the Browns. They're not exactly the people next door. Living far north in the remote interior of Alaska, miles apart, they receive mail only a few times a year—and may be America's most isolated families.

Producer Mark Stouffer "set out to film the stories of some of the most remote inhabitants of North America, who are also living closest to pure subsistence." He ended up with a film that documents people and wilderness in a remarkable study of the pioneering spirit. Stouffer found the families loving and gracious, inventive and tough—and fulfilled by their decision to go it alone. "I've eaten moose-brain-and-beaver-tail casserole," Stouffer says. "I've listened to hair-raising survival stories. These families lead lives as extreme as any you can imagine."

"Braving Alaska," Special on PBS, April 29, 8 P.M. ET

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USA

Earth Almanac

Even in Spring, Leaves Fall—Some Forever

The earth is greened by an estimated 250,000 species of plants. Within 30 years, botanists warn, more than 60,000 species may be extinct, including thousands not yet discovered. Pollution, development, and disease will take their toll. By 2020 some eight billion people will inhabit the earth, a population explosion of three billion, mostly in the tropics.

Small wonder that so much flora has so little chance. The leaves in these portraits—eloquent signatures that may become museum pieces—came from trees that, while not yet classified as endangered, are candidates for eventual extinction.

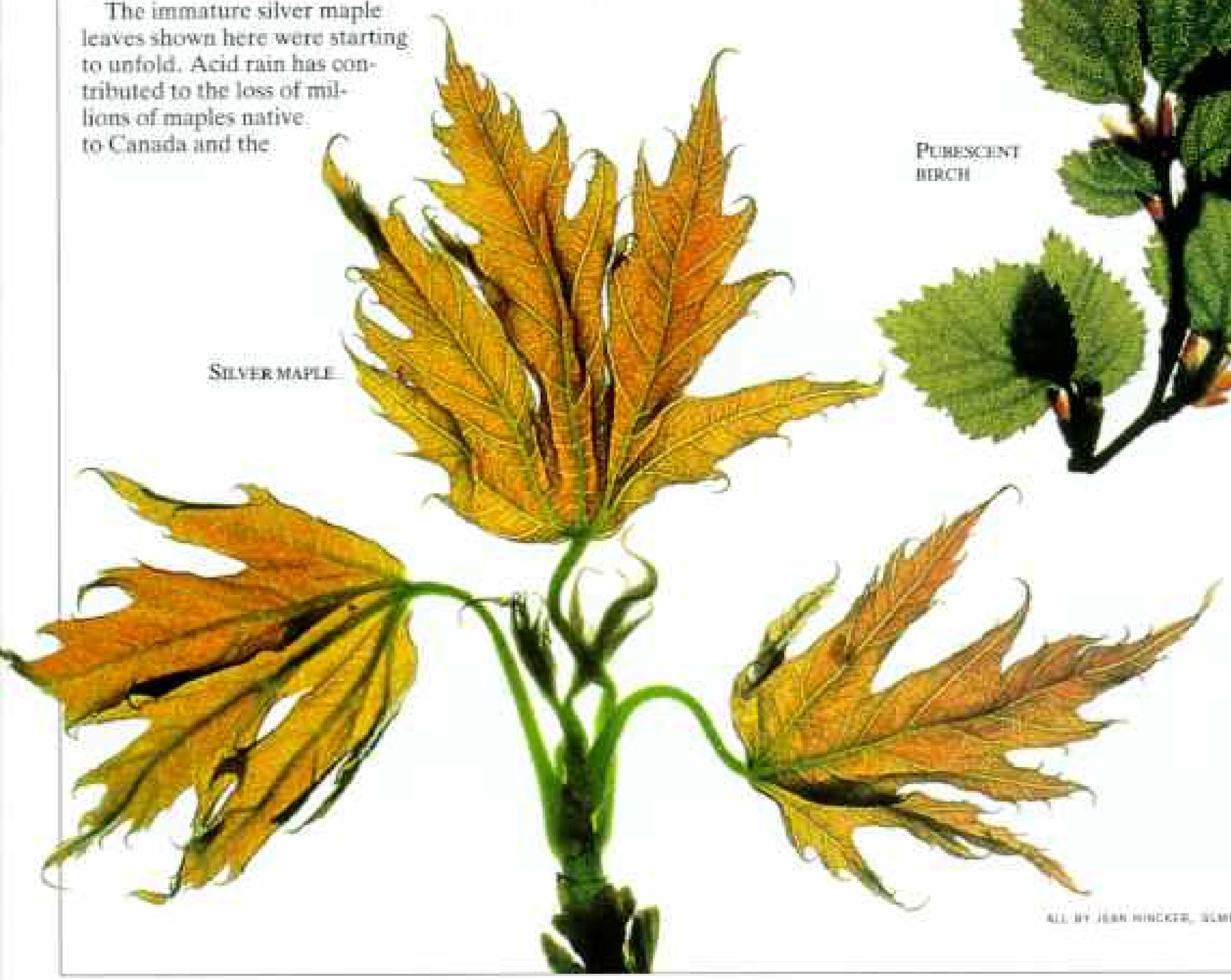
The immature silver maple leaves shown here were starting to unfold. Acid rain has contributed to the loss of millions of maples native to Canada and the eastern United States. Although airborne pollutants cross the border in both directions, Canada receives more than twice as much pollution from the U. S.—3.2 million tons a year—as the U. S. does from Canada.

Air pollution from inefficient smokestacks in Eastern Europe has thinned stands of the pubescent birch. The trees also suffer from acid-rain pollutants created in western countries and carried eastward by prevailing winds.

Common ebony, long coveted by carvers and cabinetmakers for its lustrous black sheen, comes from the heartwood—or hard center—of the tree. The ebony has grown scarce in India and Sri Lanka.

COMMON EBONY

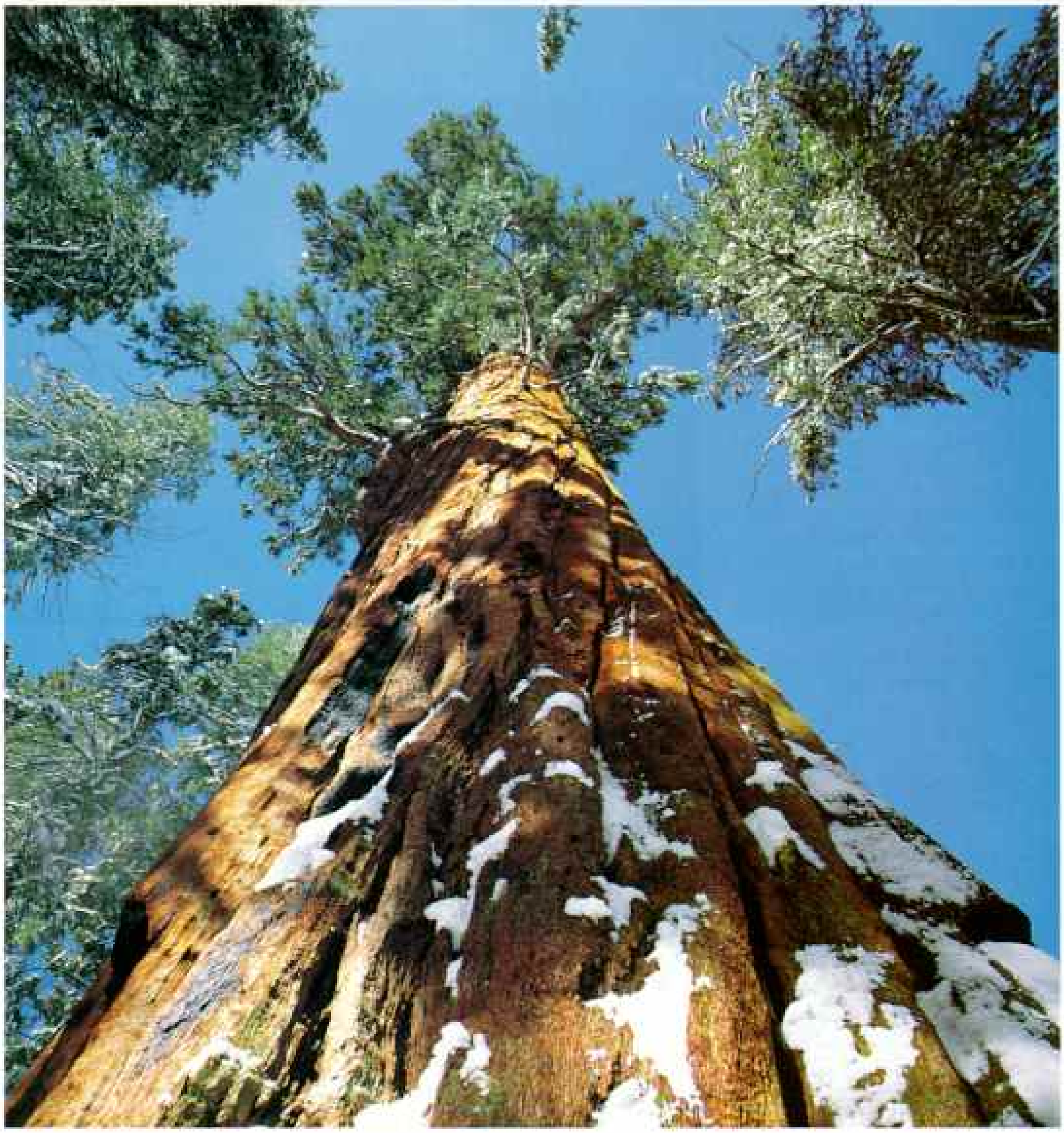
PUBESCENT BIRCH



SILVER MAPLE

ALL BY JEAN HINCKER, NGMS

National Geographic, April 1992



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For a free booklet on nuclear energy, write to the U.S. Council for Energy Awareness, P.O. Box 66080, Dept. AI04, Washington, D.C. 20035.

Nuclear Energy Means Cleaner Air.

Earth Almanac

Walls of Death, Drift Nets Will Kill No More

In a stunning victory for conservationists—and a bitter defeat for thousands of fishermen—Japan and Taiwan have reluctantly agreed to cease fishing with drift nets by the end of the year. South Korea may soon follow suit, bowing to a United Nations resolution.

Other nations and environmental groups have long condemned the monofilament nets, which hang 30 feet deep and can be 30 miles long. Although North Pacific fishermen seek squid or tuna, the nets catch nearly everything that swims into them, including this Pacific white-sided dolphin.

"It's been clear since the early 1980s that drift nets are indiscriminate and destructive," says Roddy Moscoso of the National Marine Fisheries Service. "These nets do catch an enormous amount of squid, but their take of nontarget species is just out of this world."

ROGER GRACE, GREENPEACE

While Japanese drift nets caught 106 million squid in 1990, they also swept up 26,000 marine mammals, 270,000 seabirds, 700,000 sharks, and 40 million other unwanted fish. Now economic hardship threatens Japan's 10,000 drift netters, who with fellow fishermen must find a fairer way to harvest the sea.

GALEN ROWELL, MOUNTAIN LIGHT

Steep Price Hike Aids Mount Everest Cleanup

Mountaineers will find a new obstacle to overcome in reaching the 29,028-foot summit of Mount Everest. But they may gain a weight advantage, because their wallets will be about four times lighter. To help clean up garbage and gear left behind by past expeditions, Nepal has raised its climbing fee from about $2,500 to $10,000 for nine-member parties. Each additional climber will cost an extra $1,200.

Meanwhile, the Nepal Mountaineering Association will begin a two-year, 500,000-dollar international effort in 1993 to clean up the famous peak, which an official termed the "world's highest junkyard." At its base, about 12,000 hikers a year add to the trash. Since 1953, when Everest was first scaled, 137 expeditions have left an estimated 50 tons of plastic, glass, metal—even a crashed helicopter. More garbage is on the way; the mountain is booked by climbers beyond the year 2000.

Conclave of Cats Besieged in a Thai Refuge

Eerie glow of predatory eyes shines by moonlight from a Thai forest, home to a remarkable community of cats. A thousand-square-mile sanctuary, Huai Kha Khaeng shelters at least 21 kinds of carnivores. There are six cat species, including this fishing cat, as well as tigers and both Asiatic and clouded leopards. Two bear species live here, as do seven species of civets.

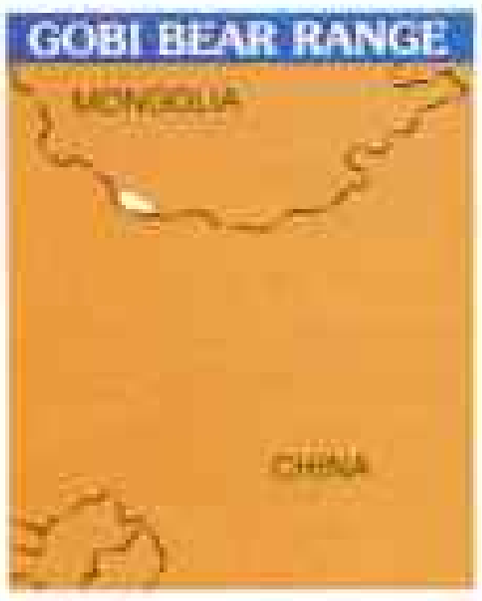
The enclave suffers from poaching and encroachment by villagers, according to Alan Rabinowitz, a field-research zoologist. But he also reports that the government has dropped plans for dams, mining, and timbering projects in Huai Kha Khaeng and instead may declare it Thailand's first tiger reserve.

—JOHN L. ELIOT

JERRY L. FERRARA, PHOTO RESEARCHERS, INC.

National Geographic, April 1992

WILDLIFE AS CANON SEES IT



Gobi Bear
Genus: *Ursus*
Species: *arctos*
Adult size:
Length, 1.7 m (males); shoulder height, 95 cm
Adult weight: 100–300 kg
Habitat: Arid plains and ranges of the Gobi Desert, Mongolia
Surviving number:
Estimated at 40–60
Photographed by
George B. Schaller

Brown bears range across most of the Northern Hemisphere, but none are as rare as the Gobi bear. Uniquely adapted to life in the harsh desert, the Gobi bear forages for isolated tufts of grass and the roots of wild rhubarb in the coolness of night. Surviving within the Gobi National Park, this bear is so little known that its subspecies is still a matter of debate. To save endangered species, it is essential to protect their habitats and understand the vital role of each species within the earth's ecosystems. Photography, both as a scientific research tool and as a means of communication, can help promote a greater awareness and understanding of the Gobi bear and our entire wildlife heritage.

On Assignment

DAVID E. HORNBACK

Losing a vital piece of gear is a photojournalist's worst nightmare. DAVID ALAN HARVEY (above), a 20-year GEOGRAPHIC veteran, found himself in that fix during Spain's El Rocío pilgrimage (pages 6-7). "I was on foot with this big bag of film and other essentials and asked a man with a Land Rover if I could load it on."

Assuming the man would stick with the procession, David headed off. By dusk the vehicle had vanished. "I got to the campsite with no food, no water, and worse—next to no film," he recalls. But El Rocío is about having faith. Fed by fellow pilgrims, David found the man with his bag at the end of the next day.

David had covered Spain for the March 1978 issue, and though much had changed, he saw the same ebullience in the dancing, singing, and camaraderie of this rough, dusty trek. "Spaniards take having a good time seriously. To share such moments with friends and family is the most important thing there is."

"Photos of quiet moments can create powerful images," says MELISSA FARLOW, who visited and revisited the Okefenokee Swamp region, photographing its seasons and residents for this issue.

NANCY CLOUD

"I grew up in a small town in southern Indiana, so I have a feeling for rural people. I'm comfortable with a life-style where you just sit with folks. You don't talk much, but you communicate a lot."

To photograph 81-year-old swamper William McKinley Crews (left), who had never heard of NATIONAL GEOGRAPHIC, Melissa spent three days at his farm chatting, admiring his cows, and making him feel comfortable with her. It was many hours before Melissa took her first picture. She then coaxed him into being photographed in a paper bag he wears as his "morning hat."

Now a staff photographer with the *Pittsburgh Press*, Melissa had worked at the Louisville *Courier-Journal*, where her photographs of school desegregation helped earn the paper a Pulitzer Prize.

"I'll always have fond memories of Crews," she says. "He was a dear, quiet man. When he found out how old I am, he said, 'Why, my 1951 truck is as old as you!'"

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