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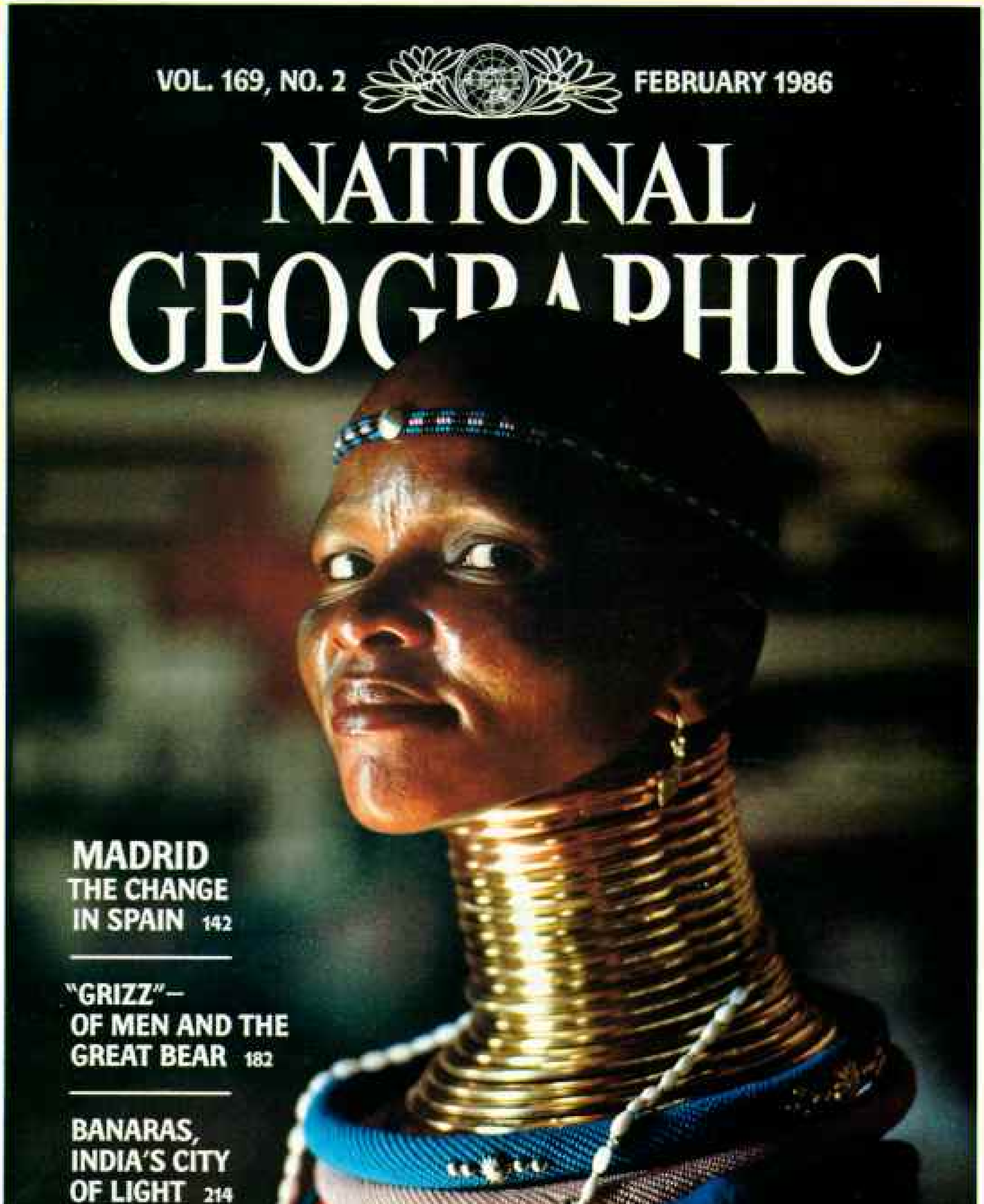

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SEE "CREATURES OF THE MANGROVE" WEDNESDAY, FEBRUARY 12, ON PBS TV

THIS MONTH'S lead article on Madrid marks the beginning—at least for us—of an increasing focus on Hispanic culture as the 500th anniversary of Columbus's "discovery" of the New World in 1492 draws near. The Vikings were in North America by A.D. 1000, and perhaps there were others. But it was Columbus and the Spanish exploration—and exploitation—that put the Americas on the map and forever changed the world. Other Europeans might have done the same, but they didn't.

Pre-anniversary events will include retracing the voyage of discovery in replicas of *Niña*, *Pinta*, and *Santa María*. We will be reminded of the impact of Hispanic culture on the Americas—that in 18 countries Spanish still serves as the official language, and that the padres who followed and sometimes even preceded the conquistadores established their church across the realm.

Recently at a board meeting of Partners for Livable Places, a nationwide group devoted to improving the urban environment, we were discussing the coming celebrations. LaDonna Harris, a Comanche Indian and respected Native American spokeswoman, said, "Our people don't celebrate Columbus's arrival, and we'll have difficulty with the anniversary of the Statue of Liberty."

She wanted to remind us, she explained, that America was discovered and occupied thousands of years before the Europeans arrived, conquered the indigenous peoples, and destroyed their way of life forever.

In addition to Hispanic culture, the newcomers also brought diseases, including smallpox, which aided the conquest by killing more than half the native population.

As it has always been on this earth, the winners wrote the history books. Since no written language existed in the Americas except for the glyphs of the Aztecs, Maya, and other Mesoamericans, what we have learned and will learn about the first Americans must come from fragmentary and prejudiced reports of early visitors, the archaeological record, and the scant surviving Indian oral history.

It is critical to a balanced understanding of American history that events leading to 1992 spotlight pre-Columbian America as well as its "discovery" by Columbus. Thank you, LaDonna, for reminding us.

Wilbur E. Garrett

EDITOR

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Madrid: The Change in Spain 142

Beneath the gloss of a cosmopolitan capital John J. Putman finds the soul of a Spanish village. Photos by O. Louis Mazzatenta.

"Grizz"—Of Men and the Great Bear 182

Grand in size and mystique, the grizzly has been diminished by relentless erosion of its habitat. Is North America big enough for the big bear? asks naturalist Douglas Chadwick.

Banaras, India's City of Light 214

Celebrated as a center of faith and learning, Hinduism's most sacred site draws an endless stream of pilgrims. The distinguished India-born author Santha Rama Rau and U. S. photographer Tony Heiderer capture the spirit of this holy place on the Ganges.

Tide Pools: Windows Between Land and Sea 252

Delighting the careful beachcomber, the intricate life in these natural aquariums depends on the bounty of shifting tides. Photographer Robert F. Sisson reveals the treasures cupped in marine pools.

Ndebele People—Pioneers in Their Own Land 260

Offered nominal independence in a "homeland," South Africa's Ndebele people cope with daily survival in a nation beset by increasing violence over its apartheid policy. David Jeffery and South African photographer Peter Magubane report.

COVER: *Metal neck rings have traditionally distinguished married women of South Africa's Ndebele. Photo by Peter Magubane.*

THE NATIONAL GEOGRAPHIC MAGAZINE
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FOUNDED 1888

MADRID: The

Change in Spain

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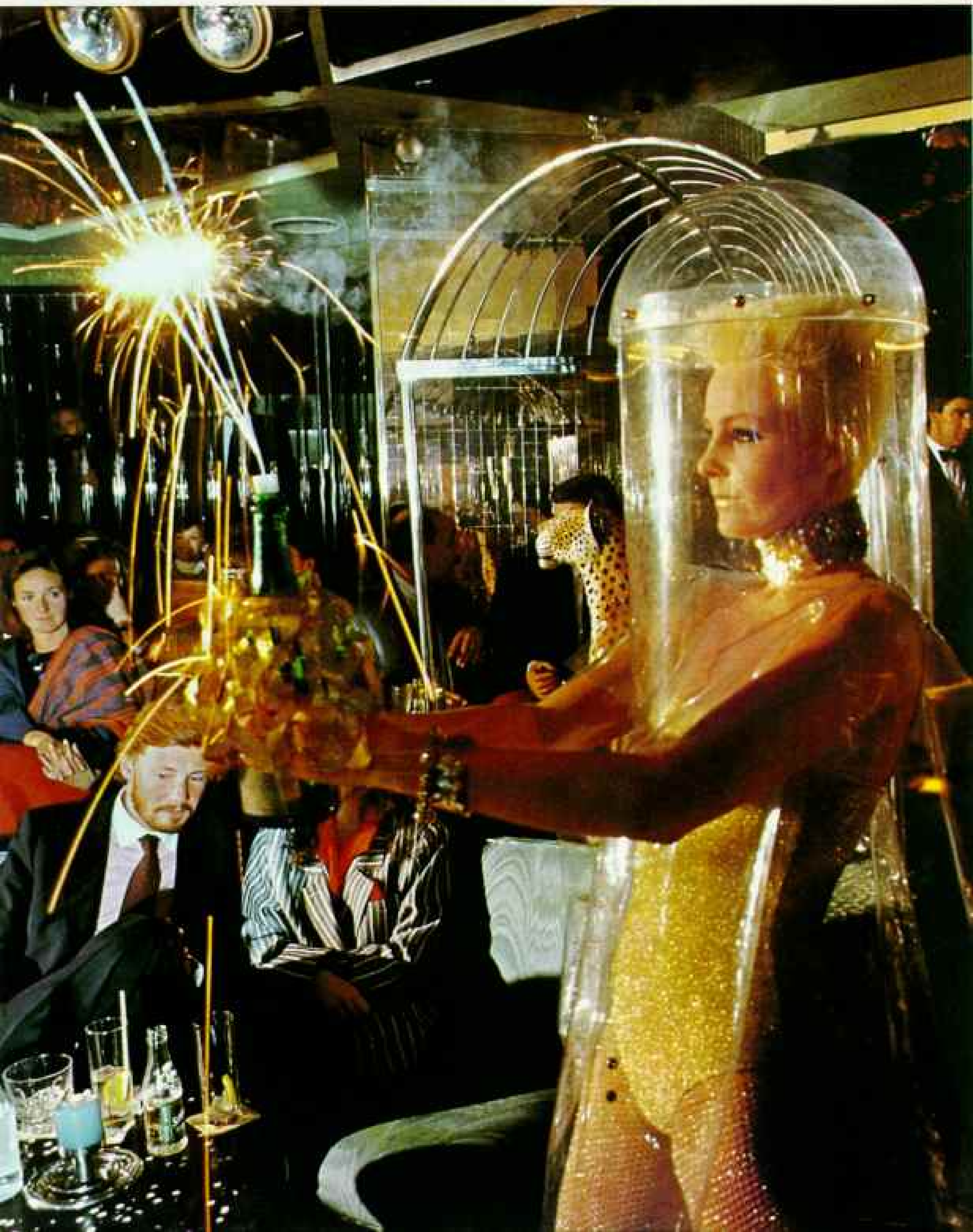
Awash in freedom after a long night of autocratic rule, Madrid is enjoying a renaissance of culture and spirit. As Spain embarks on its second decade of democracy, the capital area is bursting at the seams with a young, cosmopolitan population of five million. Beset with runaway growth, especially in burgeoning satellite communities, Madrileños face the future with the same bravado as this high-wire performer 300 feet over the Plaza de España.

By JOHN J. PUTMAN
NATIONAL GEOGRAPHIC SENIOR WRITER

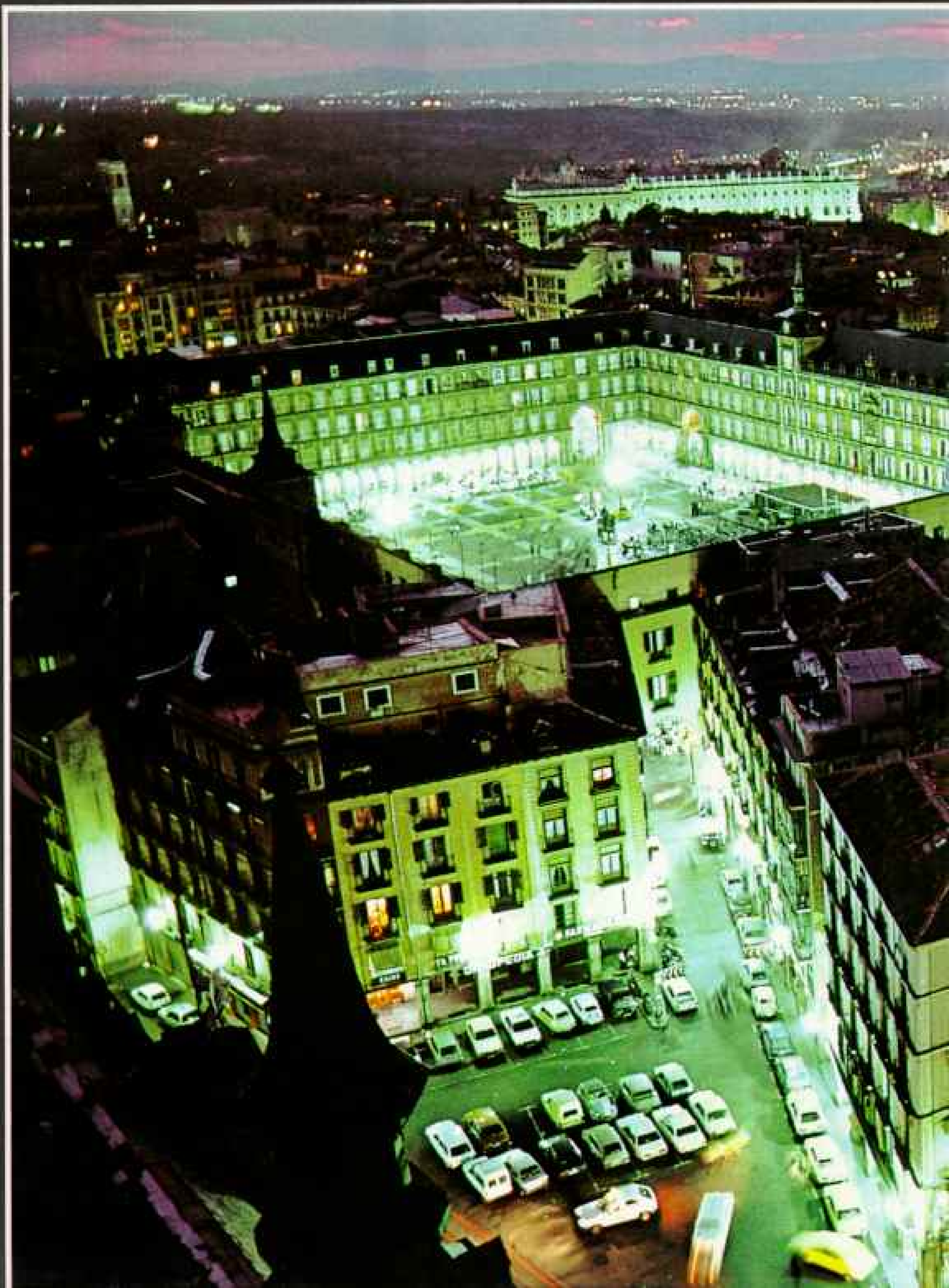
Photographs by
O. LOUIS MAZZATENTA
SENIOR ASSISTANT EDITOR

Night people, surviving on a minimum of sleep, Madrileños will catch an early play or movie, dine at eleven, and then barhop their way to a *discoteca* of their taste and means. At Vanity, a moneyed crowd



takes in an intergalactic fashion show. In the downtown theater district the young and restless at Joy Eslava move aside at three in the morning for Koki, an overnight sensation from Los Angeles.

The heart of old Madrid, the Plaza Mayor is surrounded by 136 houses built in the 17th century. Most are passed down from generation to generation within the same family. For two centuries the plaza served as the city's chief forum—



for beheadings, bullfights, and the canonization of saints. The Royal Palace, one of the world's grandest, completed in 1764, rises in the background. Today's monarchs, King Juan Carlos and Queen Sofía, use it only for state occasions.

Into the fray four times a day, Madrileños head home well after sunset. The burden of being urban falls heavy on Spain's city dwellers, who pay for the tradition of siesta with four daily rush hours. Though some

of Madrid's stores and offices are adopting the continuous workday, many of those around the Plaza de la Cibeles (below) and elsewhere close their doors at 1:30 for a midday family dinner, resuming work at four.

¡NO PIERDA TIEMPO NI DINERO!
¡LINGUARAMA LE HARA HABLAR IDIOMAS
linguarama ORENSE 24 · MARIA MART II MADRID-20

ALLOW ME TO TELL YOU about Emilio the shoeshine man. Of bantam size, with a boxer's sloping shoulders and a sun-creased face, he worked his cloth strongly and truly until your shoes seemed like dark mirrors, and they would remain that way a long time. But Emilio had other qualities: He instructed me in the character of *los Madrileños*, the people of Madrid. His own life was a textbook. There was pride, extreme individuality, a readiness to criticize, an unassailable conviction that one's life, whatever the circumstances, represented a great moral victory against stupendous odds. There was, yes, even a hint of Don Quixote, for not everyone saw things with the same vision as Emilio.

FRANCE
ANDORRA
SPAIN
PORTUGAL
Madrid
GIBRALTAR (U.K.)
MOROCCO
ALGERIA

NGS CARTOGRAPHIC DIVISION

I was staying then in an old hotel in the old part of Madrid. It was a fine hotel; they poured your drink from an upended bottle and without measurement; few of the staff had ever thought English worth learning; the parlor provided a stage for gallantry—"José, it has been 20 years, and you haven't changed a bit, you are just the same. Come, old friend, the table is set, the lunch prepared." While in the lobby would appear now and then, with the impact of a thunderclap, a pile of luggage topped by a scarlet cape—a matador had arrived! The cape fascinated; it seemed to smell of death.

Emilio had his workplace just across the street, in a corner of the Plaza de Santa Ana. One day, as he applied the black polish, he began to tell me about his life. He had been a waiter, a boxing promoter, a sparring partner. Since then he had held down this particular corner. "I'm a figure here," he said. "Seventy-four but still fit." He was proud of his work.

"It's common in Madrid that every famous café has its own shoeshine man. Many important cafés wanted me to work for them and their customers. I showed them what I could do, but I preferred to stay here. You know why? Because I am a free man. The only way not to be corrupted is just to be by your own, to work by your own, to be your own boss."

He had a philosophy: "To be a good person, a good human being." It was not easy. "Here everybody is flattering everybody, from the moment they wake up until they go back to sleep. So these people get things, you know, they go up in life; but those that don't flatter anybody, we are nothing, so we're distressed.

"Look!" he said, his short body rising to its height, his arms extended almost as if to box, "I could have been an important person, a minister, anything, if only I had been willing to flatter, to lie—but I wasn't!" He stood there, poised, as a customer came up. "Emilio," the man said, "use your head, put the stand in the shade."

I had come to Madrid to look into recent changes. The mushrooming of its population from 1.6 million in 1950 to five million today; a building boom that had changed the face of much of the city; relative economic prosperity that had enlarged the middle class; new political and business links with Europe that were eroding its traditional isolation; the functioning of democracy after nearly 40 years of a dictator's rule; a new air of freedom and possibilities that contrasted sharply with the recent past. Many spoke of

***Art inspires life** in Retiro Park, where lovers embrace by two statues depicting a suitor serenading his lady at her balcony—a Spanish tradition borrowed by New World Latinos. The park dates almost from the time of Philip II, who chose Madrid for his court in 1561 for its central location on the high Castilian plain.*

***(Overleaf)** In oldest Madrid near the Plaza Mayor, Eliseo Arias Mancebo bestirs the morning air with a bit of lute music. At 67, the father of a doctor and a pharmacist is himself studying to become a dental technician.* ▶

UNIVERSIDAD
SEVILLA

Beba Coca-Cola
PERMITIDO
CARGA Y DESCARGA
DE 21 A 11 h
CAFE EL RINCONCITO BAR
FOTOCO
Coca-Cola

Galerias
COSTAS
REGALO
REBAJAS

a renaissance in the city, chosen 400 years ago as the capital of Spain by King Philip II.

But as I sought to measure these recent developments, I was confronted time and again by the old Madrid, the traditional. It was as if I were being tossed headfirst into one Goya canvas after another, with all their crowds, color, faces, passions dark and light. I had only to look from my balcony down on the Plaza de Santa Ana: there, the pigeon lady with her bundles of bread, enveloped in a purplish cloud of birds, some perched on her shoulders and arms so that she appeared half scarecrow, half mystic saint; the three dwarfs, always together, one always wearing a cowboy hat; idlers, lovers; two Gypsies with a drum and a dancing goat. You could sense the past in the streets: beggars, vendors, fortune-tellers. ("The palm of your hand says that good luck awaits you! Before three days are over, you will find a special happiness in your heart. Give me 500 pesetas! Don't be a miser!")

You could sense it in the two aristocrats at lunch: impeccably mannered, sensitive to the slightest impropriety, instantly generous, and afterward striding toward their waiting car like hidalgos striding toward snorting steeds.

"It is not true that we have been isolated for the 40 years of the Franco regime," a distinguished man of letters told me. "We have been isolated for 400 years." Those 400 years reinforced certain attitudes. "The Spaniard," one scholar wrote, "above everything else, feels that to be a whole man he must know how to face death with dignity." Another, commenting on the apartness of the Spanish, declared: "Other peoples have left institutions, books—we have left souls."

MOTHER ABBESS María Isabel del Santo Angel appeared behind a dark screen and an iron grille. She wore Franciscan brown, a medallion depicting the Virgin carrying the infant Jesus, simple sandals. With her was *la tornera,* the nun who watches as visitors put messages into a cylinder in the wall, then turns it so that the messages can be extracted from behind the grille.

"Our main preoccupation," the mother abbess said, "is to maintain a close unity with God, and to achieve that is possible only through isolation. It is not that we don't wish to know about the world or to give advice to those who need it. But in order to concentrate on God, we cannot converse with other people. It distracts us."

The building was the Convento de las Descalzas Reales, the Convent of the Barefoot Princesses. It had been the pleasure-house of the Emperor Charles V, had been converted by his daughter Juana into a convent for women of station who wished to retire from the world, and had begun to function thusly as Philip II began to develop Madrid as his capital.

Part of the convent, now a museum, bespoke that golden age of Spain: frescoed walls and ceilings; small chapels filled with so many images they seemed like dollhouses; precious objects of gold, silver, coral, diamonds, ivory; scores of reliquaries holding remains of the saints. But it was the two nuns, the iron grille, that summoned the past more strongly.

There were 27 nuns in the convent, the mother abbess said. Their days, which begin at six, are filled with prayer, silent and spoken, group and individual. There is work: cleaning the museum; making embroidery for religious garments; sewing buttons, labels, and hems into dresses for department stores. Once they had repaired old tapestries, but no longer. "There was no profit in it, and the older nuns were a bit apart from the work, as it was very demanding on the eyes. We wanted everyone to work together, and no one to be left out because she was old."

Thrice a day come pleasant times when they can speak with each other, joke, laugh. At eight there is dinner. "Afterward we go back to pray—to say 'good night' to God."

Through a special arrangement, I was allowed to visit the modern wing of the convent, where the nuns live. The building was light, airy, simple, like a college dormitory. There was a courtyard, a garden. Here, in the middle of Madrid, was tranquillity, a hint of eternity. The nuns seemed happy, even a little excited, for a visitor here was rare. When a cat leaped from the garden through the grilled window and disappeared down the hall, they laughed.

But I wondered: A cloistered life in this day and age? Did girls still have vocations?

"Oh yes," the mother abbess said. "The last came to the convent in January. She was 16, from a wealthy and important family. Her birthday was in May, and she celebrated it here in the convent. Another is 13, very pretty, and she wants to become a nun, but she has to wait because she is so young." Madrid, I mused, was not soon to run out of souls.

"PUSH YOUR BUTT in, come on! Tuck in your bottom! Follow the *capote* with your face! Stay in front of the bull! Just move your wrists, not your whole body! Come on—do it with pleasure! Put some character in it!" Gregorio Sánchez, 18 years a bullfighter and now an instructor at the Madrid bullfighting school, wiped his face, took a swig of water from the *botijo*, an earthen jug, and came over to talk. The boys he had been teaching put away their gear—the cape, the sword, the pair of horns one used to play the part of the bull—and began calisthenics.

Gregorio was of middle height, handsome, his face creased by the countless wrinkles that come from so many afternoons in a sun-drenched *plaza de toros;* the eyes were those of a survivor. "I took the *alternativa* [the ritual in which a young man takes his pledge as a matador] in 1956. Since then I have fought in 1,200 corridas." Eight times a bull had caught him with the horns—in the buttocks, the arm, the groin, the stomach. But Gregorio was all right, satisfied with his career.

"I come from a very poor family, a small village. Thanks to the bullfighting I now have friends, money, happiness. I am

Ennobled by marriage, *Jesús Aguirre, a former Jesuit, helps his wife, the Duchess of Alba, oversee a priceless art collection from their Madrid palace. So numerous are the family's properties that the duke cannot name them all.*

married for the second time. I have three children by the first marriage, and my second wife is now expecting."

The school, he said, was a good idea. "When I started, it was different. You had to go from village to village, having accidents with the bulls, and having a very bad life. Here we teach them to live an honest life, not a life in the streets. They can be trained, get a technique. But there is something we can never teach them, and that is to be brave."

He remembered how on the morning of a corrida he would feel something strange in his stomach: "It started early in the morning. I wasn't hungry at all. I couldn't eat anything." And how, as he waited to enter the ring and heard the music commence, "there was an emotion that cannot be explained. You notice that your heart is beating very fast, and you can't stop it. But after you have given the bull a couple of passes of the muleta, you feel the heart is getting slower, slower, slower, until it gets to the right place."

He mused, a half smile coming to his face. "When you are young and you are caught by the bull, you never understand why it happened; it really happened, but it seems the bull never approached you with his horns. But the more you learn, the more experience you have, the more you fear it. So the fear grows with the learning.

"The real bravery is when you have learned a lot, because to stay in the plaza in front of the bull when you already know what it is all about—it means you have courage."

Gregorio turned his survivor's eyes back to the boys exercising: Some, he knew, would have that courage, would be able to face the possibility of death with dignity and grace; most would not.

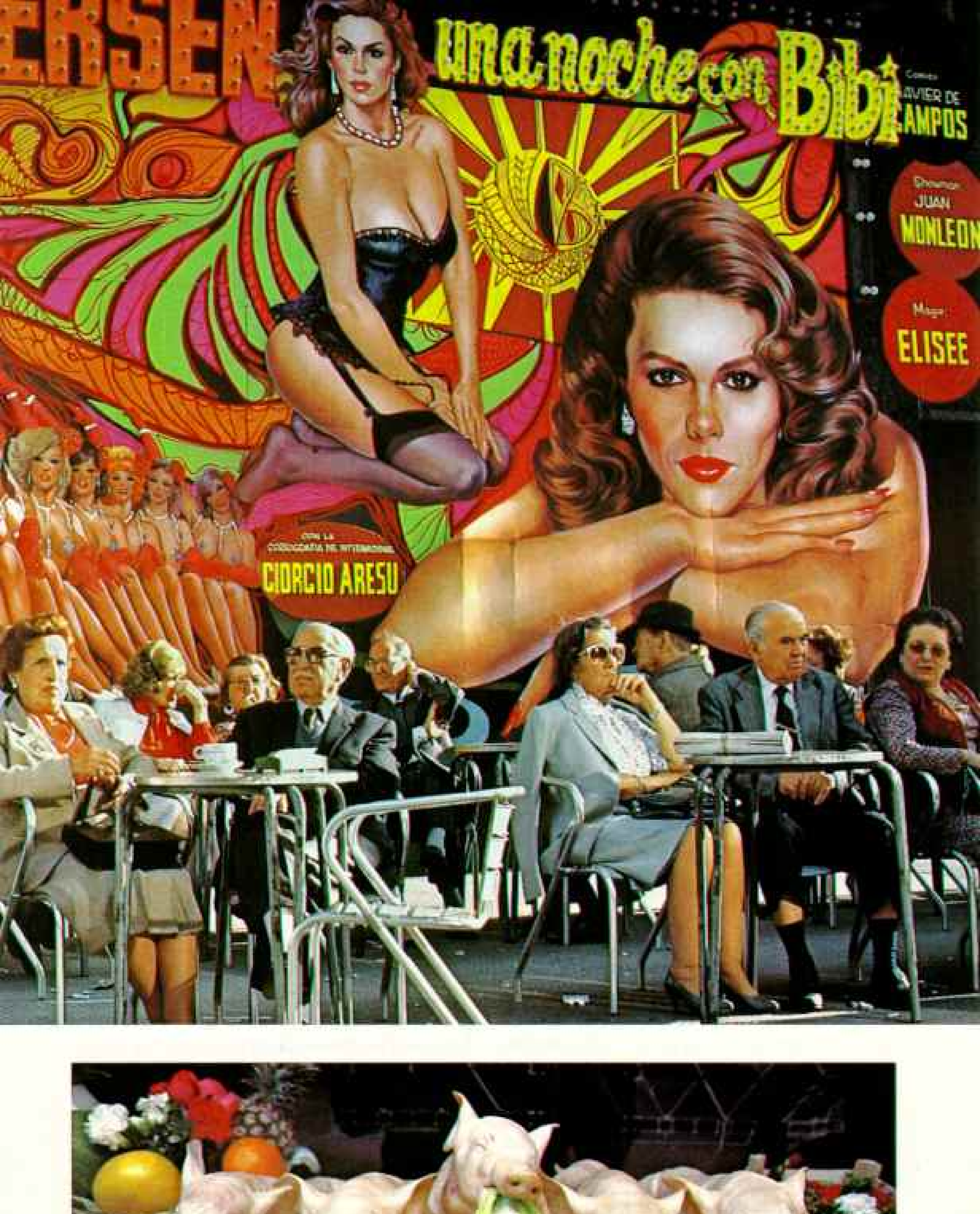
"MY FIRST MEMORIES of this house," Teresa said, "are of being very cold, of having no electricity, of how we all had to go to bed in the same room, and of what a hard time we had to fetch water, carrying a jug a long way and across the railroad tracks."

The house was small, simple, built by her father. It stands in the Pozo, a community on the edge of Madrid, and helps explain the city's growth in the 1950s, '60s, and '70s.

"Father told us he had to come here, to

BIBI AND
31 97

Symbol of changed times, *the popular female impersonator Bibi Andersen stares down from a poster along the Gran Vía, Madrid's Broadway. Such attractions reflect how much the nation's mores have relaxed since the death of Franco in 1975. Nearby, a window display in the 260-year-old Casa Botín restaurant—a favorite of American writer Ernest Hemingway—announces the house speciality, roast suckling pig.*


ERSEN
una noche con Bibi
Cómico
AVIER DE
AMPOS
Showman
JUAN
MONLEON
Mago
ELISEE
CON LA
GIORGIO ARESU

leave the village in La Mancha where he and my mother lived, because there was no work in that village 30 years ago. It cost him a lot to leave his house, his mother too, but I think he never regretted it. He got one job after the other here until he became ill and couldn't work any more."

The flight from rural poverty to Madrid in those decades was on the level of other urban immigrations in Africa or Latin America. The city bulged with newcomers. Their patchwork houses rim the city yet. Teresa was lucky: She and her own family—husband Paco, three children—were soon to move into a new apartment complex in the community.

Paco, 33, a Madrileño, had started work at 14 and in time had joined the Communist Party. At the moment, however, he was not a card-carrying member. His explanation illumined the character of the men of the Pozo and said something too about the Communist Party in Spain.

"During the 40 years of Franco, there were many Communists, and they became stronger and stronger. When the party was legalized in 1977, the members had great expectations, thought they could get a lot done. But we started seeing all the leaders dealing with the impresarios at a high level without any participation from the base. So there was a confrontation.

"There were 1,500 card-carrying activists in the Pozo; the party fired them all, save

LIBRERIA MATEOS

Spanish literati *gather at the Café Gijón each Saturday for conversation in a group that first met in 1944. Subjects range "from human to divine" says poet J. M. García Nieto* ***(left,*** *standing), a founder.*

Spain's leading poet, Rafael Alberti ***(above,*** *at right) is a living link with the early 20th-century Spanish renaissance in the arts. Editor of* El País, *the paper that more than any other helped guide Spain through the transition to democracy, Juan Luis Cebrián* ***(right)*** *scans the competition.*

seven." Now, Paco said, the party had seen its error, invited all 1,500 back. "We're thinking about it, wondering what to do."

As for his life, Paco said: "I am satisfied. I don't regret anything I have done. I could have done more, and I hope that the people of this country will do more—only they are held back by the weakness and fear they sometimes feel."

THE TINY GLASS ELEVATOR started with a creak, rose slowly through the bends of the rococo staircase; Paulino García Puente (page 170) was waiting in an office on the fourth floor. He was a small man, full of years, a little ill. As we talked, and the memories came back, his eyes brightened. He had been a *comandante* in the Republican army during the Spanish Civil War; he had been captured, condemned to death, thrown into a stable with 800 other prisoners.

"It was during the night that people were taken away and shot. An officer would stand in the doorway and read the names. He read very slowly, purposefully so, to build suspense. He would read, say, 'García'—a very common family name—then slowly the second family name that identified the man. You can imagine the reaction of those summoned. Some just collapsed, but most reacted with firmness and pride."

Mr. García Puente had survived and worked now through a small political party to reestablish the republic for which he had fought—a *republic*, without a king. Many had called that republic *"La Niña Bonita*—the pretty girl." But she had perished in civil war. All over Madrid older men sit in such offices, recalling that past about which they have no regrets save that they lost. They called to mind the old Spanish proverb: "Be patient, and reshuffle the cards." Only the game was over.

OFTEN I WONDERED at the diversity of life in Madrid. Consider, for instance, the Duke and Duchess of Alba, who dwell in a splendid palace that once was on the city's outskirts but is now in the center.

"My daily life is very simple," the duke told me. "In the mornings I do my personal things; writing, reading. In the afternoons I dedicate all my time to the administration of the House of Alba."

The family traces to the 11th century, holds 48 noble titles, including 18 titles of grandee. "My wife," the duke said, "is a direct descendant of James II, the last Stuart king of England; her family tree includes, among others, Christopher Columbus.

"The duchess," he said, "paints and also is in charge of all the family's houses. It's very demanding. You can have a lot of servants, but still you have to look after the houses yourself. If, for instance, we go to the palace in Seville, a 14th-century one, she has to start all over to have everything cleaned and organized. She likes to do it, and she likes to join the normal people of those places and has a very good relationship with them."

The duke's task, he said, is to preserve the family's huge artistic patrimony: palaces, paintings, objects of art, papers that are still mined by scholars for insights into Spanish history. "We have to live for the maintenance of this patrimony," he said, "not to profit from it. So that it is kept alive, not lost or allowed to deteriorate."

And then consider my friend Carmen, who, when I met her, was often on the way to the Monte de Piedad, the "hill of pity," the government pawnshop, to finance the coming week; or Luis, who sells religious articles and was delighted when a lottery winner attributed her luck to an image of St. Pancras and so triggered a run on his shop; or Don José Luis the impresario, who collected old cars and who kindly introduced me to the new Madrid of high fashion, artistic bustle, the newest discos.

AFTER YOU have been in Madrid a while, you begin to wonder: When do the Madrileños sleep? When do they work? And is it really true, as they claim with a wink, that they suffer from claustrophobia and so must constantly flee home and office for the street, the café? A journalist friend, Luis Carandell, described his city as "a town of conversation, with a great taste for the street, a propensity to criticism and eternal gossip."

Ah, gossip! The renowned novelist Camilo José Cela leaned close and explained: "You see, around every prominent man in Spain is a tale, sometimes red, sometimes only pink; these tales are not really calumnies, but neither are they entirely true." Such a tale, between red and pink, enveloped him; he was clearly not unpleased.

As Señor Cela was rich in years and honors, I asked his view of life. "I think it is conditioned by three things: Sex, a good stomach, and a great desire for command. The weight of love? In general, very little for the world." A bleak view? I was not surprised. Señor Cela is known for his profound sense of realism.

In the cafés I learned how to disparage those from the provinces: "With a Galician, you never know if he's coming or going; he'll answer a question with a question." Or another political party: "The Socialists lack a right hand"—the sword hand, and so are ineffectual.

I learned to relish *tapas*, light snacks designed to hold off hunger until the dinner hour—at ten or eleven in the evening. At table I favored traditional Madrileño fare—like the city's people, drawn from every part of Spain, bespeaking a robust character: king crabs, blood red, large as soccer balls; tiny squid cooked in their purplish ink; bulls' testicles sauteed in garlic; slivers of chewy air-cured ham; suckling pig, roasted in old ceramic wood-burning ovens; grilled flounder, fried hake, red snapper encrusted with salt and then baked; garlic soup, tripe stew; and *cocido*, a dish, my journalist friend Luis said, "so abundant, so rich, and so demanding that people in Madrid usually call it by the diminutive, *cocidito*, in an attempt to dissimulate something of its pantagruelian character."

When one day I discussed the challenge of Madrileño food with Emilio the shoeshine man, he confided: "I eat a lot, all the strong things, but after lunch I always take a clove of garlic and a dash of soda for the digestion." Our talk was interrupted when a woman tripped on nearby steps. "The third today," Emilio said, and was instantly, gallantly, at her side.

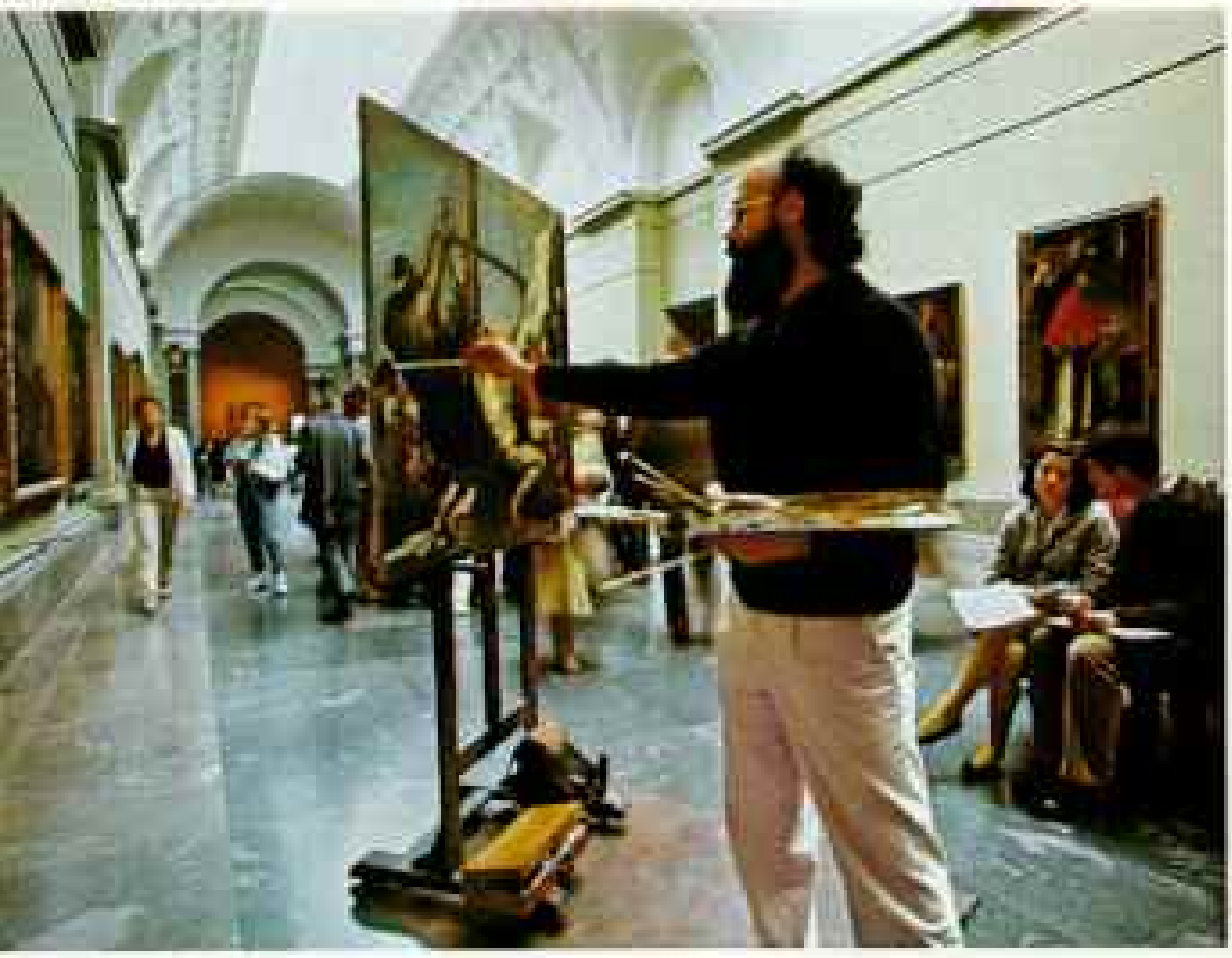
I walked on. I had my favorite places in Madrid: the Retiro, the great park in the city's heart, with its lake, ducks, boaters; the Casa de Campo, across the Manzanares River, where families picnic and would-be bullfighters practice their dreams with capes and sets of horns beneath the trees; the Paseo de la Castellana, the great boulevard that runs north-south, with its trees and cafés; the Calle de Serrano with its fashionable shops; and, above all, any narrow, twisting street in the old city.

In those streets you rub shoulders with ghosts from the past: that slender man with the war-crippled hand, Cervantes, rushing home to write; that intense man scouring the back alleys in search of characters for his next play, Lope de Vega; that young man from Aragon reporting at a royal factory for his first job in Madrid, designing cartoons to be translated into tapestries, Goya.

And, of course, the Prado: Rambling its dimly lit rooms, I felt not so much in a museum as in an old family mansion. This

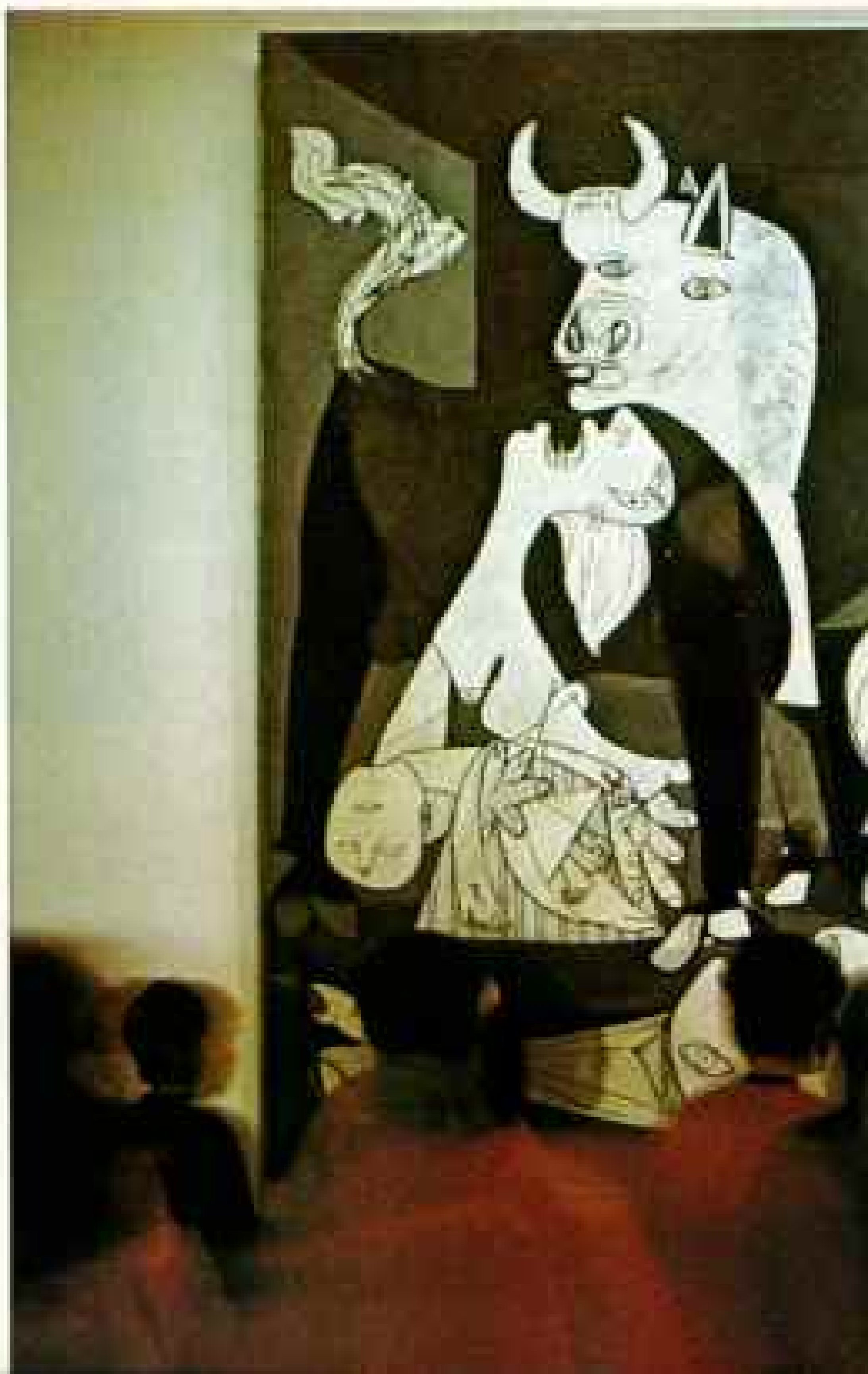
Gambling on sunshine, *an artist renders a Mona Lisa in chalk in Retiro Park. Such street activities are encouraged by Madrid's mayor, Enrique Tierno Galván, who also helped introduce horse-drawn touring carriages to the city.*

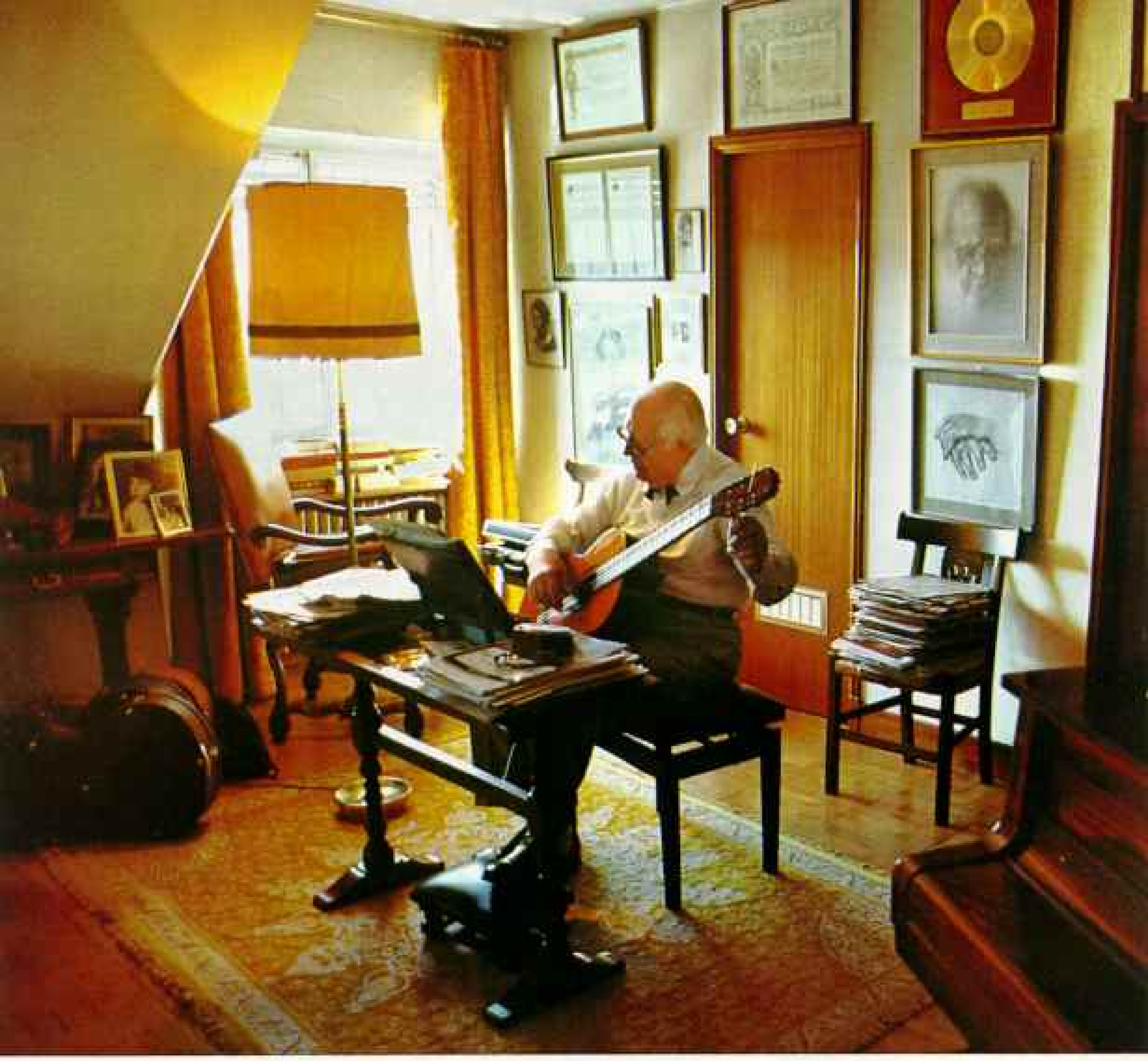
"Hold your breath *and save a painting," would make an apt warning in the Prado—Madrid's famous art museum. While a new air-conditioning system will curb the problem, many of the museum's masterpieces are showing the ravages of pollution, which includes human breath.*



Recently restored to its original glory, "Las Meninas," by Diego Velázquez **(above right)**, *is counted by some critics as the world's greatest painting. It depicts the Infanta Margarita and her attendants. The artist himself stares directly at the viewer, while the mirror behind him reflects the royal parents, Philip IV and his wife, Queen Mariana.*

Housed in a special annex, Picasso's celebrated "Guernica" **(right)** *was returned from New York to Spain in 1981, after 42 years of artist-imposed exile. Though Spanish works, including many by Goya and El Greco, compose the bulk of the Prado's collection, there are also hundreds of Italian and Dutch Renaissance pieces—most bought by the kings of Spain with New World gold. According to one art critic the Prado would need nearly five times its present space to show its 8,000 paintings. For example, only five of 45 canvases by Spanish master Ribera are on exhibit. Local artist Antonio Barón Calzado copies one, "The Martyrdom of St. Bartholomew," on commission* **(above)**.



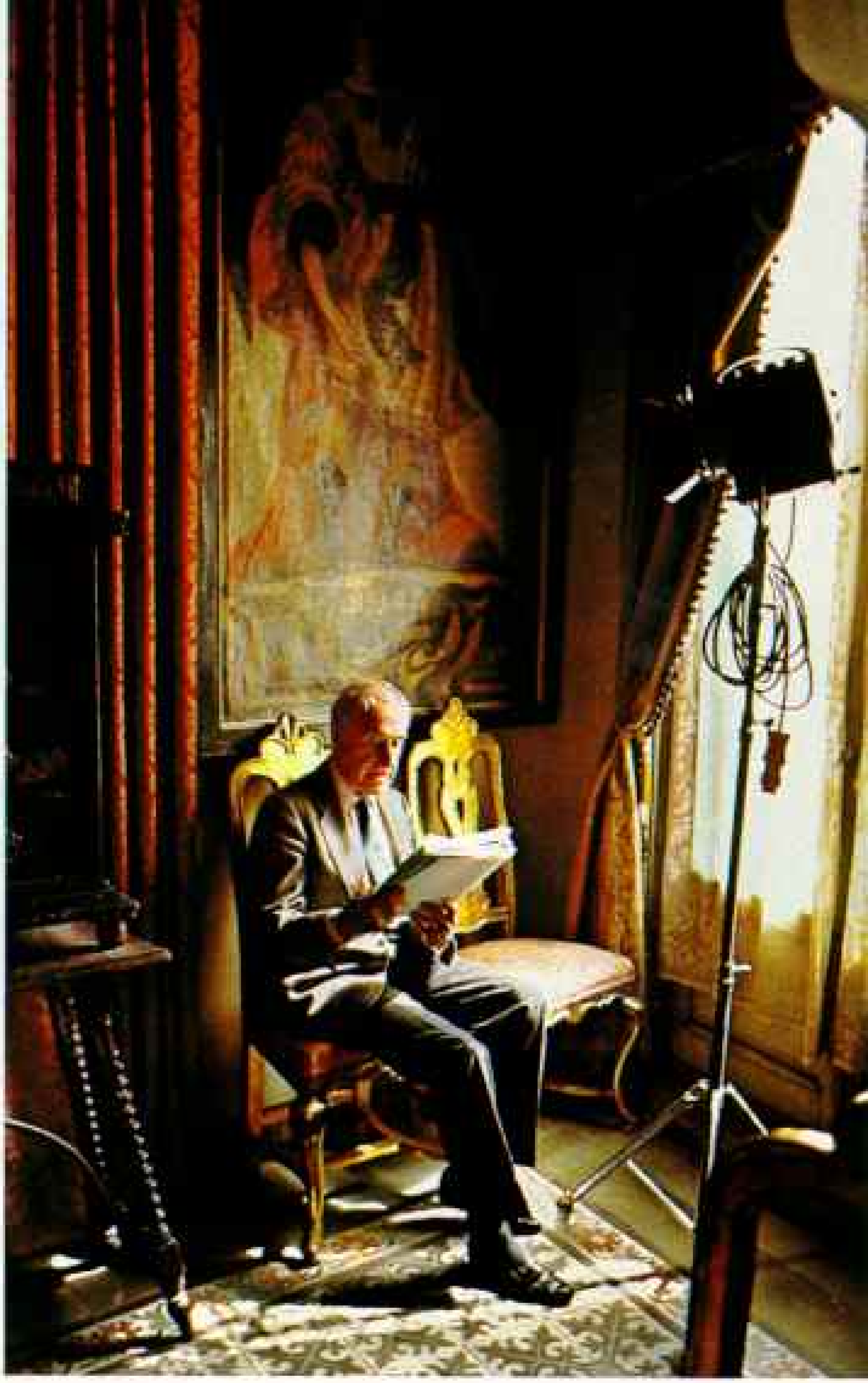


Immortal in his own time, *the great Spanish guitarist Andrés Segovia prepares for yet another conquest of America in his Madrid studio* ***(above)****. Besides re-elevating the guitar to classical status, Segovia, who will be 93 this month, has enriched its repertory with more than 150 transcriptions of Baroque scores.*

A venerated figure on the Spanish silver screen, Luis Escobar ***(above right)*** *studies his lines on a Madrid set. A director until the age of 65, Escobar turned to acting "when I was ripe."*

was fitting, for it is not an art collection assembled by savants but the personal collections of the kings of Spain—and it is rightly said that even the most inept of Spain's kings had a talent for collecting.

There are treasuries of Italian, Flemish, and German masterpieces, but at the heart are the Spanish paintings. They dissect the psyche of Spain past: the mysticism of El Greco, the religious passion of Zurbarán and Ribera, the humanity of Goya, the enigmatic quality in the portraits of the court painter Diego Velázquez. Look at the faces: Young Prince Baltasar Carlos on horseback—what can he be thinking? And Philip IV—why are the eyes so trustful? And that face—did I not see it just moments ago in the street?



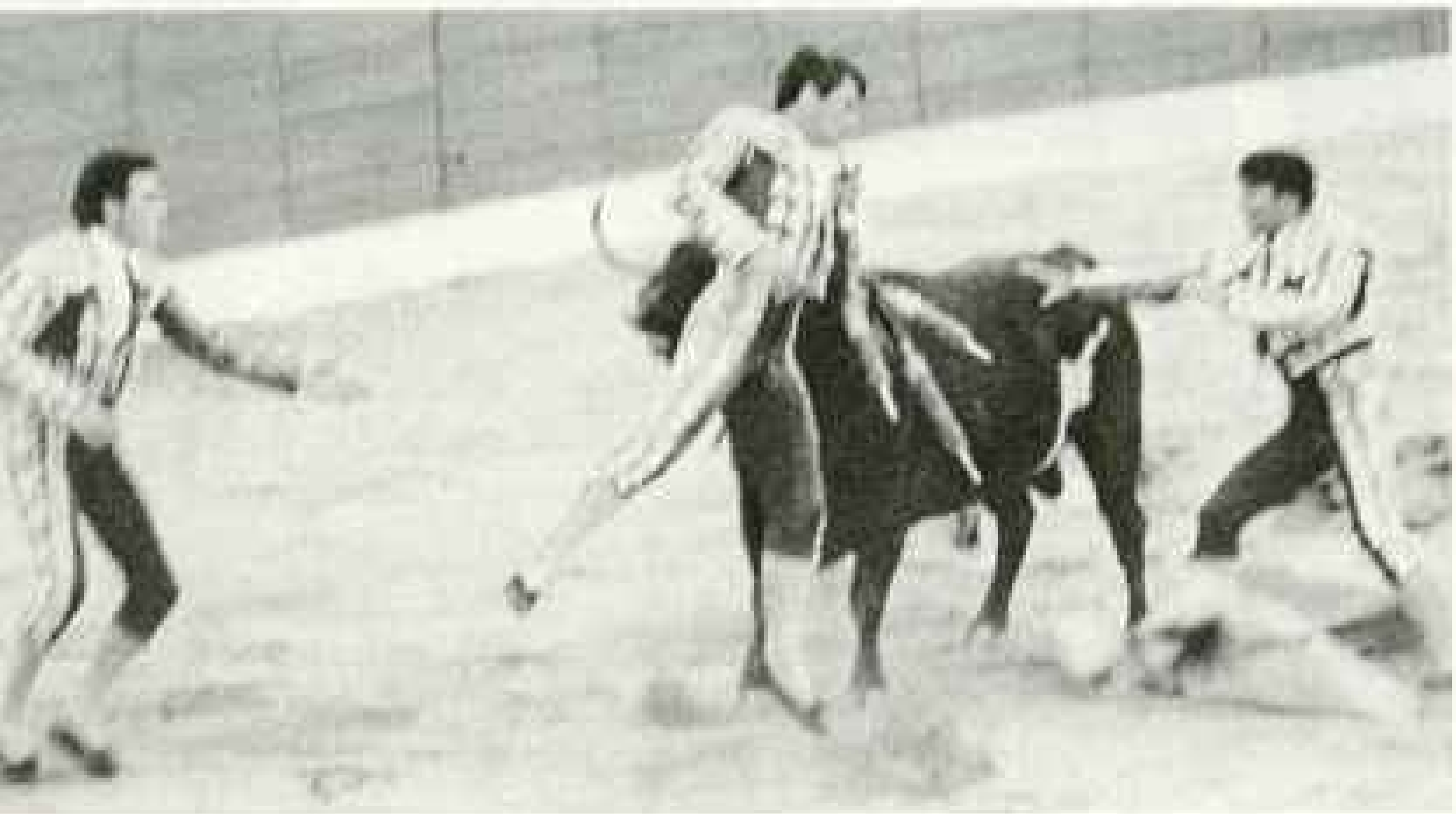
DESPITE its new office towers, its great boulevards and fountains, the smart shops and lively street life, Madrid kept reminding me of a village: spontaneous rather than ordered, fragmented, as if a group of actors had been so eager to get on with the play they had not fully set the stage. Well, it is recorded that Madrileños long hailed their city by shouting, "Viva Madrid! My village forever!"

Perhaps it is those parts of the city where houses still have tile roofs, balconies with iron grillwork, pots of geraniums. Perhaps it is the physical isolation: The city sits on a high tableland at the very center of the country, surrounded by sere plains and mountains. Arriving, one feels as though, boots dust-coated, he has reached a way station, a hospitable country inn.

Conquering Moors founded the town, building a fort above the Manzanares River, naming it Majerit. The King of León and Castile, Alfonso VI, captured the outpost in 1083, turned its mosque into a church, claimed the Virgin as its patron. In time the kings of Spain and their courts began to meet here, the town's attraction its isolation, its lack of history, its distance from older cities and competing noble houses.

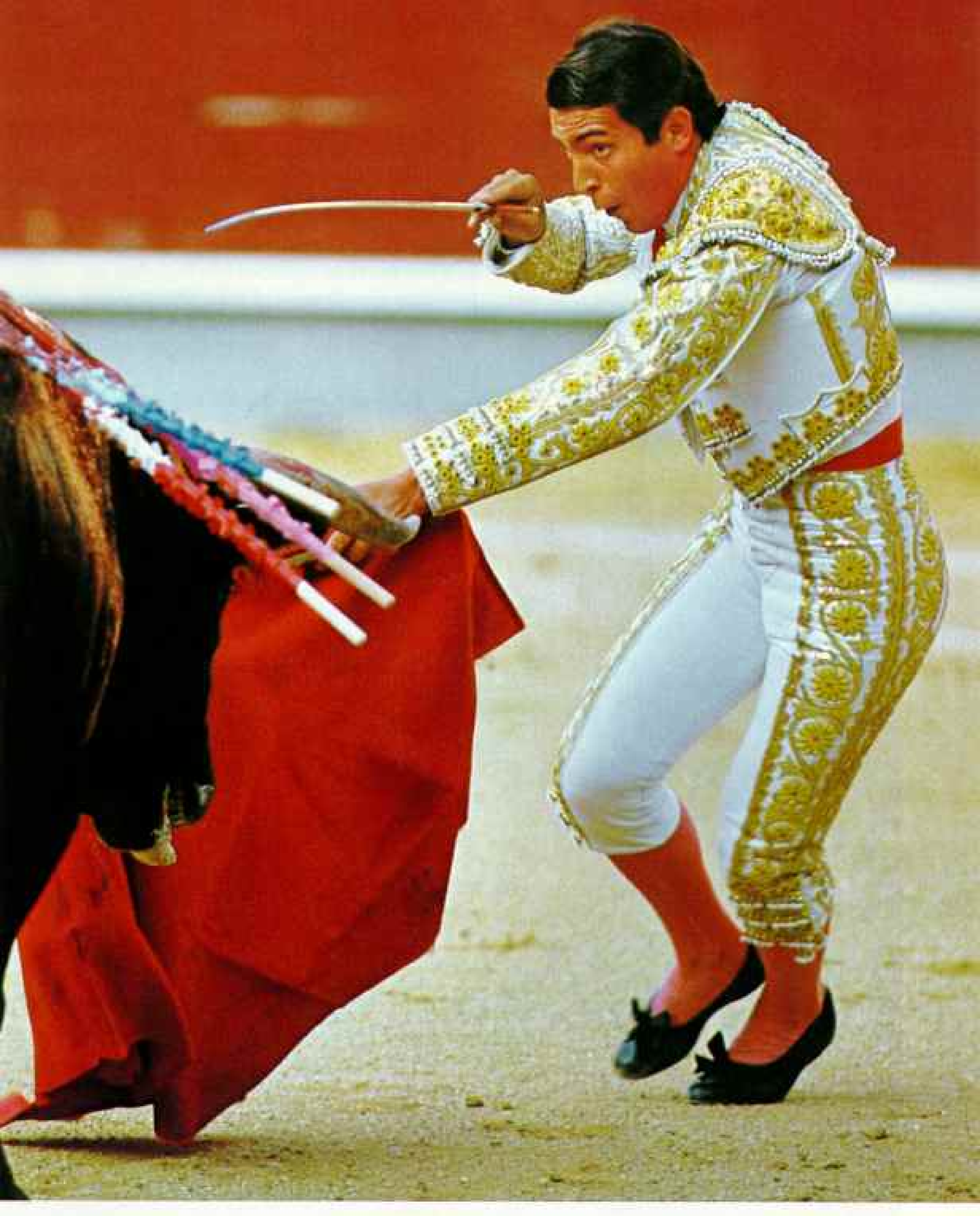
Its development was often turbulent, marked by heroism such as the revolt against the conquering army of Napoleon in 1808, and the epic siege of 1936-39 in the civil war. Seldom, it seemed, had there been time to organize the city. Now, I was to learn, the time might be at hand.

EFE VIA AGENCE FRANCE-PRESSE (BELOW)



"Pali, este toro me ha matado"

"Pali, this bull has killed me"



BOUND *for greatness, José Cubero instead became the second Spanish matador to die in less than a year. Well known as Yiyo, he cut a splendid figure in his "suit of lights"* (**left, top**) *at a May 1985 contest in Madrid's Plaza de las Ventas* (**above**). *Three months later a tragic error would end the 21-year-old's spectacular career and intensify the national debate over bullfighting. After his final sword thrust he turned to the crowd, thinking the bull slain. But the animal rallied and lunged, piercing Yiyo through the heart* (**left, bottom**). *Before collapsing, he told a friend, Pali, that he knew it was the end.*

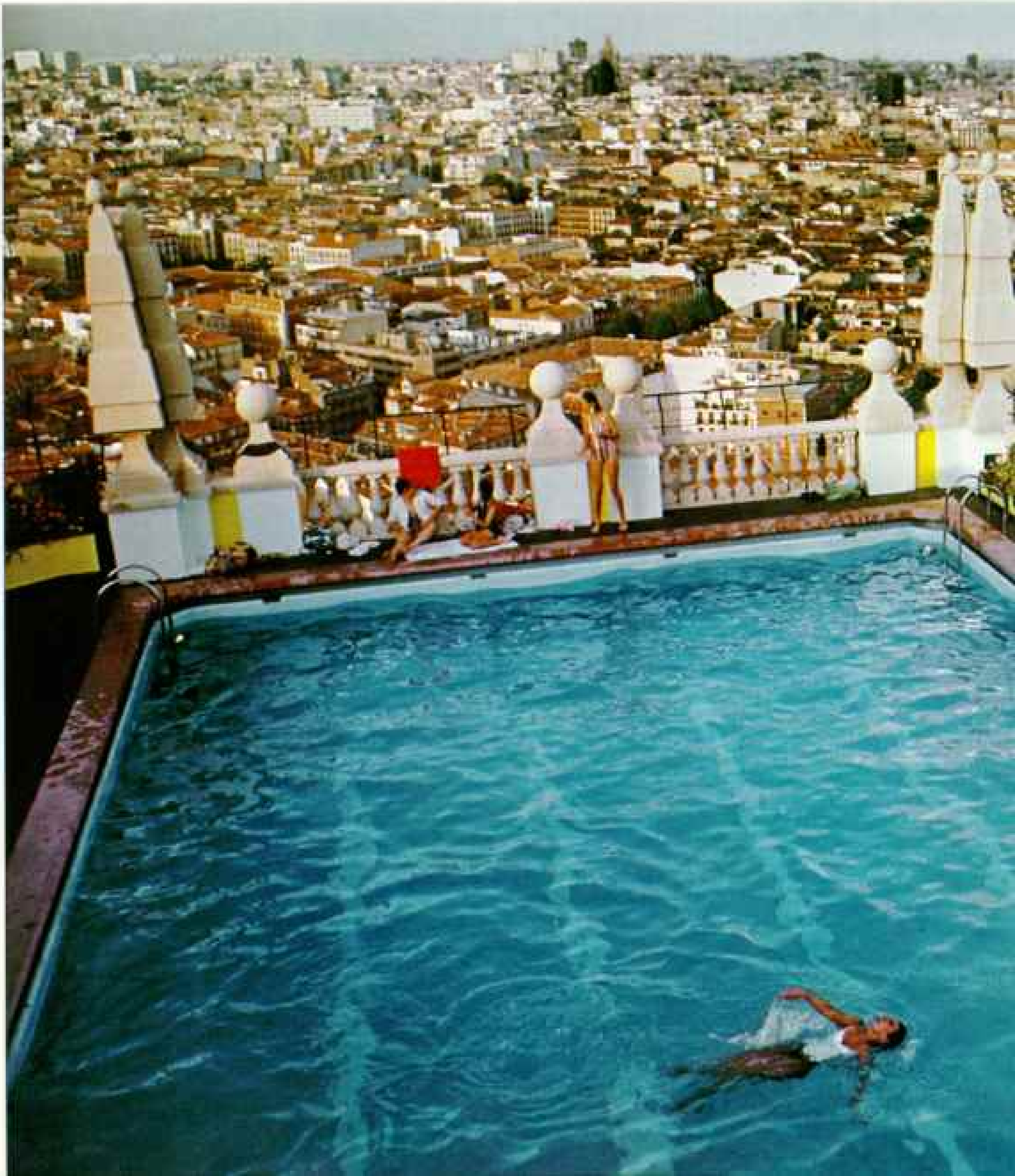
THE MAYOR, whom Madrileños call the "old professor" because of his learning and demeanor, sat on a dais in the city council chamber. When council members fell to quarreling, he would intervene like a tolerant schoolmaster, restoring order.

Enrique Tierno Galván, a Socialist, had been born in Madrid, earned degrees at the university here, fought here in the civil war on the Republican side. He could remember the old Madrid.

"In 1935," he told me, "it was a town half rural, half urban. Where you could have forests very near the town, where you could find rabbits and vegetable gardens very near the places where people lived. It remained like that until the 1950s."

Surely these memories help guide him in efforts to heal the scars of rapid growth. A new law protects 20,000 of Madrid's fine old buildings (hundreds had been torn down in the scramble for development). Inspectors now urge owners to preserve even details:

Europe's highest capital city, Madrid stretches southeast from the Hotel Plaza, where



entranceways, staircases, fine old wooden doors. The city has spruced up and expanded the parks, planted 250,000 trees, added touches of life by encouraging street festivals and by reviving courtyard theater in workers' barrios. The mayor adds a touch of literary elegance. He issues edicts in fine 17th-century Castilian, to encourage the preservation of the language as well as to delight the citizens.

There are problems: pollution, traffic congestion, the need for more and better housing for the less advantaged, a recent rise in street crime, drug use. But the great population boom has ended. The population of the city proper is even declining, some moving to suburbs for more space and quiet, others forced to move by rising housing costs.

This provides an opportunity, city planner Eduardo Leira told me. "The central part of the city is compact, shaped like an almond; around it are sort of 'packages'—peripheral developments. These packages have tremendous populations; they are

a swimmer enjoys one of the city's more than 200 days of sunshine a year.

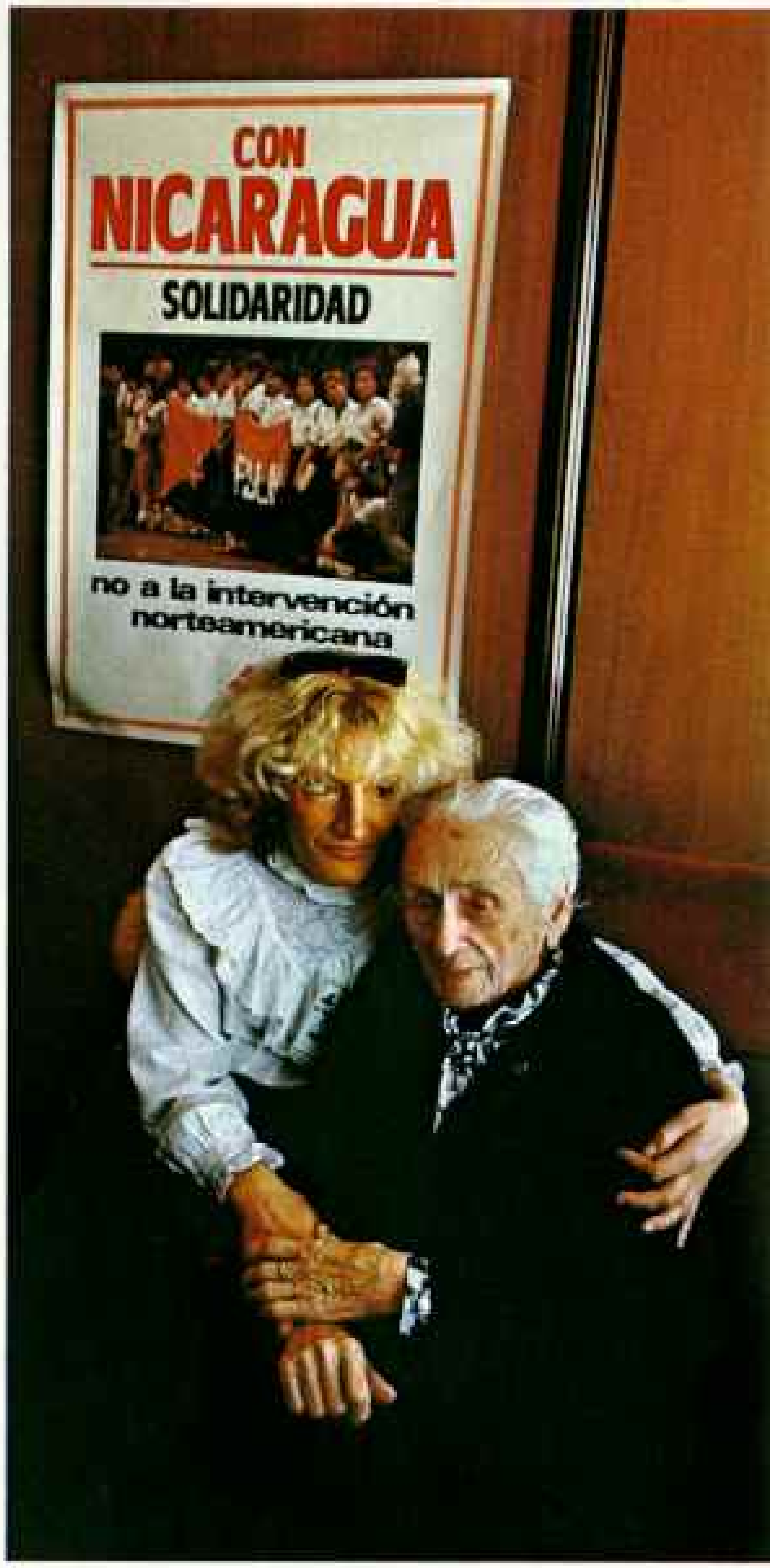
Echoes of a civil war

*A RAW NERVE for 50 years, the Spanish Civil War remains a painful topic for most Spaniards. Beneath a surface of national reconciliation run currents of rage and shame, many aimed at the memory of Gen. Francisco Franco (***right***) and his 36-year regime. Intended as a memorial to all who died in the war, the 150-meter cross over his mausoleum outside town (***below center***) is resented by many as a monument instead to Franco.*

Today old Republican leaders, many returned from exile, are familiar

*figures in Madrid, though their views are too extreme for Spain's ruling Socialists. Paulino García Puente (***below left***) was a Republican army comandante when Franco's forces stormed Madrid. After the war ended in 1939, he was lucky to escape with a prison term: Perhaps as many as 100,000 Republicans were executed.*

*Longtime head of the PCE, Spain's Communist Party in exile until it was legalized in 1977, Dolores Ibarruri (***below right,*** at right) spent most of her 38 years of exile in the Soviet Union. Popularly known as La Pasionaria, she galvanized international support for the Republican cause with lines like "It is better to die on your feet than live on your knees." Now 90, and seen here with interpreter Carmen González, she shows support for "our Central American brothers."*


CON
NICARAGUA
SOLIDARIDAD
no a la intervención norteamericana

dependent on the central city, but are rather isolated.

"Our target is to tie all together, with roads, sewers, electricity, better transportation, to achieve a kind of continuous city. For the first time in our history, we have a plan and the possibility to do it." In a way, the moment in Madrid is like the moment in Spain.

IN THE FOOTHILLS just to the northwest of Madrid stand two great monuments. One, El Escorial, was built by Philip II as a palace, a monastery, a tomb for the kings and queens of Spain. The second is El Valle de los Caídos, the Valley of the Fallen, built by Gen. Francisco Franco to honor the dead of the civil war. It consists of a great concrete cross 150 meters high, and, in a cavern in the hillside, tombs and a basilica. I thought about the two men: Each was abstemious, each governed Spain absolutely for some four decades, each died a lingering death in old age. There are those who say that as Philip's death in 1598 marked the beginning of decline in Spain, Franco's death in 1975 marked a recovery. For it was shortly thereafter that democracy returned to Spain.

When I took a seat in the press gallery of the Cortes, the Spanish parliament, on Carrera de San Jerónimo in Madrid, the bullet

***Spain's top brass,** who supported the young democracy during an easily aborted coup in 1981, turn out for the 200th birthday of the nation's flag (**left**). An admiral in the Spanish Navy, Cristóbal Colón (**below**) is a direct descendant of his namesake, known in North America as Christopher Columbus. In his library he displays a 16th-century manuscript that maps his illustrious ancestor's voyage of discovery.*

holes were still there—just overhead. It was on February 23, 1981, that members of the Guardia Civil took over the chamber in the midst of a parliamentary vote. For 18 hours they held the lawmakers at gunpoint, waiting for a military coup that did not come. King Juan Carlos went on television, used the telephone, supported the new constitution. The leaders of the coup were taken to jail; democracy went on.

"After that," a labor leader told me, "there was a psychological break, and the people think no more about revolution. I think Francoism has disappeared forever in this country; there is a new feeling, a new atmosphere."

After one parliamentary session I talked with Eduardo Martín Toval, a leader of the majority Socialist Party. He seemed fatigued, in part because of criticism directed against his party.

"The problem," he said, "is that the Socialist Party has had the task of consolidating democracy and of preventing a new regime of dictatorship. So the social and political changes that all the people expect from us have to be achieved gradually, carefully, and not in a quick, strong way. And some people—some—think we are a little bit on the right, because of this."

There was also the onerous job of restructuring industry. "It was the Socialist Party

La Bolsa, *or "the purse," Spain's stock exchange* (**right**) *has been enjoying Europe's strongest bull market, after years in the doldrums. Spain's entry into the European Economic Community this year is expected to keep the Spanish economy on the fast track.*

A Spanish success story, Alfonso Escámez (**below**) *rose from messenger to head of the Banco Central, Spain's largest private bank.*

23

New Madrileña, *four-month-old Rosita Espin is dandled by her mother, Rosa, at a christening party in the affluent development of Fuente del Fresno, 15 miles from the city center. Madrid's sprawling suburbs count many such communities of young professionals, who enjoy Spain's highest standard of living.*

that had to perform this terrible task of kicking out hundreds and hundreds of workers. This was necessary because we are ten years behind the rest of Europe, and if we wanted to catch up with the new technology, we had to do it."

Unemployment has reached 20 percent in Spain, its bite softened by family members helping each other, and by a growing underground economy. There are other difficult issues, among them terrorism by Basque elements seeking independence for their province. Now and then in Madrid a bomb explodes, a weapon is fired, a police or military officer slumps in his car, or on the pavement.

AT MONCLOA PALACE, on the outskirts of Madrid, I sat on the terrace with Prime Minister Felipe González, whom Spaniards refer to invariably as Felipe. He is tallish, handsome, his appearance more that of a celebrity than a politician. Twenty years ago he and some friends in Andalusia began to work to renew the Socialist Party in Spain, to change its focus to meet changed conditions, to wrest control from the old exiles who had guided it from abroad. In time, they had softened its ideology, broadened its appeal, won the majority of the votes.

"In most societies with a certain degree of development," Señor González said, "the societies accommodate themselves around the center—right and left. Nevertheless, by individuals, Spanish society is mainly a center-left society. It is a society that has an almost ancestral desire for progress—a desire to reach the historical evolution produced in neighboring countries."

That desire led Spain to seek membership in the European Economic Community; acceptance is expected soon. An isolationist spirit, however, continues. Señor González had promised a referendum on Spain's membership in the North Atlantic Treaty Organization. Many felt it would be rejected by the people.

Amid the political maneuvers since the death of Franco, Señor González said, there was one man who played a crucial role, serving as a reference point, quieting the nation. He was, Señor González said, "a simple man, not complex, but with an enormous capacity and an enormous intuition to know how things work in this society." That man was the King.

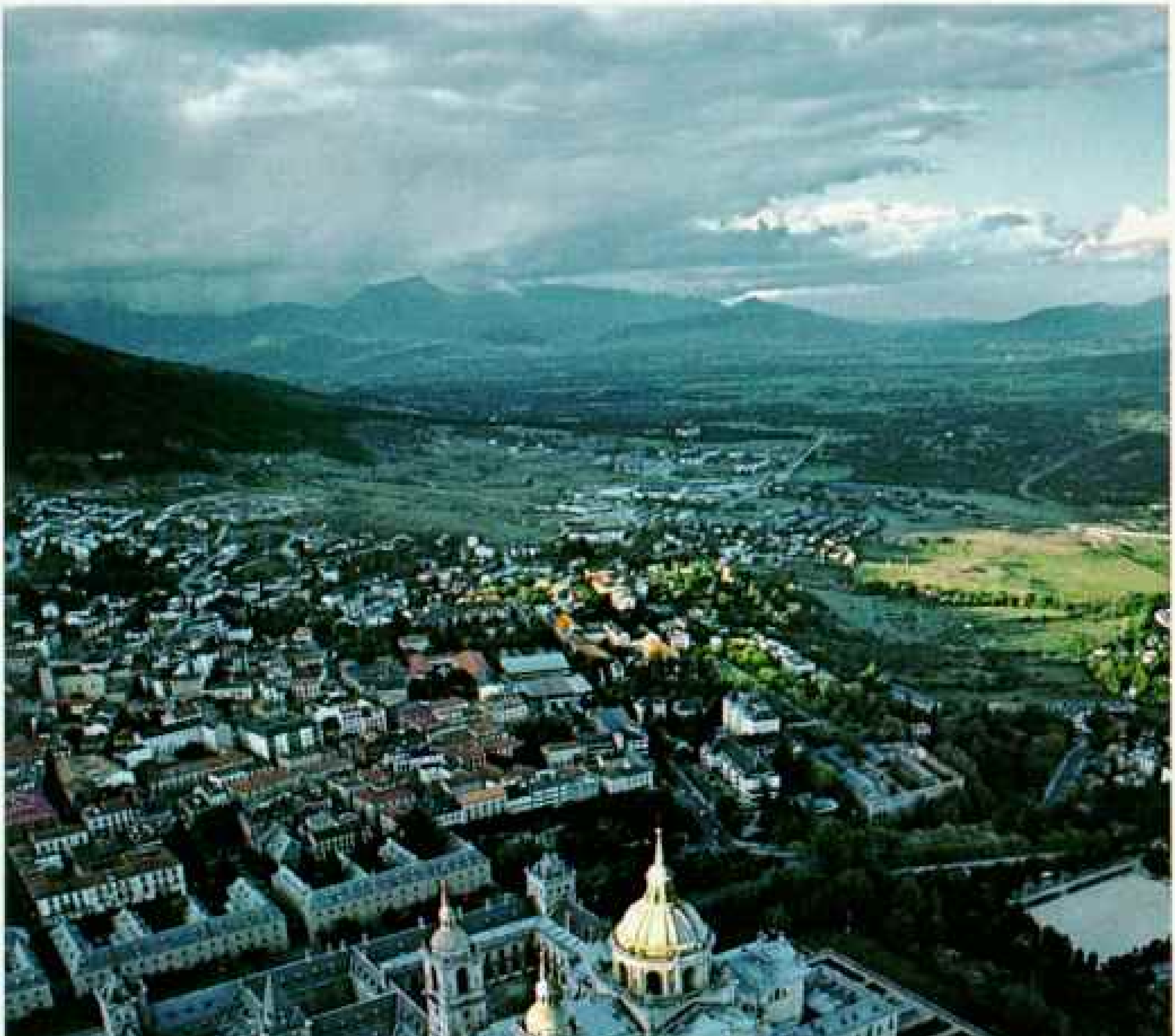
The car stopped at the checkpoint, then continued up the long, winding drive, past pines and grazing deer to Zarzuela Palace.

His Majesty King Juan Carlos was tall and fit; although he had been trained as a pilot, a naval captain, and an army officer, there was about him a certain gentleness, a sensitivity.

WE TALKED about his role in the transition to democracy. (Palace rules forbid directly quoting the King, but permit the indirect expression of his thinking.) The King believes that what the Spanish are doing now, and have done before, in establishing democracy, would be difficult to do without a king. Not because of himself as an individual, but because of the stability a monarchy provides. His role was greater in the beginning of the transition, when there was no constitution and he had to say "yes" or "no" to different proposals or ideas. Now his role is institutionalized, and the country starting to work in a more normal way.

He retains moral power, which he believes is sometimes better than legal power. When there are problems, leaders of all political parties come to the palace, the point of reference. This helps build unity.

The King said he thought the democracy was stable, its roots going down. He remarked that people often said Spain was a



Pantheon of monarchs, *the royal complex of El Escorial was completed in 1584 by Philip II. Monastery, church, museum, library, and burial place, the building also served as a summer palace for the powerful king, who ruled the world's farthest flung empire of his day. Marble tombs beneath the church hold the remains of four centuries of Spanish royalty. A side altar* **(right)** *contains likenesses, relics, and ashes of Spanish saints.*

pendulum, swinging from extreme right to extreme left. It was his task to see that the pendulum did not slip over too far.

I wondered about the vagaries of history, how it sometimes throws up disasters, and sometimes the right man at the right moment. What had shaped this man, I wondered. I knew that his grandfather had abdicated, that his father had lived as a pretender in exile, and that for many years Spain had no king. Then Franco had brought Juan Carlos into his entourage. Franco explained that he was preparing the boy to be king; many looked on the boy with contempt.

Juan Carlos had been aware of these criticisms, but believes he has always had his own way of being, of looking at things. He has had to watch out for himself since he was very young; at five he was sent off to school in Switzerland. Growing up on his own, the King said, has made him practical, a person who always looks at things with logic.

Franco used to tell the young man many things. Once Juan Carlos asked why he could not attend the ministers' councils: He wanted to learn; he promised to sit there silently, just looking, listening. Franco replied: "It's no use. You will have to do things in a different way. I am perhaps too old to change, but I know things will change." In time Juan Carlos came to understand; things did change, things did have to be done in a different way.

There had been another lesson from Franco. When the old generalissimo had named Juan Carlos Prince of Spain, the younger man had asked what might happen. Juan Carlos knew the opposition underneath; that he had been named by some of the people, not all. Franco had replied: "You have to play, not with luck, but with fate; the people of Spain will accept you." The conception—playing with fate—was very Spanish; the prediction—acceptance by the people—has seemingly been proven very correct.

ON ONE of my last days in Madrid I strolled again the Plaza de Santa Ana. Emilio the shoeshine man was packing up his kit but insisted on reciting for me one of the poems he wrote from time to time. It was dedicated to a champion boxer, but I thought it held a hint of his own Quixote-like desires, desires shared by more than a few of his fellow Madrileños.

Why did I become a champion?
The techniques I very well learned . . .
Strong and precise and diverse punches
  I gave . . .
I won 100 matches.
The audience, when watching me . . .
  I made them rise.
Many of them were emotional
  . . . they kissed and hugged me.
And from the ring they took me
  on their shoulders!

Emilio departed, a small figure with a wooden box under his arm.

With late afternoon the older people of the neighborhood commanded the benches: the women sitting shoulder to shoulder, talking; the men, in black suits, grasping their canes like badges of honor. Soon the swallows would appear to dart overhead, while the *paseo* (the evening stroll to take the air) began. The plaza would swell with life, and the life would continue deep into the night, children playing, young couples talking about the future.

I thought of the future too. One turn-of-the-century philosopher, looking back on the history of his nation, wrote: "Spain, which never had a complete social system . . . has unfolded her life and her art by a series of spiritual convulsions, as men of strength and action have come bursting forth. . . ." But it seemed that a new time had come, one impelled by that "almost ancestral desire for progress." A new play had begun, was still in the first act. And the stage, as so often in the past, was Madrid, the old village of los Madrileños. □

The indispensable man *in Spain's democracy, King Juan Carlos has seen his popularity with the people rise spectacularly since the death of Franco, when he was viewed as a puppet. After leading the nation across a political minefield, the 48-year-old scion of Spain's Bourbon dynasty has earned the accolade "Viva el Rey—Long live the King" from all quarters of the nation's political spectrum.*

"Grizz" Of Men

By DOUGLAS H. CHADWICK

I'M OUT MY CABIN DOOR early most spring mornings and into Montana's Glacier National Park, moving through first light, spruce, and snow patches. Soon I'm crouched at the edge of a meadow. Coyotes are hunting ground squirrels. Deer and elk are nearby too, glancing over at the coyotes—and at the grizzlies. As the night's frost turns to dew, the great bears graze on the same tender grass and sedge shoots as the hoofed animals.

When a grizzly moves, its silver-tipped fur shimmers and changes color, as if arcs of power were rippling off it. This is the one the Blackfoot Indians called Real Bear—omnivorous, dexterous, highly adaptable, highly intelligent, huge, aggressive, smashingly strong, capable of sprinting at a deerlike 35 miles an hour and living as long as 30 years, and once codominant with man across the western half of North America.

Few encounters with grizzlies are planned. They're sudden—like the time when I was just below the spine of a ridge among fallen rock slabs. Gnarled firs, barely waist tall, gave off the sweet sharp smell of the high country. The bear stepped out from behind a boulder. It had a ring of pale fur circling its chest and muscle-humped shoulders. I shrank back; it caught my movement. I stood exposed. The beast surged toward me and reared up to work over my scent with a head twice the size of mine. And it stripped away every illusion that separated me from nature. Then it left, as grizzlies almost always do.

It's different hidden here by the spring meadows, watching some rangy boar do a slow rumba, scratching his back on a tree. Or a sow holding her toes, rocking on her backside while her cubs walk on two legs, wrestling and making bear talk. But they can still scare me wild. For two years I followed my fascination with these

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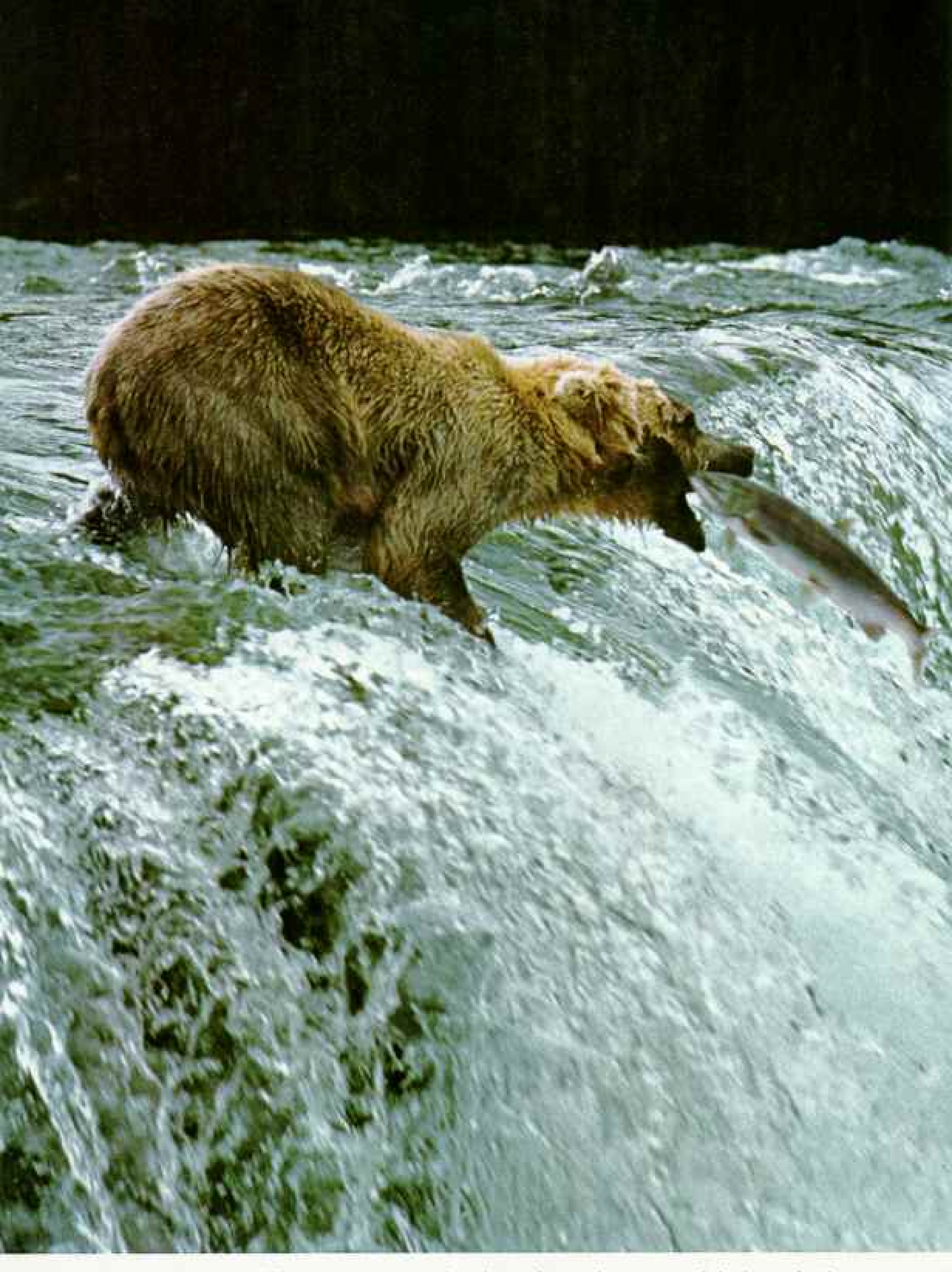
Author and wildlife biologist **Douglas H. Chadwick** lives in a cabin without power or telephone near Montana's Glacier National Park. His current assignment is in Nepal.

***A bond deep and tender** unites cubs and a sow, who will fiercely defend her offspring for two years or more. Though the bears are prolific here in Alaska, concern mounts in the lower 48 for the future of the wilderness monarchs.* JOHNNY JOHNSON

and the Great Bear



Not many get away, *but this sockeye salmon escaped the jaws of a shaggy angler at Brooks Falls in Alaska's Katmai National Park. Long painted as ferocious predators, these bears are in fact opportunistic omnivores, whose*

JOHNNY JOHNSON

diet is largely vegetarian. A voracious appetite can help build a nine-foot-tall, 1,800-pound behemoth. While most weigh considerably less than that, all are powerful, determined, intelligent creatures that always seem wonderfully larger than life.

giants, traveling to their home ground in Alaska and across their shrinking habitat in the lower 48. Does America, I wondered, still have room for the grizzly?

Tens of thousands of the great bears lived south of Canada as late as 1850. Only 600 to 900 remain there now. They have been listed as threatened with extinction since 1975. Standing sheeplike, shoulder to shoulder, the current lower 48 grizzly flock wouldn't cover half an acre. Being grizzlies, however, they roam some 12 million acres in rugged pieces of Montana, Wyoming, Washington, and Idaho. And they still roam our imagination at will; it is part of their natural habitat.

More than a dozen subspecies of the brown bear, *Ursus arctos*, are spread across Eurasia from Spain to Siberia and as far south as India. Two more subspecies make their home in the New World: *Ursus arctos middendorffi*, which takes in only the brown bears of Alaska's Kodiak, Afognak, and Shuyak island cluster, all commonly called Kodiaks; and *U. a. horribilis*, which includes all the other brown bears of North America. As most modern taxonomists see it, grizzlies of the continent's interior and the big brown bears, or brownies, of Alaska's mainland coast are simply different ecotypes within the subspecies *horribilis;* they gradually blend into one another. Many simply call them all grizzlies.

A colossal brown bear might go 1,800 pounds. Most weigh about 1,000. Many grizzlies in the lower 48 reach only 200 to 600 pounds as adults. Much of their diet is vegetarian; animal protein comes from insects, fish, rodents, and carrion. Their reputation as a fearsome predator is overcooked.

The grizzly, in truth, is just a big opportunist. During Indian times these bears ate beached whale carcasses in California and straggling bison in Kansas. When white men herded slow, tame things into its domain, the grizzly ate some of them too. The livestock industry led the way in exterminating lower 48 grizzlies everywhere but in the heart of the mountains by 1900. A two-year-old shot in Arizona's highlands in 1935 was the last grizzly ever taken from the Southwest. Yet in 1964, and again in 1967, a grizzly was found along Mexico's Sierra del Nido range in the state of Chihuahua. Each was killed.

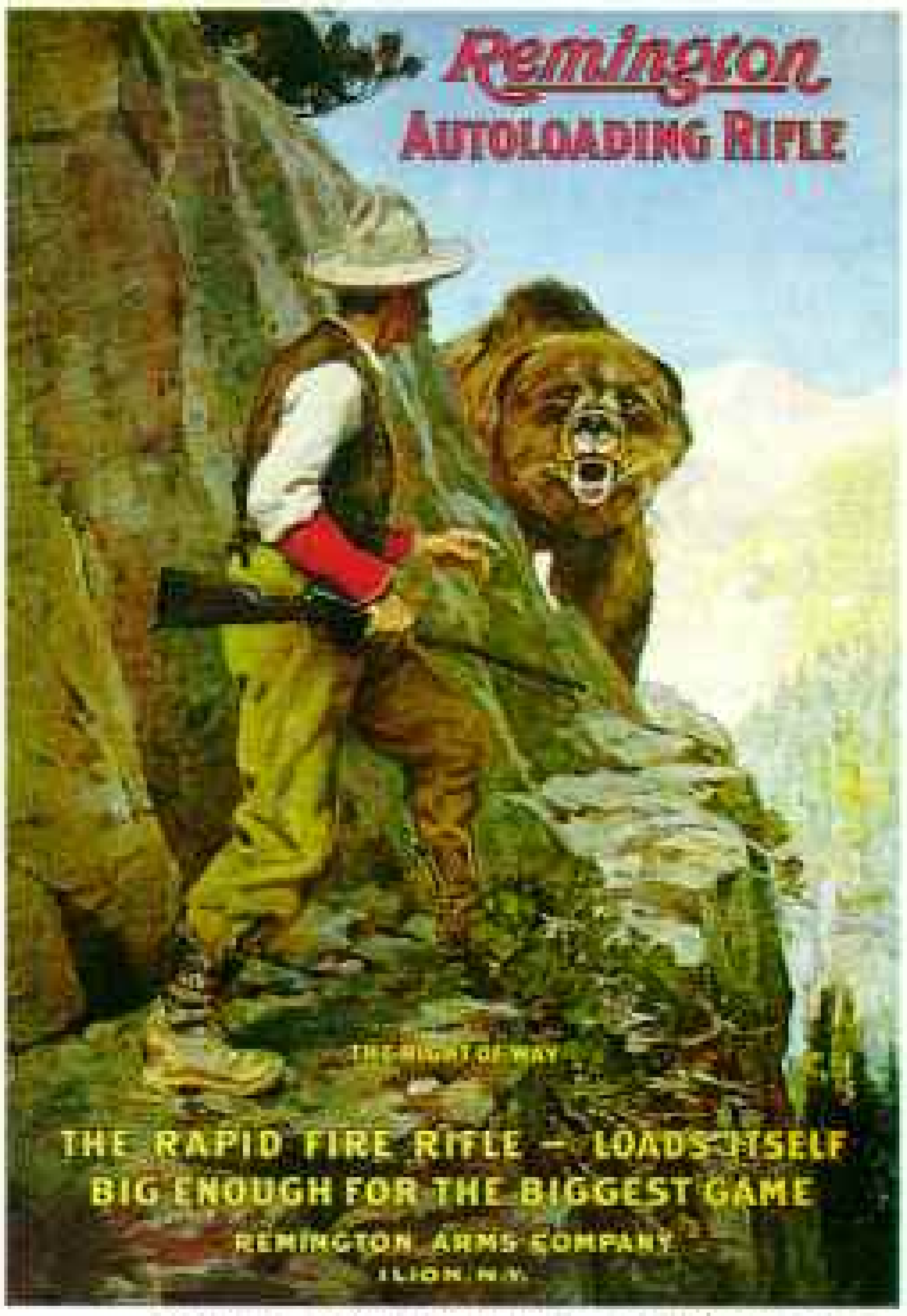
Do any live on? Early in 1983, at a lonesome rancho near Chihuahua's 9,423-foot Nido (Nest) Mountain, I listened to a young vaquero describe the bear he had seen several months earlier. Was it a grizzly? "*Si, el oso plateado*—Yes, the silvery bear."

DOUGLAS H. CHADWICK (ABOVE); PAT POWELL

To see what she can see** of her errant cubs, a sow rears up in Alaska's Denali National Park and Preserve* **(facing page). To see how grizzlies react to bulldozers and chain saws that alter their habitat, Canadian biologist Bruce McLellan* **(above)** *uses a directional antenna to locate radio-collared bears from a lodgepole pine logging site, just outside Glacier National Park. Though some grizzlies hightail it from such human claptrap, McLellan and the author found one male, or boar, feeding placidly on a nearby slope.*

"On a 1980 survey I too saw a bear here that *might* have been a grizzly," said José Treviño, a biologist for Mexico's federal wildlife agency, as we led packhorses toward the Sierra del Nido's crest. Most likely the large droppings we found in grassy canyons shaded by oak and pine were all from black bears, *Ursus americanus*. But, just possibly, some silvered bear watched us shake our heads and pass on. Rumors of *el oso plateado* also keep trickling out of the high, vast Sierra Madre range to the west.

Colorado's silvertips, with the Rockies at their backs, held out fairly long—until the early 1950s, accounts showed. Grizzlies don't read accounts. Almost three decades later, in 1979, one was killed in the San Juan Mountains. Colorado was the stomping ground of Old Mose, a damn-your-fences, turn-of-the-century outlaw grizz who ended up with a higher price on his head than some human bad guys. He had stomped about 800 head of stock and five of the men who tried to cash him in, or so the legend goes.



DOUGLAS H. CHADWICK (FACING PAGE); REMINGTON ARMS CO., INC

The myth *of the bloodthirsty monster is echoed by a 1907 advertisement* (**above**). *The reality: Since 1900 only 14 people have been killed by grizzlies in the lower 48. And at the opposite emotional pole are animal trainer Doug Seus and his friend Bart* (**facing page**), *cooling off on Seus's Wasatch Wildlife Ranch in Heber City, Utah. Bart, a 1,300-pound Kodiak, has starred in films, often in the bad-news-bear role, chasing pioneer women and wrecking cabins. At home Bart rides in the back of Seus's pickup to the car wash for a bath.*

BEARS, IT SEEMS, are what they are and also what we make them out to be. In Heber City, Utah, I found animal trainer Doug Seus romping in the backyard creek with his friend Bart, a ten-year-old, 1,300-pound Kodiak. Years ago, two of Doug's deer keeled over dead of shock when Bart strolled by their pen.

"I train black bears, wolves, and cougars for film work too. My grizzlies and Kodiaks are the hardest to tame, but the easiest to train; generally you only have to teach them something once. They can also be the most affectionate," says Doug, who goes riding on the backs of grizzlies.

In the wild the southernmost proven grizzly range at the moment is within the greater Yellowstone ecosystem. Its 5.5 million acres amount to more than 30 percent of the occupied grizzly habitat left in the lower 48, and at its core lies our oldest national park and best known bear sanctuary—2.2 million acres in extent. In the early 1970s researchers began warning that at the rate grizzlies were dwindling in Yellowstone, they might vanish by the end of the century.

Like millions of Americans, I saw my first grizzly in Yellowstone. I was a child then. Years later I returned in autumn and was hiking through Firehole Valley when I saw a bulky shape move in the sage about a hundred yards off. Real bear! I still knew almost nothing about them.

The day was clear, chill in the shadows, soft where the sunlight reached. Canada geese and then a line of swans drifted overhead like steam from the geysers. The grizzly lay amid green leaves and yellow grasses, rolling onto its back from time to time, waving its legs lazily in the air. It was beginning to look to me like a bear from a childhood storybook—almost cuddly. Eventually I grew so relaxed that my attention wandered, and I never noticed it get up. It moved behind a clump of brush and started digging. By the time I shifted to a better viewpoint with my binoculars, it had uncovered the carcass of a bison, which it must have cached earlier beneath dirt and twigs, and was ripping off gobbets of flesh.

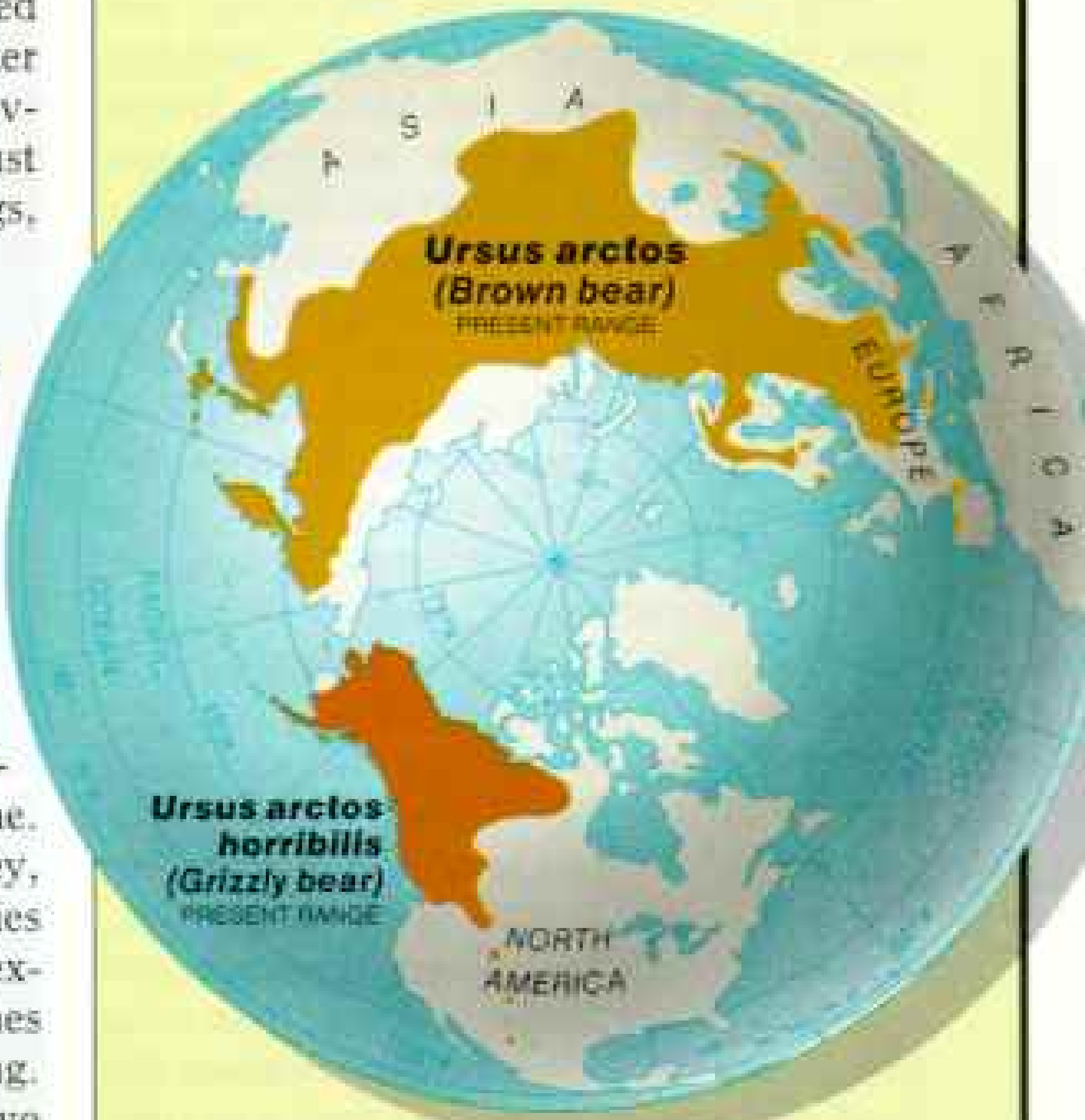
Now ravens wheeled overhead. The grizzly pulled back and circled the carcass once, enormously alert. I could see an old scar across its blood-wetted muzzle. Abruptly the bear lifted the bison's body and dragged it into the trees. Twice the grizzly somehow broke into a brisk trot with that half-ton prize in its teeth.

As I shouldered my pack, I froze. Another grizzly was crossing the sage, following its nose in the direction the first had gone. Moments later roars stormed over the valley, scattering the ravens. I saw a snarl of bodies through the trees. Walloping blows were exchanged with the speed of a shiver, branches snapped amid more roaring. Then nothing. Silence. I walked light on my toes for two days afterward, still aquiver with amazement and humility, still alive in every fiber.

Not all of Yellowstone is especially good grizzly country. It is merely where grizzlies are allowed to exist. The park itself is a lofty plateau on the Continental Divide, snowbound nearly two-thirds of the year. Lodgepole pine forests offering scant grizzly food take up more than half the land. The mountainous national forest areas surrounding the park actually have a better variety of habitat, but just beyond lies people country. Yellowstone's bears, therefore, have been cut off from other grizzly populations for more than 50 years.

GRIZZLIES WERE easy to see in the park in years past, because three out of every four bears had learned to come looking for the handouts humans provided. Until 1941 bleacher seats were set up at garbage dumps for grizzly viewing. But following the 1967 deaths of two Glacier campers from grizzlies used to garbage, Yellowstone began to shut its dumps, hoping to force the bears back to a natural life.

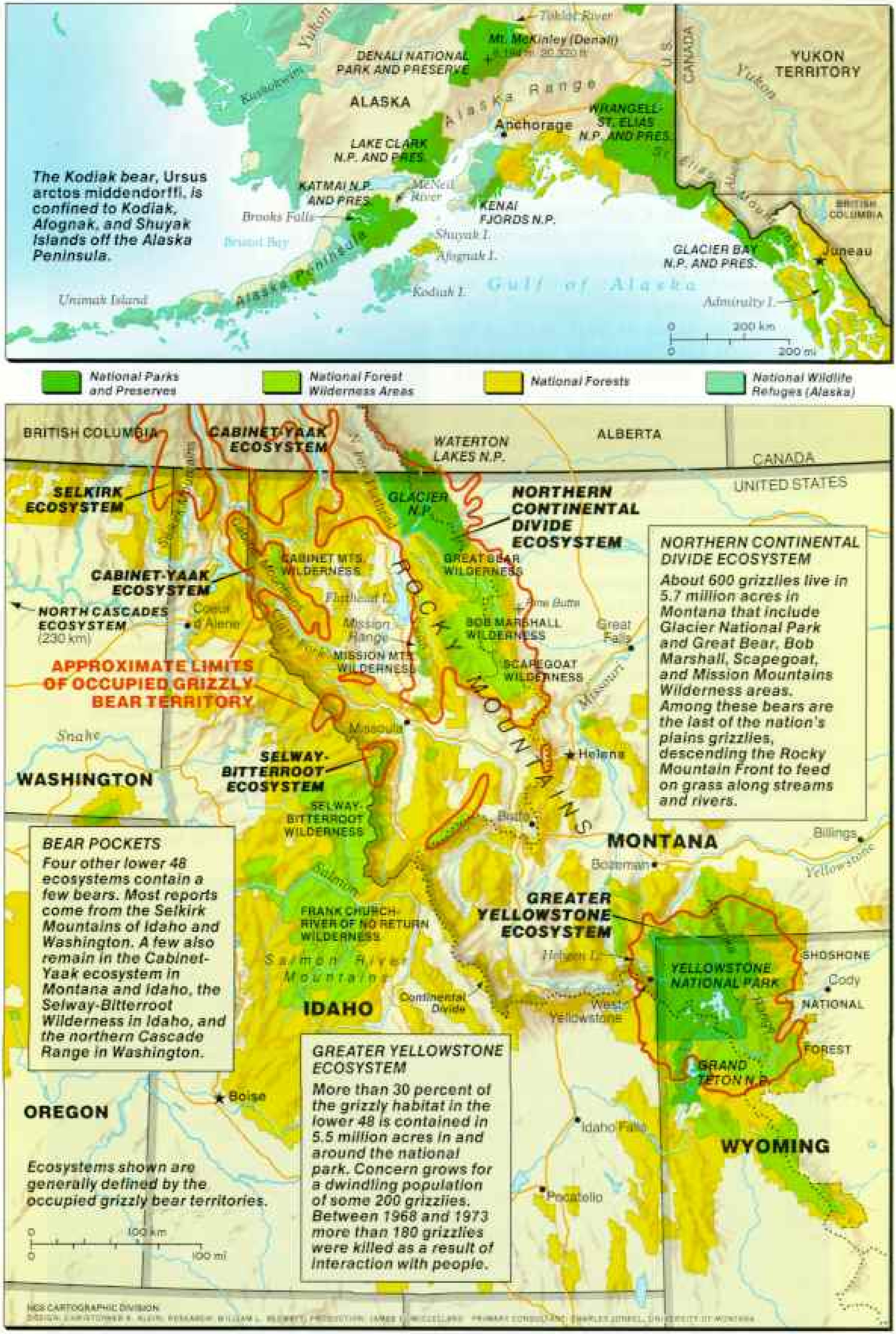
At the time, a pair of independent scientists, the leading authorities on grizzly biology, were working in Yellowstone. Pioneering radiotracking studies by brothers John and Frank Craighead, Jr., provided an



Track of the big bear

URSUS ARCTOS, the mighty brown bear, evolved about one million years ago into the ruler of vast territories. Today several subspecies, most reduced to insular populations, roam an impressive worldwide range including central Italy's Apennines, Scandinavia, the Soviet Union, the Himalayas, and Japan's Hokkaido Island. In North America _Ursus arctos horribilis_ means the grizzly. The same animal is also known as the brown bear, or brownie, in parts of Alaska and Canada. The Kodiak bear, limited to an Alaskan island group, is sometimes considered a separate subspecies.

From the Great Plains to California and south into Mexico, tens of thousands of bears flourished before the repeating rifle brought them low. Today, while some 50,000 may inhabit Alaska and Canada, only 600 to 900 grizzlies—listed since 1975 as a threatened species—survive in the lower 48, most around Yellowstone and Glacier National Parks.



The Kodiak bear, Ursus arctos middendorffi, is confined to Kodiak, Afognak, and Shuyak Islands off the Alaska Peninsula.

BEAR POCKETS

Four other lower 48 ecosystems contain a few bears. Most reports come from the Selkirk Mountains of Idaho and Washington. A few also remain in the Cabinet-Yaak ecosystem in Montana and Idaho, the Selway-Bitterroot Wilderness in Idaho, and the northern Cascade Range in Washington.

NORTHERN CONTINENTAL DIVIDE ECOSYSTEM

About 600 grizzlies live in 5.7 million acres in Montana that include Glacier National Park and Great Bear, Bob Marshall, Scapegoat, and Mission Mountains Wilderness areas. Among these bears are the last of the nation's plains grizzlies, descending the Rocky Mountain Front to feed on grass along streams and rivers.

GREATER YELLOWSTONE ECOSYSTEM

More than 30 percent of the grizzly habitat in the lower 48 is contained in 5.5 million acres in and around the national park. Concern grows for a dwindling population of some 200 grizzlies. Between 1968 and 1973 more than 180 grizzlies were killed as a result of interaction with people.

Ecosystems shown are generally defined by the occupied grizzly bear territories.

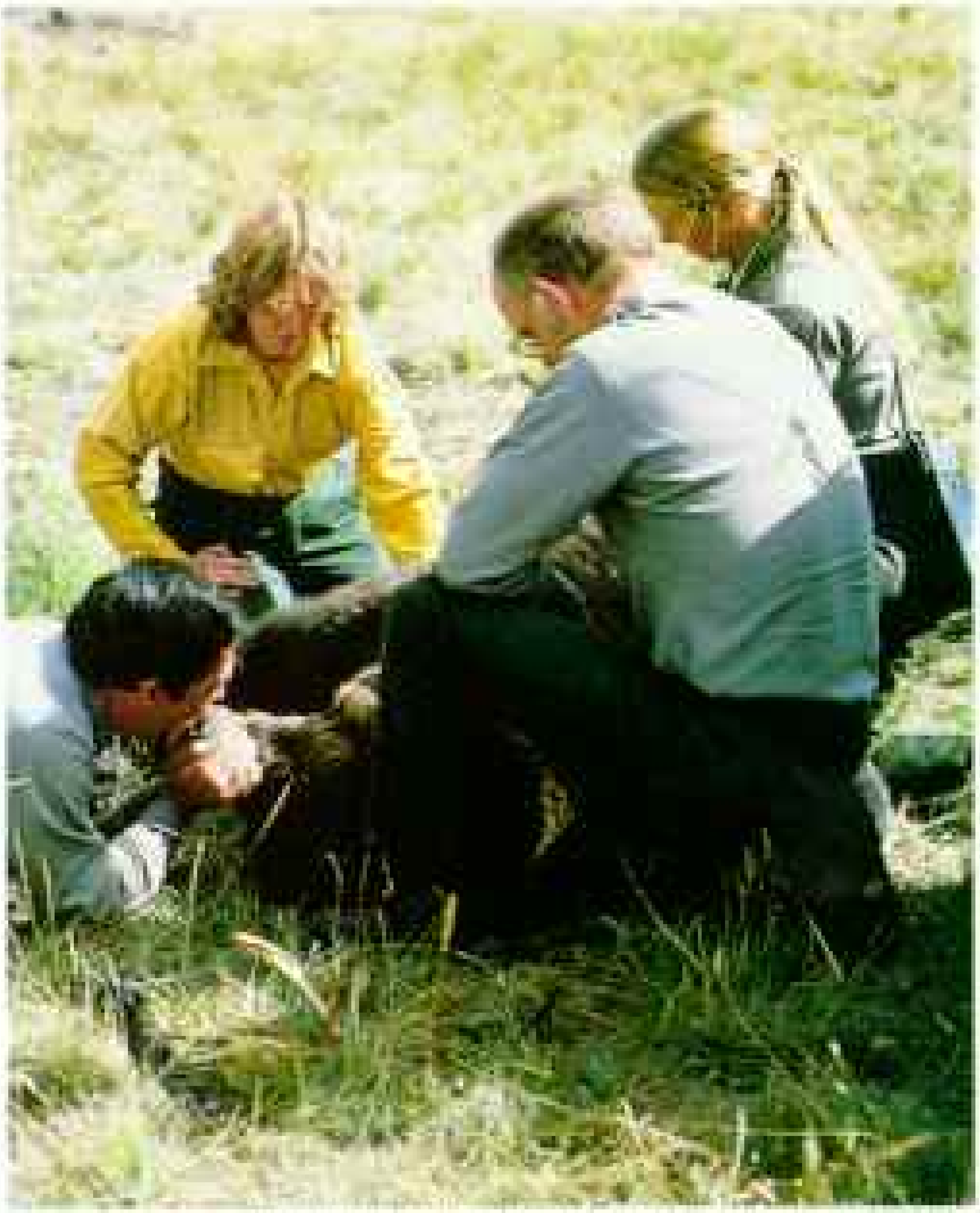
Tiklat River
Mt. McKinley (Denali)
6,194 m 20,320 ft
DENALI NATIONAL PARK AND PRESERVE
Yukon
Kuskokwim
ALASKA
Alaska Range
Anchorage
U.S.
CANADA
YUKON TERRITORY
Yukon
WRANGELL-ST. ELIAS N.P. AND PRES.
St. Elias Mountains
LAKE CLARK N.P. AND PRES.
KATMAI N.P. AND PRES.
McNeil River
Brooks Falls
KENAI FJORDS N.P.
Bristol Bay
Alaska Peninsula
Shuyak I.
Afognak I.
Kodiak I.
Unimak Island
Gulf of Alaska
BRITISH COLUMBIA
GLACIER BAY N.P. AND PRES.
Juneau
Admiralty I.
0 200 km
0 200 mi
🟩 National Parks and Preserves
🟩 National Forest Wilderness Areas
🟨 National Forests
🟩 National Wildlife Refuges (Alaska)
BRITISH COLUMBIA
CABINET-YAAK ECOSYSTEM
WATERTON LAKES N.P.
ALBERTA
CANADA
UNITED STATES
SELKIRK ECOSYSTEM
GLACIER N.P.
NORTHERN CONTINENTAL DIVIDE ECOSYSTEM
CABINET MTS. WILDERNESS
GREAT BEAR WILDERNESS
CABINET-YAAK ECOSYSTEM
NORTH CASCADES ECOSYSTEM (230 km)
Coeur d'Alene
Flathead L.
Pine Butte
Mission Range
BOB MARSHALL WILDERNESS
Great Falls
ROCKY MOUNTAINS
MISSION MTS. WILDERNESS
SCAPEGOAT WILDERNESS
Missouri
APPROXIMATE LIMITS OF OCCUPIED GRIZZLY BEAR TERRITORY
Clark Fork
Missoula
Snake
Helena
SELWAY-BITTERROOT ECOSYSTEM
WASHINGTON
SELWAY-BITTERROOT WILDERNESS
Butte
MONTANA
Billings
Bozeman
Yellowstone
Salmon
GREATER YELLOWSTONE ECOSYSTEM
FRANK CHURCH-RIVER OF NO RETURN WILDERNESS
Salmon River Mountains
Hebgen L.
SHOSHONE
YELLOWSTONE NATIONAL PARK
Cody
Continental Divide
IDAHO
West Yellowstone
NATIONAL
FOREST
GRAND TETON N.P.
Boise
OREGON
Idaho Falls
WYOMING
Pocatello
0 100 km
0 100 mi

NGS CARTOGRAPHIC DIVISION
DESIGN: CHRISTOPHER R. KLEIN; RESEARCH: WILLIAM L. [illegible]; PRODUCTION: JAMES E. MCCLELLAND; PRIMARY CONSULTANT: CHARLES JONKEL, UNIVERSITY OF MONTANA

intimate look into the lives of these creatures. Close the dumps gradually, the Craigheads urged the park—let the bears develop new centers of activity in the wild. "We were sure the cold turkey treatment would disperse the bears far and wide," John said. "Then we would really have problems." But park authorities opted for cold turkey. Many grizzlies dispersed to park campgrounds and garbage sources outside the park. More than 180 ended up dead—many, along with scores of black bears, at the hands of park staff. After several years the Craigheads' calculations showed grizzly numbers plummeting. Park biologists insisted the bears were thriving.

The Craigheads left Yellowstone in 1971 in a dispute over the freedom of independent research on public lands. The debate heralded an era of grizzly biopolitics. Yellowstone's grizzlies became the most debated bunch of bruins on earth. "The Craigheads were absolutely right about the bears dispersing and running into problems," Larry Roop, a Wyoming bear researcher, told me.

One can stand with one foot in Yellowstone Park and the other in the fast-growing town of West Yellowstone, where there were 140 trash Dumpsters and more than a hundred garbage cans available for picking the night I visited. A team of wildlife managers tried to trap grizzlies dining in the town. There were bears in backyards, in Laundromats, and on motel porches. "This is fantastic!" one man told me. "We spent a week



JEFF HENRY (ABOVE); NATIONAL GEOGRAPHIC PHOTOGRAPHER JAMES P. BLAIR (BELOW); LOWELL GEORGIA

Yellowstone's beleaguered grizzlies: *After killing sheep on adjacent land, two young bears were trapped* **(below)** *and returned to the park. A year later tragedy struck when their mother, tranquilized after stalking sheep outside the park, was suffocated by her radio collar despite attempted mouth-to-muzzle resuscitation* **(above)**. *When the park's garbage dumps were closed, grizzlies increasingly foraged in nearby towns such as West Yellowstone, where a sow, sedated and her open eyes shielded from the sun, awaits the trip home.*

in the park and never saw a single bear."

In the park, I patrolled the Madison Campground one night with ranger Paul Hager, waking tourists and fining them for leaving out such potential bear attractants as a food cooler, an open pop can, even an open tube of toothpaste.

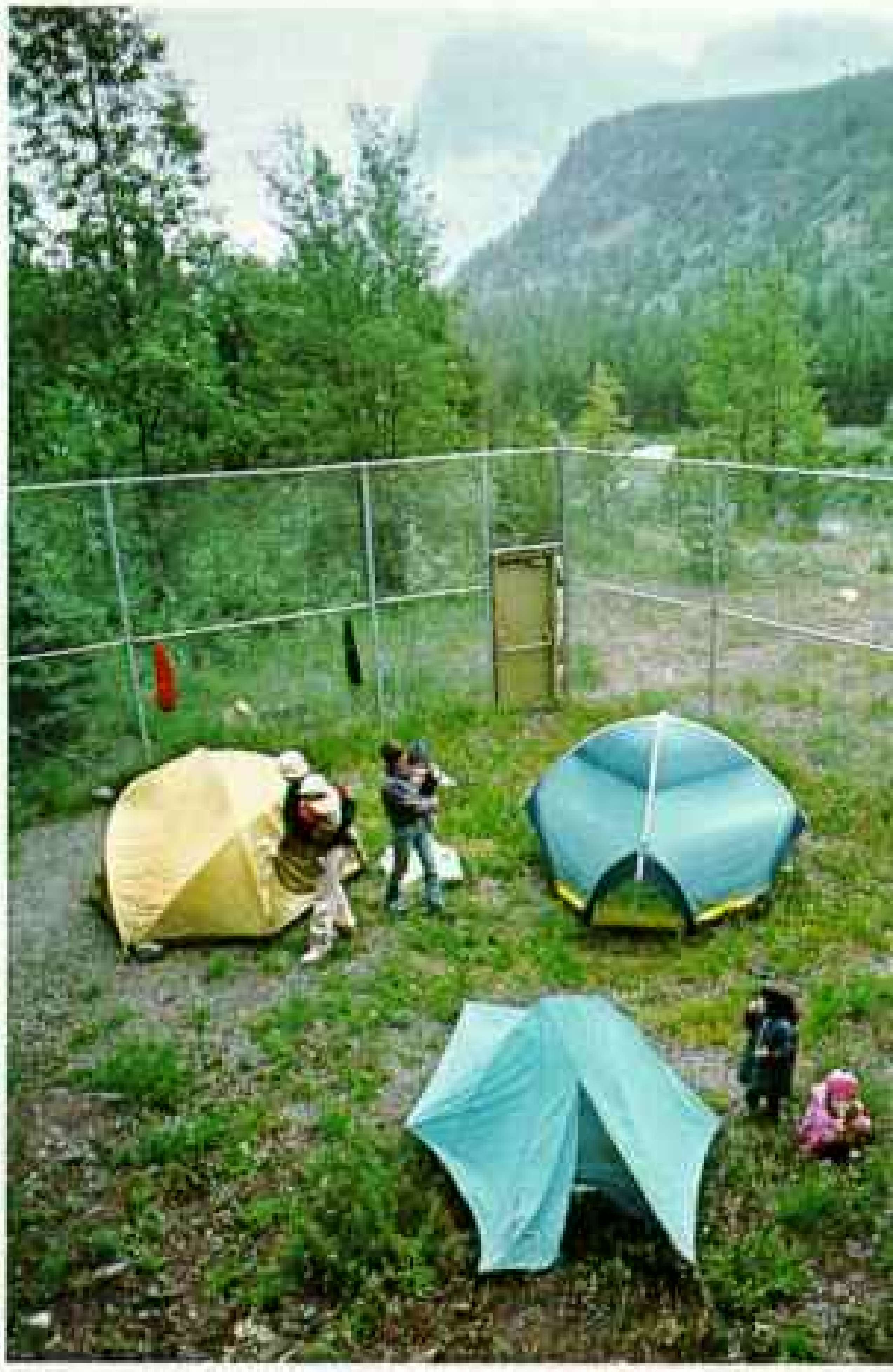
YELLOWSTONE grizzlies don't have names—they have numbers. Some are famous. Grizzly Number 60, whom I met briefly, was one of several Yellowstone grizzlies wearing a radio collar or ear tags for study. A modest-size sow with a rich brown silvered coat, she was captured and relocated several times from various garbage sites outside the park. She returned from afar yet again and was trapped with her twin yearling cubs, filching scraps from the West Yellowstone airport Dumpster. This time she was condemned to death as an incorrigible garbage junkie. Phone calls to the governor from sympathetic humans and a 1,500-signature petition resulted in her sentence being commuted to life imprisonment at a Kansas zoo. One of her cubs died in a fall from a cage slung under a helicopter while being airlifted to the backcountry.

There is a sort of wild-card factor in the meetings between man and bear that throws all calculations and studies to the wind. Number 15, a chocolate-colored boar, grew up around West Yellowstone and nearby Hebgen Lake, another area filling up with people—and proposed location for a controversial ski resort-golf course-condominium complex to be built partly on grizzly habitat leased from the national forest.

The Yellowstone authorities kept thorough records on Number 15. By the end of June 1983 he weighed about 435 pounds. He had been losing weight all winter in his den and all spring. He was 12 years old.

Number 15 was anything but aggressive. When he encountered people, it was the bear who turned tail and ran. One evening he ambled into the Forest Service Rainbow Point Campground near West Yellowstone and, before he was captured and destroyed, devoured almost half of a young man from Wisconsin. The people whose garbage had attracted him to a subdivision and a ranch in the same vicinity during the previous 36 hours are still at large.

Before the park shut its dumps, the greater Yellowstone ecosystem probably held around 300 grizzled bears. Now, 18 years later, it holds perhaps 200, and possibly 30 of them are breeding females—grizzlies being difficult to count, these are approximate figures only. Sows are maturing later, giving birth for the first time at age six instead of five, and producing fewer cubs per litter—an average of 1.9 instead of 2.2—at longer intervals than before. And grizzlies already had one of the lowest reproductive



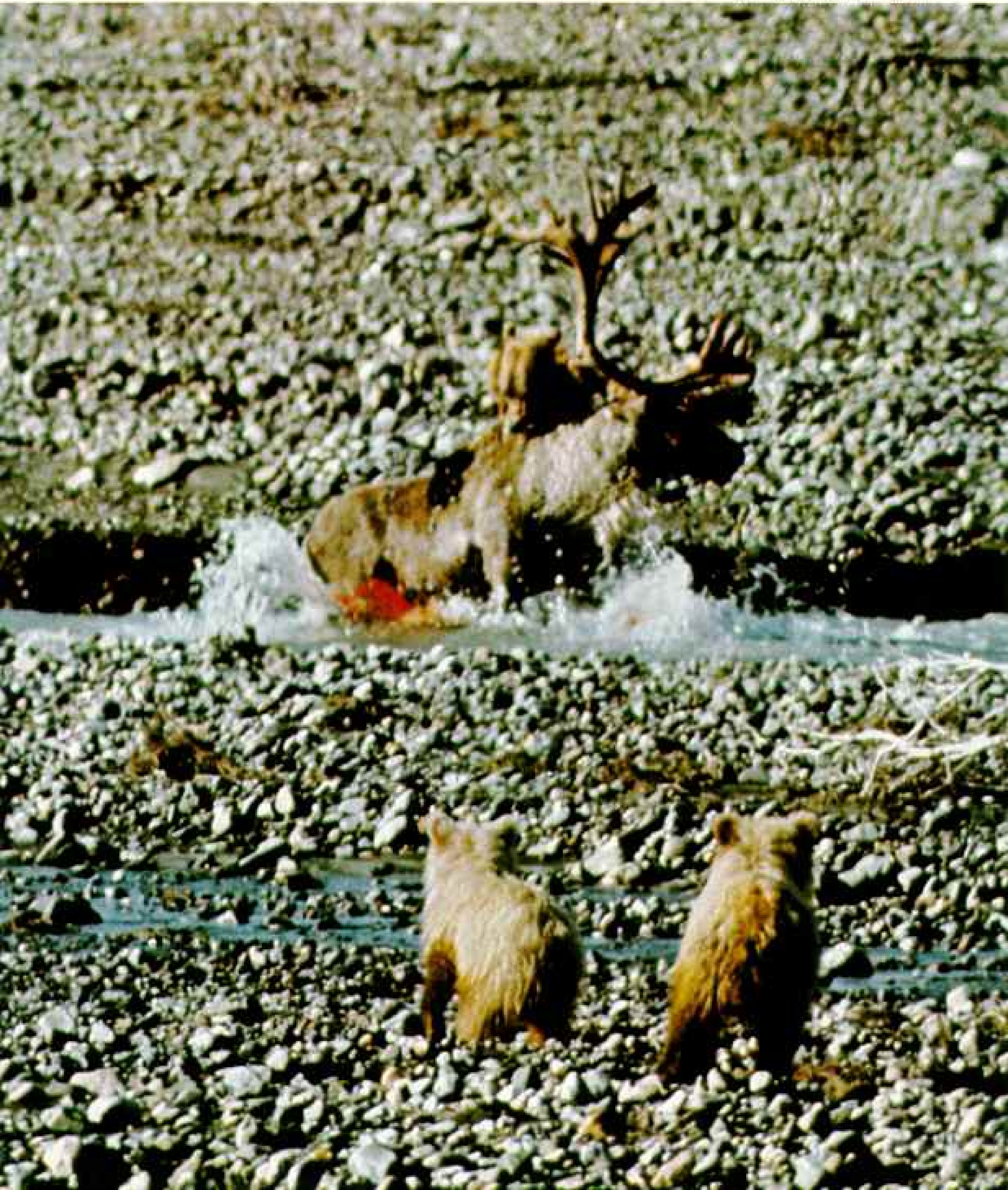
ROLLIE OSTERMICK (FACING PAGE); DOUGLAS H. CHADWICK

The great indoors: *An experimental fenced "exclosure"* **(above)** *amid prime bear habitat protects campers in Glacier National Park, where six visitors have been fatally mauled by grizzlies in the past 19 years. Encounters are frequent but rarely alarming in Alaska, where a biologist is unaware of the large brown competition behind him heading for spawning salmon* **(facing page)**.

Caribou becomes bear meat *in a tale of counterpoint on the Toklat River in Denali. Five wolves had earlier wounded the bull, tearing at its hindquarters until their prey halted. A long standoff ensued until the wolves, apparently distracted by traffic on a nearby road, departed.*

Meanwhile, a sow grizzly and three cubs meandered downriver toward the immobile caribou and came within 175 yards. Suddenly the sow's head swiveled. She broke into a charge **(left)**. *With loud growls, the cubs looked on as she tore into the bull's shoulder* **(below)**. *Soon the cubs joined the fray, but their quarry still struggled for 30 minutes. All day the bears feasted and dozed near the carcass. Evening came and a lone wolf appeared, circled the kill, and stole within a few yards of it until the sow made a bluff charge. If the wolf figured it was owed a piece of that protein, it found no sympathy from the bears.*

JOHNNY JOHNSON (LEFT); TOM WALKER



rates of any mammal in North America.

How much longer can Yellowstone's grizzlies survive when in some years their death rate from human causes alone exceeds their birthrate? The Forest Service continues to lease grazing rights in critical grizzly range adjoining the park, though with a condition unprecedented in the history of the West: Move the livestock, not the bears, if a conflict occurs. Grizzly sport hunting ended around the park when the bear was declared threatened, but black bear hunters blast grizzled bears by mistake. Poachers take a toll. A grizzly hide and head can net thousands of dollars. Gallbladders fetch outrageous prices in the Oriental medicine and aphrodisiac market. Front claws, made into jewelry, go for $100 or more.

The not-so-grim news is that as people learn not to tempt bears by leaving garbage around, the bears that are left show signs of becoming self-sufficient. "They're hunting and scavenging more big game, especially elk," says study-team leader Dick Knight. "Some grizzlies also seem to be staying around in park areas closed to hiking and camping." Those reserved areas—refuges within a refuge—now amount to at least one-tenth of Yellowstone National Park.

TOM MANGELSEN (FACING PAGE); HELEN RHODE

A Denali bear is a happy bear, *especially when gobbling soapberries* **(*facing page*)** *to build up winter fat. "To him almost everything is food except granite," wrote John Muir of the grizzly. Insects, rodents, and carrion flesh out its menu. For a playful bear, sunshine is for stretching in* **(*above*)**. *Lingering snow patches become grizzly playgrounds. It is said that they can make snowballs.*

HOW MUCH should people have to compromise? In Cody, Wyoming, Shoshone Forest district ranger Ron Wilcox told me, "We're starting to work as hard as the park does to educate the public about the importance of keeping a clean camp. And the bear is changing the way we deal with guides, outfitters, livestock, logging, mining, oil-and-gas development."

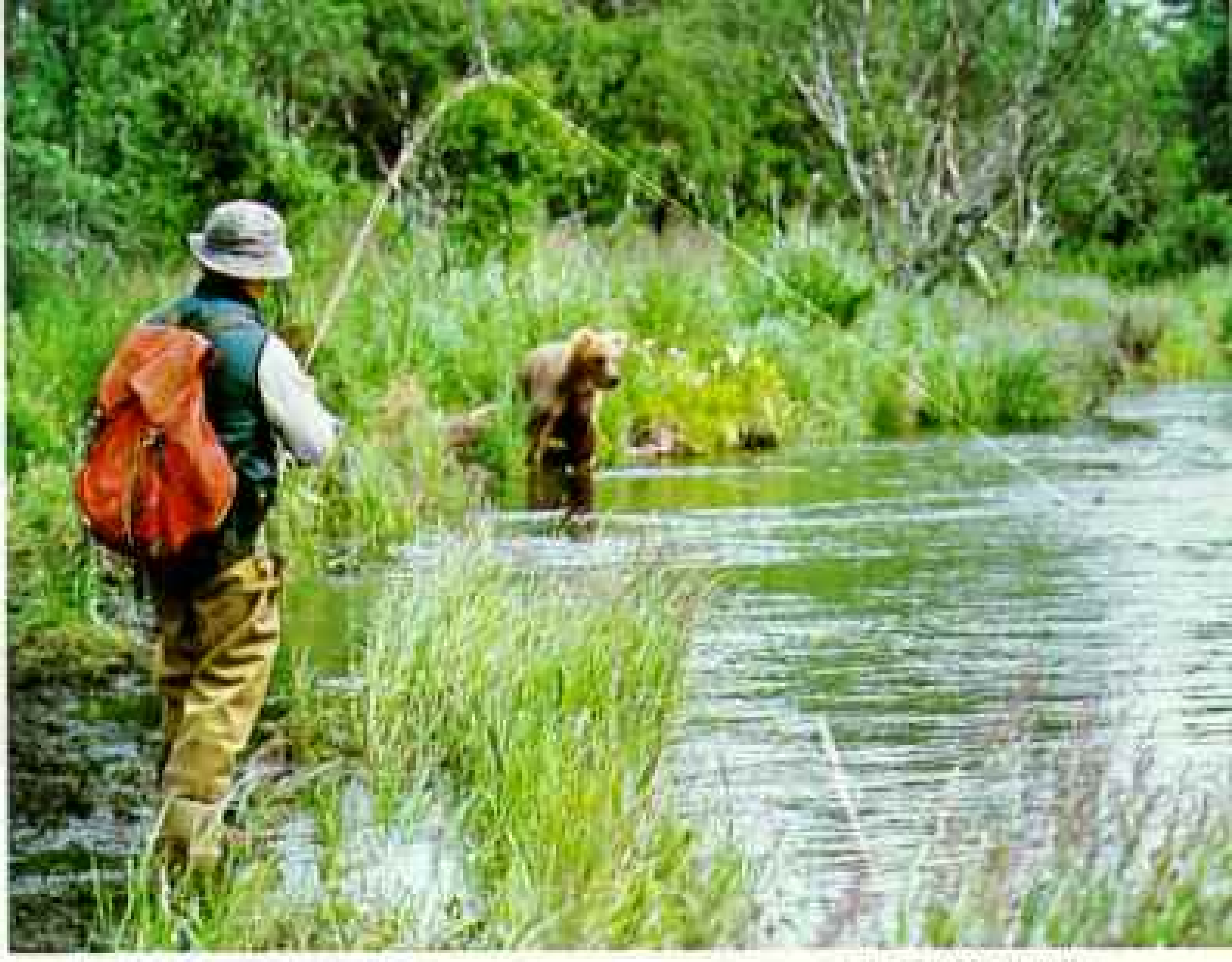
Perhaps we won't lose the grizzly altogether. Perhaps we'll just change it into something else. Take a remnant population, especially a small, isolated, inbreeding one. Keep blowing away the big, the bold, the conspicuous. And out of the shallow gene pool climbs "a scaled-down version, meek and mild. A grizzly in name only. Maybe that's the only kind our society is willing to live with," speculates lower 48 recovery coordinator Chris Servheen. The end creature may be a U. S. version of the shy, smallish European brown bear, reduced to isolated groups in mountain forests.

In Alaska's St. Elias Mountains big brown bears still live like bears. Here I found glaciers, nearly half the size of Yellowstone National Park, crevassed with blue lights and streaked with mountain scrapings, growling down out of the clouds, and I followed triple-palm-width *horribilis* tracks up onto the ice from the wolf-tracked banks of the Alsek River. Rafting through this northern end of Glacier Bay National Park and Preserve as the earth all around me was being freshly ground into grandeur, I could sense the Ice Age forces that molded the brown bear—and also the polar bear, *Ursus maritimus*, which evolved from the brown bear late in the glacial

Bear care: *One customer looks a little shortchanged on the Alaska Peninsula while nursing with a sibling* (**left**) *on milk containing as much as 33 percent fat. Sows mate every third year in summer, but their fertilized eggs do not implant into the womb until fall. This remarkable delay allows them to store fat until they and their young need it in the den during winter. Tiny, nearly naked, and helpless, one to four cubs are born in midwinter. They leave the den in spring to learn survival techniques from their assiduous and exacting mother. One sow dries off during fishing class* (**right**). *Males not only play no part in cub upbringing, they sometimes kill the offspring if given a chance. Thus a boar* (**below,** *at right*), *challenging triplets on the McNeil River, learns what every human should know: Hell hath no fury like a sow defending her cubs.*

HELEN RHODE (FACING PAGE); DOUGLAS H. CHADWICK (ABOVE); JOHN J. CRAIGHEAD

Dinner is lost *to the cause of science: Studying bear-human relationships along Alaska's Brooks River, John Craighead, a dean of grizzly research, had a salmon hooked when company called* **(right)**. *As the bear grabbed the fish, Craighead broke the line* **(below)**, *averting a potentially hazardous encounter. Most bears, sharing the bounty of the salmon-gorged stream, ignore fishermen. But problem bears get peppered with rubber bullets from a distance by park rangers.*



BOTH BY KAREN HAYNAM

epoch. The two types are so genetically similar that they have mated and produced fertile hybrids in a zoo.

On Admiralty Island, at the mouth of a salmon-spawning stream edged with salmonberries, I climbed into a tree blind. Night came, and with it a phosphorescent high tide. Seals went glowing by the shore. As the long fish milled upstream, a brownie plunged downstream into them, green fire exploding from its paws, trying to catch underwater skyrockets. Morning brought bald eagles fishing in tides of mist.

In Katmai National Park and Preserve on the Alaska Peninsula as many as three dozen brownies fish a mile-long spawning river between two lakes near Brooks Camp. Around 5,000 people visit Brooks Camp annually, and many try their luck fly-fishing the same stretch of water. Now and then a brownie, having learned to tell when a fisherman has got a strike, will lope over to grab the catch.

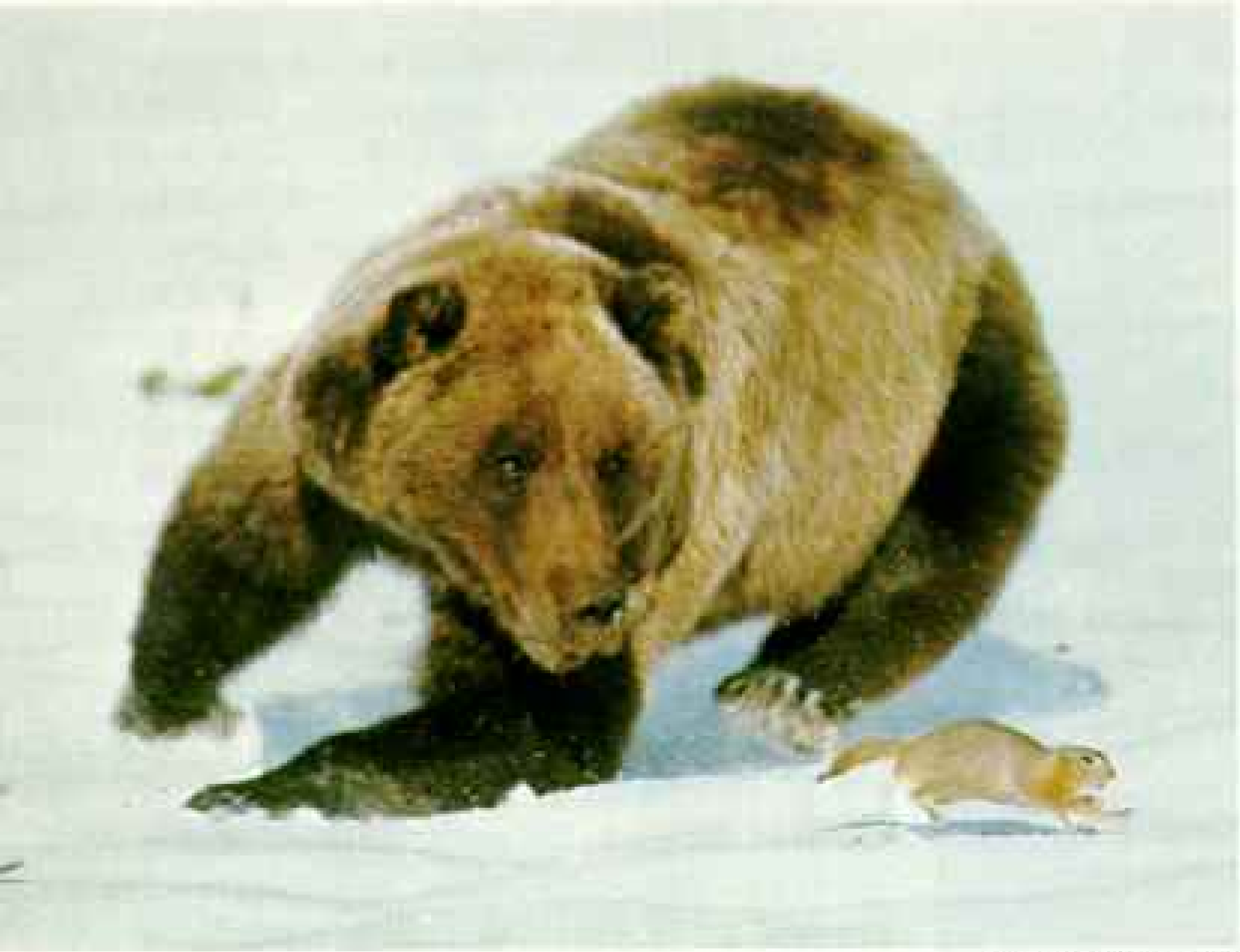
On an impulse I plunged into a pool to see how hard it would be to pin a salmon with my own paws. I remembered to look behind me. Not soon enough. A sow and two cubs were between me and the bank, coming closer. The cubs looked skittish. But their mother studiously ignored me, avoiding eye contact as she splashed slowly by ten feet away, a dark island of power in the current. "Though still loners, these bears become more tolerant of each other when they gather to share an abundant food supply," Katmai's resource management specialist, Kathy Jope, told me, "and that tolerance seems to extend to us."

Yet even salmon-feasting brownies can be tempted by our food. And if sooner or later, despite strict precautions, someone does leave out, say, a pack with tasty contents, the usual problem arises. It's no trick for a bear to figure out that a good way to get more such packs is to keep lumbering toward folks until they drop them.

Except sometimes it's a setup. The instant the bear tears into the pack, Katmai rangers pepper its rump with rubber bullets from far enough away that the pellets sting hard without breaking the skin. The rangers may fire a couple of cracker shells—earsplitting shotgun charges that explode in midair—for added effect. Aggressive fish thieves get the same treatment. And human-*horribilis* détente is restored by making use of the same capacity for rapid learning that got the animal into trouble in the first place. Since 1963 Brooks Camp has had to remove only three bears. The sole injury to humans involved a sleeping camper with bacon grease on his britches. He suffered a nip on the rear end.

WITH THAT IN MIND I arrived in Denali (Mount McKinley) National Park and Preserve, which had just been grizzled by the first August snowstorm. A combination of diverse bear forage and sweeping tundra vistas make Denali probably the surest place in the National Park System for visitors to see grizzlies. But Denali's wide-open contours also mean

Hulking over his grisly prize, *a Denali boar, muzzle-scarred from past battles* ***(facing page)****, feeds on the carcass of a yearling grizzly he killed after fighting off a sow, which retreated with the doomed cub's twin. Catch-as-catch-can takes over in a bear's hot pursuit of a ground squirrel* ***(below)****. Such small but important meals are often still asleep under the snow when grizzlies emerge from hibernation to dig them up.*



BOTH BY TOM MANGELSEN

that prudent campers lack tall trees in which to hang their grub. As hiking became more popular, more wild grizzlies were finding snacks at campsites and learning to look for groceries around people.

One grizzly was rummaging through a favorite soapberry patch when it found people camped there and claimed their cuisine. I trotted uphill through the soapberry brush to find ranger-biologist Joe Van Horn awaiting the bear's return. After a food rip-off report these days, rangers may set up a mock camp, complete with tent and packs.

"Then," said Joe, "we try to reeducate the bear by peppering it with plastic or rubber bullets." By tranquilizing the camp raiders and putting radios on them, rangers can follow up and see how well the lesson takes.

The underlying problem is being hit with a novel solution too: a portable food container for backpackers, made of grizzly-proof plastic. (Well, proof so far against all but one 1,400-pounder, tested at a zoo.)

DEEP IN ALASKA'S Arctic National Wildlife Refuge, a grizzly golden as wolf eyes followed me down a treeless North Slope valley. The bear kept to a shimmering field of overflow ice on the river's opposite shore. I would stop; the bear would stop. I would start; so would the bear. I would sit, and it would plonk down facing my way, weaving its head back and forth in the cold wind. Shorebirds flew between us piping their bright songs while the gray river rolled its gravels, folding endlessly into itself.

After a couple of miles I was alone again. The bear had turned its interest to digging in ground squirrel burrows. I had the feeling I was the first man-thing it had ever seen. I wished it the good luck never to see many others.

Although sportsmen kill about 900 *Ursus arctos* every year in Alaska, State Fish and Game Department biologists believe the state supports as many brown bears as ever—perhaps 40,000, mainly in the southern coastal region. Alaska-scale developments are under way in prime habitats. But if you want to find grizzlies, caribou, and resource conflicts, you need only go as far as the border of Idaho's Panhandle and northeastern Washington.

There, in the Selkirk Mountains, between the clear-cuts and timber roads, perhaps two dozen silvertips still survive. With them linger 25 woodland caribou—among the most critically endangered mammals in the United States. East-central Idaho's huge, linked Selway-Bitterroot and River of No Return Wildernesses produce occasional reports of silvered bears but no proof that any viable population persists. Recent studies show a handful of survivors—no more than a dozen—in Washington's North Cascades

and Montana's Cabinet-Yaak ecosystems.

The real grizzly stronghold lies in the northern Continental Divide ecosystem, consisting of Glacier National Park, the Great Bear, Bob Marshall, Scapegoat, and Mission Mountains Wildernesses, and surrounding national forest, private, and Indian tribal lands. Its 5.7 million acres, all in Montana, are home to as many as 600 grizzlies. The lower 48's only sure resident wolves outside the Great Lakes region live here too.

Like other grizzly ranges, this ecosystem is managed by a hodgepodge of bureaucracies with varying goals. And it confronts every species of development from hot pursuit of petroleum to subdivision of bear homes for vacation houses. The mountains reverberate with familiar "Who'll use it—who'll lose it" hollering matches.

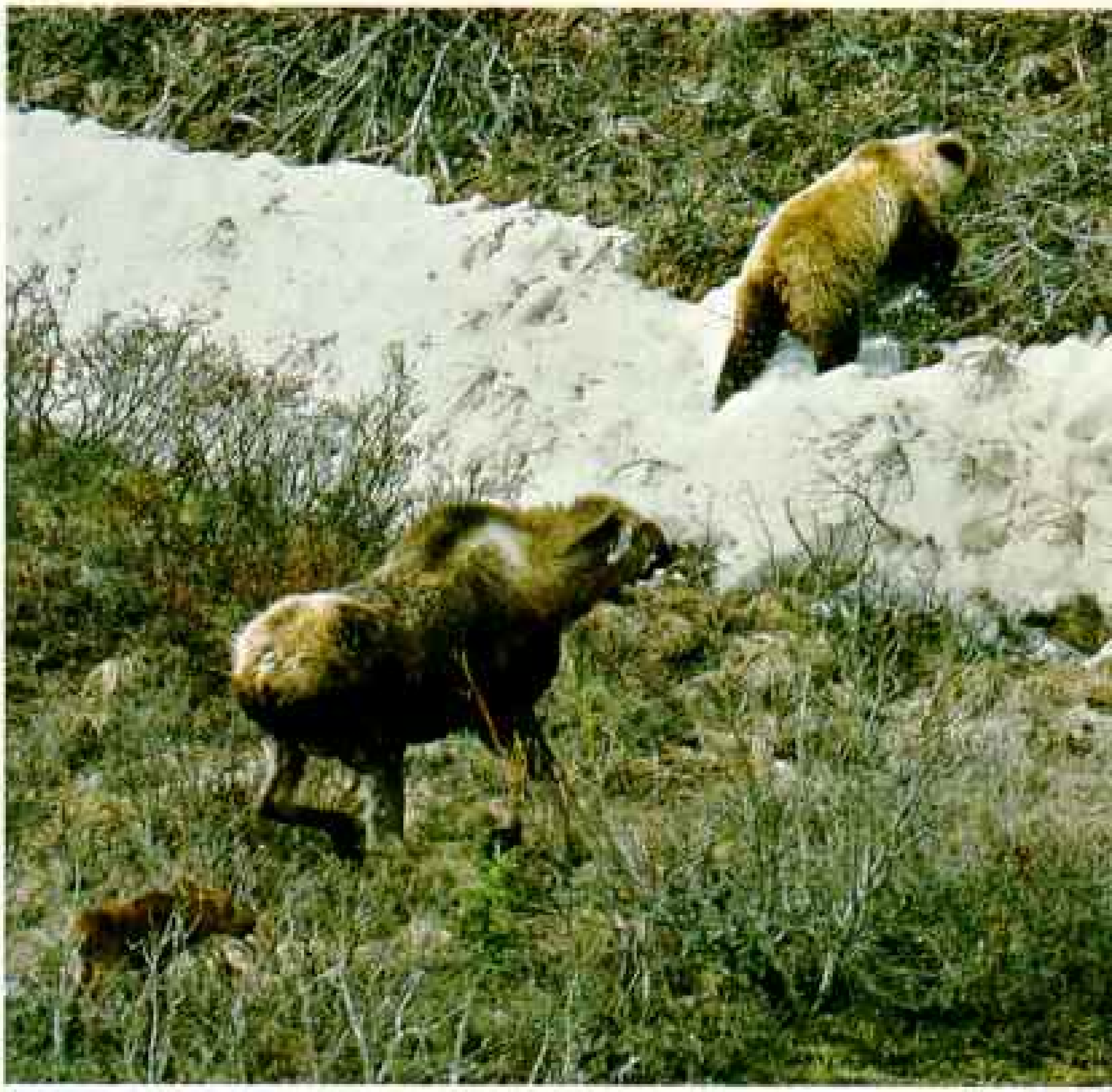
Not long ago Montana's legislators decided to let schoolchildren choose the official state animal by ballot. Participation teaches citizenship, all agreed. Guess who won in a landslide? Not too surprising in a state where Grizzly Bars, Grizz Groceries, and the like seem to thrive at every intersection. Nevertheless, a politician who worried that the kids' choice might "inflame more support for the grizzly to the detriment of our economic interests" offered an amendment to switch the honor of being state critter to the elk. Five hundred children descended on the capitol. Grizz, and citizenship, prevailed.

WHEN the wild iris bloomed, I was camping and riding and generally moseying along the Rocky Mountain Front, where the Great Divide meets the Great Plains in a roll of big winds east of the Bob Marshall Wilderness. The first grizz story I heard concerned a full-grown female that was last seen fleeing across a swampy meadow from a gang of charging cows.

Some grizzlies travel as far as 20 miles away from the mountains, out onto the prairie. By radiotracking in 24-hour sessions, state game researcher Keith Aune has found them ambling along, right next to livestock and scattered residences, usually at night. By day they stick to the brush along streams.

These appear to be pretty savvy bears; they've learned how to work around people. The high level of natural nutrition they enjoy by staying down on the edge of the plains allows sows to produce cubs at a rate that

A grizzly's greed is overmatched *by a cow moose in Denali. Earlier the bear isolated one of the cow's twin calves on a hillside, then killed and ate it. When the moose brings the remaining calf down to a riverbank, the grizzly follows, stalking* ***(facing page)****. Finally the cow charges* ***(below)****, ultimately pounding her sharp hooves on the fleeing bear, which seeks easier prey elsewhere.*



BOTH BY DAVID C. FRITTS

may lead to a definite increase in the Front's silvertips. A growing tolerance of these bears on the part of ranchers is vital to the success equation. Few raise sheep. And it helps no end that the broadly lethal predator poison 1080 has been sharply restricted in the United States.

In order to put the threat from grizzlies in perspective, consider that the estimated 40,000 to 60,000 brown bears remaining in all North America annually destroy only a few hundred domesticated animals and since 1900 have killed just 14 persons in the lower 48.

IN THE NORTH FORK of the Flathead River Valley, near British Columbia's border with Glacier Park, Canadian biologist Bruce McLellan and I located the boar he called Jake. Six years old and, at 220 pounds, far short of being your fabled ton of gut-grinding grizzly, little Jake lazed in an emerald tangle of alder on an avalanche slope, probably eating glacier lily bulbs or the succulent stems of cow parsnip. Downhill within easy rifle range, snarling and screeching, a pack of chain saws and bulldozers was busy taking a subalpine forest away to town. Why would any wild grizzly hang around?

I have seen grizzlies that ignored nearby helicopters and those that fled in apparent panic. And once, when a chopper came yowl-whomping over a rise, I saw a large silvertip charge straight for the huge hovering machine. The aircraft lifted up and hurtled on by. The people in it may never even have seen the bear. But it was there in a rage, up on its hind legs, arms out, indomitable, bellowing as if challenging the intruder to return and do battle. It might have won.

In Bruce McLellan's opinion, certain grizzlies could probably tolerate certain kinds of development—if development did not inevitably bring them into contact with garbage, guns, and people who can't tolerate grizzlies.

The road mileage on forest lands in western Montana has increased by 500 percent since 1960, though roads don't kill bears. And the Forest Service gates I noticed appearing across routes into remote wildlife territory just may help to save the bears.

As they say in Glacier Park, 90 percent of grizzly management is people management. This stone-shouldered, million-acre mosaic of high-quality habitat, connected to the Canadian Rockies, is a vital link in Montana's northern Continental Divide ecosystem. The park contains as many grizzlies as the entire Yellowstone ecosystem—around 200—on one-fifth the area. Trying to fit so many big bears safely together with ever more park visitors is an ongoing challenge for the staff. The greatest fear, of course, is a bear attack.

Magazine illustrators and taxidermists notwithstanding, brown bears almost never attack by stalking forward on their hind legs. Nor do they curl their lips far back like a snarling mastiff. Or crush victims in bear hugs. No—they come on all fours like a landslide, ears pinned back, lips out, their mouths forming an O-OOAGGH! Few have ever witnessed the reality.

In 1983, 2.2 million people—three times the population of Montana, 11,000 humans per grizzly—passed through Glacier. Two were slightly injured by bears. One of them was ranger Jerry DeSanto, who surprised a sow and cubs at close quarters and started up a tree. Mother bear caught his foot and pulled. He left skin all along the bark, he was hugging the trunk so hard. But now she had him down under her. "Play dead?" Jerry mused. "I suppose that's sound advice. But I just naturally started cussing her and punching her head." The grizzly fled.

"Nowadays, when some guy comes in hollering, 'Ranger, you've got to destroy that bear; it came at my Aunt Martha!' we ask a lot of questions and evaluate both the bear's behavior and the people's," former Glacier ranger Terry Penttila told me.

"It often turns out that dear Aunt Martha was crawling up behind the bear with her Instamatic camera. We call grizzlies unpredictable. I get the feeling they're studying us, trying to figure out what the heck *we're* going to do next."

LATE IN AUTUMN I visited a troubled young grizzly in prison—an old concrete cellblock at the Fort Missoula lab of University of Montana biologist Charles Jonkel. This boar had been caught in the North Fork of the Flathead Valley swiping food left out by one of my neighbors.

JESS LEE

The Ice Age seems to linger *as a grizzly lumbers past Denali (Mount McKinley), probably seeking roots, grasses, and berries; Dall sheep in the high country are usually safe from such marauders. "Much of the mystique surrounding grizzlies may never be dispelled, and perhaps that is good," wrote naturalist Adolph Murie, who spent 25 summers studying bears in these mountains.*

He had been transplanted, then caught again. Now, twice a day, a researcher appeared in front of his cage, goading him to charge. If he did, the boar was sprayed with a noxious substance—red pepper, on the morning I watched. On other days it might be skunk scent, or a concoction sent by Wyoming inventor Frank Child, whose sprays have repelled several grizzlies from a guest lodge and nearby campground in the Absaroka Range backcountry.

"By testing bears' reactions to different repellents here, we can select the most effective ones for future experiments in the field," explained wildlife researcher Marty Smith. "The tests also add up to a strong dose of negative, or aversive, conditioning. The idea is to counteract any positive association that a problem bear has made between humans and food."

After conditioning, this particular bear-school graduate was paroled to the high backcountry of the Mission Range. He was shot in June 1984 while raiding chickens at a cabin in the Swan River Valley.

A month later Doug Dunbar walked toward a resting 650-pound boar in a remote section of Yellowstone, purposely trying to disturb it. Doug belonged to a scientific

Trying to save *a bear that raided a cabin near Glacier, researchers drag the sedated animal into an artificial den* ***(right)*** *after months of conditioning to reinstill fear of things human. It emerged in spring, only to kill chickens and be fatally shot. A Montana hunter probably misidentified the young grizzly* ***(bottom left)*** *poached during black bear season. The state's grizzly season closes when 15 die in a year from any cause.*

Trying to find *a few more grizzlies, John Craighead* ***(above)*** *recommends that satellite-computer mapping of habitat, which he pioneered, be applied in Idaho's Selway-Bitterroot Wilderness. Here the population has dwindled to a few rumors. During their research in Yellowstone, John and his brother Frank urged that garbage dumps, such as one seen in 1968* ***(far right)****, be relocated and phased out, not closed abruptly. Then, the ecosystem probably held some 300 grizzlies. Today there are about 200, with as few as 30 breeding sows.*

JOHN J. CRAIGHEAD (BELOW); DOUGLAS H. CHADWICK

Every tendon taut, *a Katmai brown bear tears into a sockeye. Whether known for their color as blond bears, silvertips, or the "white bear" of the pioneers, nearly all require a home range of 20 to 1,000 square miles. If room can be found, they will survive. They always have. "It is astonishing to see the wounds they will bear," wrote Meriwether Lewis, "before they can be put to death."*

team that hoped to gain a better picture of how grizzlies respond to people hiking and camping in the backcountry. The team acted as guinea pigs, performing those activities close to radio-collared bears. They discovered that grizzlies typically left and kept moving away for a mile or more after being disturbed. But not always.

"Once we went a lot closer than we meant

JOHNNY JOHNSON

to," Doug began. "The bear rushed down a hill at us, huffing as he came. We didn't have a gun, but I was carrying a spray can of red pepper. I got him in the face with a stream of it when he was 15 feet away or so. It slowed him down, and he crashed into some branches. He recovered after thrashing around and took me to the ground. Then he gave me a sort of light bite on the stomach. In the meantime I'm yelling and emptying the spray can right in his face. Nose. Eyes. He broke off and ran, shaking and rubbing his head."

Ten days after that a different bear caused Yellowstone Park's fifth fatality from grizzlies since 1872. The victim, Brigitta Fredenhagen, was from Switzerland; she had camped alone in the backcountry.

From the standpoint of improving human safety, further research on grizzlies may prove invaluable. How much more research is the answer to grizzly survival, I wondered. To save a beast that represents an old fierce untouchable majesty, we keep subjecting it to new indignities, tinkering, prodding, and prying.

John Craighead says, "We already know enough about grizzly biology to save these bears. No matter what else we learn, we're not going to have grizzlies very long unless we preserve large enough tracts of good wildland habitat. Too often when a tough political decision in favor of the bear is called for, we put it off by ordering up another research project to—you know—'study the situation.' We could end up studying the grizzly to death."

Such temporizing has already taken its toll. In 1985 at least four female grizzlies were destroyed by people in the Yellowstone ecosystem, where scientists say the population can afford the loss of, at most, one breeding female a year.

ARE WE WILLING to accept nature as it is, or only as it suits us? We may never find formulas to fit all grizzlies. As I discovered, they are, above all, rugged individuals with different personalities, different knowledge learned over a long lifetime, and a startling range of moods.

When all's said and done, wilderness remains the great bear's truest strength and refuge—a place where it can be itself, a place for giants. For all we understand, the grizzly is nature's way of reminding us to leave room for her to keep working wonders.

Where our last frontiers remain good enough for the grizzly, they will be good enough for all the other wild things that need homes and space and a little respect. And they will be good enough, big enough, wild enough, free enough for us. □

BANARAS:

By SANTHA RAMA RAU

Photographs by

TONY HEIDERER

Holiest of cities to Hindus and earthly abode of the god Siva, Banaras is a beacon for

India's City of Light

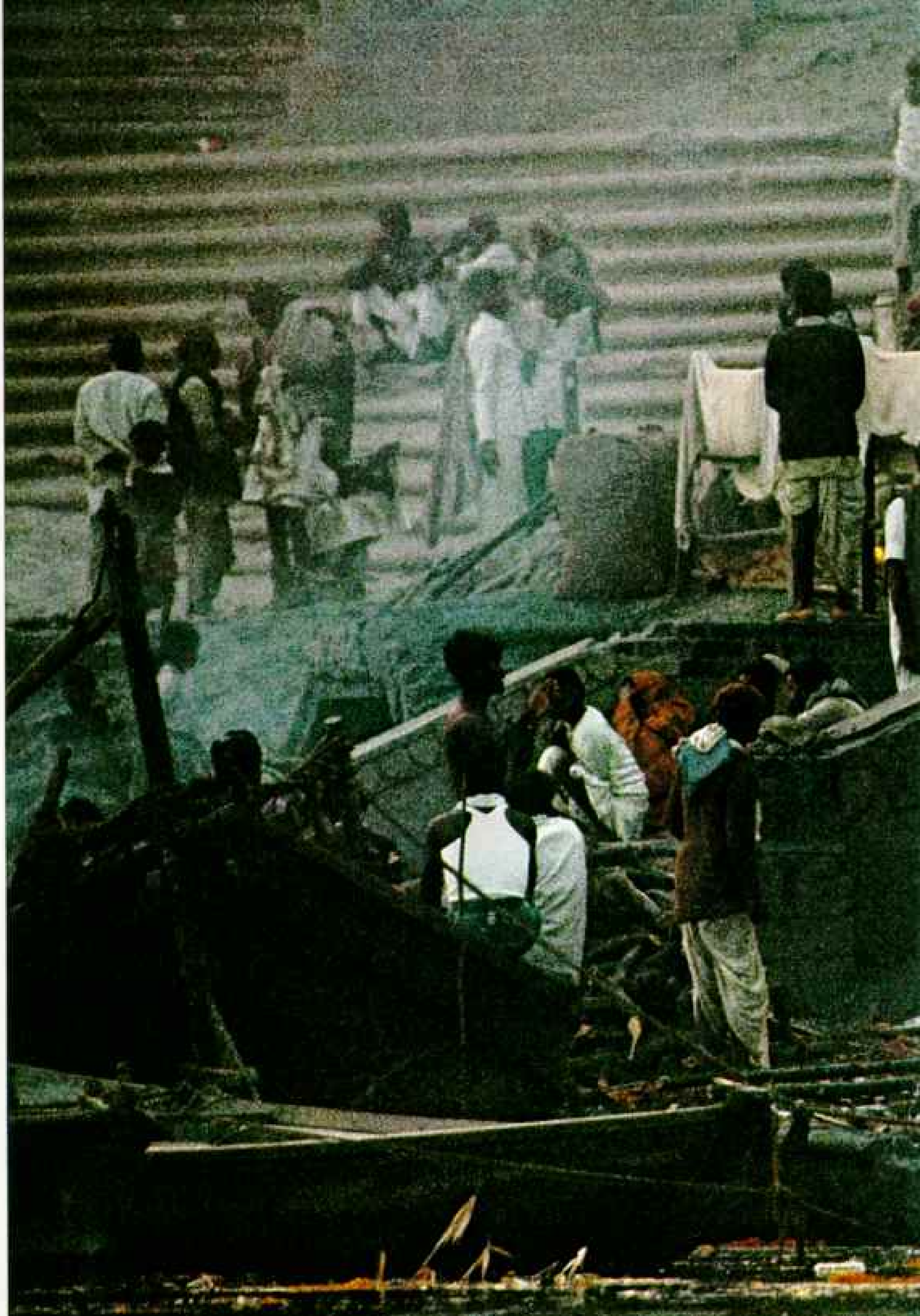
pilgrims who come to bathe in the sacred Ganges River. Festive lights bedeck a shrine to Sarasvati, goddess of knowledge, along the path of a worshiper.

A festival-day crowd streams down one of the city's numerous ghats — flights of steps that descend into

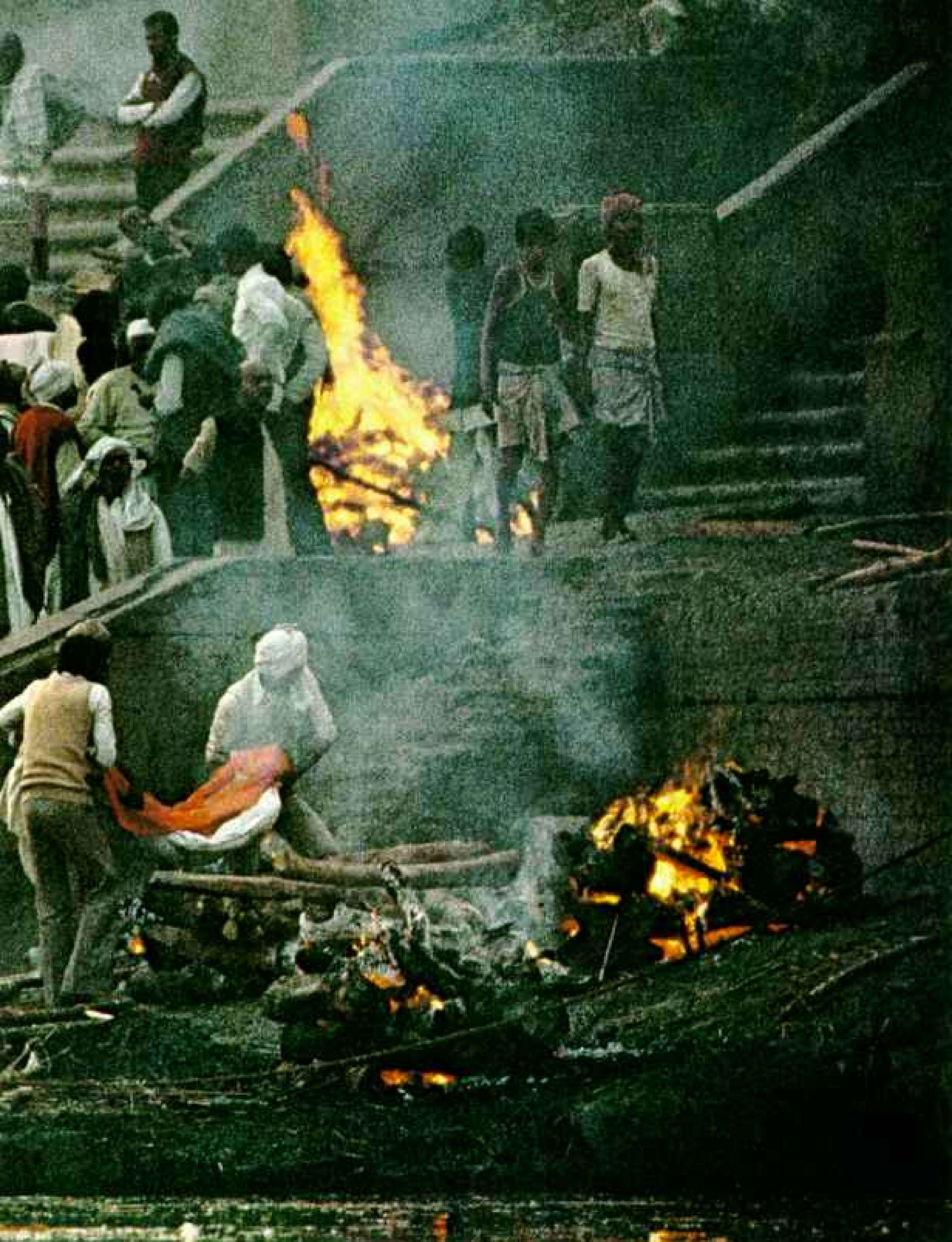
the Ganges. The river and Banaras's countless temples draw thousands of worshipers a day.

Purveyor of spiritual guidance, a panda, or Brahman priest, waits by a ghat to assist pilgrims. For a

small contribution, such men provide food and flowers for offerings and coach the uncertain in their prayers.



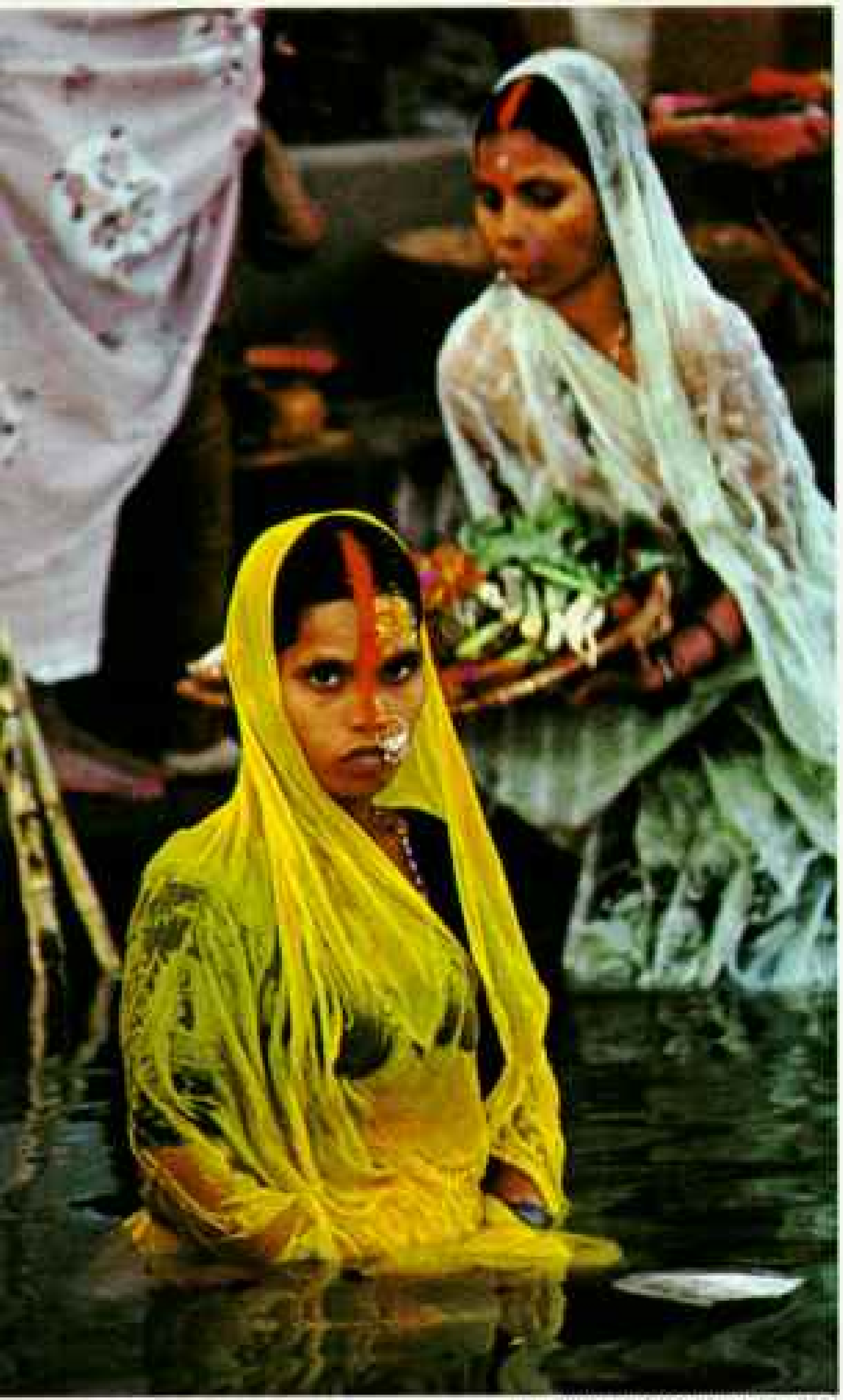
Day and night the fires burn at Manikarnika Ghat, where the dead are cremated and their remains



are scattered upon the river. To die in Banaras is to die blessed; many move here to live out their final days.

THE FIRST EXCURSION any visitor to Varanasi, the older, less familiar, but now official name for Banaras, is urged to make is a boat ride at dawn along the great three-mile, eastward-facing curve of the Ganges. It is excellent advice. At 5:30 in the morning an eerie mist hovers on the river, but as it clears you see, high above the bank, the splendid cornice of maharajas' palaces, ashrams, temples of a dozen different religions and sects, the minarets of mosques, and, leading down to the water from them, the wide flights of steps and platforms, the famous ghats. Every morning thousands of Hindus—pilgrims and residents of Banaras—stand on the ghats, some immersed to their shoulders in this holy river, some allowing the water to lap only at their feet. Some of the women are in vivid-colored saris, some in widows' white; some men wear only the briefest loincloths, some are fully clothed. All of them face the rising sun with folded hands, murmuring prayers.

As the sun clears the horizon, they make their offerings of flowers or food, throwing garlands of marigolds or pink lotuses or handfuls of grain into the Ganges; some float small oil lamps on its surface. They take the ritual drink of Ganges water in cupped hands and then fill a container—a silver or brass jar, a bottle, a pottery bowl—to take with them to the temple for their *puja*, or religious observances. There is always the sound of chanting and hymns and bells from the temples. The Brahman priests sitting under their huge umbrellas help the pilgrims with the ritual of the devotions, muttering advice or singing prayers for their clients as they lead them to the water. By now the whole splendid facade of the city is washed with a golden light of incredible purity, and one can easily understand why Hindus still call Banaras by its ancient name, Kashi, the Luminous or Resplendent, the City of Light.



HENRY WILSON (ABOVE); RAJESH BEDI

Vivid blazes *on their foreheads* ***(above)*** *proclaim the married state of women making their pujas—prayers and offerings to the Ganges.*

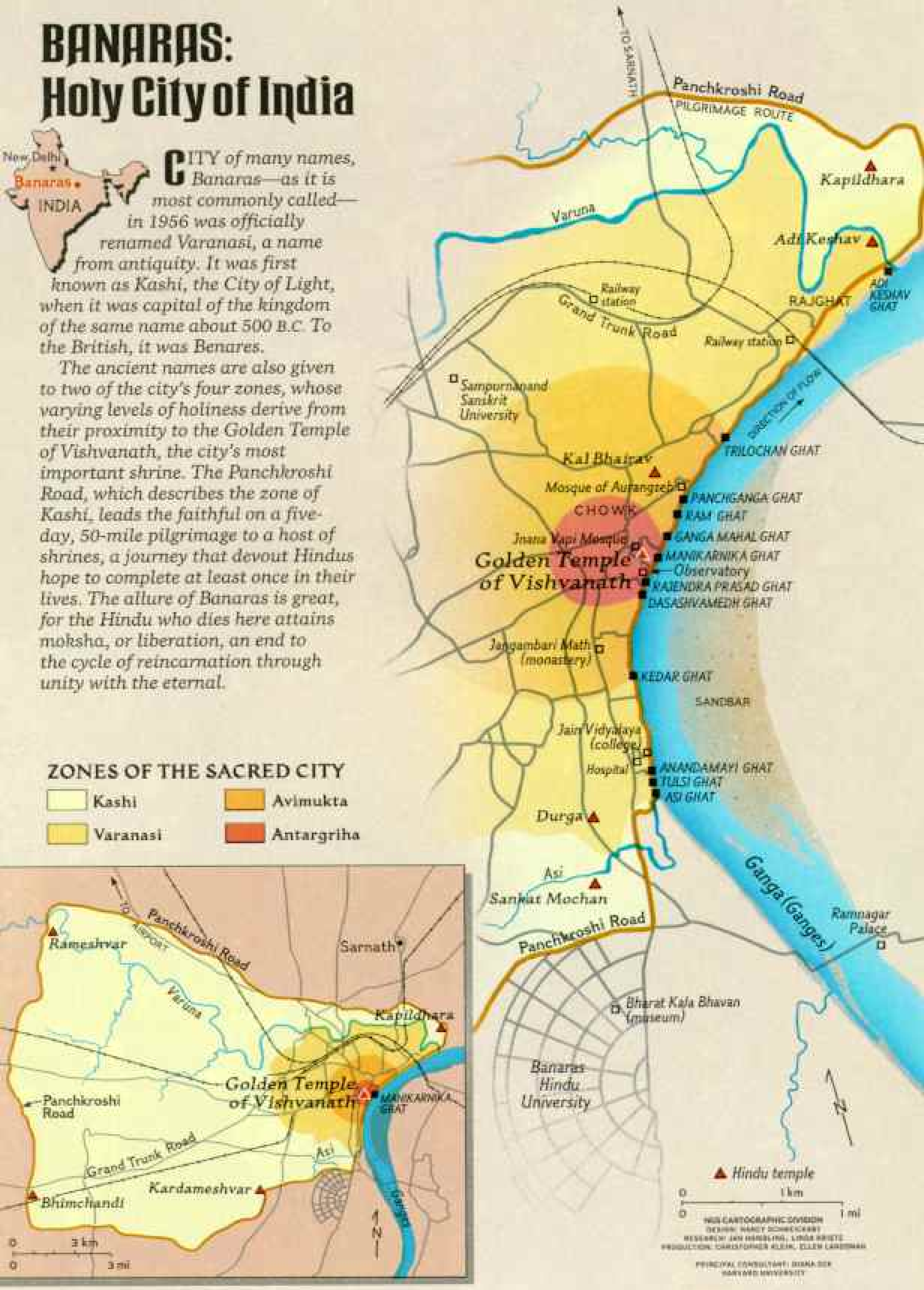
In water laced with flowers ***(facing page)****, a coin diver earns his living by retrieving money thrown into the river by pilgrims.*

This daily ceremony at dawn has repelled some foreigners who have called it wild, grotesque, unnatural, forbidding, has enchanted others as a moment to "discover what piety means," and has embarrassed many by its uninhibited, perhaps incomprehensible show of devotion in a manner altogether too exotic to accept comfortably. Yet it is a sight of such dramatic force, so moving and impressive that it stays with you through everything else you see and do in Banaras. Whatever dirt, squalor, or decay you happen on, somehow you can't help balancing it against the extraordinary evidence of faith that brings multitudes of pilgrims every day

BANARAS: Holy City of India

CITY of many names, Banaras—as it is most commonly called—in 1956 was officially renamed Varanasi, a name from antiquity. It was first known as Kashi, the City of Light, when it was capital of the kingdom of the same name about 500 B.C. To the British, it was Benares.

The ancient names are also given to two of the city's four zones, whose varying levels of holiness derive from their proximity to the Golden Temple of Vishvanath, the city's most important shrine. The Panchkroshi Road, which describes the zone of Kashi, leads the faithful on a five-day, 50-mile pilgrimage to a host of shrines, a journey that devout Hindus hope to complete at least once in their lives. The allure of Banaras is great, for the Hindu who dies here attains moksha, or liberation, an end to the cycle of reincarnation through unity with the eternal.


New Delhi
Banaras
INDIA
ZONES OF THE SACRED CITY
Kashi
Avimukta
Varanasi
Antargriha
TO SARNATH
Panchkroshi Road
PILGRIMAGE ROUTE
Kapildhara
Varuna
Adi Keshav
ADI KESHAV GHAT
RAJGHAT
Railway station
Grand Trunk Road
Railway station
Sampurnanand Sanskrit University
DIRECTION OF FLOW
TRILOCHAN GHAT
Kal Bhairav
Mosque of Aurangzeb
PANCHGANGA GHAT
CHOWK
RAM GHAT
GANGA MAHAL GHAT
Jnana Vapi Mosque
Golden Temple of Vishvanath
MANIKARNIKA GHAT
Observatory
RAJENDRA PRASAD GHAT
DASASHVAMEDH GHAT
Jangambari Math (monastery)
KEDAR GHAT
SANDBAR
Jain Vidyalaya (college)
Hospital
ANANDAMAYI GHAT
TULSI GHAT
ASI GHAT
Durga
Ganga (Ganges)
Asi
Sankat Mochan
Panchkroshi Road
Ramnagar Palace
Bharat Kala Bhavan (museum)
Banaras Hindu University
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AIRPORT
Panchkroshi Road
Sarnath
Varuna
Kapildhara
Golden Temple of Vishvanath
MANIKARNIKA GHAT
Panchkroshi Road
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NGS CARTOGRAPHIC DIVISION
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HARVARD UNIVERSITY

to worship at the Ganges in Banaras, a city of about a million. They are among its biggest sources of revenue, the deepest embodiment of its character, the most formidable barrier to an outsider's understanding.

My husband and I spent five weeks in Banaras last autumn, and as we drove to the hotel from the railway station, this transcendental vision of the city was only fitfully apparent. Any road wide enough to hold a car is a horrendous, seemingly undisciplined mass of buses, bicycle rickshas, mopeds, scooters, three-wheelers, bicycles, bullock carts, horse-drawn tongas, the occasional disdainful camel, often donkeys, sheep, and goats, and, since it was the auspicious wedding season, decorated and bejeweled elephants or horses caparisoned with brocade and tinsel to serve as mounts for bridegrooms. And, of course, the impervious, unchecked cows. Traffic makes room for them; if you are on foot, you may smack them, push them out of your way, or yell at them, but never, never injure them.

THE CITY, already old when Rome was founded, spreads down to the river in an impenetrable tangle of lanes and *galis*, too narrow for any car—many of them too narrow for two people to walk abreast. On any street, at any time, there is usually at least one funeral procession—although "procession" is often too grand a word. The cloth-wrapped body is tied to a bamboo bier, covered with flowers, and carried by the mourners to the cremation ghats, always accompanied by the chant *Rama nama satya hai*—The name of God is truth.

Along the edge of the sidewalk—if it exists at all—is usually a layer of itinerant peddlers, some from as far away as Tibet, selling clothing, vegetables, sweets, trinkets, and anything else that is portable. Beyond them are often the tables and benches of cooked-food shops, and, opening directly off the street, the long rows of tiny, open-fronted stores and workshops.

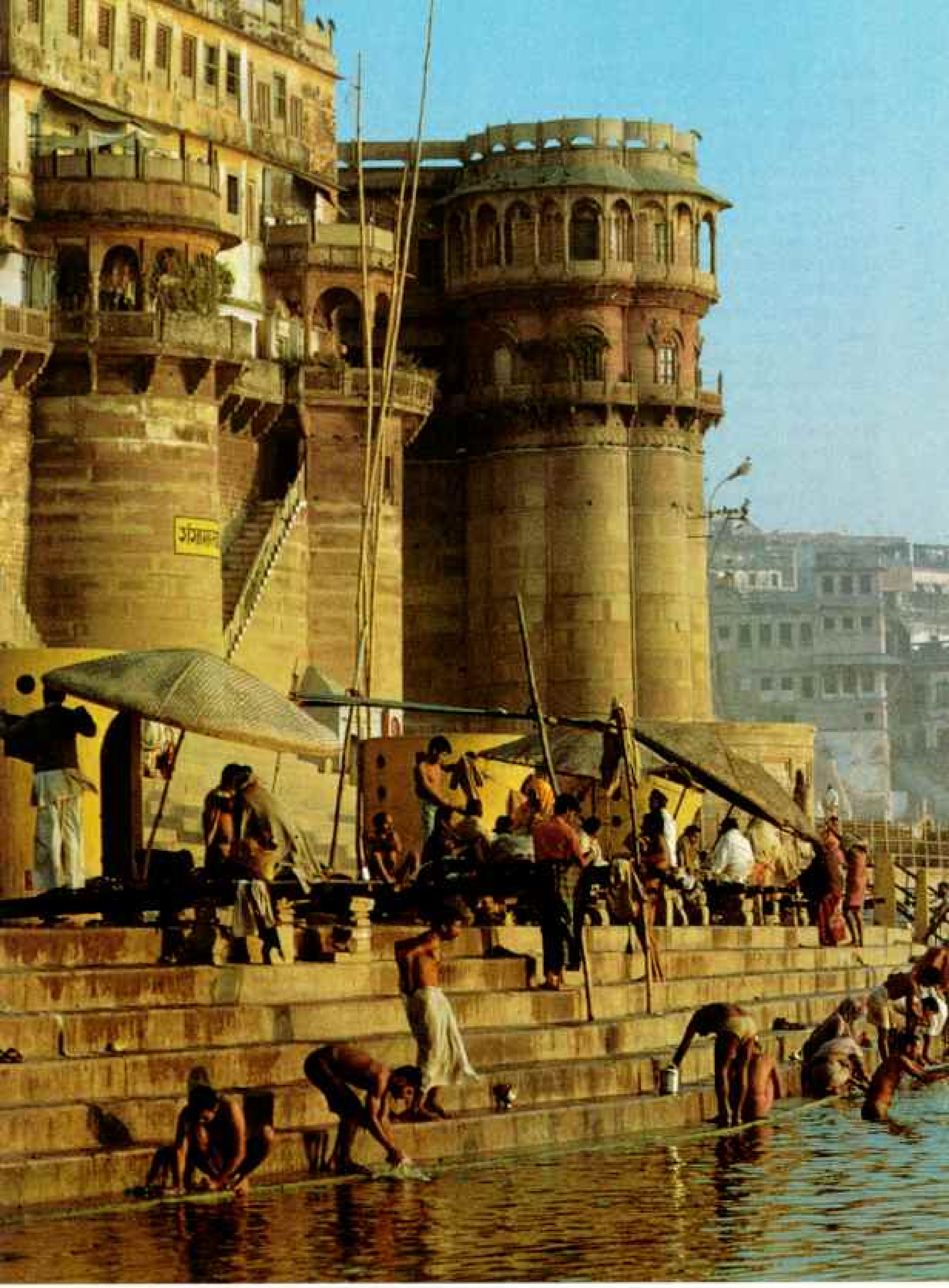
Amongst all this, pedestrians weave their way, quite as diverse and unpredictable as the traffic. The first thing that struck me was the wide variety of their clothes, which often in India tell you where the wearers come from. The warm earth colors of saris from Maharashtra mixed with the pastels of Punjabi *shalvars* and *kamizes*, local students in Western dress (usually from Catholic schools), others in neat *pajamas*, *kurtas*, and scarves in school colors, Punjabi Sikhs in tightly wrapped turbans, South Indians in *lungis* of checked cotton, and among them all *sadhus*, holy men in saffron robes carrying begging bowls in their hands, and even some ascetics, either naked or with a minimum of clothing.

The blank walls of dwellings may be painted with bold designs of monkeys, elephants, and horses with festive trappings, or grandly dressed swordsmen. Often a wall is plastered with circular cakes of cow dung still holding the impression of the hand that slapped it on to dry for later use as fuel for the fire of the evening meal. Occasionally, through an open door, you catch a glimpse of a sunny courtyard and the everyday life of the family within.

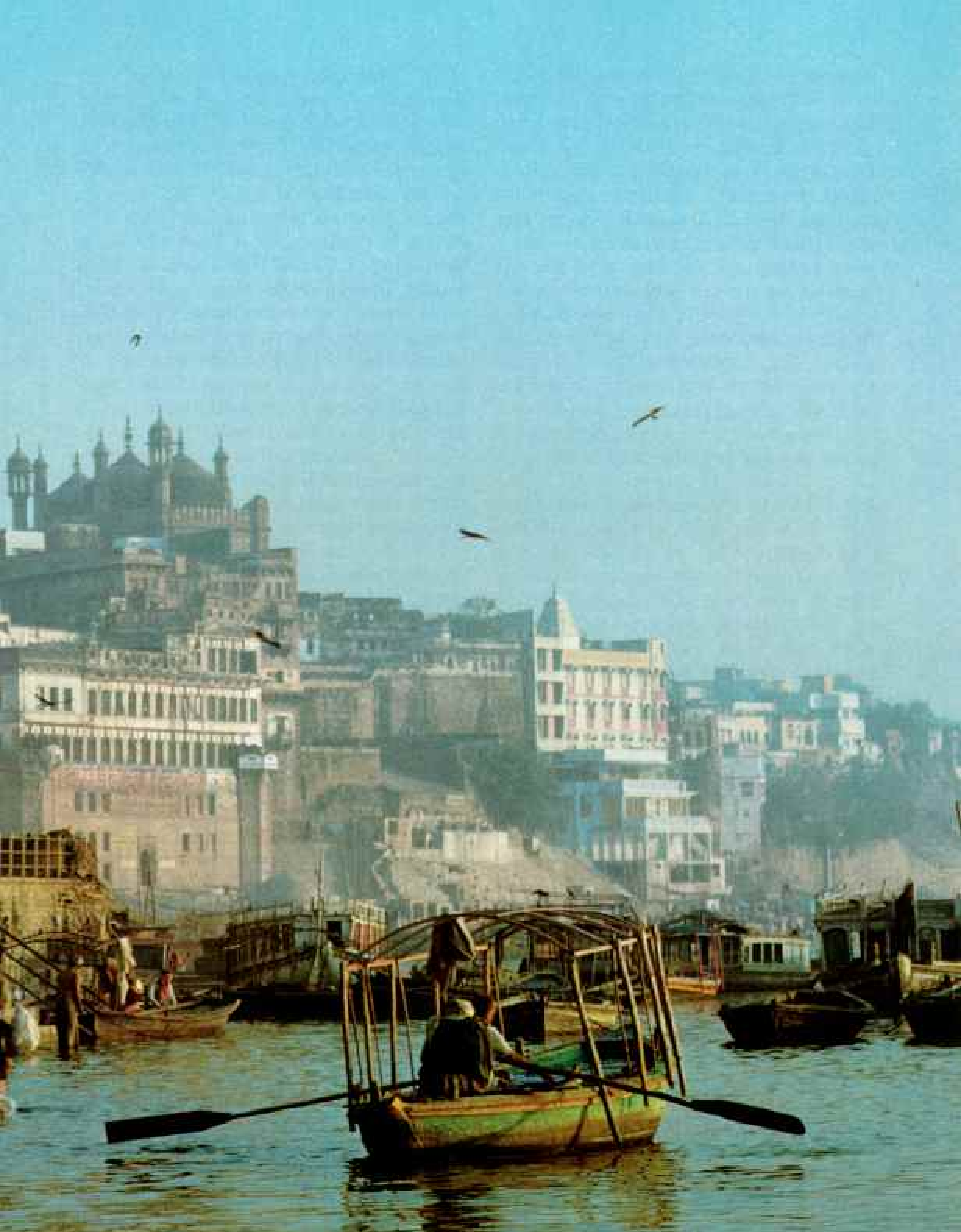
Scattered throughout this bewildering maze, up an unexpected stairway or at the turn of an alley or in the middle of a small plaza, there are hundreds of temples, some very rich like the Golden Temple of Vishvanath, some modest shrines (page 247). Most of them are surprisingly small, many of them, after numerous destructions and rebuildings, are relatively recent, though their sites have been holy for more than a thousand years. Religion is not confined to the river. It permeates the whole city.

In our first few days in Banaras I felt that I could never describe in reasonable compass the essentials or even the surfaces of a city with such a complex cultural, linguistic, and religious nature. As a Hindu I knew that Banaras was the holiest place on earth, but I didn't really know why. I knew that it was a glorious fate for a Hindu to die in Banaras, the chosen domain of Lord Siva, where you are promised release from the cycle of birth, death, and reincarnation in a final merging with the infinite, ultimate source, thus satisfying the most profound objective in a devout Hindu's life.

Santha Rama Rau has been writing about her homeland for 40 years. She now lives in New York but frequently travels to India. Photographer **Tony Heiderer** has had a lifelong fascination with India.



Cleansing clothes as well as souls, *the Ganges accommodates mundane chores at Ganga Mahal Ghat, dominated by a palace where a raja once held*



court. On the skyline stands the Mosque of Aurangzeb, built by the 17th-century Mogul emperor and today a sign of Banaras's sizable Muslim population.

It occurred to me that Banaras as a city is like an individual Hindu: It has an immemorially ancient soul that is constantly being reincarnated after each loss through violence or decay, in a slightly different form though recognizably identical essence, like a moving wave that keeps its shape. This combination of change and sameness makes an amazingly complex texture of life and physical appearances. A place that has never had a real revolution nor a new start but has simply been evolving, like a biological species, since prehistoric times, is quite strange to the rest of the world: Origins are lost in the mists of prehistory, and appearances are a mere transitory embodiment of ancient sanctity and other traditions.

BANARAS was celebrated as the place where the most profound wisdom dwelt, the seat of all enlightenment and learning. Its permanent advantages include the highest sanctity, fertile soil, and its location on a great river. Hindu rulers built great palaces, temples, and ghats in the city. There is even an astronomical observatory. They also endowed massive charities that gave new meaning to the status of Banaras as the residence of Annapurna, the goddess of nourishment, who had promised that no resident of the city would ever go without food.

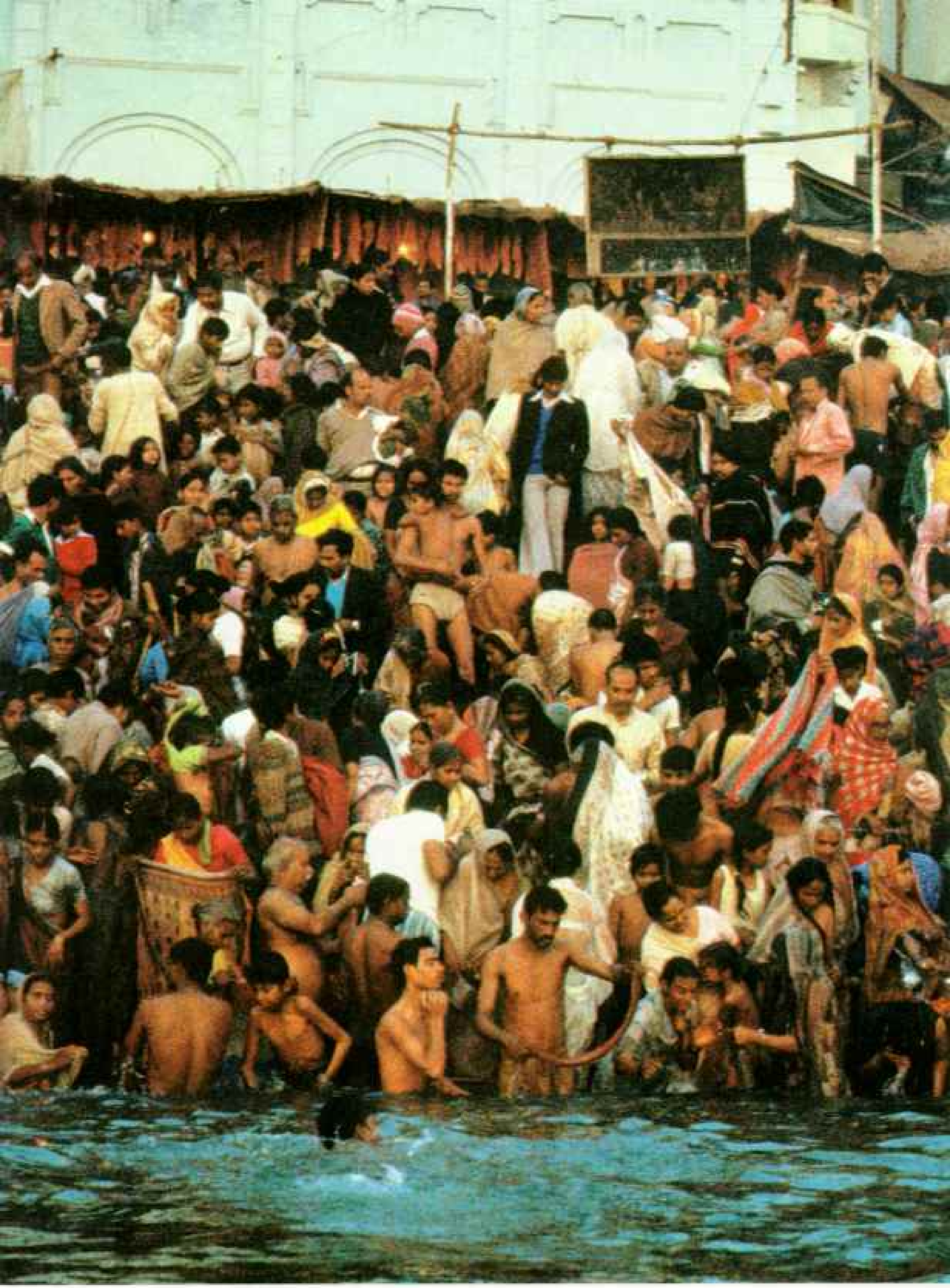
In the early years, say 1000 B.C., Kashi's inland acres, behind the high bank of the river, were known as the Forest of Bliss. There, beside its ponds and lakes, under the trees, gurus and their students, ascetics, meditators, scholars, and disciples made their headquarters, their hermitages, their classrooms. Any Sanskrit scholar from another part of India would be judged finally by how brilliantly he defended himself in debate on the Vedic texts with the pandits of Kashi.

Early in our stay we made a formal call on the former Maharaja of Banaras in his home in the city. A middle-aged man, a little hesitant in his speech, he was dressed with the utmost simplicity in a brown *achkan* over white cotton trousers. The only evidence of showiness was his cap of Banaras silk brocade with a gold border. He received us in an oval drawing room furnished with plush-covered armchairs and sofas with antimacassars. The side tables and the walls held dozens of photographs of Lord and Lady Mountbatten, Pandit Nehru with U Nu of Burma, Indira Gandhi, several viceroys.

He walked across the salon and flicked back a curtain, displaying a simply appointed bedroom. "Queen Elizabeth slept here. A very easy guest." At a portrait of King Saud of Saudi Arabia, he paused. Smiling reminiscently, he remarked that both the government of India and his own staff had been very nervous at the prospect of the king's visit because meat is seldom served in the maharaja's palace. "I informed his staff that if he insisted on meat, he could be served separately in another room. At my table there is only vegetarian food. He ate it and enjoyed it. He couldn't believe that a meal without any kind of meat could be so satisfying." Meditatively he added, "He took my cook back with him."

THE MAHARAJA'S TITLE and privileges have been abolished by the government of India, but he has lost nothing of his influence and prestige in the city. He is a student of Sanskrit and is acknowledged by everyone we met to be the leader, and a zealous guardian, of traditional Banaras culture. His Highness made a number of suggestions as to what we should see and do in order to get a feel of what was culturally important in Banaras. He specially recommended the Sampurnanand Sanskrit University, built in the middle of the last century in a delightful though quaintly inappropriate Gothic style, the oldest of the "modern," or Western-style, universities; the Tibetan Institute (located in Sarnath, the deer park where the Lord Buddha is said to have come to preach his first sermon in the sixth century B.C.), where Tibetan monks in

***At the mercy** of the charitable spirit, a leper waits for handouts of food and money on a market street shared with a balloon man and other vendors. With a constant influx of visitors mindful that charity bestows blessings on the giver, Banaras is a haven for mendicants—beggars who have quit their worldly pursuits.*



Jostling humanity *strives to reach the river on a festival day at Dasashvamedh, the most popular ghat. Pollution from sewage and partially burned corpses has*

prompted a river cleanup campaign—one often ignored. Waterborne disease is common, but the faithful insist the water is not only harmless but even healthful.

wine-colored robes stroll and discuss and work in the library of 18,000 volumes, many of them long scrolls or loose-leafed, boxed texts carried out three or four at a time on the backs of refugees from Tibet; and the Jain Vidyalaya college, evidence that yet another ancient Indian religious tradition has deep roots in Banaras, where two of the 24 Jain prophet-teachers are supposed to have been born.

The Arabic Centre of Islamic Studies is a reminder not only of the fact that more than 25 percent of the city's population is Muslim, but also of the nearly six centuries when the city was under Muslim rule. The first raid by Muslims, who sacked and plundered some Hindu temples, occurred about A.D. 1035. Banaras was finally conquered in 1194, when an Afghan general, according to Muslim historians, destroyed nearly a thousand temples and carried off his booty on the backs of 1,400 camels.

Temples continued, however, to be destroyed and rebuilt, with some emperors taking a part in both activities at different times, until the last episode of destruction by the Mogul Emperor Aurangzeb in 1669. Even now Hindu Banarsis will tell you, with outrage in their voices, how the very holy Vishvanath Temple, along with many more, was virtually leveled and a mosque built in its place, and how a brave priest secured the great stone *lingam*, the symbol of the Lord Siva, and hid it in a well until it could be reinstalled in a new temple late in the 18th century.

The best known of all among this dizzying array of scholastic enterprises is Banaras Hindu University. Founded in 1916 by the great nationalist and educator Pandit Madan Mohan Malaviya (who, when he went to England, carried a supply of Ganges water to drink), B.H.U. has a 1,300-acre campus, donated by the maharaja's grandfather, on the outskirts of the city. Its original purpose was to combine Western methods of teaching and subject matter with traditional Indian education. Today one of the largest residential universities in India, it has schools of both Western medicine and the ancient Indian Ayurveda practice, colleges of engineering, agriculture, commerce, technology, music and fine arts, theology, and Oriental studies. It also has one of the finest museums in India, the Bharat Kala Bhavan.

Going through the museum with Professor Rai Anand Krishna, a shortish man of immense charm and humor, was like being guided by an erudite and enthusiastic sprite. The museum was founded by his father, who also, to a large extent, assembled its collections. Holding up a 17th-century Kashmiri shawl, he urged, "Don't just look at it—touch it, *feel* it! Can you believe it is woven from wool?" Indeed, it looked and felt like the most delicate of silks.

In the vault of the museum, a square, strictly utilitarian room lined with safes, furnished only with a baize-covered table and a few straight chairs, assistants brought out more treasures: a large crystal pendant dating from the third century B.C., found during excavations in the Rajghat section of the city, a fragile beaten gold ornament showing two winged figures from the same period, jade dagger hilts, opium cups, archery thumb rings inscribed and dated in Persian for the Emperor Jahangir.

BUT THE MOMENT that most delighted me was when Anand Krishna showed us some of his favorite paintings. There was one Rajput miniature showing a village woman playing with a serpent; it is called "Asavari Ragini," which is both the name of the picture and the musical mode appropriate to the painting. Suddenly, in that featureless room under the harsh modern tube lighting, Anand Krishna began to sing, in a small true voice, the Asavari Ragini. When he had finished and one of the people there said "*Va va!*" (the usual Indian form of appreciation rather than handclapping), Anand Krishna replied, "I sang that very tenderly. It should have been much more vigorous to match the strength in that painting." As he handed the small precious picture to the assistant to replace in the safe, he added, "You can't understand Indian art in isolation—each picture should evoke the right song or the right passage of poetry to accompany it."

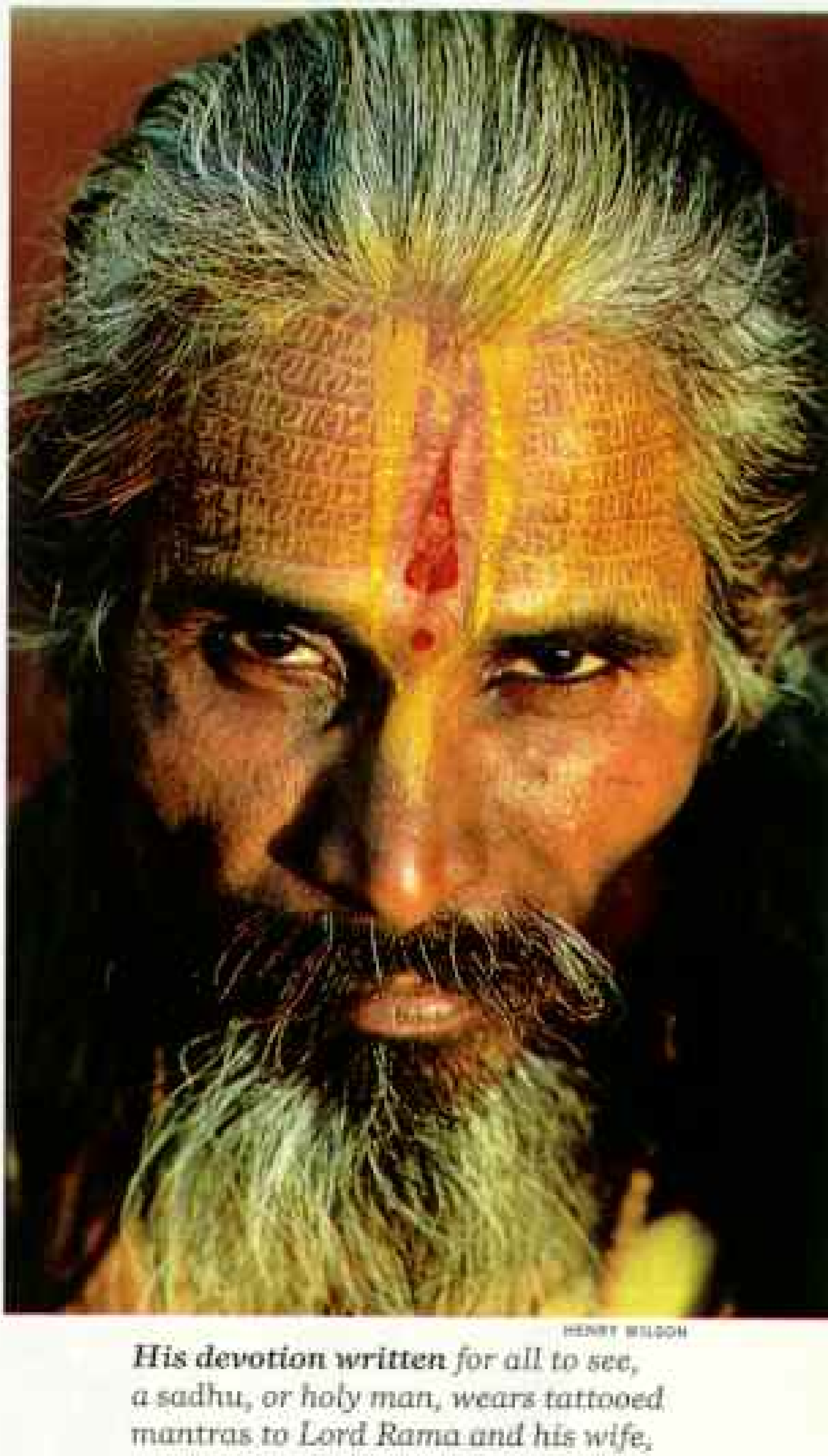
Another day Anand Krishna took me to meet a jeweler friend whose special pride is his accurate sense of weight. When he was being trained by his father, he had to know from the feel in his hand the exact weight of the stone or the gold with which he would be working. He learned to match pearls by weight and size by practicing with peas. He wasn't allowed to deal with real pearls until his eye and his feel were faultless. Now, his wife told me, he likes to show off a bit buying vegetables or fruit or anything else in the bazaar in the same way. He is never wrong.

At his house was another jeweler friend, who was somehow deputed to take me through the old city to the workshops where the metal workers, enamelers, and dealers in precious stones still follow their hereditary trades. At the end, through an unpromising doorway, up two dark flights of stairs, under the windows on a mattress, sat an old man with a cashbox in front of him. He was a master enameler.

WE WENT THROUGH the usual exchange of questions, inquiries about my family and the immediate offer of tea or a cold drink. Only after these formalities was it proper to ask about the work these men taught, supervised, and sold. Along one side of the room were low tables at which a young man and five boys, all sitting on the floor, were engaged in the exacting and eyestraining task of producing enameled ornaments, cups, oil lamps, boxes. The young man was incising the silver forms in designs that would hold the enamel. The boys, ranging in age from 12 to 15, were painting on the enamel base with fine brushes, each feather of a tiny peacock, each outline of an elephant's eye, each petal of a flower on a pillbox, exact and impossibly detailed. Then the objects are fired in a small, primitive-looking metal box in the vestibule, watched over and timed by another boy.

The old man produced what he felt were his best examples. One was a quite astonishing chess set with the king and vizier (no queens in Indian chess) riding in *howdahs* on elephants, the bishops and knights in the shape of camel soldiers and cavalrymen, the rooks as elephants, and the pawns as sword-armed infantry. Before I could ask, he told me that each set cost 6,000 rupees ($500).

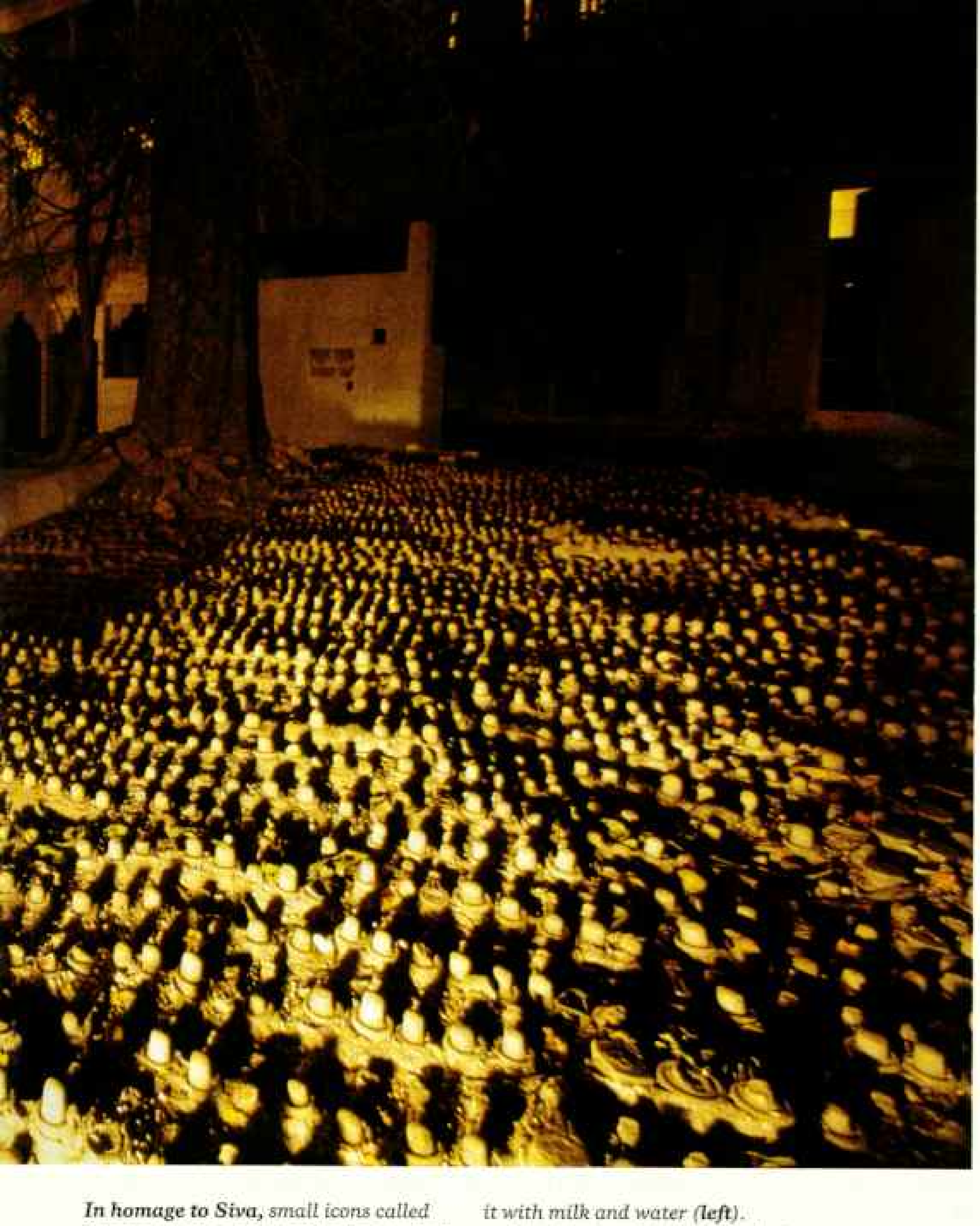
There was a time, before the great mines in South Africa were discovered, when India was the richest source of diamonds in the world, and Banaras, near the the gold and diamond mines of Bihar and Golconda, was an acknowledged center for fine jewelry craftsmanship. The city's goldsmiths still work in what must be very similar conditions to those in long-gone days, passing on their skills from father to son. One workroom that I visited was, again, on an upper story of a house in one of the narrowest alleys; four or five men were sitting on the floor, studying and discussing the making of



HENRY WILSON

His devotion written *for all to see, a sadhu, or holy man, wears tattooed mantras to Lord Rama and his wife, Sita. Renouncing possessions, sadhus are lifelong pilgrims. For such a holy man, said the god Indra, patron of travelers, "All his sins are destroyed by his fatigues in wandering."*

RAJESH BEDI



In homage to Siva, *small icons called lingams cover a courtyard of Jangambari Math, a monastery in central Banaras* **(above)**. *Others are buried beneath them—more than 60,000 have been left here by pilgrims. The devout may stay in the 50 rooms in the monastery that are open to the public for the annual feast of the marriage of Siva. In a common Hindu ceremony, a priest bedecks a lingam with flowers, anoints it with clarified butter, and washes it with milk and water* **(left)**.

A dual-natured deity, Siva destroys but also creates. Lingams, usually shaped from stone, are phallic symbols representing the god's regenerative powers. Huge lingams are a common feature of temples. The lingam typically appears on a circular base, called a yoni, that represents Shakti, the god's female half and source of divine energy. In the broadest sense, the lingam symbolizes the entirety of the Hindu universe.

a diamond-and-gold bracelet that rested on a low table. To me the bracelet seemed to be a circlet of single stones, trimmed with a thin gold edge and held together by magic. It was still on its wax mold before the final casting, and the problem was to replace the magic with a gold structure sturdy enough to hold the diamonds but unobtrusive enough to still retain the illusion. I had no doubt that the men would succeed.

DESCRIBING BANARAS in the 18th century, Lord Macaulay, the English historian and scholar, wrote, "Commerce had as many pilgrims as religion. All along the shores of the venerable stream lay great fleets of vessels laden with rich merchandise. From the looms of Benares went forth the most delicate silks that adorned the balls of St. James's and of Versailles."

The astonishing silks that Macaulay mentions are still woven in Banaras. I went to one of the old shops to buy a sari for a friend. After the customary polite inquiries and offer of tea, two assistants began unfolding a cascade of silks of such a giddying variety of colors, textures, and designs that I had to beg them to stop. Silk is sold by weight in India, and to that price is added an amount for the labor involved or the intricacy of the weave. I was given the impression that nothing was more important, at the moment, than my choice, no trouble was too great to ensure my complete satisfaction.

When I had made my selection, I asked about cotton saris. I remembered François Bernier's 17th-century description of "fine muslins of which are made turbans, girdles with golden flowers, and drawers worn by females, so delicately fine as frequently to wear out in one night. This article of dress, which lasts only a few hours, may cost ten or twelve crowns, and even more, when beautifully embroidered with needlework." I didn't find anything quite as fragile as Bernier described, but I did buy two saris in which the cotton is virtually transparent and the designs woven into the cloth seem to be floating in space. I hope they don't have to be discarded after a single wearing.

Banarsis remember and recount their extraordinary history with exuberant flair, but their special pride seems to include something more intangible—an attitude to life, a cheerful, often slightly ironic insouciance, an ease and confidence that shows in their generosity, their sense of hospitality, and their love of good conversation. They can talk for hours, forgetting mealtimes, ignoring previous appointments, if they find a subject interesting or an acquaintance diverting.

Dr. Bhanu Shankar Mehta is a pathologist and an extremely entertaining conversationalist with a profound interest in the history of his city and a special delight in the quirks of its people. One evening he outlined the pattern of a true Banarsi's day in his youth. First thing in the morning, inevitably, he would go down to the Ganges to bathe and pray. Then he would take a ferry across the river to wash his one set of clothes (laundry being a prized skill), and while he was waiting for them to dry on the sand bank, he would wrap himself in the all-purpose red cloth he always carried and chat with the boatmen or whoever else was around. He would return across the river, buy some *jalebis* (a favorite Indian sweet) and some savory snacks from a food stall, and gossip with fellow customers standing about while he ate his breakfast. Before or after this meal, he would take some exercise, usually wrestling or weight lifting, on the special platforms on the ghats.

Since these activities had taken up most of the morning, by the time he got home, his wife would tell him that the midday meal was almost ready. So he would eat and take a nap. About 3:00 or 3:30 he would go out to Chowk and have a leisurely cup of tea at his usual tea shop, where he would be certain to meet some of his friends. Nearly always a few of them would join him in strolling along to an informal or "open-door" concert given by one of the many singers of classical music. (On such occasions the singers were always women, not exactly courtesans but not entirely respectable either. A closed-door performance is one that is specially ordered, paid for by the host, and for the pleasure of his invited guests alone.) At the open-door performance our Banarsi would throw two or three rupees to the singer, order in tea or *thandai* (a milk drink made with cannabis) and the spiced and perfumed *paans* (betel nuts and leaves) that are a Banaras specialty, and settle down to enjoy himself.

At some point it would occur to him that he had better go to the bazaar and open his shop. But as soon as he had earned enough for the next day's needs, he'd close it again. "If he had a sari shop," Dr. Mehta said, smiling indulgently, "and was lucky enough to sell a sari within the first ten minutes, he'd close the shop for a week—even a month." He finally went home to dinner and, in a pleasantly muzzy state, to bed.

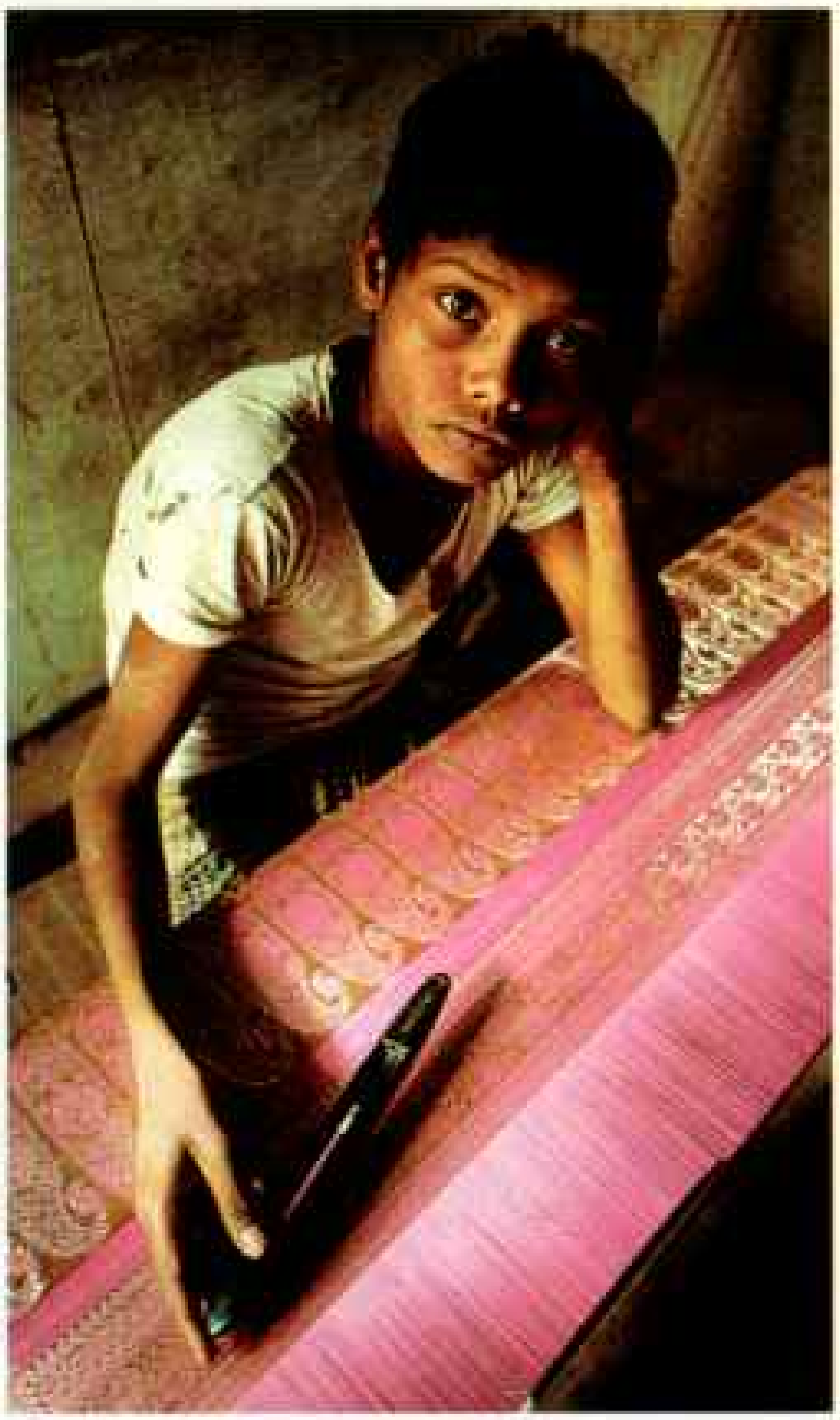
Dr. Mehta poured out a stream of stories about the eccentricities and odd sense of humor among members of the old *raiees* (aristocrats). One liked to save his servants from having to show gratitude for a bonus. His device was to fill sacks with coins, weigh them, and then tell his servants that the coins must be "dried" on the roof. When the sacks were returned, he would weigh them again, pretend to be in a rage because the sacks were just as heavy as before and therefore the coins were still "wet." Eventually the servants would catch on and bring down the sack suitably lighter, having extracted their bonus.

Mrs. Pupul Jayakar, a family friend of long standing, reminiscing over tea about the Burhwa Mangal celebrations of her childhood days, remembered the great fleets of boats, oil-lit and decorated, drifting slowly downriver on the last dark night of the Hindu year, each with its singers and musicians competing from boat to boat for excellence and imaginative improvisation. Standing on the ghats you could hear the most powerful voices all the way from Ramnagar, the fortress-palace of the maharaja four miles away on the far bank of the Ganges. The festival has not been celebrated in this florid way for at least 50 years.

MANY OF THE OLD attitudes and values may be disintegrating along with the families that supported them, but classical north Indian music is still a part of Banaras life and is still taught on the guru-chela system. Madan Vishwakarma, a handsome young singer, explained that he had met his guru while he was at the university and had become his student by a kind of intuitive recognition. Somehow the guru decides that the chela is serious. Somehow the student knows that this man must be his guru. To seal the bond between them, a guru puja is performed, complete with prayers, offerings, flowers, and blessings. The student undertakes to uphold the true tradition of the art and to receive with the utmost sincerity the moral as well as the professional instruction of his teacher: "By 'moral' I mean I had to promise to observe morality about music—not to cheapen it, not to use it to vulgar ends."

RAJESH BEDI

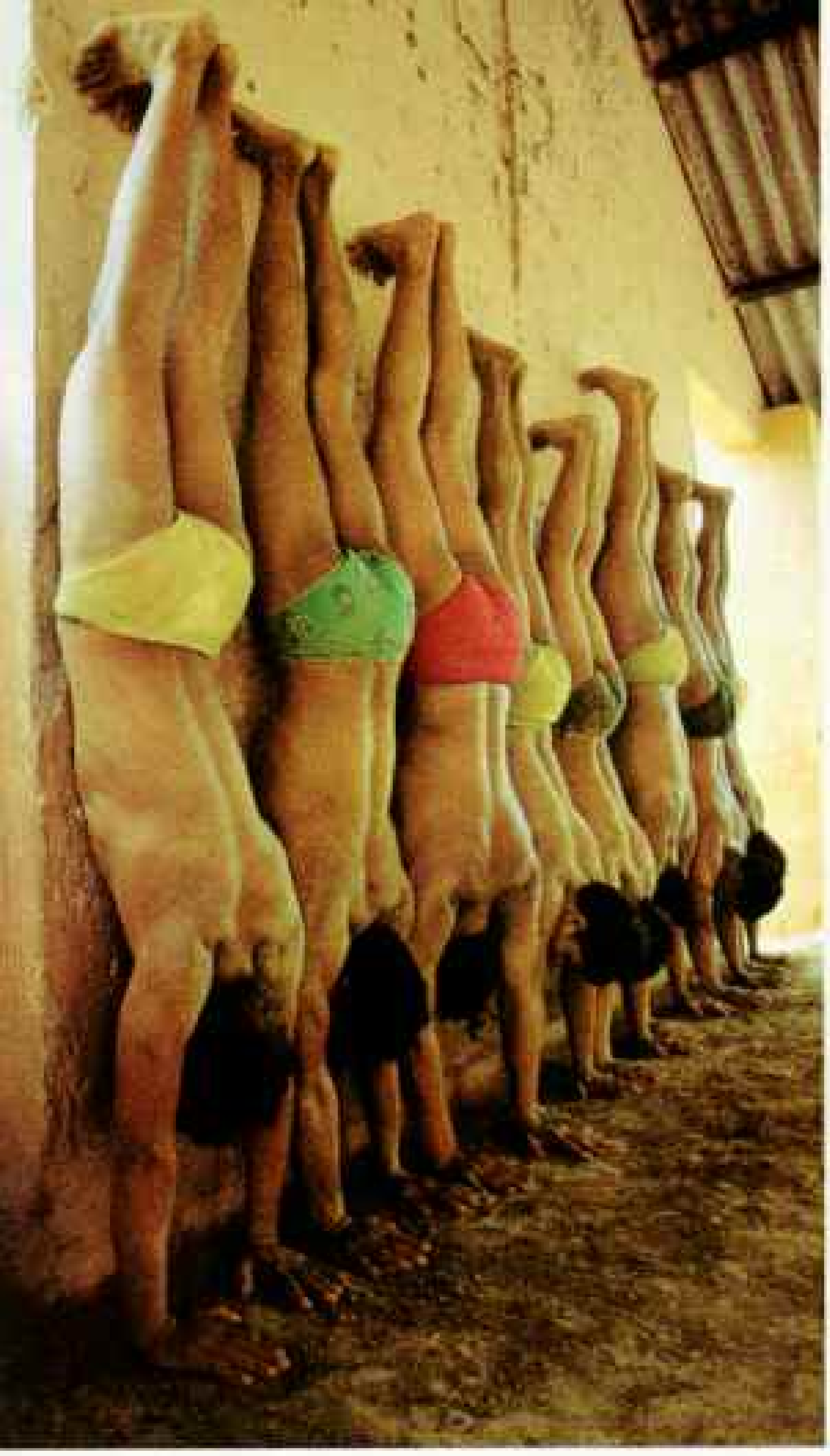
***Enlightening words** of Buddha's first sermon are believed to have been delivered in the sixth century B.C. to five followers on this hallowed ground at Sarnath, now a northern suburb of Banaras. A stupa, or domed shrine, dominates ruins where a large monastery once housed 1,500 monks.*



Center for artisans *as well as for the faithful, Banaras produces textiles, apparel, and carpets prized throughout India for their craftsmanship. A Muslim boy at his loom pauses in the nimble-fingered work of weaving rich silk brocade* (**left**). *Weaving has traditionally been the province of the city's Muslims. Even with a child in her arms, a woman whirls a skein winder into a blur* (**below**) *as she removes the wool that will be used by carpetmakers.*

Often incorporating gold and silver brocades, saris of silk are the crowning achievements of Banaras's weavers. In the central shopping district, a mother leads her young son as she steps out on a festival day dressed in an elaborate sari. Equally important for their attire is traditional makeup. The red color in the part of her hair declares her married state; the dot is ornamental. His marking is a symbol of devotion applied by a priest, showing that the boy has been ritually cleansed.

HENRY WILSON (ABOVE LEFT AND BELOW)

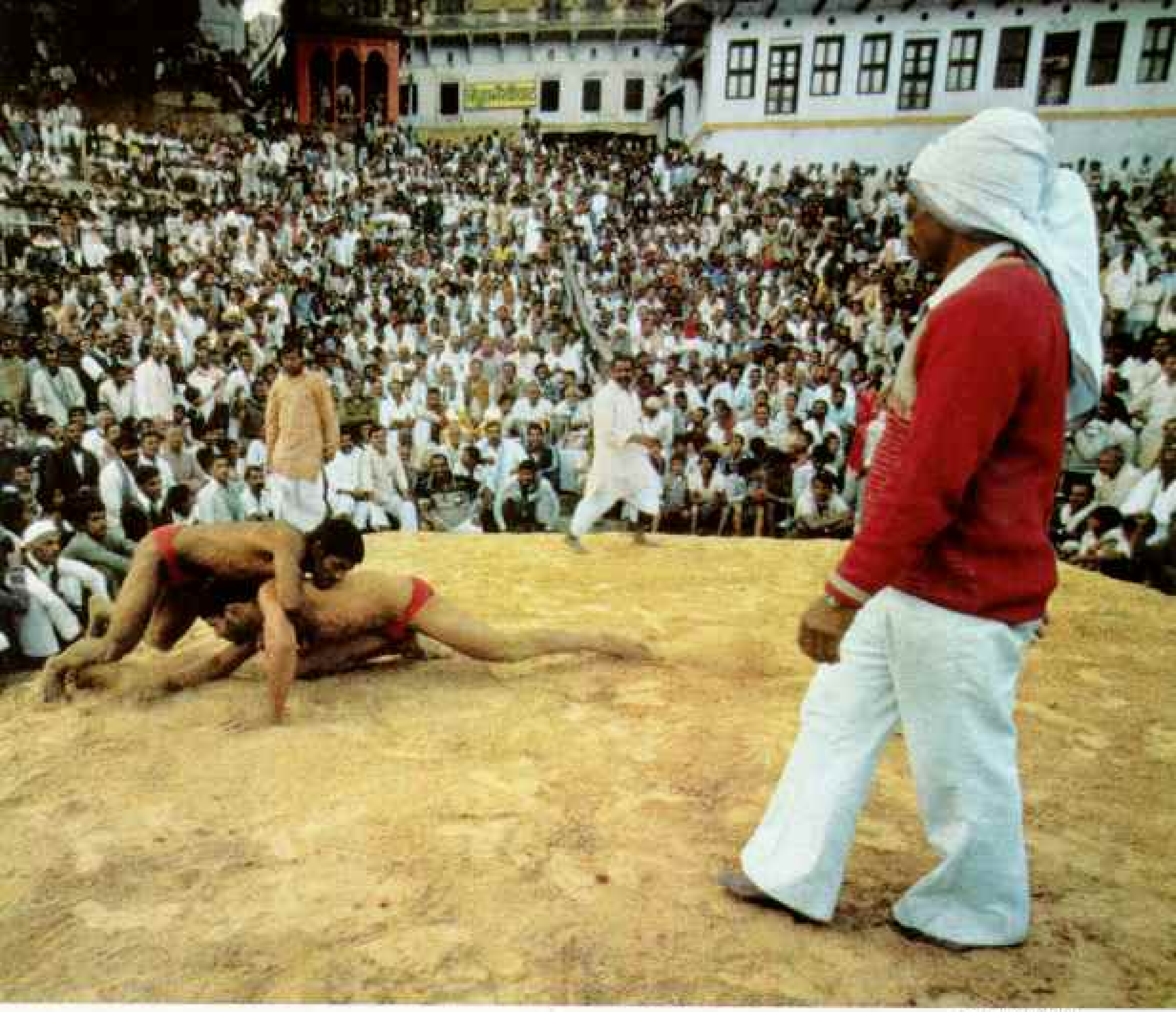


Wrestlers' regimen of exercise *calls for prolonged handstands at an akhara* **(left)***, an arena devoted to the sport. Two contestants grapple during an*

I asked if he would ever sing in films, a potentially well-paying occupation. "Films? Perhaps. But there are many well-regarded classical programs on the radio and TV that would be better when I am skilled enough."

Banaras and its music is an endless topic of discussion—has it been true to its artistic commitment? Have its great masters, Ravi Shankar, Kishan Maharaj, Bismillah Khan, commercialized their music for what Banarsis call a "ticket audience" (as opposed to a "love audience")? Has their music exchanged its subtlety, delicacy, and patrician disregard of mass approval for the crass standards of a modern box-office success? Is the style, the essential intimacy of classical Indian music, lost in a big concert hall that necessitates amplification and removes the vital interplay of performers and listeners?

We were invited one evening to a family concert. The music room was candlelit (power failures occur at least once a day), and the soft, flickering light gave an extra beauty to the slender pillars and stone arches in the sidewalls, leaving the high ceiling with its flower-shaped chandeliers in shadow. The concert had already started when we joined the small audience—perhaps 20 friends and family members—seated on straight chairs. On the *takht* sat four young women. A *tabla* player kept the intricate rhythm going while each singer in turn, accompanying herself on the *tamboura,* demonstrated the progress she had made under the tuition of her guru since the last family recital. The women took turns performing,



RAJESH BEDI (LEFT)

*elimination match (**above**) to decide who will proceed to national competition in Delhi. To some Hindus spiritual vigor and physical fitness go hand in hand.*

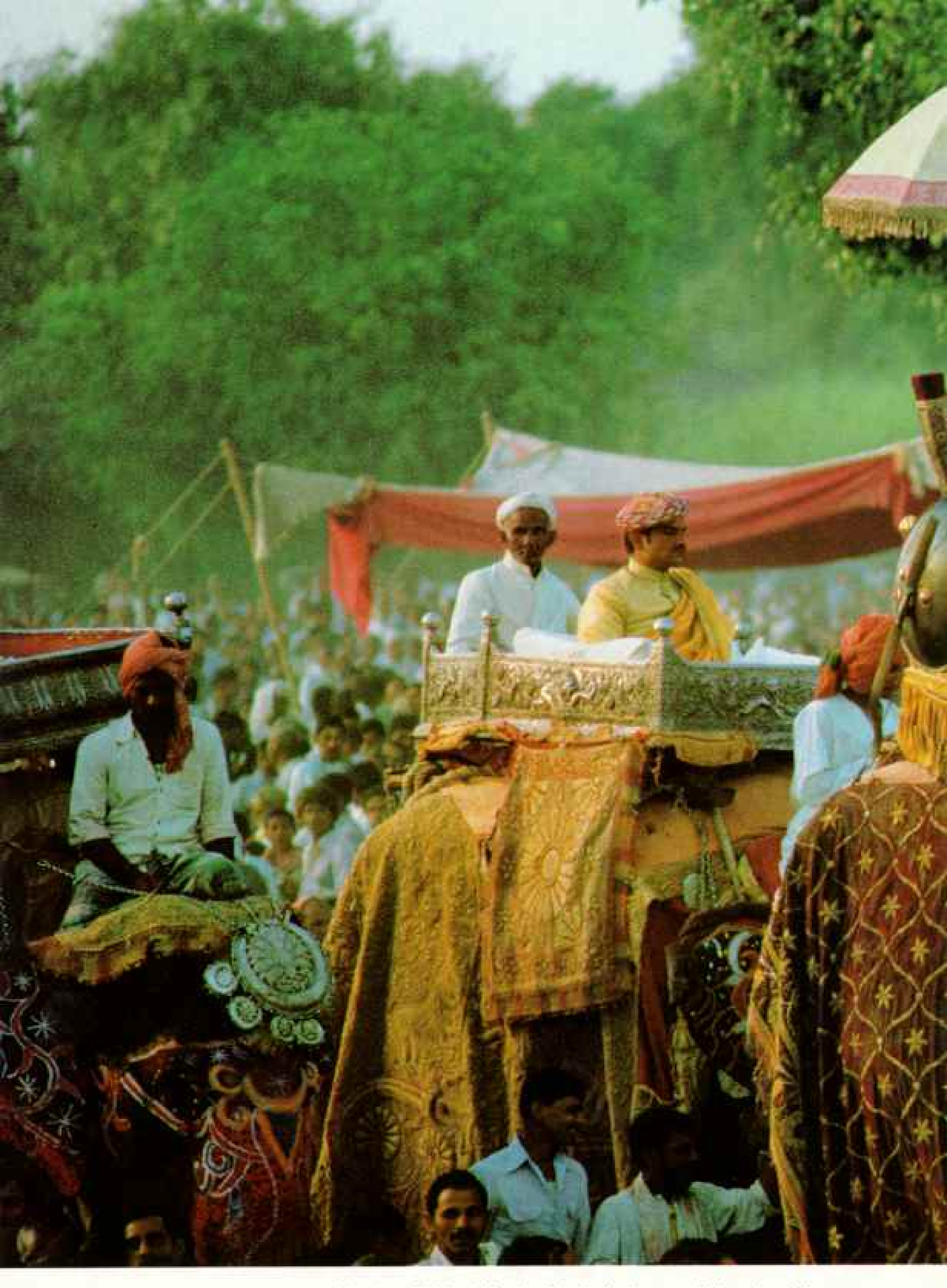
and in the intervals there were knowledgeable comments—some critical, some complimentary—about the style and voice of the singer, about her interpretation of the song, about the ingenuity of her improvisations.

IN THE END, whatever the former glories of Banaras, whatever its wealth of commerce, its brilliance in arts or crafts, one must return to its essence, its greatest and continuing distinction.

It is a holy city; the most sacred place on the 1,560-mile course of the sacred Ganges River. Indeed, it is because of this central fact that princes and conquerors, merchants and artisans, philosophers, scholars, and artists came to it and left their mark on it. And, of course, it is why the pilgrims come.

We followed two of the most famous and most ancient paths that they take. Both begin at ghats on the river. One route starts at the Manikarnika Ghat with a ritual bath and devotions performed along the way south to the Panchkroshi Road. The road makes a wide loop enclosing the sacred city, and ends on the north at the confluence of the Varuna River and the Ganges.

Pilgrims make this journey on foot, starting well before daybreak, stopping at the 108 ritual places of worship. The complete pilgrimage takes five days, and at each of the four points where travelers will spend the night there are rest houses, some donated by the rich and devout, where anyone can request lodging for the night, and where often the local villagers will provide food.



With prayerful mien, *Vibhuti Narain Singh, the former Maharaja of Banaras, presides over an annual festival celebrating the legend of Lord Rama. Every day*

National Geographic, February 1986

HENRY WILSON

for a month actors play out episodes of the saga in which Sita, wife of the divine hero, is abducted by, and finally rescued from, the demon-king Ravana.

Compared with the elaborate decoration of the city temples and their display of affluence, those on the Panchkroshi Road, though sometimes ancient and beautiful, are virtually unadorned. Many are mere wayside shrines, and some are no more than natural rock formations, painted and revered from ancient times.

Many of the traditional halts were empty (pilgrims usually travel in groups). Occasionally there were trays of flowers, a few sweets, and a little dish of rice before an image, the remains from earlier pujas. It seemed entirely appropriate to find, on the threshold of one tiny temple, a group of village women who had built a fire and were cooking a frugal meal that they would first present to the deity and then eat themselves.

In total contrast is the other favorite pilgrimage path that takes the "seekers" to the five *tirthas*, or "fords" (used here in the sense of a crossing over from the earthly cycle to a liberation of the spirit). The first of these is at the Asi Ghat, where the pilgrim bathes and then follows the Ganges north (downstream) along the famous riverfront, making his offerings, obeisances, and prayers as he goes. All around is the active life of the river and its bank, the boatmen ferrying people back and forth, bringing sand from the far shore for making concrete.

On the steps and platforms of the ghats children are flying kites; barbers are squatting in front of their customers lathering faces or trimming hair. Young men are exercising, wrestling, or deep in meditation, while beside them washermen are beating wet clothes on the stones at the river's edge, and multicolored stripes of saris, like fantastic rainbows, are spread to dry in the sun on the steps and walls behind them. A boy is washing his dog. A young mother is taking her yelling child to bathe in the Ganges for the first time. There are beggars, idlers, vendors, touts, the young, the old, the curious, the remote, the talkers, the guides, the priests, the families simply out for a stroll, the ascetics, the crippled, the women scrubbing out household pots and pans, the toughs, the gently courteous ones, and, as everywhere in Banaras, the cows and water buffalo. All are there along the Ganges, all as much a part of the everyday life of the ghats as the dirt, the discarded food and flowers, the wastepaper, the human and animal excrement underfoot.

As you walk northward from the Asi, the first important ghat you reach is the Tulsi, named for the late 16th-century poet Tulsi Das, best known for making the great Sanskrit epic the *Ramayana* accessible to ordinary people in his Hindi version. Its immediate popularity is supposed to have inspired Kashi's (and present-day Banaras's) longest and most elaborate festival, the Ram Lila, a month-long reenactment of the stories of Lord Rama and his triumph, with the help of his attendant, the monkey-god Hanuman, over the demon king of Lanka.

PANDIT Veer Bhadra Mishra is the *mahant*, or head priest, of Sankat Mochan, the temple to Hanuman, and chief administrator of its various dependencies, including Tulsi Das's house at the head of the ghat steps, in which are preserved the poet's sandals and his image of Lord Hanuman, whom he worshiped. The mahant is also a Ph.D., a hydraulic engineer, and head of the department of civil engineering at Banaras Hindu University.

Sitting in his pleasant, airy living room overlooking the river, we talked about the Ganges, a matter of concern to him these days on more than religious grounds. The city's untreated sewage empties into the Ganges to join the refuse swept in from the ghats. The pollution of the Ganges has become a national scandal. Waterborne diseases—dysentery, hepatitis, cholera—are the worst health hazards in Banaras. Cleanup money is being raised (the government of India has earmarked 430 million rupees for Banaras itself), and *Swatcha Ganga* (Clean the Ganges) committees have been formed under the leadership of the mahant.

In his late 40s, elegant in looks, entirely modest in manner, and obviously sincere, he said, "If I say to the pilgrims and the villagers the Ganga is polluted, they say, 'Never! The holy Ganga is always pure.'" The approach he has evolved is more tactful and more telling. Most pious Hindus call the river *Ganga Ma* (Mother Ganges), so the mahant puts the problem to them like this: "I ask if they really consider the Ganga as their mother. Naturally they say, 'Yes.' Then I ask, 'Would you show such disrespect to your mother? Pour filth over her?' They have to answer, 'No.' It's starting to work—but it is very difficult for the poor. What are they to do?"

The mahant is strongly in favor of the rather unorthodox proposal to construct an electric crematorium on the older of the two burning ghats. The Doms, a low-caste but very wealthy group who arrange and supervise cremations (an "unclean" occupation), "extort a minimum of 500 rupees. Most of my people can't pay that. Yet they want to honor their dead." Sometimes, if a family can't afford enough firewood, a half-burned corpse is thrown into the river. The very poor place their dead in the Ganges with no cremation at all.

NEAR THE TULSI GHAT is the Anandamayi Ghat, named for a woman saint who died in 1982, a peaceful cluster of buildings around a small sun-filled garden. Behind the ashram is one of the best hospitals in Banaras. It is headed by Brigadier A. K. Ganguly, a retired army doctor, a devotee of Anandamayi Ma, who refused an important job he was offered when he left the army because she asked him to come and run her hospital.

"I'm not the sort to do a lot of puja and meditation," he told her.

She replied, calmly smiling, "Your puja will be in service to your patients."

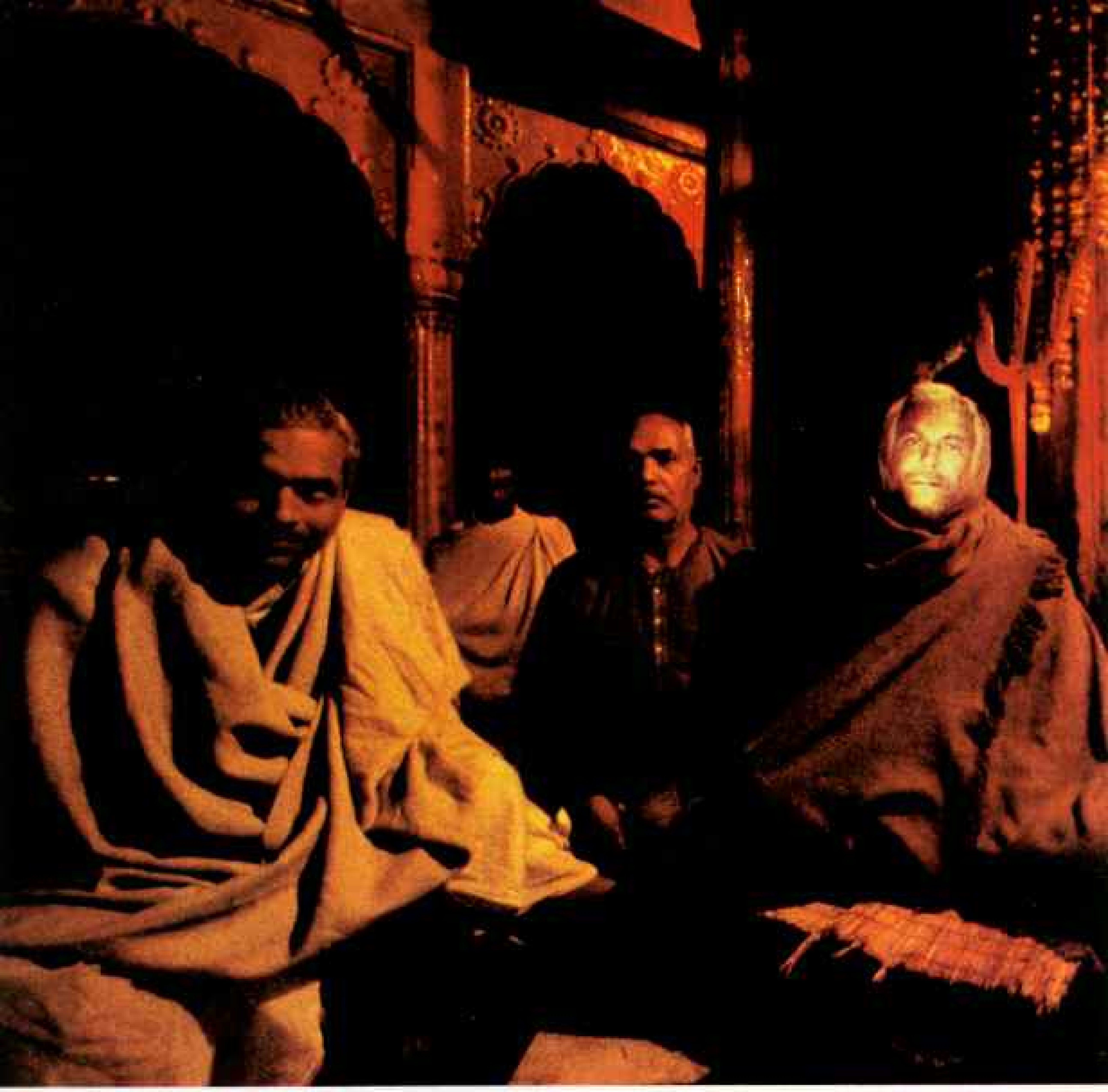
Dr. Ganguly, who is an energetic and cheerful gentleman, clearly enjoys his work and his surroundings. "Although I would have done anything Ma asked of me, she never asked something you couldn't do," he says. "It is difficult to describe the effect she had on people, the serenity that flowed from her."

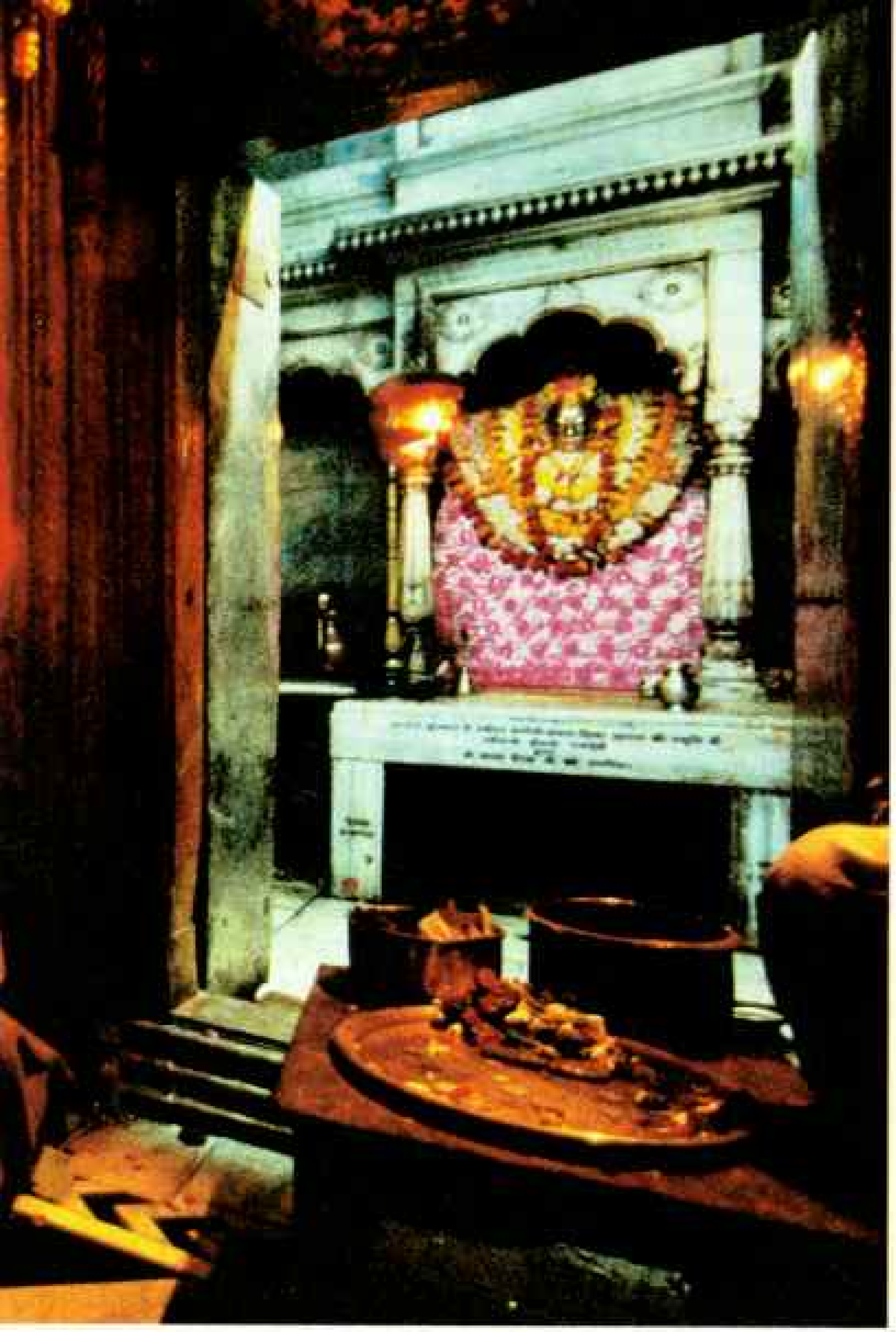
His wife agreed: "Even though Ma is dead, I still sometimes feel in touch with her. It is like the fragrance of a flower blown in through the window. You don't know where the flower is, but you know it is there."

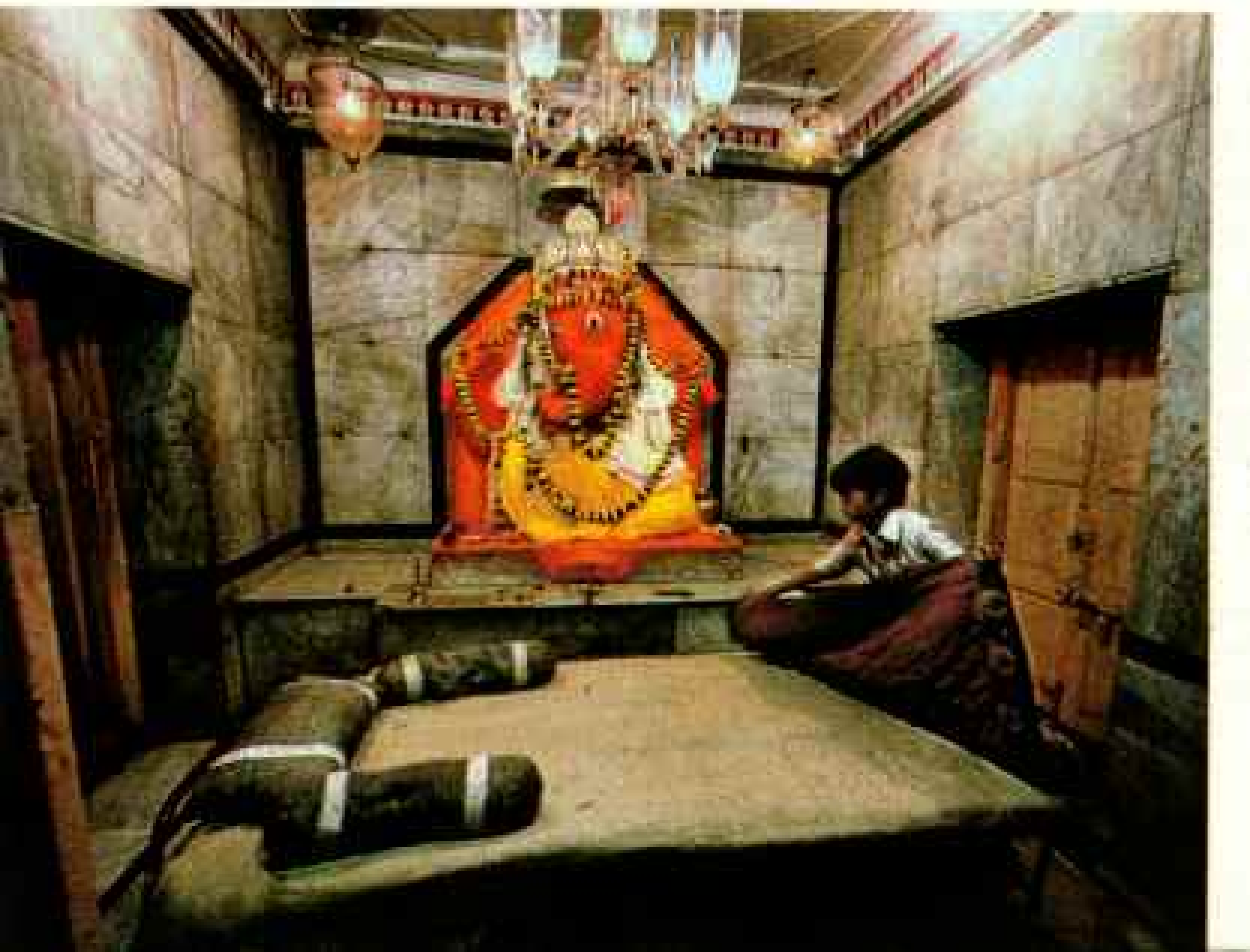
Dasashvamedh is the busiest ghat, the most accessible from the heart of the city and the most used for religious purposes. It is always crowded, with tourists as well as pilgrims, and the water's edge is congested not only with bathers but also with boats offering river trips. It takes its name from a Vedic ritual sacrifice of ten horses carried out by the great creator-god Brahma. Adjoining it is the newest ghat, the Rajendra Prasad, named for the first president of India. Its water-treatment tower is decorated with a sort of garish movie-poster of Lord Siva.

At the extreme northern end of the sacred city, beyond the holy sites that they will visit later, past homes for widows, retreats for retired beggars, a richly carved, dark-wood Nepalese temple, hospitals, and shrines, the pilgrims reach the third tirtha. Here, at the junction of the Varuna River with the Ganges, they find the Adi Keshav Temple, one of the few temples of Vishnu in this city devoted to Siva, and they bathe again. From there the pilgrims turn back southward (upstream) to the Panchganga Ghat, one of the most beautiful with its broad stone steps, where they bathe for the fourth time.

Recovering the past, *Buddhist monks at the Sarnath library use a Xerox machine to aid their work. Many manuscripts were lost after the Chinese Communist invasion of Tibet in 1950, but these Tibetan-language versions were saved. Scholars are now translating the works back into the original Sanskrit.*







Siva's fearsome side *as an enforcer of divine law is worshiped in the temple of Kal Bhairav, whose priests (***left***) function as symbolic executors of the deity's commands. Chief among these are three responsibilities charged by Siva to the god Bhairav as the overseer of justice in Kashi: cleansing suppliants of sins, keeping records of the living, and rewarding or punishing the dead for their activities in life.*

*Another well-attended god is Siva's son, the elephant-headed god Ganesh, creator and remover of obstacles. In an alcove at the Golden Temple of Vishvanath, a figure of the god overlooks a chamber (***bottom right***) where the deity's bed is made each night and his figure clothed and offered food and flowers.*

*In a courtyard near Vishvanath, a figure of Siva's mount, the bull Nandi (***bottom left***), attracts a worshiper and one of the numerous cows that are allowed to wander freely throughout the temple complex.*

So compelling is the prospect of an auspicious death in Banaras that priests have placed bars atop a well near Nandi's shrine to prevent suicides.

Finally the pilgrims come to the fifth and last tirtha and the most sacred of the ghats, the Manikarnika Ghat, named for a jeweled earring dropped by a god or goddess, where they bathe again. The Manikarnika Ghat is the acme of the religious aspects of Banaras, both those most impressive and those most repulsive to outsiders. It is a place for the living, as most pilgrims and many of the inhabitants of the city reach the climax of their devotions here; a pool in the ghat is associated in myth with the creation of the world. It is a place for the dead, since it is the principal cremation ground of the city; fires burn and smoke rises here without stopping, night and day. The obvious intense piety of many worshipers contrasts with the cynical exploitation of the poor mourners by the Doms, the hereditary attendants of the cremation ground, who dress in black rags.

A SHORT WALK from the top of Dasashvamedh Ghat brings the pilgrim to Vishvanath Lane, a winding, narrow, stone-flagged, perennially busy path, which takes him to the city's most celebrated shrine, the Golden Temple of Vishvanath. Both sides of the lane are lined with stalls selling the items used in offerings and worship—sealed jars of Ganges water, oil lamps, and religious beads as well as the familiar flowers and sweets. Anything brought back from Kashi carries its own sanctity. If only one member of a family can make the pilgrimage, others, simply by touching him on his return, will share the *darshan*, the sight that confers a blessing, and its holiness.

A few doors beyond the temple is a narrow, ill-lit house of Spartan simplicity where a governing priest of Vishvanath, Shri Ramshankar Tripathi, lives. He and his family, over generations, have seen millions of pilgrims come and go, and he is still impressed by the constancy of Hindu faith and its place in Indian life: "In fact it is growing. Even abroad it spreads. The young all over the world are finding the Hindu religion."

One evening I joined hundreds of pilgrims at the *arati* at Vishvanath. This is a regular puja performed four times every day, when Lord Siva is honored not only with flowers but also with the presentation of the arati—oil lamps, or sanctified fire—and with long Sanskrit chants.

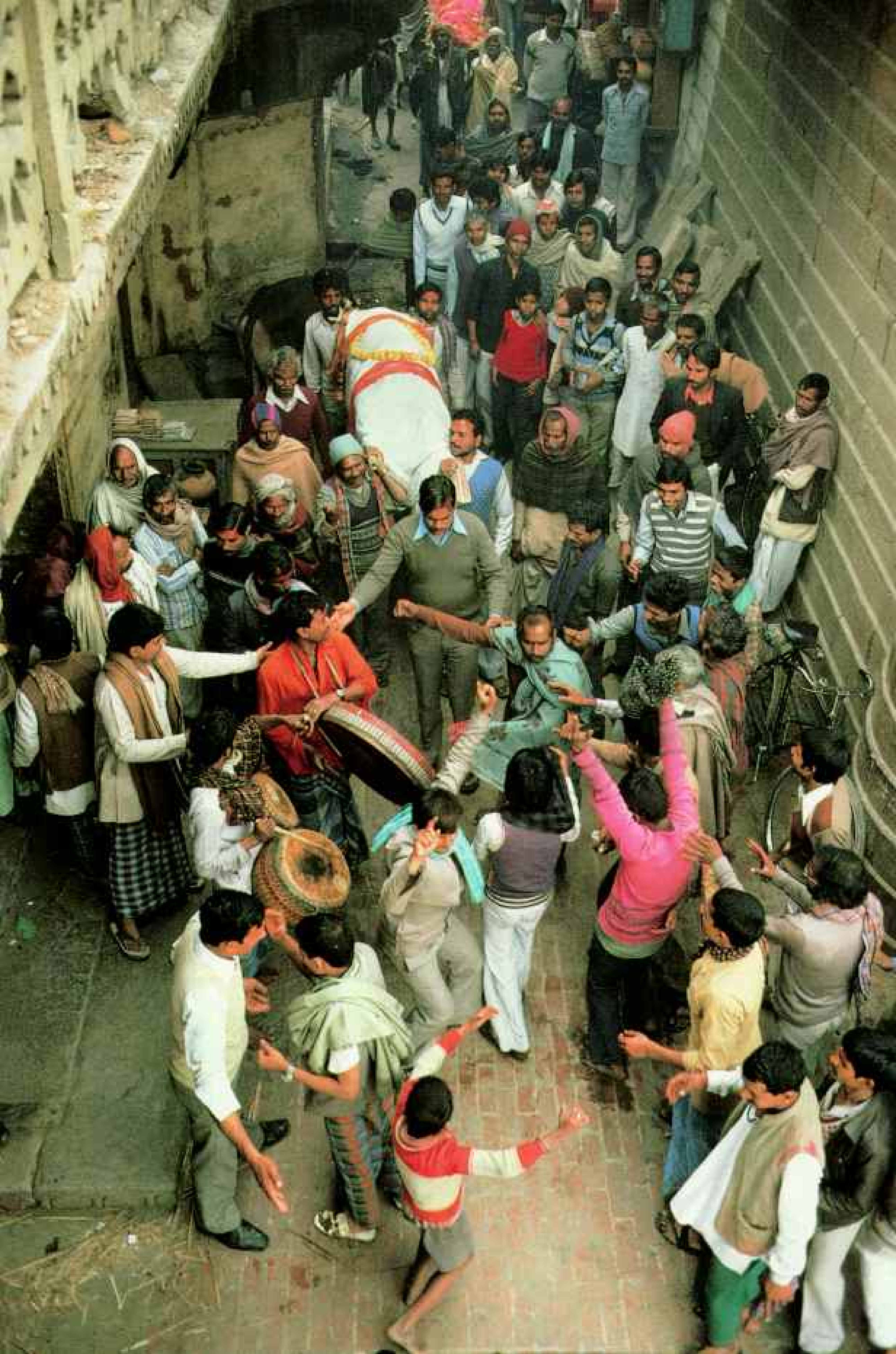
Within the courtyard of the temple, in the central pavilion where the polished black stone Siva lingam is enshrined in a square silver-lined pit, 11 priests conduct the ceremony. They wear white loincloths and are otherwise bare-bodied except for the loop of the sacred thread across the chest and the religious beads around the neck. Sitting cross-legged, each priest has beside him a silver tray holding a silver jar of Ganges water and the silver stand for the arati lights.

The chanting of Vedic verses begins with a sudden shout that shocks everyone into attention, then sinks to a more moderate level as the priests begin the decoration of the lingam. First they bathe it with Ganges water, then with clarified butter, honey, and milk. They pack the top of it with their hands to make a cushion of saffron-colored paste, and then streak their foreheads with their fingers. Wreaths of marigolds, streamers of jasmine, and a pink lotus cover the lingam until the black stone shaft is invisible. A large, curling, silver five-headed cobra is placed over the lingam, and each snake hood is decorated with flowers.

Meanwhile the chanting continues, increasing in volume and fervor, accompanied now by drums and bells until it reaches an impassioned and mesmerizing pitch. One priest lights a handful of incense sticks at a small fire beside the altar and distributes them to the others to light the wicks of their arati holders. These are presented to the lingam, there is an abrupt flare of fire from all around the altar coinciding with the final, deafening ululation of the chanting and the thunder of drums.

Now, in a sudden hush, the priests put the arati lamps on their trays, pile the trays with flowers from the lingam, and walk among

Festive song and dance *attend a procession carrying the body of an elderly man to a ghat used for burning. At the river the man's eldest son will anoint the body with clarified butter, set it aflame, then split the skull to release the spirit. Death of the aged is cause for celebrating the soul's union with the eternal.*



the worshipers offering them the blessing of the arati, a dab of Ganges water on the forehead or the lips, a flower to take away with them. Everybody pushes forward to touch the lingam, to receive the grace of the deity from the fire, the water, and the flowers that have been sanctified.

Watching the transported expression on the faces of the priests and the worshipers, the depth and intensity of the experience

Called once more to prayer, *an old woman clad in the white garb of a widow makes her way down a ghat for morning ablutions. Banaras's population is swelled by widows who, faced with a life of penury, live out their days in austere rest houses. Such is the promise of Banaras—a city of timeworn beauty offering release from a world viewed as but a fleeting aspect of eternity.*

that they shared, I realized that many of my own questions were beside the point. The pilgrims who come to Banaras do not ask why it is holy. It doesn't matter whether you believe that the Ganges fell from heaven to earth and that Lord Siva strained its waters through his hair to moderate the force, or if you prefer the more prosaic view of the Ganges as a life-sustaining phenomenon of nature. It doesn't matter whether you accept the story that Lord Siva chose Kashi as his permanent home and made it a resplendent place of spiritual light, or if you simply see Banaras as an important religious center.

The priest at Vishvanath had told me that it is not merely the place that bestows sanctity on the pilgrims, it is they that make it holy. This is perhaps the most important thing to remember about Banaras. □

Tide Pools
Windows Between Land and Sea

ARTICLE AND PHOTOGRAPHS BY ROBERT F. SISSON

NATIONAL GEOGRAPHIC NATURAL SCIENCE PHOTOGRAPHER

THE MIRROR surface of the tide pool swirled in and out of focus beneath my camera lens as the ocean surged around my knees. Bent almost double, I balanced on kelp-covered stones and watched for a limpet to appear in a thicket of surfgrass.

Suddenly a wave smacked me on the seat of my pants. When I straightened, still clutching my camera, I knew I had violated a cardinal rule of tide pooling: Never turn your back to an incoming wave!

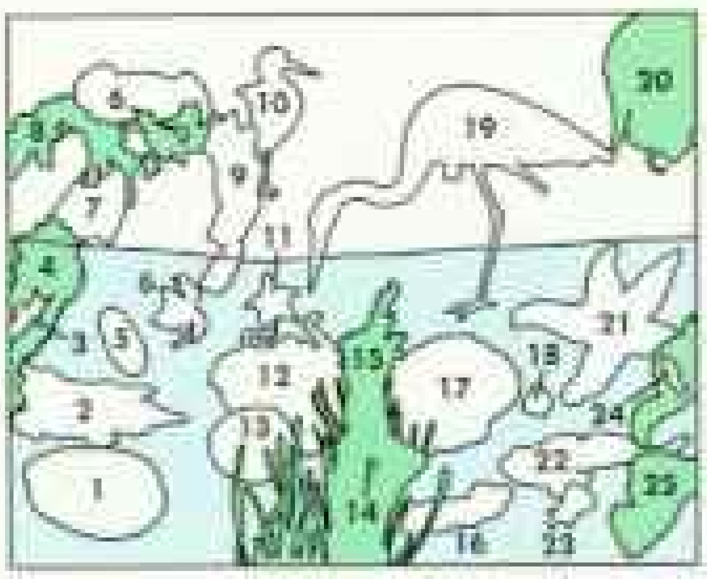
Tide pools are natural aquariums. Between the tide's ebb and flow, water collects in rocky depressions, where plants and animals balance between drought and flood.

My first glance into a California tide pool revealed only clear water and algae. I waited and watched. Soon a brown-and-white blur streaked across the shallow lagoon—a tidepool sculpin. A small green ball blossomed into a feeding anemone. Two snail shells bumped to life—hermit crabs in appropriated homes. These were but a few of the creatures that can inhabit tide pools (***foldout***).

When I stood up, my movement signaled an alert, and the colorful world at my feet faded instantly as many inhabitants darted for cover.

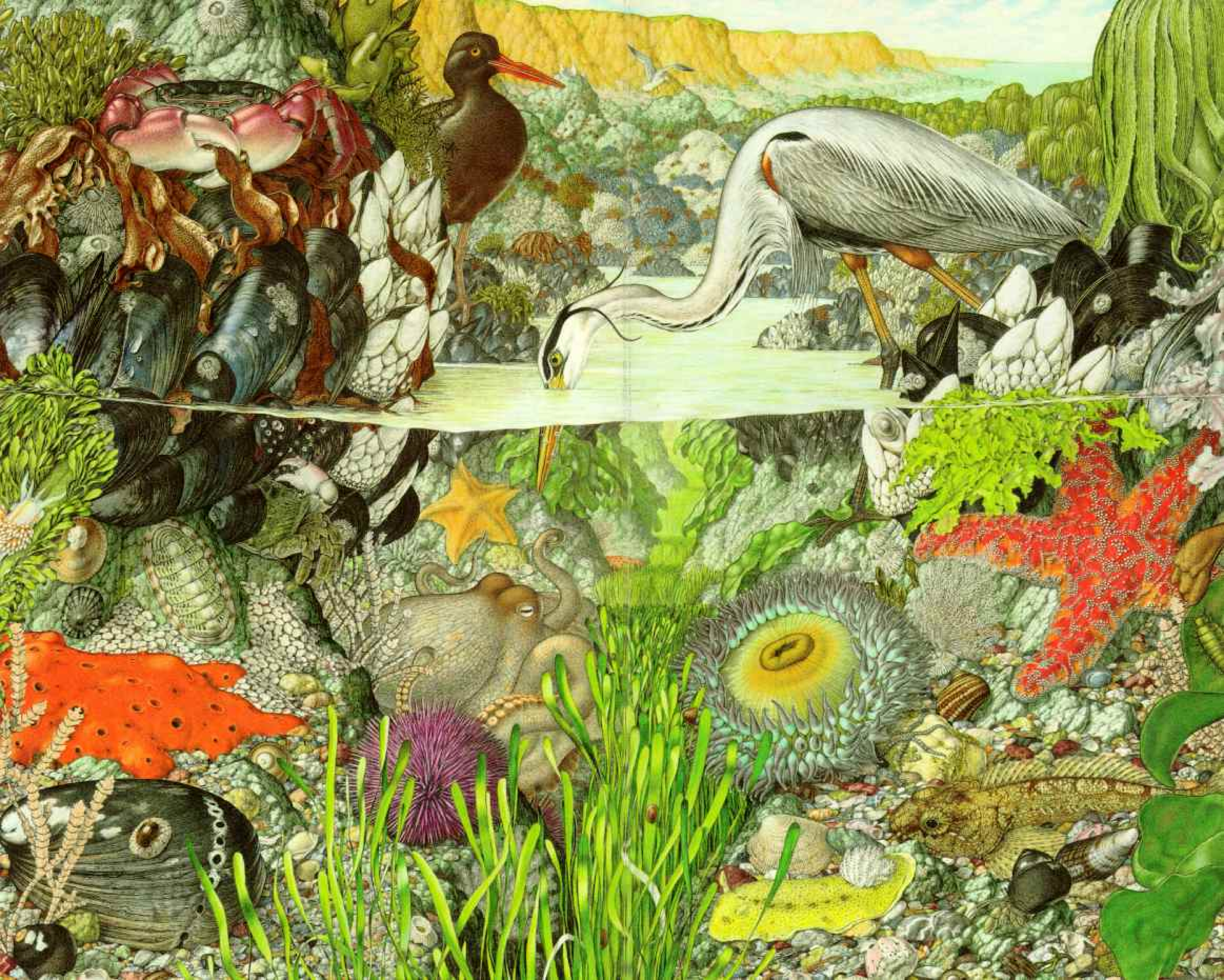
The calm of a tide pool in Carpinteria, California (***left***), belies potential violence. Storm waves can crash in with a force of 6,000 pounds of pressure per square foot.

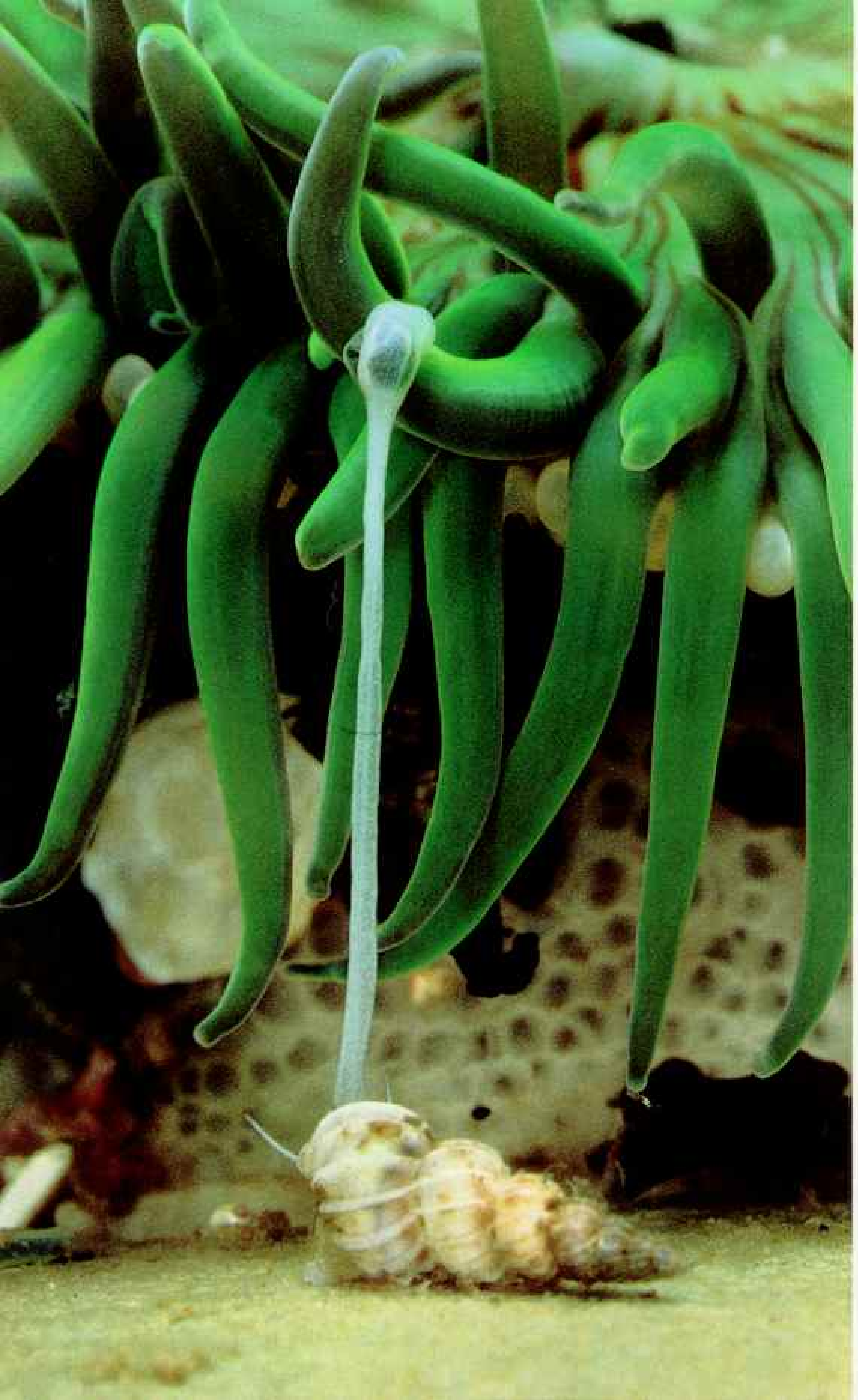
While tide pools can survive natural assaults, they are defenseless against humans. With some 20 million people within 50 miles of its coast, California was among the first states to protect tide pools, in 1971. Still, some visitors collect one of everything they see—not for study, but simply to have and discard after the novelty has worn off.



PAINTING BY KAREL HAVLICEK

1 BLACK ABALONE (*HALIOTIS CRACHERODII*) DEAD SHELL
2 RED SPONGE (*ACARNUS ERITHACUS*)
3 HORNED NUDIBRANCH (*HERMISSENDA CRASSICORNIS*)
4 FEATHER BOA (*EGREGIA MENZIESII*)
5 CHITON (*STENOPLAX SP.*)
6 LINED SHORE CRAB (*PACHYGRAPSUS CRASSIPES*)
7 CALIFORNIA MUSSEL (*MYTILUS CALIFORNIANUS*)
8 RED ALGA (*GIGARTINA PAPILLATA*)
9 GOOSE BARNACLE (*POLLICIPES POLYMERUS*)
10 BLACK OYSTERCATCHER (*HAEMATOPUS BACHMANI*)
11 BAT STARFISH (*PATIRIA MINIATA*)
12 OCTOPUS (*OCTOPUS SP.*)
13 PURPLE SEA URCHIN (*STRONGYLOCENTROTUS PURPURATUS*)
14 LIMPET (*NOTOACMEA SP.*)
15 SURFGRASS (*PHYLLOSPADIX SCOULERI*)
16 SEA LEMON NUDIBRANCH (*ANISODORIS NOBILIS*)
17 GIANT GREEN ANEMONE (*ANTHOPLEURA XANTHOGRAMMICA*)
18 DOGWINKLE (*NUCELLA EMARGINATA*)
19 GREAT BLUE HERON (*ARDEA HERODIAS*)
20 SEA PALM (*POSTELSIA PALMAEFORMIS*)
21 OCHRE STARFISH (*PISASTER OCHRACEUS*)
22 WOOLLY SCULPIN (*CLINOCOTTUS ANALIS*)
23 HERMIT CRAB (*PAGURUS SAMUELIS*)
24 ISOPOD (*IDOTEA SP.*)
25 IRIDESCENT ALGA (*IRIDAEA FLACCIDA*)





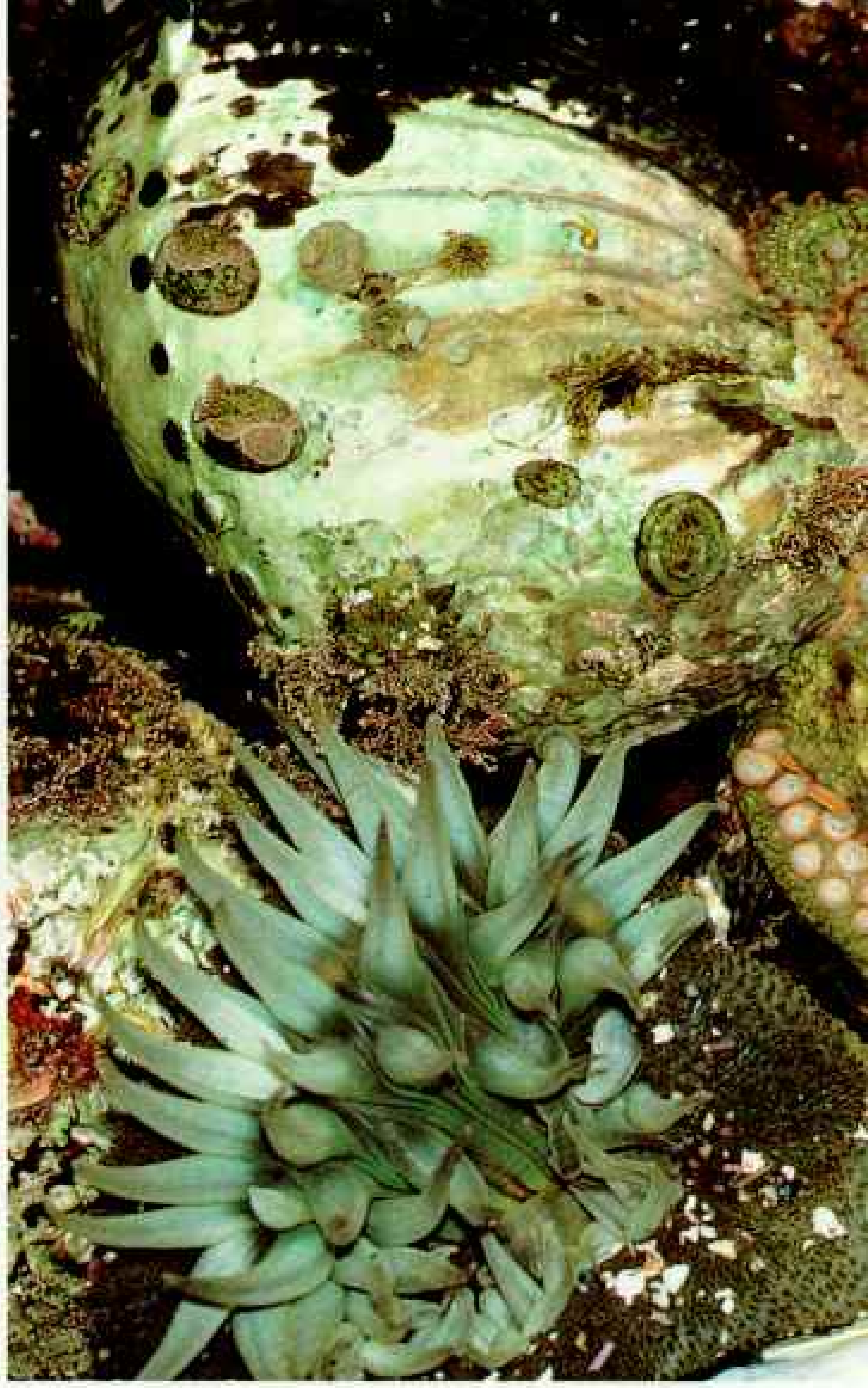
THE LAW of the jungle—large creatures devour small ones—does not always hold in the world of the tide pool. Witness the wentletrap snail, *Epitonium tinctum* (**left,** at bottom), here in an aquarium. Only three-eighths of an inch long (one centimeter), it can extend its snout three times the length of its shell. With it, the snail snacks on a green anemone, *Anthopleura elegantissima.* However, the snail nibbles only the tentacle tips; the anemone survives.

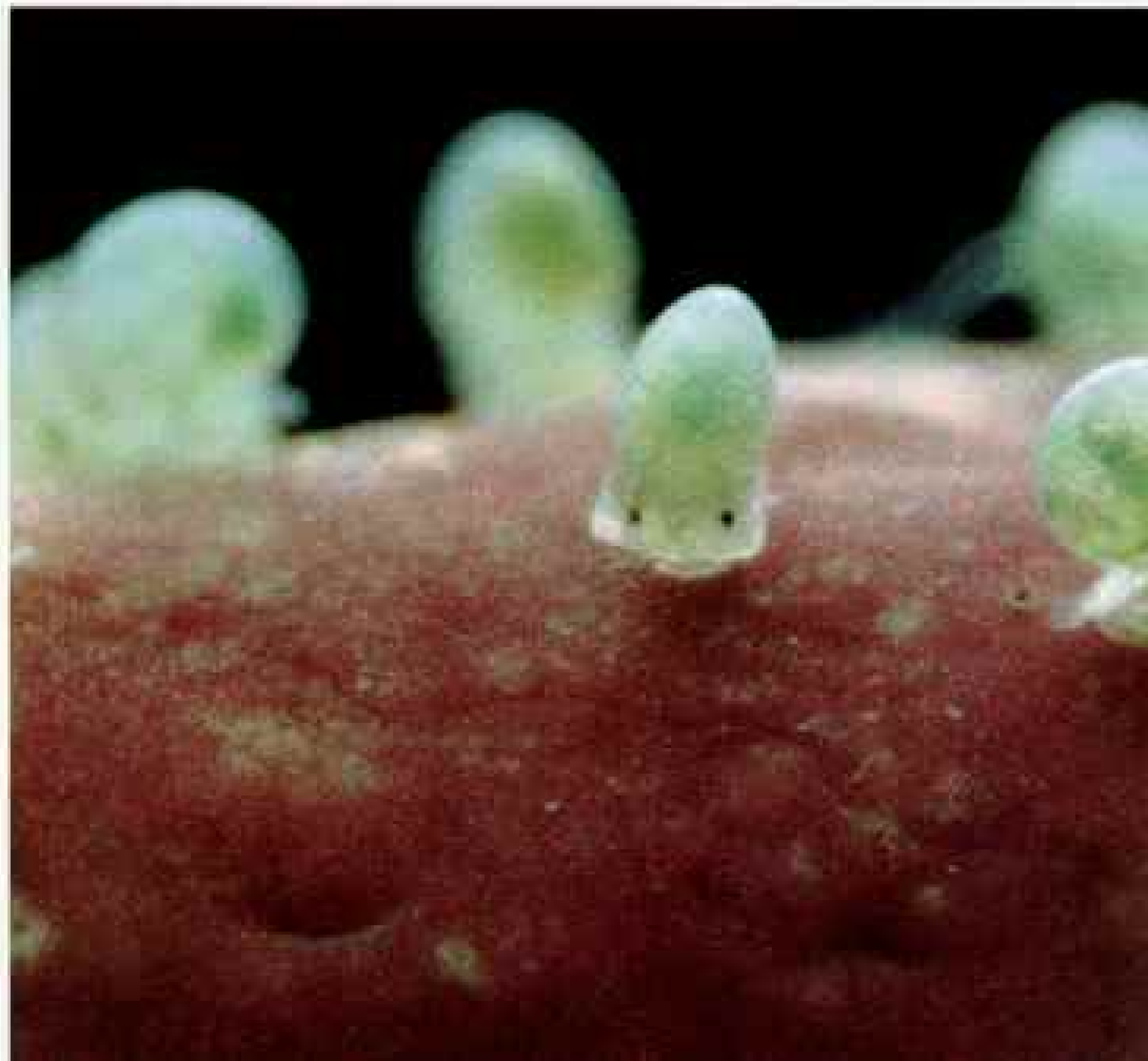
Between tides a pool (***right***) seems frozen in time. Mussels, sea urchins, barnacles, green anemones, and an abalone await an incoming tide's food-laden waters.

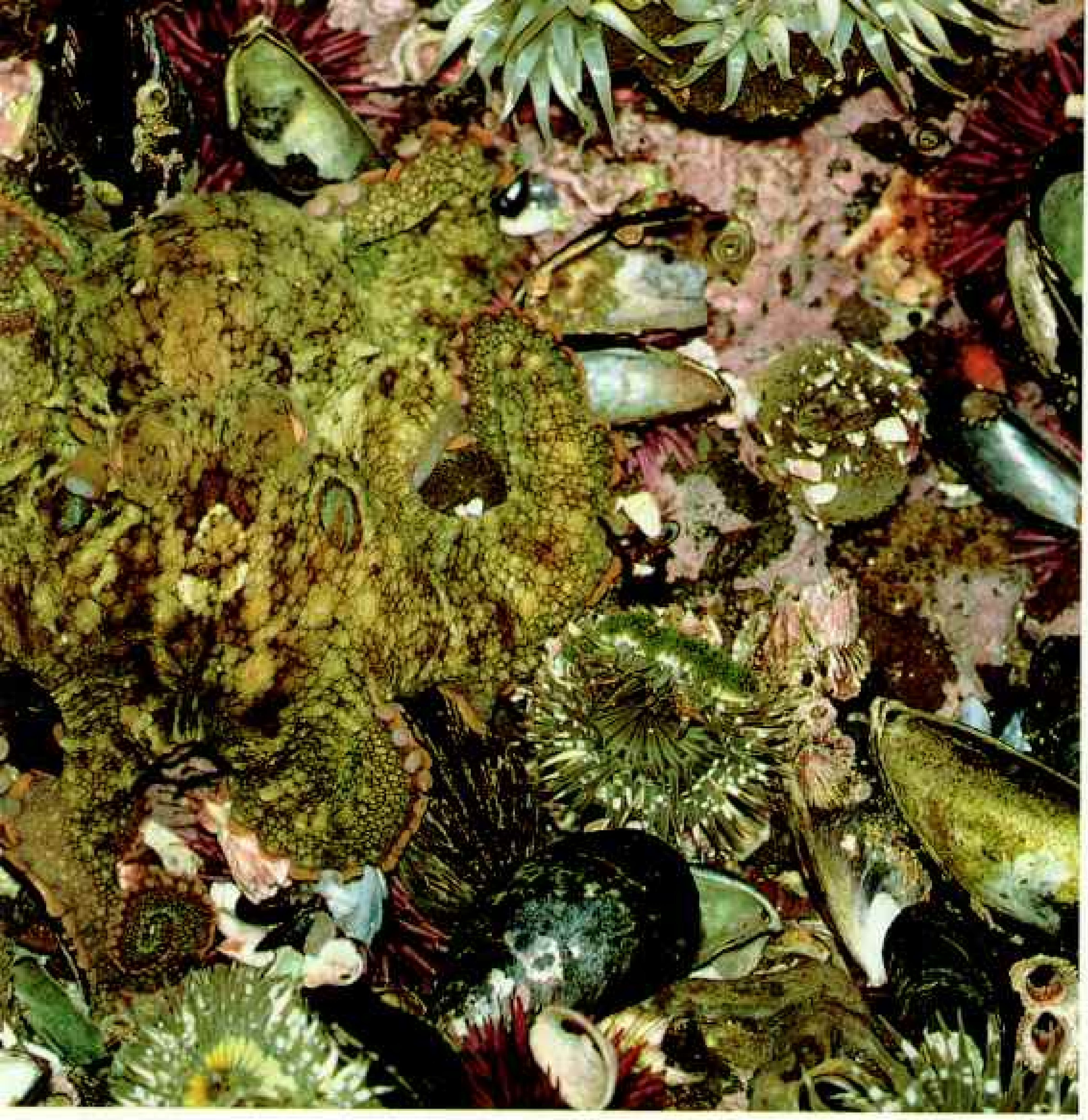
In the center of this marine paisley print lurks a two-spot *Octopus bimaculoides.* It pierces the shells of crabs and clams to inject a paralyzing toxin into the flesh before eating it.

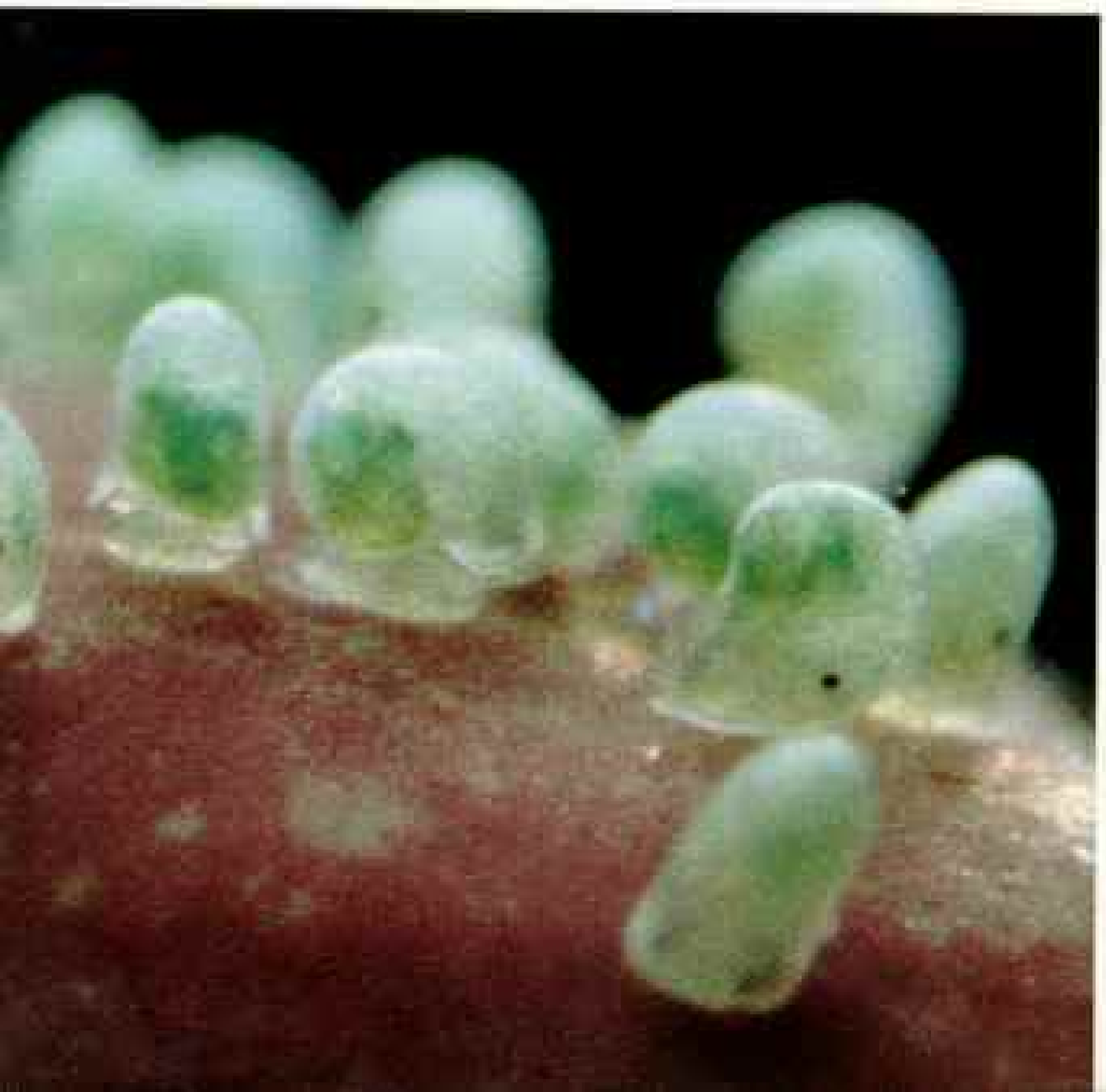
Resembling helmeted aliens on the march, seven-day-old red-abalone larvae, *Haliotis rufescens* (***right, bottom***), land on coralline red algae. These minute travelers—twenty could fit on a pinhead—drift as plankton for one to four weeks before settling down.

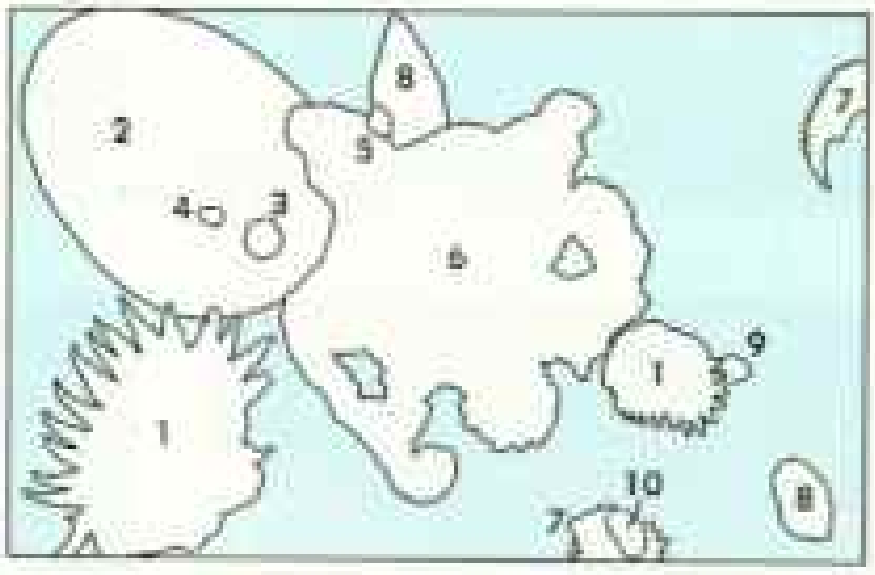
Researchers at the University of California at Santa Barbara found that receptors guide the larvae to biochemical substances secreted by the algae. These chemicals trigger a sequence that causes the larvae to stop swimming and start creeping over the algae in search of food. Soon the larvae metamorphose into miniature versions of their adult form. Abalones and algae benefit. The larvae find a home. The algae are kept clean.



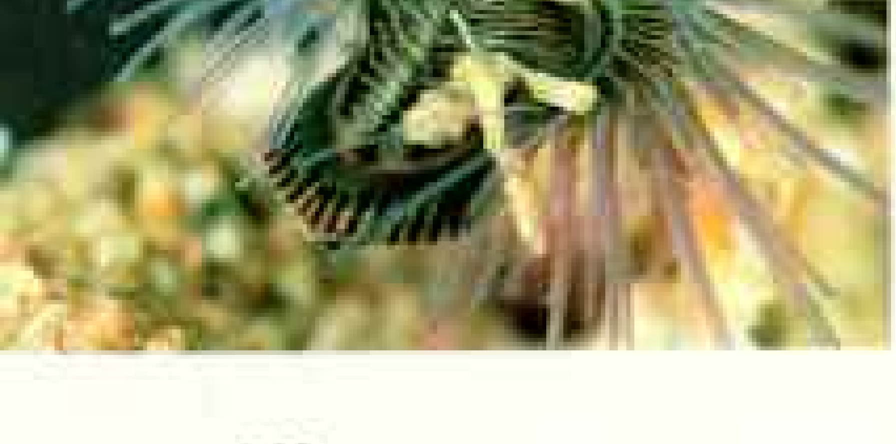








1 GREEN ANEMONE
(ANTHOPLEURA ELEGANTISSIMA)
2 BLACK ABALONE *(HALIOTIS CRACHERODII)*
3 FILE LIMPET *(COLLISELLA LIMATULA)*
4 ROUGH LIMPET *(COLLISELLA SCABRA)*
5 SHIELD LIMPET *(COLLISELLA PELTA)*
6 TWO-SPOT OCTOPUS *(OCTOPUS BIMACULOIDES)*
7 PURPLE SEA URCHIN
(STRONGYLOCENTROTUS PURPURATUS)
8 CALIFORNIA MUSSEL *(MYTILUS CALIFORNIANUS)*
9 ACORN BARNACLE *(BALANUS GLANDULA)*
10 VOLCANO LIMPET *(FISSURELLA VOLCANO)*
DEAD SHELL



SLENDER tentacles of a sand-castle worm, *Phragmatopoma californica* (**left**), sieve the tide for plankton. Food rafts to the worm's mouth on currents created by waving cilia on each tentacle.

Another sand-castle worm (***bottom, far left***) casts out body wastes, exposing its opercular disk. With this disk the worm plugs its home against intruders.

Chemical signals allow sand-castle worm larvae to locate and recognize their own species, a first step to colonization. The worms secrete small cylinders of mucus, reinforced with grains of sand. As it grows, each worm glues larger and larger bits of debris to its home. The worms build one home after another, raising an undersea condominium (***bottom, near left***).

An ochre starfish, *Pisaster ochraceus* (**bottom right**), opens a mussel by using tube feet on all five rays, a sight rarely photographed.

Hooded phantom of the tide pool, the stalked solitary tunicate, *Styela montereyensis* (***top right***), shares common traits with man in early life. In the embryonic stage both have a dorsal nerve cord and rudimentary spine. But the maturing tunicate soon loses these two characteristics and attaches itself head down, usually to a rock or shell.

Tide pools have a magnetic, mystical lure. Be gentle with them; they belong to us all. □

PATRICIA MATTHEWS DISSON (BELOW)

DILEMMA OF INDEPENDENCE FOR SOUTH AFRICA'S

NDEBELE PEOPLE

In the shadow *of a modern hat, a young matron is among the last to dress in the fading traditions of the Ndebele people. Forcibly scattered in the 19th century, many are being gathered together in a South African "homeland"—a reunion largely dictated by apartheid, the system that insists humanity be defined by race, not by individual worth.*

AFTER YEARS *of British rule in South Africa, white Afrikaners under the National Party came to political power by election in 1948. They embarked on a national policy of apartheid. This system of "separate development" includes enforced racial separation and a policy that tries to isolate South Africa's blacks in ten tribal "homelands" with nominal independence and self-government. By 1985 more than half of South Africa's 24 million blacks had been established in such homelands, more than three million of them by forced removal. The last of the homelands to be proclaimed is that for the Ndebele people.*

Of what value is such independence from South Africa to the Ndebele in their homeland of KwaNdebele? In a country whose racial violence increasingly bleeds across headlines, it may seem a small question. To the Ndebele, however, it is fundamental. If their leaders accept the offer of independence in 1986 as planned, the Ndebele may profit in the short run, since the South African government willingly negotiates with homeland leaders who do not challenge apartheid.

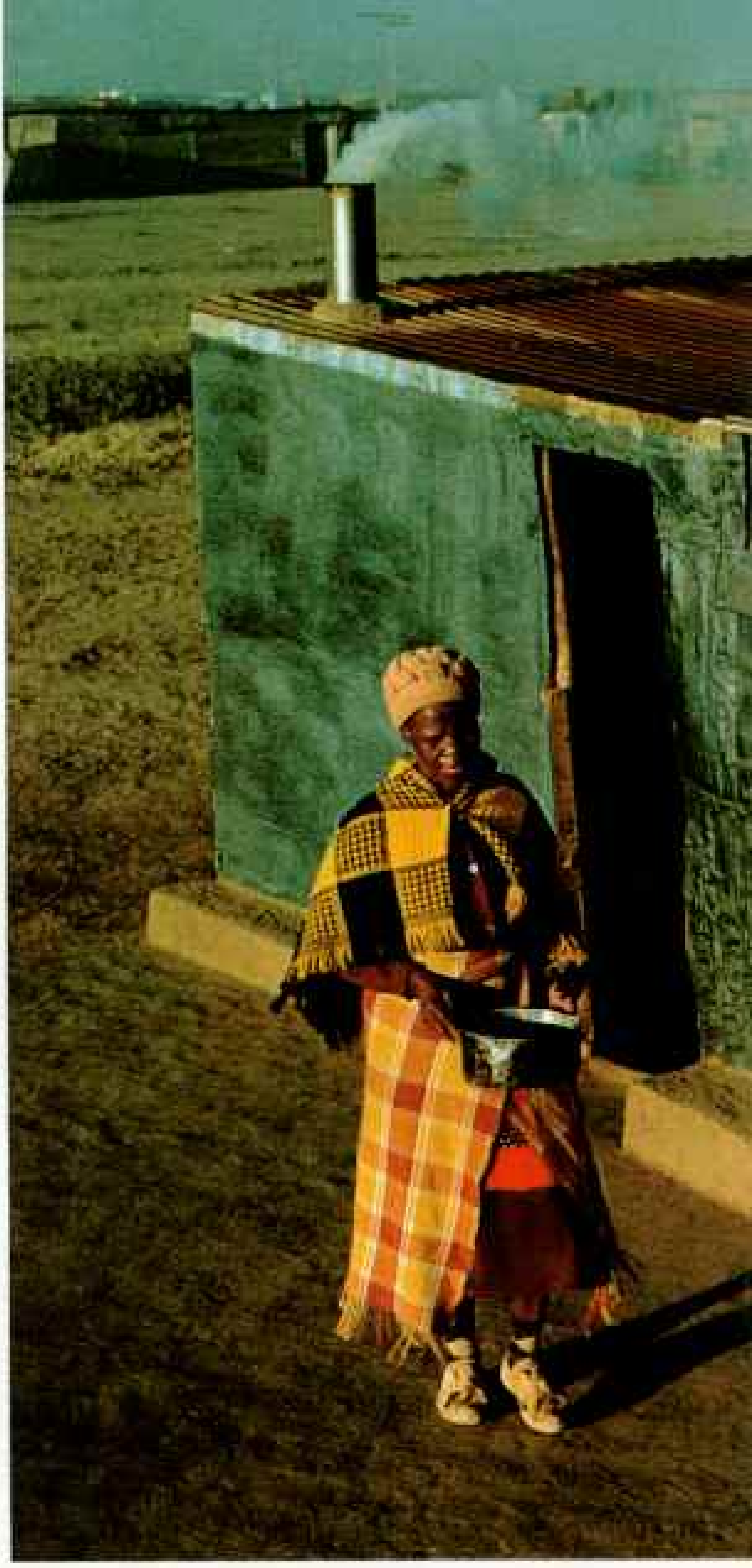
Yet if KwaNdebele accepts independence, its people may sacrifice solidarity with those blacks who see their future as South Africans, not as citizens of so-called states unrecognized by the rest of the world.

For most Ndebele the immediate struggle is survival, a daily battle. Their prospects in South Africa are no clearer than South Africa's own future. —THE EDITOR

Pioneers in Their Own Land

By DAVID JEFFERY
NATIONAL GEOGRAPHIC SENIOR STAFF

Photographs by PETER MAGUBANE
GAMMA-LIAISON



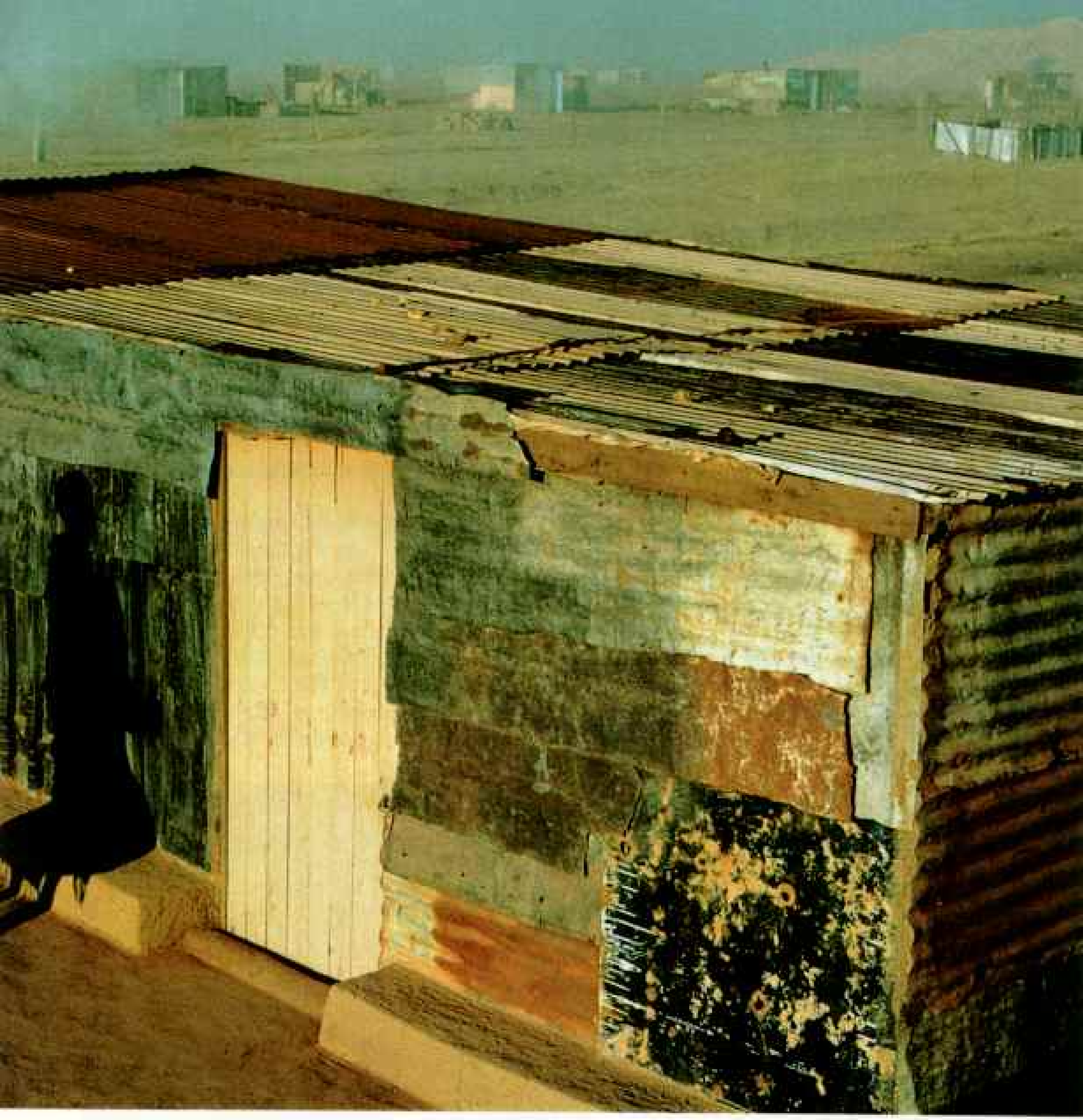
"I AM OLD. I cannot go anywhere else, even if I wanted."

Even if Mtazi Mtsweni wanted, she could not go anywhere else even if she were young. She had been living for three years in Tweefontein E—hundreds of families scraped close together like a landfill of people on a shallow dusty rise nearly barren of trees. Mostly the families had made their homes of packing crates and corrugated sheet metal. They lacked plumbing, water, and electricity.

For 50 years Mtazi Mtsweni had lived on a succession of farms owned by whites. The seventh and last belonged to a Mr. Botha. After Mtazi Mtsweni's husband died, Mr. Botha told her: Go to your homeland. He was using prisoners as farm workers. They were brought in the morning and taken away in the evening.

The farmer said go. She wanted to go to a son in Witbank, who worked, she said, "for Carbide." The company had bought him a house, but the authorities would not let her move to Witbank. Like thousands of Ndebele people, she must go to her "homeland," where she had never lived. The South African government agency that administers such conditions as homelands-related apartheid is the Department of Cooperation and Development.

For the Ndebele people, the homeland is KwaNdebele, some 103,000 hectares (the boundaries are not yet final) of semidesert landscape to the north and east of Pretoria in the Transvaal, South Africa's northernmost province. Like other homelands, KwaNdebele is a block in the foundation of "grand apartheid," the government attempt to isolate blacks in "independent" states, where there, and only there, they may exercise political rights. Four such states have been granted "independence"; none is recognized by any country other than South Africa. KwaNdebele, under its appointed ministers and partly elected parliament in the capital



On the frontier *of a new life, Mgetshana Skosana must hand-carry water to her home in Tweefontein E, a resettlement area in KwaNdebele, the homeland, or national state, for the Ndebele people. She and her husband came from a white-owned farm where he earned 30 cents a day plus a monthly bag of cornmeal.*

He has chosen a future in KwaNdebele and the life of a laborer commuting to the Pretoria region. If he succeeds, the family may aspire to a house built of mud brick.

at Siyabuswa, has accepted independence only *in principle*. It is self-governing, and, except for a brief school boycott and demonstrations against the bus system, through last October it had been free of the demonstrations and police repression that have swept many black areas in South Africa. By November, though, violence had reached some homelands, and, in the increasingly volatile atmosphere, KwaNdebele had no assurance of immunity.

KwaNdebele is a sort of afterthought, not organized until the late 1970s. Its territory has been put together primarily by slicing off parts of other homelands and by the appropriation of land owned by white farmers.

It has been populated in three major waves. Ndebele were removed from "black spots," land owned by blacks or leased by them from missions, when those black spots were declared to be territory for white settlement. Others migrated from Bophuthatswana, an "independent" state, when they found themselves a discriminated-against minority. Still others, like Mtazi Mtsweni, have been forced to move to KwaNdebele after being evicted by white farmers or from cities. Some have come voluntarily.

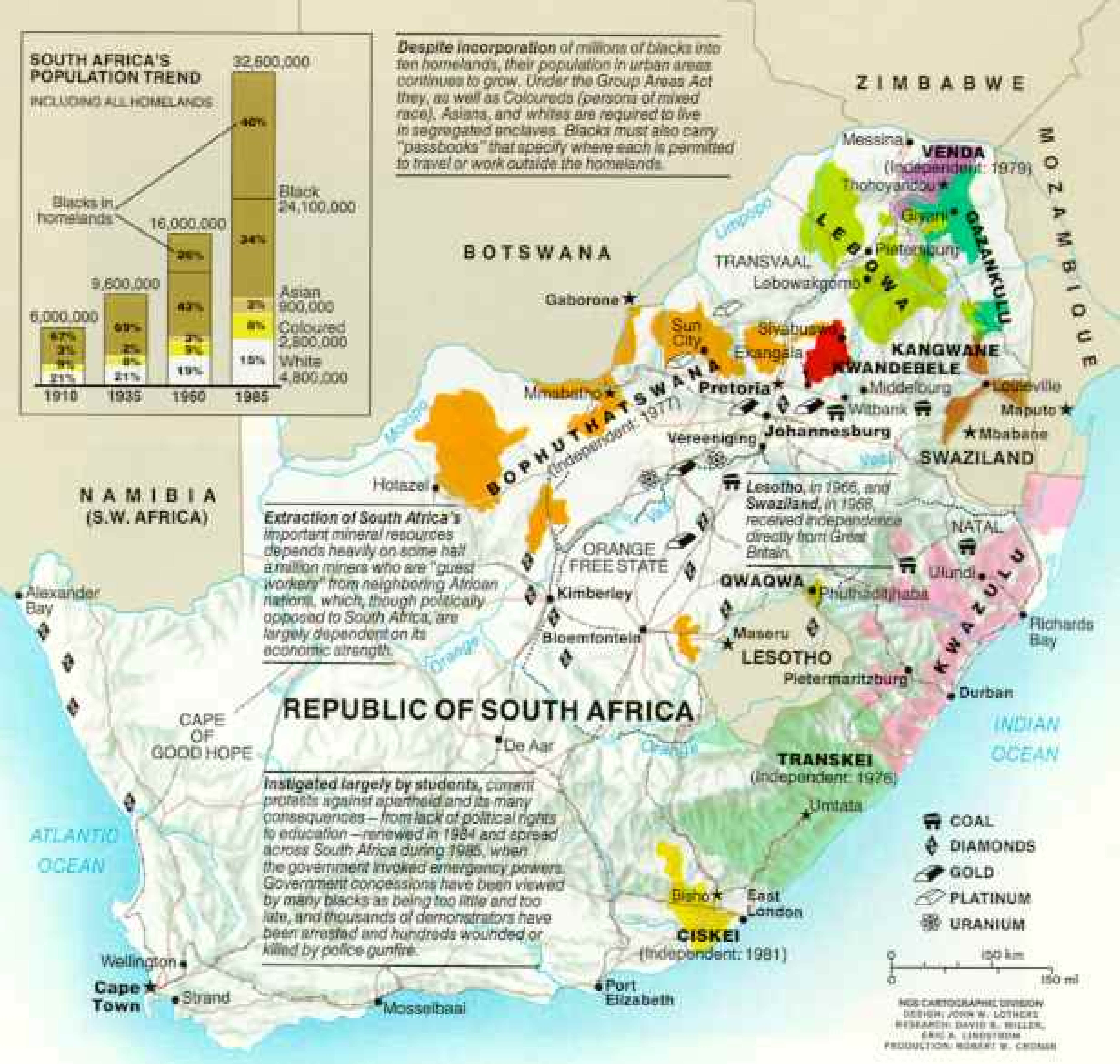
KwaNdebele's population is often given as about 300,000, but is widely conceded to be nearer 500,000. Of that number, about half are thought to be Ndebele—the rest are from the Northern Sotho, Swazi, and other tribes—and they constitute about 20 percent of all Ndebele in South Africa. The Northern Ndebele have been largely absorbed into the Sotho culture. The rest are scattered.

In Tweefontein E, a newer settlement in KwaNdebele, Mtazi Mtsweni's house is better than most. Of plastered mud brick with a metal roof and fronted by a small courtyard and low wall, it follows a basic Ndebele design. Yet it lacks the brilliantly colored, abstract wall painting that distinguishes Ndebele architecture.

Nor is her roof thatched. There is no suitable grass—hardly any grass at all—in Tweefontein E, so thatch must be bought. A bundle of thatch, called an *isherefe*, costs 14 cents minimum. Mtazi Mtsweni's government pension is 42 rand a month and buys about what 42 dollars would in the U. S. If she spent all her money on thatch, she could buy 300 iisherefe a month, hardly enough to roof a shed.

The thatch roof, cool in summer, warm in winter, is but one disappearing tradition. Many years ago, before South African independence from Great Britain, "a time when we never drank tea and never used plates," she went to the hospital in Middelburg with a chest complaint. The doctors told her that before treatment she would have to remove her *iindzila*, the stacked brass and copper

Forced to relocate *in KwaNdebele after being evicted from a white farm and then denied permission to live with a son in the town of Witbank, Mtazi Mtsweni looks after the children of another of her sons, a disabled coal miner.*


SOUTH AFRICA'S POPULATION TREND
INCLUDING ALL HOMELANDS
6,000,000
9,600,000
16,000,000
32,600,000
67%
2%
9%
21%
69%
2%
8%
21%
26%
43%
3%
9%
19%
40%
34%
3%
8%
15%
Blacks in homelands
Black 24,100,000
Asian 900,000
Coloured 2,800,000
White 4,800,000
1910
1935
1960
1985
ZIMBABWE
MOZAMBIQUE
BOTSWANA
NAMIBIA (S.W. AFRICA)
Messina
VENDA
(Independent: 1979)
Thohoyandou
Giyani
GAZANKULU
LEBOWA
Pietersburg
TRANSVAAL
Lebowakgomo
Limpopo
Gaborone
Sun City
Siyabuswa
Ekangala
KANGWANE
KWANDEBELE
Mmabatho
BOPHUTHATSWANA
(Independent: 1977)
Pretoria
Middelburg
Louieville
Witbank
Maputo
Johannesburg
Mbabane
Vereeniging
SWAZILAND
Vaal
Molopo
Hotazel
ORANGE FREE STATE
NATAL
Ulundi
QWAQWA
Phuthaditjhaba
Alexander Bay
Kimberley
Richards Bay
KWAZULU
Maseru
Bloemfontein
LESOTHO
Orange
Pietermaritzburg
Durban
REPUBLIC OF SOUTH AFRICA
CAPE OF GOOD HOPE
De Aar
INDIAN OCEAN
TRANSKEI
(Independent: 1976)
Umtata
ATLANTIC OCEAN
COAL
DIAMONDS
GOLD
PLATINUM
URANIUM
Bisho
East London
CISKEI
(Independent: 1981)
0
150 km
0
150 mi
Wellington
Cape Town
Strand
Mosselbaai
Port Elizabeth

***Despite incorporation** of millions of blacks into ten homelands, their population in urban areas continues to grow. Under the Group Areas Act they, as well as Coloureds (persons of mixed race), Asians, and whites are required to live in segregated enclaves. Blacks must also carry "passbooks" that specify where each is permitted to travel or work outside the homelands.*

***Extraction of South Africa's** important mineral resources depends heavily on some half a million miners who are "guest workers" from neighboring African nations, which, though politically opposed to South Africa, are largely dependent on its economic strength.*

***Lesotho**, in 1966, and **Swaziland**, in 1968, received independence directly from Great Britain.*

***Instigated largely by students**, current protests against apartheid and its many consequences—from lack of political rights to education—renewed in 1984 and spread across South Africa during 1985, when the government invoked emergency powers. Government concessions have been viewed by many blacks as being too little and too late, and thousands of demonstrators have been arrested and hundreds wounded or killed by police gunfire.*

NGS CARTOGRAPHIC DIVISION
DESIGN: JOHN W. LOTHERS
RESEARCH: DAVID B. MILLER,
ERIC A. LINDSTROM
PRODUCTION: ROBERT W. CRONAN

South Africa's Homelands Archipelago

RESTRICTION OF BLACKS to certain South African territories had its roots in British and even earlier colonial policies, but it was not until after the 1948 election victory by the Afrikaner-dominated National Party that apartheid took full force and the homelands policy was fixed. Apartheid means "apartness," and blacks, 74 percent of South Africa's population, were offered "independence" in homelands constituting 13 percent of the country's territory. Four homelands have accepted independence. KwaZulu has refused it. KwaNdebele is in transition, having accepted only the *principle* of independence. None is internationally recognized.

A branch of a Nguni-speaking people who migrated south into what is now South Africa about A.D. 300, the Ndebele were established west of modern Johannesburg by about 1500. The Afrikaners' mythology and political rationale has been that they, as a white tribe, and black migrant tribes arrived in the interior at the same time—after 1700. The Boers ("farmers" in Afrikaans) defeated the Ndebele in 1883, and scattered them in family-size groups across their Transvaal farms. Now about 20 percent of all Ndebele live in KwaNdebele. The rest have been absorbed among the Sotho people to the north or are scattered countrywide.

AFRICA
SOUTH AFRICA

rings most married Ndebele women then wore on their ankles, arms, and neck. She did not put them on again and does not miss them. Besides, "the Christian ministers told us it was not good to be wearing iindzila."

The ministers had told Ndlelete Thubana: "Look at Jesus. He doesn't wear your traditional dress. So take it off and wear something like Jesus wears."

For Nomapitoli Thubana of Kameelrivier, removal of her iindzila was a practical matter. She commutes to a city job, and the rings "keep you from moving fast and doing your work." Now, for ceremonial occasions, she can clip on a plastic choker with simulated rings.

Her husband works around Pretoria in construction, a trade in which Ndebele are particularly skilled. When he had given permission for removal of her iindzila, he said, "My son's grandchildren will not know how their elders lived."

Perhaps they will know about the blue buses that roll out of KwaNdebele, daily bearing 17,000—about 16 percent of its work force—to work in Pretoria and surrounding communities. As the white Afrikaners had their Great Trek in the 19th century, many Ndebele have a grinding daily trek to work. Some who live in the far reaches of KwaNdebele line up for buses in the dark of 2 a.m. in hopes of getting a seat. Four or more hours later they arrive at their jobs, work eight hours, and again ride the blue buses. What remains of the day is six to eight hours for dinner, for family, for sleep.

__A brutal commute__ is the lot of thousands of Ndebele who must daily begin boarding buses before sunup (__left__) and spend as many as eight hours going (__lower left__) to and from jobs in nearby cities, such as Pretoria. These workers return home nightly, if briefly. The majority return less frequently. Those who work in distant cities must live in dormitories, where their families are not permitted. Many women in domestic service live with their employers, returning home on occasional weekends.

Jobs in KwaNdebele are few and, generally, pay little. With men commuting, women who stay at home find what work they can. Nomsa Mabena (__right__) and other women share mechanics' duties at a rural service station.

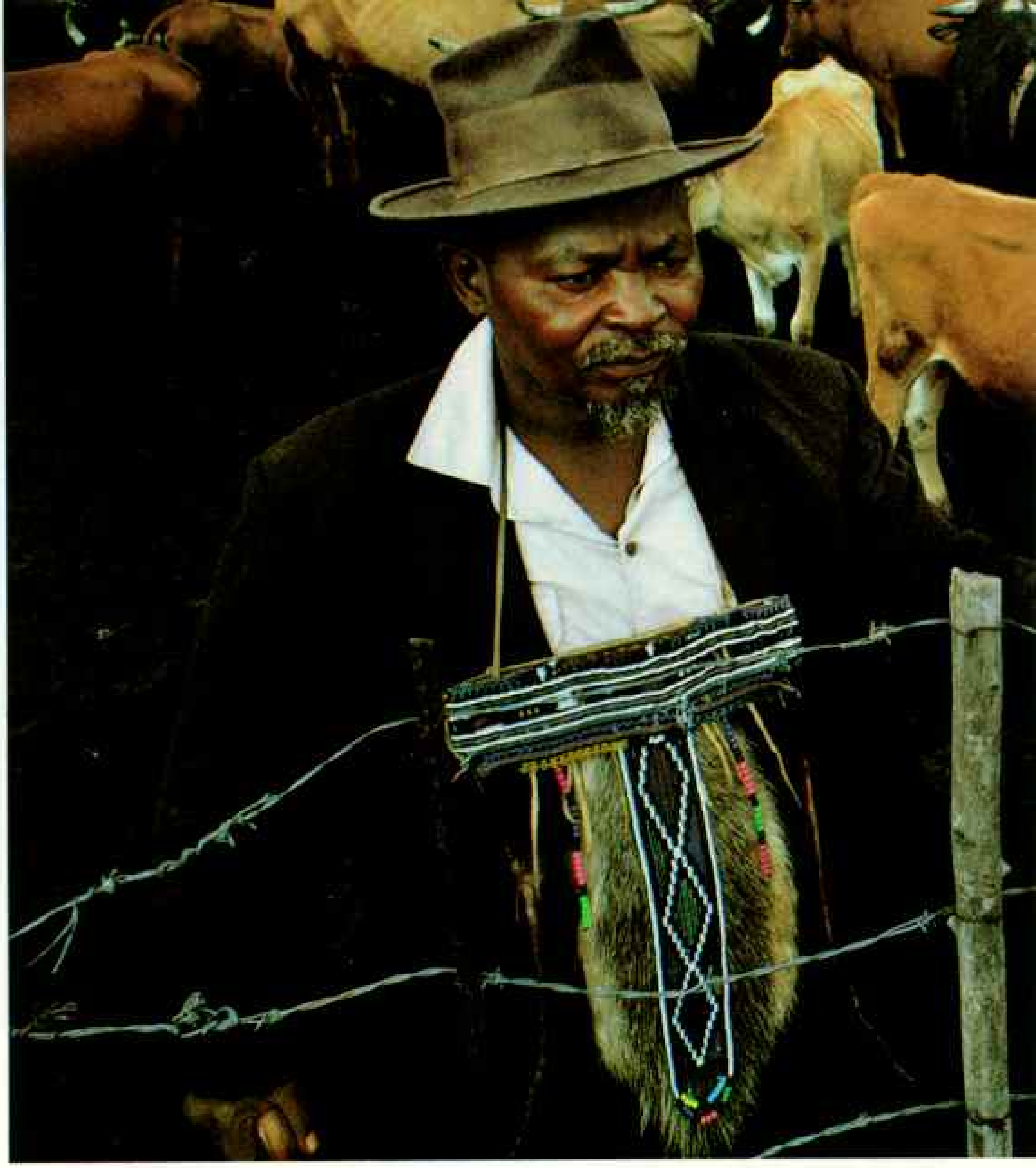
Most other workers from KwaNdebele see their families less: Twelve percent come home only once a week, 16 percent every two or three weeks, 43 percent once a month, and 12 percent return even less often. Of this group men who work in the cities or in the coal mines are often forced to live in barracks-like dormitories. Women are frequently domestic workers who live with the white families they serve.

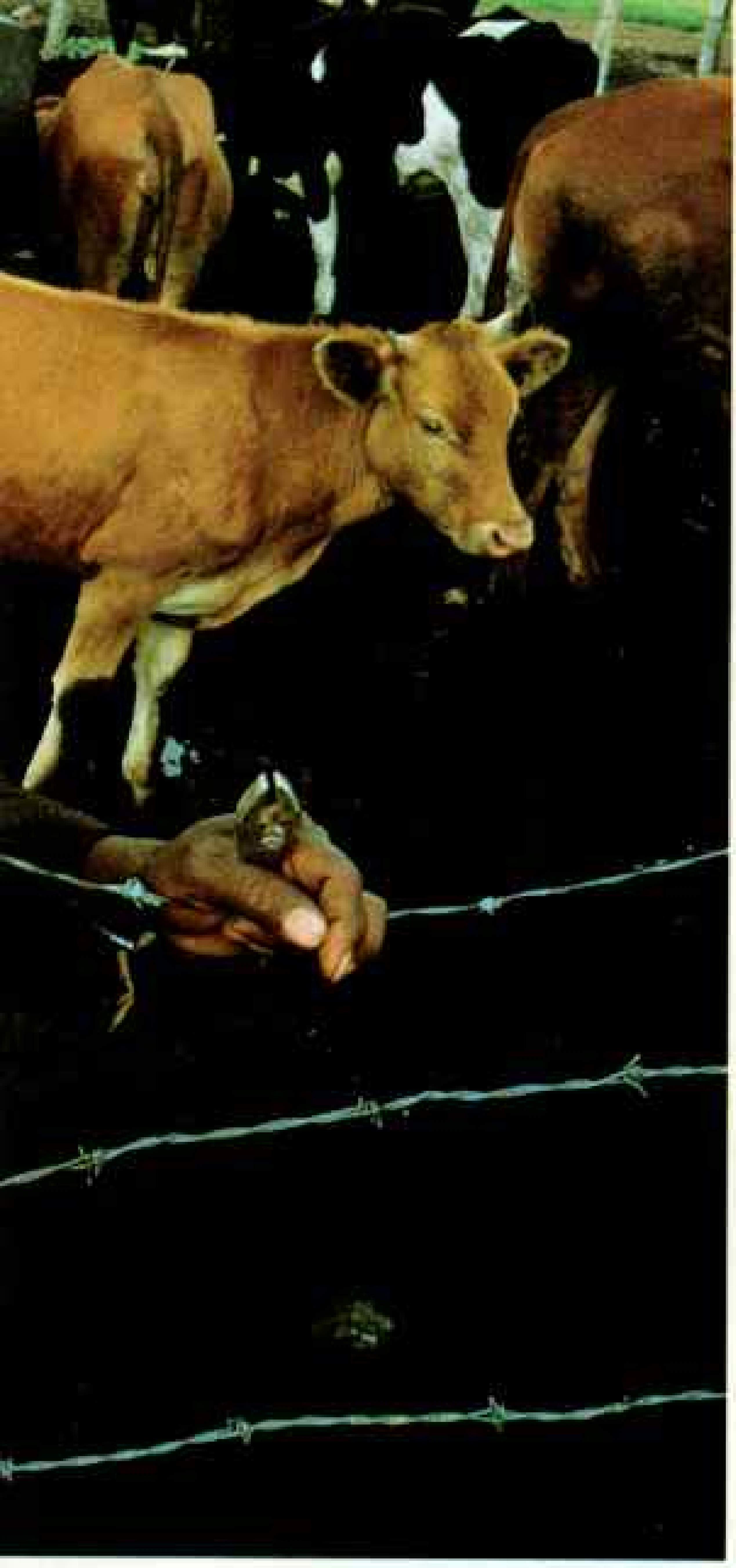
KwaNdebele is officially a national state: It has agreed in principle to accept the sort of independence South Africa wants to give. In fact, it is a largely self-governing labor pool—a state of the old, the sick, the young, and the jobless in its waking hours. Though many Ndebele are gathered in a place that is in a sense their own, the circumstances of the place conspire to destroy the visible ornaments of their traditions.

When circuit-riding Roman Catholic priest Father Richard Königbauer planned his parish church in Weltevrede, he was determined to decorate it Ndebele fashion.

"If you have such riches of culture, you should be happy and welcome it and use it. These things are just beautiful, I think."

Isango leZulu, "the gate of heaven," is that, the church proper and the wall surrounding its courtyard trimmed in vivid geometric designs painted freehand by Danisile Ndimande with help from her husband, Mjayelwa. Their own home had been Father Richard's inspiration, and when the church was done, it so impressed the family of Ndebele Paramount Chief David Mabusa





A farmer of substance *and a headman of the Ndebele, Eli Masilela* ***(above)*** *looks to a doubtful future. The white farm where he has sharecropped for 40 years has been sold to the South African government for transfer to KwaNdebele. He wonders if he will be allowed to stay on with his family and livestock. For six generations the Erasmus family* ***(left)*** *has farmed in the Transvaal with Ndebele tenants, but the government has forced them to sell five of their six farms for incorporation into KwaNdebele.*

Mabhoko Mahlangu that his residence was painted "like the Catholics'." Yet most in KwaNdebele lack the time or money to decorate their houses, and the Ndimandes had no commissions to paint more.

ON A TUESDAY MORNING scores of Ndebele women gather early at KwaDlawulale ("the place to eat and sleep") with their beadwork, some of it 30 and more years old, heirlooms really, including aprons they had worn as brides and other pieces appropriate to their status as young matrons. They bring fertility dolls and dolls given to girls on their initiation into womanhood. They bring strips from beaded blankets and necklaces, headbands, copper and brass iindzila. Some of the beadwork they bring is in the old style, mainly white, and some of it is in the new style—more elaborate, varicolored but darker, mainly blue and green.

Dinah Mabudafhasi and Kevin Lancaster arrive in a covered pickup truck, and the women settle themselves by their goods in a mood of patient expectation. Dinah will do the buying; Kevin will gather the pieces and load the truck.

The women will get a fair price for their goods, which wasn't always so. A white man used to come in a Land-Rover. He paid low prices, a few rand here, a few there, and the women would sell to him, for they needed the money.

Now they will sell only to Dinah or perhaps to a collector who pays about what Dinah pays—and in six months' time that has been 100,000 rand. Dinah and Kevin will bring the goods to their organization, a nonprofit group called Operation Hunger, which will make arrangements for resale.

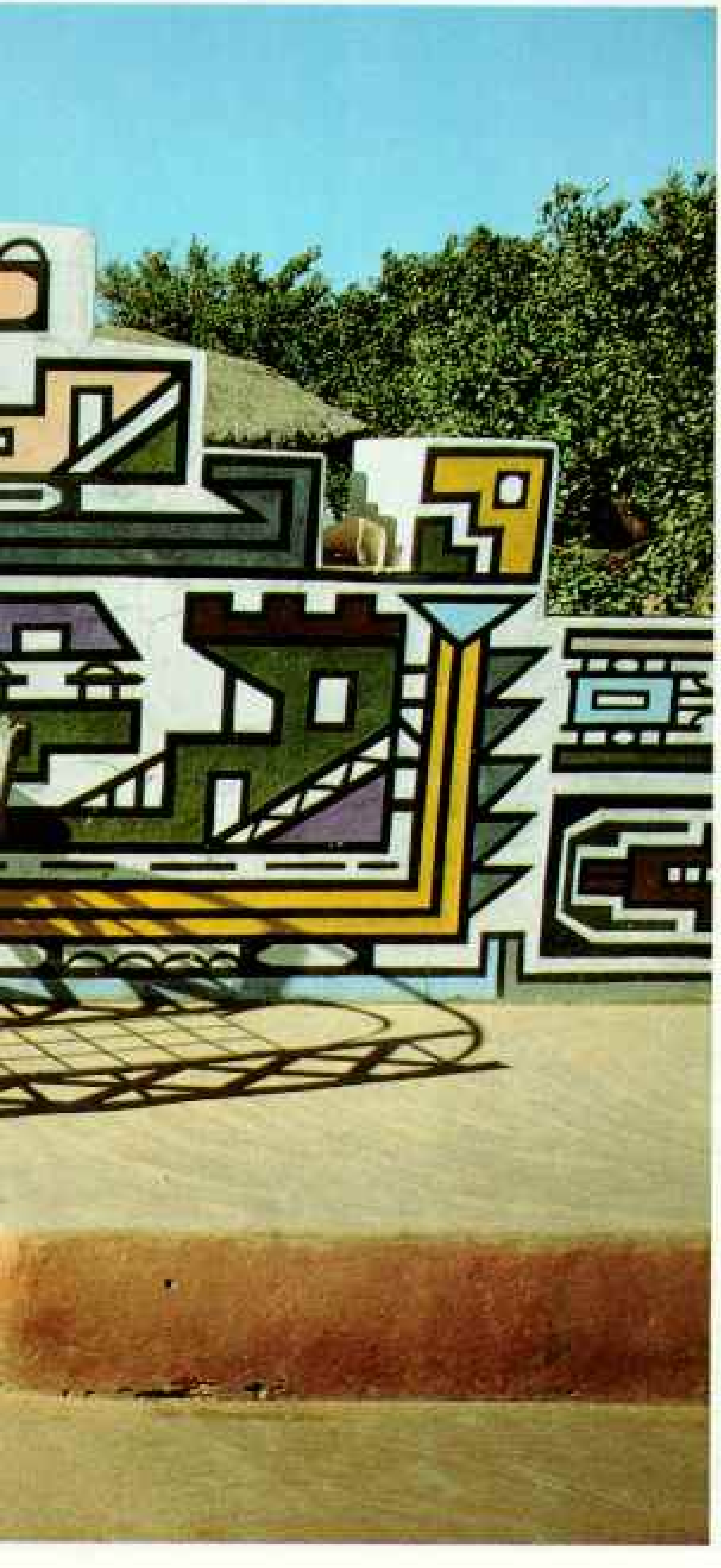
The money is used in part to buy food for the malnourished, and in KwaNdebele alone—where many are desperately poor if not starving—10,000 benefit from supplementary mealie (corn) meal and protein mix made into a stewlike soup. Kevin warehouses and transports the mealie that the women's goods will help provide, perhaps for their own children or grandchildren.

Dinah scans the goods with several things in mind. One is how much cash she can afford to spend this day. Another is how to distribute it so that the maximum number of women get something. She must also consider what sells well on the open market. Still, if one woman has an abundance of excellent beadwork, Dinah will not buy it all.

"Some women bring everything they have. It's heartbreaking. I could buy it all on one trip, but I try to buy only one or two items so their stock is not depleted."

The buying moves briskly; Dinah is direct and businesslike in choosing goods and passing cash. When the buying is done, the women rise, chat among themselves, and move away, one of the largest congregations of traditionally dressed Ndebele to be seen in the region. Their iindzila impose perfect posture and a stately, slow-motion gait. Their short blankets, tight over their shoulders, flaring at the waist, add a cone between the cylinders of iindzila. Theirs is a geometric, abstract beauty.

RASMUS ERASMUS is a sad and frustrated Afrikaner farmer. "Last week the government was here; they took my fifth farm. I told them I don't want to sell so I fought them in court for seven years. I wouldn't sell—that's all—but they forced me to sell. Why do you do a thing like this? I leave it for my children. They must have it one day when I'm dead. It cost me 8,000 rand to try to keep my property, but they just took it anyway. The government."



The property was five farms of 5,000 morgen (more than 10,000 acres) in grazing and cropland, taken by forced sales and marked for incorporation into KwaNdebele.

"That leaves us stranded with just the home farm," said Erasmus's wife, Lucy. Of about a thousand morgen, and not scheduled to become part of KwaNdebele, it is some of the last open country between Johannesburg and Pretoria—prime land for suburban or industrial development. Yet the farm is now but a remnant of what was.

"This farm is now the sixth generation," said Lucy Erasmus. "The Erasmuses were here in the beginning, the first white settlers in the Transvaal. They came here in 1838. My husband's great-great-grandfather had ten children. The first farm was 12,000 morgen. All his ten children also had 12,000-morgen farms. They had ground in the highveld; they had ground in the bushveld. Wherever you would go, most of the Transvaal belonged to the Erasmuses. They had thousands of head of cattle. It took them days to drive the cattle through Pretoria to go to the lower regions in winter.

"They all had Ndebele that worked for them, and the Ndebele have been living with us for generations. The same families over and over again. We've looked after them like our own children. We've been to their weddings. We've buried them. We cried with them if somebody was sick or dying—or when a baby was born we had a do. They had their own cattle, their sheep and lambs. They used to sell their pumpkins, and they used to sell their mealies, and they did very well."

Now, with the Erasmus lands much reduced, only four Ndebele families continue to live on the home farm, and, as a sideline, all harvest and bundle grass for the thatch Mtazi Mtsweni cannot afford. Lucy Erasmus: "We don't say, 'Look, give us so much of the grass you cut.' We say: 'Go on,

***Exuberant grace** of traditional Ndebele architecture—thatch roof with painted house and courtyard walls—is now rare. Danisile Ndimande, one of the finest artists, painted her home freehand without resort to sketches or plans.*

Cause for dancing *is rare in KwaNdebele. There is little time for maintaining traditional ways, but when celebrations are held to honor the initiation of girls into womanhood, whistles sing out* (**left**)*, as former initiates and younger girls join in to dance or just to socialize* (**above**)*. Before this weekend of music and gift giving, the initiates have been secluded at home, where their mothers instruct them in the responsibilities of adulthood. Since upon initiation they are deemed marriageable, their mothers set forth codes for future conduct as wives and discuss other matters passed in confidence from generation to generation.*

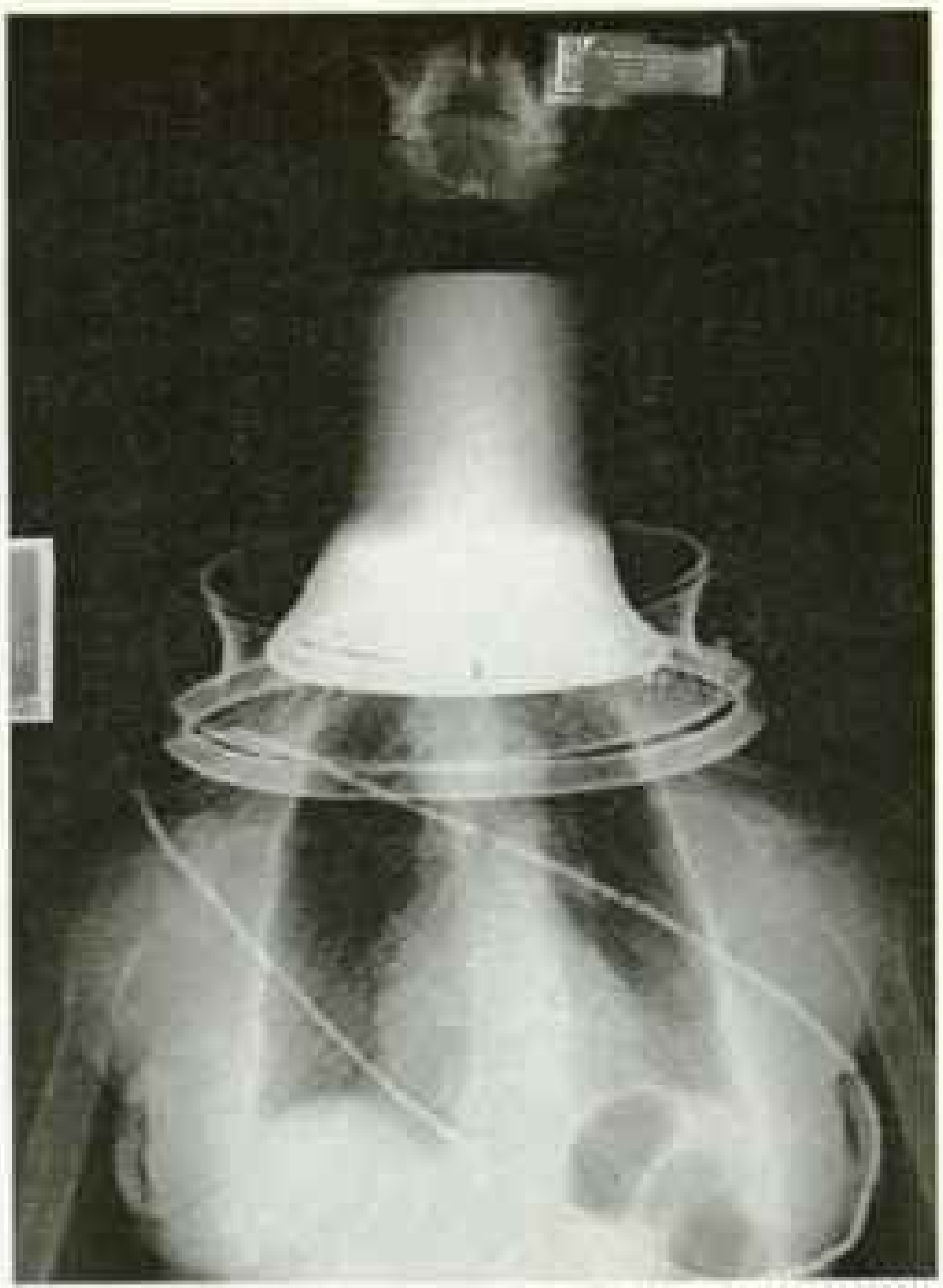
make a living.' We try to help them."

The saga of the Erasmuses is Afrikaner history writ large in one family. They were early settlers in the cape region, then went to Natal to escape the English. "When great-great-grandfather was in Natal, he and his sons used to go to shoot lions and elephants at Victoria Falls. It was called the Erasmus Falls, because they were there 20 years before Dr. Livingstone *discovered* it. How the Erasmuses laughed about this big discovery, because it was their hunting ground."

Then, seeing the English advance, they packed up, left Natal, and came to the Transvaal, where their history has twined with that of the Ndebele for six generations.

A giant South African corporation keeps pressing to buy the home farm. Lucy Erasmus: "Anglo-American has offered us a fortune—millions—to sell this farm. We just can't accept it, because in our graveyards we've got three generations of Erasmuses and Ndebele buried there. So they say: Are you so sentimental that you don't want to become multimillionaires because of a couple of graves? So we say: Yes, that's how we feel about it."

They cannot simply say no to the government, and it is there that their bitterness is aimed. "I said to the town clerk the other



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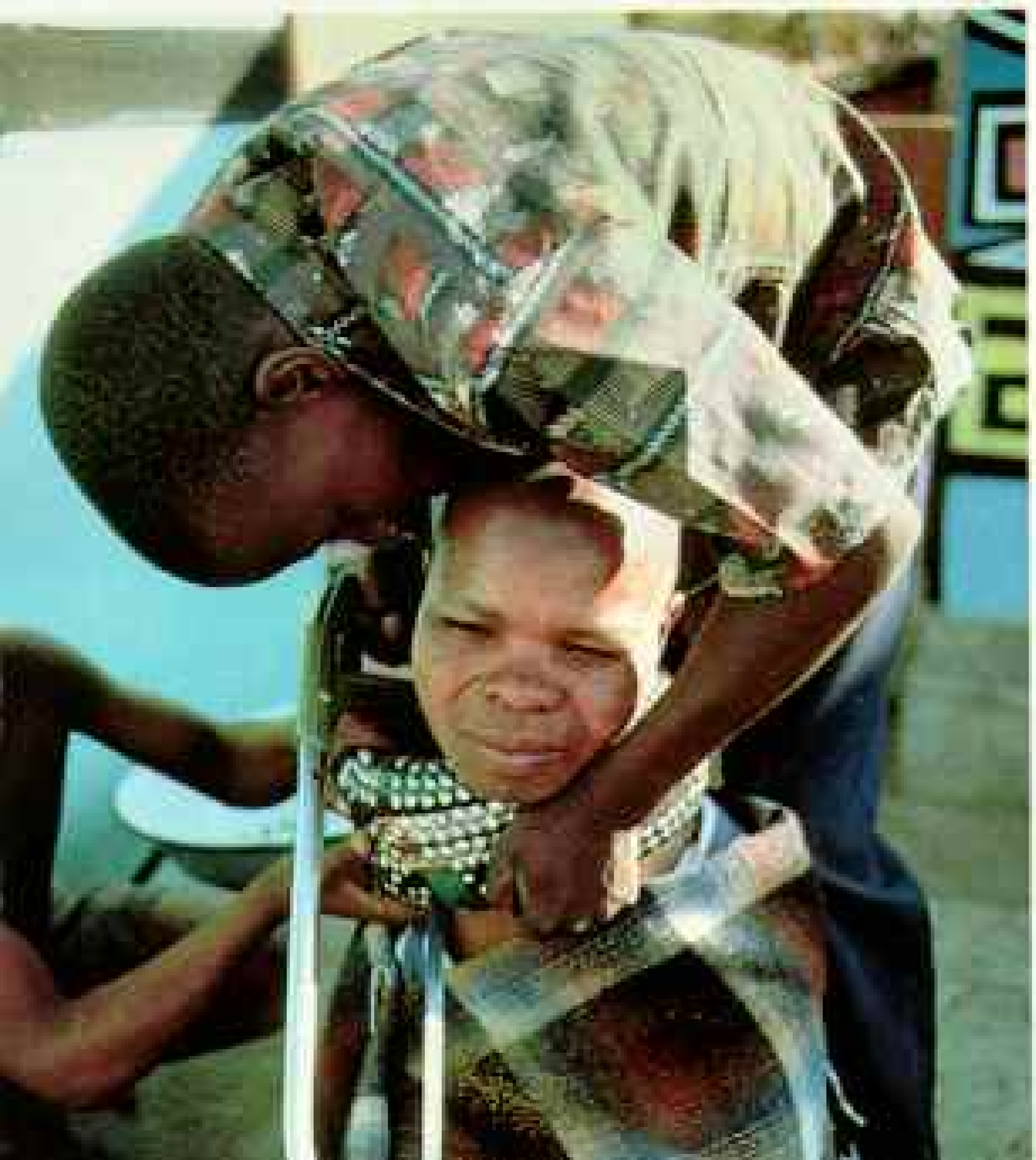


*"**Is this really me?**" asked Nomali Kabini (**right**) on seeing an X ray (**above left**) that showed deformation of her collarbones from the iindzila's weight. Unmarried women may wear rings on their legs or arms (**above**), though weight gain can lead to discomfort.*

*Effa Mahlangu (**left**) had badly swollen ankles and got her father's permission to remove her leg iindzila. Her brother, Piet, pried them off, then hacksawed her straw-stuffed neck bands, for, now that the leg iindzila were gone, the neck rings would look inappropriate.*

day, 'Why don't you just put a red flag up here, because you are doing exactly what the Soviets are doing.' "

ELI MASILELA, an Ndebele farmer whose family includes six wives and 185 children, grandchildren, and great-grandchildren, faces a different kind of uncertainty. For 40 years he has lived and worked on the same white farm, exchanging family labor for grazing rights and cropland. His home resembles a small village, with a house for each wife and various connecting and out buildings, some 15 in all constructed in Ndebele fashion, except for the house of his sixth wife, who is from the Pedi tribe. He has more than 60 head of cattle and grows mealie, peas, potatoes, and sweet potatoes.

He also leases land for 700 rand a season to grow more sweet potatoes as a cash crop. His son Thomas, who hopes to become a teacher of farming, supervises the harvest as a tractor-pulled plow turns the earth, and the hired laborers, mostly women, sort by hand through the till and pluck out the tubers. For this work the Masilelas pay three rand a day, or 25 rand a week.

The elder Masilela walks slowly back and forth in front of his buildings, directing here, answering there, advising and consulting—a figure of authority with his fedora and gleaming carved walking stick. His influence extends from Bronkhorstspruit to Verena in his capacity as *induna*, or Ndebele headman. Yet that means less than it once did, for, on the one hand, the old tribal structure has been superseded by KwaNdebele's civil government.

On the other hand, the South African government is buying the farm on which he lives. The farmer had told him he could stay "until doomsday," but he is gone, and now a neighboring Ndebele has hired attorneys and brought suit in the white courts. He is trying to dispossess Masilela, claiming prior rights descending from his father. Other Ndebele farmers down the road will follow Masilela. If he goes, they will. No farmer wants to go to the crowded new settlements like Tweefontein.

"I prefer to die here," says Masilela. "I cannot start over."

Most of the other white farmers, kind or cruel, have been bought out by the South African government, but most lands have not yet been transferred to KwaNdebele. What happens then the Ndebele farmers do not know. It is a time of limbo.

It is also limbo time in Ekangala, a new township of some 6,500 living in tightly packed block bungalows isolated like a corral in ranch country. A KwaNdebele "growth point," which by the year 2000 is expected to have a population of 300,000, Ekangala is roughly divided into two sections, one of Ndebele, one of non-Ndebele.

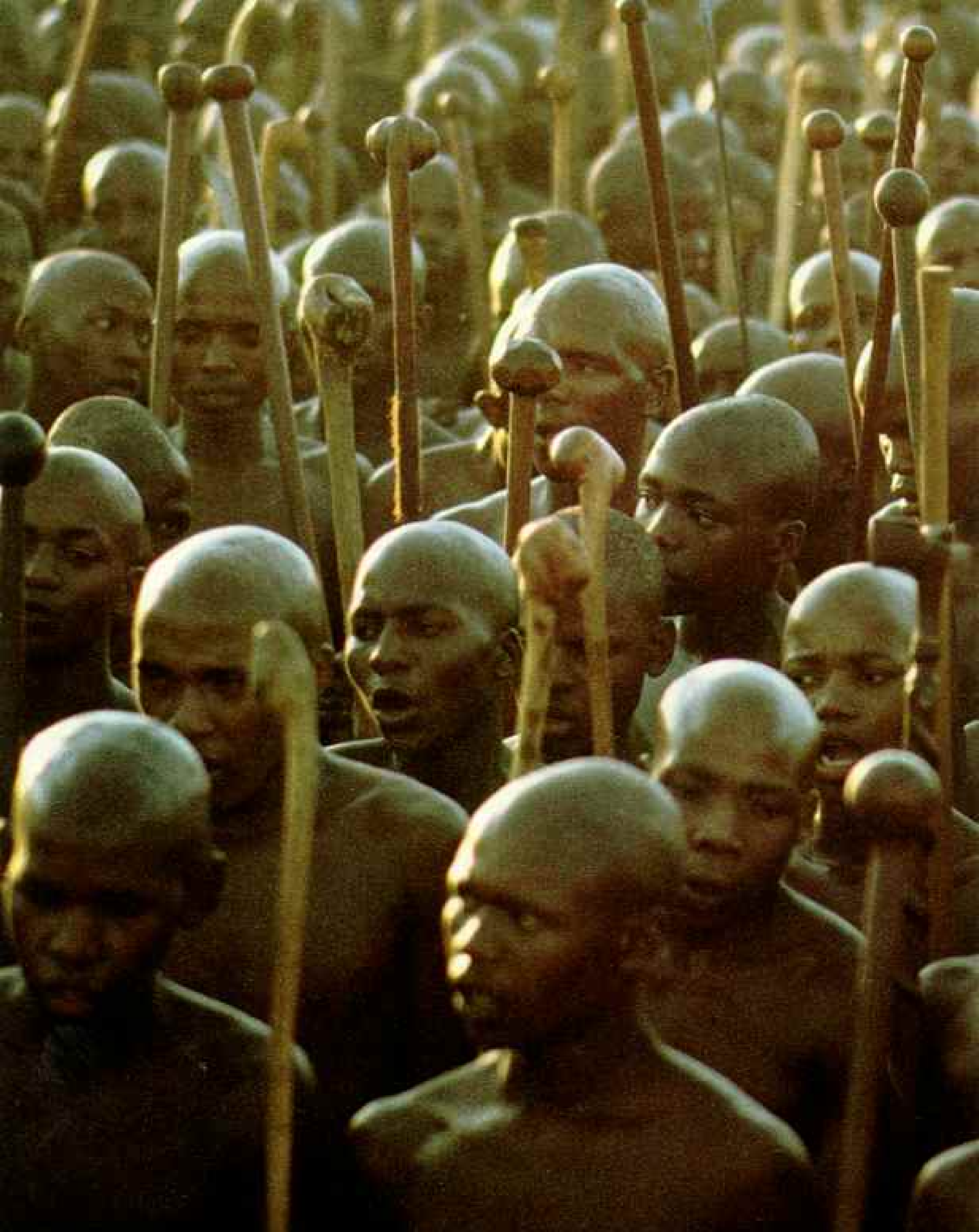
Chief minister *of KwaNdebele's government since 1979, S. S. Skosana* ***(left)*** *has become a well-to-do businessman and farmer. Ndebele Paramount Chief David Mabusa Mabhoko Mahlangu* ***(right)*** *sits outside his home with his wife Selephi. His authority is now mainly restricted to tribal and ceremonial matters.*

Vusimzi Mabena, who says he is a Swazi, had been "on a waiting list for a long time to get housing in Atteridgeville," a black township near Pretoria. "When I heard about these, I came and got a house, but no one told me it would be in KwaNdebele."

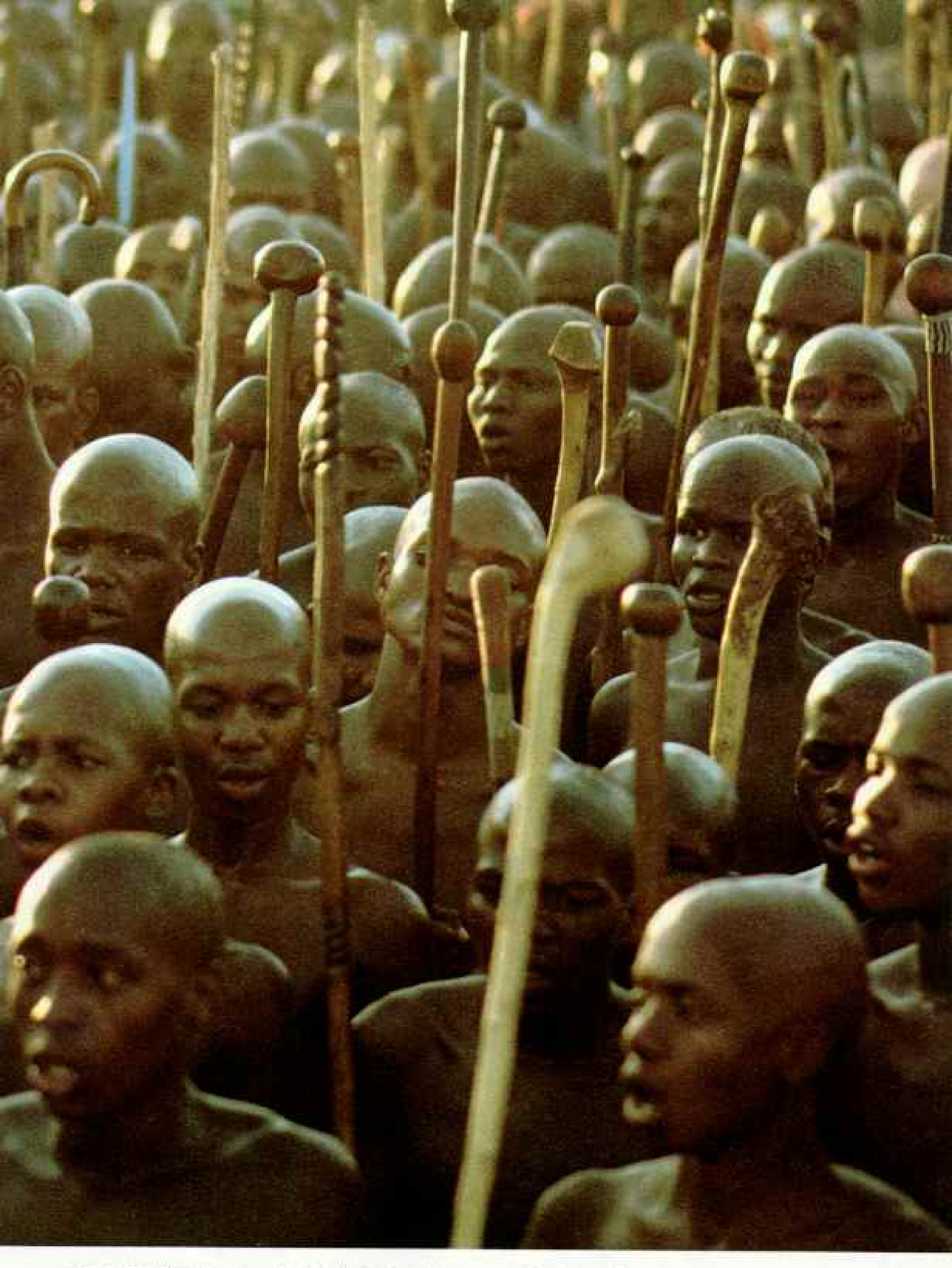
His four-room house with electricity, running water, and sewage costs 139 rand a month. "We knew rents were high, but we were told they would be reduced," he said. "They weren't, and this is why the superintendent's office was burned down. I will have to go back where I came from."

He and other non-Ndebele have feared that if and when Ekangala is made part of KwaNdebele, they will lose their rights to live and work elsewhere. They also fear harassment and discrimination of the sort Ndebele knew in Bophuthatswana. According to investigations by the Black Sash, a women's organization dedicated to human and civil rights, peaceful protests by residents of Ekangala have ended with police tear gassings and beatings abetted by vigilantes from KwaNdebele.

Three kilometers down the road the factories of Ekandustria rise on an empty landscape. This industrial site is divided between South African territory, where construction is languishing, and KwaNdebele, where the KwaNdebele National Development Corporation Ltd. (KNDC) has embarked on a blitz of recruiting businesses and building prefabricated factories. In two years KNDC, under general manager Philip Kotzenberg, has brought 35 industries to Ekandustria, has another 19 about to move in, and is building 22 factories on speculation—despite the severe recession in South Africa. Among those signed up are two



After two months in the bush *Ndebele youth who have endured circumcision and been instructed in manly arts and duties gather before the paramount chief. With the rigors of initiation behind them, they will return to their villages for*



days of celebrating. Armed with clubs that also serve as dancing sticks, they have passed into manhood and will be admitted to the councils of men. To mark this status, their parents fly white banners before their homes.

corporations from Israel, two from Hong Kong, and two from the Republic of China (Taiwan).

"We go out and we look for investments. We try to force people to come, not force but twist their arms," joked Kotzenberg, describing KNDC's aggressive marketing that with tax and other financial incentives makes Ekandustria attractive to corporations. Still he grants that even if the building boom continues and even if KNDC takes over South Africa's part with equal success, Ekandustria cannot be the whole answer to employment, not even for nearby Ekangala's eventual labor force.

In the KwaNdebele capital of Siyabuswa, where KNDC is developing small industry and commerce, Placid Kunutu is developing the young. With two master's degrees from the Teachers College of Columbia University, he is minister of education and culture and has by far the most formal education among KwaNdebele's ministers. On that job since March 1985, after serving in various diplomatic positions without portfolio, he has been learning how to manipulate the

levers of South Africa's education bureaucracies to bolster the KwaNdebele school system of 152 schools, 111,000 pupils, and 2,905 teachers, plus a teachers training college and technical institute.

"I have been mainly doing remedial work and reshuffling. The atmosphere of riot [in South Africa] has influenced my whole way of doing things." That way is not to sit back waiting to see what will happen in South Africa—educationally, economically, or politically. Kunutu's plan is to try to assemble the best teams he can to upgrade education. But even success will bring its share of problems.

"In view of the recessionary period we are going through right now, I am definitely in quite a spot to educate children and not have jobs for them. On the other hand, I am quite convinced we should *not* be saying: no jobs, therefore no training."

Training is only one dilemma—a cog in a great clanking dilemma machine. The central one is: how to cope with apartheid? The officials of KwaNdebele have been called sellouts and worse for agreeing in principle to accept South Africa's brand of independence.

Kunutu said forcefully, "We don't accept apartheid; we don't. It's been imposed on us; we don't accept it. But how do you deal with apartheid?"

Platoon of celebrants *on the way home encounters an old friend, now a member of a home guard unit. In South Africa's national army service is voluntary for blacks but mandatory for white men.*

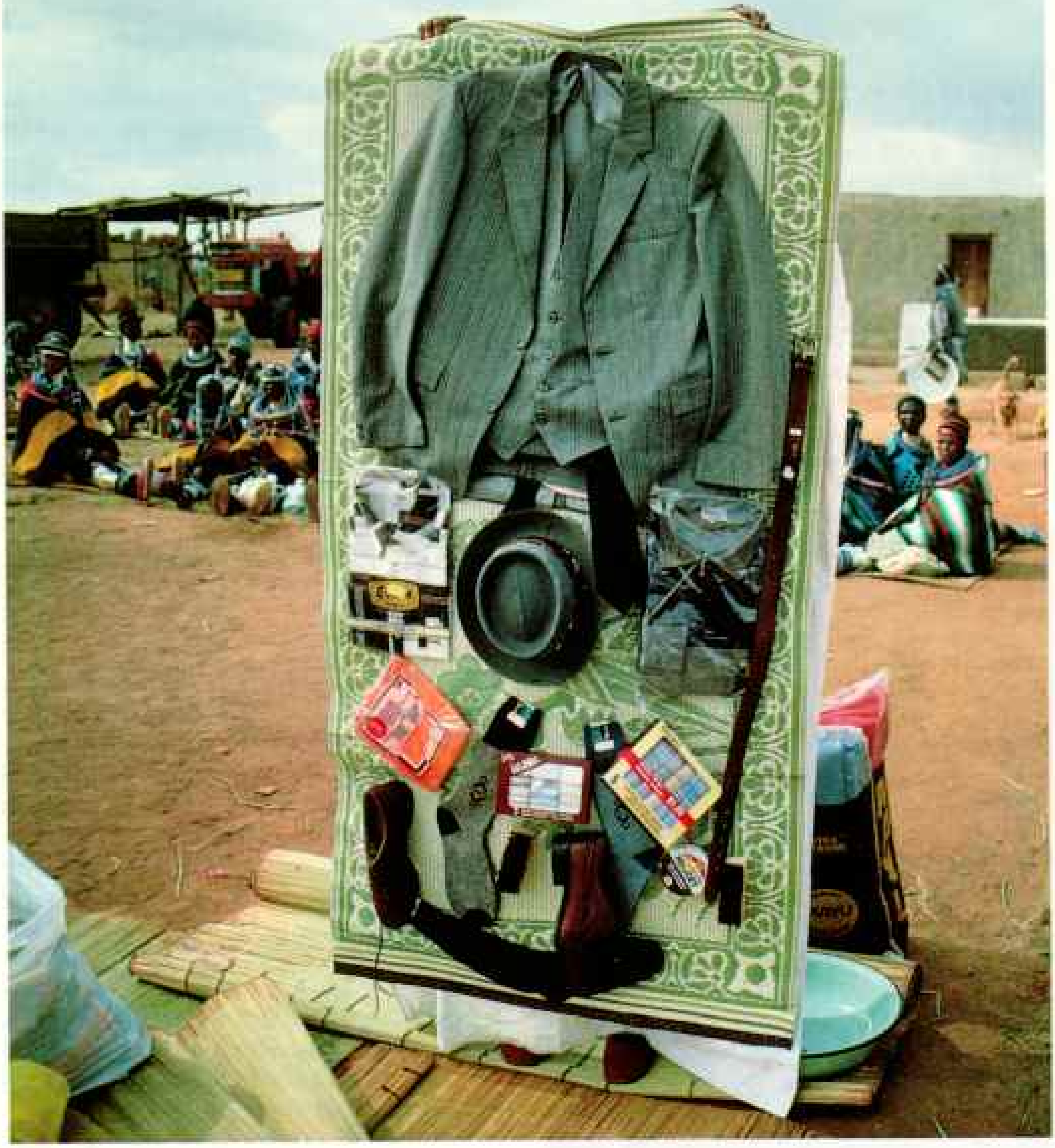
KWANDEBELE'S ANSWER for the moment is to keep negotiating, press for concessions, for more land, more programs, more funds, freer status. It is there—on the ground between agreeing to independence in principle and agreeing in final fact—where the KwaNdebele strategy is being played out. Is that smart? Is it wise? Whoever can foretell the future of South Africa may answer.

Dirk van Deventer tells a story of two Ndebele boys, brothers who grew up on his farm, a farm he and his wife, Paula, will soon be forced to sell. When the brothers were young, van Deventer told them:

"'I'll give you each a heifer for every year that you farm with me.'

"The younger looked after his animals. They multiplied. Whatever he sold, he put in the bank and earned interest on it. He now has a substantial amount of money.

"The other had his few head of cattle. He was driving a tractor for me and just got sick and tired of it one afternoon. A week later he swapped his livestock for a light delivery vehicle, and he became a hawker. He'd buy watermelons, or pumpkins, or whatever,



***Passage of rites** ends with a mother's gift—the uniform of the working world beyond KwaNdebele. She hopes her son will find a wife to help her at home—a daughter-in-law's duty. But she knows that survival in a labor pool called a homeland may well bring separation of family and an end to tradition.*

and try to resell them. I think he is now virtually penniless.

"The other brother stuck with us. He is a farmer. I trust him. He's doing much better than European foremen did, and I try to give him his due.

"He had a good crop on his plot of land this year. He came and told me what his harvest was, and he said, 'I'm very pleased about it.'

"And I told him, 'So am I.' "

The story seems an almost biblical parable, yet what lesson is to be drawn? When Dirk and Paula van Deventer are forced to sell their farm, and if they are not allowed to remain and manage it, what will happen to the good young Ndebele husbandman? Van Deventer is considering buying land in another country, Swaziland, partly to help protect him.

Before dawn Paula van Deventer hears a sad music. It has a rhythmic hiss, like surf advancing and withdrawing along an ocean shore. Wave after wave of blue buses are rolling south along the highway in the dark. □

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Turnaround in geography: a first report

"WE HAVE A LOT OF WORK to do." That is how I ended this page last October on the subject of geographic education. We've started on that work at the Society, and I'd like to make this column a first report card to our members—especially since hundreds of you have sent me thoughtful letters on the subject. I fervently believe that it is important, and I am gratified that so many members share that conviction.

This past fall, for example, the theme of the 51st annual meeting of the Southern Governors' Association was the internationalization of the South, with particular emphasis on international education. The southern governors are well aware of the link between their states and the global economy. Direct foreign investments in southern enterprises were some 82 billion dollars last year, or 42 percent of the national total, while the South exported 63 billion in manufactured goods, or 30 percent of the national total. Whether or not globalism is a good idea in theory is beside the point; in economics it is simple fact.

As I was privileged to tell the conference, the biggest changes I've seen in my lifetime are rapid transportation, instant communications, and technological explosion, especially in the audiovisual field. (My remarks were prerecorded on videotape and edited into an electronic magazine format!)

Coupled with those advances has been the decline, nearly the demise, of instruction in geography. Could anyone conceive of a more self-defeating strategy than to perfect technology but then not to utilize it well in the service of education?

"You cannot," I suggested to the governors, "enter the global decision-making process without knowing the globe, and we don't know the globe in this country. We must solve that problem."

Here, then, is our report card, an outline of our first steps at working toward a solution of the problem:

Our pilot geography projects with the District of Columbia and Los Angeles school systems have given us valuable experience, and we hope to expand these efforts. As I write, we are planning a celebration of "Geography Day" in those schools with the hope that we can expand it nationwide.

The Society has joined with the National Council for Geographic Education, the Association of American Geographers, and the American Geographical Society in a program known as the Geographic Education National Implementation Project (GENIP). GENIP seeks to build a network whereby the best techniques, training, and materials in geographic education can be rapidly diffused through school systems. We hope that within four years we can reach several hundred districts in the U. S. and Canada.

We are also organizing and funding a Summer Geography Institute in Washington, D. C., where some 40 teachers will be brought up-to-date in methods of geographic education to benefit their students and colleagues. For this month-long program, the teachers will receive stipends and academic credit and be expected to "carry the torch" back to their schools.

The governors' conference stressed the welter of outmoded and incompatible audiovisual and computer systems that make it costly and difficult for schools to use technology efficiently, cooperatively, and at reasonable cost. Working together, the governors could help relieve that problem. We know that, despite the Society's commitment to applying technology in educational materials, we cannot produce them economically in a hundred different formats.

We still have a lot of work to do, but I hope that if the Society were being given a report card in geographic education, the note might read: "Trying hard; staff works well with others; progress slow but improving."

Gilbert M. Grosvenor

PRESIDENT, NATIONAL GEOGRAPHIC SOCIETY

Members Forum

Usumacinta

Your otherwise excellent article on the Usumacinta River (October 1985) was marred by lack of perspective on Guatemala's political problems. The Rebel Armed Forces, self-important as they may sound, are a militarily insignificant faction of Guatemala's 2,000 guerrillas, who pose no real threat to the nation's well-trained 30,000-man army. The real danger stems from the utter poverty and despair of the majority of citizens in the midst of prolonged economic depression—itself partly the result of military mismanagement.

The military forces remain not only more feared than the guerrillas, but also, according to the nation's Catholic archbishop, the main perpetrators of a continuing wave of murders and disappearances. The army continues to forcibly resettle thousands of Indians in so-called new towns and has regimented 900,000 in military-style civilian patrols.

Brian J. McGinn
Alexandria, Virginia

Your article implies that Guatemala's military regime has eliminated previous human rights abuses. In fact, seven months after General Mejía Victores assumed power, the U.N. Commission on Human Rights reaffirmed its "profound concern at the violations of human rights" in Guatemala.

Evan Hadingham
Cambridge, Massachusetts

Bravo! An explanatory pronunciation of foreign place-names! Usumacinta River (oo-soo-mah-SEEN-tah). In this troubled world we need to know all we can about our neighbors, which entails the need to pronounce their names correctly.

Leonard G. Robinson
Petersburg, New York

After two President's Pages dealing with geographic ignorance, it is ironic to find an example in the October 1985 issue. Wilkerson states "the Usumacinta flows northward (an oddity among rivers in North America)." Most Canadian rivers flow northward, definitely not an oddity.

George Wady
Birtle, Manitoba

Two Samoas

Robert Booth's "The Two Samoas" (October 1985) was excellent. One area I wish he had investigated is the role of the Church of Latter-day Saints (Mormon) in Samoa. In 1890 James Ricks, my wife's grandfather, was sent to Samoa on a church mission. In 1962 I visited American Samoa and talked to several older residents who still remembered Elder Ricks.

Recently, construction of an LDS temple was accomplished by local church members plus a few labor missionaries from the U. S. The South Pacific islands have tremendous potential for interesting reports. Please keep them coming.

Merdin Criddle
Aptos, California

The author states "Six ships—three German and three American—went down [in the 1889 hurricane]." If by "went down" the author means "sank," only three sank. The *Nipsic* and the *Olga* were beached; the *Adler* was tossed on the reef, where she remained in full view until the 1960s, when she was covered with landfill during redevelopment of Apia's harbor. U.S.S. *Nipsic* was repaired and continued in Pacific service for the U. S. Navy for a number of years.

Patrick P. Reams
Everett, Washington

Pandora Shipwreck

The "Wreck of H.M.S. *Pandora*" (October 1985) states that *Pandora* is the most important historical wreck in the area. I would give equal importance to *Sirius*, a 24-gun Royal Navy ship of the same size that served as the flagship of the fleet that took the first settlers to Australia. She was wrecked off Norfolk Island on 15 March 1790. Underwater archaeological investigations conducted on her are an important part of the upcoming Australian bicentennial to begin in January 1988.

John F. Millar
Williamsburg, Virginia

The seagoing vulture Edward Edwards, master of H.M.S. *Pandora*, makes "Breadfruit Bligh" look like a Cornish vicar by comparison. But the fates were good to him. According to George Mackaness, *The Life of Vice-Admiral William Bligh*, New York, 1931, "Captain Edwards, having been exonerated from blame for the loss of the *Pandora*, rose rapidly in the navy, attained flag rank in 1799, became a full admiral in 1810, and died in 1815."

M. C. Stark
Santa Monica, California

Frankincense Trail

I lived in Taif, Saudi Arabia, for three years. "Arabia's Frankincense Trail" (October 1985) struck an evocative chord. I could almost smell the aroma of frankincense. Your readers might be interested in another tale about the trail: Freya

For some people, tying them takes more than a few minutes.

Tying a shoe is a task most of us take for granted. But for some of us, it's much more. It's an achievement.

Three out of every 100 Americans are mentally retarded. That's six million people who need our help and encouragement. Not to tie their shoes for them, but to help them learn to do things for themselves.

Through the ARC—the Association for Retarded Citizens—America's retarded citizens are learning to be self-sufficient. ARC provides job training workshops, educational programs, sheltered workshops and neighborhood housing to help retarded people help themselves.

Over 85% of America's retarded citizens can lead productive lives. Even the most severely retarded people can learn to stand on their own two feet.

It's a big job. But a rewarding one. ARC needs you to give whatever you can—time, money, jobs, housing opportunity, understanding.

Next time you bend over to tie your shoes, remember those who need a little more help—and remember that you can give it.

arc

Association for Retarded Citizens

When you give help you give hope.

Stark's *The Southern Gates of Arabia,* first published in 1936 but recently republished by J. P. Tarcher, Los Angeles.

William F. Gallagher
Bangor, Maine

An anthology of Thomas J. Abercrombie's articles might make a worthwhile National Geographic publication.

John D. Tinny
New Castle, Delaware

It certainly would. But the 30-plus articles he has written and/or photographed are easily found in libraries through a National Geographic Index.

Trumpeter Swan

"Ko-hoh, Ko-hoh!" to NATIONAL GEOGRAPHIC, Charles A. Bergman, and Art Wolfe. My fifth-grade students were thrilled by "The Triumphant Trumpeter" (October 1985). They had just finished hearing E. B. White's *Trumpet of the Swan* when October's journal arrived. Many of the photographs could have been used to illustrate White's story of a young cob.

H. J. Follett
Margarita, Panama

Planet Earth

Your article on "Our Restless Planet" is a reality for us these days. I congratulate the authors for the clear explanation of how an earthquake can occur and the mechanics of the dynamic crust. The question remains: How can quakes be predicted and thousands of lives saved in the future?

Eli S. Anderman
Mexico City, Mexico

The 1985 tragedy in Mexico City will be the focus of a forthcoming earthquake story that attempts to answer your question.

Pearls

I read with great interest your article "The Pearl" (August 1985). I feel obliged to rectify an omission. The history of the pearl in the first half of the 20th century is synonymous with Leonard Rosenthal, known worldwide as Pearl King.

Born in the Caucasus in Russia, Rosenthal arrived in Paris as a 14-year-old immigrant in 1884. He became expert in Oriental (natural) pearls. When the Japanese introduced cultured pearls, he brought suit against the Japanese government and won. As a result, the cultured pearl was given that name, an X-ray apparatus was devised for its detection, and this half man-made artifact could no longer pass as the genuine article.

After the 1929 crash, his fortune of over 100 million dollars was wiped out, and Rosenthal, a Jew and a Socialist, fled to New York penniless. He started over, having by necessity made peace with the cultured pearl. By importing huge lots from Shanghai for department stores, he helped establish the enduring fashion of the little black dress with a string of pearls. He died in Beverly Hills in 1955; he was my father.

Rachel Rosenthal
Los Angeles, California

Members Forum

In reference to Members Forum, October 1985, I'm appalled that one who reads NATIONAL GEOGRAPHIC should consider "knowing where the Amazon River is" as being "unnecessary information" or "clutter" of the mind. If my doctor told me he didn't know where the world's greatest river was, I'd be afraid he couldn't find the islets of Langerhans. So long, Doc!

Richard J. McKenna
Half Moon Bay, California

In body geography the islets of Langerhans are cells in the pancreas that secrete insulin.

The letter stating "It's counterproductive to clutter the mind with unnecessary information" makes two mistakes. First, there is no such thing as unnecessary information. Every single bit of information that exists is important and useful to some living creature in the universe. Second, it is impossible to clutter the mind. Scientists have long since proved that there is no discernible limit to the number of bits of information that the human mind can receive, absorb, and remember.

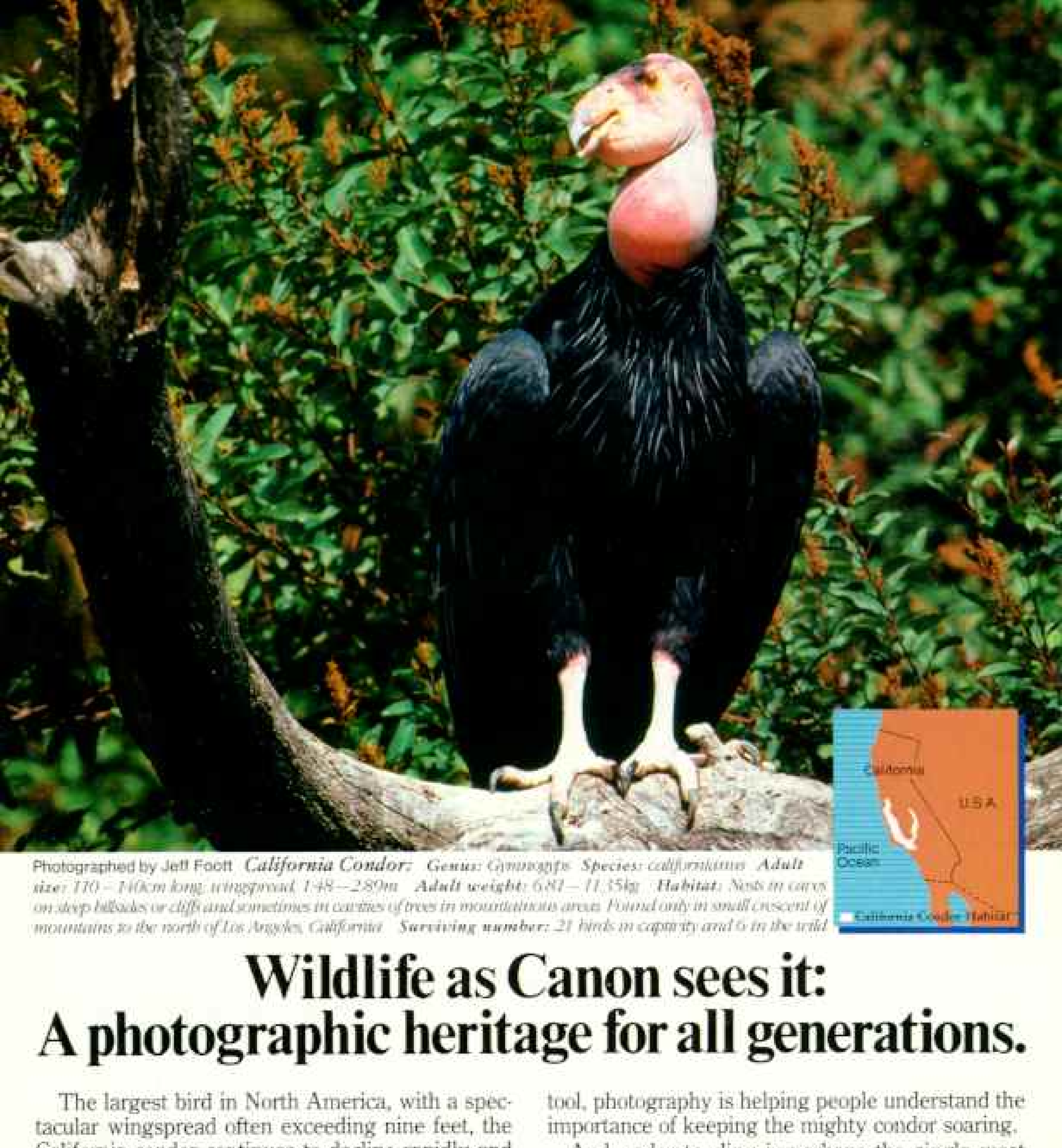
J. Stuart Morrow
Sewickley, Pennsylvania

Of the 773 letters published between September 1981 and May 1985, some 83 percent came from within the 50 states, 6.6 percent from Canada, 1.4 percent from England, and 8.4 percent from the rest of the world. I know that a very large number of your members are U. S. citizens, but is it really as high as 83 percent, or do I notice a certain bias influenced by country of origin?

Cyril A. Adam
Guernsey, Channel Islands, U.K.

The Society's membership breaks down almost exactly as you have counted our letters: 82 percent of our 10.5 million members live in the United States, 7.3 percent in Canada, 1.8 percent in Britain, and 8.9 percent in the rest of the world. However, we choose letters for their intrinsic interest, not their return address.

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



Photographed by Jeff Foott *California Condor:* *Genus:* *Gymnogyps* *Species:* *californianus* *Adult size:* *110 – 140cm long, wingspread 1.48 — 2.89m* *Adult weight:* *6.81 — 11.35kg* *Habitat:* *Nests in caves on steep hillsides or cliffs and sometimes in cavities of trees in mountainous areas. Found only in small crescent of mountains to the north of Los Angeles, California* *Surviving number:* *21 birds in captivity and 6 in the wild*

Wildlife as Canon sees it: A photographic heritage for all generations.

The largest bird in North America, with a spectacular wingspread often exceeding nine feet, the California condor continues to decline rapidly and faces a very uncertain future. In the past year, the known wild population drastically decreased from 16 to 9, resulting in additional birds being taken into captivity for their protection. Scientists are continuing intensive research to determine the exact causes of mortality, and to learn more about the birds' requirements for survival.

Nothing could bring back the California condor should it vanish completely. And while photography can record it for posterity, more importantly photography can help save it and the rest of wildlife.

With time running out for condors in the wild, captive breeding may be the only means of ensuring the species' survival. Hopefully, someday the captive population will be reestablished in the wild for an enlightened mankind to admire. An invaluable research tool, photography is helping people understand the importance of keeping the mighty condor soaring.

And understanding is perhaps the single most important factor in saving the California condor and all of wildlife.

F-1

FD 300mm f/2.8L

Canon

Images for all time

On Assignment

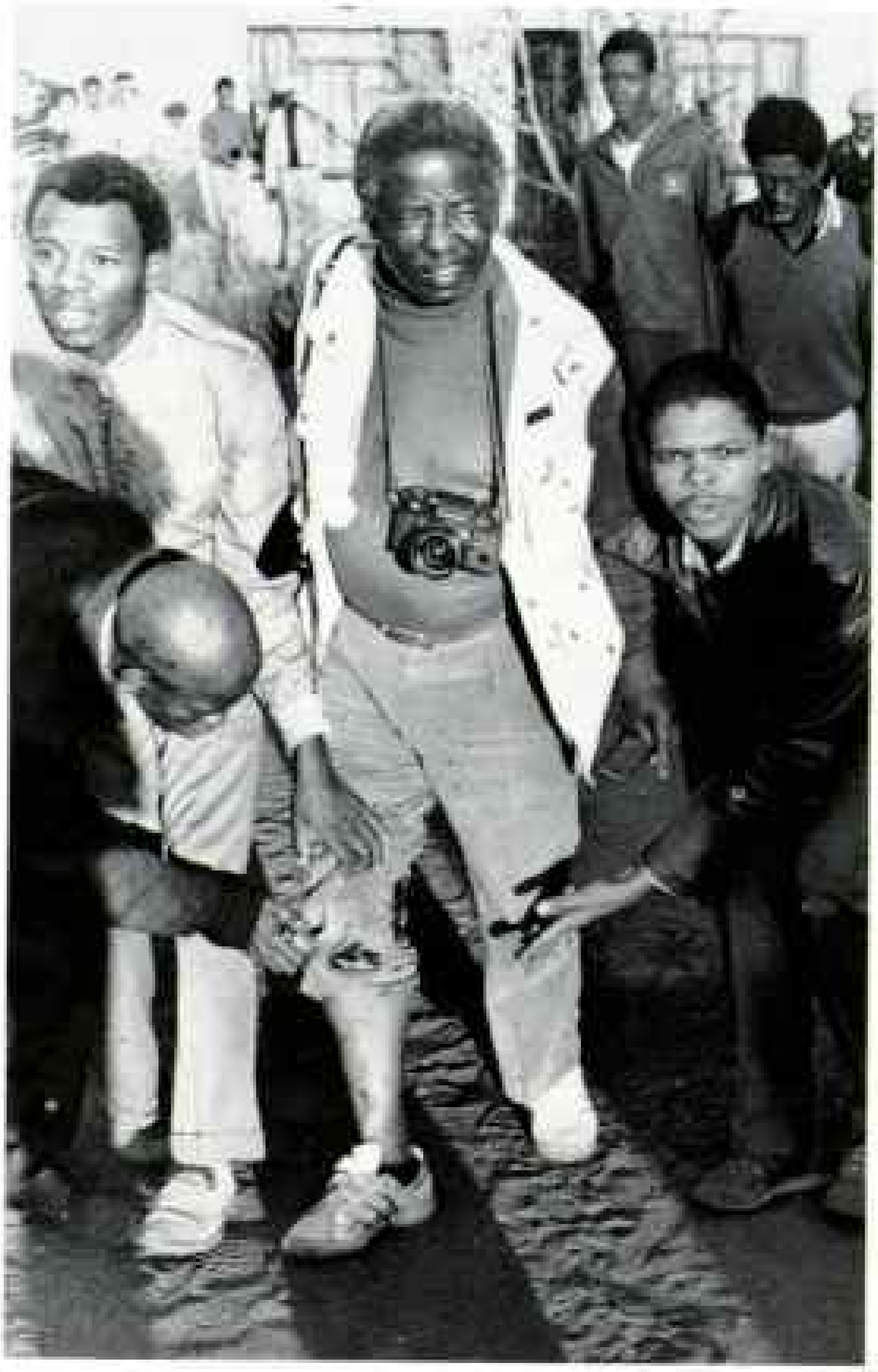
WITHOUT WARNING South African police in an armored vehicle leveled shotguns at a crowd that gathered after the funeral of a woman run over by a police truck in a black township this past July. The mourners turned and ran. Free-lance photographer ***Peter Magubane*** (**below**) took five frames of the fleeing crowd, then began running too. He did not realize that he had been shot in the feet and backs of his legs. Helped into his car, he went for private treatment, for by appearing at a public hospital he, the victim, would likely have been charged with "public violence."

With 17 pellets of lead shot still embedded in him, one wound still oozing, he pressed on to complete his coverage for NATIONAL GEOGRAPHIC of the Ndebele people.

Such dangers have often confronted the 54-year-old South African photojournalist. In June 1969, while working for the *Rand Daily Mail,* Magubane was arrested for allegedly conspiring to overthrow the state. When first jailed, he was forced to stand with each foot on a stack of bricks while police interrogated him—day and night for five days. He was held without bail in solitary confinement in Pretoria Central Prison until September 14, 1970.

Though twice acquitted of the charges, he was "banned" within his own country for five years. He was forbidden to attend gatherings, associate with more than one person at a time, leave Johannesburg without permission, or pursue his profession. He survived mainly by buying goods at auction and reselling them.

Yet he never put his cameras away and has published seven books, including two on Soweto, the giant black township outside Johannesburg. His *Magubane's South Africa* was banned in South Africa for seven years.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Now based in New York City, Magubane returned to South Africa last November to cover the continuing violence. New restrictions had been placed on the press, but whatever rapport he had from years of dealings with the police promised little help. "The senior officers know me, but they are not where the trouble is; they're behind desks. So I'm just another photographer."