VOL. 162, NO. 1 JULY 1982

NATIONAL GEOGRAPHIC

IN THE WAKE OF سندباد

CARRARA MARBLE: TOMBSTONE OF ETERNITY 42

PERU'S PILGRIMAGE TO THE SKY 80

WILLA CATHER: VOICE OF THE AMERICAN FRONTIER 71

THE IVORY COAST— AFRICAN SUCCESS STORY 94

UNEARTHING THE OLDEST KNOWN MAYA 126

OFFICIAL JOURNAL OF THE NATIONAL GEOGRAPHIC SOCIETY WASHINGTON, D.C.

SALVAGE archaeologists—gleaners as they're called—work behind, around, and ahead of the bulldozers of this world, saving archaeological information from obliteration by construction projects. Hardly a ditch is dug in London without a survey for Roman artifacts. Knowledge of a third-millennium Bronze Age culture in Thailand was troweled from land to be flooded by a Mekong River dam. Some of the richest finds of Aztec civilization were uncovered when archaeologists suspended work on the Mexico City subway.

Last November at Windy Gap, 8,000 feet up in the Colorado Rockies and 60 miles northwest of Denver, orange stains were exposed in the soil of a pipeline trench. Archaeologist Charles Wheeler—whose company, Western Cultural Resource Management, had been contracted to monitor the pipeline project as required by federal law—halted work. And thus began the rewriting of the history of Archaic man in the United States.

The orange stains marked the oldest permanent structures ever found in the West, and probably in the country. Preliminary studies suggest mud-and-wattle shelters. Radiocarbon dates indicate habitation over a span of 4,000 years, beginning about 8,000 years ago—a time when early Americans were thought to have been only nomadic. These people mined a nearby outcrop of jasper to make spearpoints and scraping tools.

When study costs exceeded the budget of the Northern Colorado Water Conservancy District, Arthur C. Townsend, Colorado's historic preservation officer, began a search for funding. Secretary of the Interior James Watt made an appeal for funds. The National Geographic Society, among others, responded. The National Trust for Historic Preservation made a substantial grant from its Endangered Properties Fund. The Johnson Bros. Corporation generously agreed to hold up pipeline work until July 31 while the two-foot layer of ancient debris is studied. Dr. Jeffrey Kenyon of the U. S. Bureau of Reclamation assigned seven archaeologists.

Before the bulldozers roll again next month, Windy Gap will have been gleaned of its archaeological treasure, and our understanding of Archaic America will be changed forever. We will keep you informed.

Wilbur E. Garrett

EDITOR

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COVER: *Emblem of Oman marks the billowing sails of Sohar, an Arab boom coursing the seas that Sindbad sailed. Photograph by Richard Greenhill.*

IN THE WAKE OF sindbad

By TIM SEVERIN
Photographs by RICHARD GREENHILL

*"**My destiny** makes a strange tale," said Sindbad the Sailor, the legendary Arab adventurer who the author believes is a composite of historical figures. A noble (**above**), reminiscent of Sindbad, decorates the cover of a 1932 edition of "The Thousand and One Nights," which contains the seven voyages of Sindbad the Sailor.*

*In search of Sindbad, the author, sponsored by the government of Oman, sailed from Oman to China in a reconstructed merchant ship of Sindbad's era, depicted in stylized form in a 13th-century manuscript (**right**).*

ILLUSTRATION BY JOSÉ SEGRELLES, © 1932, SALVAT EDITORES, BARCELONA

THE SQUALL STRUCK at dusk—sudden and vicious as the slap of an open palm, powerfully delivered.

Staggering under the blow, the ship heeled sharply, swinging broadside to the wind. The sea burst in through the lee scuppers and swirled across the deck. There was a rumbling crash from below as everything loose tumbled across the ship. Men sleeping on the weather side were thrown from their bunks. Others on deck grabbed onto ropes for handholds and clung on against the heart-stopping angle of the ship's deck.

Out of the black squall came jagged bolts of lightning, bursting over our heads like shrapnel. As I peered forward along the deck, each blaze of lightning froze the images of my crew on my retina—images of grimacing faces, straining arms, hands clenched on ropes, feet braced against gunwales for purchase.

Turbaned figures sprang like genies out of hatchways and came racing down the deck, shouting, not in panic but in exhilaration. They were men elated by the thrill of danger at sea. Experienced hands put the tiller hard over, and the bow swung slowly up into the wind. Other hands slacked off the main and mizzen sheets, and amid the crash of the waves and the hiss of rain on deck, the ship straightened up and began to surge forward once more like a well-trained acrobat that has recovered his footing after a near disaster.

An hour later the squall line was safely downwind, and the ship's rigging took on its usual elegant tracery against the stars of the night sky. Above my head swelled out the three distinctive triangular sails, each with its crimson crest: two crossed battle swords and a hooked dagger.

In the waist of the ship hung a lantern. There the off-duty watch had gathered to relax after the squall. They were a piratical-looking crew, I thought. A few wore shorts, but

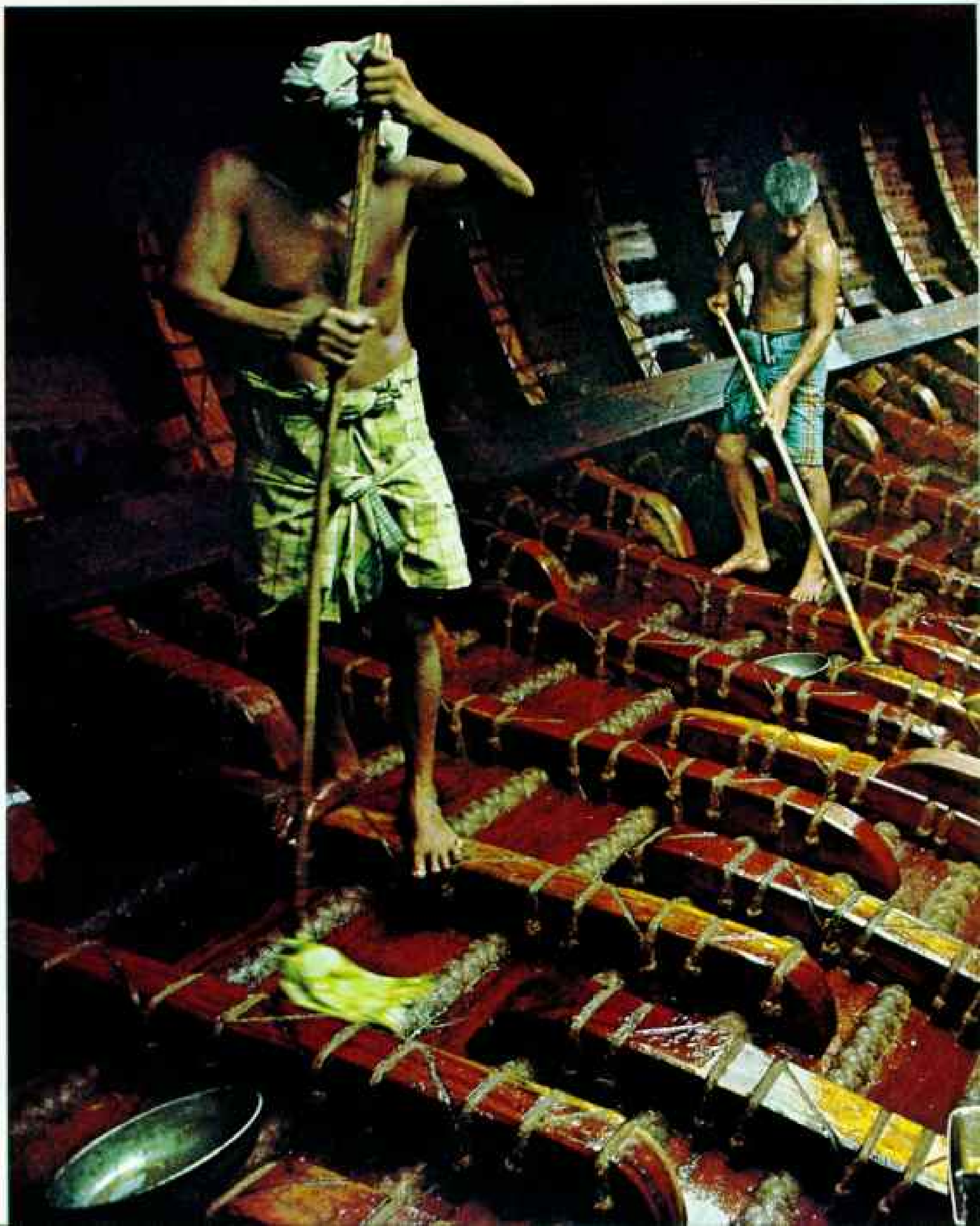
القرآن ثم ورد بعد ذلك طير يلاقيها وخارق جلاها وقال اركبوا فيها بسم الله مجراها
ومرساها ثم بقي نفس المعذبين او عباد الله المكرمين وقال اما انا

Some 400 miles of coir—*rope made of coconut fibers rolled and twisted by hand—lash the timbers of Severin's craft at Sur, Oman, where for centuries Arab shipwrights built vessels that sailed to Africa and Asia.*

*With laborious precision, timbers were shaped with hand tools and 20,000 holes were drilled. The coir was threaded by craftsmen from India's Agatti Island, where the art of sewing a ship together survives. Afterwards they pack the holes with a waterproof mix of lime and tree gum (**right**). Inside the hull (**below**), workmen wielding mops dipped in vegetable oil preserve the coir.*

Earlier Severin had prowled the forests of India's Malabar Coast to secure 140 tons of aini wood—similar to teak—for construction of the hull. From one giant log came the 52-foot hand-hewn keel.

Lime was applied below the waterline to repel shipworms, and fish



oil was smeared on the hull as a preservative. For masts and spars Severin chose poon trees from Beypore, India, once used for the same purpose by the Royal Navy.

No stranger to adventurous voyaging, Severin sailed from Ireland to Newfoundland in 1976-77 in Brendan, a 36-foot leather-and-wood craft, giving credence to a legend that lays the discovery of the New World to a sixth-century Irish monk.

BOTH BY BRUCE FOSTER

most preferred loincloths and nearly half wore turbans. The color of their skins ranged from ebony through shades of brown to sunburned pink. Some spoke in English; others in Arabic. It was almost a scene out of *The Arabian Nights Entertainments*, that collection of tales of adventure and romance that has delighted listeners for centuries and includes the voyages of Sindbad. Indeed, that was the whole point: In a sense it was Sindbad's ship we were sailing.

OUR VOYAGE had its origin three years earlier in another epic involving a legendary sailor. In 1976-77, with a crew of four, I had sailed a 36-foot boat made of wood and leather from Ireland across the North Atlantic to prove the feasibility of the legend of St. Brendan.* Early chronicles maintain that in the sixth century A.D. an Irish monk by the name of Brendan set sail with a crew of fellow monks and eventually reached the "Land Promised to the Saints"—presumably North America.

Though no tangible evidence of that voyage exists, the success of our transatlantic crossing in a boat such as the Irish used in his day proved that the Brendan legend may have been based upon fact.

So it is, in my view, with Sindbad the Sailor—or Sindbad of the Sea. His seven voyages described in *The Thousand and One Nights*, as Arabs call *The Arabian Nights*, are based on real voyages by real sailors.

We know that Arab navigators were exploring the sea routes far to the east of their homelands soon after St. Brendan was said to have braved the Atlantic. The exotic lands and peoples that Sindbad encountered have intriguing parallels with actual lands described by the early Arab geographers.

The more I delved into the legend of Sindbad, the more I suspected that he was no mere fictional hero of children's tales. Rather, he was a composite figure, an amalgam of the Arab sea captains and merchants who ventured to the limits of the known world in the golden age of Arab sail between the 8th and 11th centuries.

So, as with St. Brendan, I determined to re-create the voyages of Sindbad. I would build a replica of an Arab merchant ship of his era and sail her along the route that was the supreme achievement of Arab seafaring—the 6,000-mile voyage to the fabled ports of China (map, pages 12-13). I hoped that this experience, a step a thousand years back into the past, would help us understand how the early Arabs built and sailed their ships, how they navigated, and how the adventures of Sindbad had arisen.

Such a task was more challenging even than building the little leather-and-wood *Brendan*. It meant the research, design, and building of an early medieval Arab ship. It meant finding and training a crew to sail such a vessel and gathering the necessary supplies and equipment for a voyage that could take the better part of a year.

WHAT DID a medieval Arab ship look like? Arab shipwrights do not use drawings or plans when they build a ship. They work entirely by eye, and probably have always done so. Thus the only early Arab illustrations of ships are highly stylized drawings that give no sense of practical design (page 3). But on a Portuguese chart of the Indian Ocean dated 1521, I found pictures of an early Arab *boom*. It matched the details I could cull from the early Arab texts, details of size and capacity, of speed and construction.

The boom could also be sewn, not nailed, together, and that was vitally important. If my replica was to be authentic, it would literally be held together with cord instead of nails. It seemed a bizarre notion. Yet early travelers, including Marco Polo, had noted that Arab ships were stitched together with cord made from coconut-husk fiber. It was said that the Arabs could not use nails in their ships because there were great magnets at the bottom of the sea that dragged all the iron out of passing ships.

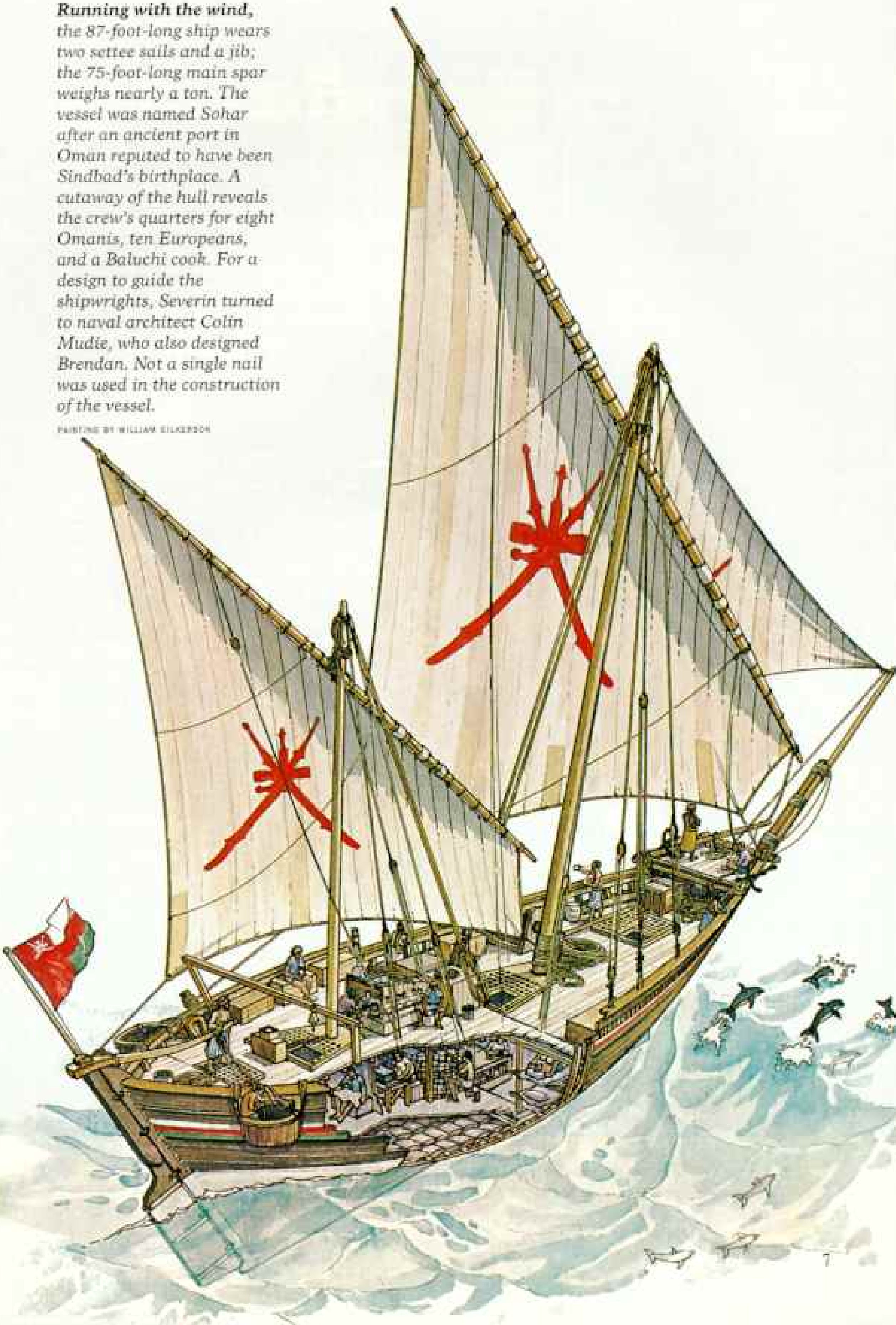
Searching for more data about traditional Arab vessels, I visited the Sultanate of Oman. Lying at the entrance of the Persian Gulf, Oman has a remarkable maritime heritage. The "ships of Oman" were mentioned frequently in early texts.

Equally important, Oman has retained an unbroken tradition of Arab shipbuilding. Until 1970 *(Continued on page 11)*

*The author's account appeared in the December 1977 NATIONAL GEOGRAPHIC. His book detailing his latest adventure, *The Sindbad Voyage*, will be published this fall by G. P. Putnam's Sons, New York.

Running with the wind, *the 87-foot-long ship wears two settee sails and a jib; the 75-foot-long main spar weighs nearly a ton. The vessel was named Sohar after an ancient port in Oman reputed to have been Sindbad's birthplace. A cutaway of the hull reveals the crew's quarters for eight Omanis, ten Europeans, and a Baluchi cook. For a design to guide the shipwrights, Severin turned to naval architect Colin Mudie, who also designed Brendan. Not a single nail was used in the construction of the vessel.*

PAINTING BY WILLIAM GILGERSON



*"**My vessel was alive.** I could hear the chuckle and gurgle of the tide running past the skin of the ship," said Severin of the day he stood in the bilges checking for leaks after the launching ceremony at Sur. The Omani flag flies from the*

BRUCE FOSTER

stern of the ship, whose mast is still unstepped. With prodigious zeal, carpenters had performed a task that many thought impossible. The ship was built in a mere 165 days; skeptics said it would take three years.

Oman was virtually a closed country, its people living as they did almost since the foundation of Islam. Then, with the accession of its able young sultan, Qaboos bin Said, the country suddenly began to emerge into the modern world.*

The beaches and ports of Oman provided me with useful examples of traditional Arab ships and shipbuilding techniques, but, above all, the Omanis themselves gave me their friendship and a sympathetic hearing for my project. I was welcomed to Muscat, the capital, by the Minister of National Heritage and Culture, His Highness Sayyid Faisel bin Ali Al Said. At the minister's invitation I showed a film of the *Brendan* voyage and outlined the Sindbad project.

Two weeks later Sayyid Faisel sent word that the sultan himself had approved the project and that the Ministry of National Heritage and Culture would sponsor it.

Unsure of just what "sponsorship" meant, I found myself soon afterward in the minister's office again. In the most delicate and gracious manner he conveyed the message: Oman would meet the entire cost of the project from the sultan's private purse—ship, crew, voyage, and all—on behalf of the people of Oman and the Arab world. I was stunned. It seemed that in Oman at least, the Arabian Nights still existed.

THE FOLLOWING year remains a blur of travel, research, negotiations, agreements, delays, and minor setbacks, all combined with gradual progress.

One of the few requests Sayyid Faisel made was that our voyage begin by November 23, 1980, during the celebration of the tenth anniversary of Sultan Qaboos's rule. That gave me less than 15 months in which to design the ship, locate materials, build it, assemble a crew, collect supplies, lay out a route, and seek permission from governments along the way, including the People's Republic of China.

As the first step I chose a building site that seemed to augur well for the project: the coastal town of Sur on Oman's easternmost point. Here for centuries Arab shipwrights constructed the Omani merchant vessels that roamed from Zanzibar in the south to India and Sri Lanka (Ceylon) in the east, in quest of timber, spices, and ivory.

Colin Mudie, a British naval architect who had produced the vital drawings for *Brendan*, now did the same for a medieval Arab boom, working with the data I could provide him and his own flair for understanding early shipbuilding methods.

Finding the materials for the ship was a tortuous quest. Lacking good boatbuilding timber of their own, Arab shipwrights in the past imported teak from India's Malabar Coast. In 1979, however, the Indian government prohibited the export of raw teak. Luckily, by oversight a very similar timber called *aini* was left off the banned list.

PAINTING BY ARTHUR SZYK FROM THE ARABIAN NIGHTS ENTERTAINMENTS, COURTESY HERITAGE PRESS, NORWALK, CONNECTICUT

*"**The promptings of my soul,**" as well as the desire for profit, incited Sindbad **(above)** to voyage after voyage, despite shipwreck, near starvation, and encounters with cannibals, ogres, apes, and giant serpents. After each trip he settled down to enjoy his riches, until the promptings stirred again.*

*Sheets taut, Sohar sails proudly in the Indian Ocean **(facing page)**.*

*See "Oman, Guardian of the Gulf," by Thomas J. Abercrombie, in the September 1981 GEOGRAPHIC.

master mariners, skillful traders

SEVEN CENTURIES before Columbus, Arabs mastered the route to China to seek the riches of the Orient: camphor and cinnamon, pepper and ambergris, silk, gold, gems, porcelain, and sandalwood.

The dependability of the monsoon winds (despite Sohar's trial in the doldrums), the navigators' sure knowledge of the stars, and the zeal to succeed made possible voyages a quarter of the way round the world.

In seven visits to the forests of western India, I located, marked, and arranged the felling of the aini trees I needed. More than 140 tons of logs were dragged out of the forests by elephants, taken down to the coast, and shipped to Sur.

The search for men who still knew how to stitch a ship together with coconut cord was equally time-consuming. Until recently, small boats in Oman were still built in this fashion, but the technique is almost gone. Besides, I needed men who could sew together planks up to three inches thick.

Such men, I learned, lived on Agatti Island in the remote Lakshadweep Territory 245 miles off the southwest coast of India. Curiously enough, it was to the islands of Lakshadweep that the Arab shipbuilders of Sindbad's day had also gone to get their coconut rope. Now from Agatti I hired ten rope workers and purchased the 400 miles of coconut cord for the replica ship.

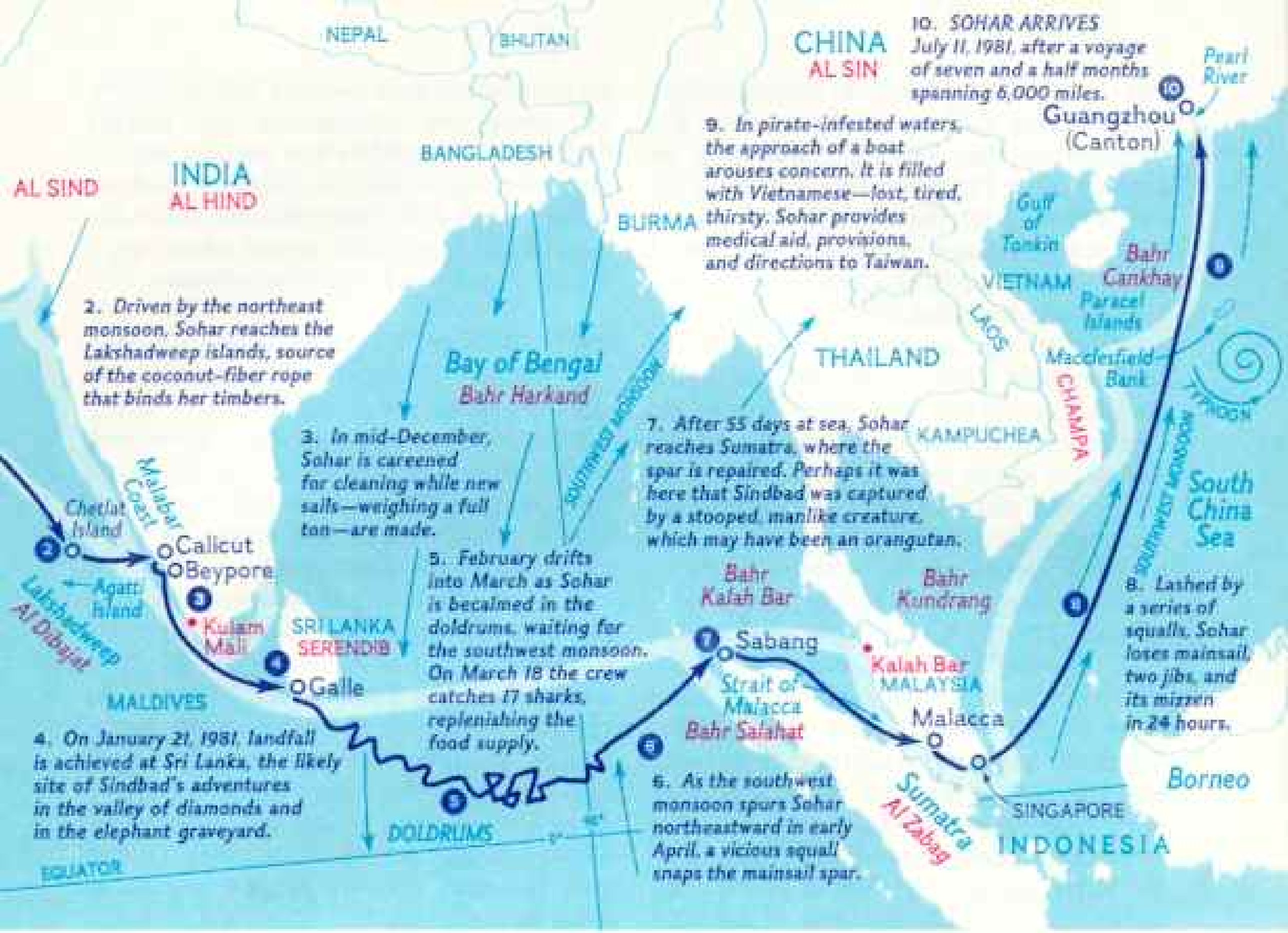
This rope was very special. It had to be made from the husks of coconuts rotted in seawater, not fresh water; pounded with wooden mallets—for iron hammers would weaken the fiber—and spun by hand. Rope made by machine was not strong enough.

By New Year's Day 1980 the shipbuilding team had assembled at Sur. Besides the rope workers, there were a dozen Omani shipwrights and a contingent of Indian carpenters from Malabar.

The Omanis worked with razor-sharp adzes, chopping out ribs for the vessel. The Indians preferred to use soft-iron chisels. With these they could shape out the intricate curves of a hull plank and cut complicated joints in the great beams. They shaped the 60-foot mainmast from a single tree trunk as if it had been turned on a giant lathe.

The beach at Sur rang with the clatter of mallets on chisels and the thump of adzes as the hull began to rise from the huge 52-foot keel. If the ship was to be ready by November 23, there was not a moment to be lost, and my team learned that there was no point in asking me when a job should be done. The answer was the same: "Today." Inevitably I earned a nickname among the workmen, "Sayyid Al Yom—Mr. Today."

The men's effort was stupendous, even in



the heat of summer, with the temperature at 118°F. By July we were on the last lap, plugging the 20,000 hand-drilled holes through which the coconut cords passed, holding the vessel together. On the inside the holes were plugged with coconut husk; on the outside with a mixture of lime and tree gum.

Finally the interior of the ship was swabbed with vegetable oil as a preservative. The rope workers told me that if regularly oiled the ship would last 60 to 100 years. By contrast a nailed ship had only ten years before every nail had to be replaced.

Then, after the most exuberant launch party I have ever witnessed, the ship took to the water. Tribesmen from Oman's interior, fishermen from the coastal villages, old sea captains from Sur, all magnificent in festival robes, gathered to dance, sing, and celebrate the birth of a new ship. And at the personal request of the sultan she received her name. She was called after the Omani city that had been famous throughout the Arab world during the time of the China voyages. The same city was reputed to be the birthplace of Sindbad himself. She was called *Sohar*.

THE FINAL WEEKS were devoted to fitting out and selecting a crew. One of the first volunteers was a young corporal from the marine division of the Royal Oman Police by the name of Khamees. Boarding *Sohar* in the harbor of Muscat where we had moved her, Khamees presented himself to me in immaculate uniform and saluted with such force that he literally bounced up and down from the aftershock.

"Khamees, sir!" he barked in proper military style, then added with a huge grin, "I wish to sail to China." There was no resisting such enthusiasm or spit-and-polish air, and Khamees was promptly signed on. Seven more Omanis followed, most of them civilians with seafaring backgrounds, but one of them was an officer in the Royal Oman Navy, also named Khamees. To distinguish between the two, we nicknamed them "Khamees Police" and "Khamees Navy."

The remaining ten crew members were Westerners. They included three marine biologists who would take samples and run pollution tests, two expert divers, a man to operate our small radio, a film cameraman

and a sound recordist, a photographer, Bruce Foster, and my old friend from the Brendan voyage, Trondur Patursson, an artist from the Faroe Islands. And finally, to our ultimate grief, there was Shanby.

He came aboard at the last moment. I lacked a cook, and he claimed to be one. Shanby was from Baluchistan, a man of indeterminate age, grubby exterior, and the unmistakable air of a survivor. Through a dockside interpreter I made him an offer: He could cook lunch for *Sohar*'s crew, and if it passed the test he was hired.

The meal proved to be a lackluster vegetable curry, but it was edible and Shanby was duly signed on. As it turned out, we were destined to eat the same dismal meal off and on for the better part of a month.

On November 23 a great crowd of well-wishers gathered at the naval base in Muscat to witness our departure. Sayyid Faisel watched the ceremony, and an escort of gunboats, as well as the royal yacht, accompanied *Sohar* out past the headland.

We slipped our tow, and I turned to Trondur at the massive ten-foot tiller. "Course southeast till we clear the land. Make sail."

The Omanis ran to the mainsheet, laid hold, and hauled to a chant of "*Yallah, yallah, w-Allah l-mueen*—Go, go, Allah will help." The huge mainsail, furled to the main spar with light cotton thread, came rippling free, and we were outward bound.

IT IS A GENERAL RULE of deepwater sailing voyages that the first few days are the most frustrating. This is the time when untested ropes part, poorly tied knots come undone or jam tight, fittings snap off, and hours are wasted searching for items that have been buried in the last-minute rush of loading for sea.

So it was with *Sohar*, but as we picked up the northeast monsoon winds from India and sailed down the Arabian Sea at better than four knots, the chaos gradually subsided and life aboard took on a certain rhythm.

Our day began at dawn with prayers by the Omanis, followed by breakfast of bread or pancakes, something that even Shanby couldn't ruin. But he was so abominably lazy and slow at the skillet that latecomers began to confuse breakfast with lunch. The crew was divided into three watches, so that each man stood four hours on duty and eight off, except for emergencies and special tasks. One of the latter was wearing ship, a maneuver equivalent to jibing in modern sailboats but a far more difficult feat with huge lateen-rigged sails, one of whose spars weighed more than a small automobile.

THREE HUNDRED MILES out from Muscat, I began to experiment with the techniques by which early Arabs determined their position at sea. They used stars rather than the sun to calculate latitude, and my Omani crew still referred to specific directions by the names of stars rather than by compass points.

The principal navigation instrument was brilliantly simple. Called a *kamal* (page 22), it was merely a wooden rectangle pierced by a knotted string. The kamal enabled a ship captain to measure the angle of the North Star above the horizon, and from that to calculate his latitude. After practicing with a homemade kamal, I was able to estimate *Sohar*'s latitude within 30 miles of her true position, checked against a sextant observation.

The early Arabs were unable to measure longitude, but they hardly needed to. Coastlines on the route to China run roughly north and south, and as master mariners the Arabs knew them by sight.

As we ran steadily south by east down the Arabian Sea, I was pleased with *Sohar*'s performance. She eased her way through the sea rather than fought it, and handled well.

Our chief complaint was the terrible stench emanating from the bilges. It was hydrogen sulfide, perhaps bacteria-produced, the basic stuff of a schoolboy's stink bomb, and it gave us sore throats and headaches. To the radio it was nearly fatal: The circuitry soon turned black, and the radio sent out an increasingly feeble signal.

Driven on deck by the bilge gas, we spent most of the time in the open air, unless it was raining with tropical intensity.

As with Arab ships of old, the lavatories were twin "balconies" slung over the stern like theater boxes. During hot nights we could stand in the balconies taking showers by dipping water up from the phosphorescent sea with a rope and bucket. It was magical to stand in the darkness as the seawater

ran off one's body in ghostly rivulets, leaving flecks of luminescent plankton behind like fireflies on the skin.

We continued to make good time in the Arabian Sea, logging as many as 80 miles a day. I feared that the Europeans would begin to get bored. They were all active young men, most of them new to the sea, and they found the quarters cramped, the routine monotonous, and Shanby's food appalling.

Not the Omanis. They settled easily into the rhythm of shipboard life. They chatted, sang traditional songs, rigged fishing lines in our wake, and dozed. They could sleep anywhere, stretched out on deck with their turbans unwound and draped over their faces for shade. Yet whenever there was work to be done, they laid into the job with zest.

The Omani habit of chanting in cadence to heavy work was soon adopted by the Westerners as well. They joined in with the measured clap of hands, the stamp of feet, and the rhythmic calls that made the work lighter. To me it was a welcome sign that the crew was welding itself into a unit.

In mid-December we made our first landfall—the tiny island of Chetlat in the Lakshadweeps. Rimmed by dazzling white beaches and aquamarine seas, Chetlat seemed like paradise. But it was paradise sinking beneath the dead hand of officialdom. India maintains tight control, regulating the coconut-crop economy, monopolizing imports, discouraging foreign contacts, and saddling the archipelago with a bloated, inefficient bureaucracy. When I called at Chetlat's police station to show my letter from India's foreign ministry permitting *Sohar* to visit the Lakshadweeps, I noticed an impressive file folder labeled "Chetlat Station Crime Reports."

Historically the Lakshadweeps were famous for their total lack of crime. I asked the police captain if things had changed. "Naturally," he answered with a trace of pride. "The islands have become modern, and so there *must* be crime."

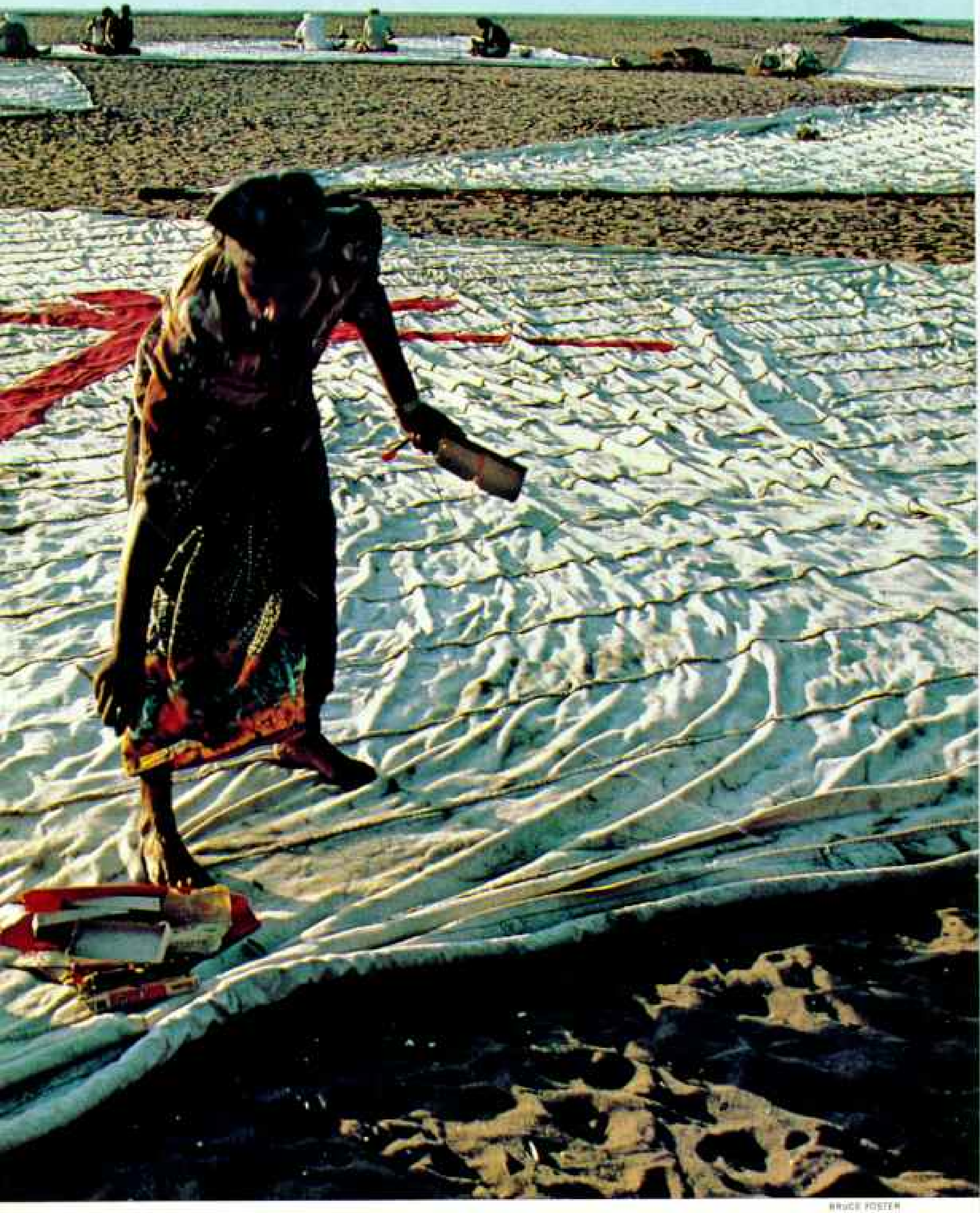
AT BEYPORE, near Calicut, on the Indian mainland Shanby left us by popular demand. During the week-long voyage from Chetlat he had virtually retired, waiting for someone else to do his job, and stealing food when no one was looking. His replacement was Ibrahim, a government clerk who was fed up with office routine. Ibrahim turned out to be a first-class cook.

Beypore provided more than just a good chef for *Sohar;* The port also supplied wives for seven of my Omani crew. This was something of a revelation to me. I knew that for centuries Arab sailors had been coming to Beypore and the nearby city of Calicut, and like sailors all over the world, they married

BRUCE FOSTER

Delicately spread *by foot and by rakes, peppercorns dry in the sun at Calicut on India's lush Malabar Coast. Traditionally, Arab ships called here to trade for pepper. Calicut was Sohar's first continental landfall after leaving Oman, and here the Europeans celebrated Christmas.*

Stitching against time, *Indian fishermen at Beypore turn a ton of canvas into a new set of larger sails to replace Sohar's old ones, wind-worn and baggy after the 1,600-mile voyage from Oman. Severin bought the canvas and, with an*



BRUCE FOSTER

assistant, drew the outlines of the sails on the beach. Thirty men hired for the occasion fell to with such vigor that they completed the sails in five days—a task that would have taken as long as four months in Europe or North America.

local women. Often the men kept two families, one at home in Arabia and one in Calicut. The Muslim community in Calicut was very pleased when their girls married Arab sailors. What I hadn't realized was that the captain of an Arab ship must give permission before a sailor can marry—and he must also make a loan for the wedding payment.

Drawing me aside one morning, Musalam, one of my best sailors, dropped the bombshell. He had met a girl in Calicut he wanted to marry. Could I lend him the money for the present to the girl's family?

"How much do you need?" I asked nervously. "As you wish," he replied politely.

What would he do with his new wife when *Sohar* sailed again? Oh, that was all right, Musalam answered. He would send money to her regularly, and try to arrange that she come to Oman later.

But what about his wife and daughter that he already had at home? They would be delighted, Musalam declared. There would be someone else to help clean house and cook, and the first wife would have more time to spend with the child.

In the end I advanced Musalam 1,000 rupees—roughly $130—out of ship's funds for a wedding gift to his new in-laws, though I considered it a dangerous precedent.

I was never more right. In less than a week every Omani but one, Khamees Navy, had applied for a 1,000-rupee loan and was duly married. We departed Beypore with a freshly scrubbed hull, an additional set of hand-sewn sails, and seven new bridegrooms.

ON THE AFTERNOON of January 21 we raised the welcome coastline of Sri Lanka, or Serendib as the early Arabs called the great island. The name has given us our English term "serendipity."

An offshore haze obscured Adam's Peak, the 7,360-foot landfall familiar to Arab seamen over centuries past (page 20). Islamic legend maintains that on this mountaintop Adam took his first step after being expelled from Eden.

Serendib may well have been the land described in one version of Sindbad's seventh voyage, in which he was captured by pirates and sold into slavery to an ivory dealer. The dealer forced Sindbad to go into the forest every day and kill an elephant for its tusks. Eventually the elephants showed Sindbad their secret graveyard, so that he could obtain the ivory without killing them.

Tame elephants as well as wild ones in Sri Lanka feature in the Sindbad stories. According to *The Thousand and One Nights*, Sindbad twice visited Serendib and reported that its king held magnificent state processions in which he appeared mounted on a huge elephant. Today, as *Sohar*'s crew saw,

BRUCE FOSTER (ABOVE)

"Gems beyond price" *lay before Sindbad's eyes in a stream that may have been in present-day Sri Lanka. Today a miner (***above***) examines alluvial gravel for precious stones. At a perahera, or procession, honoring Buddha, a boy wears finery fit for a prince of Sindbad's day (***facing page***).*

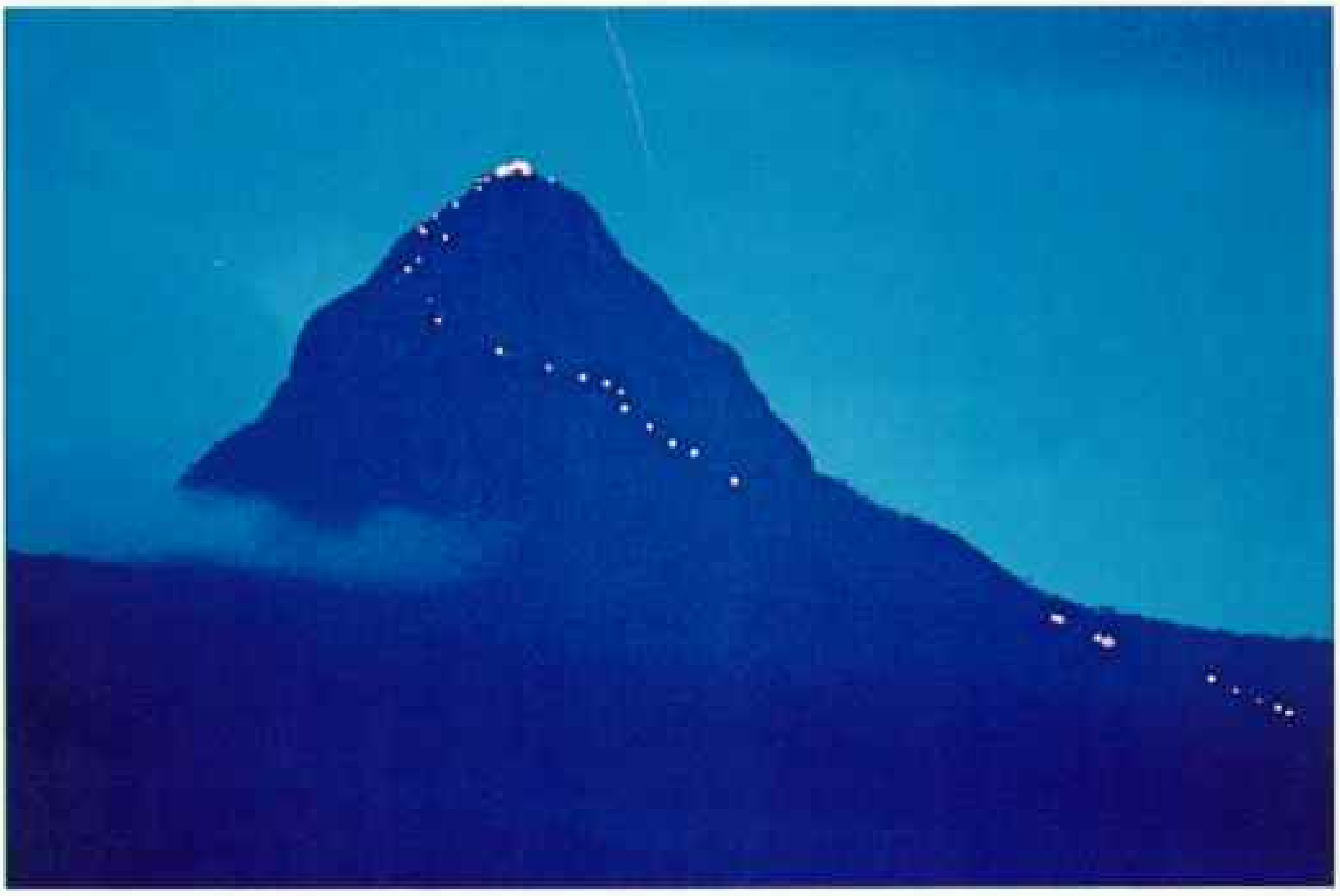
Sri Lanka continues the tradition with the flamboyant *peraheras*, parades held every year when fire dancers and mummers march through the streets. The great elephants caparisoned in brocade are the high point of the show.

Sri Lanka also seems to be the location for the valley of diamonds, where on his second voyage Sindbad managed to elude the swarms of snakes that guarded the valley and emerged with his pockets full of gems.

Although no diamonds are mined in Sri Lanka, the country is world famous for its other precious and semiprecious stones—rubies, topazes, cat's-eyes, and the blue sapphires of Ceylon. As in Sindbad's adventure, the gems are found on the valley floors and are dug from pit shafts sunk in the alluvial gravel. Snakes seek out the cool damp of the pit shafts, and it is perhaps significant that the gem trade is still in the hands of Muslims, whose oldest shrines are the graves of Arab sailors who brought their religion to Sri Lanka in the seventh century.

IN SRI LANKA Richard Greenhill took over from Bruce Foster as our still photographer, and Tim Readman, a friend from Muscat, replaced Trondur, who had to return home. We were also joined by a doctor, Nick Hollis from London. In a day or so the new hands had settled in, and we departed from Sri Lanka to catch the southwest monsoon winds that would carry us eastward to Sumatra.

But the monsoon winds were late, disastrously late. After three weeks we were still 700 miles from Sumatra, and I was beginning to be concerned about our freshwater supply. We used fresh water only for drinking and cooking. Now half our reserve was gone, and I ordered every man to ration himself to as little water as possible. The results were interesting. Some men needed six cupfuls a day; others only half that amount. The best way to reduce water consumption was to keep in the shade, but with the sun high overhead—*Sohar* was at 2° North—the great, limp sails gave little shadow.



Pinpoints of light—*pilgrims' lamps—reveal the trail up 7,360-foot-high Adam's Peak in Sri Lanka. Islam holds that Adam left a giant footprint here after being expelled from Eden. During his sixth voyage Sindbad was shipwrecked on the island, then known as Serendib—the source for the word "serendipity." Sindbad's serendipitous finds included rubies and pearls.*

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"***It rose and rose*** *until I thought that I was about to touch the vault of Heaven," said Sindbad of the giant roc. Marooned on an island on his second voyage, the resourceful wanderer tied himself to a sleeping bird and the next morning was airlifted to a valley littered with diamonds. With them, Sindbad "used life joyously, eating prime meats, drinking delicately, lying soft and dressing rich."*

In the first week of March we had a stroke of luck. A rain shower passed over us, and we rigged tarpaulins to catch fresh water and drain it into our tanks.

TO ALL OF US aboard *Sohar* March 18 became known simply as the "day of the sharks." Around noon a school of fish resembling large mackerel appeared beneath the becalmed ship. Fishing lines dropped overboard, and soon there were six nice fat fish flopping in a basket on deck. Just as the seventh was being hauled in, a four-foot shark emerged from the depths, swallowed the fish, then turned with a rush and snapped the line.

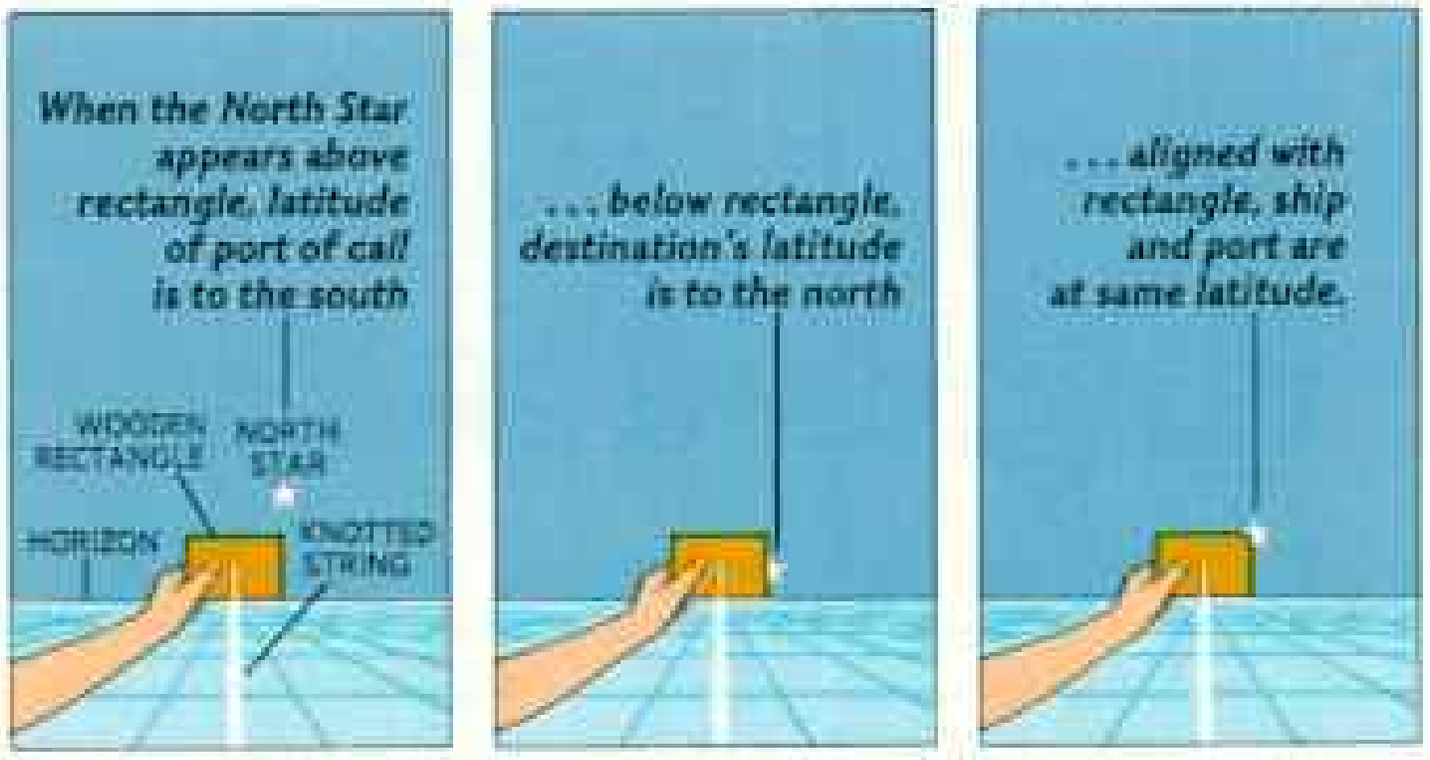
Suddenly more than a score of sharks had gathered and were lunging at the school of fish. Quickly, Khamees Police cut a strip from one of the fish in the basket, baited a large hook, and threw it overboard. The next ten minutes were sheer pandemonium.

Shark after shark was hooked and came thrashing aboard, to be subdued by the Omanis with clubs, bats, belaying pins, and even one of the four-foot-long windlass bars. Crash, slap, slither, thump! The sharks were writhing on deck like huge demented springs. The Omanis were dashing back and forth, cheering with delight, clubbing sharks, cutting them loose from hooks, and putting the lines over again.

By now the deck had become a truly hazardous place, with more than a dozen enraged sharks flailing and snapping at anything within reach. It was only a matter of time before someone lost a few fingers or toes, perhaps an entire hand or foot.

"*Bas, bas!*—enough, enough!" I shouted. We already had more shark meat than we could possibly use. Slowly the commotion subsided. Clubs were put aside, lines coiled, shark bodies heaped by the cooking area, and the decks swabbed clean of blood. The

DIAGRAM BY NATIONAL GEOGRAPHIC ART DIVISION



The North Star, a wooden rectangle, and knotted string guided Arabs at sea.

Steering by Polaris, *the North Star, Arab seafarers of old used a kamal, a kind of sextant, to measure latitude. At dusk, Severin* ***(left)*** *demonstrates the technique to one of the Omani crew members.*

In his left hand he holds the kamal, a wooden rectangle, with its bottom edge on the horizon. A knotted string held in his teeth, each knot representing the latitude of a known port, tethers the kamal at the proper distance. The position of Polaris in reference to the kamal helps determine the ship's course ***(diagrams at left)****.*

final tally: 17 sharks in 20 minutes. They yielded a quarter of a ton of meat, which we salted and dried in the sun.

Five days after the shark episode we almost lost our new photographer, Richard Greenhill. Richard is a great gangling heron of a man, with a beak of a nose, a questing eye, and a stoop to his shoulders, all of which make him look as if he is wading through the shallows in search of fish.

Day and night Richard stalked about in search of pictures, oblivious of the hazards of a sailing ship. If he walked across the decks, he tripped over a hatch. If he sat down, a swinging rope end knocked off his straw hat. If he put down his mug of tea, it promptly slid into the scuppers. Somehow Richard could make even a flat calm seem as if the ship were pitching in a high sea.

Richard's close call came about in typical fashion: One calm day he decided to photograph *Sohar* from some distance away with his latest homemade contraption, a bamboo pole with a camera mounted on top. He swam off and was a good hundred yards away when a breeze sprang up.

On board everyone started yelling "Wind! Wind!" When Richard finally realized what had happened, he began thrashing in our direction, still clutching the pole and camera. I ordered *Sohar*'s sails backed to slow her down, but even so, Richard only just made it to the end of the safety line that always trailed in our wake.

Richard was hauled aboard like a gasping flounder and we agreed he should never leave the ship again without permission—at least not in mid-ocean.

ON APRIL 5, two months after we left Sri Lanka, the doldrums eased their grip on *Sohar*. The first stirrings of the southwest monsoon filled her sails, and we began to make real progress toward Sumatra. Then, early one morning, we suffered a serious mishap. The rising wind veered abruptly, got on the wrong side of the mainsail, and pressed the 75-foot-long main spar against the mast. The spar snapped in a trice. The huge sail hung like a broken wing. *Sohar* was a crippled ship. Carefully we lowered the shattered spar. One section was sweeping back and forth across the deck like a deadly scythe that could have maimed a man. In the light of a gray, depressing dawn, we salvaged the wreckage. By cutting clean the jagged end of the longer section, we made a jury rig. The spare mizzen was set on the shortened spar and hoisted aloft. *Sohar*'s speed was reduced by a third.

On April 15 we sighted the northern approach to the Strait of Malacca, the great ocean corridor for traffic between the Middle East and the Orient, especially oil tankers serving Japan. A line of nine or ten large ships bore down on us as we neared the strait; then a gust of wind and rain suddenly blotted them out. I felt for all the world like a pedestrian stepping blindfolded into the fast lane of an expressway during a rainstorm, but *Sohar* came through safely.

Three days later we finally made port at Sabang, on an island just off the northern tip of Sumatra. We had been at sea for 55 days, and Sabang looked as beautiful to us as it must have to our predecessors of old.

Sabang's giant neighbor, Sumatra, was known as the Land of Gold. Its ruler was said to be so rich that he threw a solid gold brick into his palace pool every morning to demonstrate his wealth. Yet for all its beauty the Land of Gold was regarded with dread by early Arab visitors, who claimed that the inhabitants were ferocious cannibals. But for his quick wits Sindbad himself might have been their victim.

It happened during his fourth voyage, when he and his crew were wrecked off an island. The natives took the castaways to their king and offered them food. Sindbad grew suspicious and declined to eat, noticing that as his shipmates did so they seemed to fall into a stupor.

Days passed. Sindbad still refused to eat while his crew continued to feast, growing gross and fat. It wasn't long before he discovered that the natives were dining on human flesh. Horrified, he slipped away from the cannibal village. As he fled, he passed a field where his companions were on all fours, cropping the grass like cattle, watched over by a herdsman.

Hashish, used in northern Sumatra as a flavor in food, may have been one source for this gruesome yarn, as well as the existence of man-eating tribes in Sumatra.

Another incident, during the fifth voyage, also suggests *(Continued on page 29)*

Sails hang limp in the doldrums *south of Sri Lanka, where Sohar drifted for weeks waiting for the southwest monsoon. After Richard Greenhill photographed this scene from the water, his camera on a pole, a sudden breeze filled the sails,*

and the crew shouted for him to return as the vessel made way. With an effort worthy of Sindbad himself, Greenhill managed to reach the end of the ship's safety line and was hauled aboard, after he insisted that his camera be saved first.

Sentry diver *Tim Readman, brandishing a bang stick, guards Peter Dobbs and Richard Dalley from a whitetip shark as the pair fix a damaged rudder in the Indian Ocean (**left**). When the shark swam closer, Readman resorted to noise. "Aboard we heard him growling like a watchdog as he paddled around in a nose-to-nose confrontation with the shark," Severin remembers.*

*Later, crew members caught 17 sharks for food in a furious 20-minute frenzy that left the deck awash with squirming, snapping animals. Abdullah clubs one to death (**above**). Fortunately, Sohar did not encounter the marine monster found in one version of Sindbad's seventh voyage. Opening a mouth "like a valley between two hills," that beast nearly swallowed the vessel.*

(Continued from page 23) knowledge of Sumatra. Sindbad was captured in a forest by a stooped, manlike creature with rough black skin. The creature lived on wild fruit and could not talk. Sindbad's captor was called the Old Man of the Sea; it was probably the great ape of Sumatra, the orangutan.

The surrounding forest provided *Sohar* with a fine tall tree that was shaped into a replacement main spar. The harbor turned out to be a bonanza for the marine biologists, who made a rich haul of specimens. In early May we set off down the Strait of Malacca for Singapore.

WORD of our voyage had preceded us, and we were met in style by the senior Singapore harbor pilot. In his starched white uniform he came aboard clutching a chart and a walkie-talkie.

"I am your pilot," he announced smartly, then spied our enormous ten-foot-long tiller. "But how I am to pilot this vessel I cannot imagine." He had a sudden inspiration. "Perhaps I shall give directions, and you will do the piloting."

So with Musalam at the helm, *Sohar* sailed majestically into Singapore. A dozen oceangoing giants stood aside to let her pass.

A crowd welcomed us at dockside with ceremonial Chinese and Malayan dancing and singing, followed by countless invitations to make ourselves at home in the city.

It was an appealing idea, but we couldn't stay long. I had planned *Sohar's* entire voyage largely around the next and final leg—the passage from Singapore through the South China Sea to our destination, the port of Guangzhou, or Canton, on the Chinese mainland. My aim had been to take advantage of seasonal winds along the way, first the northeast monsoon and then the southwest monsoon, so as to be across the South China Sea before typhoon season.

Now, with the long delay of the southwest monsoon, we were behind schedule. Although the typhoon season normally begins in July, severe storms have been known in the South China Sea as early as May, and we were already into the first week of June.

So we left Singapore after an all-too-brief visit and set our course across the ancient seas known to Arab sailors as the Sea of Kundrang and the Sea of Cankhay. Among the seven seas on the way to China, it was written, these two were the worst. Here one might meet the great storm wind that my modern Omani sailors called *tufan*. It was, I suspect, their word for typhoon.

The first four days out of Singapore were deceptively mild, and I began to think that our luck might hold all the way to Guangzhou. By early on the fifth day I knew better.

Just before dawn we were hit by what I first took to be a squall of moderate proportions. I was not worried. *Sohar* had weathered scores of such squalls in the previous months. But this squall turned out differently. Abruptly it worked up into full gale force. *Sohar's* rigging groaned under

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"An excess of marvel." *So Sindbad* ***(above,*** *hand raised) summed up his voyages to enthralled listeners at his palace in Baghdad.*

On Tekong Besar Island near Singapore ***(facing page)*** *one of the Omani crew also finds an audience. Seven Omanis got married during the voyage, as did Sindbad. Afterward he "lived in the calmness of supreme joy."*

the load, and an alarming cracking sound ran throughout the length of the ship. For a moment I thought she would capsize. Then with a thunderous crack, the mainsail disintegrated.

Relieved of her burden, the ship straightened up. We lowered the wrecked sail and made fast the main spar. It was lucky we did so, for out of the west came an awesome array of storm clouds, rolling and churning like the smoke of a great fire. It was a local phenomenon known as an "arch squall." As soon as it passed we hurried to make sail again, for every day at sea increased the risk of encountering a typhoon.

All that day we ran the gantlet. No less than three arch squalls flailed us, and we lost three more sails—two jibs and a mizzen—blown to shreds. The ship was taking heavy punishment, but her crew held up superbly. It was at the height of one such squall that Khamees Navy dropped to his knees and prayed for *Sohar* and her crew (page 32).

MY LOG for the next five days tells a grim story: two more squalls on June 16th; three on the 17th; four on the 18th; two on the 19th; one on the 20th.

Though the price was high, the squalls were driving us toward our goal. We literally stitched our way out of trouble. Hour after hour we sat on deck, sewing together the mangled sails so that we could press on northward. My log has other entries: an advance of 90 miles one day; 110 miles the next; a record 135 miles the next.

For a week there was not a dry spot aboard *Sohar*. In our state of sodden discomfort we were pleased to find that the swarms of cockroaches that had shared our living quarters since early in the voyage took an obvious dislike to the South China Sea. After a day or two of squalls there was considerable water sloshing about below, and the cockroaches clearly hated getting their feet wet. When *Sohar* was on the port tack, water collected on the opposite side, and all the cockroaches retreated to port. When we changed tacks, the water shifted and an army of disgruntled cockroaches reluctantly broke camp again and moved over to starboard. It was somehow satisfying to know that for *Sohar*'s unwanted guests it was hardly a luxury cruise.

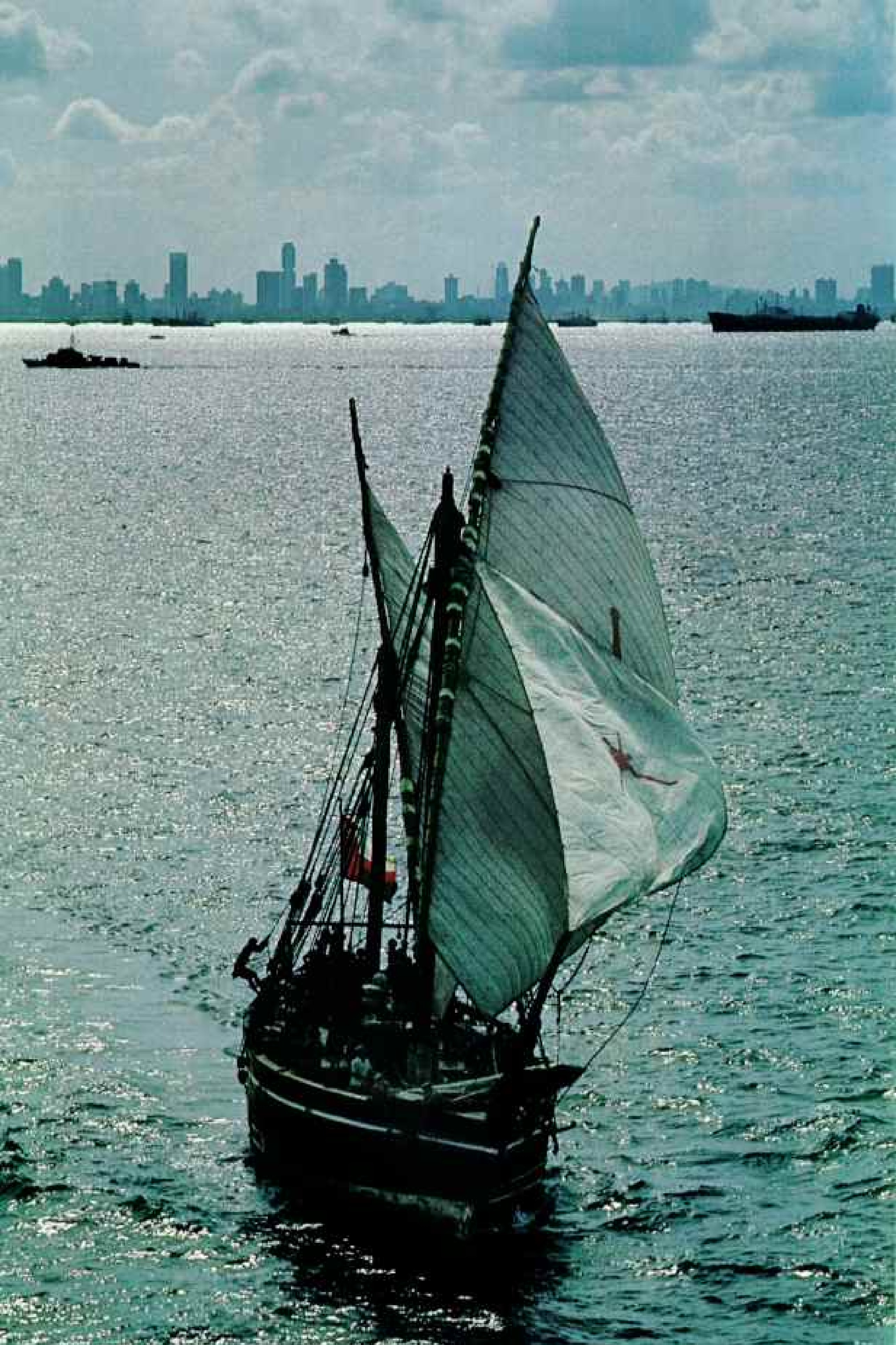
ON JUNE 25, with the arch squalls behind us, we cleared the passage between the Paracel Islands and Macclesfield Bank off the Gulf of Tonkin. We were now only 350 miles from the mouth of the Pearl River, the great waterway leading to our destination, the port of Guangzhou. But we were also in pirate waters, an area where today marauders prey on unarmed vessels. On the afternoon of June 26 it appeared we might need our rifles and gas grenades, borrowed from the sultan's armed forces in case of attack.

Shortly past midday a small motor launch appeared a mile or two astern of us, and through my binoculars I could make out only men aboard. We were too far offshore for coastal fishing grounds, and I recalled the descriptions I had heard of typical South China Sea pirates: groups of well-armed men in fast launches who boarded and robbed small vessels and sometimes murdered their crews. Off Singapore, pirates had even been attacking tankers. As the launch continued to gain on *Sohar*, I ordered the crew to break out their weapons.

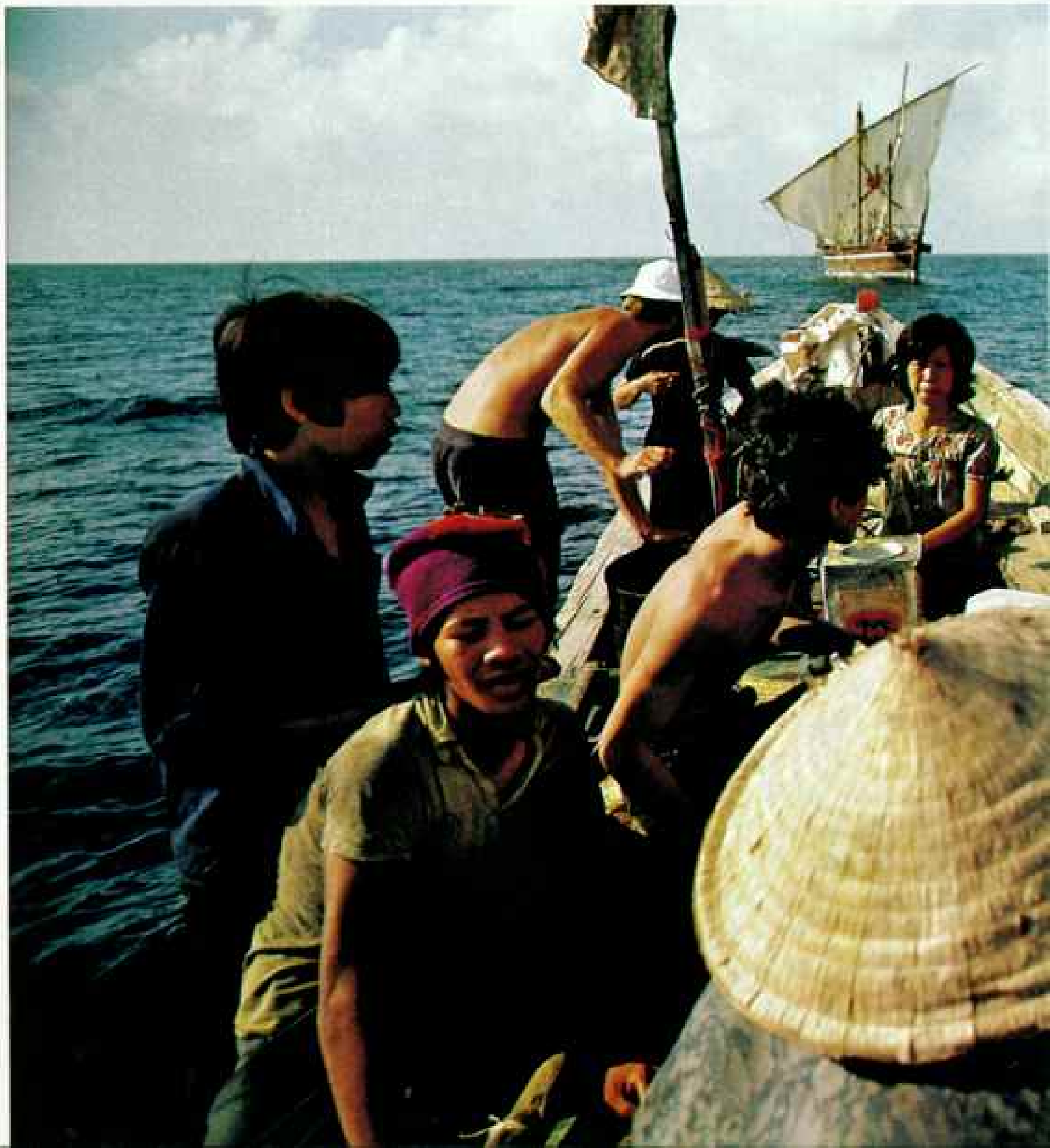
As it turned out, the launch was filled not with pirates but with their potential victims—a group of boat people from Vietnam (pages 34-35). There were seven men, four women, and seven children. They were trying to reach Taiwan, and they were short of fresh water, food, clothing, and other supplies. When they spied *Sohar*'s strange silhouette a mile or two away, they had decided to ask for help but took the precaution of putting the women and children belowdecks.

We did what we could for them, starting with supplies of fresh water, sacks and cartons of food, *(Continued on page 38)*

With mainsail and mizzen *filled by a fair breeze—and crewmen adjusting her jib—Sohar leaves a glass-smooth wake as she departs Singapore. Ahead lies the 1,700-mile sail to Guangzhou, or Canton. It is June, the start of typhoon season in the South China Sea, and the trial of vessel and crew continues.*



"The sea rose in her fury," *Sindbad said of his sixth voyage. In the South China Sea, the men of Sohar keep faith with their predecessor. A sudden squall shreds the mizzen into giant pennants flapping from the spar (**right**). In 24 hours, two jibs and a mainsail are also lost, and the Europeans take notice when one of the veteran Omani sailors kneels and prays to Allah (**below**). Battered but seaworthy, the vessel proceeds. As another storm approaches, the crew hastens to take down the replacement mainsail (**above**).*



Weapons drill *for the pirate-infested waters of the South China Sea finds the men of Sohar at the ready. Musalam* (**left,** *center) checks his rifle while Severin inserts a clip of ammunition into an automatic pistol. Behind him, a crew member practices arm's length aim with another automatic.*

"We had been given grim warnings by the authorities in Singapore," said Severin. "It was estimated that there were some 15,000 pirates, mainly fishermen who preyed on Vietnamese refugees—boat people."

When a small boat filled with men approached from astern, Severin ordered Dobbs and Readman to speed out in the dinghy to reconnoiter. They encountered 18 Vietnamese—the women and children were hiding—crammed into a boat 25 feet long.

*Assistance was immediate. Doctor Nick Hollis (***below left,** *in white hat) treated several cases of sunburn. Other crewmen replaced the craft's tainted drinking water and brought Omani dates and other food. An infant enjoys a cracker (***below right***).*

Severin was able to repair the vessel's compass and through an interpreter drew a rough chart to Taiwan for the skipper. As the Sohar party departed for the ship, a chorus of thanks was their reward.

Sails snugged *as she passes a junk, Sohar proceeds briskly up the Pearl River, under tow by a Chinese tug. Chinese authorities ordered the escort*

when dark clouds to the south portended the season's first typhoon. Later Severin exulted: "We had done it, we had sailed Sohar to China."

Journey's end *spurs a dance of welcome in Guangzhou* ***(right)****. Later, captain, crew, and officials proceed to a reception* ***(below)****. From left: Huang Zhen, Chinese Minister of Cultural Relations; Liu Tianfu, governor of the province; Sayyid Faisel bin Ali Al Said, Omani Minister of National Heritage and Culture; author Severin; and Sheikh Mustahail bin Ahmed Al Masshini, an Omani undersecretary.*

(Continued from page 30) extra clothing, and a medical kit put together by our ship's doctor, Nick Hollis. Nick examined the refugees and pronounced them in fair condition, considering that they had been at sea more than a week and were beginning to suffer from exposure.

We inspected their hull and engine, which also appeared sound, and we repaired their homemade compass, which had run out of flotation fluid and was almost useless.

Then I drew a rough chart with the compass bearings for Taiwan and explained it to one of the women who spoke a word or two of English. The real problem was that no one aboard the launch had any knowledge of the sea, but they had two powerful assets: hope and determination. With an engine, their little boat was traveling faster than we were, and they had a good chance of reaching their goal. We waved good-bye, and soon they were a dwindling dot on the vastness of the sea.

TWO DAYS LATER we sighted the coast of China, dominated by the peak known as Dawanshan at the mouth of the Pearl River. For centuries Dawanshan stood as a beacon to Arabs on their way to the great river port known today as Guangzhou, but which the Arabs called Khanfu. Here Arabs and other foreigners came in such numbers to trade for porcelain and silk that the Chinese appointed a special inspector of customs to look after them.

The mouth of the Pearl River was wide and eerily deserted. The white golf ball of a distant radome atop Dawanshan seemed to regard us with a solitary baleful eye as we held a course up the broad estuary. We anchored for the night in the lee of an island. Two junks shared the anchorage with us, but the fishermen took no notice of us, and we were surrounded by ghostly silence.

The next afternoon we finally made contact with our hosts. As we continued to trudge upriver, a fast gunboat suddenly

Towering spire *of the minaret of the Huaisheng Mosque in Guangzhou looms above two Omanis, sheltered from the rain by Chinese hosts. The mosque, according to legend, was built in A. D. 627 by an uncle of Muhammad.*

Brothers of the spirit with Sindbad, two young Chinese ***(facing page)*** *in a Guangzhou park wear merchant seamen's uniforms. After his 27-year-long seventh voyage, Sindbad was "definitely cured . . . of any further desire for travel." He spun his final tale and settled down to a tranquil life.*

swept down on us and began blinking frantically with its signal lamp. We couldn't read the message, so we simply raised the Chinese courtesy flag and dropped anchor. Apparently satisfied, the boat sped off upriver.

The next morning a large tug appeared, and a voice in excellent English crackled over the radio: "How do you do? I am Mr. Liu from the Chinese Foreign Office, and I have come from Guangzhou to meet you."

Falling in with the formal mood of the moment, I answered politely: "How do you do, I am Tim Severin, and my crew and I have come from Oman to meet *you*."

With that we were towed to Guangzhou for a joyous welcome. We had missed the season's first typhoon by just 48 hours.

THE KINDNESS of our Chinese hosts was memorable. At Guangzhou they took us on tours of the city and fed us as if we hadn't had a meal for the entire voyage. It had taken us seven and a half months to sail 6,000 miles, and Guangzhou seemed one continuous banquet.

Above all, the Chinese seemed to appreciate that what we had done had been the product of teamwork, a quality they valued deeply, and they showed obvious pleasure in reestablishing their historic link with the Arab world—a link that the Sindbad voyage had come to symbolize.

For the welcome ceremony my friend, Sayyid Faisel, Oman's Minister of National Heritage and Culture, flew in with an official delegation on one of the sultan's planes. To greet them a group of high-ranking Chinese dignitaries arrived from Beijing.

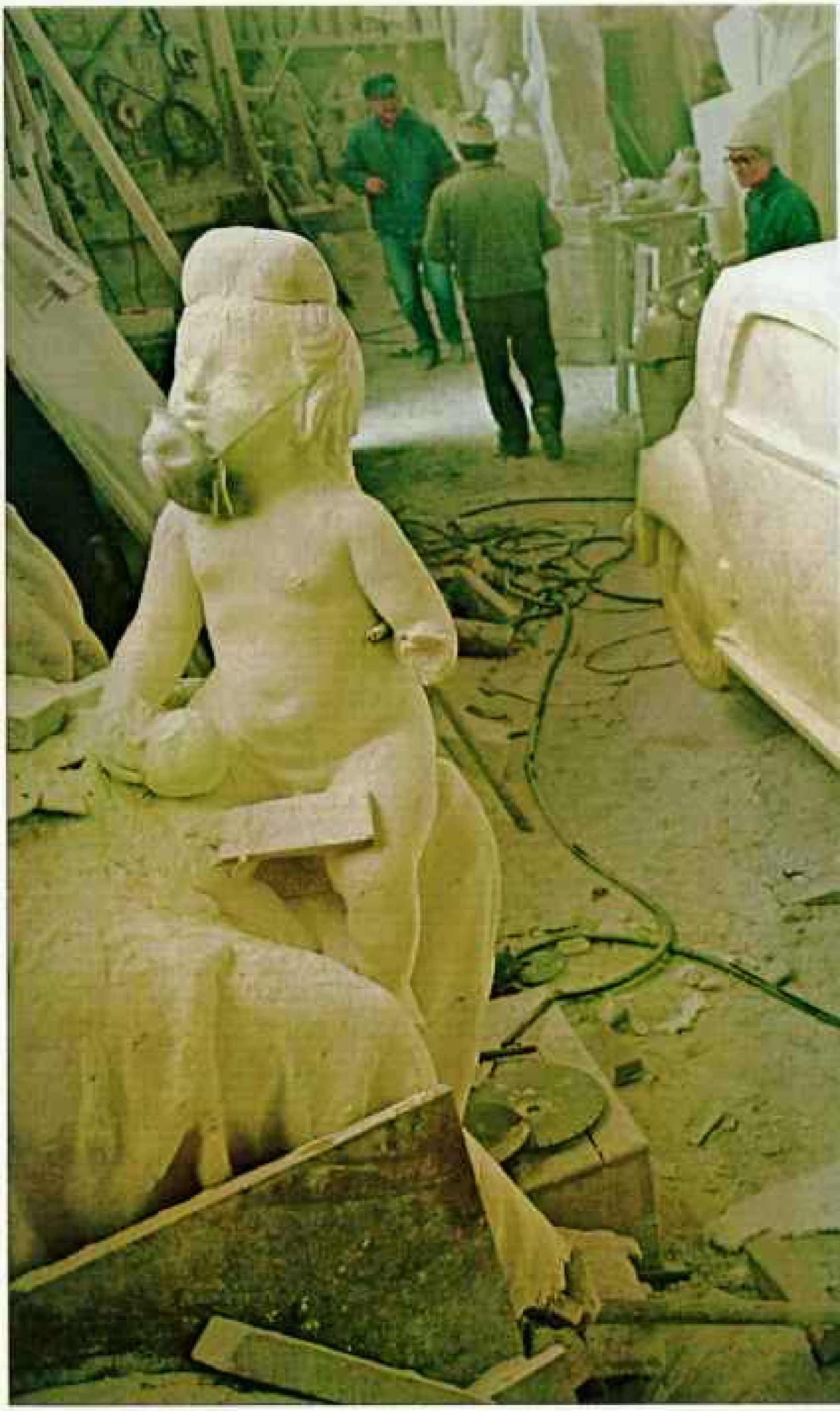
When it came to my turn to speak at the ceremony, I felt a pang of regret. It was, I realized, the last time my crew would be together. We had done what we had set out to do: We had traced the Sindbad stories for a quarter of the way round the world. Now our great adventure was ending.

Sohar, too, had served the purpose for which she had been built. Soon she would be shipped back to Muscat and put on display. The enthusiasm and generosity of the sultan and the people of Oman, and the tenacity of the men who built and sailed *Sohar*, had made the Sindbad voyage a reality. Now that voyage, like Sindbad's seven voyages, would become another tale. □


YAMAHA

Carrara Marble:

By CATHY NEWMAN NATIONAL GEOGRAPHIC EDITORIAL STAFF



Speeding nowhere, *except perhaps toward immortality, a 1953 Fiat of white marble takes shape in a studio in Carrara, Italy. The original, spotted on the street and leased by the sculptor, Roland Baladi, was driven into the studio, where artisans under his direction spent six months executing a precise copy from a 20-metric-ton marble block. For 2,000 years man has wrested the extraordinary, the ordinary, and the in-between from marble found in mountains surrounding this city.*

Touchstone of Eternity

Photographs by PIERRE BOULAT

YOU MIGHT SAY it stuck out like a sore thumb . . . but a thumb 16 feet high, weighing 25 metric tons, carved from fine white marble?

Amid clouds of white dust kicked up by pneumatic chisels at his studio in Carrara, Italy, Carlo Nicoli explained:

"It's by the modern French sculptor César. Thumbs are a specialty of his. This one was commissioned by a Saudi sheikh. César made a plaster mold of the sheikh's thumb, then my artisans copied every whorl, every wrinkle." Nicoli's studio is one of those where sculptors send plaster models of their work to be scaled up and executed in stone. The thumb would decorate a boulevard in Jiddah (facing page).

"Imagine," he said, "it took us 400 days just to reproduce the wrinkles."

Days later I watched machines slice marble from the walls of Cervaiole, one of 225 active quarries near the world's marble capital, the city of Carrara. Many of the slabs would be shipped to Arab countries, the destination of 50 percent of this marble these days. I envisioned all the cool, white buildings springing up in the desert: banks, airports, palaces, ministries, private villas.

"You know," said a man whose job it was to bulldoze the debris, "they will be taking marble from these mountains long after the oil has dried up."

He was right, of course. The stone of Carrara has endured many empires. If today's oil sheikhs see marble as the very metaphor of luxury, so did the ancient Romans, whose Emperor Augustus opened these quarries for large-scale exploitation during the first century B.C. Reportedly, he boasted, "I found Rome built of bricks; I leave her clothed in marble"—eventually including imperial forums, Trajan's Column, and parts of the Pantheon, among other structures.

Great artists long have been bewitched by the magic of Carrara marble. From this stone Michelangelo wrested his immortal "David," the tender "Pietà," and his fierce "Moses." Masters like Cellini, Donatello, della Robbia, Bernini, Canova, and, in our own day, Henry Moore and Isamu Noguchi have shaped enduring works from it.

Carrara marble found its way into the cathedrals of Florence and Siena, the Leaning Tower of Pisa, the pavements of St. Peter's, Leningrad's Hermitage, the World Trade Center in New York City, Washington's Kennedy Center, and the staircases of the Victoria and Albert Museum in London.

This classic stone marks the European graves of American soldiers killed in both World Wars. Copies of "David," the "Pietà," and "Moses" sculptured from Carrara marble decorate that extravaganza of cemeteries, Forest Lawn in California. Las Vegas hotel lobbies are filled with it (one even boasts a marble Joe Louis, fists up).

Statue or staircase, all began as a chunk of mountain in a 390-square-kilometer area in Tuscany's Apuan Alps (diagram, page 48), which last year yielded 1.3 million metric tons of marble from an almost inexhaustible supply. The region includes a string of such marble towns as Massa, Querceta, Seravezza, and Pietrasanta. But it is Carrara, a city of 70,000, that is the best known and the economic heart of an area where 18,000 jobs revolve around a marble axis. And so,

rumpled, broad-shouldered Carrara—where the Carrione River runs milky with dust from marble sawmills and the streets reverberate with the rumble of trucks straining under massive loads of stone—has become a generic name for fine marble.

Birth of the Noble Stone

From the nearby Mediterranean shore I scanned the first wave of those mountains. Cool, white, distant as the moon, they appeared snow covered, though it was mid-May. As I drove up the Ravaccione valley, the image melted. The snow became marble tailings: the debris of more than 2,000 years of quarrying. I climbed carefully over the rubble, picked up a stone, turned it, and watched the sun strike shards of light from its surface. It bore a pedigree extending back 200 million years. . . .

It is an epoch of geologic calm; warm, shallow waters spread over this corner of Italy. Coral and other marine organisms live and die, their skeletons drifting to the floor in a continual snowfall of calcium carbonate. A sea change unfolds; time cements the tiny crystalline corpses into limestone. Then, 170 million years later, turmoil erupts. Micro-plates of the crust collide. The earth bucks and heaves. Heat and pressure forge another change. The crystals re-form into tight, precise patterns. As the layers crumple and thrust upward, the noble stone, marble, is born.

"The fine compact grain—that's what makes this stone special," said Robert Gove, a U. S. sculptor who has lived in Carrara for ten years. "We say it has *nervo*—strength. It takes detailing better than American or Grecian marbles." He caressed the smooth, porcelain-like surface of a Madonna he had carved. "It's so lovely, it almost intimidates," he confessed.

For a sculptor this city surrounded by mountains of marble exerts a pull like gravity. "Here the air breathes art," said Susan

MEHMET BIBER

Dusted white *by quarrying debris, marble-filled peaks rear above the village of Bedizzano, near Carrara. Opened for commercial mining by Emperor Augustus in*

the first century B.C., these mountains furnished ancient Rome with stone for its Pantheon and imperial forums. Last year they yielded 1.3 million tons of marble.

Falkman, a sculptor from Iowa. "The artists sit in the cafés covered with marble dust. The talk is of marble."

At the Bar Igea in nearby Pietrasanta, sculptors from around the world meet in the afternoon over glasses of throat-stinging grappa to discuss, criticize, and, perhaps, envy one another's work.

Or they speak of the work progressing in Sem Ghelardini's studio in Pietrasanta, Nicoli's in Carrara, or the one run by the large operation, Henraux, in Querceta, where the famous and not so famous send plaster forms for execution in stone.

"A dentist came here every summer to have models of molars enlarged in stone," Marc Heinlein, an industrial designer told me. "Henry Moore's work is done here too. He sends his plaster models from England."

This news, startling at first, made sense when I thought about it. Obviously, an artist like Moore, who may turn out six massive works a year, doesn't take a chisel and single-handedly carve a 12-foot-high statue.

Instead, I learned, he creates a plaster model called a maquette. Then an artisan nails a series of studs, called points, into the form and uses calipers to transfer the proportions to the larger scale.

In the Henraux studio I held a maquette Moore had created. The doll-size abstract form had recently been scaled up to an 80-ton sculpture destined for a downtown Miami development. Moore would visit the studio sometime later to supervise the final stages of production.

"So who is the artist," I asked Nicoli, referring to the giant thumb. "Your workmen or the sculptor?"

Nicoli waved his hand impatiently. It is an old debate: "The artist is the composer of the symphony. He does not waste time trying to play all the parts. If he uses the orchestra, our workmen, he can make the most beautiful music. We are not creators. We are proud to be executors."

Whittled away *by centuries of quarrying, mile-high Altissimo (**facing page**) probably provided stone for Michelangelo's "Moses." The 390-square-kilometer area of the Apuan Alps (**above**) has 225 quarries and is dotted with marble towns, but Carrara, a city of 70,000, remains the economic focus. Some 50 percent of the stone goes to Arab nations; West Germany and the United States are also major buyers.*

Finest Marble Beyond Sculptors' Reach

Carrara does not live by art alone. The insistent whine of sawmills underscores how little of this marble goes into sculpture. Nearly 90 percent is shaped into slabs for buildings or tombstones. Most of the remainder becomes columns, balustrades, or other elements of building design. Ironically, the best marble is sometimes too expensive for a work of art. "With the finest grade costing $3,000 a cubic meter, the best stone can end up as flooring," one sculptor mournfully told me. Economics will prevail, even in mountains haunted by the ghost of Michelangelo.

Robert Gove showed me a piece of thin cable. "This revolutionized the industry," he said. "A Belgian invented it in 1854. Sand

To slice up a mountain, *a web of marble-cutting wires* ***(above)*** *is strung from pulleys, then fed with an abrasive slurry of sand and water. After a wire has sawed through a block* ***(below left)****, jacks pry open the fissure. Boulders lowered in the gap separate the block from the rock wall* ***(below center)****. A pillow*

of debris cushions the block's fall ***(below right)****. Unforeseen faults, however, can ruin a block, shattering it into worthless fragments on impact. Blocks are trucked to sawmills and shaped into slabs destined for architectural facing, paving, or headstones. Only a negligible amount goes into sculpture.*

and water shoveled on this moving wire abrades the stone, slicing it like cheese."

We drove into the mountains above Carrara to a tunnel mouth where a webbing of marble-cutting wires, intricate as a game of cat's cradle, ran off a series of pulleys and disappeared into the dark hole. Marble usually occurs in bedlike deposits beneath the dirt-and-rock covering of a mountain, which must be cleared by bulldozing. Shallow deposits can be mined from open pits, but other deposits require tunneling into the mountain.

Carlo Dell'Amico, owner of the quarry, approached and extended a massive hand, chalky with marble dust and leathered with calluses.

As my hand disappeared in his, Carlo smiled. "When I was young and went to town, you could never get a girl to dance with you. They took one look at your hands and pulled back.

"Then, the work was *duro e pericoloso*, hard and dangerous. We worked for slave wages. For lunch we had a piece of bread and sometimes a chunk of lard."

Ten years ago Carlo borrowed money and asked Carrara officials' permission to drill the walls of an abandoned railway tunnel. The gamble worked; the quarry yields about 10,000 tons of marble a year. But how did he know he'd find marble?

He touched his nose. "You sniff it out. It's an instinct. Why, I can look at a block and tell if there's an ashtray or a Madonna in it."

Carlo's workers live better than he did, taking home about $200 a week. By law, they are paid even if weather closes the quarries. But white ambulances waiting at the bottom reminded me that, though conditions are easier, the work is still pericoloso.

Hoping to carve their niche *in the art world, some 30 sculptors let the chips fly in Carrara's annual sculpture contest, held in the Piazza Alberica (**facing page**). Each contestant has only 14 days to shape a potential masterpiece. Juror Gigi Guadagnucci (**above,** at left) confers with a young artist.*

Horn Signaled Grim News

Quarrying marble has always claimed lives and limbs. In earlier days teams of men lowered the stone by cable down steep, jagged slopes on a wooden sled called the *lizza*.

"I was 22 when I first saw a man on my lizza team die," said Renato Lenzotti, who captained a team for 28 years. "The cable broke. He was crushed."

Then, when a man was injured or killed on the slopes, a horn wailed.

"A terrible sound," Renato recalled. "The men put down their tools. Everyone started down. In the village the women cried, wondering if it was their husband, their son, their fiancé. They went to the foot of the mountain and waited. As the men walked through the street, all you could hear was the scratch of their boots against the ground."

As use of the lizza declined, so did injuries. Today safety laws require steel-toed shoes, safety hats, and masks for those in the sawmills. But the measures are mostly

winked at. "A steel hat? What good would that do against a five-ton block?" a quarry owner asked.

With marble, one works with danger, but also with history, nature, and the forces that shaped it. Yet this backbreaking toil is first and foremost a living.

"It would be nice to take the romantic approach," said Gabriele Lavaggi, president of Henraux, which owns Altissimo, the mountain most often associated with Michelangelo. "This is a business."

A risky one, he might have added. Opening a quarry can cost three-quarters of a million dollars. And then, who knows? If the formation is cracked, the marble may be almost worthless.

Henraux, founded in 1821 by an agent of Napoleon sent to acquire stone to glorify the emperor, owns 35 quarries; only five are active. "If we can't use big machinery in the quarries, it won't pay," Lavaggi said.

We walked through the sawmills, huge hangars floored in marble flagstones, where machines with 70 blades gnaw through blocks at about eight inches an hour. Because it is a center of stonecutting and polishing expertise, this region imported some 550,000 tons of marble and granite last year from countries such as Brazil, Portugal, and India, to be cut into slabs and shipped to markets like West Germany, Saudi Arabia, the United States, and Japan.

"We're dependent on construction cycles," said Lavaggi. "But if the market declines in one country, it expands in another. I'll only worry when the last building has been built." He paused and watched the grinding of steel against stone. "Old buildings are always coming down; new ones go up. Architects are content to have their work last for a hundred years. Sculptors work for eternity."

Perhaps they do. But eternity frequently eludes them.

Leaving the Henraux complex, I saw two marble heads lying on their sides in the dust. The woman's hair was tied back in a severe bun. The man's nose was chipped off. The faces were those of Eva and Juan Perón.

Seeing my puzzlement, a worker explained: "They were to be statues on her mausoleum. Perón ordered them."

The statues were nearly finished when news came from Argentina. Perón had been ousted. An emissary, dispatched by the new government, ordered the statues decapitated. "My friend did it," the worker said, whacking an imaginary chisel. "Clonk. Clonk. The heads rolled off. Fortunately, the bill had been paid."

In Search of the Master's Mark

Marble infuses my dreams. At night I see the beautiful varieties of this stone—the cloudy gray *bardiglios*, the swirling *arabescatos*, and the lovely *fior di pesco*, cream colored with amethyst markings. These mountains hold some 50 variegated marbles. But for a sculptor, the most coveted is the ivory, translucent *statuario*, the stone sought by Michelangelo.

I hunted for an "M" on the impassive face of Mount Altissimo above Seravezza. Here, according to legend, Michelangelo searched for pure veins of statuario, inscribing an "M" on the rock walls for the stonecutters.

"Perhaps we can find one," said Don Florio Giannini, a priest from the nearby village of Ruosina, whose father and grandfather worked these quarries.

We hiked a weed-tangled trail edging the Serra River. Don Florio pointed up the slope to a rectangular hole in the serrated profile of this magic mountain.

"That is the Mossa quarry," he said. "Michelangelo made 12 visits to the area, seeking blocks of perfect stone. Marble for his 'Moses' and the 'Captives' may have come from there."

But this quarry is depleted and not easily accessible to machinery that now makes quarrying profitable, so it lies abandoned.

We did not find an "M." Any initials have probably been erased by long years of stripping marble from these mountains. "People

Serene anguish *radiates from Michelangelo's "Pietà" at St. Peter's in Rome. Carved by the master at 24, it is his only signed piece. Hearing a visitor attribute his work to another, the sculptor stole in at night and chiseled his name on the sash. Michelangelo went to Carrara for marble, compelled by genius to seek the mountain's pure, white soul himself.*

TED SPIEGEL, BLACK STAR

Wrestling ten tons *of marble down a steep slope on a cable-lowered wooden sled called a lizza, a team of men reenacts for an annual demonstration the traditional way of hauling marble from the quarries* (**above**). *Trucks do the job today, grinding up and down herringbone trails* (**above right**). *Since the acute angles preclude turns, the vehicles must alternately drive forward for a segment, back up for the next.*

With the phasing out of the lizza in the early 1960s, life and limb loss declined, but the work remains hazardous. Now retired, Rodolfo Alberti (**right**) *tells granddaughter Alessandra how a marble-cutting wire severed four fingers.*

For the wives of these men, each day brings the torture of doubt. Reflecting on Rodolfo's working life, his wife, Adele, commented: "If he was late, I would sit by the window and wait. I worried all day. Will he return whole? Will he return at all? But I knew he must go. We needed the pane assicurato—assured bread."

In days past, a horn wailed if a man was injured on the slopes. The

men put down their tools and silently filed down to the villages.

Now, safety laws prescribe hard hats and steel-toed shoes, but are generally ignored. Quarrying earns a man about $200 a week in this heavily unionized trade; he is paid even if poor weather closes the quarries.

More than 2,000 men work in these mountains, many the sons and grandsons of quarriers. "For me there was no choice," one told the author. "I only know marble and women. Both are hard and cold, fragile and lovely."

Toppled heads of state, *those of Eva and Juan Perón (**left**), lie pillowed by dust outside the Querceta studio of the Henraux marble company. Once attached to statues commissioned by the Argentine dictator, they were lopped off after his ouster on orders of the succeeding regime.*

*A truck shoulders marble through Carrara's narrow streets (**right**) to a sawmill. Fashioned into art or architecture, the stone that commemorates outlives the momentary course of empires.*

did not always know . . . ," sighed the priest.

Yet Michelangelo's marble endures. In 1980 some 800,000 people moved through the Gallery of the Academy of Fine Arts in Florence to see his magnificent "David," many of them as if entering a shrine.

The "David" stands in the rotunda with simple, classic grace. Its weight is focused on the right leg, hips slightly angled, because the block of marble from which Michelangelo fashioned it had been left misshapen by another sculptor who had worked it unsuccessfully years before.

It had been a block of marble like any other when, in the dawn of a September morning in 1501, the 26-year-old Michelangelo first put chisel to that stone.

Why had that particular conjunction of sculptor and stone produced a heroic figure that transcends its own myth? I could only wonder at the twofold enigma of genius and creation.

"Look at this piece of statuario. It's like a pearl." In his studio high above Massa, sculptor Gigi Guadagnucci picks up a *subbia*, the pointed chisel used by marble sculptors since Phidias, attacks the stone, then digs even deeper into its ivory heart. Chips explode, an arm emerges. In time a reclining nude lifts up and out of the whiteness. Under the bite of a *gradino*, a clawed chisel, the form rounds, defines—the woman seemingly awakens after a sleep of eons.

Perhaps she was there all along. Pliny wrote of ancients who, while splitting rocks, found a human image inside. Michelangelo spoke of liberating the form in the stone. Guadagnucci calls it a "dialogue between man and marble."

It is all the same. Inorganic marble, born of sea life, again takes on organic form—a sea change in reverse.

Turning Metal Into Stone

I returned to Nicoli's studio and spotted a toaster carved from white marble.

"It's by the sculptor Baladi. We call it 'hyper realism,' " Nicoli said with an Italianate shrug.

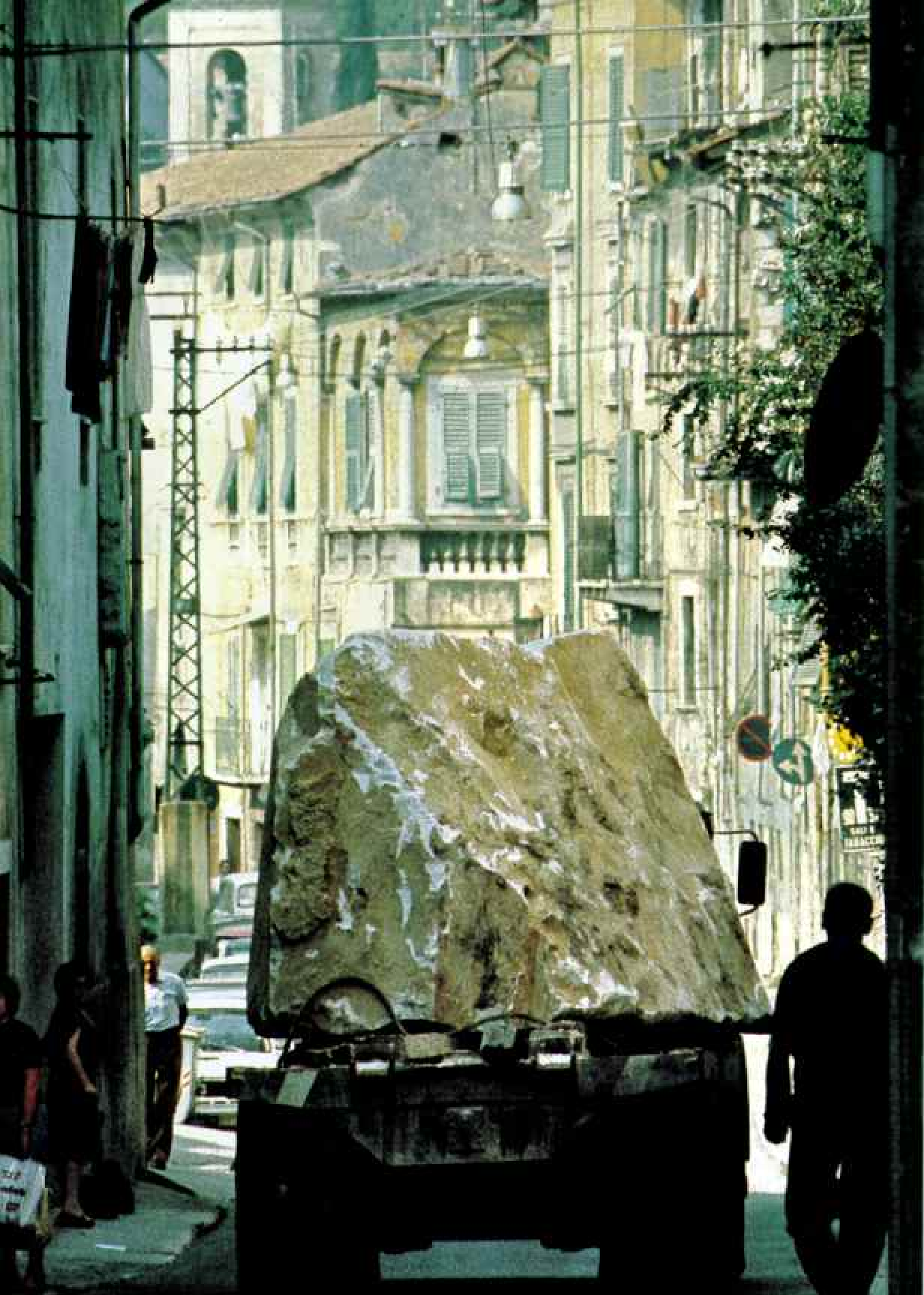
"One day I am driving with Baladi and he says, 'Stop! I must have that car.'

"He has seen a 1953 Fiat Topolino, but the owner loves it, too, and will only lease it. So we rent it and drive it into the studio and copy it in marble."

Afterward the marble version is towed off, so to speak, and parked in front of a Milan art gallery. And, in time, a parking ticket ends up on the marble windshield.

It was sold, I'm told, to Umberto Agnelli, Fiat's vice-chairman. I don't know if he bought it as an art object, as a monument to his company, or simply on a whim.

I like to think he believes that a marble Fiat has a better shot at immortality than a metal one. □



Peru's Pilgrimage to the Sky

By ROBERT RANDALL

Photographs by
LOREN McINTYRE and
IRA BLOCK

I CLIMBED one last rise and then stopped, stunned by an explosion of color and reverberating music. In an isolated valley beneath glistening glaciers, costumed figures danced among thousands of pilgrims. They would spend the night here, at the concrete-block sanctuary of this sacred place called Qoyllur Riti (Star of the Snow). This days-long Peruvian pilgrimage, held some nine weeks after Easter at the time of Corpus Christi, commemorates a miraculous appearance of Christ in 1780—but many anthropologists believe its roots are pre-Columbian.

To arrive at this spot 50 miles east of Cuzco, I had accompanied Indians on a frigid moonlit trek through the rugged Andes. As I watched the pageant, my companions put on the feathered costumes of the *chunchos* (**right**), representing jungle Indians. They believe that the creation of the sun drove the precursors of these jungle people—who lived in a world illumined only by the moon—into the rain forests, where light could not penetrate.

As darkness descended on the valley floor, I huddled with friends for warmth, anticipating tomorrow's climb.

LOREN MCINTYRE

WHISTLES pierced the marrow-freezing air at 2 a.m. Hundreds of Indians, dressed in shaggy garb with knit masks, called to one another to begin the glacial ascent. These were the *ukukus*, young men in bear costumes who are chosen to represent their villages on the pilgrimage.

We climbed to the edge of the glacier, then lingered among icy rocks for two hours, drenched by the cold light of a silver moon. Despite my heavy boots and warm clothes, the cold stabbed viciously at me. But the ukukus, some shod only in sandals, regarded the cold stoically. For them it was appropriate penance, a critical part of the pilgrimage.

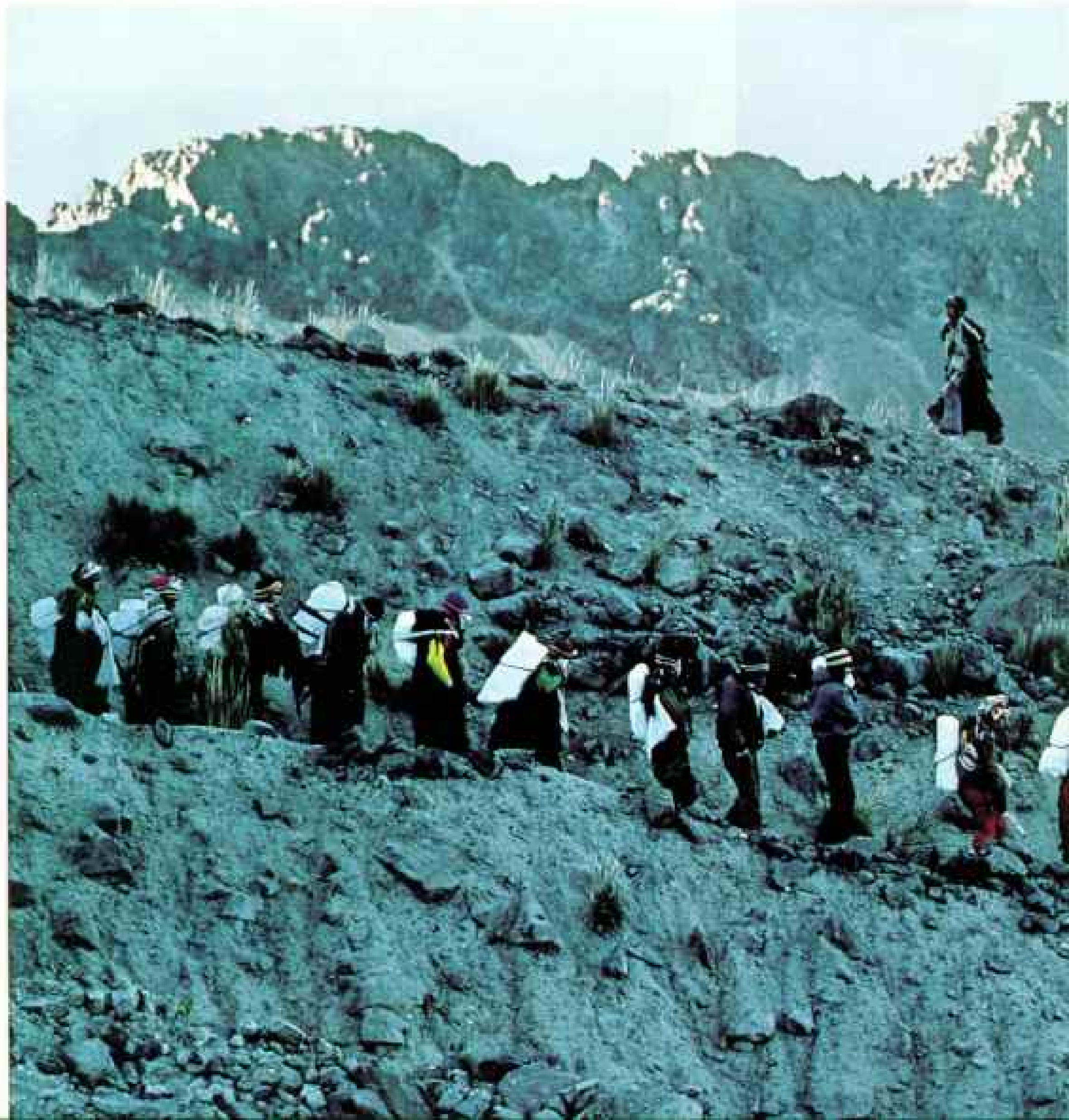
Finally, as the light of dawn softened the high, hard profile of the mountains, we climbed up onto the glacier. Carefully kicking steps in the ice, we struggled ever higher.

IRA BLOCK


INRI

A WOODEN CROSS was set into the snow (***left***), as an Indian friend scooped a hollow in the ice, lit candles, and prayed (***below***). For him, as well as the ukukus, the grueling climb up the 16,000-foot-high glacier is not so much a physical trial as a journey fraught with spiritual danger. According to legend, the mountain harbors fearsome *condenados,* the spirits of those who have committed a mortal sin. These beings can easily kill, but the ukukus are strong enough to brave such danger. As I understand it, the ukuku—or bear—is a symbolic intermediary, a link between opposing worlds. Standing upright, he unites the animal with the human. Living in caves, he connects the underworld of the spirits with the world of man above. Coming out only at dawn and dusk, he bridges night and day. By climbing up the sacred mountain, he links the people of his community with the gods.

BOTH BY JOHN MCINTYRE



AFTER PRAYERS the ukukus began their descent. At the base of the glacier they stopped, cut chunks of ice, and slung them on their backs (***left***). The Indians believe that ice from the mountain has healing powers. As they snaked down the mountain (***below***), morning sunlight glinted blindingly off their frozen burdens.

The ukukus returned to the sanctuary and distributed the ice to the people of their villages, who melted it. Some of the liquid was mixed with barley to make a warm drink; the rest would be carried home in bottles. I drank the barley brew, welcomed its warmth, and wished for the good health it might impart.

At the sanctuary the dancing and praying continued. The sanctuary contains a rock bearing the image of Christ. It commemorates the miraculous appearance of the Christ child to a young herdsman named Mariano in these mountains two centuries ago.

I joined the crush of pilgrims inside. The light from hundreds of candles burnished the faces of those who cried and prayed in front of the sacred rock.

"They cry," I was told, "for the sufferings of El Señor, The Lord."

BOTH BY IRA BLOCK


SEÑOR

LORAN MCINTYRE (LEFT, BELOW) AND IRA BLOCK

"GIVE ME YOUR BLESSING, Señor de Qoyllur Riti, so that I can return to my home." I heard the final Mass said at the sanctuary after the ukukus' return.

Then the crowds dispersed, except for a group of a thousand or so who headed out for the trek to the village of Tayankani, 20 miles away. Many dancers—such as the one above, at right—were going, and I joined them. Near the sanctuary we saw tiny stone houses and corrals (***left***) built by pilgrims who were asking the mountain god for the fertility of their livestock. We walked all day to arrive at a small hamlet where we rested until moonrise. Then we continued—a long single-file line serpentining over the moonlit mountain trails. Along the way stops were made for prayers at various shrines. With the light of dawn the image of Christ was placed at one last chapel (***above left***) before being carried down to Tayankani.

Are the Christian elements of this pilgrimage—the candles, the Mass, the images of Christ—merely a thin veneer of Catholicism pasted over ancient native beliefs? Or have they combined with indigenous religion to form a completely new, or syncretic, belief? The origins of this pilgrimage provide fertile ground for scholarly dispute. For these Andean Indians there is no dispute—just belief. □

THE COUNTRY OF Willa Cather

By WILLIAM HOWARTH

Photographs by FARRELL GREHAN

ON HER FIRST DAY at the University of Nebraska, Willa Cather was mistaken for a professor. She was only 16, fresh from a small prairie town. Yet when she peeked around a classroom door and asked, "Is this elementary Greek?" the students were impressed.

They had been expecting someone like this, with a deep, commanding voice, a solemn face topped with short hair, and a straw hat. So they nodded politely, then burst into laughter when the stranger entered—and proved to be a young girl.

Willa Cather (1873-1947) grew up to be a major American writer, but today many people still do not know her face. Critics rank her with our great modern novelists—Faulkner, Hemingway, Fitzgerald—and she was certainly esteemed in her own time. Supreme Court Justice Oliver Wendell Holmes praised *My Antonia* as a book that "makes the reader love his country more."

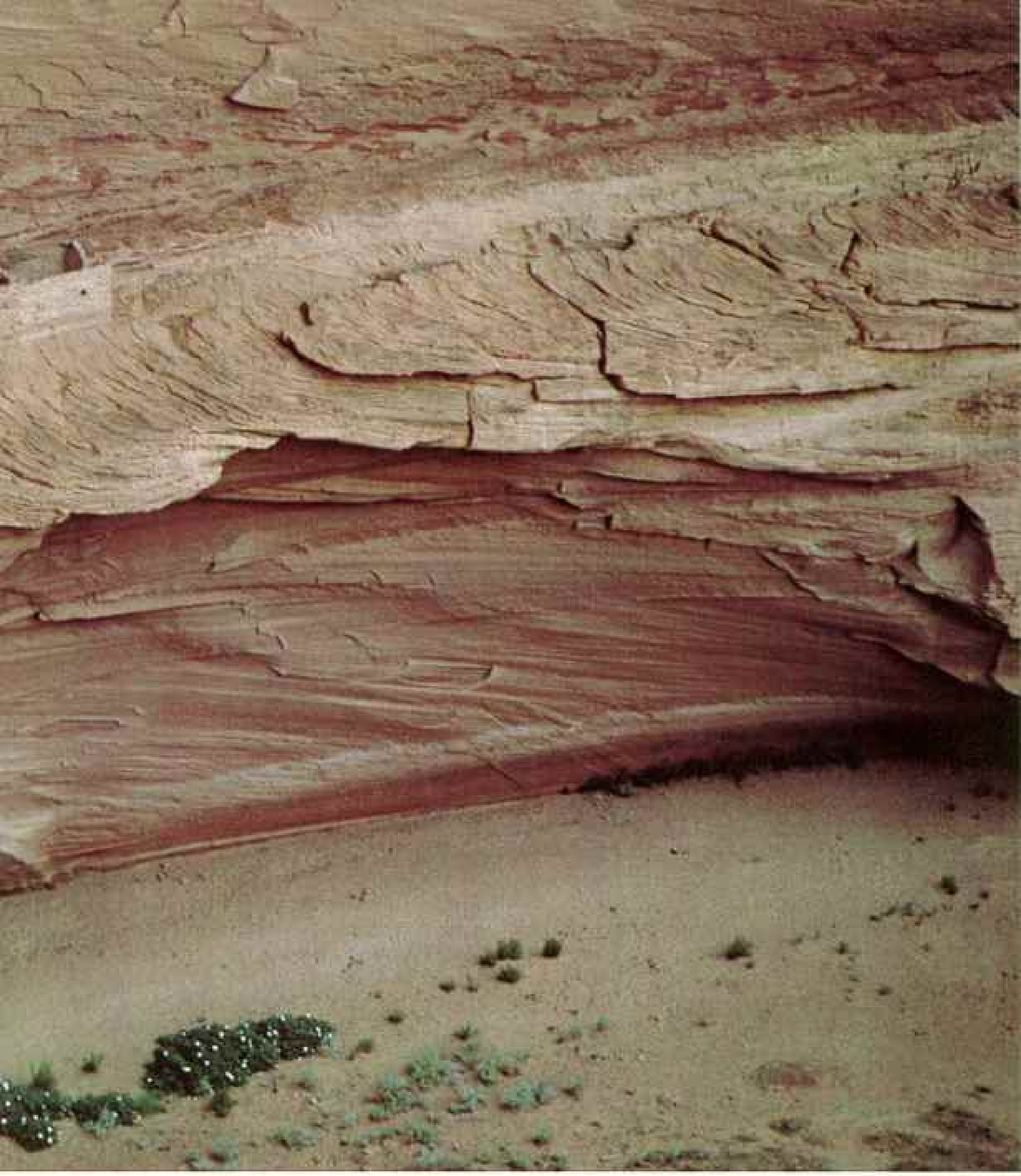
Miss Cather wrote that novel and 11 others. Her books still have this effect on readers, for she had the power to elevate ordinary people and places. No one has described the American West with more passion and clarity. In every sentence, her feeling for the earth surges beneath a strong, disciplined prose. This from *My Antonia:*

We were talking about what it is like to spend one's childhood in little towns like these, buried in wheat and corn, under stimulating extremes of climate: burning summers when the world lies green and billowy beneath a brilliant sky, when one is fairly stifled in vegetation, in the colour and smell of strong weeds and heavy harvests; blustery winters with little snow, when the whole country is stripped bare and grey as sheet-iron. We agreed that no one who had not grown up in a little prairie town could know anything about it. It was a kind of free-masonry, we said.

Willa Cather became the voice of an unsung people, the generation of immigrants who settled our western frontier. Today many writers regard that history as tragic, a paradise lost through careless greed. Cather believed that America's promise would endure: *We come and go, but the land is always here. And the people who love it and understand it are the people who own it—for a little while.*

NEBRASKA STATE HISTORICAL SOCIETY

***Like cottonwoods** by a Nebraska field, Willa Cather drew nourishment from the prairie soil and grew into an artist of enduring strength. A tomboy at 15 (**above**), she soon entered the University of Nebraska and embarked on a literary career that celebrated the pioneer generation of western settlers.*



*"**The cleanness** of sun-baked, wind-swept places. . . . a voice out of the past, not very loud, that went on saying a few simple things to the solitude eternally." The Southwest was a major source of inspiration to Virginia-born, Nebraska-bred Willa Cather, and her novels helped awaken America to the beauty and history of arid lands.*

*She was an early visitor to the Canyon de Chelly region in Arizona (**above**), where the Anasazi built dwellings high in the sandstone cliffs a thousand years ago. Rock paintings by later Navajo artists (**left**) depict a 19th-century Spanish expedition to the area.*

When Sinclair Lewis accepted the Nobel Prize in Literature in 1930, the first American to win it, he named Cather as one who also deserved that honor.

She earned many honors herself: a Pulitzer Prize, the Prix Femina Americain, and honorary degrees from Yale and Princeton. At Princeton in 1931 she shared her day of honor with Robert Frost and Charles Lindbergh. Miss Cather received the greatest attention, for Princeton had never before granted a degree to a woman.

And she showed the world how much a woman can achieve. In 1908, at 35, she became managing editor of *McClure's Magazine*, the nation's leading journal of arts and public affairs. Her circle of admirers included William Jennings Bryan, H. L. Mencken, Theodore Dreiser, and Louis Brandeis.

For all her acclaim, Willa Cather was a complex and elusive person. She had an artist's ability to imagine and impersonate, playing roles in fiction unlike her life. The big sister in a family of nine, she had a great capacity for love and affection. Yet she never married.

We know little about the private Willa Cather because she destroyed most of her papers and left a will forbidding publication of her letters. Although ambitious, she regarded celebrity as a curse—every phone call and photographer invaded her time, chipped away at the solitude she needed for work. Her publisher, Alfred Knopf, disagreed, saying, "People who wish to be private must not produce work as she did."

FOR SEVERAL YEARS I tried to understand Willa Cather by reading and teaching her books, but still she eluded my grasp. Pictures of her revealed only the surface. Most people who knew her directly are now gone. One exception is the great violinist Yehudi Menuhin, the son of Russian immigrants, who remembers her when he was 12 and giving his first concerts. She enjoyed the company of the child prodigy; they read Shakespeare together and hiked all over Central Park. She was, he recalls, the friend who made his family treasure "our attachment to the land that we called our own."

I found her at last in the land. Books in hand, I recently journeyed through the country of Willa Cather. I went from mountains to prairies, hiked in canyons, and explored the ruins of ancient Indian tribes. Along the way I met people of many cultures, whose ancestral customs live on. I came home with a new sense of America's variety, much of it captured in the work of this remarkable woman.

Willa Cather was born in Back Creek Valley, a village tucked into the mountain ridges of northern Virginia, near Winchester. Her father raised sheep for city markets; he made leather foot pads for his dog to wear on the steep, rocky hillsides. Young Willa loved this country life. She learned the names of flowers, heard many stories from her elders. Her first composition, before age ten, was in praise of dogs: " . . . who ever wrote enything [sic] on a *Cat?*"

ON A SPRING DAY in Back Creek (now Gore), my daughter, Jenny, and I can still see the Virginia of long ago. In warm sunshine, the earth is stirring. Swallows soar by the brook called Cather's Run; up on the hills, dogwood rises from streaks of melting snow. Dogwood reminded Cather of childhood: *In all the rich flowering and blushing and blooming of a Virginia spring, the scentless dogwood is the wildest thing and yet the most austere, the most unearthly.*

Her last novel, *Sapphira and the Slave Girl* (1940), described several landmarks that have begun to fade away. Her birthplace is an abandoned shell; nearby Willow Shade, the family farm, has lost its barn and front pasture. We hunt for a flour mill that Cather described as "freshly white-washed every spring." Jenny finds it in a sorry state, weathered to a dull gray and standing on a dry streambed.

Yet people here remember Willa Cather. Phyllis Wisecarver, who lives at Willow Shade, speaks in a soft drawl as we tour the house and garden: "I read her books in high school and heard stories about the ghost of a little girl who haunts the back road. When we moved out here, my English teacher said, 'Now don't let that place run down!' "

In 1883 the Cathers joined other relatives in Nebraska on the Divide, high country between two river valleys near the Kansas border. Cut by wind and water, these dissected

plains were nearly treeless, just miles of tall prairie grass. At first Willa missed her mountains. Nebraska was "nothing but land: not a country at all, but the material out of which countries are made."

The pioneers learned to make something out of nothing. Nebraska is not flat and featureless, for on the Divide I am standing at an elevation of 2,000 feet, in country that resembles a rolling sea. The land swells and rises, and upon these waves of earth lie long-stemmed grasses, washed by a strong summer wind.

Surveyors divided this country into a vast gridiron of square-mile sections. To find their section, settlers made crude odometers—measure a wagon wheel, tie a rag to the rim, count the revolutions in each mile. They also improvised shelters: In a treeless land, blocks of sod were the best building material. The Cathers' first house in Nebraska sat on a barren slope encircled by "nothing but rough, shaggy, red grass."

Today at that site nothing remains—I can see only grass against an empty sky. Yet this lush, waist-high grass is something indeed; in one patch many kinds thrive, each with a family name: buffalo, grama, dropseed, side oats, foxtail. There's wild marijuana as well, and many dots of meadow flowers—scarlet, blue, and yellow. The wind stirs them all with a soft, rushing sound: *The whole country seemed . . . to be running.*

A CENTURY AGO life on the Divide had the same variety. The Cathers' neighbors were Swedes, Czechs, Germans, French, Scotch-Irish—immigrants who put down roots in a new land. They endured a lonely, harsh existence, suffering the trials of drought and blizzard, prairie fires and insect hordes. This land had never yielded to men: *It was like a horse that no one knows how to break to harness, that runs wild and kicks things to pieces.*

For almost two years Willa Cather lived on the Divide and tasted its wildness. On her pony she rode for miles, following buffalo trails to the river. She found prairie flowers—goldenrod, milkweed, wild roses—and heard tales of her neighbors' woes. Many homesteaders failed and left, but she felt secure: *as if her heart were hiding down there, somewhere, with the quail and the*

EDWARD STEICHEN (ABOVE). REPRINTED WITH THE PERMISSION OF JOANNA T. STEICHEN, JOSEPH BAILEY (BELOW).

"Observant, truthful, and kindly . . . *the chief requisites in a good story-teller," wrote Pulitzer Prize-winning Willa Cather (1873-1947), who posed for photographer Edward Steichen in 1926. In addition to poetry, numerous short stories, and newspaper and magazine articles, Cather wrote 12 novels, all now in print.*

Alexander's Bridge *(1912) is set in Boston and London, locations familiar to Cather when she was managing editor of McClure's Magazine.*
O Pioneers! *(1913),* ***The Song of the Lark*** *(1915),* ***My Ántonia*** *(1918) extol the western frontier.*
One of Ours *(1922),* ***A Lost Lady*** *(1923),* ***My Mortal Enemy*** *(1926) decry the new materialism after World War I.*
The Professor's House *(1925),* ***Death Comes for the Archbishop*** *(1927) evoke the Southwest.*
Shadows on the Rock *(1931), set in Quebec,* ***Lucy Gayheart*** *(1935), a Nebraska setting,* ***Sapphira and the Slave Girl*** *(1940), a Virginia locale, were her last major efforts.*

GOLDEN TALENT MEDALS ISSUED BY THE U. S. MINT IN 1991 HONOR MARK TWAIN AND WILLA CATHER.

plover and all the little wild things that crooned or buzzed in the sun. Under the long shaggy ridges, she felt the future stirring.

Her first western novel, *O Pioneers!* (1913), told how the Divide was won by settlers who turned the grassland into "squares of wheat and corn; light and dark, dark and light." Driving here today, I can see more circles than squares. Hybrid corn has a powerful thirst. Many farmers have filled the draws and erected pivot sprinklers—pumps that suck water from deep wells and spray the fields in slow circles. People have also changed; few cling to the old foreign customs, and most now live in town.

On the high road to the town of Bladen, I soon come upon the old Dane Church. The inside is empty, without altar or pews; stones in the graveyard lie buried in grass. *When you get so near the dead, they seem more real than the living. . . . If they feel anything at all, it's the old things, before they were born.* The church is stark white, with shadows on its siding. A square of light and dark, dark and light.

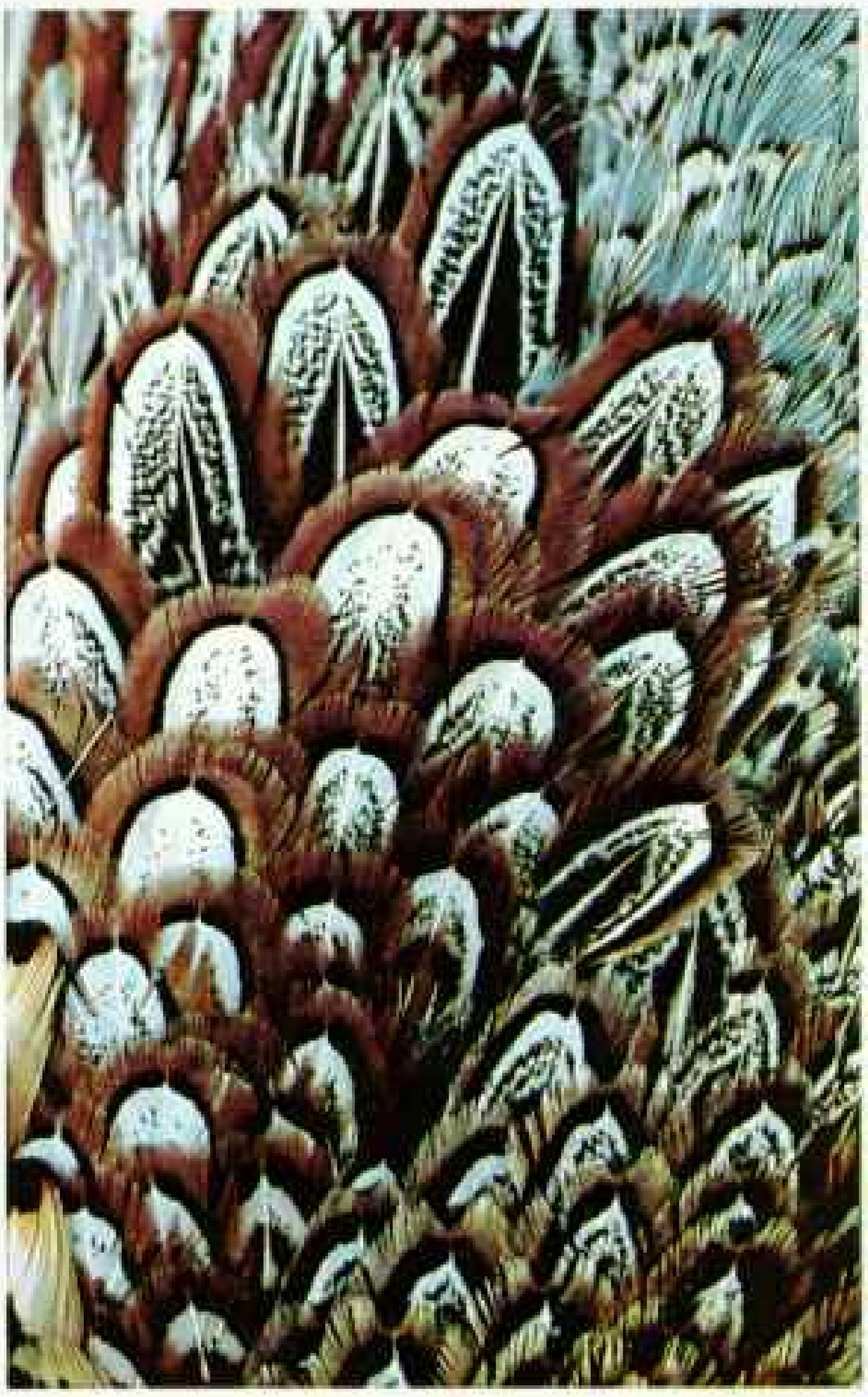
Red Cloud, Nebraska, is a town of tidy yards and picket fences, of modest frame homes in good repair. The Cather family moved here in 1884, coming off the prairie to a settled world of schools and churches. At Third and Cedar I find their home unchanged: *a low story-and-a-half house, with a wing built on at the right and a kitchen addition at the back, everything a little on the slant—roofs, windows, and doors.*

During her teens Willa Cather fought the

Sundown beams *upon the old Dane Church and the grassy plains of Webster County, Nebraska* **(above)**, *where the Cathers settled in 1883. In the lives of immigrant farmers and strong, resourceful women, Willa Cather found her vision of America, "a place where refugees from old, sad countries were given another chance." Her books mourn the passing of those early days, when life was rich but fleeting, like the color of a wild prairie rose* **(right)**—*"a dye made of sunlight and morning and moisture, so intense that it cannot possibly last."*

"**Singing straight at the sun,** *their heads thrown back and their yellow breasts a-quiver," meadowlarks were Cather's emblem for the joys of artistic expression.*

*She accepted her talent as a gift, one that obliged her to touch all aspects of life. Her books teem with bittersweet memories, as nostalgic as they are grim. For every full-throated song, a countering scene of madness or death appears. The feathers on this pheasant (**below**) were photographed just moments after the bird flew into barbed wire and died. Art captures such images forever. In "O Pioneers!" a girl held a slain duck "and looked at the live color that still burned on its plumage."*




BIRTHS
DEATHS

town's social conventions. She cropped her hair, wore overalls, performed autopsies on dead cats. Out back she built a play town and served as the mayor; once she pitched a tent on the porch roof, over her parents' objections. Other days she spent in quiet retreat, sitting beneath a front-yard tree or reading in her private attic bedroom. She decorated this "Rose Bower" with floral paper, white curtains, and bits of seashell in a neat collection.

ANN BILLESBACH is curator of the Cather home: "I think Willa's behavior was not so unusual. Today I can wear jeans and a man's cologne, work for my own living. Back then, girls had fewer options." We examine the family Bible, where Willa played another option, changing "Wilella Cather . . . 1873" to "Willa Sibert Cather . . . 1876."

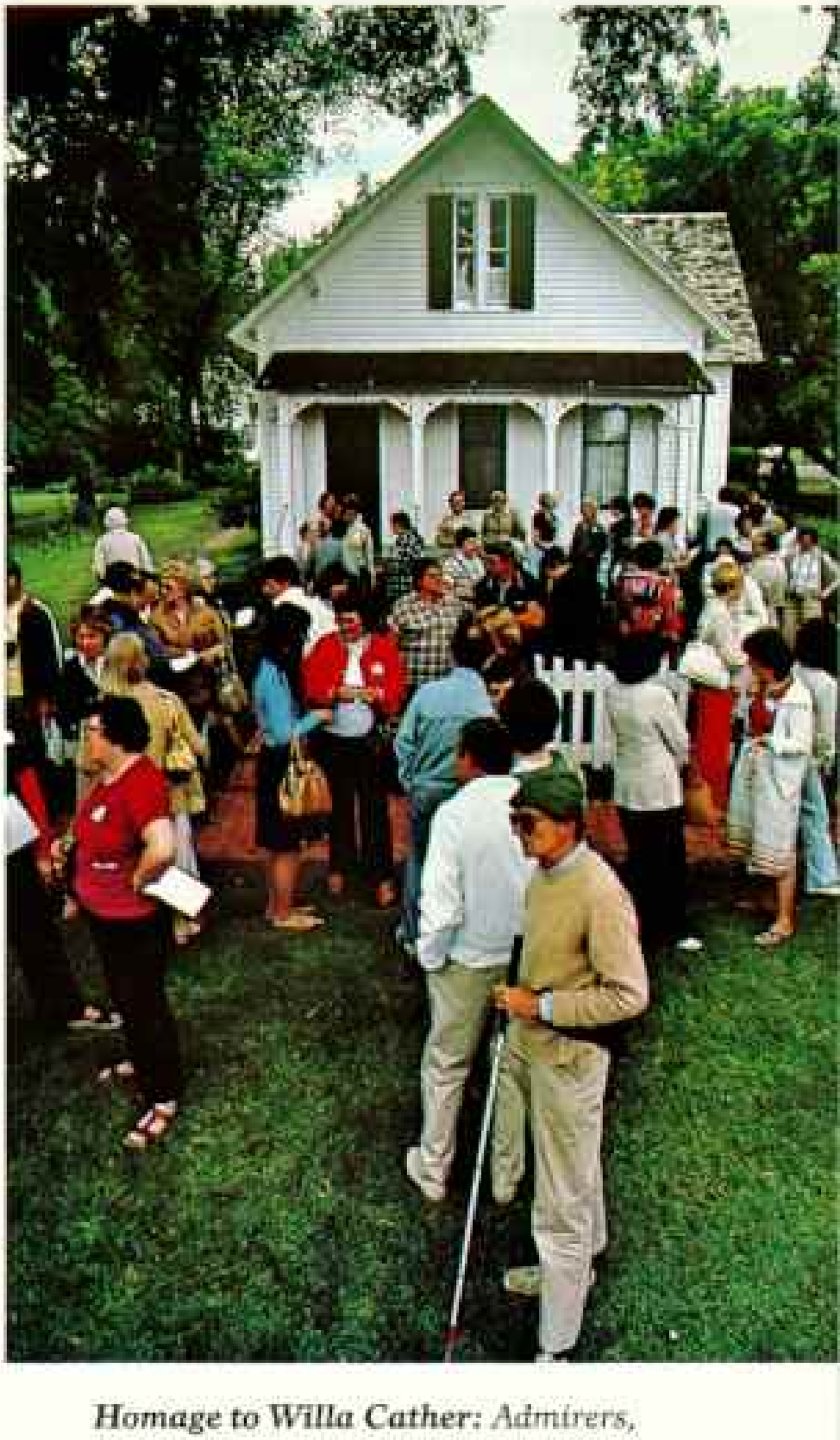
Outside the house, owned by the state historical society, waits a throng of pilgrims. These scholars and devoted readers, participants in a national conference on Willa Cather, are from 24 states and Canada. Their names read like a census from the old Divide: there's Murphy, Peck, and O'Connor; Schrager and Franz and Grumbach; there's St. Clair, Boucher, Crozier; Petersen, Rosowski, and Zoecklein. For days they have talked of Cather's books; now I join them to see the country of *My Ántonia*.

The book captured Willa Cather's feelings about sex, ambition, and small-town life. Her main characters, Jim Burden and Ántonia Shimerda, were friends for life but took opposite paths: He built a career in the East, she a great family in Nebraska. They were the halves of Willa Cather; through them, she became complete: *I had the sense of coming home to myself, and of having found out what a little circle man's experience is.*

Because Cather modeled Ántonia on a real person, Annie Sadilek Pavelka (1869-1955), many scenes in the novel have exact counterparts in Webster County. Annie's father committed suicide and was buried at his section corner. When roads later crossed there, the builders left his grave untouched, a wooden cross on a mound of grass. To Cather's Jim Burden the place became an enduring memorial: *In all that country it was the spot most dear to me.*

Today at that junction we find no grave, no wooden cross, for they were moved years ago to a cemetery in Red Cloud. Yet grass still grows by the roadside, and in one corner I notice a lone utility pole. Its form is lean and exact—a perfect Latin cross.

Jim and Ántonia spent their best days together on the prairie. He taught her English there, and she listened to his dreams of the



Homage to Willa Cather: *Admirers, including a blind schoolteacher from New England, gather at her childhood home in Red Cloud to share scenes that inspired her fiction. Near the family Bible (left) stand portraits of her parents and Willa, about ten. Life here inspired her reverence for home, "where she wanted to be, where she ought to be."*

future. The day he said farewell before going east, they saw the prairie lit by sunset and moonrise, "two luminaries . . . resting on opposite edges of the world." He and she would be just as separate, yet forever sharing the same memories.

We now pause at the Willa Cather Memorial Prairie, almost a square mile of virgin grassland, and slip away for private walks. Down in the draws, larks are singing—a high spray of sound, with many caroling turns. My path meets Diane Mustonen, a high-school teacher from Omaha who is expecting her first child: "I like the openness and freedom here, the sense of space and light." She nods with approval: "*This* place is my Willa Cather."

Years later Jim and Ántonia met again, in a scene Cather placed at the farmhouse of the real Annie and her husband, John Pavelka: *Everything was as it should be: the strong smell of sunflowers and ironweed in the dew, the clear blue and gold of the sky, the evening star.* Now everything here is dry and vacant. We Cather buffs try to imagine a place bursting with life, full of animals and orchards and a dozen children. Instead, we see rusted pumps and an abandoned truck; we peer down into an empty fruit cellar, dank as a cave.

Up in the sunlight Ned Ryerson has less trouble picturing the scene Willa Cather invented. A schoolteacher from New England, he has read and taught her books for years—but has never seen Nebraska. "I lost my sight over a year ago; this is my first solo trip. Her country is as I expected: warm and windy; you can taste the dryness." He smiles, plucks some cheatgrass, and samples its aroma.

IN 1890 WILLA CATHER entered the university at Lincoln, a world of books and ideas where "everything else fades for a time, and all that went before is as if it had not been." Driving toward Lincoln, I pass through a long summer dusk. The windmills become sculpture; grain elevators assume cathedral shapes. Mozart is on the car radio—sponsored by a feed company, I hear. Suddenly a coyote crosses the road, heading east. I stop to see his mask and flecked coat before he bounds into the wheat and is gone.

First order of the day *for a newborn calf is a wash by its mother. When the*

heroine of "My Ántonia" has a child out of wedlock, a friend declares: "This baby has come into the world sound and strong, and I intend to keep an eye on what befalls it."

Lifting its head *above the prairie, a new university rises at Lincoln, Nebraska, in 1872. As a student here in the 1890s, Willa Cather planned to study science, but soon discovered her writing talent, contributing to student publications and local newspapers. Always eager for outdoor adventures, she took a spin on a railroad handcar (**below**) during a visit to Cheyenne, Wyoming.*

COURTESY OF CATHER FAMILY (BELOW); NEBRASKA STATE HISTORICAL SOCIETY

At Lincoln, Willa Cather became her adult self, a strong, compact figure with dark blue eyes and russet hair. She gave up the boyish clothes and haircut, but not to attract admirers. Her energy went into writing stories and reviews for the local papers. Bernice Slote, retired professor of English at the university, has written and edited a shelf of books on Willa Cather yet cannot imagine her as a close friend: "She was not for other people; she existed for her writing."

Cather grew slowly as a writer. A decade slipped by after college, years spent as a journalist and schoolteacher in Pittsburgh before she joined *McClure's* in New York. The city opened many horizons: lunch at the Waldorf, evenings of Bernhardt or Caruso. She wrote stories about sculptors and painters; yet Willa did not lose her country ways. She dressed for comfort, in wool skirts and sensible shoes, often with a bright red scarf. For exercise she walked in Central Park, and on winter days the open-decked bus was her favorite ride.

The Southwest was a different horizon. In 1912 she visited the new state of Arizona, where desert and canyonlands were dotted with Indian ruins and adobe missions. This country aroused her as a writer. Nearly 40, Willa left *McClure's* to devote herself to novels. In *The Song of the Lark* (1915), she described how her heroine, Thea Kronborg, could dedicate her life to art.

The visitors' register at Walnut Canyon National Monument is signed "Miss Cather" on May 23, 1912. She walked a trail along this twisting gorge and paused at several caves. Indians built shelters here centuries ago; she found only ruined walls and bits of shattered pottery. But the canyon became a place of discovery for Thea Kronborg.

Cather portrayed Thea as bathing each day in a pool with a sand bottom behind a screen of cottonwood trees. A stream flowed

A wedge of sandhill cranes *glides above the Platte River north of Red Cloud, Nebraska. In "O Pioneers!" Cather's old Ivar, an immigrant from Norway, knew these travelers well: "From up there where they are flying, our country*

looks dark and flat. They must have water to drink and to bathe in before they can go on with their journey. They look this way and that, and far below them they see something shining, like a piece of glass set in the dark earth."

here in 1912, but now the canyon is dry—dammed off for a city reservoir.

After bathing, Thea climbed to an Indian cave, "a nest in a high cliff, full of sun" and basked in the hot dry air. She watched "arrow-shaped birds," swallows that "never dared to rise out of the shadow of the canyon walls," and thought of her own incomplete career. The ancient Indians revered water: *Stupid women carried water for most of their lives; the cleverer ones made the vessels to hold it.* Thea and Willa both knew which role to pursue.

Without water, cottonwoods and insects have declined in Walnut Canyon. Tryntje Seymour, a young New Yorker now living in Arizona, has helped me follow this trail and understands Thea's decision. "Up on Second Mesa I have seen Hopi dances where men become spirits urging the clouds to bring rain. The men are artists; their power touches something central and strong."

For all her attraction to the West, Willa Cather preferred to live in New York City. Her Bank Street apartment was an island of quiet security; she eventually rented the flat above to keep it empty. Here, in a room filled with cut flowers, she wrote each morning for several hours. Her working garb was often a sailor's blouse and dark tie, with a plain duck skirt. Planning a summer trip to Colorado, she bought khaki pants, a jacket, and a wide-brimmed hat to ward off the sun.

HER TRIP in 1915 was to Mesa Verde, a new national park reached by horse-drawn wagons. She camped in tents on Chapin Mesa and explored its Indian ruins, set high in the cliffs of a vast canyon system. Down in the canyons she separated from her guide for several hours, then had to climb a dangerous trail by moonlight. Ten years later she used this experience in *The Professor's House* (1925), a novel that reflected her search for lasting ideals.

On a summer morning at Mesa Verde, I retrace Willa Cather's trail with my son, Jeff, and Linda Martin, a park ranger. Jeff is 10—going on 40—a small and serious hiker. Linda, a Nebraskan, has firm opinions: "Nebraska's two best writers were women, Willa Cather and Mari Sandoz." Linda also sets a mean pace; soon we are treading the soft white dust of Soda Canyon.

In *The Professor's House*, Cather took her experiences and those of two 1888 cowboys at Mesa Verde, Richard Wetherill and Charlie Mason, and created one hero, Tom Outland. The explorers came here in December, as Willa's Tom did, but he followed her trail through Soda Canyon.

At the junction with Cliff Canyon, Willa had waited hours for her guide. We come to this place now and pause to share her vigil.

As she sat here, shadows folded down the cliff walls. The air was still, and silence held through the long summer dusk. At last a full moon rose above the canyon rim: *The arc of sky over the canyon was silvery blue, with its pale yellow moon, and presently stars shivered into it, like crystals dropped into perfectly clear water.* Finally guides arrived; by moonlight the party began to hike along Cliff Canyon, a mass of jagged boulders and sagebrush.

DOWN ON THE CANYON FLOOR we stand where Tom Outland made his great discovery: *I wish I could tell you what I saw there, just as I saw it, on that first morning, through a veil of lightly falling snow. Far up above me, a thousand feet or so, set in a great cavern in the face of the cliff, I saw a little city of stone, asleep.*

A moving description, but Wetherill and Mason first saw the ruins of Cliff Palace from above, looking *down*. No one could look *up* and see Cliff Palace; it lies within too deep a cave. What, then, did Tom—or Willa—see?

Jeff paces south, scanning the cliff walls. High on the canyon's east side, he spies a thin line of ruins, lit by the setting sun. At 2 a.m., the hour Willa Cather passed by, a full moon would flood that cliff with light. Linda consults her map: "Its name is Swallow's Nest." Just so: It resembles the cliff in *The Song of the Lark* that Thea Kronborg saw, from her pool deep in Walnut Canyon. Cather completed the novel just before her trip here.

Late one hot afternoon the superintendent of Mesa Verde, Robert Heyder, leads my wife, Bonnie, and me to Cliff Palace, the city that Tom found: *pale little houses of stone nestling close to one another, perched on top of each other, with flat roofs, narrow windows, straight walls, and*

in the middle of the group, a round tower.

Our mood bends close to Tom's: *We went about softly, tried not to disturb anything—even the silence.* Time has stopped in this cavern, where the rock has kept dry for centuries. Some walls still have their original plaster; inside the tower we can see unfaded paint. *Such silence and stillness and repose—immortal repose. That village sat looking down into the canyon with the calmness of eternity.*

Like the people who built this city and vanished, Tom Outland also lost his discovery. But he retained his memories, which stirred a new idea: *It was possession. The excitement of my first discovery was a very pale feeling compared to this one. For me the mesa was no longer an adventure, but a religious emotion.*

AS HER OWN spiritual concerns deepened, Willa Cather made long trips to New Mexico in 1925 and 1926. Ten years earlier she had ridden horseback in the hills near Taos and visited towns in the Espanola Valley. Now she was drawn to Santa Fe. She read about a French priest, Jean Baptiste Lamy (1814-1888), saw his statue, and *Death Comes for the Archbishop* (1927) was born.

On a bright winter day I have come to the same statue. Archbishop Lamy stands in front of the cathedral he designed, built of golden stone with two soaring towers—both incomplete. Santa Fe is an adobe town; even gas stations conform with a mudlike stucco. Lamy wanted stone, in a color that honored Clermont-Ferrand, his home in France. This cathedral crowned his New World mission, to build a great diocese from many diverse people.

Willa Cather embodied herself and Lamy in Jean Marie Latour, a priest whose life was a complex history of ideas and events. History runs deep here, in a land settled well before New England. At Santa Fe's oldest mission I can tap a mallet on the same bell Latour heard: *Full, clear, with something bland and suave, each note floated through the air like a globe of silver.* Cast in Spain, the bell has an inscribed date: 1356.

As she traveled down the Rio Grande Valley, Cather imagined Father Latour riding to villages, administering sacraments, camping on the open plains. She had to stay at wretched hotels, and her best food might be cheese and crackers. Both travelers found compensation in the country's dry air: *the fragrance of hot sun and sage-brush and sweet clover; a wind that made one's body feel light.*

Strict with his own vows, Father Latour also respected Indian beliefs. In the mission at Laguna Pueblo, I find a scene he admired. Christian *santos* on the altar and painted above them: *gods of wind and rain and thunder, sun and moon . . . the church seemed to be hung with tapestry.*

One pueblo Willa had longed to see for years was Acoma, the Sky City that sits on a rugged mesa. Here the Indians built a huge church, hauling earth and timbers over great distances. Father Latour felt something hard and alien in the people of this rock. According to a legend he heard, they tolerated one bad priest until he killed an Indian servant. That night they took the priest to their highest cliff "and, after a few feints, dropped him in mid-air."

In winter Acoma is nearly empty, for most families now live in the valley below. A wet snow is falling as I stand at the cliff edge and gaze at Enchanted Mesa, rising a few miles away. My guide, Barbara Miller from Acoma, repeats a legend that Willa Cather knew: "No one ever climbs that mesa, for the pathway down will vanish behind them." My response is tactless: "Surely, someone has climbed it?" She gives me a long and silent look. I know how that priest felt, dropped in mid-air.

GOING NORTHEAST to Taos, Willa Cather found her best lodgings at the home of Mabel Dodge Luhan. Mabel played host to writers and artists; her sprawling hacienda was a mélange of parrots and porches and dovecotes. She also collected husbands; the fourth was Tony Luhan, an Indian from Taos Pueblo. Tony left an Indian wife for Mabel, but he still wore his braids and bracelets.

Tony and Mabel may have inspired Willa Cather's description of this northern region as proud and rebellious. Her Father Latour had difficulties with the Indians of Taos. In 1847 they had revolted and scalped the new American governor. Their leader, Latour

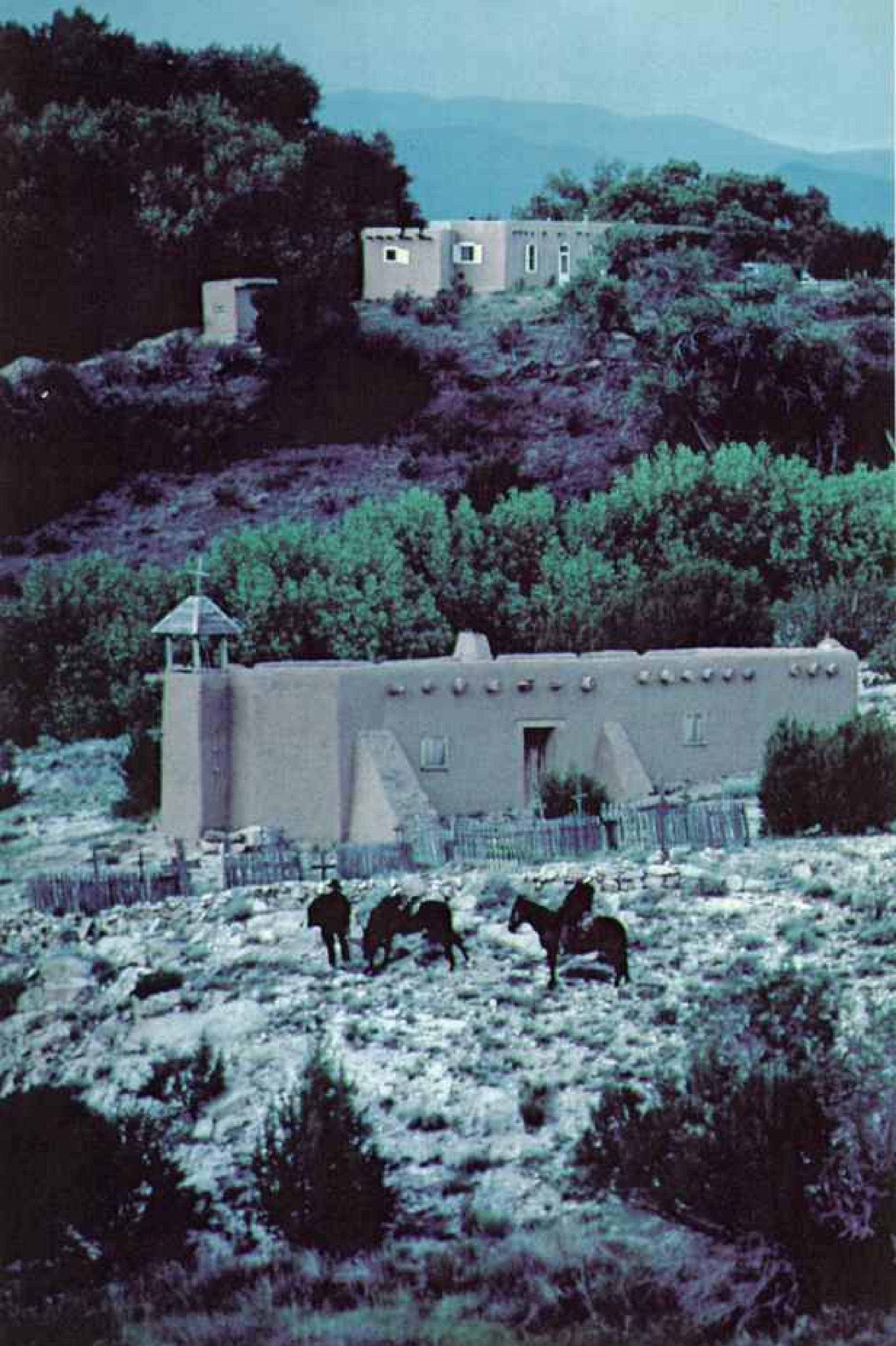
suspected, was Padre Martínez—a priest "of violent, uncurbed passions."

Here fiction and history clash, for Hispanic New Mexicans regard Antonio José Martínez (1793-1867) as a cultural hero. Thomas E. Chávez, a historian at the state museum in Santa Fe, explains: "Martínez created some of our first schools and printed books. Yes, he fought Lamy; the Frenchman was too orthodox and ascetic for this country. When Lamy died, people venerated him. But did they finish his cathedral towers?"

In his final years Cather's Latour built a small country home near Tesuque. He grew apricots and cherries while his cathedral rose in Santa Fe. Fifteen miles south of there he had found the right stone in a solitary hill, "yellow, a strong golden ochre, very much like the gold of the sunlight." That hill overlooks the railroad terminus for Santa Fe. Coming and going from New Mexico, Willa Cather always stopped here. The village is called Lamy.

IN HER LATER YEARS, Cather resented the losses that time brought: changes of residence, deaths in her family. The place that made her secure was Grand Manan Island, off the east coast of Canada. Standing by her cabin in Whale Cove, I can see why Willa Cather came here so often. Surrounded by the changes of tide, rain, and fog, she lived on enduring rock. This island must have awakened memories of all her life and work. The cabin is plain and weathered, gray as a mill in Virginia. Her study window faces the sea, which

Pursuing high ideals *with great practical skill, Jean Baptiste Lamy, first Archbishop of New Mexico* ***(above)****, was a hero to Willa Cather, and she fictionalized his life in "Death Comes for the Archbishop." At his country lodge near Tesuque, Lamy built a chapel with hand-painted windows to remind him of the stained glass in French cathedrals* ***(right)****. Indians at a pueblo near Taos run a relay race to celebrate the festival of San Lorenzo* ***(left)****. Cather's archbishop saw in the Indians something "youthful and elastic."*



Evening shadows *fall upon a mountain chapel near Santa Fe. "The old mission churches, even those which were abandoned and in ruins, had a moving reality about them," Cather said. Just 12 days before her death on April 24, 1947, she was planning another journey west to "the bright edges of the world, on the great grass plains or the sage-brush desert."*

swells and heaves like a Nebraska prairie.

One of her last stories, "Before Breakfast," written in 1944, described an island visitor, Henry Grenfell, who found his place in time on an early morning walk. Following his steps, I pass through damp spruce woods to an open cliff, far above the sea. Like a western canyon, the cliff is undercut with large caves. I think of mesas, yet breathe an air of brine.

Here Grenfell saw a young girl appear, strip off her robe ("Her bathing-suit was pink"), and plunge into the cold water. When she returned safely, he felt a rush of joy: *Plucky youth is more bracing than enduring age. He crossed the sharp line from the deep shade to the sunny hillside behind his cabin.* Like him, Willa Cather was prepared to move on.

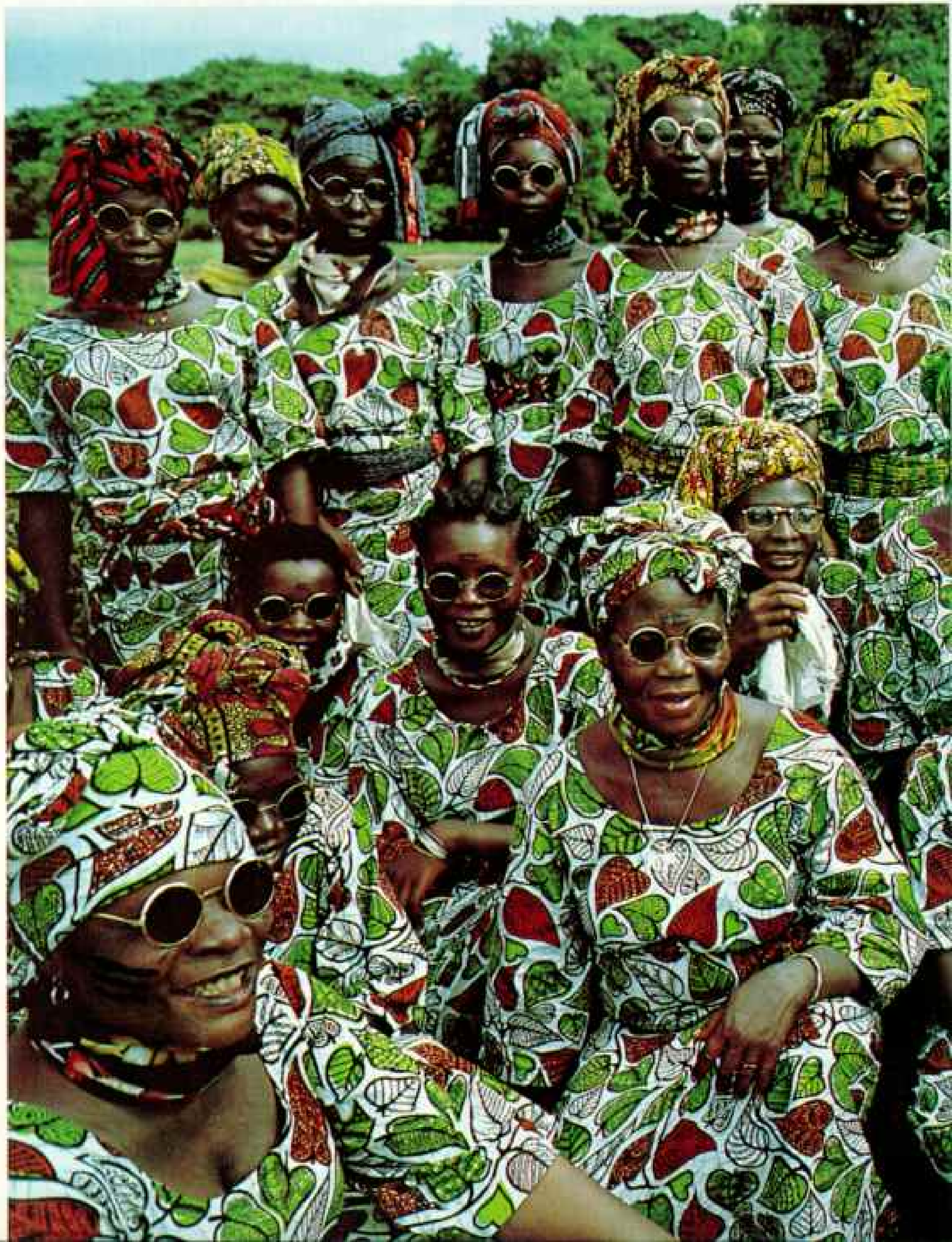
A day later I stand by her grave in Jaffrey, New Hampshire. She wrote some of *My Antonia* here; her epitaph repeats the words of Jim Burden: *"That is happiness; to be dissolved into something complete and great."* The grave lies in a far corner, close to the road. At the old crossroads grave in Nebraska, Jim Burden had said no one passed "without wishing well to the sleeper."

Home at last, I ask a friend about some rocks I saw on Grand Manan. They lay on either side of a geologic fault, one side young and one side old. He replies that this line is a contact between two landmasses. "See this dot on the map? That is Grand Manan, shown in two colors. The west side is young American rock; the east is a bit of Europe."

In her books Willa Cather gave us something complete and great, a vision that united the Old and New Worlds. That island was a proper home for this artist, whose country lay both east and west. I thank my friend, then head for a morning class. Students are waiting; perhaps one today will be a new and unknown face. □

The Ivory Coast—

ARTICLE AND PHOTOGRAPHS BY
MICHAEL AND AUBINE KIRTLEY



African Success Story

With ties to two spheres, *Ivoirian women wear the local costumes of an official nationwide women's association. The government seeks to preserve tribal traditions while strengthening a sense of nationhood among more than 60 ethnic groups.*

Twentieth-century megaliths *pierce the skyline of Abidjan—capital, chief port, railhead, and financial nerve center for one of Africa's most prosperous and stable*

nations. Foreign investment, encouraged by moderate politics since independence was gained from France in 1960, has helped expand a strong agricultural base.

Like sprouts from a dusty dry earth, *granaries and huts of a Sénoufo village cluster amid yam fields on the northern savanna. Well nourished, by Third World standards,*

Ivoirians also produce cash crops such as coffee and cacao for export, financing a favorable trade balance and imported luxury foods and other consumer goods.

A TRIO OF SPOTTED PANTHERS crouched atop thatched houses, snarling at me. Six others circled on the ground. One screamed, raked his talons at my camera. I fell backward against a hut, remembering sickly that I had been forewarned; the panther-man ritual was dangerous, sometimes fatal. By reflex I protected my face with my arms.

Whips cracking, other men suddenly intervened to rescue me, chasing the panthers out into a leafy enclosure and shouting, "No ordinary man may enter here!"

Later that day the panther-men brought me food. They were amiable now, and had removed their painted-cloth costumes, but I was still nervous in their presence. I knew that each had spent seven months alone in the jungle seeking to become a wild animal: "To worship the panther and be with her."

While I was asking questions, a man suddenly fell to the ground, writhing and pitifully howling like a wounded beast. Convulsively tearing at his clothes, he jumped up naked, white-eyed, and ran on all fours into the jungle. I was dumbstruck. "You have pronounced a taboo word," someone cried out. He refused to elaborate. I never learned what the word was.

The panther-men are Wè tribesmen (called Guéré by French colonialists) of the Ivory Coast's western highlands. As photojournalists, my French wife, Aubine, and I had come to this small, prosperous West African nation four months before. We came with the warning ringing in our ears that we would find a corrupt neocolonial country—independent of France since 1960—where whites were still in control behind the scenes, where "tradition" was quickly becoming "folklore." We half-expected the ultramodern capital, Abidjan, to be an imperfect copy of Paris. We certainly didn't expect what we found.

IN OUR countrywide travels, Aubine and I saw that secret societies and rituals such as the panther ceremony were commonplace. We visited sorcerers and the gold-encrusted court of a tribal king. We sang with fundamentalist Christians and danced alongside masked gods. Before our incredulous eyes, an entranced celebrant stabbed himself in the abdomen (page 110), pulled out a portion of his intestines, pushed them back in, then made the wound heal by rubbing it with egg, herbs, and kaolin.

"Anyone who scoffs at or disbelieves the magic in our country," declared French-educated Ambroise Agnero, of the National Library, "understands nothing. Such rites are the basis of our everyday life."

This esoteric and supernatural world is the soul of the Ivory Coast. And yet, ask an Ivoirian how he wishes to live, to what he aspires. He may well answer that he wants an air-conditioned villa with car (not just any—a Mercedes-Benz, thank you!), color TV and videocassettes, plush sofas, champagne at every meal, a European wife, an exclusive club, and money to burn.

"We have our feet in the Stone Age, while our heads spin in the atoms—we haven't found our bodies yet," explained René Babi, director of tourism for the western regions.

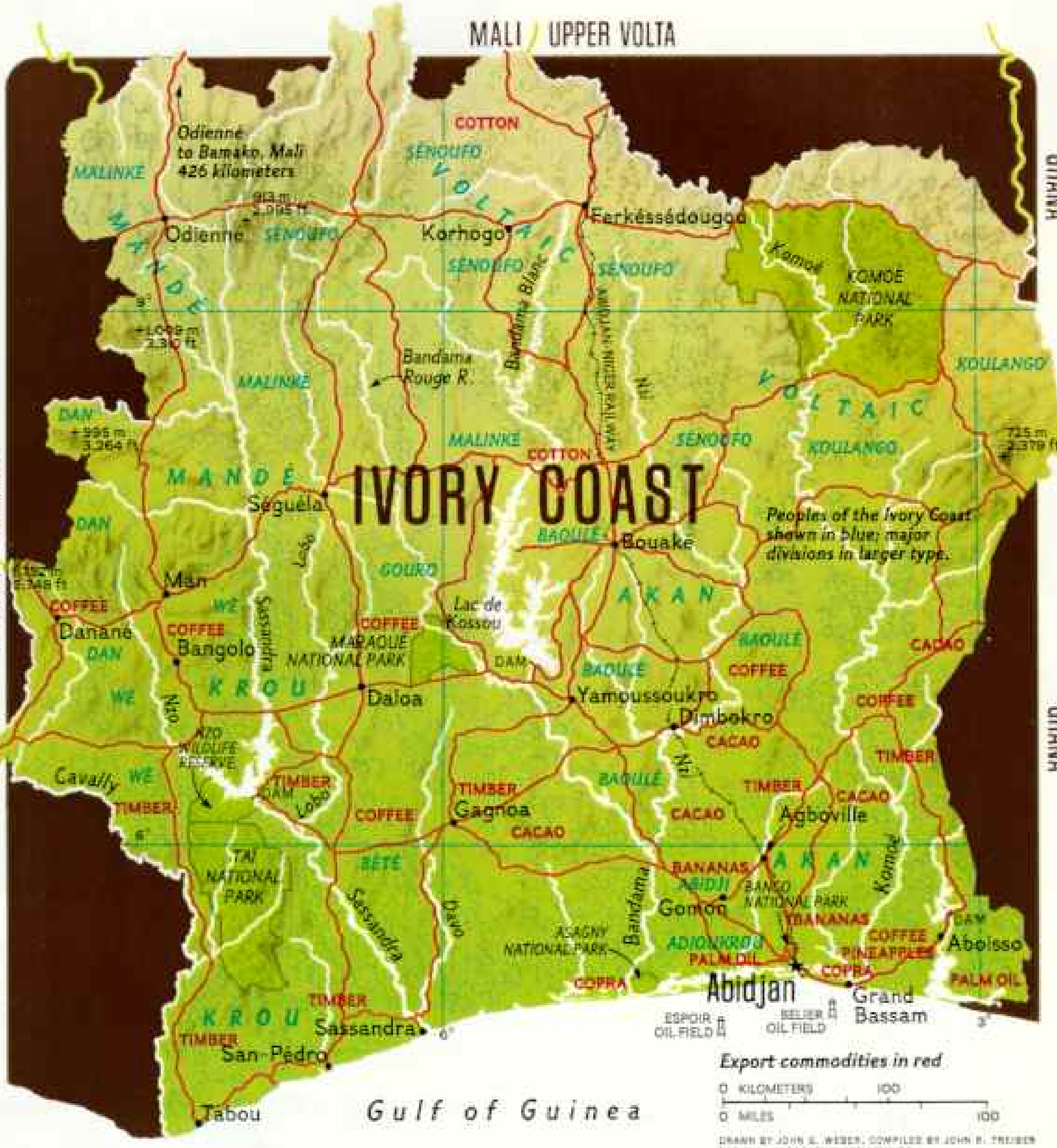
THE IVORY COAST once had many elephants, hence its name. It is also called the "miracle of Africa." Almost alone among newly independent nations, it has had no coups, no mass rioting, no tribal wars. Ivoirians have the highest standard of living in black Africa, and their per capita income is one of the continent's highest.

Sound management has produced real economic growth every year since independence, a feat unparalleled in most of the Third World. Some 2.5 million people, more than a quarter of the population, have immigrated here to work. All this without oil—until recently—or any major mineral resource, amid more than 60 potentially divisive tribal groups.

More jobs are available, more merchandise passes through ports, more outside investments are made here than anywhere else in French-speaking black Africa. The Ivory Coast ranks first in world cacao production and is the largest African coffee producer. Recent offshore oil discoveries promise imminent petrodollar wealth.

So who's complaining? Just about everybody, unfortunately.

Government officials lament drastic budget cuts stemming from a decline in the prices of coffee and cacao. N'Guessan Kouassi, our driver, throws up his arms in dismay when he realizes that his children's



AMPLY ENDOWED with watered farmlands, hardwood forests, and tropical climate, the Ivory Coast weaves prosperity from a large work force and political stability. **AREA:** 322,500 sq km (124,500 sq mi). **POPULATION:** 8,262,000, including 2,500,000 immigrant workers, about 100,000 Lebanese and Syrians, 50,000 French. **CAPITAL:** Abidjan, pop. 1,597,000. **RELIGION:** Animist, Muslim, Christian. **HISTORY:** Côte d'Ivoire was claimed by France as a colony in 1893. Alongside the Europeans an African planter class arose and in 1945 elected one of its own, medical doctor Félix Houphouët-Boigny, to the French National Assembly. He led his country into independence in 1960, encouraged a Western-oriented free-enterprise economy, and still rules as president of the republic and head of its only political party. Now 76, he is lionized by many Africans as a pioneer of the continent's independence movement. **LANGUAGE:** French, some 60 African dialects. **LITERACY:** 25% and rising, with 75% of youngsters in school. **LIFE EXPECTANCY:** 46 years. **ECONOMY:** Agricultural; a world leader in cacao, coffee, and palm oil. Also timber, pineapples, bananas, cotton. **PCI:** $1,060.

schoolbooks will cost him two months' salary. Wherever one travels, the villain is referred to as *la conjoncture*—the juncture—the world recession. It has deflated optimism and ego; it has closed businesses; and for the first time serious doubts are voiced nationwide about the government.

"We didn't make imaginative choices at independence," claimed a teacher we met. "We followed strictly colonial models for a consumer society, and now we pay for this by our extreme dependence on the outside world—if it suffers, we suffer."

The Ivory Coast has indeed oriented its politics toward the West. President Félix Houphouët-Boigny, elected at independence and now in his fifth five-year term, declares his disdain of Soviet incursions into Africa; he broke relations with Moscow in 1969. He has been a moderating influence among Third World countries. Often called America's best friend in West Africa, the Ivory Coast today feels it gets little thanks in return, and frets about the future.

The country's new Ambassador to the United States, René Amany, was the director of the National Stabilization Fund when Aubine and I visited him in his spacious 23rd-floor office in Abidjan. The fund controls the marketing of all Ivory Coast export crops. As director, Amany supervised worldwide price negotiations, while assuring farmers of a fixed revenue by buying crops at predetermined prices.

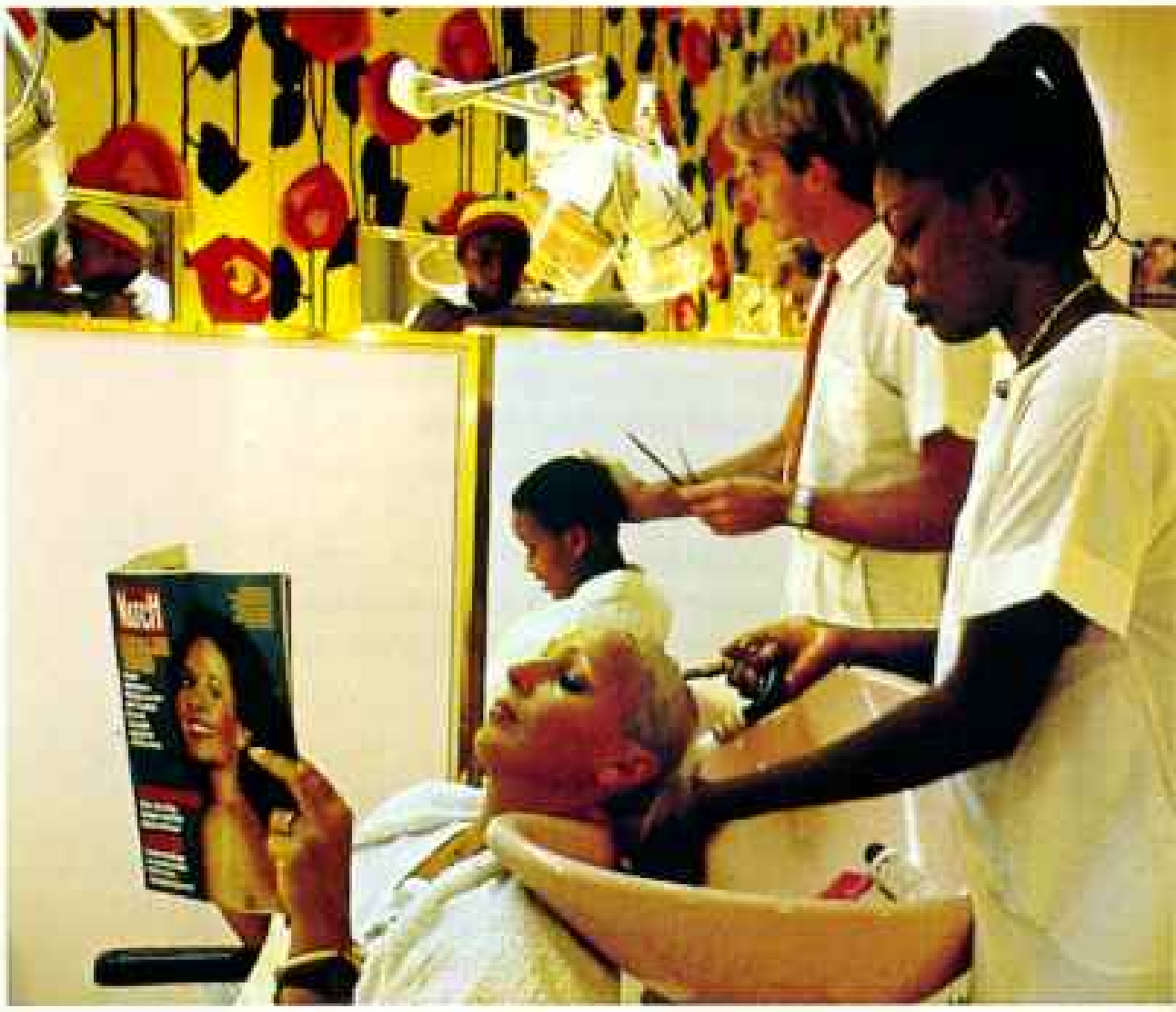
He complained to us that profits, which must be used to fill government budgetary gaps, have decreased from one billion dollars five years ago to only 100 million dollars in 1981, following a 70 percent drop in the market price of coffee.

"The United States is one of our most important trade partners," he told us. "Trouble is, America treats us just as it would a commercial enterprise—if we go bankrupt, then, in American eyes, it must be our fault, bad management. In fact, we have twice as much coffee as we are allowed to export under international agreement. But at the same time, we feel that the U. S. protects the coffee growers of Central America—which have higher quotas under the agreement—in order to bolster political stability in that region. How can I tell the millions who suffer from these decisions that Uncle

The good life *for thousands of middle-class Ivoirians resides in Abidjan neighborhoods like Deux Plateaux* ***(above)****. But many citizens cannot find housing, despite 8,000 units a year built by the government during the late 1970s.*

Plentiful food, much of it imported from France ***(left)****, stocks modern food stores across the nation. And the latest Parisian hairstyles can be found in the salons of Abidjan's showcase Hotel Ivoire Inter-Continental* ***(right)****.*

The European influence is sustained by 50,000 resident French. The government encourages the placing of Ivoirians in positions now filled by the French—a plan labeled Ivoirization.



Sam has forgotten his friends in Africa?

"As our guest, the director of a large U. S. food company recently visited the Sénoufo country. He left realizing that the buttons he pushes affect the lives of real people."

THESE REAL PEOPLE, the Sénoufos, inhabit the northern savanna around Korhogo, the country's fifth largest city. We visited them during the dry season, when commemorative funerals are held for those who had died during the year. One was a chief. "He was our 'old man,' " explained Ousman Coulibaly, a local notable. "He must have been at least 114! He remembered, as an adolescent, seeing Samory [a revered 19th-century anticolonial fighter]."

Among the Sénoufos, a man's life is divided into seven-year phases, the most important being ages 14 through 21. The ideal age is 126—6 times 21—when all knowledge and purity on earth are attained. The elderly live in dignity and veneration. Their funeral rites reflect awe for their great wisdom.

Thunderclouds gathered like jackals as we drove the muddy track with Ousman through howling squalls. I mentioned my fears about making photographs of the various funeral ceremonies in such conditions.

"You will see," he reassured us. "It may rain all around, but our anti-rain prayers will assure that not a drop spoils the day."

The village was indeed dry. Red dust clung to the muggy air, turning huts and granaries into rusted iron sculptures. Firecrackers erupted as we arrived—was this a funeral or a festival? An old woman greeted us by banging on a tin can. Beyond her along a trail leading to the sacred grove, men played whistles and balaphons (wooden xylophone-like instruments) before a mesmerized crowd of swaying women, babies sleeping on their backs.

Welcoming us into a circle of smiles, merrymakers undulated around the swaddled corpse of the old man. "Life is like a pond we cross," said Ousman. "At the end of the crossing, we discover our ancestors. We'd better make sure now that they are happy with the way we said good-bye."

All afternoon, lightning and storm clouds circled. As we left the village, high winds and drenching rain battered us. But not a drop had spoiled the funeral.

As in many Ivoirian societies, the Sénoufos practice an extremely disciplined and mystical approach to life. From birth to death, actions and thoughts are controlled

Amid beer and banter, *capitalism thrives in the backyards of Treichville, a sprawling Abidjan suburb crowded with farm people and immigrants. A vendor hawks a dress to customers at a "maquis," an informal, open-air bar.*

by a complex social code and philosophy called Poro. Its rigorous rules and severe initiations have one overriding aim: to create and maintain order.

The elders are idolized teachers. Disobedience is intolerable. "Fidelity buys more than wealth," they instruct. "Friendship should be honored by death, when necessary." Lifelong education runs the gamut of theoretical and practical knowledge, from religion, cosmology, and magic to history, etiquette, arithmetic, and the making of farm implements. Initiates adopt a secret language and liturgy.

Even picture taking has its regulations. Desiring to photograph a sacrificial shrine, I was frustrated by the priest, who declared that I must satisfy his god with my own sacrifice, lest it kill him for sacrilege.

"What must we do?" I asked.

"It will accept 15,000 francs [$50]."

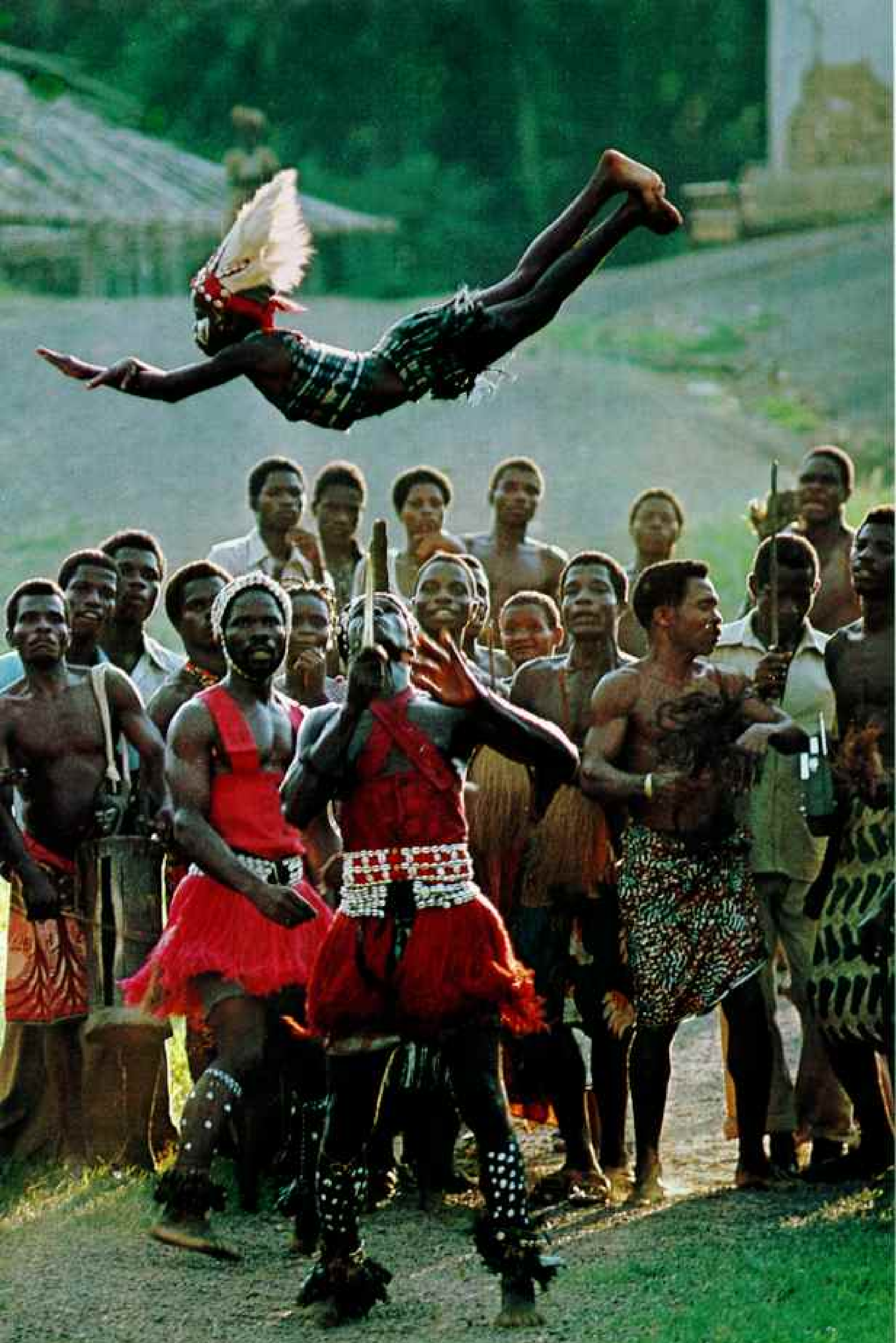
"Why so much?"

"Monsieur, even my deity suffers from 'la conjoncture.'"

OLIVIER MARTEL (RIGHT)

Nonchalant grace *springs from two to three years of rigid training undergone by young girl performers (**above**), chosen at age four to learn the Dan tribe's acrobatic dances. Male dancers toss the acrobats back and forth from the crooks of their arms, flourishing knives beneath them (**right**) and often appearing to catch them on knife point.*

Once imbued with sacred meaning, the performances continue as a folk custom, performed in Dan villages on special occasions—including tourists' visits—and in other parts of the Ivory Coast by traveling Dan troupes. A multitude of religious rituals and societies that cultivate secret or magical knowledge and skills act as controlling forces in village life. Traditional Ivoirian beliefs posit a parallel spirit world that constantly influences day-to-day events.



OF THE SIXTY-PLUS distinctive tribes now inhabiting the Ivory Coast, few were there originally. According to legend, the only indigenous folk were "little brown people" who lived in the forest.

The peaceful Sénoufos and Koulangos settled in the north and east a millennium ago. About 1600, warlike Malinkés pushed south from today's Mali, expropriating land and assimilating local populations.

Around this period a group from the Akans' great Ashanti Kingdom moved into the southeast. One branch, led by Queen Pokou, pushed on to the banks of the Komoé River. Querying her priest about the hazardous crossing, Pokou was told that all would go well if she offered a sacrifice. She did, her own son, crying out "*Baouli*—the child is dead." Her descendants, called Baoulés to this day, went on to farm the savanna and become the largest Ivoirian tribe.

Other migrations gave rise to the sylvan Krou group (Bétés, Wès, and others) in the southwest, the southern Mandés (Gouros, Dans, etc.) in the west, and the Lagoon peoples (Adioukrous, etc.) in the southeast. Soon the first whites established trading posts along the coast and began bartering for ivory, palm oil, and slaves. France's interest remained mercantile until the late 19th century; then French forces sallied inland, signing treaties and protectorates with local chieftains.

The Côte d'Ivoire was officially declared a French colony in 1893. Export crops such as cacao and coffee were introduced to stimulate the economy, and French plantation owners conscripted men to work hundreds of miles from home. In 1934 Abidjan, newly created port and terminus of the old Ocean-Niger railway, became its capital.

"In the early 1940s," Coffi Gadeau, the nation's grand chancellor, recalled, "no one really *desired* independence. We wanted an end to injustices—such as the 'native code,' which allowed forced labor. Our breakthrough came in 1944, when Gen. Charles de Gaulle gave us the right to have a representative in the French Parliament." Félix Houphouët-Boigny was elected to the National Assembly after a bitter campaign. Through the next 15 years, the future president and his party helped eliminate most injustices. Independence followed in 1960.

Remarkably, Houphouët did not reject the former masters. To the contrary, he encouraged the French to invest in the private sector, staffed schools with French teachers, and called upon French technical advisers to help run the country.

Today more than 50,000 French make their homes here, three times as many as at independence. Insisting that Ivoirians must gradually occupy these positions, Houphouët set aside 30 percent of the national budget for education.

Wherever we traveled, the French were there. French secretaries typed my letters, a French barber cut my hair, a French locksmith made me a duplicate key. We bought imported French wines, cheeses, and canned goods from French salesclerks at French supermarkets.

Aubine and I once sought to interview Emmanuel Dioullo, the mayor of Abidjan. He referred us immediately to his assistant. French, of course.

Many feel that Ivoirization has come to a standstill. Well-educated, unemployed nationals glut the job market. I spoke of this to my friend Seydou Coulibaly, a high-school teacher, who suggested that a "white is right" complex had developed, encouraging future employers' belief that educated Ivoirians are less desirable than even incompetent French.

"Our own government provides the example," he said. "A few years ago the U. S. offered agricultural aid to several West African countries, provided that each country would propose a viable project. Houphouët sent a team of French experts to outline our project. The Americans were shocked. Mali had sent Malians, Upper Volta had sent Voltans. We sent only French! And we were turned down."

Outside of a general uneasiness that expatriates take jobs away from Ivoirians, avoid mixing with them, and live in luxury, we found that overall resentment toward the French was minimal.

"Look at the nations around us!" exclaimed a financial official in Abidjan. "Ghana is bankrupt; Guinea has a repressive, poor society. In the Ivory Coast, Africans live the life they dream about; telephones work, utilities are repaired, transport

(Continued on page 114)

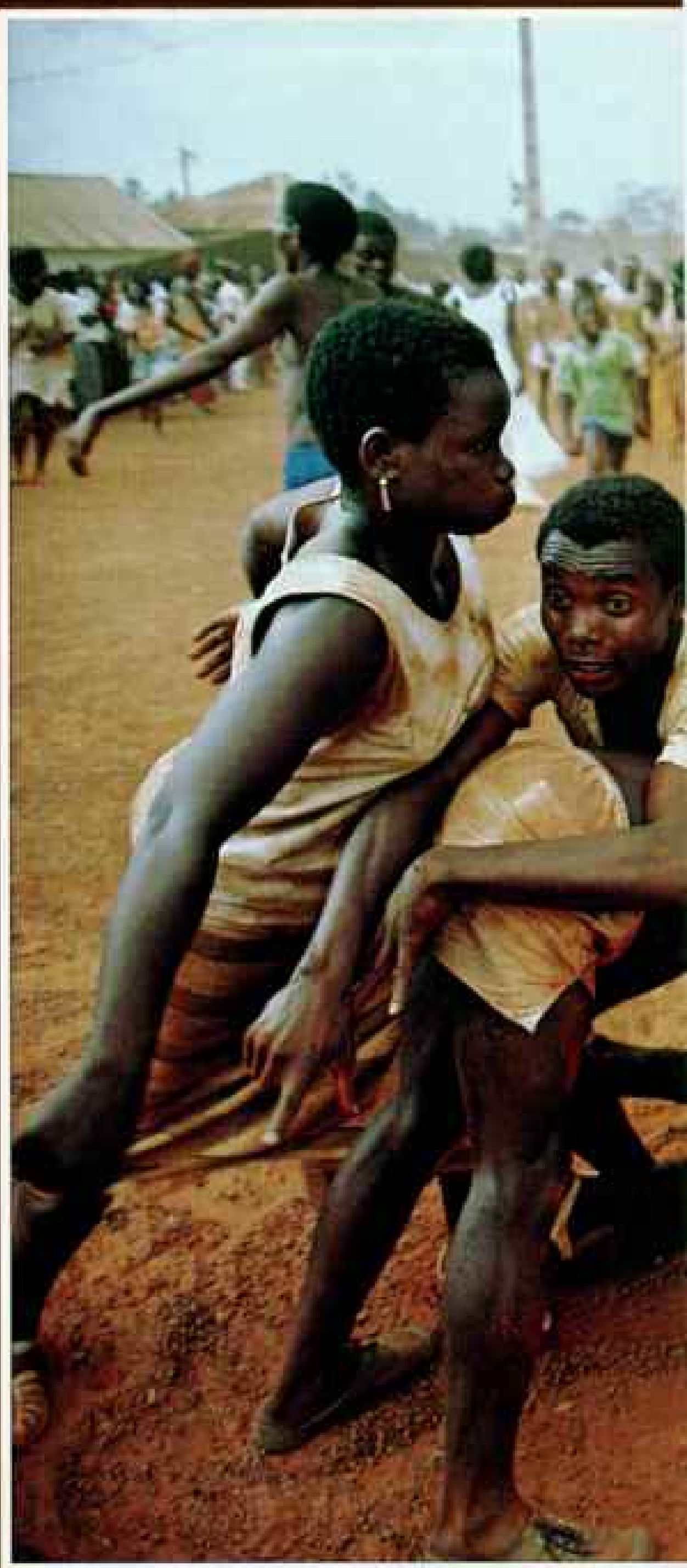
Living With the Spirit World

IN THE ANIMISTIC COSMOS accepted by more than half of all Ivoirians, boundaries blur between man and spirit, dreams and waking, real and unreal.

Panther-men, initiates in a mystic society of the Wè tribe, dance in raffia costumes upon returning to their village after seven months of living in the bush as wild animals.

PANDEMONIUM reigns at the Abidji tribe's Dipri festival, held on their new year at Gomon, an hour's drive from Abidjan. Possessed by "sékés"—beneficent spirits—participants stumble blindly in the street (below right), bodies contorted, oblivious to each other and their surroundings.

At the height of collective frenzy, a man plunges a knife into his abdomen (below left), one of several forms of self-mutilation practiced at the Dipri. Observers, including the authors, report seemingly miraculous healing of such wounds with application of



poultices made from kaolin, herbs, and raw eggs. Festival participants say that, while they were entranced, their sèkè prescribed both the wound and the cure.

Surprisingly, the festival functions as an invocation of harmony within the society. All Abidjis from Gomon are required to attend. The evening before, they reconcile divisive issues, both on a personal level and in the community. Bad spirits are driven out of town, and celebrants purify themselves. Healing and other acts of magic are believed to be guided by good spirits.

MASK AND THE MAN behind it merge to become the incarnation of the mask—a representation of a nature spirit from the world beyond the village—in rituals that reaffirm connections with the supernatural. Masks also sometimes act as arbiters and enforcers, singers and clowns. Styles and meanings vary widely. At a yam harvest festival, a Dan mask (top left) of great power reflects one aspect of the Dans' world view: Serene, expressionless, it mirrors the gentler, controlled elements of human nature. Dan stilt dancers, resting

against a rooftop after a performance (right), serve as entertainers in less exalted roles.

Fierce animalistic features of a Wè warrior mask (above) and the rarely seen wisdom mask Nanh-Sohou (left) express Wè perception of the wildness found in nature and in man himself, a ferocity restrained by a social order overseen by the masks.

(Continued from page 108) functions. The Ivory Coast is no 'miracle'! Houphouët realized that his 'pup' could not be prematurely separated from its mother, that's all!"

THE CHARISMA of Africa's "Old Wise Man"—at 76, Houphouët is one of the continent's oldest leaders—extends beyond his country's borders. Not long ago, Aubine and I were watching a scratchy newsreel in an outdoor theater in Bamako, Mali. The audience was plainly impatient with the highlights of an African summit meeting, even when Malian President Moussa Traoré spoke. But when Houphouët's round, sparkly face popped on the screen, the applause was deafening.

A Malian leaned over, saying, "He's like our father; he made his country work, and he'll show us the way. We're proud of him."

Ivoirians express much the same sentiment, though they grouse that Houphouët has not named a successor. They are also curious as to why he always dresses "like a white." I bet a friend that I could photograph the president in the traditional garb of his tribe, the Baoulés. "I'll believe it when I see it," my friend replied.

We found the Ivoirian chief of state walking in the gardens of his palace at Yamoussoukro, his hometown, about 270 kilometers northwest of Abidjan. "Have you noticed the flowers in my country?" he asked, pointing with obvious pleasure to arbors of orchids and bougainvilleas. "We have many natural riches, but I love the flowers most."

Dapper in his simple dress suit, Houphouët nonetheless remains close to his roots. After medical school in Senegal, he served his people as a physician before taking up politics. He has told other members of the wealthy class not to forget their own villages, and he set the example himself by personally making huge investments to modernize Yamoussoukro, now a vibrant city of 45,000.

Diminutive, eyes alight, he ushered us through his palace. The hallway was lined with display cases of gold tribal treasures, among them a beautiful figurine depicting an elephant riding on a tortoise. "Power should never go faster than wisdom permits," he observed.

Continuing, we saw living quarters, immense salons, and dining rooms, all decorated with exotic carpets, Aubusson tapestries, Chinese furniture, and paintings by masters such as Renoir and Chagall. At last we entered a small study.

"This is where I dream. To make Yamoussoukro an international center of peace, learning, and fraternity."

The chief of state then recalled visiting U. S. President and Mrs. John F. Kennedy in Washington, D. C., in 1962. "They asked me how it was that I never aged. I told them 'I don't smoke, I don't drink.' Later, Mrs. Kennedy offered me a glass of champagne to toast my trip, but I asked her for sparkling water instead. I think I shocked her.

"I've always admired America. When people ask me why I welcome the French, the Lebanese, or any African who needs a fresh start, I say 'Look at America.' What made you a great nation is your immigrants. Immigrants make *us* a successful nation." He confided his pride that the 1980 elections *à l'Américaine*—with multiple candidates—had brought his country farther along the road to democracy.

A friend in Abidjan once told us, "Houphouët's become a sort of god." Though no one doubts his power or its stern application, his reputation for compromise is legendary. He is proud never to have spilled blood. "Rather," he told us, "I pardon those who plot against me. To pardon an enemy is to break his jaws; he can no longer bite you."

Then I told him of my bet, suggesting he would make a very handsome portrait in his bright Baoulé clothing.

"Of course, I would like to wear traditional dress. I am African, no? But as president, I rule over all my subjects, not only the Baoulés. I'm sorry. I must refuse your request. I must be careful to avoid jealousies."

A NAGGING PROBLEM facing the president is conservation. Twenty-five years ago, a third of the country was covered by dense forestland. Because of expanding agriculture and timber exploitation, forests cover less than 10 percent today. Too, organized poaching and illegal planting have decimated the country's rich wildlife. Since 1975 the government has limited all hunting and set aside some 18,500

square kilometers (7,150 square miles) for parks and reserves.

Aubine and I drove our Land-Cruiser to 3,500-square-kilometer Taï National Park in the southwest. Designated a world biosphere reserve by UNESCO, it is the last significant area of primary tropical forest in West Africa, and one of the few in the world. Moreover, 10 percent of its plant species are found nowhere else, and the Taï is a refuge of the pygmy hippopotamus as well as several kinds of antelope.

By a rain-sodden track we found Christophe and Hedwige Boesch, a Swiss couple who have studied chimpanzee behavior in the Taï since 1979. Christophe invited me to go hiking.

A limp blanket of mist coated the soggy earth as we clambered over fallen limbs and pushed away lianas that hung about like snakes. As we walked, he pointed out different varieties of plant life—a majestic mahogany tree, tiny delicate flowers, a giant *makoré* tree, and thick parasitic vines that completely swallow their host trees. At one point I inadvertently stepped on the tail of a five-foot-long lizard, which scurried into the underbrush. Suddenly we encountered a man-made path.

"Poacher's road," Christophe said forebodingly. "The way will be easier now, but less happy."

Soon we saw the carnage of this trade. Elephant skulls, stripped of tusks, rose gloomily like bleached rocks out of the hazy forest green. At one old campsite we counted five skeletons, including three babies.

"Poachers don't care how big the tusks

Equatorial oddity, *the first ice rink in West Africa draws skaters from steaming outdoors to glacial relief at the Hotel Ivoire. Luxury hotels in major cities and coastal resorts invite expanded tourism, a scarcely tapped trade. An already developed infrastructure of good roads, water supplies, and communications smooths prospects.*

come—not when a pound of ivory sells for nearly a month's salary. Elephants will not last long," he said disgustedly.*

THEN WE LEFT the track, I quickly felt as if within a womb, warm, wet, and timeless. All noise was muffled, yet constant: the dripping of condensation, nasal trumpet calls of the hornbill, the screeching of colobus monkeys, treetops rustling from their incessant movement. And another sound, very faint: Thump . . . thump . . . thump.

"Do you hear them, Michael? The chimpanzees? They must be 500 meters away. They are calling each other by thumping the tree trunks."

We ran in the thumpers' direction, stopping only 15 meters from a large male chimpanzee who was nervously keeping guard. Christophe shook the branches of a tree. "I want them to know we are here," he said.

The big male froze when he saw us. He screamed and bounded back toward several others, and they scrambled away noisily. Christophe was miffed.

"We got too close before warning him. Often when they see me, they tolerate my presence. Our constant problem is to avoid the impression of aggression."

The next day, talking with a park ranger, I learned of a more insidious form of aggression. His most discouraging problem is corruption. "The law is clear," he said. "No tree felling inside the park." He lamented that despite his entreaties and fines, loggers (almost exclusively white) continued to sneak men into the Taï to cut wood for export.

"Even worse, it appears they have bribed top officials in the government; when I impound their equipment, I always receive a release order from my boss within three

*Oria and Iain Douglas-Hamilton's African elephant survey for the November 1980 GEOGRAPHIC recorded only 4,000 of the embattled giants remaining in the Ivory Coast.

Willing hands *find work as "fanicos," laundrymen, on the outskirts of Abidjan. Non-Ivoirian Africans, drawn by the nation's relative affluence, provide most menial labor. Ivoirians aspire to more skilled jobs or farm village land.*

days. What can I do against such influence?

"The answer is nothing, until Ivoirians realize that part of their precious heritage is about to disappear forever!"

"MODERNISM and our traditional ways are two poles of conflict; one will eventually destroy the other," asserted a cultural adviser to us one day. "And this country is slowly losing its cultural foundation."

Subsequently we spoke of this to Jean-Baptiste Beugray, accountant at the National Business School and a member of the Abidji tribe just north of Abidjan. His reluctance to talk was obvious. "First see the Dipri feast, in two weeks' time, at Gomon, my hometown," he said nervously. "Then maybe you'll understand."

We arrived at Gomon on the eve of the festival. Our host, Michel Kouakrah, a village elder and an Abidji, warned that what we would see might frighten us. The Abidjis, he went on, were noted for their great powers of magical healing.

"Even Treichville Hospital in Abidjan sends us 'incurable' cases. Once a man had a bullet in his brain. We sucked it out and sent him back cured!" he boasted.

He explained that the Dipri is a new-year celebration, a time of reconciliation, when enmities are laid aside and magical powers fully restored.

At sunrise, clangorous knocks on our windows awakened us. "They are chasing the last bad spirits from the village," Michel declared. Chanting lines of clay-covered figures jogged up and down the central village street, waving wooden wands. The atmosphere was expectant.

A man broke away from the crowd, striding stiffly, crying in pain. Exultantly, a woman opened her mouth, rolled her eyes, moaned, fell to the ground, and crawled toward a group of marchers. Soon the street was littered with writhing, helpless, dust-coated bodies. I felt conspicuous, my cameras an embarrassment, but everyone seemed oblivious. Michel pushed us along, saying, "This is the beginning; the séké [good spirit] is entering their bodies. Soon they will show the power it gives them."

I followed a group marching toward the edge of the village. Knife in hand, a tall, robust fellow was screaming in strident yelps. The crowd pressed round. He turned toward me, lifted the knife above his head, and stabbed himself violently in the abdomen. I felt sick as blood trickled over his white shorts. Later I saw him strutting proudly as he exhibited a portion of his intestines. Then he shoved them back in, broke

Open-heart miracle *takes place under scalpels of a surgical team at Treichville Hospital's cardiac unit (**left**), one of two Abidjan facilities equipped for the delicate operations. French training figures in most doctors' backgrounds, but the University of Abidjan now turns out its own physicians. Free medical care is offered at widespread medical centers, although medicines and supplies are often scarce.*

*In cities and countryside, Ivoirians still place great faith in traditional healers. A Ghanaian herb specialist (**right**) deals in sidewalk cures for a variety of ills, graphically shown on his in-shop advertising.*

an egg over the wound, and rubbed it with herbs and kaolin. The wound closed.

I was at a loss to understand what I had witnessed. My belief was strained. Seeing that I was shaken, Michel shouted in my ear, "You see now how great is the spirit's power? That man will cure sick people in just that manner." Aubine and I went back to our cabin.

AT MIDAFTERNOON we returned. There was now no organized activity, only scattered groups, entranced, gasping, groping, blind to the outside world. Abruptly a great swerving wave of marchers swept everyone up into it—then stopped, confused.

"This is the last test of power," Michel announced. "One clan has thrown up an invisible barrier."

Then, as if with an immense sigh, the strain was broken. The crowd dispersed. Dipri was finished; normalcy returned.

I found the stomach piercer back at the bar, having a beer. I asked if his wound hurt. "No, but this *beer* is giving me a little heartburn," he replied in impeccable French. I could not take my eyes from his mud- and blood-stained body.

Despite the intensity of what we had just seen, Michel later observed that the Dipri had lost much of its power. "Christian missionaries," he declared, "tell us we are wrong to call the spirits to heal our wounds. And many of our educated youth are cautious about accepting initiation. They fear falling into trances at their Abidjan offices, exposing themselves to ridicule."

The Abidjis are a small tribe (16,000), one of many. Forging a nation from such groups, with their divergent beliefs, is fraught with pitfalls. As Jean-Marie Lathe, a photographer, said, "I am an Adioukrou, from the south. When I was growing up, my mother constantly warned me against western tribesmen because they supposedly ate human flesh. Nowadays I don't believe that, but I am still apprehensive in their presence." Thus do intertribal stereotypes build up, creating animosity and suspicion.

We felt little sense of nationhood in the Ivory Coast. Tourism official René Babi put it this way: "We would die for a tribal soccer team, but not even cheer our national colors; we hire for the tribe, not for merit." Many feel that the death of President Houphouët will be the death of the nation.

Not so, said teacher Seydou Coulibaly, asserting that hope for the post-Houphouët era springs from its very beginnings. "The president chose a form of development based on regionalization and de-emphasis of

Petrodollars in its future, *the Ivory Coast develops offshore oil at a carefully measured pace. A field called Espoir (Hope) may hold a 500-million-barrel bonanza. Drilling in the smaller Belier field (***above***) ushered the country into the ranks of oil-producing nations in 1980. Offshore wells now yield 10,000 barrels a day, a third of the nation's needs. Plans call for self-sufficiency in oil by 1983, and even a surplus for export.*

*For decades coffee, cacao, and timber have been the mainstays of the nation's economy and have given the country a favorable balance of trade, seldom seen in the Third World. The government regulates the marketing of coffee—here warehoused in sacks in San-Pédro (***below***)—cacao, and other export crops at guaranteed prices. Worldwide recession and falling coffee prices in the late 1970s short-circuited government projects, including plans for a monorail and an expanded airport in Abidjan.*

*Other projects reap rewards. In the north, cotton has become a cash crop, and new food-processing plants in the countryside may take population pressure off Abidjan. Opened a decade ago, the deepwater port of San-Pédro booms (***right***), handling timber and coffee shipments. Dense forests covered a third of the Ivory Coast 25 years ago; with less than 10 percent wooded now, reforestation programs have assumed top priority.*

tribal differences. Second, he gave everyone a high standard of living and a high standard of education, which no one wants to lose. He made us bourgeois. Third, he placed the accent on agriculture. Every Ivoirian is a farmer at heart."

JUST who is the "typical" Ivoirian? We headed for the central plains, Baoulé country, to find out. Presently we came to the farm of Kouamé Albert, in a small village south of Bouaké.

Albert's compound was a riot of chickens, children, and broken mortars, with a hammock strung between two trees, in which he was sleeping. He received us with cool suspicion and was irritated when we asked him about his way of life.

"Don't they teach you good manners in your country?" he scolded. "Here we say 'Good day' and ask about family health, before talking business!"

I asked the wizened old man for his pardon. He informed us that he could neither show us his plantation nor invite us to lunch until the village chief approved. As it happened, the chief was out in the fields.

We left and returned after lunch. Albert was much friendlier. "Why didn't you come to eat? The chief sent two chickens, a pot of rice, and a pitcher of *bangui* [palm wine]." We imitated the old man as we poured a little wine on the ground before sipping, as an offering to the ancestors.

Then he took us about his small plantation, a mini-jungle of coffee, cacao, and banana trees. Pushing aside broad banana leaves, we arrived at a clearing where his sons were spreading coffee beans to dry.

"We sell $1,500 to $2,000 worth a year,"

he informed us. "That is sufficient for our basic needs. One of my sons is an engineer in Abidjan. He sends us money as well."

Excitedly Albert pointed to a little string that led up a tree trunk to a trap. Caught by the neck was an "agouti," a cane rat, which is a prized ingredient in stews. Back home, he handed the animal to one of his three wives and turned to us. "Go visit the village while I prepare a typical dish for you." Then he lay down in his hammock.

That evening, though Albert hadn't moved from his hammock, *his* typical dish was served by the women.

After dinner a small figure covered with grasses ran into the compound, surrounded by chanting children. "The apprentice masks are bidding you welcome," Albert informed us. "They are in training to be important masks some day."

IVOIRIANS refuse to acknowledge the human behind the mask, so one never says "masked man," or "masked figure," only "mask." Masks are integral to peasant life—divine, visible links to the ancestors, serving different social roles. There are comedians, dancers, singers, storytellers who amuse and beguile. There are warrior masks who keep order and punish offenders of tribal law. There are masks of wisdom, whose powers are called upon only rarely.

Aubine and I were invited to a great feast day for masks by Dao Bonnot, mask chief at Bangolo in Wè country. "We have chosen our century man," he informed us. "He is the oldest man in the region. We will now give him a wonderful funeral while he is alive."

He added that after this supreme recognition, the century man must live out the remainder of his days as a nonentity, inside his compound. "The mask of masks, Nanh-Sohou, who was never born and is as old as the earth, will watch over him till he dies."

We were warned not to talk directly to masks, or approach too close. We listened as the village chief intoned the mask call. "We have offered 3 cows, 20 sheep, 20 roosters, and 10 hens. The masks are satisfied!"

Then we heard a jingling noise. Through the winding alleys between huts moved a procession of perhaps 200 dancing men and women, surrounding numerous fearsome masks. Each mask walked slowly, pompously. At the end of the line stood an all-white, lion-faced mask, taller than the others, who would take a step only every 15 seconds or so. At each step, his white-costumed cortege genuflected, rang little bells, and cried out praise to the mask.

"Nanh-Sohou is called only once every eight years," whispered Bonnot. "He gives us great delight in coming."

We were humbled by the sacredness, the solemnity, of the event. I felt it a privilege

Led by a tusker, *elephants crash through the scrubby savanna of Komoé National Park. Photographic safaris explore the 11,500-square-kilometer reserve, largest in West Africa. Hunting is controlled throughout the nation, but elephants—victims of the trade that gave the Ivory Coast its name—still fall to poachers.*

when Nanh-Sohou permitted me to photograph him (page 112).

"This is the first time that has ever happened," Bonnot later informed me.

FAR FROM THE MASKS in spirit and style is Abidjan, the Manhattan of West Africa, where money is both law and happiness. Despite la conjoncture, a gold-rush ferment pervades, drawing fortune seekers from throughout Africa. Skyscrapers seem to bud overnight on the Plateau, the lagoon-ringed commercial center. And startling contrasts abound.

In the space of a single April day I drank champagne in a banker's swank office and sloshed knee-deep with youngsters playing in overflowing sewers. I was trapped in a morning traffic jam, went ice-skating at noon, and attended a charity fashion show that evening. I discussed the merits of the Rubik's Cube with a bureaucrat, then swore after I left his office when a thief ripped my watch from my wrist.

Everywhere I watched a feverish struggle to scratch upward on the social ladder. Once I entered a small shop to buy a dress for Aubine, only to find that status regulated fashion. Varying in price, each design bore its own name, which a slender, phlegmatic saleswoman ticked off: Traffic Jam (meaning, the way up is rough); Your Foot, My Foot (I'll always be at your side); The Eye of My Rival (. . . makes me jealous); My Husband Is Capable (. . . of making money); and African Development Bank, meaning, I suppose, that to afford the dress, one might need to own the bank.

"Here we like our women expensive," a rich doctor's son told Aubine one day. "I like to feel I have a jewel by my side."

Aubine later talked to Mrs. Alexise Gogoua, secretary to the country's secretary-general. "A village woman," she said, "spends her whole life in routine—fetching water, pounding grain, caring for children, cooking, cleaning. Since she's uneducated, she's unencouraged by society. Men control everything. Here in the city we can work, have financial independence."

But city life, Mrs. Gogoua went on, has its drawbacks. "We are anonymous, we lose our roots. I have helped form groups that retain contact with the village." And even in Abidjan, she noted, husbands have not emancipated wives. "We both work, but the wife still goes home to cook and clean house.

"Some change is taking place," Mrs. Gogoua continued. "I even know a husband who gets up in the night to give the baby its bottle. A new life-style is coming. I feel that what's happening today in Abidjan will spread all over the nation. We will pull women into equality!"

As for men, Abidjan's lure can be short-lived. So we discovered while talking with Edmond Kouakou of the National Tourist Office: "Life in Abidjan is not easy. You must pay for everything, even peanuts. I go to my office and worry. About what? I worry about whether my children crossed our hectic roads in safety. I worry if they will ever be able to understand the life of my parents, if they will remember the Baoulé language. In the village there are no cars, there is peace. I dream of being a farmer. To live on the farm, and use the modern things I know."

A WEEK BEFORE our trip home, singer Pierre Amédée invited us to an afternoon jam session. During a break from his soulful, rhythmic music, he told us the story of one of his most popular ballads, about the proud reaction of a panther that left the jungle only to be ridiculed in the city.

With a glint in his eye, Pierre said: "We Ivoirians are like the panther as we venture into your modern, westernized world. But in your ignorance you look down on us. Perhaps someday you'll understand our real strength and be afraid of our just revenge.

"Pray for mercy, white man!" He roared with a hearty laugh, then extended his hand to me in friendship. □

"Dream lover" statuettes *represent spiritual spouses in the otherworld that Baoulés believe they leave at birth and rejoin at death. Individuals troubled by marital or childbearing problems often commission such figures and sleep alone with them one night a week to commune with their dream lovers—a link with the unseen world that so greatly pervades the Ivory Coast's rapidly modernizing here and now.*

Unearthing the Oldest Known Maya

By NORMAN HAMMOND

Photographs by
LOWELL GEORGIA and
MARTHA COOPER

IN THE HEART of a Maya pyramid, excavators reach toward the roots of one of the New World's most accomplished ancient civilizations. The Maya flowered during the first millennium A.D., creating grand art and architecture and an advanced system of writing. Now findings at Cuello, a ceremonial center uncovered in northern Belize, push back the first stirrings of lowland Maya culture to 2400 B.C.

The site reveals early development in building, crafts, agriculture, and trade—and unexpectedly early evidence of human sacrifices. These discoveries open a new chapter in the complicated saga of the Maya, now proven to be among the first settled peoples in the New World. LOWELL GEORGIA

THE SMOOTH ROUND object had a different color and texture from the stones around it. It took me a moment to realize that it was a human skull, lying face down.

We were digging out a temple courtyard at the ancient Maya center of Cuello in Belize, in Central America. Although we had already found many burials, we were not expecting to find one here, thrown in like trash. Other bones emerged; a young man had been buried in a seated position, and rubble piled over him. I wondered if he had been sacrificed.

That wonder turned to certainty in the next ten days as more and more bones appeared, badly crushed by the cumulative rubble of 24 centuries. One skull was particularly striking. It had a neat hole in the forehead near the hairline—a perfect fit for ceremonial chert daggers we also were finding.

A research project supported by your Society

Eventually we excavated more than 20 skeletons, some complete, some with detached skulls lying beside lopped-off limbs. This grim evidence of mass slaughter contrasted starkly with our image of the Maya as the Greeks of the New World—civilized creators of early America's most magnificent art and architecture. Clearly we were uncovering the barbaric rituals of a civilization not yet emerged.

The carnage dated to about 400 B.C. This is an early date for the Maya, although by the 1970s the earliest known Maya lowland settlements had been gradually pushed back to the seventh or eighth century B.C. Nowhere, however, had archaeologists uncovered a scene such as the gruesome mass of human remains and rubble we toiled over.

At Cuello we were merely scratching the surface. Beneath our feet slept cultural layers that would draw us deeper into the Maya past than archaeologists had ever peered, and establish this gifted people as one of the oldest settled societies in the New World.

The Maya lowlands, comprising the Yucatán Peninsula of Mexico, the adjacent Petén Province of Guatemala, and Belize, were the heartland of Classic Maya civilization more than a thousand years ago.* Between the third and ninth centuries A.D. the Maya built the great temple cities of Tikal, Palenque, and hundreds of others now buried in tropical rain forest—monuments to their ruling dynasties and to the economic vitality of the society they controlled.

After excavating the last sacrificial skeleton, colleagues Juliette Cartwright Gerhardt and Mark Horton and I stood over reconstructed plans of the burial. Gradually we pieced together what had happened on a bloody day almost 24 centuries ago.

The Maya rulers at Cuello had decided to replace their modest ceremonial precinct, a courtyard surrounded by low plastered platforms bearing thatched temples, with a grandiose new design—a massive raised platform some 200 feet square and standing 12 feet high. Crowning a low ridge, it would dominate the surrounding village, which spread across flat brush-covered terrain.

Laboriously hauling tons of rubble to raise the great platform, the ancients carefully left a central, saucer-shaped depression, about 20 feet across and two feet deep.

In this they placed the corpses of two young men, their heads almost touching, bodies stretching apart. Beside them they arranged several pots. One was a unique amphora with pointed base and three handles—an eerie echo of the early Greeks and their wine jars. Over it all they piled random human bones, then surrounded the grisly centerpiece with a ring of seated burials.

Radiocarbon Dates Amaze

Our interest in Cuello had begun in 1973, when I first spotted the site on an aerial photograph. It was unknown to archaeologists, although the prominent mounds in the bush were familiar to local folk. Scouting out the site, I discovered a striking assortment of pottery spilling from a mound that had been bulldozed for road fill.

In 1975 I dispatched Duncan Pring, then one of my graduate students, to dig a test pit there. It produced a collection of burned wood samples, which we submitted for radiocarbon dating to laboratories at Cambridge University in England and the University of California at Los Angeles.

*The December 1975 GEOGRAPHIC contained a four-part treatment of the ancient and modern Maya civilization; the August 1981 issue reported a discovery of Maya art in a Guatemalan cave.

The first results, from Dr. Roy Switsur at Cambridge, set my pulse racing: "You've got a date of 1020 B.C. plus or minus 160 years," Roy assured me. Tantalizingly, below this material lay another three feet of earlier archaeological layers.

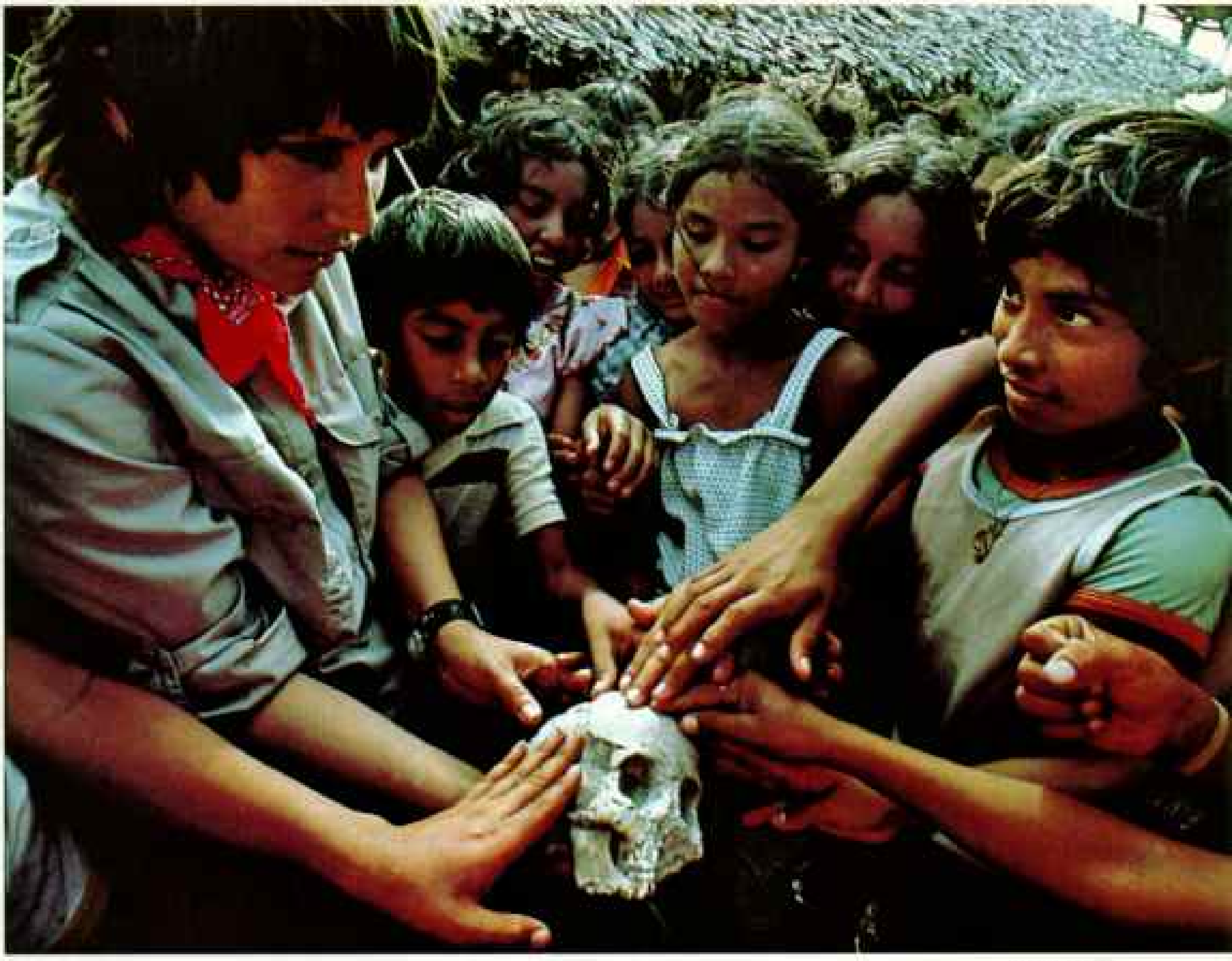
When the UCLA dates arrived from Dr. Rainer Berger, we could hardly believe our eyes. From the base of the pit came a date of 2050 B.C. plus or minus 155 years—a thousand years earlier than the Cambridge sample! This took the history of the Maya back to a time when farming villages were only just becoming established in the Middle American tropics. The occupation of Cuello apparently spanned the entire Formative period of Mesoamerican prehistory, from before 2000 B.C. to the third century A.D.

We began our major excavating in 1978 under the joint aegis of the National Geographic Society, the British Museum, and Rutgers University.

Our workers, many of them Maya themselves, built a camp of pole-framed houses with palm-thatched roofs—materials cut from the bush covering the ruins. Our huts must have looked much like those of the early settlers of Cuello some 4,000 years ago.

We found the local architecture ideal for the hot, humid climate. The open-sided buildings admitted the slightest breezes. Often these blew in smoke from sugarcane fields, fired by local harvesters to drive out the many venomous snakes.

With our reassuring cluster of carbon dates, we started *(Continued on page 134)*



MARTHA COOPER

The dead breathe life *into history for local schoolchildren who surround site lab director Karen Bruhns to touch a Maya ancestor buried at Cuello more than 2,000 years ago. Studying remains from more than a hundred burials, medical researchers found a generally well-nourished population—taller than today's Maya—who suffered from ailments such as arthritis and sinus inflammation.*

Peeling back layers of time

*STUDDED WITH FIRSTS in Maya archaeology, the levels at Cuello document the transformation of a simple farming settlement into an early ceremonial center. Scholars speculate that the rise of Classic Maya civilization in the lowlands may be traced to cultural influences from Mexico or the southern highlands of Central America. But findings at this site argue that the genius was nurtured in lowland centers such as Cuello. Tools, pottery, and architecture of early inhabitants clearly influenced those of later generations. Human sacrifice and possibly self-mutilation—bizarre rituals of the Classic Maya—were also practiced at Cuello. An offering (**below**) from the third-century A.D. pyramid includes chert daggers, a greenstone ax, and a stingray spine—an object later Maya used to draw blood from their bodies for the gods.*

*The ceremonial center (**right**) came to light during four seasons of excavation led by the author, Norman Hammond, and supported in part by a National Geographic Society research grant. The site takes its name from the Cuello family, the current landowners.*

*The ancient Maya built, remodeled, and renovated for 26 centuries. Before the platform supporting the pyramid rose in 400 B.C., the center was a courtyard ringed by low lime-plaster platforms bearing timber-frame temples or civic buildings. In the foreground, site director Juliette Cartwright Gerhardt kneels on the 1500 B.C. level of the courtyard and scrapes a platform. The oldest platform (**right**) was built about 2200 B.C.—200 years after the site was first occupied—and is the earliest plastering known in the Maya realm. Buried by other structures over the centuries, this bottom level is pierced with postholes from successive buildings and an oval grave that was dug about 1200 B.C. The oldest burial on the site (**far right**) held a woman not yet 40 years old whose remains date to at least 2200 B.C.*

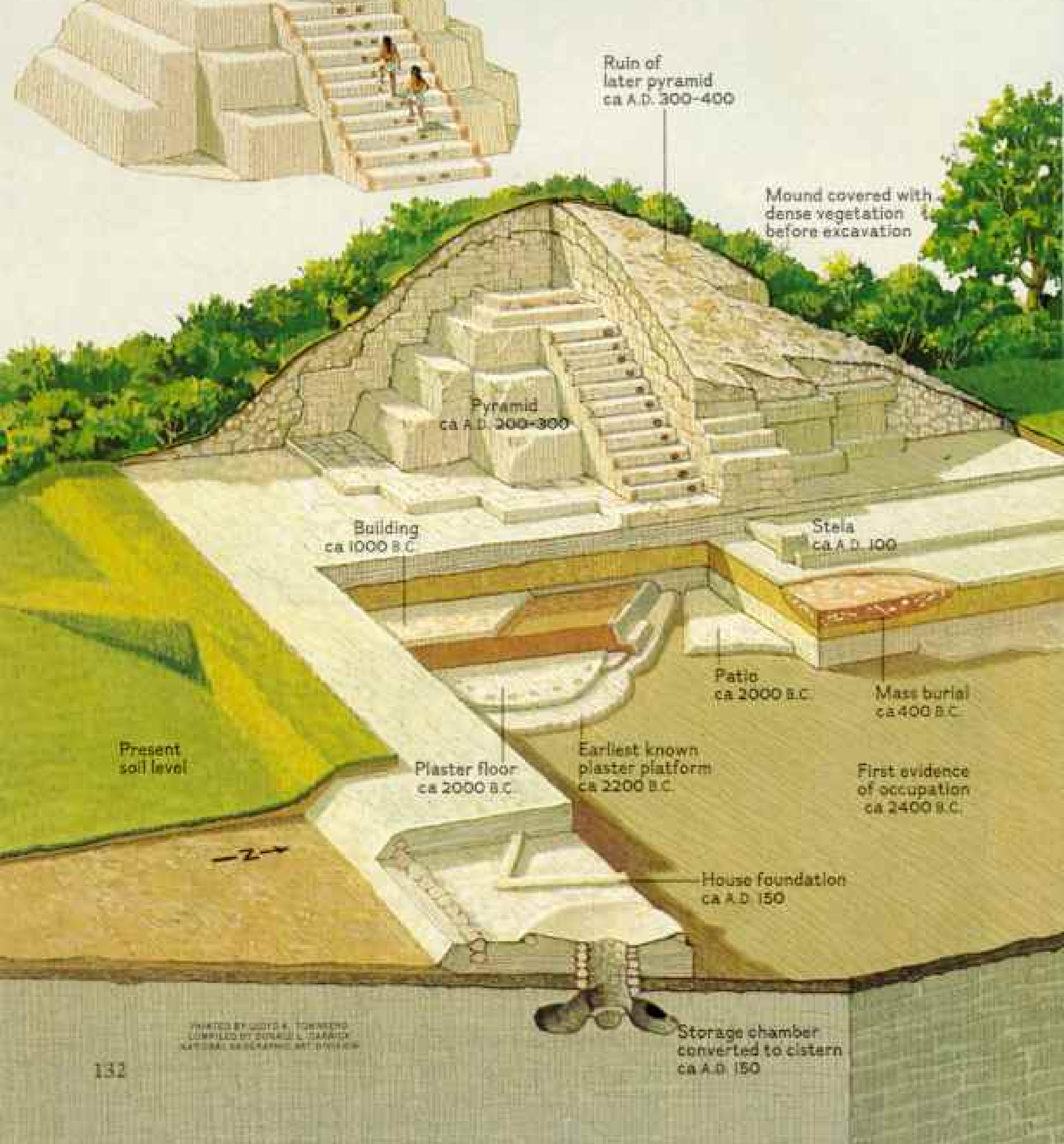
LOWELL GEORGIA (LEFT); NORMAN HAMMOND (BELOW, LEFT AND RIGHT); MARTHA COOPER

The changing face of Cuello

HIGHER AND GRANDER Cuello evolved, and by the fourth century A.D. one massive 12-foot-high platform spread over more than an acre. Increasingly taller pyramids elevated temples as high as 30 feet above the plaza. This painting shows how excavation opened the platform, with major discoveries noted.

The mass burial—a gruesome montage of human sacrifice—marks the earliest level of the sprawling platform. The deaths appear to have

Artist's reconstruction of temple and pyramid ca A.D. 200-300



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COMPILED BY DONALD L. CRABB
NATIONAL GEOGRAPHIC ART DIVISION

been a climax in the ritual destruction of the old temples when the courtyard was filled.

At the dawn of the Classic Maya era, some 1,000 people lived around Cuello. Selective breeding of maize assured increasing yields of the staple crop. For southern jade and razor-sharp black obsidian, Cuello probably traded macaw feathers and jaguar pelts to Maya nobility. Local trade brought in fine chert daggers.

***Most precious** of jewels to the Maya, jade beads, now strung for display with a pink oyster-shell bead (**below**), were buried during the ritual razing of the old temples. Jade first appeared at Cuello about 1200 B.C., which is the earliest documented date for the lowlands.*

*A bead of distinctive blue jade (**opposite, bottom right**) dates from 1100-900 B.C. and may indicate the earliest known Maya contact with the Olmec people on the Gulf of Mexico.*

(Continued from page 129) excavating for the answer to a basic question: To what extent was this earliest Maya lowland society culturally "Maya" in terms of the Classic period of grandeur some 2,000 years later?

The structure to be tackled first, because it was the latest, was the small pyramid at the western end of the platform (diagram, preceding pages). For three sweltering weeks we toiled to slice a trench through limestone that had weathered for centuries. Breaking through at last, we found it held—another pyramid. Since the outer one had been built in the fourth century A.D., the earlier structure must be of the third century or before. Few buildings of that period had ever been completely excavated in the Maya lowlands. Now we had the chance.

It proved worth the effort. The terraced inner pyramid was a lustrous cream color. On an eastern stairway we discovered enigmatic designs painted inside oval rings. "These could be monster masks," speculated colleague Carl Beetz, as we gently exposed the ancient art. "Similar ones have been found nearby, modeled in stucco."

To me the ovals also looked like later Maya hieroglyphic characters. If so, the Cuello villagers were merely utilizing the form of writing without yet exercising its function, although at sites such as Tikal painted glyphs were already in use.

What surprised us most was the back of the pyramid: Instead of high-squared terraces, a spreading fan of small steps cascaded downward. Unique in design, our little building stands aside from the mainstream of Maya architecture.

Digging into the inner pyramid, Carl encountered a dedicatory offering: Four brand-new chert daggers, an ax of highland greenstone, and, unexpectedly, a long serrated white object. "That's the poison spine of a stingray," said Carl excitedly. "They

who treasured this rare stone.

*Tropical feathers may have waved from a mammal bone carved in a serpent design (**below**) and likely hollowed to serve as a fan handle.*

*Centered on a terra-cotta stamp from A.D. 100 (**below**), four dots and a vertical bar, which represents the number five, form the Maya symbol for nine. Mathematically minded, the Maya showed a keen grasp of astronomy and devised a remarkably precise calendar.*

MARTHA COOPER (LEFT AND ABOVE); LOWELL GEORGIA (TOP AND BOTTOM RIGHT)

must have brought it from the Caribbean." The Classic Maya used such spines to let blood from various parts of their bodies in ritual offerings. Here was circumstantial evidence of the practice much earlier.

The offering had come from a pit cut into still another plaster floor—remains of an even earlier building. Was this also a temple? Carl's next find, fitting into a macabre pattern, suggested that it was. A long red plaster dome, like a sausage sliced lengthways, covered the grave of an adolescent girl who had been beheaded. Her skull lay on her ribs, beside two fine bowls.

Deeper Descents, New Discoveries

To continue our descent, we opened a 30-by 100-foot pit through the plaster floors in front of the little stepped pyramid. Almost immediately we encountered a curious lump of limestone. We exposed more and more of it as we cleared successive plaster surfaces from the plaza. We resented it as a nuisance.

Then one morning, while I was standing atop the pyramid, the sun struck the stone at a revealing low angle. Suddenly I realized that it had been shaped by the hand of man—a stela! The top was battered beyond recognition, but the lower part was a squared slab that had once stood upright.

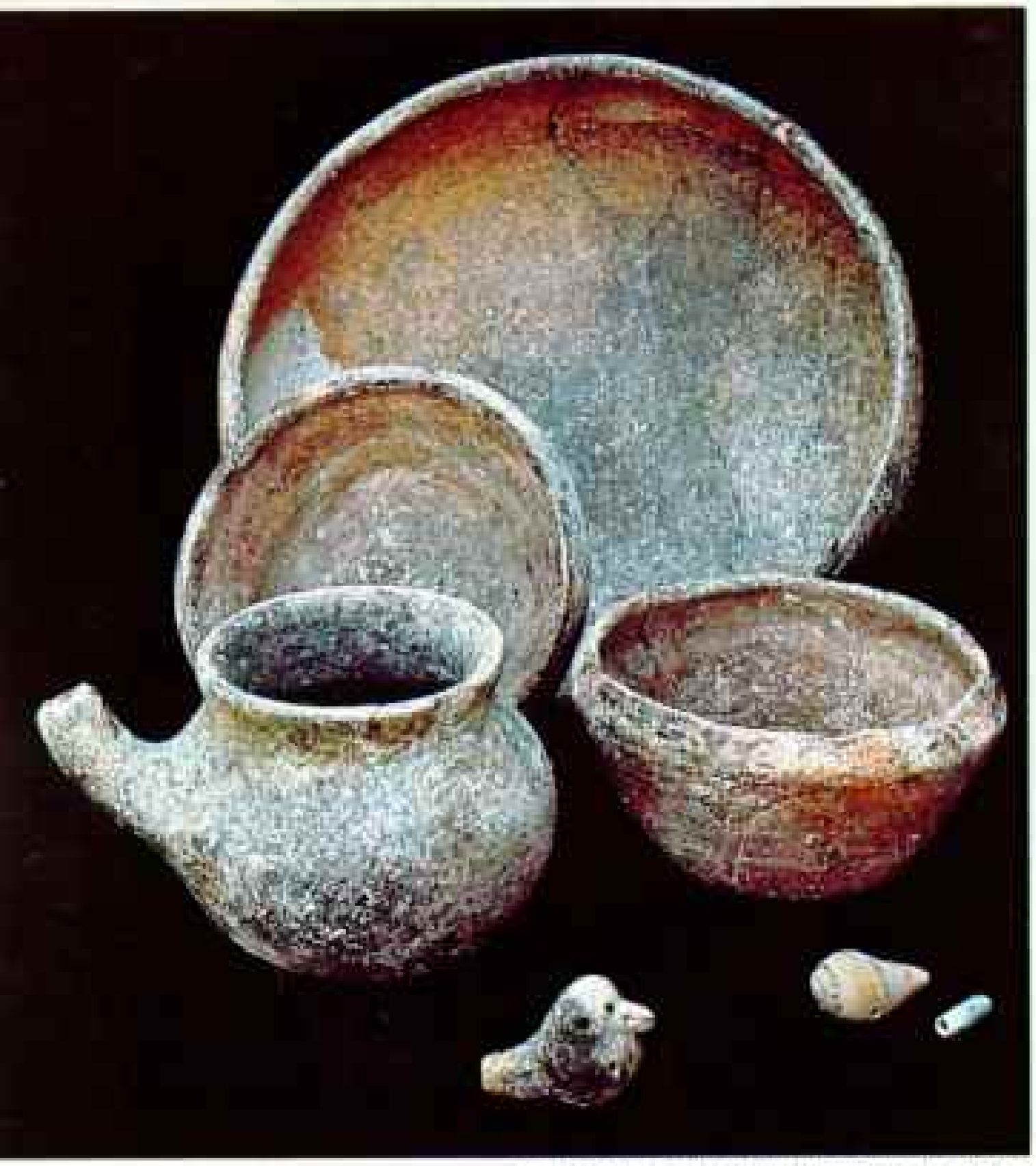
Throughout the Classic period the Maya erected stelae, carved with images of proud rulers and inscriptions detailing their titles and dating events in their reigns. The earliest dated stela in the Maya lowlands is from Tikal, Guatemala, at A.D. 292. We estimate that a full 200 years earlier an unknown ruler erected the Cuello stela.

In the northern part of our large excavation we hit a spate of burials dating from the centuries around the time of Christ. The Maya had seated each person in a small cylindrical pit, then inverted a large bowl over each one's head. One well-built man was

Shaping new styles in pottery

*ON A FLIGHT of imagination a ninth-century B.C. potter adorned a half-red and half-cream-colored bowl with a water bird (**left**), redrawn here for clarity. It is the earliest known example in the Maya world of organic-resist pottery—a design painted with resinous material that chars on the clay when heated. Cuello pottery—among the oldest found in Central America—testifies to technical skill even at the time of the earliest settlement in 2400 B.C.*

*Simple but well-crafted bowls (**middle**) rested with other tokens in the 1100 B.C. grave of a child. A red slip topping a cream slip complements an earlier incised bowl (**bottom**). The remnant of a topknot scratched on an A.D. 200 sherd (**below**) may have crowned a type of figure common in later Maya art.*



MARTHA COOPER (ABOVE); LOWELL GEORGIA (ALL OTHERS)

especially well preserved; as we removed a pot the size and shape of a champagne bucket from over his head, we could see the vertebrae and ribs, bones that usually decay rapidly in the Maya lands.

While the reasons for the Maya deaths remain obscure, we know quite a lot about their daily lives, and particularly their diet—thanks to a lucky discovery.

Separating old plant material from soil and trash deposits, Charles Miksicek, our botanist, had identified many species of food plants and useful trees. But we lacked a sealed collection of remains that would show what plants the Maya had used at one precise time—the equivalent, archaeologically speaking, of a single trash can.

One day we were visited by a colleague, Dr. E. Wyllys Andrews V of Tulane University, who has worked for years in northern Yucatán. We had just found a strange stone-lined shaft surrounded by a sloping plaster floor. Will promptly identified this as a *chultun*, or cistern. Our excavation showed that it had first been an underground pantry, was then converted into a cistern, and later was filled with rubbish.

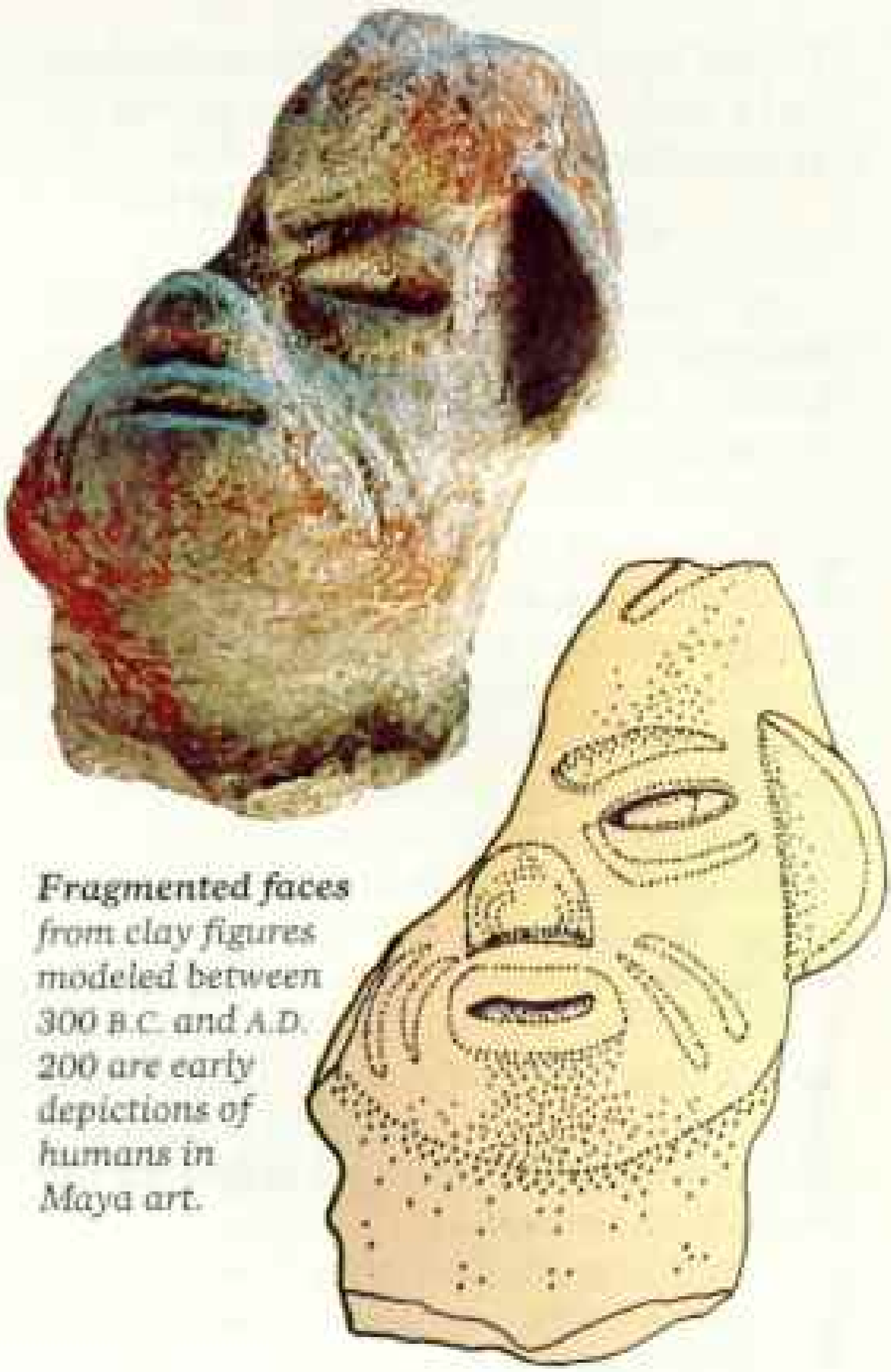
The dirt that choked it was packed with burned corn kernels, cob fragments, and squash and passion-fruit seeds, along with broken pottery. Obviously the chultun had been filled in a very short period, sometime in the first or second century A.D. Here was our Maya trash can!

Cotton seeds were found in a second, older chultun. "The cotton shouldn't surprise us, even though it hasn't been found before," remarked lab director Karen Bruhns. "This area and the lowlands to the north were famous for their cotton mantles at the time of the Spanish conquest, and the Maya at Cuello had to wear clothes made of *something*."

I agreed; spindle whorls for making cotton thread are known from other Maya sites at least 2,000 years old.

Both chultuns provided valuable information about the cultivation of maize—staff of life to the ancient and modern Maya alike.

We also found a number of pottery-lined fire pits, including one that still held deer bones—apparently the remains of a venison stew. Looking into evidence of Cuello diet, faunal analyst Dr. Elizabeth Wing of the



Fragmented faces *from clay figures modeled between 300 B.C. and A.D. 200 are early depictions of humans in Maya art.*

Archaeologists *reproduce artifacts in line drawings to clarify details such as the creases on the face at top.*

Barely visible *painted markings, perhaps tattoos, are highlighted in this sketch.*

Florida State Museum found that the Maya had a preference for deer, although dog too appealed to their palates.

A Deconsecration by Fire

As Cuello's ceremonial core slowly emerged, we began to realize that the mass burial of 400 B.C. was but the last act in a series of rituals that had sanctified the transformation of the Maya temple precinct.

But we saw in certain acts a deliberate deconsecration as well. Timber and thatch temples were set afire and fell blazing into the courtyard; we found the long reddish scorch marks where the upright posts had smoldered away on the plaster floor. A stone-walled temple was torn down. The fronts of other raised platforms were ripped away, and tiny jade beads were scattered on the raw scar of one disfigured building.

"It looks as though the Maya were bidding a fond farewell to an old friend," said Sara Donaghey, for several years my invaluable deputy director, as we picked up the beads with tweezers.

A radical expansion in the scale of ritual architecture coincides with the beginning of a period of major changes in early lowland Maya society. Population increased dramatically, and settlements became more complex in structure, reflecting an increasingly stratified society. The appearance of massive public buildings shows that rulers now commanded substantial organized labor forces. Thus the Maya had begun their final push toward their Classic period.

As we continued digging, we found that these temples were already old when they were destroyed—their floors were badly worn, and some had been resurfaced. Within them, like a set of Chinese boxes, lay remains of still earlier structures. In one, dating to just before 1000 B.C., the Maya had sliced across a grave, removing the head and shoulders but leaving the lower skeleton intact. With it was one of our most exciting finds—a tiny pointed pendant of blue jade.

This rare mineral is foreign to Maya lowlands. But it was used for high-quality jewelry and ceremonial objects by the Olmecs, a people of the Gulf coast of Mexico whose massive sculptures and earthen pyramids rose by 1000 B.C., earning them the title of "America's first civilization." Our blue jade pendant suggests a westward link to Olmec lands 400 miles away and the possibility that Olmecs and Maya influenced each others' cultures from an early date.

We found other pieces of jade, all from this same approximate period of 1100-900 B.C. One turned up with the burial of a child of about six, accompanied by four pots,

What stocked a Maya pantry?
Botanist Charles Miksicek puts foods still grown locally to a survival test in one of Cuello's underground storage chambers. Months later the kernels of maize he holds remained edible, as did maize smoked in the husk. MARTHA COOPER

pierced seashells, and a pottery whistle. The latter was in the form of a plump little bird (page 140). Four holes pierced its sides. I blew, and across the centuries came the same note that its young owner had heard. I moved my fingers over the holes, and found that I played the first five notes of the diatonic scale—do-re-mi-fa-sol. With this toy the ancient Maya had played the same note sequence as our Old World ancestors.

Below these discoveries the earliest period of Cuello still awaited us: 1,400 years back to 2400 B.C., which we were illuminating for the first time.

We set about removing successively earlier levels in the form of plaster floors, rubble walls, and layers of fill and trash. Floors unfolded like pages of a book. Even in this dim dawn of their history, more than 3,000 years ago, the Maya of Cuello left signs of ritual. Several times we encountered skeletons lying in graves cut through the oft repaired plaster floors.

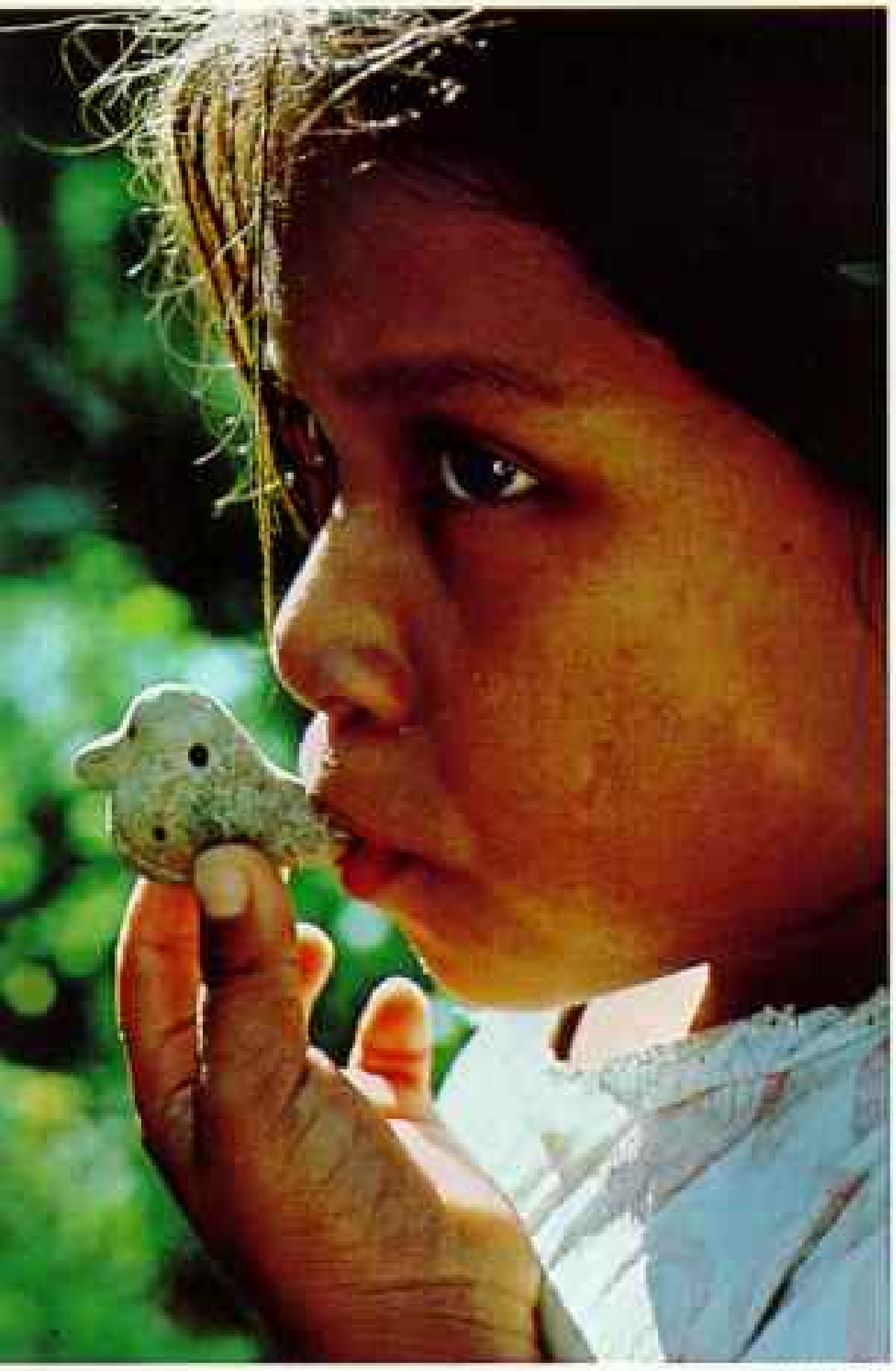
From the very mouths of these dead came a final story for our bulging notebooks. Their teeth showed severe wear, suggesting a diet that included abrasive substances. Two possible culprits are powdered limestone, soaked with corn kernels to soften them, and sandstone particles from Maya corn-grinding manos and metates.

With each step back into time, we uncovered more primitive corn specimens—continuing evidence of genetic improvement

wrought by succeeding generations of Maya agronomists. Their corn yields probably more than doubled between 2400 B.C. and A.D. 200. Maize originated in the arid highland of central Mexico, and the fact that it thrived in these humid lowlands is a tribute to its adaptability and the persistence of the Cuello Maya.

We found that the courtyard, scene of so many centuries of ceremony, had first been laid out in about 2000 B.C. Incredibly, once the Maya had determined the original plan, they carefully conserved its form within fairly narrow limits for more than a thousand years, until the day when it was buried by rubble and remembered by sacrifice. At last our trowels scraped against remains of the earliest building in the sequence—and one of the oldest known in the New World. All that remained was a keyhole-shaped plaster platform, pierced by numerous postholes; here no one had stood for more than 4,000 years. Obviously it too had been a thatched hut, resembling our camp headquarters. This simple structure documents the earliest known use of lime plastering as an architectural technique in Mesoamerica.

One side of this lowest platform bore the indention of a clay basin, hardened by burning. Whether it was a hearth, or had been used for the ritual burning of *pom*, a resin incense still used by modern Maya, we shall never know. But at the end of the season I descended one last time to the ancient structure and lit an offering of pom in thanks for the successful end of the project.



MARTHA COOPER

A mute bird sings *for a modern Maya as it did for a Cuello child buried with the clay ocarina 3,000 years ago. Air vents sound the tones do-re-mi-fa-sol—rare evidence that the Maya used this scale, and fitting grace notes in Cuello's variation on the theme of Maya history.*

4,000-year-old Culture Confirmed

Looking upward at the succession of buildings we had bared, now a layer cake of plaster floors, I could see with a single sweep of the eye how the Maya had gradually developed their ever more elaborate architecture. The platforms had gotten higher and larger, until by 400 B.C. they were several feet high and more than 40 feet long. The temples atop them, though still of timber and thatch, also grew steadily larger.

While the part of Cuello we dug was devoted mainly to ritual, it shows us much more than the genesis of a Maya ceremonial center and the beginnings of public architecture. It reveals the progressive development of crops and crafts through more than 2,000 years as Maya civilization emerged. Bizarre episodes such as the mass burial show too that there was a darker side to Maya life.

The most important result to me, however, has been the demonstration that an independent Maya cultural tradition existed at least 4,000 years ago, from early in the Formative period. No longer need we seek the mainspring of Maya civilization in ancient highland Mexico, as some have claimed, or in the highlands of Central America, as others have believed. The Classic Maya are visibly the descendants of Formative precursors such as those at Cuello. □

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Photographed by George B. Schaller. *Nilgiri Tahr: Genus: Hemitragus Species: hylocrius*
Adult size: Average 1m tall at the shoulder Adult weight: Average 90kg
Habitat: Cliffs near open grassy terrain at 4,000—8,000 ft altitudes in southern India
Surviving number: Approximately 2,000

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

Already in 1880 a writer warned that because of hunting the Nilgiri tahr could become extinct one day. Today, this type of wild goat could indeed disappear, and if it did, there would be no way to bring it back.

But photography can record the Nilgiri tahr for posterity, and it can actually help save it and the rest of wildlife.

Photography is a handy and reliable information-gathering tool for conservationists. Through it, one could, for instance, find out more about the tahr's little-known reproductive behavior—a task complicated by the fact the animal courts and mates in the monsoon season.

Photography also gives people in general ready access to nature in the wild. Not only can it show us the tahr's beauty, but it could tell us something about how the animal has adapted to its environment, in which it has evolved in isolation since reaching it eons ago. Such insight would contribute to our better understanding of nature.

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

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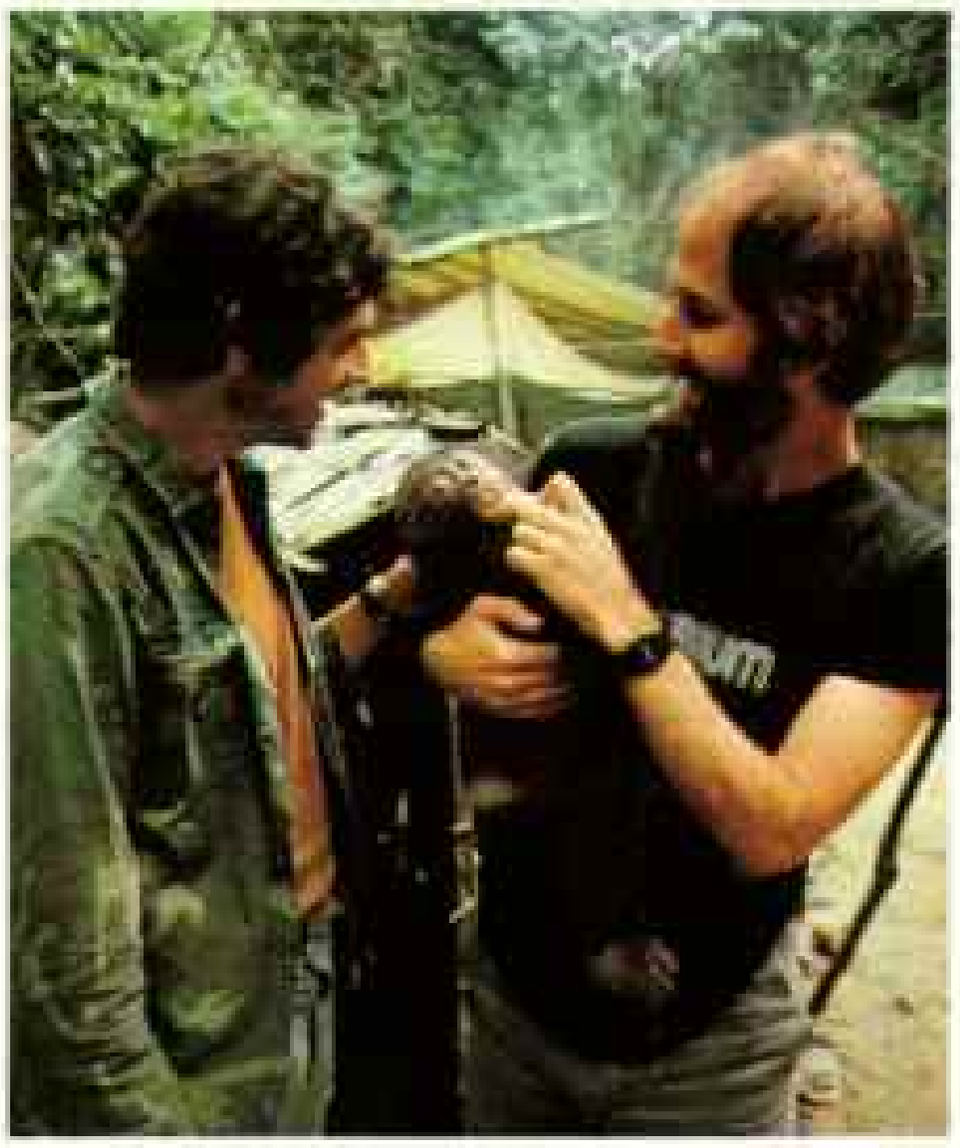
BOTH BY NOEL BADRIAN



Pygmy chimps of the Lomako

ALOFT in their home forest, pygmy chimpanzees (**above**) along Zaire's remote Lomako River fear few predators except leopards—and man. Identified as a species in 1933, *Pan paniscus* is endangered by poaching, lumbering, and farming, according to State University of New York anatomist Randall L. Susman (**left**, at right). Funded by the National Geographic Society, the National Science Foundation, and other research organizations, Dr. Susman's studies of pygmy chimps in the wild are casting new light on these least known, lightweight great apes that some scientists regard as man's closest relative. Help support study of these creatures and efforts to preserve their dwindling habitat; use the nomination form below.

Members Forum

CENTRAL KENTUCKY

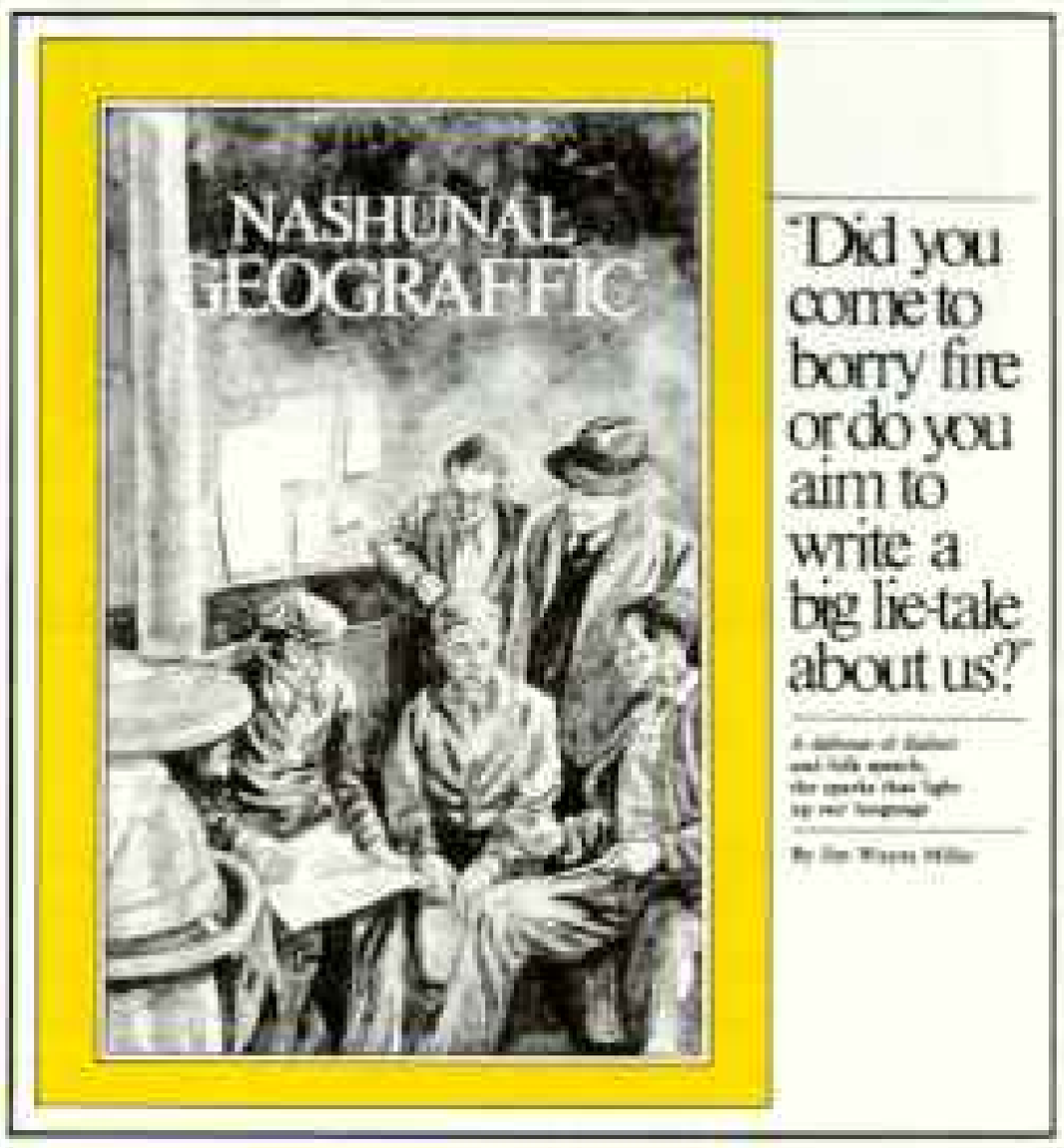
When the April 1982 issue arrived, I was curious as to what in the world kind of coverage could be done on central Kentucky, where I live. I loved the article. I was moved from laughter to tears. I went away and taught school in the West—and after ten years came back home to the earthiness of central Kentucky.

Shelby Jackson Bewley
Rineyville, Kentucky

I enjoyed "Home to the Heart of Kentucky." However, it is hard for me to believe that John Ewing cannot speak English! I was at the University of Kentucky with both him and his wife. Your author should learn to spell.

Eugene Culton, Jr.
Winchester, Kentucky

Mr. Ewing reviewed the section of the article that quoted him and had no objection to the dialect. In an excellent article in the Louisville "Courier-Journal" that included this spoof of our cover, Western Kentucky University language professor



COURIER-JOURNAL ILLUSTRATION BY STEPHEN SEBREE

Jim Wayne Miller points out that neither dialect nor standard English is always spelled the way it is pronounced. He contends—quite rightly, we feel—that writers should be both skillful and considerate when reporting folk speech, and readers should not take offense where none is intended.

How we paid for a "first-class" flight.

—The New York Times

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I was sad to hear that some citizens of Taylor County were upset by the article on central Kentucky. When I first saw myself quoted in dialect, I thought it looked odd, but after repeating it to myself, I realized it was written exactly as I said it. I was also sad to hear that some people were upset because they thought we were pictured as "country hicks." Maybe one of the reasons the population of young people here has increased through the years is because we have kept some of our beautiful country ways.

Roger Blair
Campbellsville, Kentucky

POLAND

I have to compliment you and thank you for the special supplement in your April 1982 issue, "The Face and Faith of Poland." I left Poland in 1939 as a German prisoner of war. It is hard to condense more than 1,000 years of history and the principles of a country like Poland in such a sensitive and compassionate way.

Jan F. Cieszynski
Polish-American Association
of Wisconsin, Inc., Oshkosh

The text is the best short summary of Polish history I ever saw. I taught the history of Polish civilization until my retirement last spring. Among the great figures I would put Józef Piłsudski (1867-1935), who played a principal role when Poland regained her independence after World War I.

Name withheld by request

I congratulate you on your effort. However, I find it disturbing that the broadside does not rise above the stereotype of Poland as primitive, peasant, priest-ridden, and gray.

Eugene Kusielewicz
President, Polish National Alliance
Brooklyn, New York

I wish to protest most strongly certain statements by Czesław Miłosz in his essay on Poland, mentioning Poland's growth where "it gradually grew like a coral reef . . . stretching far to the east to areas subsequently claimed by Russia." This wording is the misconstruing of historical facts. What Russia took from Poland was Russia's original territory, which Poland captured from Russia during Tatar invasions.

Leonid S. Polevoy
Salt Lake City, Utah

The maps published with Dr. Miłosz's essay show seven stages of Poland's empire that waxed and waned over nine centuries. After Kievan Russia

fell to the Tatars in the 13th century, Lithuania—which later merged with Poland—expanded into that land, today part of the Soviet Union. Historical claims in Eastern Europe often overlap as the result of wars, alliances, and royal marriages.

TRANSPACIFIC BALLOON

I did get blown off course a bit by your article about the *Double Eagle V* balloon flight (April 1982) across the Pacific, riding on "easterly winds" from Japan to California. On an easterly *course*, yes, but using *westerly* winds! By the way, a polyethylene gasbag "a mere 4.5 millionths of an inch thick"—are you sure now? I rather suspect you are out by a factor of 1,000.

Ruediger M. Seyff
Guelph, Ontario

We were blown more than a bit off course as well: The winds were indeed westerly; and the thickness of the gasbag was 4.5 mils—thousandths of an inch, not millionths.

HUMPBACK WHALES

Mr. Payne's article "New Light on the Singing Whales" (April 1982) was tremendously interesting. However, I would like to point out that the name *Megaptera novaeangliae* is not entirely Latin. The first word is Greek, meaning "big winged." So let us give credit where credit is due.

Al G. Fontas
Ogden, Utah

WOLSTENHOLME TOWNE

In the Members Forum of April 1982, there was a letter on the subject of scalping and its antiquity. This is of interest to those of us at the University of South Dakota who worked on the Crow Creek massacre project. We found evidence of scalping, decapitation, and corporeal dismemberment. The Crow Creek people were killed about 1350, 142 years before Columbus reached the New World.

John B. Gregg, M. D.
Larry Zimmerman
University of South Dakota, Vermillion

HUDSON BAY

The article "Henry Hudson's Changing Bay" in the March 1982 issue shows a map with an almost perfect arc formed by the shore stretching between the Inuit communities of Inukjuak and Kuujjuaraapik and past. Is it an optical illusion? The remnants of a huge crater? A chance formation?

Eugene De Bor
Garrett Park, Maryland

Your second guess is closest to scientific theory. Some geologists believe that more than two billion years ago a giant meteorite created the near-perfect arc, but there is no conclusive evidence.

SINAI

In the April GEOGRAPHIC I was delighted to see the photographs of St. Catherine's Monastery as well as the text about Bishop Irineos. The story and accompanying pictures were a sensitive treatment of Sinai, in keeping with the magazine's tradition of excellence.

Chris Turkel
Greek Orthodox Archdiocese
of North and South America
New York City

The report "Eternal Sinai" has a clearly biased political orientation. Two million Arab Americans would probably agree with me.

Sylvie Bellmare
Montreal, Quebec

AMERASIAN CHILDREN

I have just read your editorial in the February NATIONAL GEOGRAPHIC concerning Amerasian children. I am deeply touched by this problem. Is there a group working on helping these children?

Dorothy Hirschland
New Paltz, New York

Two groups that are specifically involved with helping Amerasian children are: Pearl S. Buck Foundation, Inc., Box 181, Green Hills Farm, Perkasie, Pennsylvania 18944, and the United States Catholic Conference, Migration and Refugee Services, 1312 Massachusetts Avenue N.W., Washington, D. C. 20005.

PALAU LAKES

In the article on the Palau salt lakes (February 1982), the author wondered at the almost programmed behavior of the jellyfish *Mastigias* that swim first to the west, then to the east, at the same times each day. This behavior is not uncommon. Along the shores of Long Island at 6 a.m. a continuous stream of pods bearing thousands of *Homo stupidus* heads west to the near shore of the Hudson River. Precisely at 4 p.m. the stream reverses direction! The *H. stupidus* repeats this behavior daily througnout his productive years.

Edwin Rudetsky
Brooklyn, New York

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.*

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*Source: R.L. Polk and Co. 1981 model year *New Car Buyer Analysis*.

On Assignment

RIFLE FIRE AND RICOCHETS ended ***Tim Severin's*** first venture into exploration. In 1961, with two companions, he set out to trace Marco Polo by motorcycle from Venice to China. "In northern Afghanistan shots erupted," he relates, "so we turned south to the Khyber Pass and went on to Calcutta. One of our two motorcycles had broken, so there were three of us on one bloody bike for 1,500 miles."

The journey produced the first of seven books written by the Oxford graduate. No armchair follower of explorers, Severin sailed a leather-and-wood boat from Ireland to Newfoundland in the legendary wake of St. Brendan, a sixth-century Irish monk reputed to have reached the New World (GEOGRAPHIC, December 1977). And in 1980 he weighed anchor in pursuit of Sindbad the Sailor.

TIM SEVERIN BY BRUCE FOSTER

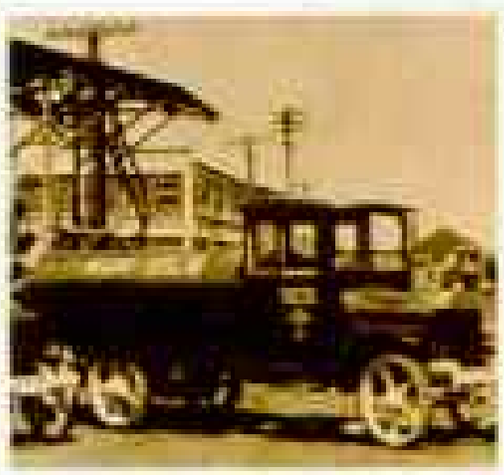
MICHAEL AND AUBINE KIRTLEY

AFRICAN WANDERLUST has led photojournalists ***Michael*** and ***Aubine Kirtley*** from nomads' tents to the treasure-filled palace of Ivory Coast President Félix Houphouët-Boigny (***left***). Before the Kirtleys met in 1973, Michael—a native of Kentucky—had crossed North America, Europe, and Africa—hitchhiking some 300,000 miles on the three continents. As the daughter of a French cavalry officer, Paris-born Aubine spent many of her younger years in the dusty outposts of colonial Algeria.

Since their first published work, "The Inadan, Artisans of the Sahara," appeared in the August 1979 NATIONAL GEOGRAPHIC, the Kirtleys—traveling now with two children—have had a rare personal interview with Libya's Muammar Qaddafi and taken one of the few photographs of Billy Carter on his 1979 visit. Their children's presence has opened doors, but also brought crises. Unwary on a jungle stroll, five-year-old Tercelin was attacked by driver ants that bit Aubine severely as she frantically pulled them off her son.

Among the Ivory Coast's Wè tribe, three-year-old Ariane became the apple of a "dancing mask's" eye; he carried her off to adopt her. "How do you react to this?" Michael wondered. The solution: a $15 ransom.

Remember when life was so simple?



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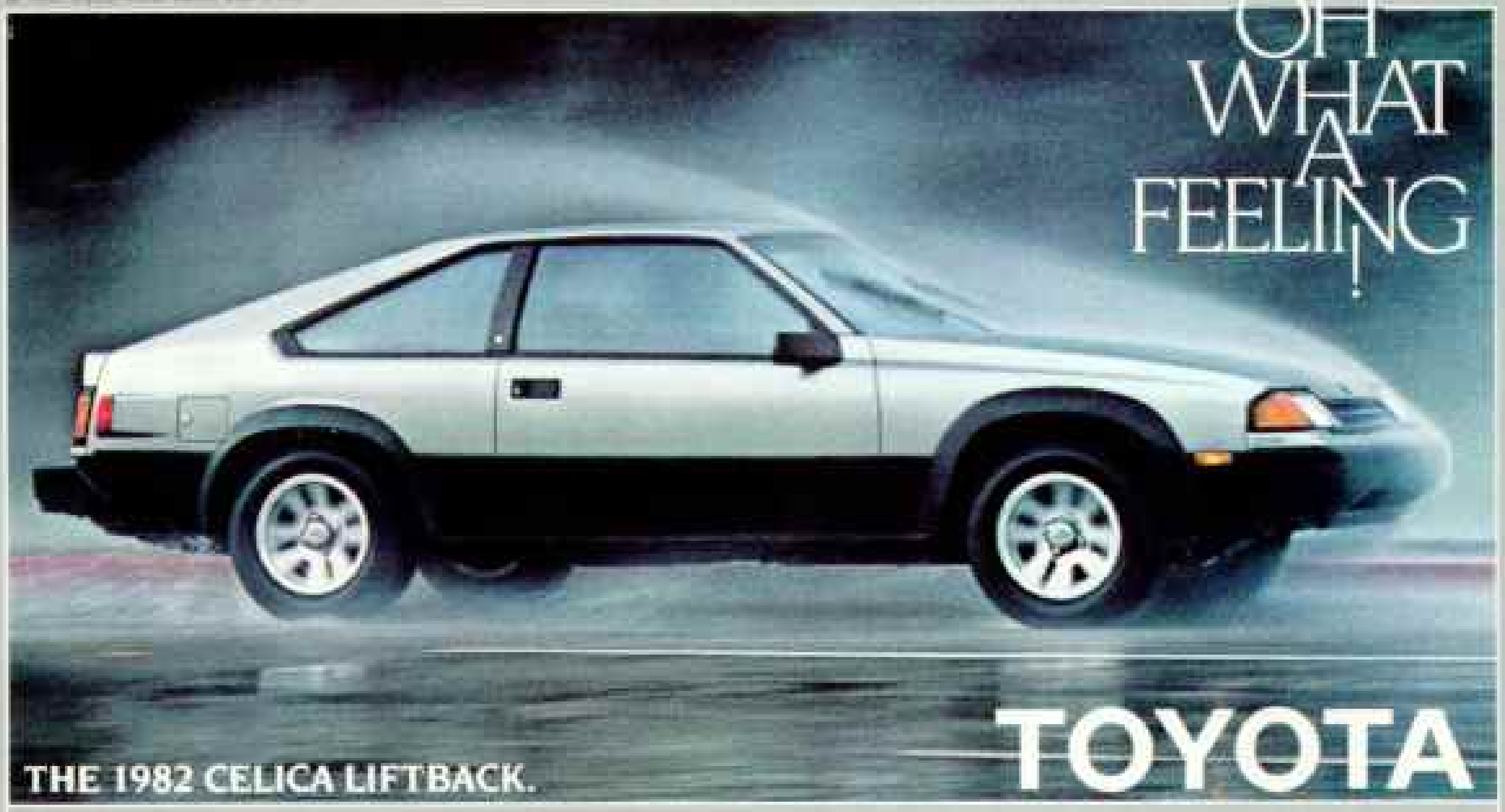

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The 1982 Toyota Celica GT Liftback. The right stuff, and more!

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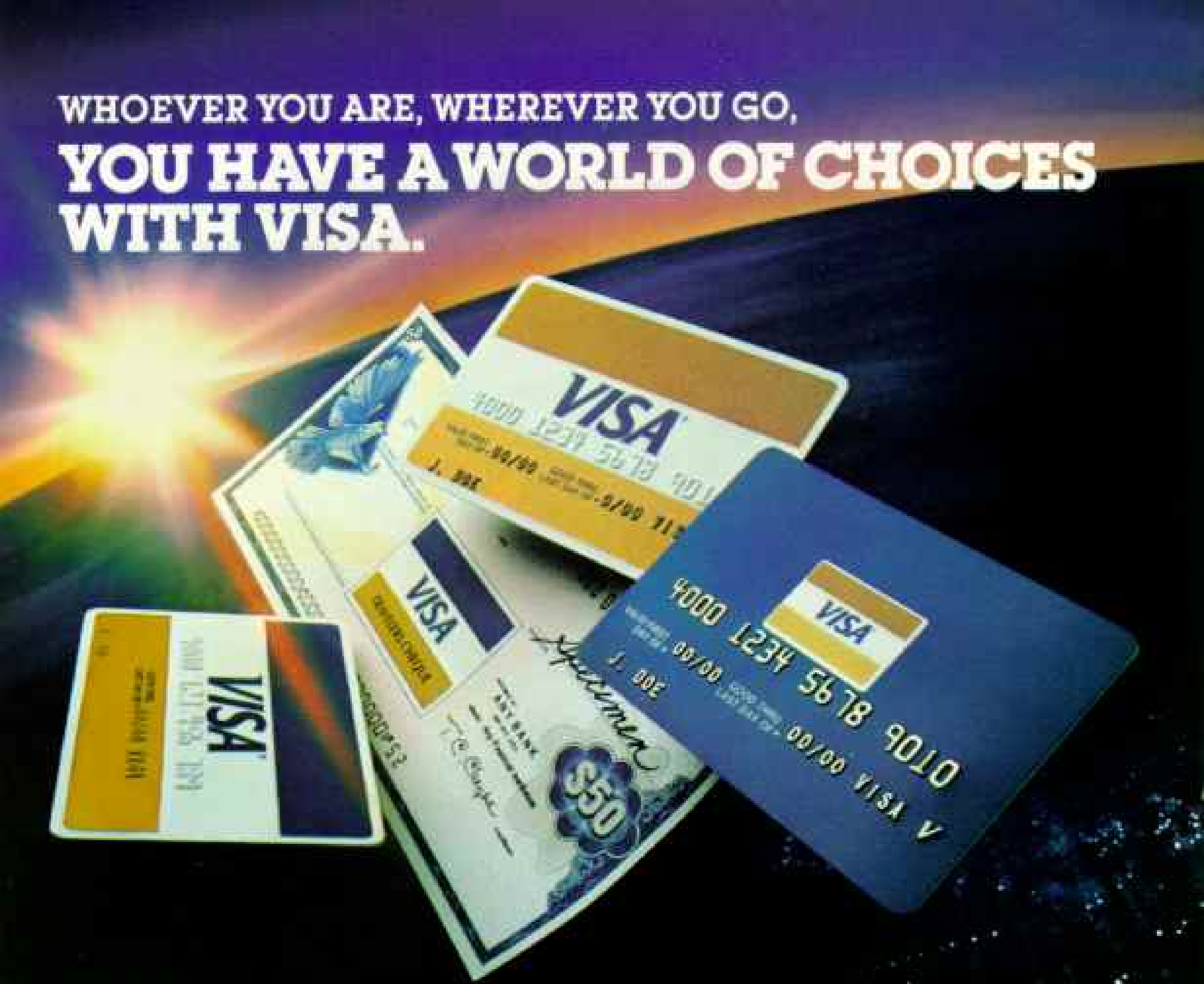

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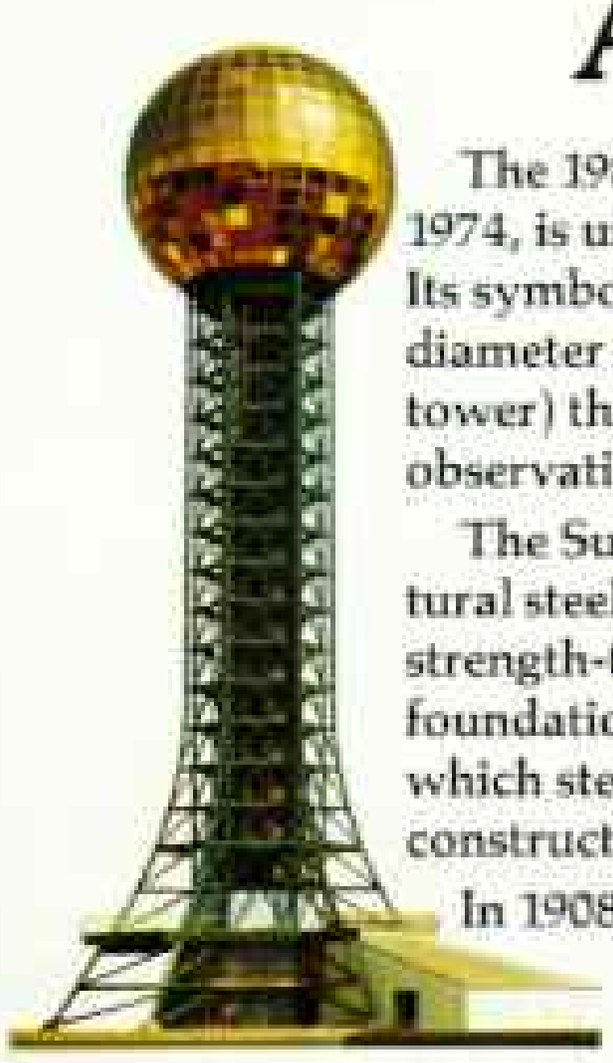

The 1982 World's Fair, the first since 1974, is under way in Knoxville, Tenn. Its symbol is the Sunsphere—a 74-foot-diameter golden globe (atop a 192-foot-high tower) that houses a restaurant, lounge, observation deck and exhibits.

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Bethlehem Steel Corp., Bethlehem, PA 18016

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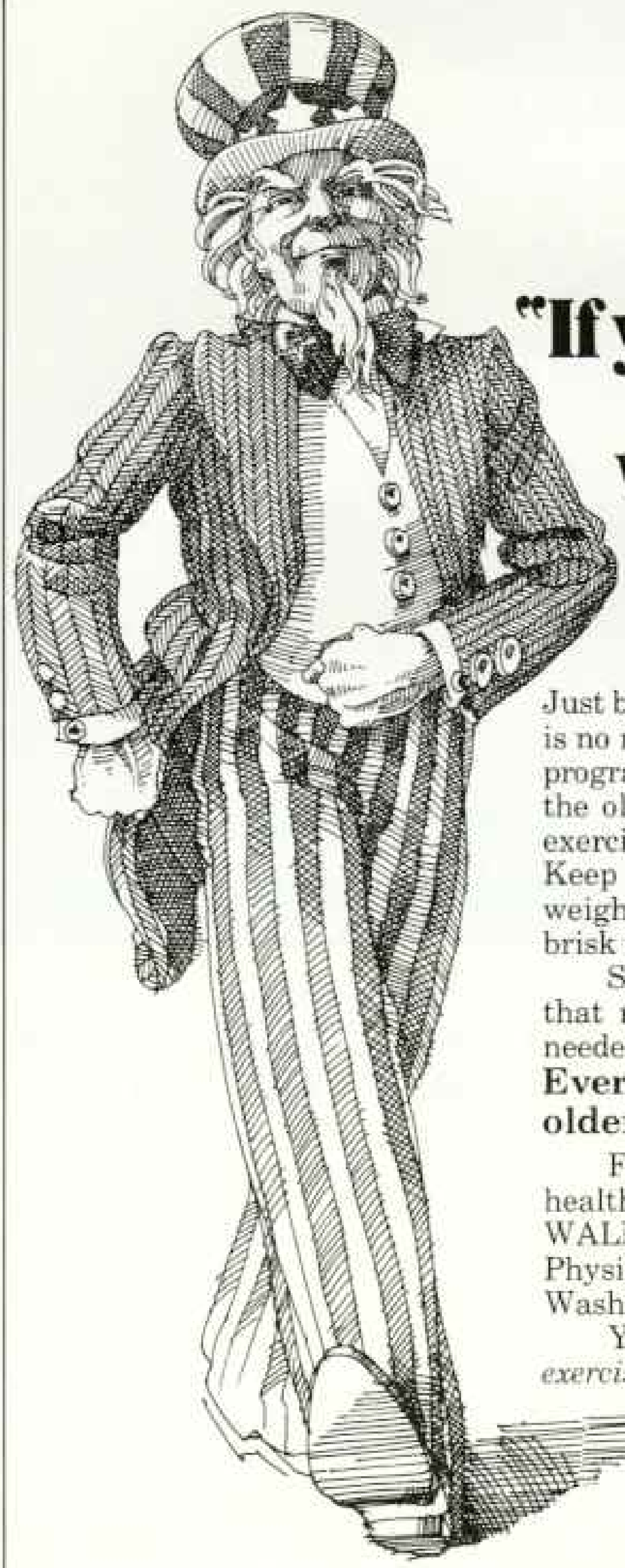

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