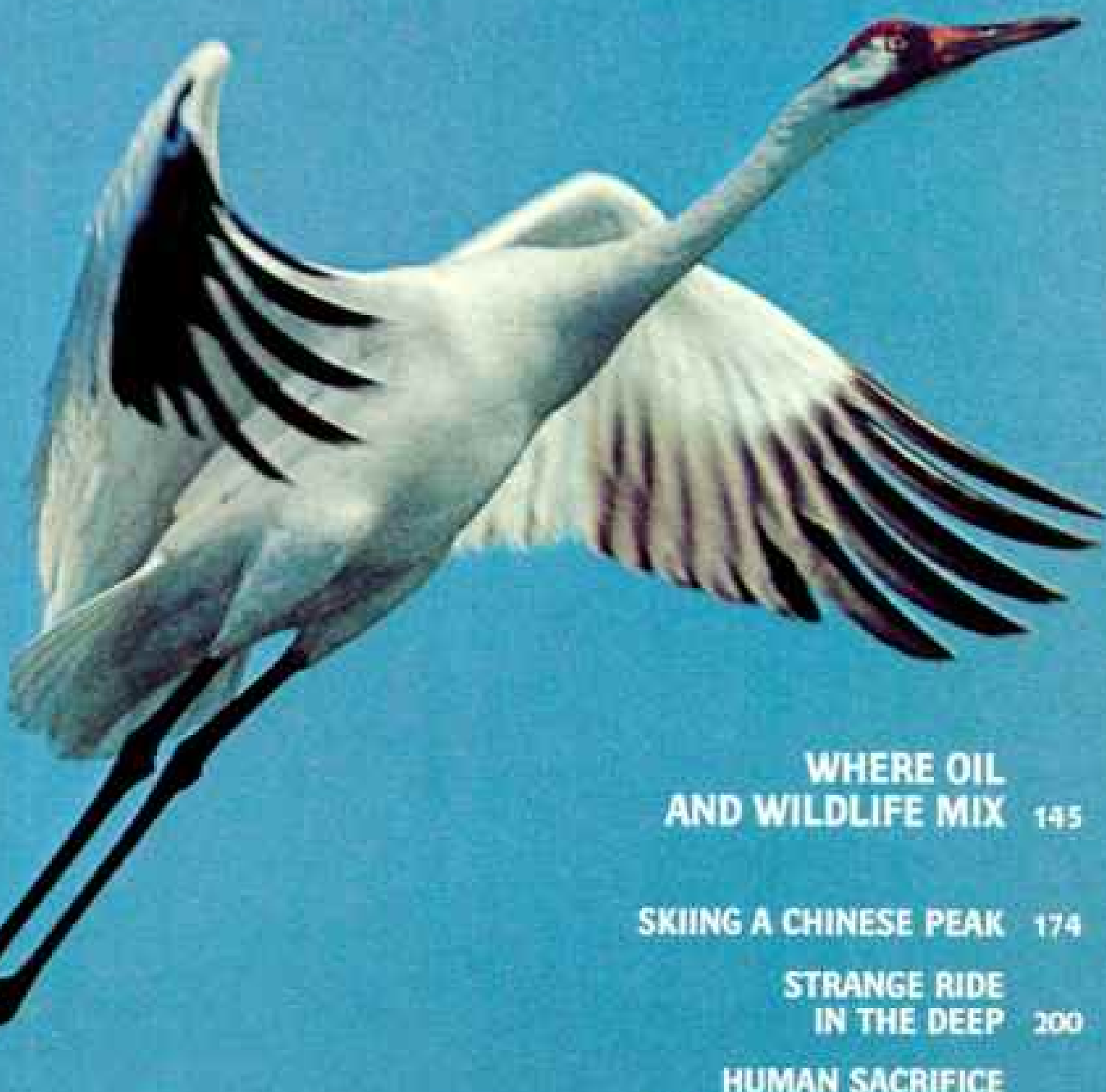
DOUBLE MAP SUPPLEMENT: WEST INDIES AND CENTRAL AMERICA

VOL. 159, NO. 2 FEBRUARY 1981

NATIONAL GEOGRAPHIC



SEE "LIVING TREASURES OF JAPAN" WEDNESDAY, FEBRUARY 11, ON PBS TV

AS OUR PLANE descended for a night landing in Beijing, I kept my face to the window for my first view of the capital of the most populous nation on earth. I never saw it. I saw a few streetlights and occasional moving headlights, but none of the glow of a modern city. By contrast, I had left from Los Angeles, where hundreds of square miles glitter like a Times Square theater marquee.

China cannot afford the luxury of turning night into day. In truth, neither can we.

A conservative estimate indicates that Americans consume 20 times as much fossil fuel per capita as do the Chinese. And we pay a budget-busting price for our extravagance. Our streets and highways carry a steady stream of 3,000-pound cars and their lone passengers. Sealed buildings still air-condition to the point where sweaters are needed in the heat of summer. Acres of automobile sales lots bask night after night under millions of watts of electricity.

This will change. None of us can continue to be insensitive to the energy crisis. Short of war, no subject has so dominated our thinking, our economy, our life-style, or our future. Nor has any issue come upon us with more advance publicity; yet an "it can't happen here" or "it will go away when gas prices go up enough" rationale still seems to prevail.

Already because of the fuel crisis we see our once world-dominant automobile industry becoming a welfare recipient. We all suffer from soaring living costs. We see more and more of our citizens unemployed. Even thoughtful leaders suggest that we could find ourselves at war to protect our foreign oil sources.

Because of the seriousness of the energy problem, the editors of NATIONAL GEOGRAPHIC, with the full support of the Society's officers and trustees, are preparing a special bonus edition of the magazine, which all of you will begin receiving in the next few weeks. This energy special, prepared under the direction of Science Editor Kenneth F. Weaver, will discuss how we got into our present position and what we can do individually and collectively to deal with it. This edition will carry no advertising. All costs will be borne by the Society as a service to you the members.

Wilbur E. Garrett

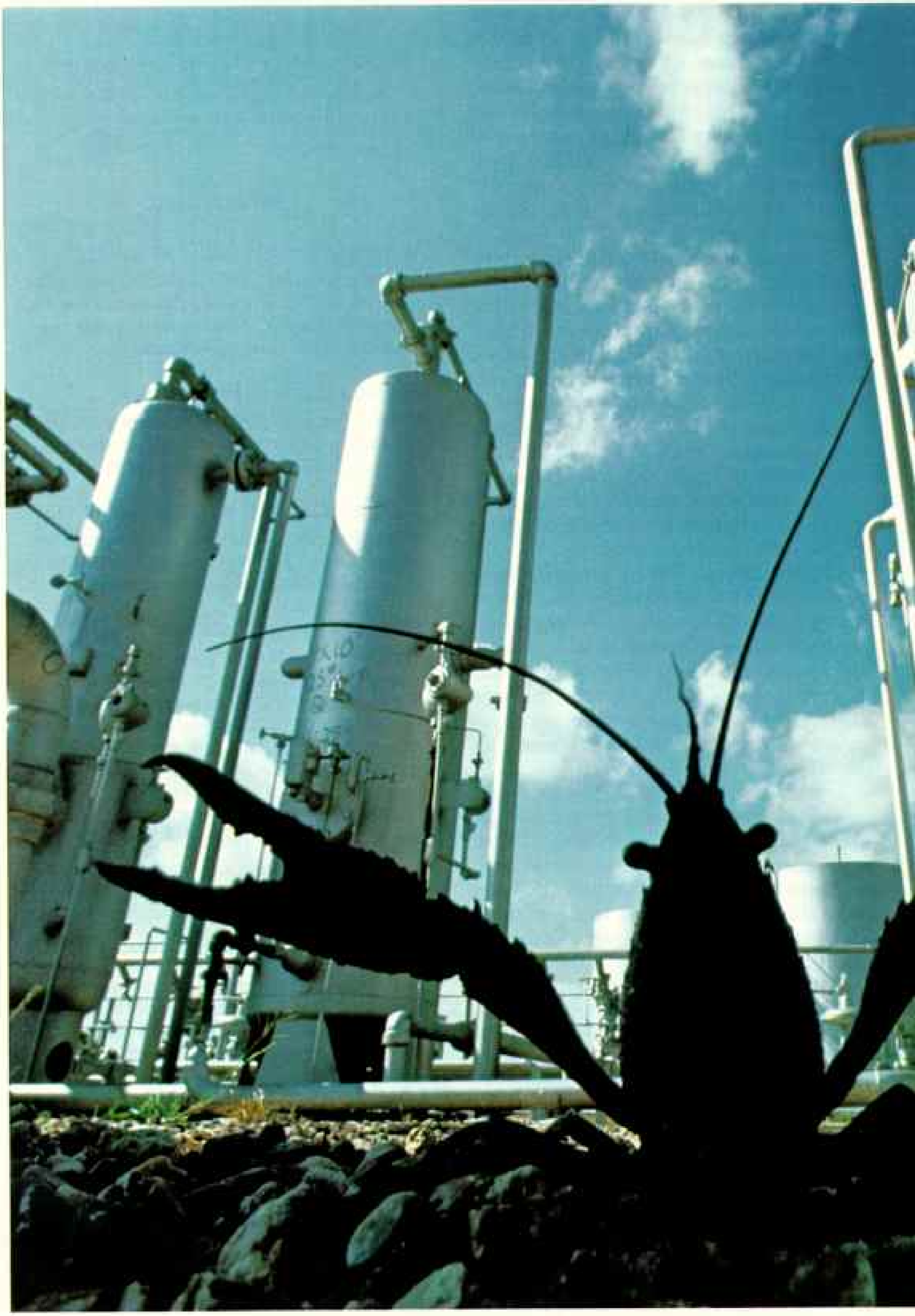
EDITOR

NATIONAL GEOGRAPHIC

THE NATIONAL GEOGRAPHIC MAGAZINE VOL. 159, NO. 2

February 1981

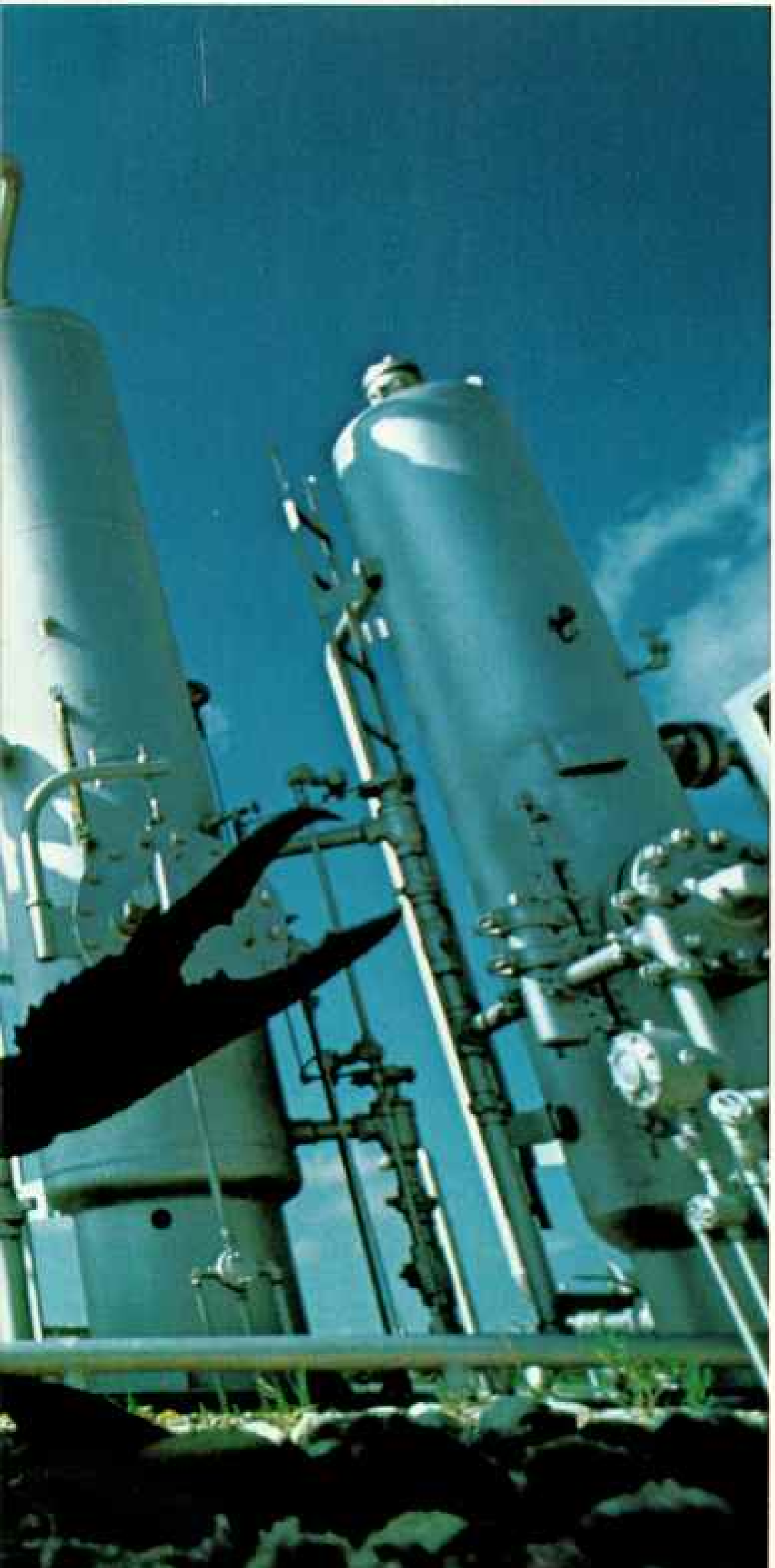
COVER: *A whooping crane—which wildlife experts and concerned oilmen strive to save from extinction—soars from Aransas refuge in Texas. Photograph by Steven C. Wilson and Karen C. Hayden.*



A sympathetic, sometimes whimsical view by two biologists of the Texas coast

Where Oil and Wildlife Mix

TEXT AND
PHOTOGRAPHS BY
STEVEN C. WILSON
AND
KAREN C. HAYDEN
ENTHEOS



PRECAMBRIUS CLARKII

With claws poised, a red swamp crayfish rears up before a natural-gas collection battery in Aransas National Wildlife Refuge. Here industry and conservation have struck a "live and let live" balance.

EVERY PLACE is a potential home. Along the Gulf coast of Texas, a pair of least terns assessed the homemaking potential of an aircraft tie-down on an abandoned airfield (**above**) and found it acceptable. A bed of sticks cradled four eggs on a natural-gas wellhead (**right**) overlooking the choppy waters of Mesquite Bay—space to build a nest and raise a family of great blue herons.

To an unusual degree, wild creatures and man have learned to share living and working space in this land of contrasts—of broad shorelands that are home to wintering waterfowl and resident reptiles, and to rodents and other small mammals; of the energy industry's arrays of wells and pumping facilities; of vessels laden with fuel and chemicals that ply coastal waterways.

Here vast beaches and dunes, bays and estuaries, savannas and oak mottes, marshes and salt flats lie vulnerable to nature's ceaseless sculpturing. Here a layer of loam covers a mile-deep layer cake of sands that harbor tremendous pockets of fossil fuels. Man taps the energy below while trying not to destroy the Gulf coast's rich wildlife heritage.

North and south from Corpus Christi, barrier islands—Matagorda, San Jose, Mustang, Padre—shield the Intracoastal Waterway from seasonal storms off the Gulf of Mexico (map, page 151). On the mainland, Aransas National Wildlife Refuge is the favorite wintering ground of a bird symbolic of endangered species—the whooping crane. The

STERNA ALBIFRONS

symbolism is appropriate, for the endangered list at Aransas contains ten other creatures: the peregrine falcon, southern bald eagle, Attwater's greater prairie chicken, brown pelican, American alligator, and five species of sea turtle.

MAJOR THREATS to wildlife began late in the 19th century—hunting and egg collecting, combined with land drainage, reclamation, farming, and ranching, crescendoed into critical losses of habitat. Numbers of whooping cranes dwindled until, by the end of the century, fewer than a hundred birds were left on earth.

Hope came with the 1930s. Thanks to newspaper cartoonist and conservationist J. N. "Ding" Darling and others, the U. S. government began to acquire acreage for wildlife habitat. In 1936 Neil Hotchkiss, a federal wildlife biologist, visited the Texas coastal-bend area. After seeing four whoopers on Blackjack Peninsula, he recommended further study of the area as a potential refuge.

In 1937, for less than half a million dollars, the government bought 47,215 acres from the San Antonio banking family of Leroy G. Denman, Sr., and others, specifically for a wildlife sanctuary. Though the government did not acquire mineral rights, it did require that part of the Denman gas and oil royalties go to the U. S. Treasury until the purchase price was rebated. The Denmans leased their mineral rights to Continental Oil Company, which then began development.

In 1938 the world's wild

DICHROMANASSA RUFESCENS, HYDRANGEA TRICOLOR, ARDEA HERODIAS

whooping crane count was down to 29.

By 1947 Continental had begun continuous production at Aransas. With insights from biologists and birders, the firm organized its operations around the needs of the surviving cranes. As L. F. McCollum, then the chief executive of Continental, recalls: "The cranes didn't want to be anyplace else, and I didn't want to be the one to make them leave."

In 1948 the wild whooping crane population was up by just two from a decade earlier—to 31. The count sank to 21 in the winter of 1951-52, then rose gradually to an encouraging 74 in 1978-79. Last spring there were six yearlings to join the flight north to Canada's Wood Buffalo National Park. It is a 2,500-mile journey that is not without peril—a predator, a storm, a utility wire.

THE WILD whooping crane census now stands at 76, an improvement deriving in large measure from protective practices at Aransas. Other wildlife that flourishes includes three herons (**left**, from left)—a reddish, a Louisiana, and a great blue. They nest on tiny Carroll Island in sight of a drilling platform.

Such compatibility is jeopardized daily by the barges that ply the Intracoastal Waterway, through the very heart of the whooping cranes' preferred grounds. The hazard is not the traffic but the cargo—crude oil, benzene, carbon tetrachloride, hydrochloric acid, and other caustic chemicals. One mishap could mean disaster.

Peril of a larger magnitude seemed only a tide change away in the summer and fall of 1979. On June 3, 600 miles to the southeast off the Yucatán Peninsula, a Mexican oil well blew

out. Fire enveloped the rig, and the well began spewing an estimated 30,000 barrels of oil a day into the Gulf's far-ranging currents. It was the largest oil spill in history.

Two months later an oil slick reached the Texas coast's barrier islands, striping the beaches with black, sickening birds, and routing bathers and fishermen. Man-made booms were stretched across the narrow entrances to the bays, estuaries, and marshes that protected the whoopers and friends.

BY THE GRACE of God in the form of seasonal changes in wind and current, the immediate danger ended by early winter, and in early spring the well was finally capped. The first waves of "chocolate mousse" and tar balls washed up on the outer coast, but the barrier islands shielded the rich wetlands and gave man some time to meditate upon an environment's vulnerability.

As biologists we made three trips to this land we came to know as the "whooping cranes' oil field." With images caught on film and in words, we have sought to convey its daily activities, which were of compelling interest to us as students of animal behavior.

Sometimes frustration was our only reward. I remember a day on the mud flats of Ayres Island in a 14-foot johnboat. It wasn't the driest boat I'd ever captained—I've used sieves that leaked less—but it was the steadiest. For an hour I had been waist deep in the mud, trying to push the boat closer to a family of whooping cranes we'd spotted earlier in the day.

We seemed no closer to the birds than we were hours before, when we'd stopped to swallow a few handfuls of dried fruit and nuts. The sun hung near the western horizon; I was numb with exhaustion.

Karen traded places with me, and we struggled on. Now she was pushing so hard that she was crying. The distant white dots we sought to photograph turned yellow with the sinking sun. Then they strode to the tide line, trumpeted, faced into the wind, leaned their long necks forward, and took off. They covered in less than a minute the distance we spent all day trying to make.

But usually we were luckier. Once as we walked through tall grass beside Sundown Bay, we saw whooper tracks and suspected that we were in a resting area. Then, far down the beach, a pair took off. As we crouched in the grass, they landed about 20 feet away. For 20 minutes they stood and groomed, then moved down the beach, feeding on blue crabs. They stalked a mile or more before flying (left).

SINCE WE ARE consumers of gas and oil and tires and telephones and many other things that increase our comfort—and sometimes our confusion—Karen and I seldom find ourselves polarized into the we-they confrontation trap that seems to be the perpetual quagmire of environmentalists and industrialists. We want whooping cranes. We want oil. Some people fear that it may not be possible to have both.

Yet I look to the future with all the optimism of a perennial winner. I come from a chain of life that is three billion years old. An unbroken chain. All my ancestors were the smart ones. They made the right decisions. I would hate to be the one who broke the chain and destroyed three billion years of effort.

* * *

DRAWN BY S. STEFANOFF, COMPILED BY J. R. TAILER
NATIONAL GEOGRAPHIC ART DIVISION

Prairie boomer announces spring

TYMPANUCHUS CUPIDO ATTWATERI

*A CLUMP OF SALT GRASS shudders, and out onto the flat he stalks, his silhouette advancing as the white disk of the sun pierces the fog. He lowers his head; circling, he drums his feet. Great sacs balloon alongside his neck (**left**), and the dawn fills with a strange and hollow command. Neither song nor thunder, yet both.*

A challenge has been given, tossed into the morning air. The Attwater's greater prairie chicken is on his booming ground. Boom, boom, boom. Out stalks another male. The challenge is accepted.

For more than two hours the males strut, circle, dance, and fight, wings battering, feet pouncing, pecking. In the bordering tall grass, hidden and secretive, are the females—seemingly entranced, selecting their mates.

Preservation of the Attwater's booming grounds is important to the species' survival since Aransas shelters 45 to 50 of the world's population of 2,000.

ALLIGATOR MISSISSIPPIENSIS

A day in the life of the marsh

IN BIG DEVIL BAYOU the warmth of afternoon rouses an American alligator. Soon he will feed on frog, an event that will be announced in the quiet swamp by a distinctive crunch of jaws.

*For alligator-watching, afternoon is soon enough to arrive, but for watching residents of the Heritage Trail, it's better to start at dawn. We first knew the sun was up by a tiny spotlight flashing from an oak. Dewdrops on the gently pulsating wings of a hairstreak butterfly (**top, facing page**) were catching those pure, intense colors upon which poets reflect and physicists experiment. What lucky creatures we are to extract such joy from a butterfly's morning exercises!*

A green tree frog sleeps under

the indifferent tread of a lynx spider intent on an insect breakfast ***(below)****; in a world where all life is sustained by other life, it's good not to be on everybody's menu.*

By evening light we followed a black-tailed jackrabbit ***(below, right)*** *along trails discernible only to his twitching nose. We pondered what he sought so devotedly in the failing day.*

Did he worry that humankind knew him erroneously as a rabbit instead of a hare, since his progeny entered the world furry instead of nude? Did he worry that the name jackrabbit derived from jackass, as tribute to his impressive ears? Certainly not. Would he show alarm if a predator-like shadow slid across his path? Would he be motivated to use his vaunted 35-mile-an-hour speed to flee? You bet.

STEPHEN (ABOVE); LEPUS CALIFORNICUS (BELOW)

PHIDIPPUS; LEPUS CALIFORNICUS

DUSK FINDS migrating sandhill cranes descending onto field or lakeside, legs lowered like airplane flaps to slow their glide. Each spring they follow retreating snows north as far as

GRUS CANADENSIS

arctic tundra to breed and hatch young. Each fall they fly south as far as the subtropics, part of the winter population that helps give Aransas a total bird-species count of more than 350.

CARLE LITTARE

LAMPROPELTIS CALLIGASTER CALLIGASTER

Fire–fierce and natural–serves the land and its life

ONCE MAN SAW complete fire suppression as a desirable goal. "People hate fires because they burn their houses down," Aransas biologist Steve Labuda told us. "But with total suppression, combined with overgrazing, Mexican ground squirrels were wiped out, and the Attwater's greater prairie chicken became endangered."

Controlled burnings, now part of the refuge management program, kill shinnery oaks and other scrub. The scrub encroaches on the prairie-grass ecosystem upon which the Attwater's and other indigenous creatures depend.

*Fire is the most economical way to undo the destruction from decades of domestic abuses. By favoring small rodents, it also benefits the coyote (**left**), a rodent controller in nature's plan.*

*As we followed the flames across hundreds of acres of burn, vultures led us to a casualty, a prairie king snake (**above**). It died only inches from its underground home, which offered safety from the momentary heat. The vast bulk of wildlife has learned to survive fire, just as it has learned to cope with other natural threats such as storm or flood.*

"The primary purpose of a refuge," Steve Labuda said, "is to create or maintain existing habitats for the benefit of the indigenous species—the critters that live there naturally."

He handed Karen a paper. On it were words spoken in 1855 by Suquamish Indian Chief Seatlh, for whom Seattle, Washington, is named: "What is man without the beasts? If all the beasts were gone, man would die from great loneliness of spirit, for whatever happens to the beasts also happens to man. All things are connected."

A drama of predator and prey amid the dunes

ON A CLOUDY DAY without shadows, we saw a black-tailed jackrabbit nibbling grass on a sandy hummock on Padre Island. Gusts of wind bounced the grasses, but the jackrabbit was almost motionless.

Heard, but not seen, was the marsh harrier's dive. It hit the

CIRCUS CYANEUS HUDSONIUS

*hare with its talons (**left**), whirled, struck again, then kited skyward.*

Moments later, it reappeared near ground level, coasting into the wind. It gently settled near the carcass.

With an economy of motion it skinned the furry underbelly and began to pull apart the carcass segment by segment. To increase leverage, it tautened neck muscles and pushed at the ground with its wings while straightening its legs.

The harrier was a voracious eater, wasting little. Between feedings it stayed nearby—50 to 1,000 feet away. Each time it flew off, it tried in vain to get the carcass airborne.

We resisted identifying with prey or predator; we restrained ourselves from that human talent for moral verdicts. We had come to observe nature—not to pass judgment.

AN AERIAL altercation—*details unknown—diverts a mated pair of reddish egrets from their parental duties. After the brief episode one bird settled back down to their nest atop a yucca, which held three-week-old triplets.*

The other egret joined shorebirds feeding along a sandbar on Carroll Island, a five-acre sanctuary in Mesquite Bay just outside the refuge. On this June day a black skimmer, at left, prepares to skim, while a heron, at right, stands over its nest.

These and other egrets, herons, spoonbills, terns, and gulls keep the island in tumult in summer; in September the place was a noisome guano heap. We could envision the lush spring growth flourishing on all those organic nutrients, but at the end of the nesting season Carroll Island needed a rest from the birds.

DICHROMANASSA RUFESCENS

Lunge... grapple... twist... choke.... Two tom turkeys bar no holds

MELISANDE GALLOFAVO

A CONFRONTATION shatters the peace of a shady Aransas oak motte. The angry gobbling of tom turkeys exceeds even our car's roar, and we brake to a halt. There they are, not 40 feet away, and only partly hidden among the trees.

Their gobble-gobbles subside until they become a high-pitched ruffling purr. The larger bird keeps his feathers in display; his tail ruffles in the wind. The smaller bird, always keeping lower and with feathers in partial display, begins a circular dance with much wing spreading. So engrossed are they that they do not notice as Karen and I creep close.

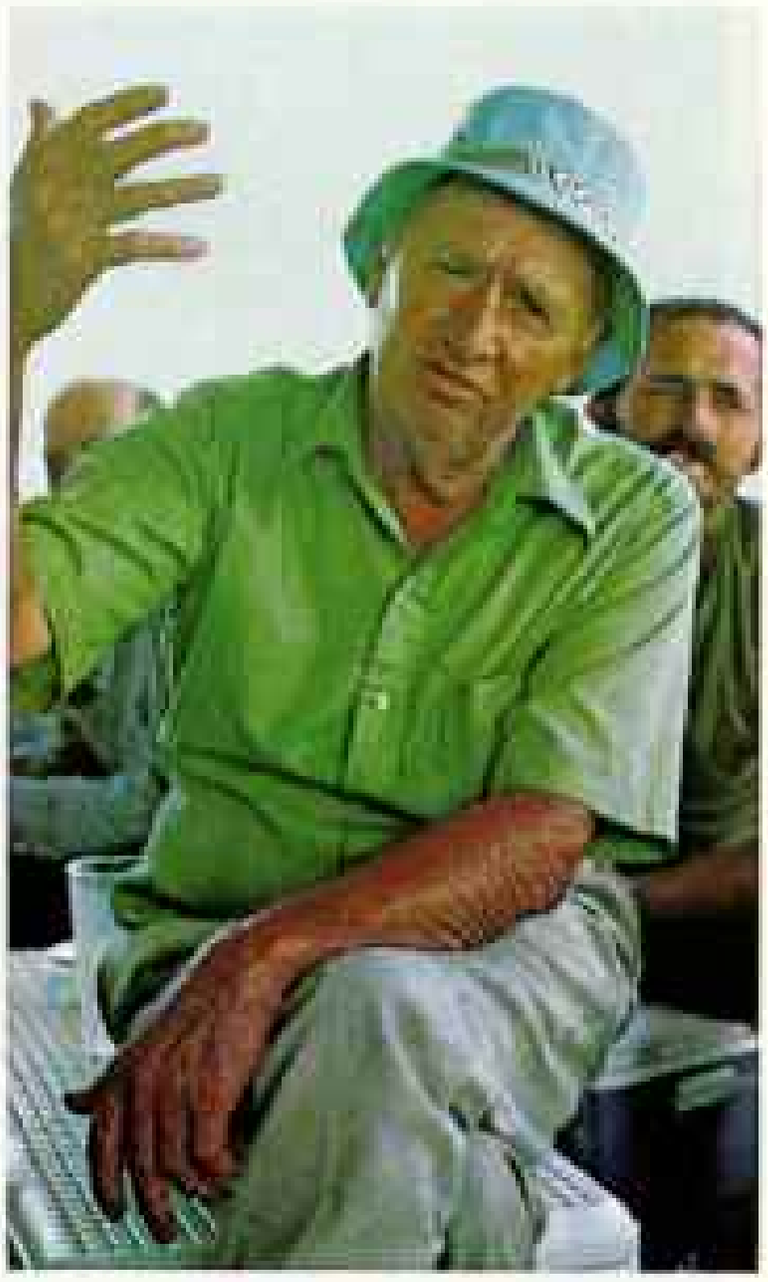
Under muggy skies the two toms wait each other out for almost half an hour. A butterfly passes. Blackflies whine. Two javelinas huffle past, searching for acorns. A great-tailed grackle calls. Nothing distracts the toms from each other.

Now their silence intensifies the confrontation. In a sudden flurry they vie for position; with outstretched necks they catch each other, beak by beak.

Round and round they go, flattening grass, toppling stalks of flowers. They push and twist among the oaks. Each seems intent on choking the other.

After a quarter hour of beak-locked battling, the larger bird forces the smaller to the ground. The wingbeats stop, the fluttering subsides. A decision has been reached. The weary fighters vanish through the grass, and peace returns to the afternoon.

"You Haweses gotta leave...."



BANE OF RANCH LIFE, blackflies bedevil cattle on Matagorda Island, causing them to seek relief in the brisk evening winds along the beach (left). The cattle belong to the Hawes family, and the land they graze on once did—for more than a hundred years prior to 1940.

Alfred W. "Pat" Hawes (right) recalls the day that a U. S. marshal appeared at their house. Pat and his father were working on the roof, and Pat says he will never forget the marshal's words: "Don't put another shingle on that roof. As of now all this belongs to the U. S. Government. You Haweses gotta leave...."

The land was needed for a bombing range; the condemnation proceedings allowed owners five to nine dollars an acre. In 1948 the Hawes cattle returned under a lease that can be terminated on 30 days' notice. The family has struggled to regain title to the land, which lately has been assessed as a worthwhile addition to the Aransas refuge.

Hugh Hawes, Pat's brother, summed up family feelings about the protracted struggle. As a war came on, their mood was patriotic: "We went into the service. This was our part of America. This is what we were fighting for. Now, after 40 years, we still haven't got it back."

A strong case could be made for adding the old Hawes ranch to the refuge. But would that make the Haweses—as independent, self-reliant, and tenacious as the cattle they raise—an endangered species? Or, at this refuge where for more than forty years wildlife habitat and natural-gas and oil production have been managed compatibly, isn't there another possibility?

A CRY *of recognition? On a dredging spoil bank where 107 black skimmers live, a parent returns home to its vocal mate, nestling over their downy buff young. We noted and tried to*

RYNCHOPS NIGRA

understand the meaning of their raucous calls and body language, with which they signaled obvious social order. Did marching about their colony communicate constrained dignity? Did jostling with beaks lack decorum? It was good for the skimmers to know and for us to speculate.

A SENSITIVE APPROACH by industry to the Gulf's environmental balance is mandatory, residents learned in 1979. Bathers and laughing gulls alike were used to gleaming sands of Padre Island until an oil well in Mexico's distant Bay of Campeche blew out in June, setting off history's largest oil spill.

The slicks ultimately traveled 600 miles and reached the barrier islands. Walking into the dunes of Padre, we followed a twisting impoundment of silenced sea. No beat of waves, no aeration by surf. A scum of oil kept crab and insect away. Gone were the herons and the egrets.

Almost as soon as the oily tides arrived, they were turned away by shifting winds and currents, and the ever moving sands began to bury what had washed onto the outer beaches. In early September we watched life return to those beaches, but not without cost. Among shorebirds, the willets seemed to suffer most; they feed at surf's edge, burrowing through oily sand for donax, a bivalve. The ghost crabs suffered, their eyestalks covered with oil.

Though few creatures died, most seemed to hurt. Though shorebirds commonly regurgitate undigestible matter, we had never seen birds vomit before. I had a sudden vision of birds sickened, too weak to cope with predators, facing great migratory journeys, winter closing in. It wasn't easy to think about.

WILLET, CATOPTROPHORUS SEMIPALMATUS

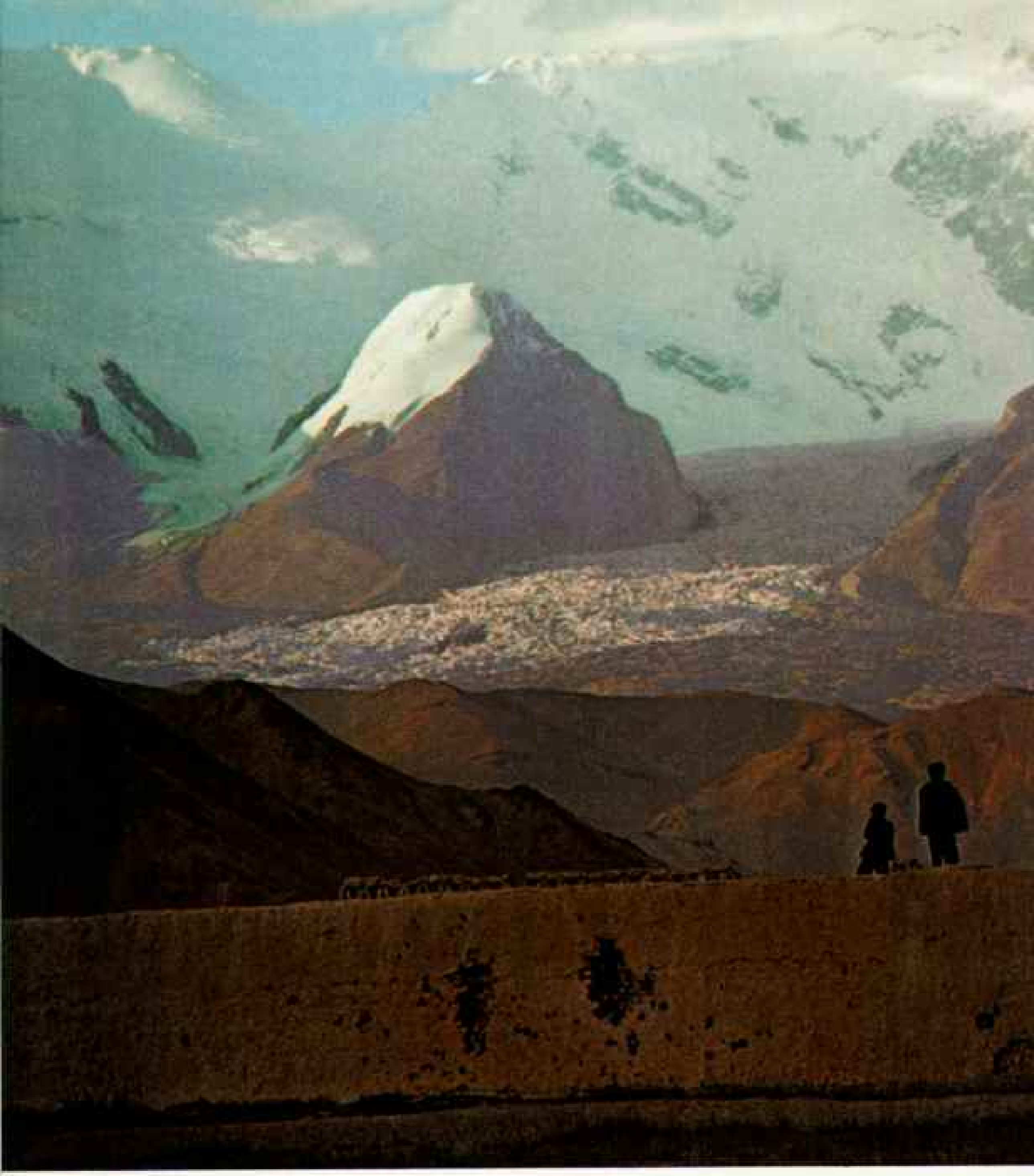
Black tide turns a shore sadly silent

LITTLE FELLOW named for a big state, this Texas horned lizard appears poised for takeoff on the runway of Matagorda's defunct airfield. Actually he's intent on catching insects, mainly ants, which thrive as well around abandoned airstrips as on natural dunes and savanna.

Horned lizards are not thriving, due in part to man's tendency to kill them on sight or capture them as curiosities or pets. They also suffer a decline from loss of habitat.

Like the giant dinosaurs that became extinct, these little lizards have become highly specialized and hence do not adapt readily to change. But whether adaptable or not, they—and all wild creatures—are entitled to an environment in which their kind can survive. This is the principle we saw put into daily practice by roughnecks and wildlife researchers alike. Along the great curving shorelands of the Texas coast, the key word is compatibility of humankind with the rest of nature, and there, over four decades, good beginnings have been made. □

PHRYNOSOMA CORNUTUM



American Skiers Find

ADVENTURE IN

By NED GILLETTE Photographs by the author

WESTERN CHINA

and GALEN ROWELL

***Under the eaves** of the earth, Kirgiz villagers catch the day's last light on China. Now a team of U. S. skiers gets a rare look at the people who live with these giant peaks.*

DUST BLOWN BY DESERT winds and stirred by hundreds of passing feet, hooves, and wheels veils the setting sun, bathing the land in soft mauve hues. Two boys sit in the road playing a kind of checkers with red and black stones.

Market day is drawing to a close in this central Asian city of Kashi (Kashgar), pressed against China's sensitive far-western frontier with the Soviet Union.

Commuter traffic swirls by us in a chaos of color and vintages, a startling contrast to the uniformity of Beijing (Peking): brightly dressed Uygur women on foot; long lines of camels padding to the clang of bells; wooden carts hitched to chop-stepping donkeys; hard-used red tractors; and an occasional olive drab state-owned truck, its driver leaning on the horn as if mere volume alone could part the masses, of which we, remarkably, now form a part.

We are six mountaineers, accepted by the Chinese Mountaineering Association to be the first Americans to climb in China in 48 years. We have christened our National Geographic-sponsored group the American Friendship Expedition. Our goal is to make the first ski ascent and descent of 24,757-foot (7,546-meter) Muztagata, in the Chinese Pamirs. (See pages 192-9.)

Flying from the United States to Beijing, then on through Ürümqi (Xinjiang's capital) to Kashi, has been a week-long journey back into medieval times. We now stand in innermost Asia, the most remote corner of this land of nearly one billion people. And each day and experience here contributes something new for our rich mosaic of memories.

Dick Dorworth, for instance, will never forget ambling alone through the ancient streets of Kashi and being stopped by a young Uygur. Pointing at Dick's black beard, the man asked, "Pakistan?"

"No," Dick answered. "America."

"America?"

"America."

Shaking his head, the Uygur squatted and drew a circle in the dust. On one side he made a rough sketch of China, placing a dot on the left outside edge. "Kashgar," he said. Then he placed a second dot on the far side of the circle and again asked, "America?"

Dick grinned and nodded, and the Uygur's eyes grew wide with wonder.

Also recalled is an evening, the light nearly gone, when spontaneous neighborhood music began drifting through the night: the strings of a *rabab*, the primal rhythms of a hand drum, a voice rooted in the venerable traditions of the city. The music went on until dawn, then a loudspeaker from the city center took over, blaring official music and announcements of the day in both Chinese and the Turkic language of the Uygurs.

"East meets West in Kashi every morning," quips our dynamic interpreter, Wang Wei Ping.

And at receptions. "When I was a small boy in America," I say to my hosts, "my parents told me that if I dug a deep hole straight down, I would come out in China. That journey has been a longtime dream, and we. . . ."

One man breaks in with a gleeful smile. "When I was a child in primary school, my teachers said if I dug a hole, I'd end up in America! This is our bridge of friendship!"

A Land and People Apart

The far west of China's Xinjiang Province, inhabited primarily by people identical in race, language, and Islamic faith to the Soviet Central Asians, is still officially closed to foreign tourists.*

Previously, Western oil technicians have paused in Kashi on their way to the developing oil fields of Xinjiang. A Japanese film crew and a British mountaineering team also have stopped here briefly. But we are the first Westerners since "liberation" in 1949 to spend more than a few days in the streets of Kashi.

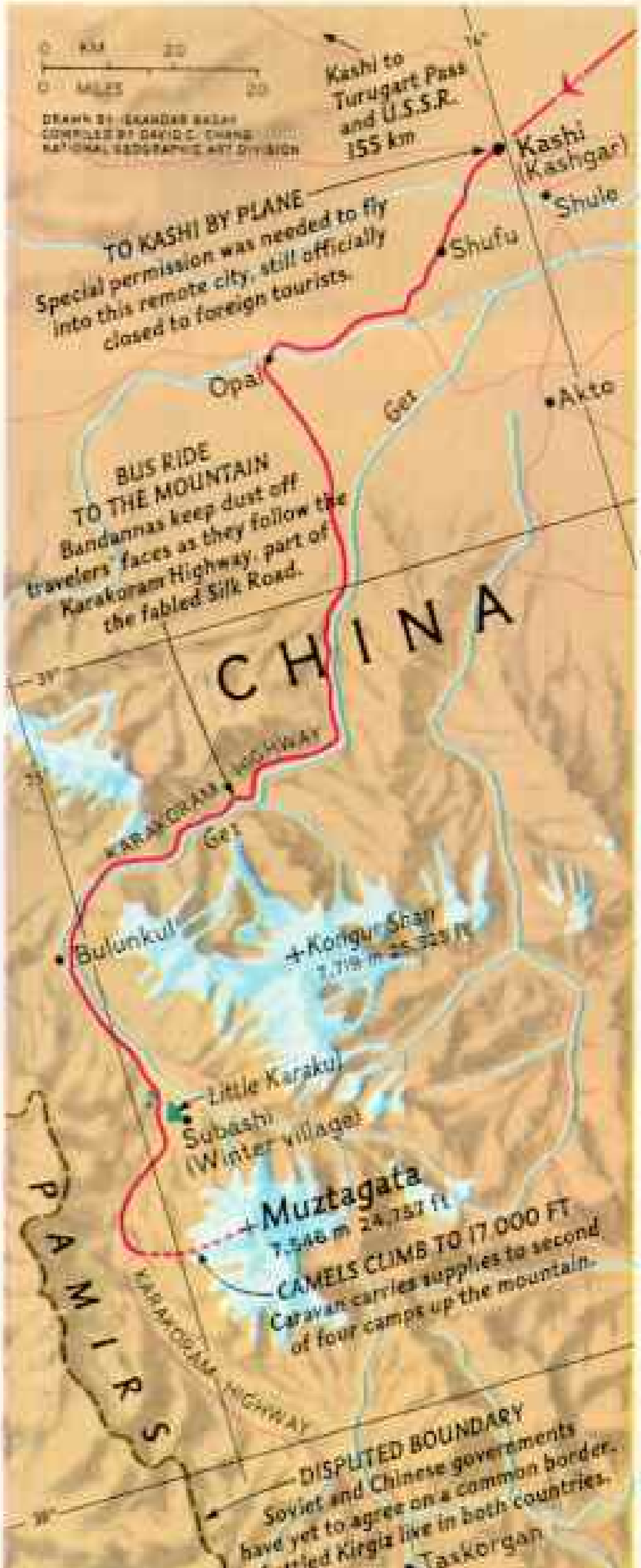
*Rick Gore reported on the northern part of the province in "Journey to China's Far West" in March 1980.

Forsaking Siberia *centuries ago, Kirgiz horsemen settled in the high valleys near Muztagata—Ice Mountain Father—which the Chinese opened to the American expedition last summer after a 32-year ban to foreigners. These seminomads are related by Turkic language and Muslim religion to the Uygurs who populate Kashi (Kashgar). Regional government is controlled by the Han, China's ethnic majority.* GALEN ROWELL

Dusty oasis *of ethnic color in a nation of uniformity, the city of Kashi retains a Turkic flavor in its mud-brick houses, covered alleyways, awninged markets, and poplar-shaded boulevards. On East Brigade Street (**above**) morning traffic rolls and walks toward a colossal Chairman Mao on the horizon.*

*For 20 centuries Kashi served as a meeting place for Chinese, Indian, and Persian merchants before the Communists sealed the country in 1949. Among the city's few foreign visitors since, the six Americans felt like celebrities as they passed through on their way to Muztagata (maps, **far right**). Children thronged about their jeep (**left**) for a look, and a 100-year-old woman (**right**) wept at her first sight of a Western woman.*

NED GILLETTE (TOP) AND EALEN ROWELL



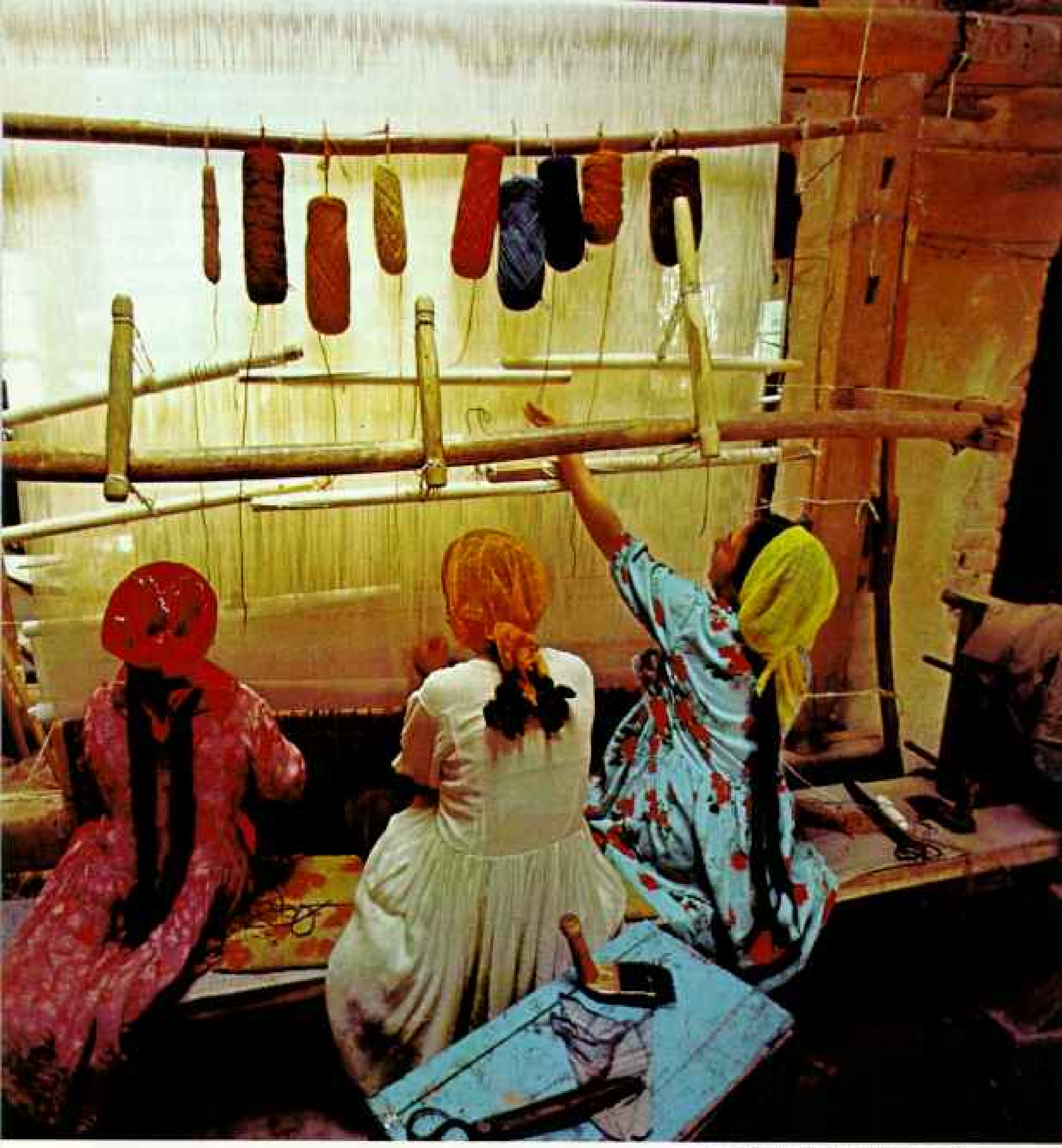
Kashi's economic fabric *is woven together by money from Beijing (Peking). The government has poured millions into this city of 175,000 near the U.S.S.R. border, building hospitals, schools, parks, stores, and light industry to aid minority development. Workers at the state carpet mill* (**right**) *can earn higher-than-average wages for their exacting skills. A nearby cotton-textile plant employs 3,000. At the Handicraft and Arts Workshop* (**left**)*, a seamstress fashions a souvenir for future visitors to this shop along the ancient Silk Road. Thread is spun from silk cocoons being sorted in a small commune* (**below**)*.*

Dick Dorworth, 41, former world speed-skiing record holder, is our number one skier. Galen Rowell, 39, is one of America's best known wilderness photojournalists and a noted mountaineer. Jan Reynolds, 24, is a ski instructor in Vermont. Jo Sanders, 31, handles our travel arrangements, and Cameron Bangs, 43, is our doctor. I am 35 and the expedition leader. My specialty is skiing in exotic places—adventure skiing, I call it.

The team raised, in only two months, the necessary funds to come here. The Chinese are blunt about the high cost of expeditions in their country: The government needs the foreign exchange.

The mountaineering association has assigned us a vibrant mountaineer for a liaison officer, Chu Ying Hua. We grow extremely fond of him. Gone are all ten of his toes, lost to Mount Everest (Qomolangma) on the 1960 Chinese expedition. One of three climbers to reach the top, he traded his toes for his country's honor.

"It was my duty to climb Qomolangma as



JAN REYNOLDS (TOP LEFT) AND GALEN ROWELL

given by Premier Zhou Enlai," he says. "I would have died rather than fail. Near the summit we could not climb the 'second step.' It was too steep for our clumsy boots. I finally took them off to get closer to the rock."

Horses Prompted Chinese Interest

During the past 2,000 years Chinese dynasties occasionally have extended their rule to the distant west, pushing back Huns, Turks, Arabs, Tibetans, and Mongols. Chinese interest in Kashi began in the second century B.C., when the great Han Emperor Wu Ti, intent on defeating marauding Huns, sent to Fergana in what is now the Soviet Union to arrange a tribute of the fabled horses that "sweat blood and originate from the heavenly horses."

Trade caravans followed. Commerce flourished in times of peace, which were frequently interrupted by civil strife and invasions. Both Genghis Khan and Tamerlane fought to control the strategic trade routes in this region.

Silk was the lure. Emissaries and monks as well as merchants traveled the Silk Road between Cathay and Persia and Rome. Kashi, situated between the wastes of the Taklimakan Desert and the peaks of the Pamirs and the Tian Shan, became a bustling emporium of diverse cultures and goods.

Modernization Comes to Kashi

Today Kashi is still a melting pot of time and culture, but insulated from modern Western influence. Thirty years ago the population of Kashi was only 40,000; now it is 175,000, mostly Uygur. But the economy remains largely agricultural, and the Uygurs are still people of unhurried industry. In this moderate climate, with plentiful snowmelt for irrigation, the fertile soil provides an easy living for the people even without mechanization.

The Chinese have put substantial effort into the city. The 50-foot wall that once surrounded the center is gone. Big, unimaginative edifices built in the 1950s house department stores, shops, and offices. Our hotel, the Welcome Guest House, is comfortable, richly carpeted with bright, exquisite rugs. Cameron and Dick share their bathroom with a resident frog.

For many the standard of living has been raised, and literacy has increased. Kashi is remarkably free of poverty. The Chinese are proud of what they have accomplished here. Chu reprimands me only once.

"*Bu ke qi* [Not OK]. The dark angle of old, ugly, or beggar people is not for your camera."

"I'm sorry," I reply.

"One never has to say I'm sorry among mountaineers," he answers. "Only among politicians."

The hand of the late Mao Zedong (Mao Tse-tung) sweeps over Kashi's Peoples' Park from his 100-foot-high concrete eminence on the low skyline. Although a numerical minority in the province, the Han Chinese firmly control top positions in government, agriculture, and industry.

DICK DURRANCE (ABOVE) AND SALLY POWELL

Cabbageheads and sleepyheads *can both be found in Kashi fields. A night watchman* ***(above)*** *snoozes his morning away in a patch of melons that grow sweet and juicy with hot days, cold nights, and mountain water from antique canals. A sunny Uygur girl* ***(right)*** *helps her family at one of the communal farms, which also grow cotton and wheat.*

Domed city of the dead, a field of tombs hold Muslim faithful.

But the flavor of the place is in no way Chinese. We are in an outpost of Islam. Seven of Xinjiang's twelve minorities, including the Uygur, are Muslim. However, they carry their religion easily, with little of the fervor of other Islamic countries.

Although the Beijing government allows religion to be practiced within central mosques, it discourages, sometimes strongly, worship in small mosques built by *akhun*, local religious leaders. Still, we saw several of these being constructed with great care. Many had been destroyed during the Cultural Revolution in the late 1960s.

"Given the choice, we would prefer to be a country with our own flag—Eastern Turkestan," declares one Uygur. "But that may be unrealistic."

One morning we sit on worn carpets in Aziz Aysa's five-room house. Seven years old, it is flat roofed and made of sun-dried mud bricks reinforced with straw—adequate, since only about three inches of rain fall a year. Aziz works at a large commune east of Kashi that grows more than 50 kinds of fruit—melons, pears, apricots, peaches, pomegranates, plums, and *aq alma*—huge white apples. He owns his house. His bicycle, which cost 179 yuan ($112), stands outside. He wears a watch.

NED GILLETTE

Islam commands the loyalty of many Uygurs despite official disapproval.

His family has lived here for generations. He has six children: Minorities are not subject to the birth-control regulations that encourage Han couples to have only one child.

"*Aomin Allah akbar*—Amen, God is great," Aziz intones. "He has granted us this good meal." We cannot hope to finish the heaping bowls of vegetables, mutton, and thick boiled noodles, called *laghman*, placed before us. Peering village faces vie for position outside the one window.

"Before liberation," our host is telling us, "each family here lived from the harvest of a small plot. Four landlords owned almost all the land around our village of Kukong. Then, after liberation, the people were gathered together and provided with more free land to grow crops together."

Youngsters Outplay Visitors

We are at a table across from the 40 part-time trainers and coaches of the Sports Federation of Kashi. The reception room is quiet, except for enthusiastic sucking and slurping on plums and melons—the first order of business at any meeting in summertime Kashi.

Han director Kao Neng Ben and Uygur deputy director Qurban Aimet ask us to participate in some Ping-Pong diplomacy. Jan

Enough hands for any job: *China hammers out its future with raw manpower. To help make concrete for new mill wheels, a youngster* ***(below)*** *simply breaks big rocks into little ones. At a roadside blacksmith shop* ***(right)*** *a youth forges iron as brother and father puff encouragement in the intense heat. The birth-control-conscious government placates restless minorities by allowing them to raise large families.*

and I go down in firm defeat to ten-year-olds Yang Xu and Bai Jang.

Dick and Jo are invited to teach an English class of 150 adults. Five Uygurs sit in the front row—the rest are Han. Knowledge of a foreign language is required for promotion. The choices are Russian, Japanese, and English. Most choose English. Their employers have donated half a day for each to attend the spare-time school. This is the first time they will actually hear a Westerner speak English.

"What does, 'You are pulling my leg' and 'The man was all legs' mean?"

"What is the difference between factory, plant, mill, and works?"

During a break in the English lessons, Jo sings "You Are My Sunshine" to her class.

Dick and Jo are amazed at the range of questions about their life-style, education, work, philosophy, and political viewpoint.

Wang tells me, "As an interpreter in the old days, three or four years ago, I could only say hello, good-bye, and translate directly. No feeling, no emotion, no humanity was allowed. Now I can talk about all my opinions with foreigners."

Following Marco Polo's Path—by Bus

En route to our mountain, our heavily laden rented bus inches up the tortuous grade of the deeply notched Gez River valley. We are following the unpaved Karakoram Highway, part of the old Silk Road, 200 kilometers south into the high Pamirs. Marco Polo had traveled this same road 700 years earlier, over what the Persians called the "Roof of the World."

GALEN ROWELL (ABOVE) AND SID BRIGGS

The Pamirs, which include Muztagata—Ice Mountain Father—are an intricate jumble of icy peaks at the borders of China, the Soviet Union, and Afghanistan. From this hub issue the world's greatest mountain ranges: the Himalayas, Karakorams, Hindu Kush, Kunlun Shan, and Tian Shan.

As we lumber along, gaining altitude, the landscape is bleak and forbidding, largely empty of humanity. In vain we have been scanning the mountainsides for wildlife: the elusive snow leopard, bear, wolf, ibex, and Marco Polo sheep.

Above 11,000 feet the highway flattens as we enter a long valley. Of the major Pamirs, meaning "high, wide, grassy valleys between mountains," this is the only one within China's boundaries. The road runs within ten miles of Soviet territory. The boundary is a hazy line, still in dispute. Perhaps one reason we are allowed here is to lend credibility and exposure to China's claim of sovereignty over this territory. American mountaineers have also climbed in the Soviet Pamirs across the border.

Marco Polo wrote of high valleys so lush that "a lean beast grows fat here in ten days." As we crest a rise, such a place spreads before us. Meadows carpet the broad valley floor, dotted with purple and yellow flowers. Sheep and goats shepherded by Kirgiz mountain nomads graze by a meandering stream. The mud walls of the village of Subashi grace the far shores of Little Karakul. Yurts, or *aq ui* (Turkic for "white dwellings"), which provide summer shelter, squat like giant mushrooms. Above barren hills and gigantic *(Continued on page 192)*

A dune of world-class size—piled high by desert winds funneled through

GALEN ROWELL

the Gez defile—towers above two riders in a high Pamir valley.

Friendship followed *trading of stories, food, and jewelry when the skiers visited Kirgiz nomads at the base of Muztagata. Welcomed into the felt-covered yurt of Turdi Beg (***left,** *at right), the Americans ate flat bread, yogurt, and goat cheese with his family and friends. Later the visitors showed off their mountain tent of nylon and aluminum (***below***) and shared freeze-dried "ice cream." The herdsmen tend state animals along with their own on summer grazing areas assigned by their brigade leader. Yet in most ways their lives resemble those of their grandfathers. "I felt quite at home when the women milked the goats," said Jan Reynolds (***bottom, *** left), who grew up on a Vermont dairy farm. Turdi's wife, Tursunai, at right, gave her a pair of Kirgiz earrings to try on. "But she never really believed that a woman could climb the mountain," Jan said.*

NED GILLETTE (BELOW) AND GALEN ROWELL

(Continued from page 187) sand dunes rise Muztagata and the Kongur Shan: massive, glacier laden, the highest of the Pamirs. Their alluvium fills the valley floors, and the waters that flow from them give life to the distant desert oases.

The splendor and peace of the summer landscape take us by surprise. We have heard that the ceaseless winter winds are among the cruelest outside the polar regions.

A Kirgiz horseman races our bus. Dressed in black corduroy, high black boots, and black wool hat, he gallops with ease. Our mechanical horsepower is no match for his at this altitude.

At the base of Muztagata we dump our gear, set up camp in the meadow, and spend several days getting used to the altitude.

Kirgiz Settle Into New Ways

The Chinese have effectively incorporated the Kirgiz into the communal system. Though it is no longer possible to roam at will, old traditions persist. The Kirgiz are Mongolian in appearance but speak a Turkic dialect and write in Latin script. They are now "settled" nomads.

Subashi *qishlaq* (winter village) numbers 700 people. Seventy still go out to *yaylaw*, or summer grazing grounds; two or three camels carry one family's possessions.

We visit the yurt of 55-year-old Turdi Beg, sitting on brightly colored quilts made by Turdi's wife, Tursunai.

"When I was a young man," he says, "only a horse path led to the outside, and it was difficult to exchange wool for flour, salt, wood, and cotton cloth. In the old society few could read. Many children died before one year. There was nothing for us, not even our own tent. Now we work for ourselves and are happy."

Outside, slopes of icy peaks catch the last of the light; silent white snow turns amber.

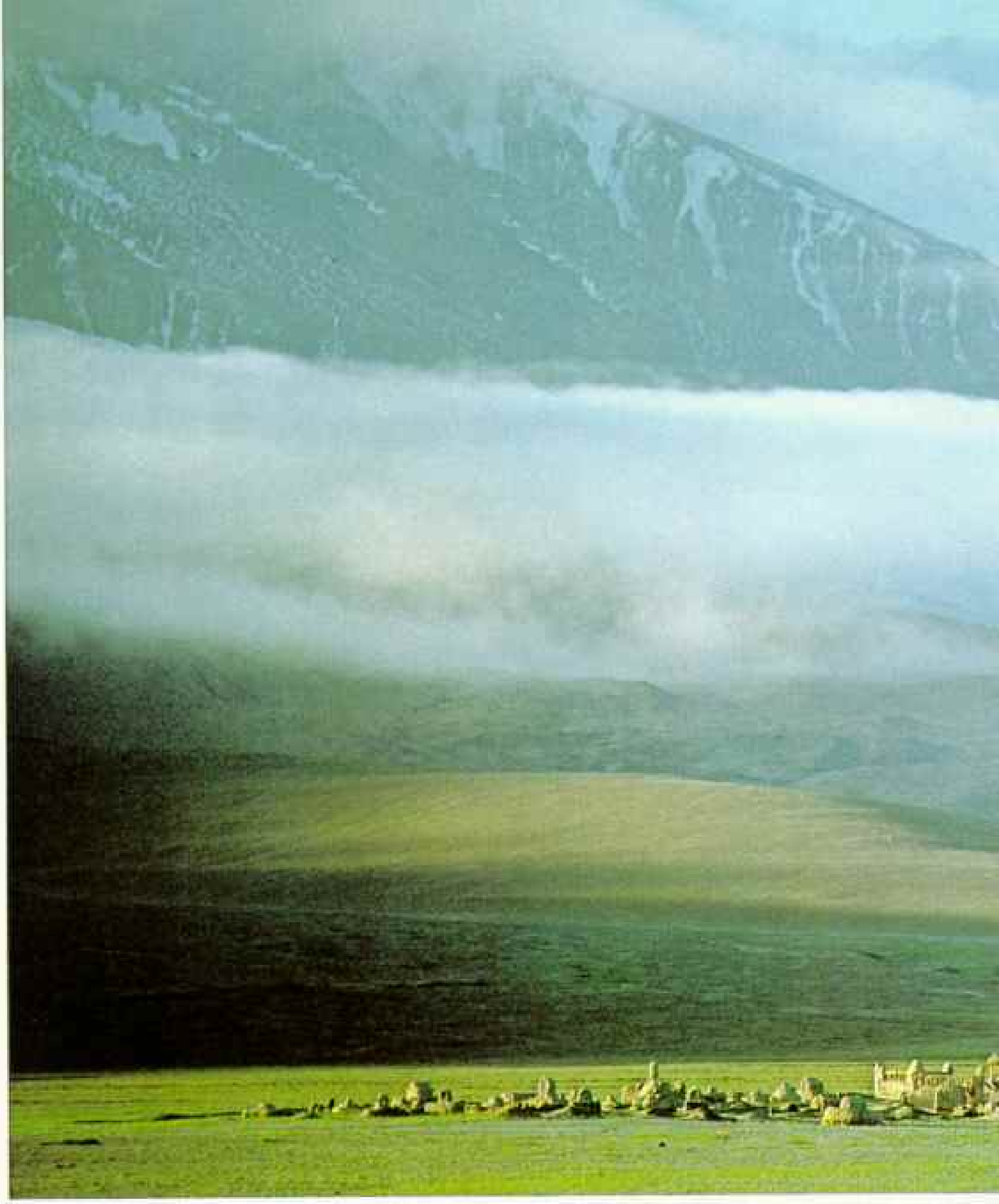
"For generations we regarded Muztagata as the highest mountain in the world," says Turdi. "Now we know it is not. But we still regard it as the best, because it gives water for our animals.

"My grandfather told me that there is a beautiful garden on top where white-robed saints live in peace and harmony. Please . . . tell me if that is true when you climb the Ice Mountain Father." * * *

Skiing From the Summit of China's Ice Mountain

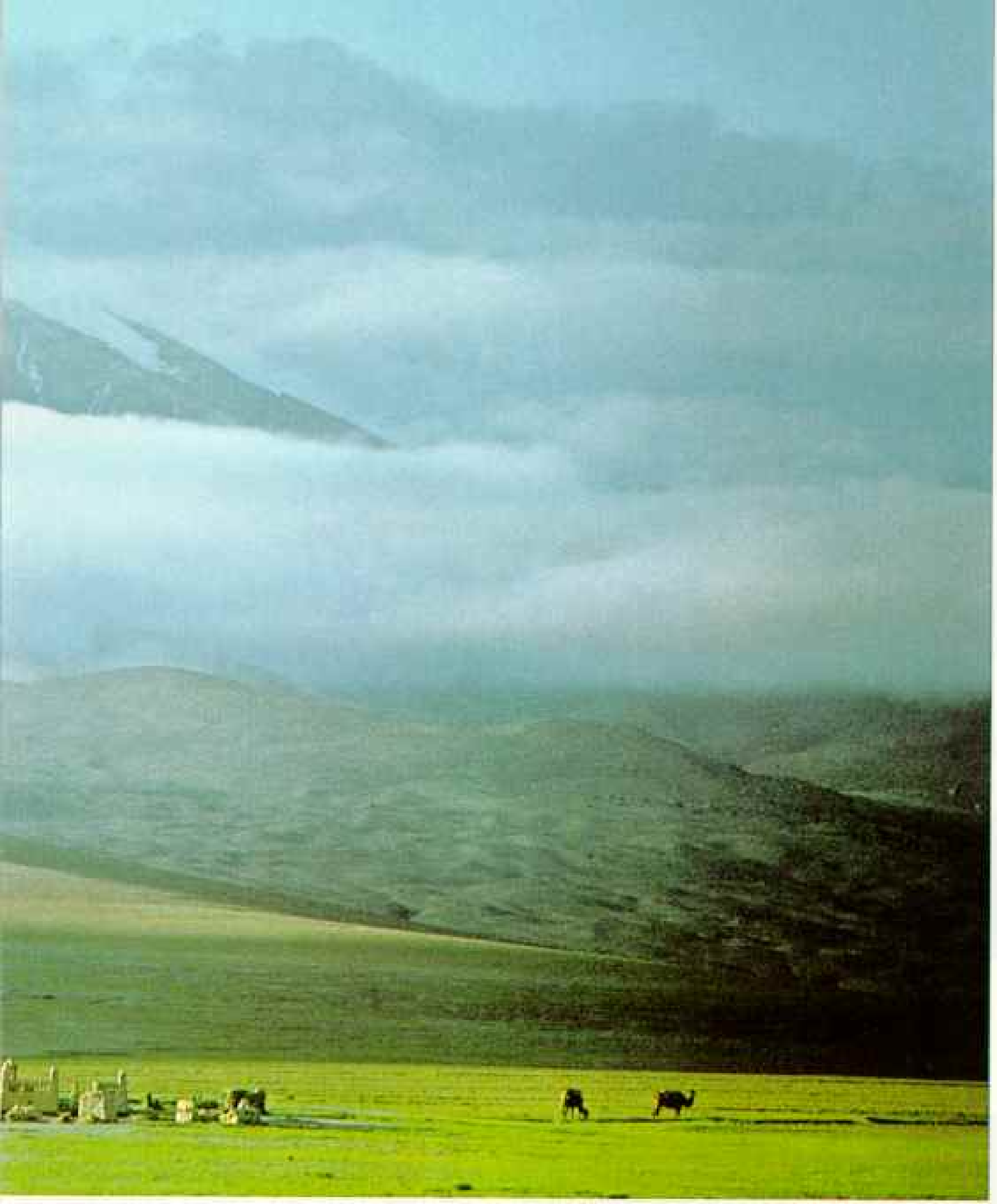
Author Ned Gillette leads an American team to 24,757 feet in the highest ski ascent and descent in history. First to the top, climber Galen Rowell snaps a self-portrait of his wind-and-sun-shielded face.

GALEN ROWELL



MORNING CLOUDS linger above an old Kirgiz graveyard (***above***) near road's end at the base of Muztagata, where we establish our meadow camp. We are skiing writer Dick Dorworth, wilderness photojournalist Galen Rowell, ski instructor Jan Reynolds, cold-weather specialist Dr. Cameron Bangs, Jo Sanders, who made our travel arrangements, and myself.

Only twice before has Muztagata been climbed: first in 1956 by a Sino-Soviet team, then in 1959 by a Chinese expedition. In four attempts in 1894, Swedish explorer Sven Hedin failed to reach the summit, as did Englishmen Eric Shipton and H. W. Tilman in 1947. The great whale-backed slope gives climbers little encouragement as



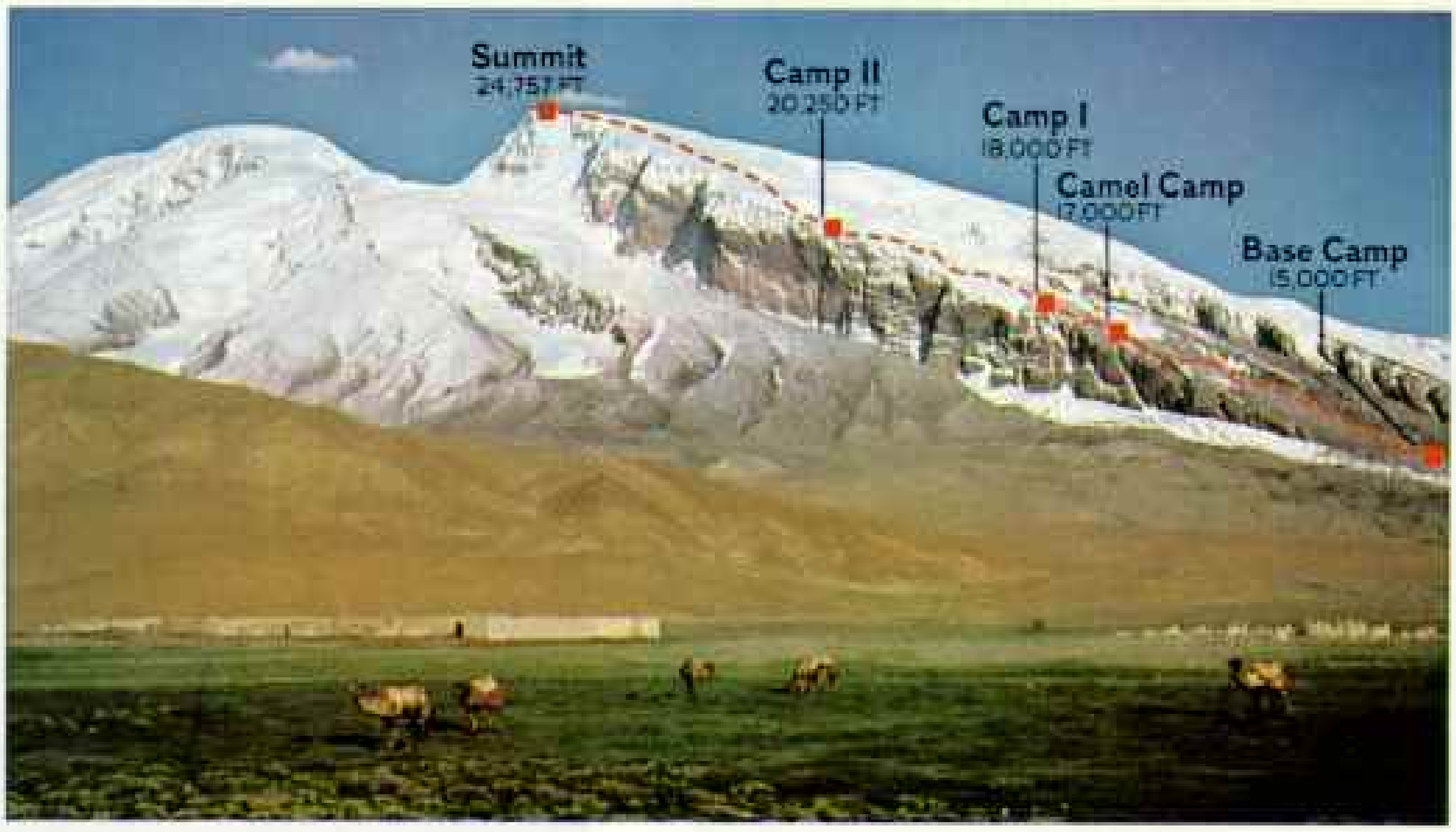
they chase the same unchanging horizon hour after hour, all the while being dragged down by deep snow, thin air, and unexpected cold. "We live and learn," Tilman wrote, "and big mountains are stern teachers."

We are skiers, however, and our strategy is new: to stay on top of the snow as we make our ascent. Our lightweight alpine skis are equipped with mountaineering bindings that hinge at the boot toe for easier climbing. Their bottoms are fitted with artificial sealskins to better grip the snow. We'll ascend the first half in stages, getting accustomed to the altitude until we reach our high camp—almost as high as Mount McKinley. Then we'll dash to the top in a single, demanding push.

An improbable caravan begins the trek to the top

DESERT MOOSE, as we affectionately call them, Bactrian camels haul skis, food, and gear (***above***) to the snow line at Camel Camp (***right***). Interpreter Wang Wei Pei (***left***) helps a Kirgiz camel driver fasten the unlikely cargo to an animal's back. We carry our own loads to Camp I at 18,000 feet and to Camp II at 20,250 feet, waiting out snowstorms on the way. But altitude sickness forces Dick to descend from Camp I, and exhaustion halts Cameron at Camp II.

ALL BY RED GILLETTE



REACHING THE TOP won't be the only prize for us. Others have been there before, including our mountaineering friend Chu Ying Hua, here (***left***) with Wang, right, Jan, and me. More than the summit, we seek the thrill of skiing down, of floating across this immensity in hauntingly perfect snow.

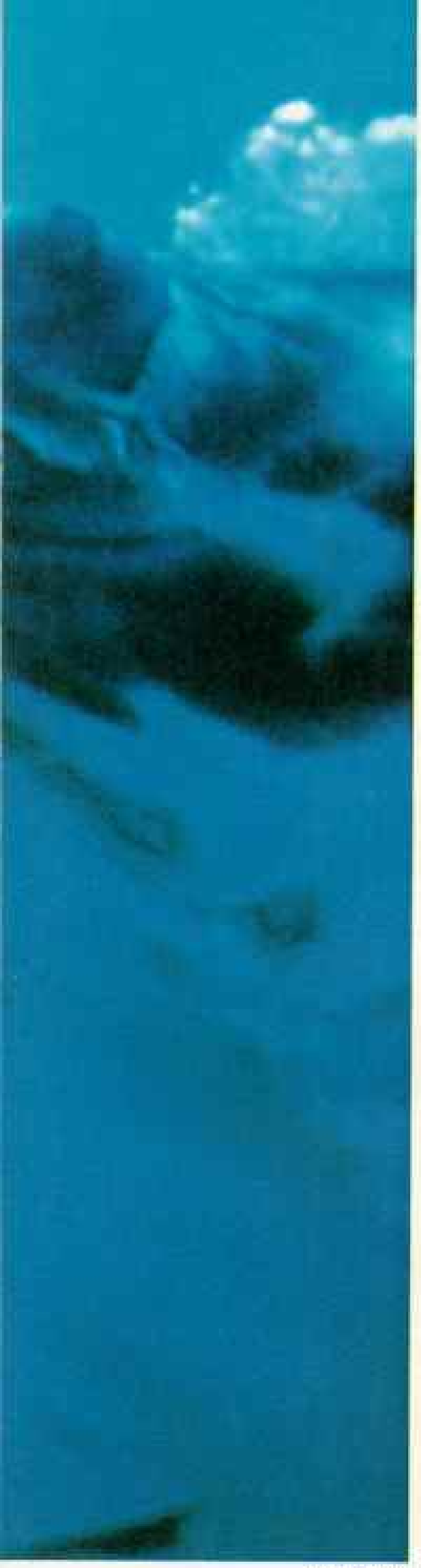
So we set out from Camp II (***below***) on July 21, 1980, on a grueling ten-hour charge to the top. But the receding horizon taunts us throughout the day. In a race between exhaustion and coming nightfall, I recall that none of us has ever climbed so high before.

Two hours before dark, however, Galen makes a final, painful push, and at last reaches the summit. Jan and I follow. And for a moment, at the top, we revel in the view—an orange sun easing behind the Soviet Pamirs as golden shadows rise up the slope to meet us. Then we push off for the downhill run atop eight inches of powdery snow. Jan (***below left***) sets a new altitude record for women skiers. And we slip into the instinctive rhythms of survival skiing. By the time we reach Camp II, darkness is nearly as complete as the smooth, deep satisfaction we share. □

REID BAILEY (BELOW), CAMERON BANES (TOP LEFT), AND GALEN ROWELL

By PETER BENCHLEY

A Strange Ride in the



STAN WATERMAN

Deep

IT GLIDED OUT OF THE STYGIAN GLOOM like a great black bomber, banking slowly into an easy turn, righting itself and heading straight for me. As the behemoth drew nearer, it achnowledged my presence by dipping a wing, intending to pass beneath me. I reached out and grabbed hold—one hand over the lip of the open mouth, the other gripping the leading edge of a nine-foot wing.

And we were off. The gentle giant carried me on a leisurely roller-coaster tour, diving from 30 feet to 150, cruising the twilight depths until suddenly it chose to soar once again toward the surface. And then, at 50 feet, it dived into a 360-degree somersault, pulled out, and, with me still dizzily holding on, swooped into a roll—like a plane at an air show.

We had come upon this manta ray by chance. Underwater photographers Stan Waterman and Howard Hall and I were filming the rich and varied life around one of the seamounts (submerged volcanic peaks) in the Gulf of California, locally called the Sea of Cortés. Mantas may frequent such formations for the upwelling currents that carry the macroplankton, a major part of their diet. But generally they permit no contact by humans.

One day we spotted a particularly large manta—between 18 and 20 feet wide—moving peculiarly slow. A closer look revealed that it had been fouled in a fisherman's net, and the ropes had slashed deep wounds. Pieces of rope were still festering in the wounds and trailing off behind the ray.

Later that day a young woman in our crew, Michele Binder, dropped into the water and let herself drift down on top of the manta. Michele carefully pulled the ropes from the manta's wounds and packed the shredded flesh together. Still the manta did not try to flee. Once free of the ropes, in fact, it seemed to perk up, and it carried the amazed woman on its back until she ran out of air.

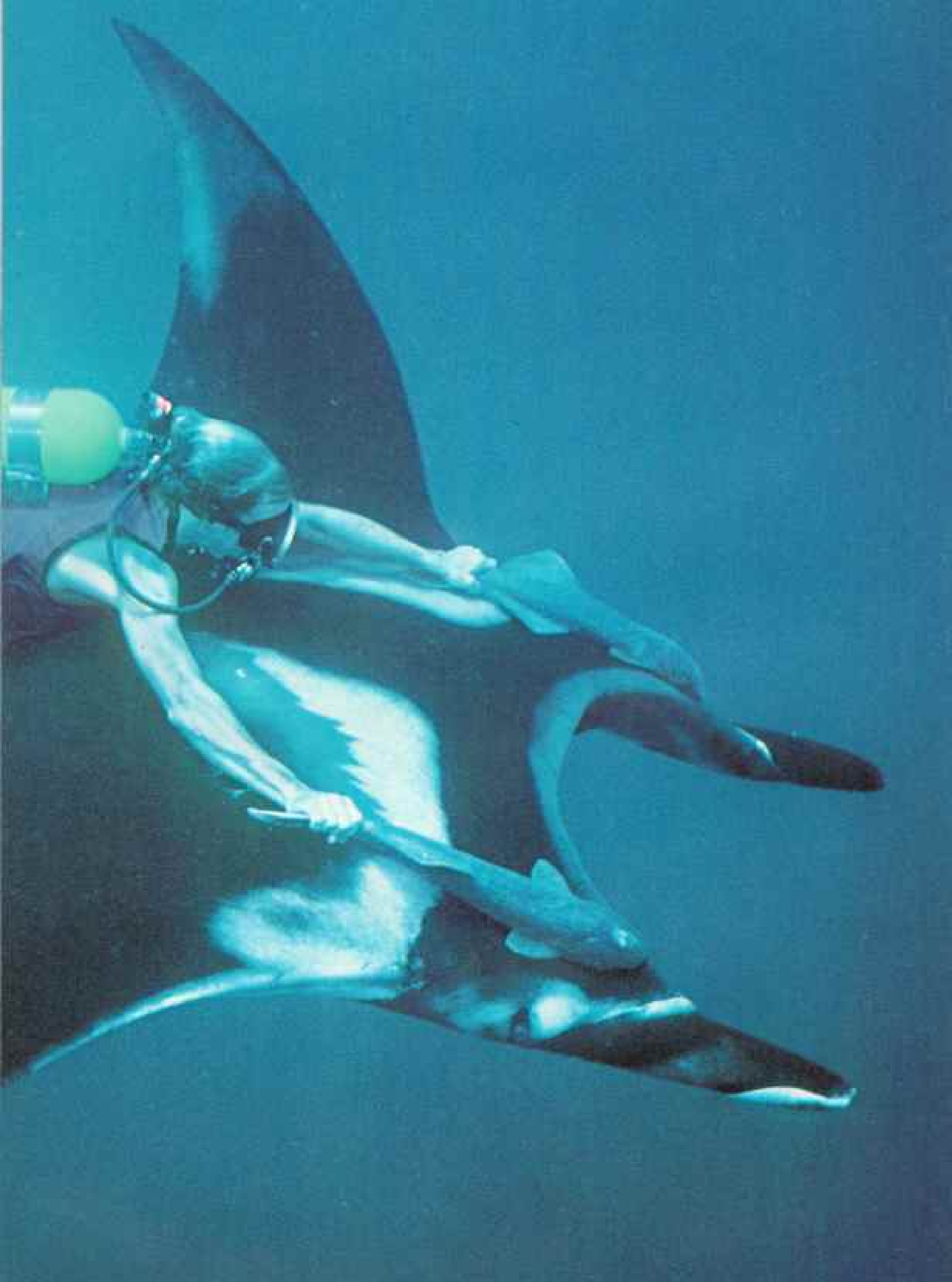
For three days the manta gave rides to all comers. Only twice did it demur. Once, Stan accidentally touched the manta's eye. The fish shrugged its wing and slapped Stan hard enough to bloody his lip. The other time it seemed simply moody. It rolled over on its back, like a dog longing to have its belly scratched, but wouldn't let anyone approach.

The other mantas of the seamount remained shy and elusive—until our last day. Then one appeared with a remora fastened to each lobe. On a whim, Stan's son Gordy grabbed the remoras, expecting them to pull free. They didn't. So, gripping the remoras like the handlebars of a motorcycle, Gordy rode off into the darkness ***(following pages)****.*

We speculated for days about why the mantas had permitted us this rare and splendid contact. Perhaps, we thought, they regarded us as they do remoras and parasites—as harmless nuisances to be tolerated stoically until, inevitably, we departed.

Whatever the impulse that had temporarily tamed these primitive animals, we felt privileged to have been there. And as we left the seamount, we raised a toast to the mantas—and to the intrepid Michele, our own Androcles.

Like a submarine cyclist, Gordy Waterman rides a second docile manta;



HOWARD HALL

this one came with handlebars—a pair of hitchhiking remoras. □

DRAMA OF DEATH IN A MINOAN TEMPLE

By YANNIS SAKELLARAKIS and EFI SAPOUNA-SAKELLARAKI

Photographs by OTIS IMBODEN
NATIONAL GEOGRAPHIC PHOTOGRAPHER
and SPYROS TSAVDAROGLOU

WE WILL NEVER KNOW all the details of what happened on that rocky hillside in the unimaginably distant past, but we are more than reasonably certain of these salient facts:

Thirty-seven centuries ago, in a time when savage earthquakes were rocking the island of Crete, a Minoan priest (left) sought to avert final catastrophe with a rare, desperate act: To the deity of his hillside temple, he offered up the ultimate sacrifice—a human life.

But the victim died in vain. Scarcely had his death rattle ceased than a climactic temblor brought the temple roof and massive stone walls tumbling to earth, killing the priest beside the body of the young man he had just slain.

At the same time, the falling roof killed two others, probably temple functionaries. One was a (Continued on page 210)

PAINTING BY LOUIS GLANZMAN

DETAIL (ABOVE): PAINTED SARCOPHAGUS FROM HAGIA TRIADA, 1400 B.C.; SPYROS TSAVDAROGLOU (BELOW AND LEFT)

Blood sacrifice, *common at Minoan festivals and funerals, normally centered on animals. On the painted sarcophagus* ***(above)*** *a bull with red spots lies trussed atop a sacrificial table, bleeding from the neck into a vessel that will be offered to a deity. Goats await the same fate. As a flutist plays, a priestess brings fruit and a ritual vase to an altar.*

Evidence of a similar rite turned up during the authors' excavation of a Cretan temple, but this time the victim was human. The skeleton of an 18-year-old male ***(right)*** *lay in the fetal position on a low platform. The right heel is so close to the thigh that Greek anthropologists believe the youth was bound before being killed with the knife. The rare bronze blade bears the finely incised outline of a boarlike beast* ***(left)****.*

MYSTERY FROZEN IN TIME

*ON AN ISLAND haunted by antiquity, the authors have for 16 years collected bits of the past from buried ruins and the memories of local people in and around the village of Arkhanes. In 1979 at the junction of ancient roads on a hillside terrace, they found pottery sherds with Minoan script and a limestone carving resembling bulls' horns, such as often consecrated Minoan facades. Digging, they found this rock-walled temple (**above**) with three chambers and a corridor. It looks north over vineyards toward the site of the great palace complex of Knossos, fabled for its labyrinth and Minotaur.*

*In the temple the position of four human skeletons, vessels, and other artifacts (**right**) led the authors to speculate on the instant of death: In the west chamber, attended by a woman, a priest apparently cuts the carotid artery of a young male and collects blood. An earthquake strikes, and an attendant drops the libation jar before reaching the deity whose altar includes unhewn rock of this sacred hillside. The falling roof crushes and entombs the four people. Fire started by oil lamps consumes wooden objects and chars stone walls. The dust of ages settles over all, and the burial remains undisturbed for 3,700 years.*

OTIS IMBODEN; PAINTING BY LLOYD K. TOWNSEND

young woman; the other a person—whether man or woman we do not know—who appeared to have been carrying a sacred vase of a type used for libations of animal blood.

Completing the destruction, flames swept the temple ruins. Earthquake and fire went hand in hand in ancient Crete, where oil lamps provided interior lighting.

That much of a recently discovered ancient drama now seems clear. But before ever we dared utter the dread words "human sacrifice" aloud, we spent agonizing hours pondering the evidence.

In some respects we were fortunate. The site was compact and our team of workers highly skilled. An associate professor of archaeology at the University of Athens, Yannis was in a position to enlist university colleagues as consultants. For financial assistance we had the generous support of the Archaeological Society of Athens.

When finally we revealed our discovery and our conclusions, we caused quite a stir both in the archaeological world and among the public. Never before, for one thing, had there been strong proof that Crete's prehistoric Minoans practiced human sacrifice, although it had long been suspected.

And our fellow Greeks, it soon became apparent, were loath to believe that the Minoan civilization, forerunner of their own, had a dark side.* The Cretans, they had been taught from childhood, were lovers of peace and beauty, a cultured people who would have abhorred such a brutal ritual as human sacrifice. Yet the evidence has been pronounced incontrovertible by many of our scientific colleagues.

The actual skeletons of those who perished in the temple, preserved under the rubble of the building in the positions in which they died, provided telling clues. Nothing had disturbed them, we discovered, between the time of the disaster and the day we brought them to light. Their unusual positions told us immediately that they had died violently. But under what circumstances?

We believe that archaeologists should interpret their finds so as to illuminate human behavior and history. Thus our hillside temple offered not only discoveries of intrinsic worth but also a mystery to solve.

BUT PERHAPS WE are getting ahead of our story. It begins with Efi's discovery of the hillside site and her belief that beneath the brush-covered slope might lie an archaeologically important ruin. This section of north-central Crete abounds with Minoan remains, best known of which is the palace of Knossos seven kilometers (four miles) to the north.

For 16 years we had been excavating a lesser known but possibly equally important palace in the heart of Arkhanes, now a large modern village (map, page 208). Meanwhile, we had explored the nearby cemetery of Phourni, which we believe to be the most important in the Aegean of prehistory. Here we uncovered more than a score of burial buildings dating from the third millennium B.C. down to later Minoan times, when the warrior people of mainland Mycenae occupied Crete.

One day, searching the countryside near Arkhanes for undiscovered ancient sites, Efi led some of our Phourni workers to a small hill at the base of Mount Juktas, legendary tomb of the Cretan Zeus. It is a place of singular beauty. The Aegean Sea bathes the shore in the distance, and pungent herbs perfume the air. Because shallow caves believed carved by Aegean gales pock nearby rocks, the local people call the area Anemospilia, or "caves of the wind."

On the north slope of the foothill, the group came upon pottery sherds incised with signs in Linear A, the earliest and as yet undeciphered Minoan script, scattered among the tumbled stones of a very old wall. Probing deeper into the underbrush, the

The authors are leading Greek archaeologists. Yannis Sakellarakis is director of Crete's Iraklion Museum and a scholar of Minoan religion and art. Efi Sapouna-Sakellaraki is Greek adviser to the American School of Classical Studies in Athens.

*See "Minoans and Mycenaeans," by Joseph Judge, NATIONAL GEOGRAPHIC, February 1978.

Life-size feet of potter's clay, *reminiscent of the idol in the dream of Nebuchadnezzar in the Book of Daniel, survive intact in the central chamber. Their shaped tops fitted a wooden cult statue; depictions of such idols have been found at other Minoan sites.*

party found a piece of carved limestone they recognized as part of a sculpture called "horns of consecration." These Minoan symbols, probably stylized representations of bulls' horns, graced the facades of buildings that had religious significance.

Efi called Yannis to the site.

"There's something of importance here," he agreed. "We'll dig and find out what it is."

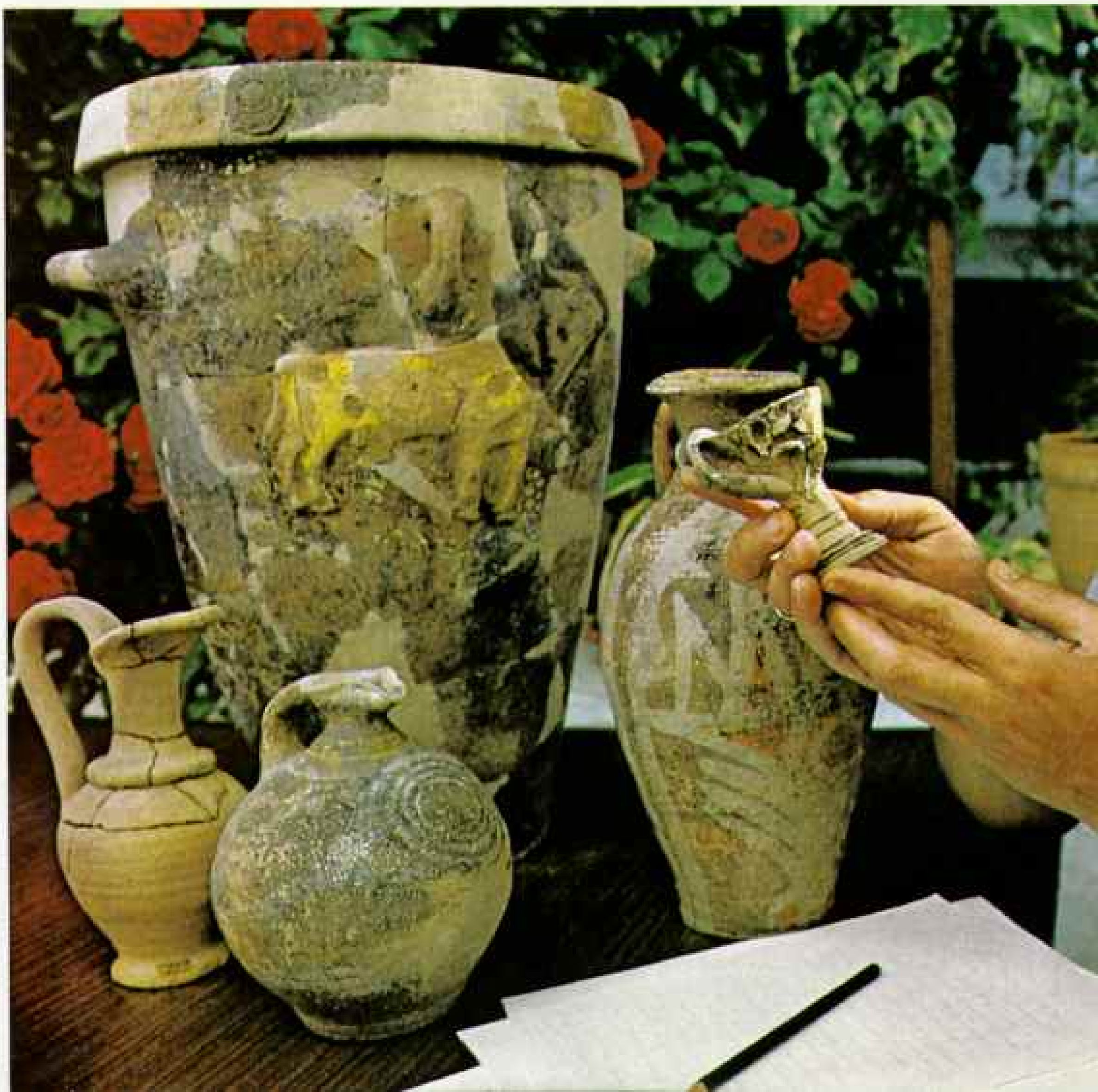
AND DIG WE DID in the early summer of 1979. Each morning for more than a month our team of University of Athens students and Arkhanes villagers, many of the latter trained veterans of earlier campaigns, made their way to Anemospilia, half an hour's walk from the village, and worked until late afternoon.

By the close of the first day's labor we had traced the plan of a freestanding building that we concluded could only have been a temple. For one thing, it had stood in the center of a small walled plot that we identified as a *temenos*, or sacred enclosure, familiar to us from Cretan works of art. For another, it faced north, often a sign of a building with religious significance.

The Anemospilia temple had contained three narrow rooms. They did not interconnect, but each opened into a corridor that extended the width of the building (pages 208-209).

Now we began digging in earnest, starting with the corridor. We had a fright at first when we found a place where treasure hunters had hacked at the walls. But our worries proved groundless. The would-be plunderers had not entered the ruins.

The corridor had had two functions. First, it provided access to the three temple



naves. Second, it had been the place where materials for offerings were initially assembled. These went next to what we may call side, or secondary, altars for final arrangement, and were then carried to the central altar, where all offerings were made.

In the corridor we uncovered rows of vessels that had contained offerings such as fruits, grains, peas, and possibly milk, honey, and wines (below). In some of the jugs, many of them miraculously unbroken, we found charred fruit seeds.

People of the countryside often came to visit us, following a deeply rutted, centuries-old path that you can still see bisecting the temenos. When they saw the jars, they were amazed.

"To think," said one man, "we have walked over these things all our lives and never known they were there!"

OTIS IMBODEN

Pottery styles, decoration, and techniques offer the archaeologist a relatively accurate calendar. From ceramics at Anemospilia we learned that the temple had been destroyed in the earthquakes that many believe had thrown down all the first palaces of Crete around 1700 B.C. We knew too that our temple had never been rebuilt, as were most important places of the so-called old palace period. Had it been, its priests would have furnished it with utensils made after the time of its destruction.

IMPORTANT as was the pottery, the discovery in the corridor of our first skeleton provided the greatest thrill. It was a unique find: The only remains of Minoans heretofore unearthed had been recovered from tombs.

Initially, we thought we had found merely an earthquake victim; only later were we able to ascribe to this person a possible role in the drama on the hillside.

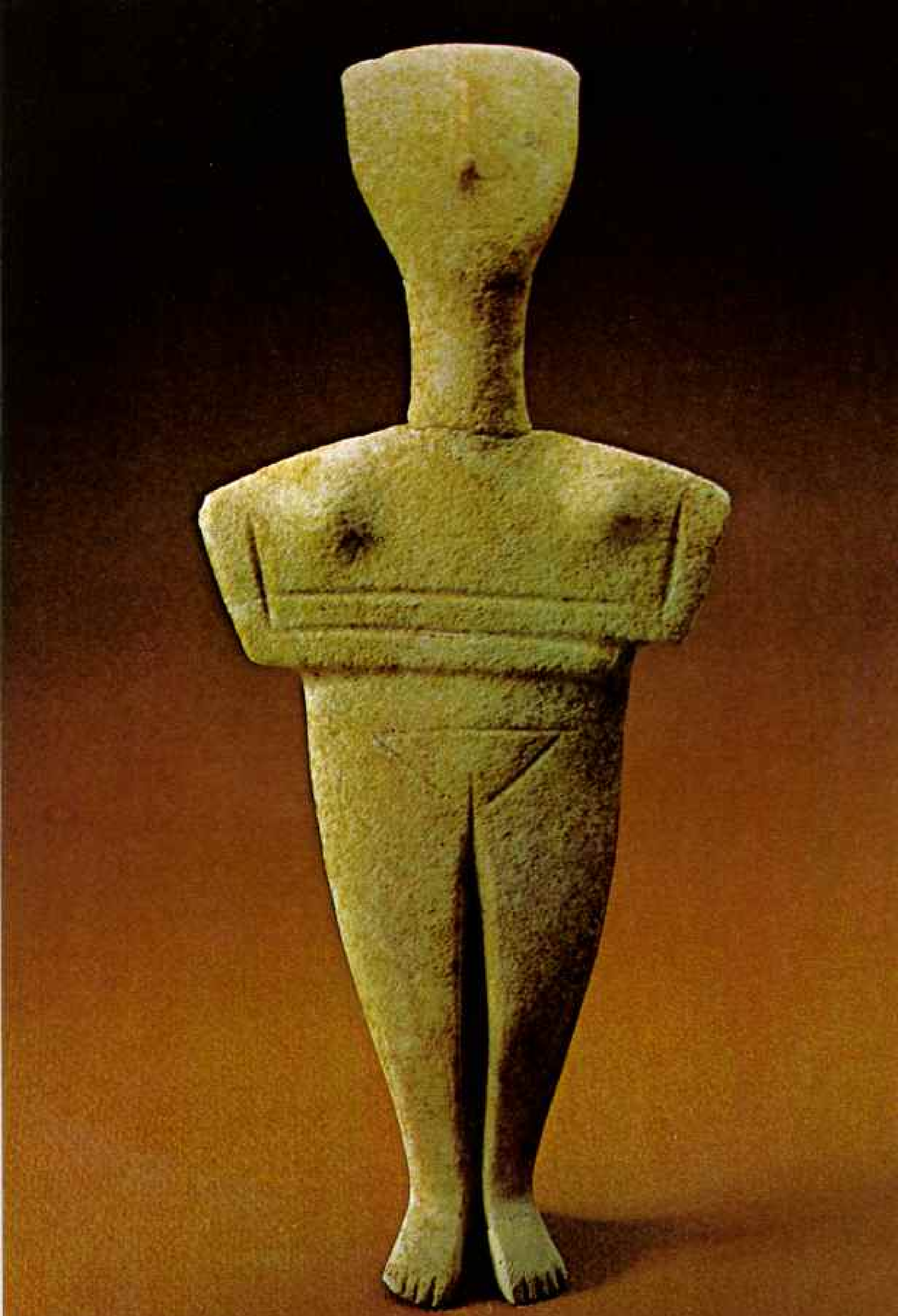
When we had finished the corridor, we turned to the central chamber. Our familiarity with contemporary Minoan art led us to conclude that the room must have contained the image of the temple deity, and hence was the heart of the shrine.

Such images were life-size wooden statues that never survived fire or the ravages of time. But from art found at Knossos and in the rich ruins of Phaistos, we know what they looked like.

They often wore headdresses, sometimes curls, of bronze or steatite—soapstone—and were richly gowned. At Anemospilia we recovered no headdress, but we did find bits of burnt wood and a pair of clay feet that had been the idol's base (page 211).

Our statue, or xoanon—the word is ancient Greek—had stood on a raised platform. At its feet *(Continued on page 218)*

Temple's sacred masterpiece, *the libation jar of distinctive Kamares ware shows a red-spotted bull in relief. It was the only vessel, out of some 400 found in the temple, not in a logical position. Its 105 pieces lay scattered over several meters, suggesting to Yannis Sakellarakis, here holding a chalice, that it was dropped and broken during the earthquake.*



Sightless idols *presented yet another enigma to the authors, who found them during a separate excavation a few kilometers from the temple. First known from the Cyclades, isles centered around Delos, these powerfully simple female figures had been placed between rocks in a tomb at Phourni, a Minoan graveyard in continual use from 2500 to 1100 B.C. Usually carved of the marble common in the Cyclades, sometimes purposely broken, and occasionally in seeming mother-daughter pairs, the grave gifts, or offerings, were most likely imported. The mother figure (***below***) was cleaned and repaired for display (***left***) at the Iraklion Museum on Crete.*

*One idol, made of ivory common in Crete (***right***), may represent the work of Cycladic sculptors there, the authors believe. A tomb complex may even be the burial place for a Cycladic community in Crete. The orderly gift-laden graves of Phourni contrast to the jumbled, abnormal entombment in the hillside temple.*

ALL BY DAVID HANDSCHY

Riches from a noble tomb, *the first found unplundered in Crete, came to light at Phourni during the authors' excavations. A gold signet ring* ***(above)****, found with the skeletons of a woman and a sacrificed bull, shows a goddess beside a man uprooting a sacred tree from a tripartite sanctuary. Necklaces* ***(below)*** *were made of gold, imported stones, and glass paste—the blue rosettes. A terra-cotta shrine with detachable door* ***(right)*** *was found near the site of the palace at Arkhanes. Men on the roof gaze down at a goddess giving blessing.*

ALL BY OTIS IMBODEN

priests had placed the best and most of the more than 400 pottery vessels we recovered from the temple.

Close to the xoanon had been left unhewn a piece of the hillside rock, symbol of the earth, which with the sea and the sky the Minoans considered the eternal elements of their world. The sacred stone played a role in cult ritual; over it, we believe, priests poured blood offerings to the deity.

After the central room, we excavated the nave to the east. Here bloodless offerings had been arranged prior to being laid before the idol next door. The vessels that had contained them still stood on and before a ruined stepped altar that rang a bell in our memories: Such an altar had been pictured on a rhyton, or libation vase, recovered from the Minoan site of Zakros.

If further proof of the room's liturgical role was needed, it was near at hand in the Iraklion Museum. Here a popular display is a famous sarcophagus from Hagia Triada, painted with ritual scenes; in one appear virtually exact duplicates of ceramic vessels that turned up at Anemospilia (page 207).

NOW WE HAD ONLY the west room to clear. The team began the job with its usual enthusiasm, but as the hot, dusty days passed, the enthusiasm turned to disappointment, for the trowels unearthed nothing.

And then it happened. Nearing the original floor level, we found three more human skeletons. Disappointment turned to exhilaration, fatigue vanished.

Two skeletons, both found lying on the floor, clearly were the remains of earthquake victims. Falling debris had broken the legs of one.

The third was another matter. We believed we had found animal remains. They rested upon a platform we recognized—again the Minoan artists!—as an altar upon which animals were sacrificed. Close beside the platform, furthermore, had stood a pillar with a trough at its base. Just such troughs at Knossos, we believe, were used to collect blood as it dripped from the altar.

We began careful clearing of the bones, still thinking they were those of a young bull or other beast. Suddenly a worker's trowel struck a metal object. We brushed away the earth to reveal a bronze knife such as we have never seen before or since. Still almost razor sharp, it was 16 inches long and weighed more than a pound. Each side of the blade bore the incised rendering of an animal head (page 206).

And what an animal this was! Unlike any beast in the natural world, it had the snout and tusks of a boar, ears shaped like butterfly wings, and the slanted eyes of a fox. Apparently the artist had symbolized, in this composite rendition, animals in general. To us there could be only one explanation. This great weapon was a sacrificial knife, used to kill animals for blood libations.

ALTHOUGH more than a year has passed since we closed the season at Anemospilia, our recollection of what followed the finding of the knife is as clear today as if it had happened yesterday. On his knees in the dirt, patiently cleaning the bones on the altar, Yannis looked up and said in a strained voice:

"This was a human being, not an animal. It is hard to believe, but I think we have found a human sacrifice."

In retrospect, perhaps we should not have been so thoroughly shocked. Written history documents the practice of human sacrifice in mainland Greece; mythology describes it in prehistoric Crete as well, as witness the story of the Minotaur and the Athenian youths and maidens.

In the normal course of events, the Minoans and the Greeks of later years sacrificed animals, with bulls the preference in Minoan blood rituals. But under unusual stress, the ancients grew desperate and offered human lives to angry gods.

Plutarch tells us, for example, that Themistocles sacrificed three men to assure victory at the Battle of Salamis, although some scholars doubt the account. Again, a seer ordered a human slaughtered to rid Athens of a plague in the seventh century B.C. If a crucial battle and a devastating epidemic produced abnormal stress, we can be quite sure that earthquakes would do the same.

We now believed we knew the true story of Anemospilia. But confirming it would require expert help. We turned to our friends at the University of Athens. Dr. Alexandros Contopoulos, professor of anthropology and

director of the Athens Medical School Anthropological Museum, joined us in Crete with his assistant, Dr. Theodoros Pitsios. So did Dr. Antonios Koutselinis, assistant professor of criminology at Athens University and a master of the coroner's art.

Carefully our friends studied the temple site and all it contained. When they were satisfied, we gathered in the pleasant courtyard of our excavation headquarters in Arkhanes and together reconstructed the final act in the drama of Anemospilia.

THE SKELETON on the altar, reported the anthropologists, was that of a male, about 18 years old. Well built, five feet five inches tall, he lay peacefully curled on his right side.

And how had he died? Probably from loss of blood, the anthropologists told us. Neither the falling roof nor the fire that followed had killed him.

"There is evidence that when a body with its blood supply intact is burned, the bones turn black," explained Dr. Contopoulos. "But if the blood has been drained before the fire, the bones will remain white.

"When we looked closely at this skeleton, we saw that the bones of the left side, which was uppermost, were white, while those on the right side were black. Thus, I believe that half this man's blood had been drained before the fire. The loss was more than enough to kill him. The heart stopped pumping, leaving blood still in the body's lower side."

The carotid arteries lie close beneath the skin on the sides of the neck. Knowing from animal sacrifices that through these vital arteries passes the entire blood supply, the ancient executioner, we can reasonably assume, severed the one on the left side to kill the youth and obtain his blood.

But who was the executioner? Surely it was someone whose bones we had found in the temple, for catastrophe had struck swiftly, leaving no time for escape.

We ruled out the skeleton farthest from the altar, that of a woman about 28 years old, of medium build. Other than the fact of her presence in the west room, there was absolutely nothing to connect her with the sacrifice.

One suspect remained: The skeleton lying

PHOTO BY OTIS IMBODEN

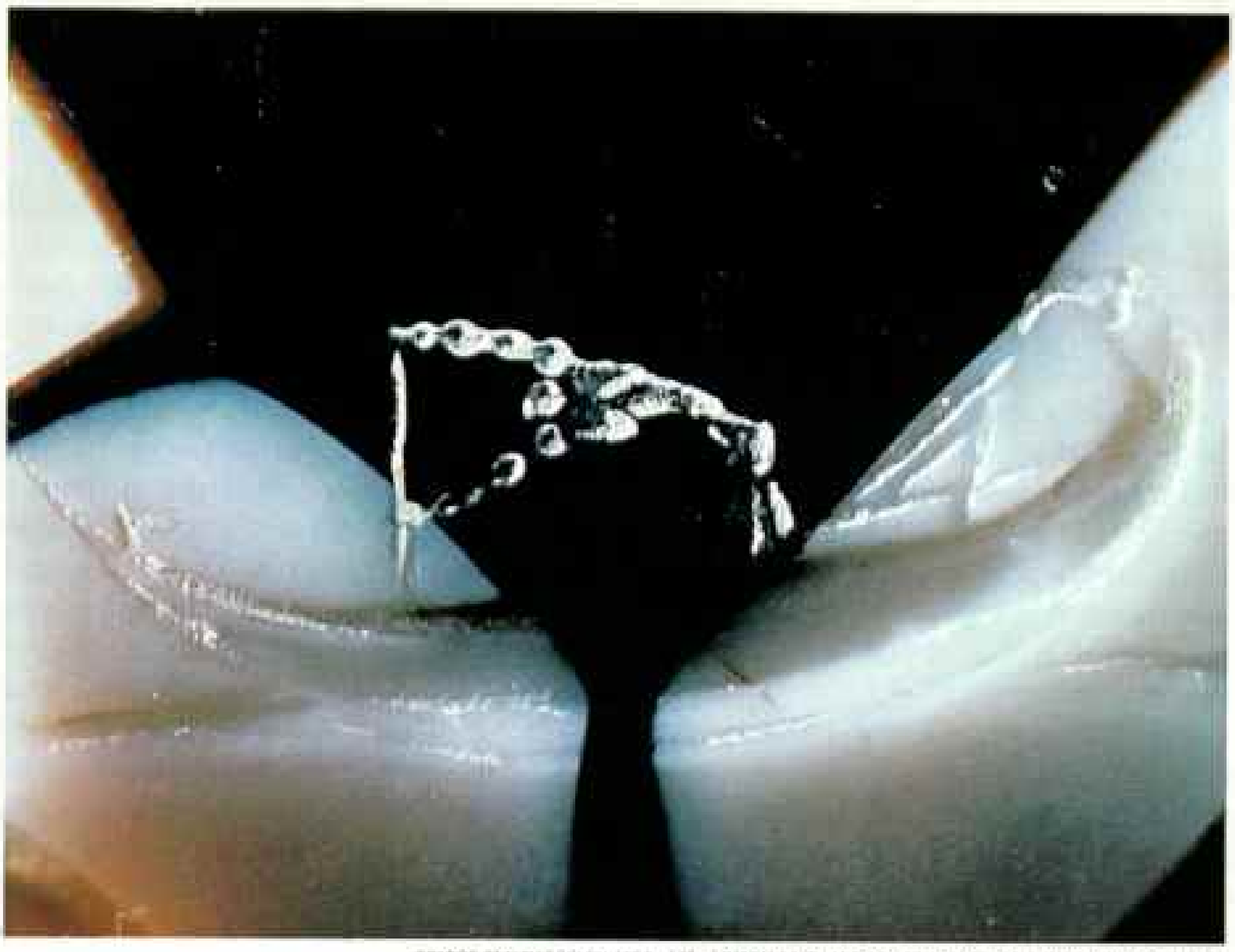
Human bones tell tales *from ancient Crete. The woman's skull, examined by Dr. Efi Sakellaraki and Dr. Alexandros Contopoulos, an anthropologist, shows traces of disease—hereditary anemia.*

Finger bones of the youth ***(above)*** *turned black on the right during the temple fire, the result, Dr. Contopoulos believes, of blood remaining in the right side of the body. The two other skeletons close by showed uniform coloration.*

CLUES TO THE MOST DESPERATE RITE OF ALL

*THEIR CONTENTS DESTROYED, tall ceramic jars, or pithoi (**below**), set in the east room of the excavated temple, probably held offerings of fruits, grains, honey, and even bolts of cloth.*

*In the temple's west room the extraordinary position of two adult skeletons (**lower right**) suggests the terror of the final moments. The young woman, believed to have been a priestess, died prone with legs splayed. The six-foot man fell with his hands raised, as if warding off falling timbers. He wore two ornaments of the wealthy class; his ring was made of silver and iron, the latter a rare commodity in the Bronze Age (**right**), and on his wrist was tied a stone seal (**far right**) decorated with a slender boat poled by a man. This excavation yielded the first earthquake victims from the quake-plagued Minoan civilization—and, in the authors' opinion, the first human sacrificial victim in Crete.*



SPYROS TSAVTARIDELLIS (TOP LEFT, BOTTOM LEFT, AND LOWER RIGHT); DIRK IMBODEN (TOP RIGHT)

very near the altar. It was that of a powerful man, six feet tall and in his late thirties. We found him on his back, hands raised as if to protect his face. Coroners, who often see this defensive posture in victims of earth cave-ins and building collapse, have even coined a name for it: the "boxer's position."

The tall man left two clues as to his calling. On the little finger of his left hand he wore a ring of silver and iron, the latter a rare and precious metal in the Bronze Age Aegean (page 220).

On his wrist he carried an engraved seal of such exceptional artistic merit and obvious worth that only a person of substance could have possessed it (preceding page). Surely this was a priest, a man of power and standing in the highest classes.

How he had managed to get the strong youth on the altar must remain forever a mystery. A religious zealot or, as Dr. Konstantinos Romaios, ethnologist of the Academy of Athens, has suggested, the obedient son of the priest who slew him, the teenager might have gone willingly to his death.

Or perhaps he had been overpowered or drugged, trussed up like the red-spotted bull being sacrificed in the Hagia Triada painting, and carried to the altar. His legs, at least, had probably been bound, said the criminologist, Dr. Koutselinis, for they had been bent so far back that the right heel nearly touched the thigh bone.

When we suggested the priest as the likeliest murder suspect, Dr. Koutselinis quickly agreed.

"We could make a good case against him in court," he said. "I'd suggest to the jury that after slashing the carotid, he laid the knife on the body where you found it, then began to collect the blood. We can only guess how long he lived before the roof fell."

At some point he or another closed the young man's mouth, which would have started to sag open in death. When we found the remains, the jaws were tightly locked. In the tomb burials we have excavated, the lower jaw was always slack.

THE SKELETON FOUND in the corridor was in such poor condition that the anthropologists could not even tell us whether it had been a male or a female. We decided to call it a man; at least we had one chance in two of being right!

If the pathetic bones told us nothing, the pieces of a shattered vase scattered next to them gave food for thought. When our technicians put the 105 sherds together, we had an exceptionally beautiful piece of Kamares ware, so called for the Cretan cave that yielded the first examples of such pottery. We consider it the best of our Anemospilia finds, and we know that spouted bucket-like vases similar to this one were used for the pouring of blood libations (pages 212-13).

Perhaps our reconstruction of what took place in the corridor at the moment of disaster is fanciful. But we can suggest a reasonable theory: The man, perhaps a second priest, was carrying what may have been the temple's most sacred vase from the central chamber to safety when the building collapsed. He left two similar vessels of lesser quality behind. Again, he may have been taking the vase, already containing the blood of the human sacrifice, from the west room to offer to the idol in the central nave.

Then came the cataclysm, and three and a half millennia of silence, until our trowels disturbed the dust.

A PEASANT passing the dig one morning reined up his donkey and gazed into the green Arkhanes valley at our feet. Then he turned to us and said: "You have chosen the right place to work. Here the partridges sing more sweetly than anywhere else."

We may find little more of importance at Anemospilia, but we treasure it for something that far transcends even beauty and serenity. From this lovely height we have the mystic feeling we can look into eternity.

Nothing here can have changed greatly in 3,700 years, nor is it likely to do so for centuries to come. The sea sparkles as always in the distance, azure by day, wine red in the glow of the setting sun. The donkeys serenade their loved ones in the vineyards as always, roosters acclaim the morning of each day.

So in time we will finish at Anemospilia and pay the debt we owe it by leaving it to the sun and the winds. Then, when quiet once more bathes the hillside, the partridges will return to sing more sweetly than anywhere else. □

JOSEPH ALSOP: A HISTORICAL PERSPECTIVE

A CONSIDERABLE STIR, and even something of an outburst of hostile expert criticism, has been caused by this highly important archaeological discovery in Crete. Hence it will be well to remind archaeological buffs of the similar first responses to the most significant find about ancient China made in the past half century.

This was the discovery at Anyang, last capital of the very early Shang Dynasty (traditionally 1766-1122 B.C.). There, Chinese archaeologists cleared several deep royal tombs yielding an enormous harvest of magnificent Shang bronze vessels, and just as important, much additional evidence about Chinese religion, customs, ways of life, and technology in the remote era of the Shang Dynasty.

Many students of China, who had condemned the Shang Dynasty as entirely mythical, were astonished by the great discovery, which even included names of Shang kings almost exactly corresponding to traditional Chinese king lists. Chinese response to the discovery was even more unhappy. Confucianism was still the basis of Chinese culture fifty years ago. Confucius taught reverence for the "former kings," as benevolent, humane, and peace-loving rulers. Yet the Anyang excavation showed that the "former kings" of the Shang Dynasty had practiced human sacrifice on an enormous scale, mainly using war prisoners. Naturally this was most painful news for Confucian-educated Chinese of those days.

In just the same way, many modern Greeks have now been shocked by the evidence that human sacrifice was being offered in a Minoan temple on the flanks of Mount Juktas, at the very moment around 1700 B.C. when the temple itself crashed into ruin in one of Crete's great earthquakes. The horror is illogical, however. The Minoan bull game was plainly a most dangerous sport for the youths who played it, and it cannot be doubted that the bull game was originally a special form of human blood sacrifice. Roman gladiatorial combats grew out of ritual combats staged at the funerals of Etruscan magnates—still another form of human blood sacrifice. The classical Greeks offered human sacrifices more than once in moments of extreme emergency.

The evidence collected by Yannis Sakellarakis and his wife, Efi, does not mean that human sacrifice was a regular Minoan practice. This sacrifice was a desperate measure to stave off what must have looked like the end of the world.

Of far greater importance are the doubts of some Greek archaeologists that what was discovered on Mount Juktas was really the ruins of a Minoan temple. It has always been supposed that the Minoan cult centered all but exclusively in the shrines and sacral areas of the great Minoan palaces and in the shrines on mountaintops known as peak sanctuaries. Besides, no temple really resembling the Sakellarakis find has ever been discovered before. But there must always be a first time for each major discovery. Furthermore, although the Sakellarakis find was certainly not a peak sanctuary, it almost exactly reproduces the finest Minoan representation of one of these mountaintop shrines that has yet been unearthed in Crete. This is the magnificent sanctuary rhyton excavated by Dr. Nicholas Platon at Zakros. The tripartite structure of the shrine itself, the *temenos*, or sacred enclosure, in sum the whole layout and plan of the newfound temple ruins are there for all to see on the sanctuary rhyton.

Moreover, the Sakellarakis find, with one side room for sacrificial grains and other necessities, another side room for the blood sacrifices, and the central chamber where the actual offerings to the divine image were made, throws more light on the actual workings of the Minoan cult than has ever before been available. Thus, this find is a splendid advance in the progressive recovery of the lost human past, which is the real task of all archaeology.

THOMAS D. BENNETT

Mr. Alsop established his credentials as a writer on Bronze Age Greece with his book *From the Silent Earth*, Harper & Row, New York, N. Y., 1964.

A free spirit leaves a message for the tide on a St. Thomas beach all his own—for the moment. A surge of people and development challenges quiet ways as paradise comes of age in

The U.S. Virgin Islands

IT IS EVENING. I lie enmeshed in a sisal hammock strung between two sea grape trees on tiny West Cay, an uninhabited island in the Caribbean. Yellow genip flowers perfume the air. Parakeets chirp. Fat coconuts hang pendulously overhead. I have drunk their cool, sweet milk and have eaten my fill of broiled yellowtail, drenched in lime juice.

I am content. But Pete LaPlace, the bronzed and muscular fisherman in the adjoining hammock, is not. We have fished all day with little luck, and his empty motorboat bobs lightly in the turquoise cove, a few yards away.

By THOMAS J. COLIN

Photographs by
WILLIAM ALBERT
ALLARD and
CARY WOLINSKY
STOCK, BOSTON

There's another reason for Pete's anxiety.

This tranquil patch of sand and scrub in the United States Virgin Islands has been his fishing camp for a decade, and he loves it. "When God make dis place," Pete says in a mellifluous calypso patois, "He know what He was doin'."

These days, every time Pete returns to camp he fears he may find a bulldozer tearing up his haven. For in recent years, as suddenly as summer squalls sweep across the tranquil bays, changes have swept the territory's three main islands: St. Thomas, St. Croix, and St. John. Of the remaining fifty-some islets, most are uninhabited.

Since 1960 the tourist horde has exploded from 100,000 visitors annually to more than a million. It happened almost overnight, spurred by the U. S. State Department's closing of Cuba to tourists and by the affluent mainland economy.

During the same period the resident population has soared from a cozy 32,000 to a hectic and burdensome 100,000. The growth stemmed principally from three disparate groups. West Indians, known locally as down-islanders, or aliens, came from a host of impoverished islands in the Antilles. Affluent and adventurous Americans, black and white—dubbed continentals—also came for opportunity, or just to chuck the rat race. And Puerto Ricans, who had been coming to the islands since the 1930s, continued their steady influx, primarily to St. Croix. The result of all this heady growth: a crowded paradise.

Then came the sunny afternoon of September 6, 1972. On a terrace overlooking St. Croix's lush Fountain Valley Golf Course, five young black islanders shot and killed four visitors from Miami and four club employees; seven were white.

The front-page crime terrified residents and made the boast of local license plates—American Paradise—grimly ironic. Tourism plummeted. And suddenly the world viewed the once quiet islands as yet another hostile and afflicted place in the Caribbean.

I had come to see whether paradise really had been lost. In weeks of travel I saw many of the problems faced by stateside urban centers, but I saw none of the serious ills that plague other Caribbean islands: dire poverty, severe racial unrest, unstable governments, hopeless levels of unemployment.

By comparison, the U. S. Virgin Islands draw stability from their U. S. ties. They're also well off: Per capita income is more than $5,000 a year, higher than any other island in the West Indies.

And the Virgins thrive on the energy of their friendly West Indian population. I fondly remember Lillian Joseph, a hard-working food vendor from Antigua. From morning until night, bent over a small brazier, she sold crisp fried chicken, a pan-fried bread called johnnycake, and maubey, a zesty drink homemade from cinnamon, ginger, and maubey bark.

"How're things going," I'd ask. Her lilting, inevitable reply: "Ah, m'son, you know how t'ings does be."

Typical of the territory's industrious down-islanders, Miss Lillian takes hard work in stride. "Oh mon," she once told me with a laugh, "I used to get up four in the morning to weigh flour; we had to do all sorts of t'ings before we went to school. I'm so much accustomed to this."

Like many Virgin Islanders, Miss Lillian is concerned that discipline of youths in the islands "isn't like it used to be."

Joblessness and school dropouts loomed large among the problems I encountered. Among others: Fresh water must be rationed; power outages plunge homes and hotels into darkness with annoying frequency;

new schoolteachers from the States often quit in midyear, unable to cope with crowded classrooms and difficult dialects.

In addition, the stress between the West Indian newcomers and native blacks produces serious rifts in the polyglot society. And, although Fountain Valley turned out to be an isolated nightmare, the urban-scale crime rate is troublingly real.

No less real are the islands' charms. I succumbed to duty-free shopping and island-made rum in frothy piña coladas. To dazzling clear waters unsurpassed for wreck and reef diving. To around-the-clock carnivals and throbbing steel-drum bands. To native dishes like *kalaloo*, a spicy meat and seafood stew, and custard made from soursop, an exotic local fruit.

I even found St. Thomas traffic nearly tolerable. Islanders find hospitality an expression of local pride, and good business. When motorists stopped in mid-road to chat—a perverse local habit—barely a horn objected.

And in all my wanderings, being as careful as I would be in any unfamiliar place, I never felt unsafe. Although there is deep concern among all residents about the islands' growing crime rate, most I met shared my cautious equanimity, augmented in many cases by guard dogs and barred windows. Then there is Phil Shuman.

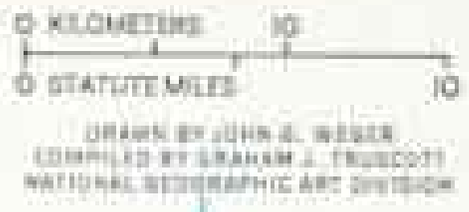
Phil, an electrical engineer from Chicago, brought his family to St. Croix in 1971. Their West Indies-style home, with daughter Sara's horses tied up outside, has wooden louvers instead of windows—and no bars.

"Our house is a dwelling, not a place of refuge," Phil told me. "If we ever get to that point, we'll move."

Islands Knew Many Masters

Following Columbus's discovery of St. Croix in 1493, the islands passed through a succession of owners: Spain, England, France, Holland, even the Knights of Malta. Eventually the Danes took control and built a thriving economy based on sugar, slave labor, and commerce.

The rise of the sugar beet and the fall of slavery in 1848 ended the prosperity of the islands. Denmark sold them in 1917 for 25



St. Thomas

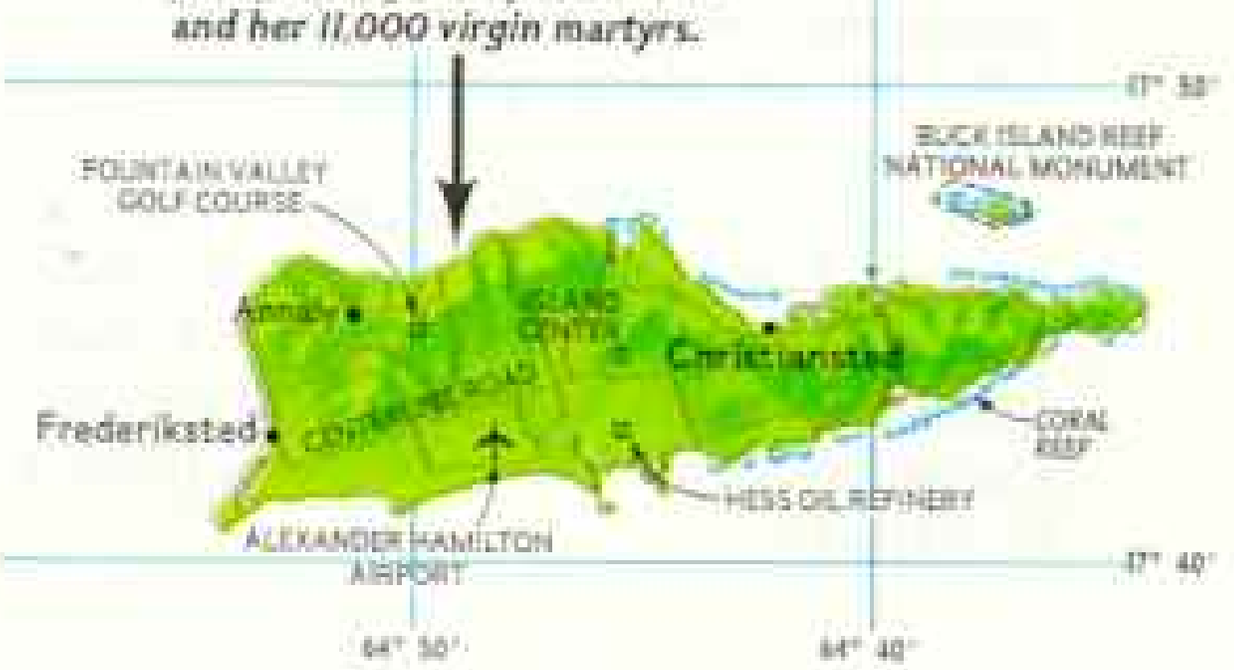
Trade and tourists funnel into Charlotte Amalie, capital of this unincorporated territory of the United States. In 1917 the U.S. bought the three main islands and 50 small islets from Denmark.

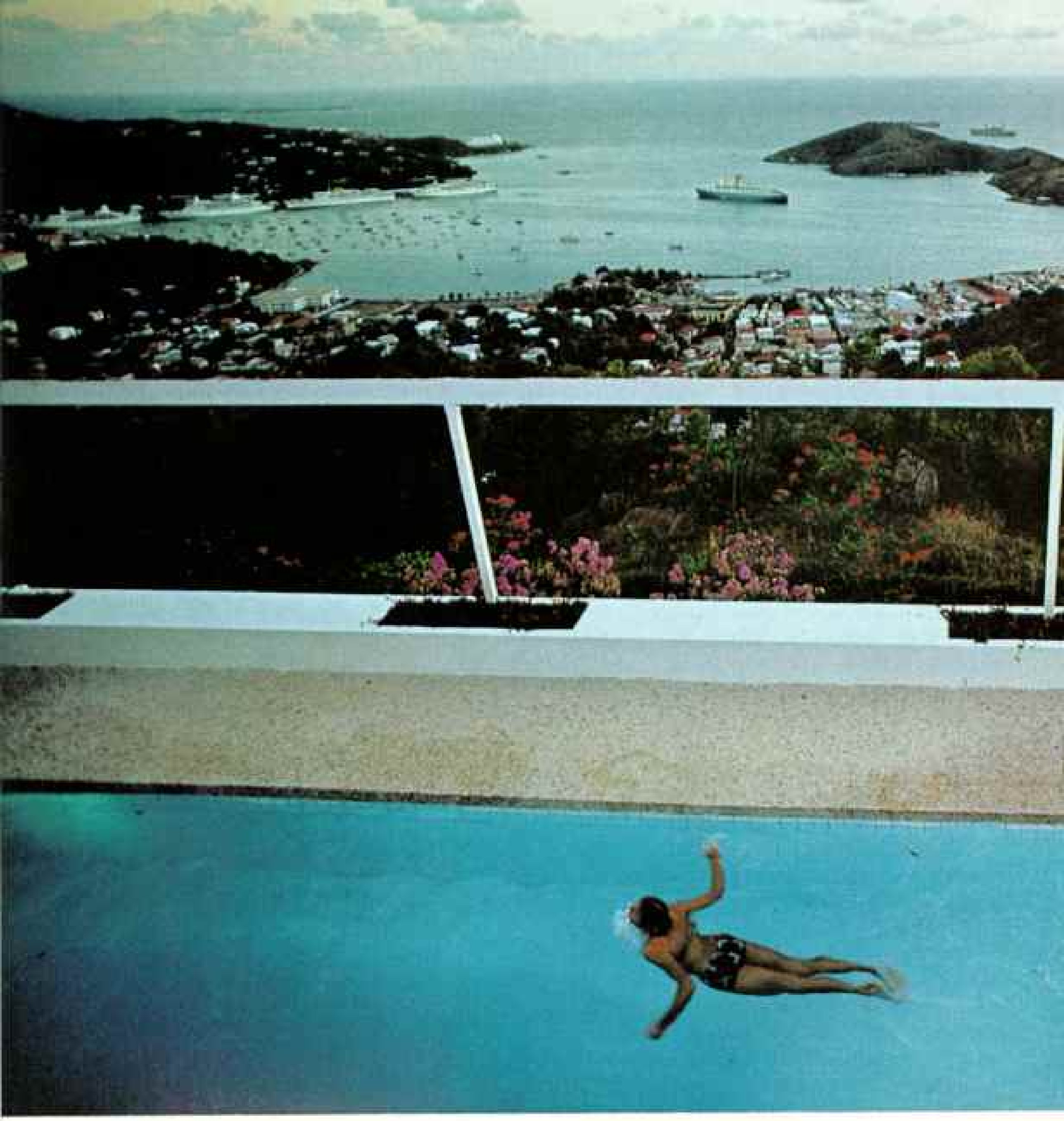
St. John

Quiet and lush, St. John boasts luxury resorts and a 12,630-acre national park, nearly half of it underwater. In 1733 slaves on Danish sugar plantations revolted, leading to abolition in the Virgins in 1848.

St. Croix

Industry and agriculture attract immigrants from other Caribbean islands. Columbus, who anchored here in 1493, named the island group for legendary St. Ursula and her 11,000 virgin martyrs.





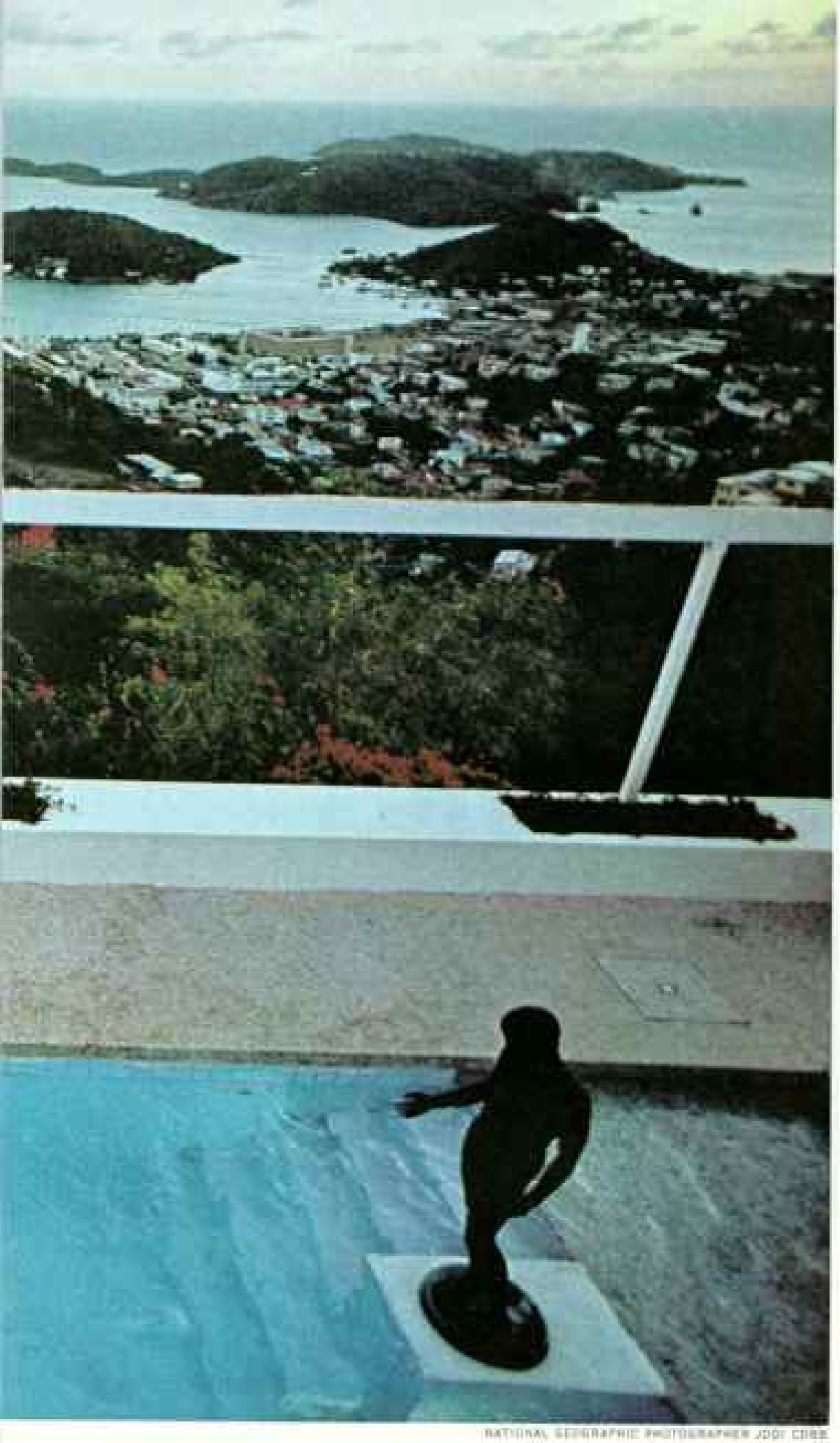
million dollars to the United States, which sought a Caribbean naval base.

Despite the territory's ethnic patchwork, it's easy to define a "native." Anyone born in the islands, black or white, qualifies. Most, however, are black, a sizable minority of them landed and well off.

"What am I? That's a good question," laughed Arnold Golden, the commissioner of public works. "I probably have a black, Irish, and Danish background. My wife's a Puerto Rican; my kids are Crucian [born in St. Croix]."

Other ingredients in the ethnic stew include emigrants from the British Virgin Islands and other islands along the Lesser Antilles. Pete LaPlace's forebears came from the French island of St. Barthélemy. Geographically if not ethnically distinct, the white "Frenchies" live in two clannish communities on St. Thomas: sleepy Hull Bay, on the north side, and Frenchtown, a dense collection of small houses and shops beside the harbor in Charlotte Amalie, St. Thomas's only city and the islands' capital.

For 50 years after the U. S. purchase, the



NATIONAL GEOGRAPHIC PHOTOGRAPHER JODI COBB

***Dazzling poolside view** of Charlotte Amalie looks over a line of cruise ships in St. Thomas Harbor. By day, tourists crowd the shopping district for duty-free bargains. Throughout the islands they spend more than 250 million dollars a year. In 20 years the number of annual visitors has mushroomed from 100,000 to more than a million.*

Over the same period the population has tripled to 100,000. The lure of the Virgins—the per capita income exceeding $5,000 a year is the Caribbean's highest—has drawn a steady stream of "down-islanders" from the Antilles to the south as well as Puerto Ricans from the west, hoping for better lives. Despite relative affluence, poverty lingers, as do problematical utility services such as a supply of fresh water. The pool at left is filled with rainwater from a pair of cisterns.

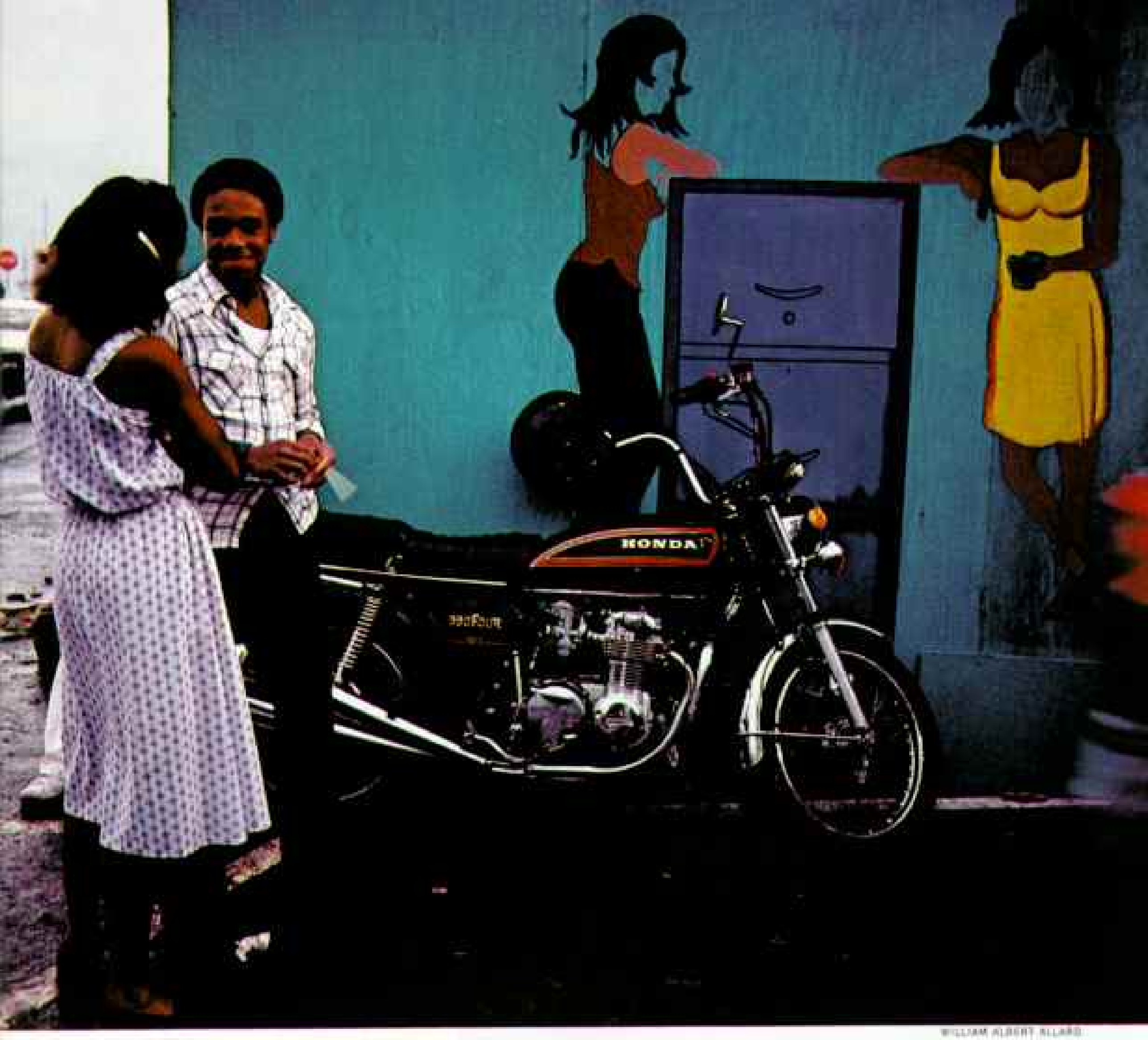
territory virtually slept under colony-style rule, first by the Navy, then by presidentially appointed governors.

In 1970 Congress granted islanders the right to elect their own governor, and in 1972 their own congressional delegate. The current representative, black St. Croix physician Dr. Melvin Evans, can vote in committee but not on the House floor.

Local affairs are handled by a sometimes raucous 15-member senate, bedeviled by the main cause of interisland friction: St. Croix's contention that St. Thomas, the seat of power, gets most of the funding.

Some say the islanders are not ready for more self-government. Indeed, in a move that has insulted many, the federal government proposes to take over collection of U. S. income taxes, a privilege the territory now enjoys.

Lack of confidence is understandable. Despite its 40-million-dollar-a-year federal subsidy, the local government has been slow, or unable, to build vitally needed capital improvements, such as new roads, water-desalinization plants, and adequate



WILLIAM ALBERT ALLARD

power plants. And the government is saddled with a ponderous bureaucracy that employs one of every three working islanders.

The local officials I met were impressive. No one who knows straight-talking Verne A. Hodge, presiding judge of the territorial court, can doubt islanders' ability. As attorney general, Hodge had the temerity to sue the federal government, seeking the return of excise taxes that had been collected for gasoline refined in the territory and shipped to the States. At stake in the pending suit: half a billion dollars.

Hodge knew little about comfort as a youth growing up in a large St. Thomas family. Meals were often bread and bush tea, brewed from local herbs. His bed was the floor—"no such thing as a pillow."

But he studied hard, earning a law degree from Howard University in Washington, D. C. "Some people think we are the most ignorant people in the world; it just is not so," he thundered. "There is no community that doesn't have problems, or has the money to do everything. Begin with that premise."

Although islanders want more autonomy—a proposed constitution for the territory will be put to a referendum soon—there has never been a strong movement for statehood or independence. U. S. ties, and subsidies, are too prized.

Actually, the islands prize most their independence from each other. Some St. Thomians still fear a visit to St. Croix, the largest island and the agricultural and industrial center, as an invitation to crime; others say the island is just too dull. Crucians think St. Thomas is too hectic. St.

*"**We've had to bend** with the growth, but we're still trying to keep a certain charm," says Mrs. Gertrude Lockhart Melchior (**right**), a St. Thomian community leader whose black, Danish, and Dutch ancestry typifies the islands' melting-pot heritage. Her family's large property holdings—which include much of Charlotte Amalie's shopping district—started when her grandfather, as a young man, won $10,000 on a sweepstakes ticket.*

*Shiny new wheels (**left**) bespeak a growing middle-class prosperity; a street mural depicts an office coffee break. The most sought-after jobs are with the territory's government, which employs a third of the working force.*

Johnians escape. Their mountainous island, home of the largest national park in all of the Caribbean, is too quiet to compete.

This I know for certain: No visitor has seen the Virgins if he's visited only one.

Historic Port Bustles With Life

St. Thomas's Charlotte Amalie, for more than 200 years one of the most important ports of the West Indies, is a powerful blend of commerce and tourism, spiced by history, beauty, and a West Indian beat.

The deepwater harbor is still the heart of the city. Schools of cruise ships gleam at anchor. Along the wharf, bare-chested crewmen load creaking, rusting cargo boats that supply the British Virgins.

And everywhere along the mile-long waterfront highway are cars and people—mostly, it seems, hurrying tourists with bulging shopping bags.

Many shops along the waterfront and narrow Main Street are ensconced in lavishly restored 18th-century Danish warehouses, their sturdy walls thick enough to withstand hurricanes and cannonballs. The wares range from Cartier jewelry and Louis Vuitton luggage to T-shirts reading "Save water—shower with a friend." This is the Times Square of the territory's 250-million-dollar-a-year tourism industry, its largest.

The pace slows along the narrow streets that rise steeply from the harbor. Economic status tends to rise with the elevation. First comes chockablock pastel frame housing, then landscaped manors built for the Danish aristocracy. Finally a stratosphere of modern hilltop homes, many owned by millionaires born of the tourist boom.

One of them, developer James Armour, a former New Yorker, helped lead the restoration of Charlotte Amalie's downtown shopping area. Now he's in the midst of building St. Thomas's first 18-hole golf course, a magnificent 300-acre project with breathtaking cliffside vistas beside the sea and room for 600 luxury condominiums.

"God knows development attracts a ragtag lot, and the islands have suffered," Jim acknowledged. "Guys who shouldn't have been in business were making millions."

But times have changed for the better, he said. "The lean years of the early seventies cleared out the marginal operators. And

ALL BY WILLIAM ALBERT ALLARD

Towering merrymakers *called Mocko Jumbies stride on stilts during Carnival on St. Thomas* ***(right)****. Preparing for parades that wind for hours through the streets, two costumed celebrators apply each other's makeup* ***(top)****. Youngsters line a parade route amid the overflow from days of festivities. "For us, Carnival is like a poor person's trip overseas," one St. Thomian explains, adding with a chuckle, "so we hope our visitors don't expect too much attention while it's going on."*

pretty strong land-use codes have been created." A recently passed Coastal Zone Management Act further protects the waterfront from reckless development.

Jim voiced his concern about relics of the city's past, including the oldest structure, battered Fort Christian, built in 1671. "In any city in the U. S. it would have been sacred—they wouldn't have touched a stone," he fairly sputtered. "We still use it as a jail."

Buccaneer "Importer" Looks the Part

Many pirates died in the fort at the end of a rope. Today drug smugglers keep the buccaneer spirit alive, according to police. In a dark corner of a popular bar in Frenchtown, I spied a broad-shouldered young man playing high-stakes backgammon with swashbuckling abandon. He wore rings on his fingers, tied his hair in a ponytail—and owned a lovely schooner anchored in the harbor. "He says he's an importer," the bartender told me with a conspiratorial wink.

Frenchtown has declined as a traditional enclave of French farmers and fisherfolk. Women no longer wear the high poke bonnets, the famous basket culture has vanished, and as I strolled the quiet streets, I heard no French. But I did glimpse an occasional front-porch hammock, still the preferred way of sleeping among old-timers.

The landslide election of free-spirited Michael Paiewonsky to the senate has further challenged old ways. Michael's grandfather was a Lithuanian immigrant who in 1918 purchased the A. H. Riise Company, which today enjoys a sizable share of the islands' lucrative liquor and gift trade. Michael's uncle, Ralph, was governor during the hectic sixties—when government bureaucracy and tourism both exploded without restraint, leading to the rise of a large black middle class.

Island-casual in jeans and T-shirt, Michael took me by motorboat to Hassel Island for a look at the city from the middle of the harbor. We scrambled up Signal Hill, for two centuries a lookout post for inbound shipping. Michael pointed across the harbor, where a sprawling hotel commanded a promontory.

"Building a big hotel like that doesn't really bring local people into the tourism business," he said. Instead of more big hotels,


AIRISE
LIQUORS
CARNIVAL

Michael proposes small, native-owned guesthouses and development of new industries, perhaps an island ferry system or local fruit cannery.

Michael also faults an education system that fails to provide basic skills. "Kids here see no future in staying in school, so they drop out early. Half of them can't find work; it's a vicious cycle." He is among many who blame lack of jobs and of quality education for the troublesome crime rate.

One day, as I explored the labyrinth of roads that wind along St. Thomas's resort-filled coast, I met a young black man whom some would consider, on sight, as a problem. His name was Antonio Tirado. His face was framed by a mass of tight curls that hung down to his shoulders—the uncombed hair, or dreadlocks, worn by Rastafarians, a growing cult in the Virgin Islands, as in Jamaica, where the group was born.

Devotees of natural living, Rastas eat no meat and use clay cooking pots, not metal ones. They also read the Bible and smoke copious quantities of the "herb"—marijuana. The number of Rastas in the Virgin Islands is unknown, but true devotees are few. Hundreds of young people simply affect the hairstyle along with a sullen expression.

Rastas are considered a rough lot, but Antonio—he calls himself "Butch"—certainly was not.

He urged me to understand that true Rastafarians love all men, black or white. Others claim the faith, he said, "but they just in it for the style, to be bad."

Of his wild hair, Butch added, "It ain't for people to fear us; it's the way a black man's

CARY WOLINSKY

At peace *in a lettuce patch grown by a trickle-irrigation system in an arid section of St. Croix, a member of a vegetable cooperative takes a break. He copies his dreadlock braids and organic lifestyle from the Rastafarians, a Jamaica-based religious group whose influence is widespread throughout the Caribbean. The Rastas smoke marijauna freely, but blame their hostile image on street toughs who adopt their style without their beliefs.*

hair supposed to be." He offered some advice: "Here in the country you're with good people, but in some sections of the city, watch out! Even I get a heap o' tribulation."

Island Retains Danish Flavor

Just 40 miles from the hubbub and hills of St. Thomas lies St. Croix—spacious, refreshingly flat in places. Its main city, Christiansted, is positively tranquil. Formerly the Danish colonial capital, it was built according to strict fire codes. The result: wide, straight streets lined with pastel residences, stately government buildings, and shaded arcades now housing duty-free shops and fine restaurants. Those cruise ships that do come to St. Croix must anchor at tiny Frederiksted, west of Christiansted.

Only a few hundred Danes remain on the island of 50,000, but like the amazing Lawaetz clan, they seem omnipresent.

Frits Lawaetz, for many years a senator, runs the largest of the island's few remaining cattle ranches. Brother Kai grows produce and breeds exotic fruits and flowers. Brother Eric is a hotelier and developer.

I met Frits at a performance of the Royal Danish Ballet at Island Center, St. Croix's striking outdoor amphitheater. During intermission we talked of ranching, and I volunteered readily for the next day's roundup.

His Annaly Farms sprawls across 5,500 acres near the island's northwest corner. This is lush country, with towering mango and turpentine trees, and thick vines hanging in a nearby rain forest.

Two veteran Puerto Rican cowboys were in charge, waving their sombreros with theatrical exuberance. By midmorning we had flushed 125 animals from the thick brush and had driven them through an anti-tick dip. Called Senepols, these hefty, docile animals are bred for both milk and meat in hot climates and are being exported to the southern U. S. as breeding stock.

At lunchtime the dark-skinned cowboys went their separate way, leaving me to lunch with Frits, Jr. This is the general racial tendency of the islands: cooperative work and social separation.

Puerto Ricans, who compose nearly 20 percent of St. Croix's population, have gradually earned acceptance. The election of personable Juan Luis as governor of the territory illustrates their expanding political force. Affluence, however, still eludes most Puerto Ricans, although there is a growing cadre of professionals and middle-level government officials.

The popular 40-year-old governor is an enigma. He is reserved, shunning the party circuit and rarely meeting with the press. He agreed to meet with me, if I submitted questions in writing first.

I did so, and we spoke for more than an hour. The governor rates crime as his biggest concern, followed by utility deficiencies. "I don't deny the islands' problems," he said, "but we are working aggressively to solve them." He was particularly troubled by IRS plans to channel islanders' federal income taxes through the U. S. Treasury. "That would be a gigantic step backward in

WILLIAM ALBERT ALLARD

Worry over crime *leads St. Thomas author and businesswoman Eleanor Heckert to keep a gun handy at home. Though she has not been robbed or attacked, "most of my friends have," she says. "I've lived here since 1955, I have roots here, and I don't want to leave."*

Riding a tide of investment, condominiums rise near a yacht club on

our quest for more local autonomy," he told me. At present these taxes are collected—and spent—by the territory itself.

I found another story of Puerto Rican emergence in a dusty, backcountry community called Profit, where many of the wooden houses are little better than shacks. Hot and parched, I stopped one Sunday afternoon at the Rancho Alegre bar on Centerline Road.

Inside I found friendly faces, cold *cerveza*, and a spirited dominoes tournament. Among Puerto Ricans (and down-islanders) dominoes amounts to a contact sport, with players shouting aggressively as they slam down their pieces.

One of the contestants that day was an intense 27-year-old named Pedro Cruz. Almost single-handedly, this up-and-coming community leader had rallied his neighbors, lobbied the senate, and finally won funds to build recreation facilities for the community. Another Juan Luis, I thought.

Nearby, the Cofresi cockpit, owned by a local attorney, draws enthusiastic down-islanders and Crucians as well as Puerto

CARY WOLINSKY

Cowpet Bay. Recent legislation sets limits on future waterfront development.

Ricans. Cockfighting and gambling are illegal, but on the Sunday I was there, betting was open and spirited; fans waved fists full of bills as they shouted wagers back and forth. But the cockfight camaraderie inside the arena gives way to hostility outside.

For when tourism and industrialization knocked, relatively few Crucians answered. Consequently, the new opportunities—from taxi driving to hotel work—were snatched up by enterprising Puerto Ricans and other West Indians. As a result many Crucians are bitter.

"It's not that native Virgin Islanders are lazy," said Keith O'Neale, a tall, handsome Trinidadian who started a trucking firm. "I'd just say they are a proud people, not attracted to service work." That pride may hark back to colonial days, when prestige came with a starched collar and a nine-to-five desk job at Government House.

Despite their economic progress, the down-islanders have suffered. Though they comprise an estimated 30 percent of the territory's population, most still lack U. S. citizenship and thus the right to vote in local

elections—a right that could make them a powerful new political force. Until a crucial 1970 court ruling, down-islanders couldn't send their children to public school, nor could they receive workmen's compensation, hospital care, and other benefits, though they paid local and U. S. taxes.

Nearly 13,000 alien workers had come to the territory by 1970, at one point constituting 90 percent of the construction work force and filling 60 percent of the service jobs. Aliens entered the islands under relaxed immigration rules, often to work at substandard wages and to live in squalid barracks, since razed. An estimated 7,500 West Indians still live in the legal limbo of noncitizenship, deportable if they lose their jobs.

"You're talking about people who have their families here, who have built homes here," said accountant George Goodwin, who came from Antigua.

Islanders Resent Tycoon's Perks

Many of the islands' socioeconomic gripes swirl around one very powerful, locally unpopular statesider named Leon Hess, board chairman of the Amerada Hess Corporation. The hard-driving oilman built one of the world's largest refineries—700,000 barrels a day—on 1,600 acres along St. Croix's southern coast (following pages).

In return for his enterprise, the Senate exempted Hess from nearly all taxes. Similar concessions have been extended to the neighboring Martin-Marietta alumina plant and to other businesses, including the seaplane commuter line founded by aviator Charles Blair and now operated by his widow, former movie star Maureen O'Hara.

Islanders clearly begrudge Hess his exemptions, which are due to expire within two years, and hungrily await renegotiation—talks bound to have a profound effect on the islands' shaky finances.

Uncharacteristically, the publicity-shy oilman agreed to an interview. Forty floors above Manhattan, one of the nation's most powerful industrialists, tan and taut at 66, discussed his tough-guy reputation.

"Is it deserved?" I asked.

"I like to think I'm firm and fair," Hess shot back, opening a thick account book. Then, with punctilious pride, he led me line by line through his firm's contributions to

***The only way to go**—better education for their children—is a growing concern of island parents. This mother, taking her child to school in Charlotte Amalie (**above**), watches for traffic outside a narrow underpass with one sign stenciled backwards. Although the government spends lavishly on education, classrooms remain overcrowded, partly the result of a 1970 court decision admitting to public schools the children of immigrant workers in legal residence.*

*As one result, parents turn to private schooling. In 1969 a small enterprising group on St. Croix started the Tamarind School in an abandoned sugar plantation (**right**) canopied by lush forest. Here two dozen pupils—blacks, whites, and Puerto Ricans—study traditional subjects, with an emphasis on the outdoors.*

BOTH BY CARY WOLINSKY

the islands. The total: more than half a billion dollars, including wages, 18 college scholarships a year, two elementary schools he built, and a 1.5-million-dollar police complex for St. Croix.

Hess had considered moving older refinery units to St. Lucia. But now he has given his pledge to the islands that he says he cares deeply about. He wants to stay.

But what if the territory's final offer is unworkable? The oilman's answer was blunt: "I don't intend to go into bankruptcy; if it's unprofitable, I'll shut the refinery down." That, local officials told me, would have devastating consequences for the economy.

For many islanders the economy means whatever the surrounding sea provides. And lately it has been providing less.

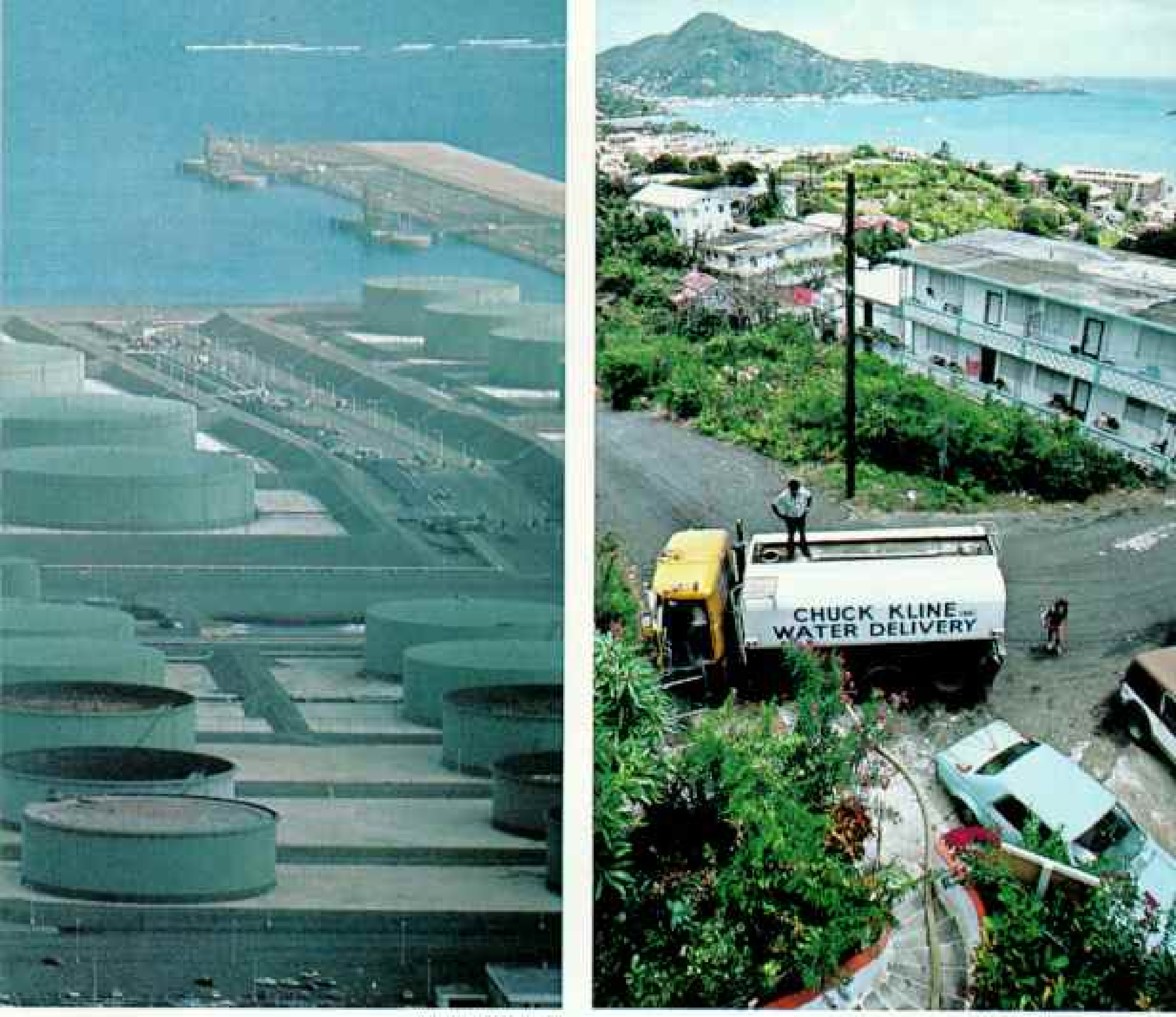
Many local fishermen blame poachers for their empty traps, handmade from chicken wire and slats. But my friend Pete LaPlace reckons, "Dere's not as much tievin' as people t'ink." He blames the bad catches on pollution from cesspools, runoff, and the thousands of traps littering the ocean bottom. These have covered much of the fish-breeding habitat, reducing productivity.

The Purest Virgin Offers Refuge

From Pete's paradise islet I approached St. John with eagerness and fear—fear of disappointment. But the moment I stepped off the ferry at Cruz Bay, the island's tiny village, I relaxed. St. John is the quintessential Virgin. Here, some 2,500 residents have 20 square miles of lush mountains and quiet coves largely to themselves.

When corporate executive Dr. Shailer Bass was retirement bound, he searched the globe before finding St. John. "I went to

WILLIAM ALBERT ALLARD



CARY WOLINSKY

Florida, but I saw where that was going. The Bahamas? Too flat and hot—and unstable. I even looked at Maui and New Zealand." Today Bass and his wife live in a dream house of native cypress and coral overlooking shell-shaped Rendezvous Bay.

Sugar was king on the island 250 years ago. By 1733 there were more than a hundred plantations, their terraced hills covered with cane. Then the slaves revolted against a penal code that imposed such atrocities as flogging, hot irons, even amputation and the rack.

Now the ruins of plantation manors and sugar mills mingle with the dense vegetation. Back in the 1950s, Laurance S. Rockefeller worried that St. John's beauty would be exploited. So he quietly bought up thousands of acres and donated some 5,000 of them to the National Park Service, retaining

Shot in the arm *for the economy, the Amerada Hess Corporation built one of the world's largest oil refineries on St. Croix* ***(above left)****. Most of its capacity of 700,000 barrels a day is destined for the U. S. mainland. The company enjoys generous tax exemptions—which rankles many islanders—but Hess pumps in millions of dollars in wages, scholarships, and building donations. A bauxite processing plant, watch factories, and rum distilleries add to St. Croix's industrial image.*

The most crucial commodity on the islands is fresh water. Rainfall trapped by catchments is seldom enough to fill wells, and four seawater desalinization plants suffer chronic breakdowns. Distributors like Chuck Kline, Inc. ***(above)****, have their hands full supplying customers with water from private wells or barged from Puerto Rico.*

Virginal essence *of St. John* (**above**) *was ensured by a gift of land from Laurance S. Rockefeller, which grew to embrace more than half the island with a national park. His Caneel Bay resort lies at far left, the sleepy town of Cruz Bay at center. On a quick tour, cruise-ship visitors take a snorkeling lesson* (**right**) *for a glimpse of the beauty beyond the water's edge.*

BOTH BY CARY WOLINSKY

enough for his luxurious Caneel Bay resort.

Although more than half the island is now protected parkland, I could almost smell the fear of development. As one pessimist put it: "Half of this island is still a lot of land—that could mean a lot more jeeps."

So development is a disturbing fact of life on all three islands, I concluded. But it's not *all* bulldozers and 350-room hotels, I'm glad to report. What comes to mind is Hazel Eugene's newly opened establishment, a reassuring vision of the Virgin Islands spirit.

Unhappy in St. Thomas, Hazel moved to Coral Bay, on St. John's placid east end.

We had arrived in Cruz Bay together, and I'd given her and maybe 200 pounds of provisions a lift to her new restaurant, a rough cooking shed and four tables made from boards and sawhorses.

"What's for dinner?" I asked.

She smiled impishly and reached behind the shed. I can still see her standing there with that wriggling gunnysack of land crabs. She'd caught them herself in a nearby mangrove swamp.

They were excellent. □

The Caribbean: Sun,

By NOEL GROVE Photographs by

Sea, and Seething

STEVE RAYMER BOTH NATIONAL GEOGRAPHIC STAFF

From the tip of Florida to the shores of South America, myriad islands like Jamaica (left) offer blue water, white sand, balmy breezes, soothing sunshine, and a relaxing indolence that make them idyllic tourist retreats. But those tourists often shield their eyes from the overpopulation, the poverty that stands begging, and the endemic joblessness that will not go away easily. Behind the lovely island facades thin topsoil and scarce fresh water make agriculture difficult in many areas. Hundreds of years of paternalistic colonial rule have left populations ill equipped to develop their new nations. Political and racial unrest festers throughout the archipelago, a region shared by opposite worlds—rich and poor—with little means, and seemingly little desire, to communicate. Noel Grove and Steve Raymer present an unshielded report on their recent travels in the troubled islands. THE EDITOR

THE ROAD out of Port-au-Prince leads one over forested hills and back through centuries. Donkeys outnumber cars, and children run naked. Between the hills are plains carpeted with sugarcane. Bullock teams pull wooden-wheeled carts, urged on by drivers with snakelike whips.

The poor live in the hills, growing coffee for meager cash and food for subsistence. The annual rural income in Haiti averages $60, and that includes the few wealthy landowners who grow sugarcane and coffee and make many times that amount.

I visited the three-acre farm of a man named Nesmère. He welcomed me, a stranger, and with his machete quickly chopped open a green coconut to offer its sweet milk. We walked the smooth dirt paths of his farm, through a tangled cornucopia of beans, yams, and melon vines climbing stalks of corn. Trees stretching above bore grapefruit, breadfruit, and guavas; coffee plants grew in their shade.

Perhaps it was pride that forced Nesmère to assure me that he and his wife and three children have enough to eat. "Enough" is a delicate balance, and one that was upset for thousands of Haitians when Hurricane Allen lashed Haiti's southwestern peninsula in the summer of 1980. Many went hungry and fought over food and water airlifted in by the United States military.

Nesmère's farm survived the weather, but under the best of circumstances his family is undernourished. It is not unusual for women in the Haitian countryside to lose half of all live births to infant diseases. A child of two is called, in creole, *youn ti chapé*—"a little escapee" from death.

"I once surveyed 250 people in that area, asking them if they would leave Haiti if they could," an American anthropologist told me. "Every one of them, except for the very old or sick, said yes. I asked them why, and they would answer, *'Pou chèché lavi mouin*—to search for my life.'"

Thousands have left, many of them in shabby overcrowded boats whose owners promise passage to Florida but often drop them in Cuba or the Bahamas. Haiti, the poorest country in the Western Hemisphere, provides an extreme example of the flight from poverty. But throughout the islands of the Caribbean, people are "searching for their lives." Economic problems, stoked by years of neglect and fired by rising oil prices, are causing them to look for solutions by ballot boxes as well as leaky boats, and occasionally by bullets.

There are hundreds of islands of the Caribbean, curling like an unclasped necklace between North and South America. (See the double supplement map of the West Indies included with this issue.) About 50 are inhabited,

(Continued on page 252)

***Poverty still cracks the whip** in Haiti—the world's only republic born of a slave revolt and the hemisphere's poorest nation. After Hurricane Allen ravaged home and crops last year, a woman awaited medical care for her son, whose red hair may be a symptom of malnutrition.*

*Haiti's land is as impoverished as its people. As seen in the southwest (**facing page**), erosion-controlling trees have been largely cut for firewood, allowing topsoil to wash into the sea.*

People, Haiti's biggest export, *line up in Port-au-Prince to apply for visitors' visas to the United States. Consular officers reject those failing to furnish convincing evidence of intent to return—more than half the applicants. Nevertheless, for many thousands of Haitians, visas to the U. S., Canada, and elsewhere represent one-way tickets from a country where unemployment estimates range up to 50 percent. As some 80,000 young people come of age each year, mounting desperation has led thousands to flee in small, leaky boats.*

Proposals to increase international aid are countered with charges that much current assistance never reaches the populace. Though credited with a relaxation of the political repression of his father's regime, young President-for-life Jean-Claude Duvalier still dictates the nation's future from his palace in Port-au-Prince ***(right).***

With snorkel and fin, *from the Bahamas to Bonaire, legions of water enthusiasts enjoy a feast for eyes only: the West Indies' magnificent coral reefs. At Buck Island Reef National Monument, in the U. S. Virgin Islands* (**above**)*, snorkelers are guided through miles of fragile coral gardens by underwater trail markers.*

The tropical trinity of sun, sand, and surf annually draws some nine million visitors to "the islands," which are populated by 30 million people. In recent years the numbers of American visitors have leveled off, while Europeans have increased sharply.

Prominent

Once the most highly prized colonies in the world, made rich by the toil of African slave labor, the West Indies now follow their own lights in navigating the shoals of self-determination.

GREATER ANTILLES

❶ **Cuba,** *under Spanish rule for four centuries, achieved independence in 1902. U.S. influence remained strong until the fall of the Batista regime to Fidel Castro in 1959; diplomatic relations were severed by President Eisenhower in 1961. The world's largest exporter of sugar, the Pennsylvania-size Communist republic has an essentially agricultural economy. Population: 9,825,000.*

❷ **The Cayman Islands,** *a British dependency and free port, enjoy a prosperous economy based on seafaring, banking, and tourism. The three islands cover 100 square miles. Population: 16,500.*

❸ **Jamaica,** *after its capture from Spain by the British in 1655, became a flourishing sugar producer, until slavery ended in 1838. Independence came in 1962. The agricultural economy is fortified with tourism and bauxite. Population: 2,240,000.*

❹ **Haiti,** *supported by the labor of hundreds of thousands of African slaves, was 18th-century France's richest colony. After a 13-year struggle, the world's first black republic was born on January 1, 1804. Political violence, marking much of the country's subsequent history, was quelled by U. S. occupation from 1915 to 1934. Since 1957 the nation has been ruled by one family. Population: 5,600,000.*

❺ **The Dominican Republic,** *ruled by Spain, France, then Haiti, gained independence in 1844. Since that time dictatorial regimes have been the rule, democratic governments the exception. Sugar, coffee, and cocoa are the most important crops, while tourism is a fast-growing industry. Illiteracy and lack of irrigation remain major problems. The population of 5,690,000 comprises blacks, whites, and a mulatto majority.*

❻ **Puerto Rico** *is a self-governing U. S. territory, ceded in 1898 after the Spanish-American War. Islanders, among the Caribbean's most prosperous, share citizenship with residents of the mainland, where one and a half million others reside. While a vocal minority urges independence, a larger group wants statehood. Population: 3,400,000.*

DRAWN BY JOHN D. WEBER
NATIONAL GEOGRAPHIC ART DIVISION

islands of the changing Caribbean

LESSER ANTILLES

7 The U.S. Virgin Islands, a U.S. dependency, were purchased from Denmark during World War I to guard a strategic entrance to the Caribbean. The three major islands, St. Thomas, St. Croix, and St. John, total 133 square miles. Inhabitants from elsewhere in the Caribbean, drawn by a prosperous economy, constitute about 35 percent of the population of 100,000.

8 The British Virgin Islands, first settled by the Dutch, were taken over in 1666 by English planters, who raised sugar and sea island cotton with slave labor. The three dozen islands of this self-governing colony cover only 59 square miles. On Tortola, the largest, live 80 percent of the population of 12,500.

9 St. Martin, only 37 square miles, is all free port, dominated by tourism, and shared by French St. Martin and Dutch St. Maarten. Population: 24,000.

10 St. Barthelemy, at one time a Swedish possession, is again a dependency of French Guadeloupe; it is affectionately called St. Barts. Population: 2,800.

11 St. Christopher and the adjacent island Nevis make up a self-governing British dependency, with sugar underpinning the economy of the former and sea island cotton the latter. Settled in 1623, St. Kitts became known as the Mother Colony of the West Indies. Population: 50,500.

12 Antigua is a self-governing British dependency, where tourism rivals cotton production in economic importance. Population: 75,000.

13 Guadeloupe, settled in 1635 by 400 Frenchmen, was four times occupied by British forces. Since 1946 the island and its dependencies have been represented in the French parliament as an overseas department. Sugar, bananas, and rum are important to the economy. Population: 318,000.

14 Dominica, independent since 1978, is a former British colony struggling to subsist on an agricultural economy, primarily bananas. Population: 80,000.

15 Martinique, ignored by 16th-century Spanish conquistadores because of the fierce Carib inhabitants, was settled by the French in 1635. A French overseas department, famous for its rugged beauty, the 425-square-mile island supports an agricultural economy. Population: 308,000.

16 St. Lucia gained its nationhood from Britain in 1979 and hopes to bolster its agricultural economy with a free-trade zone and an oil-transshipment terminal. Population: 121,000.

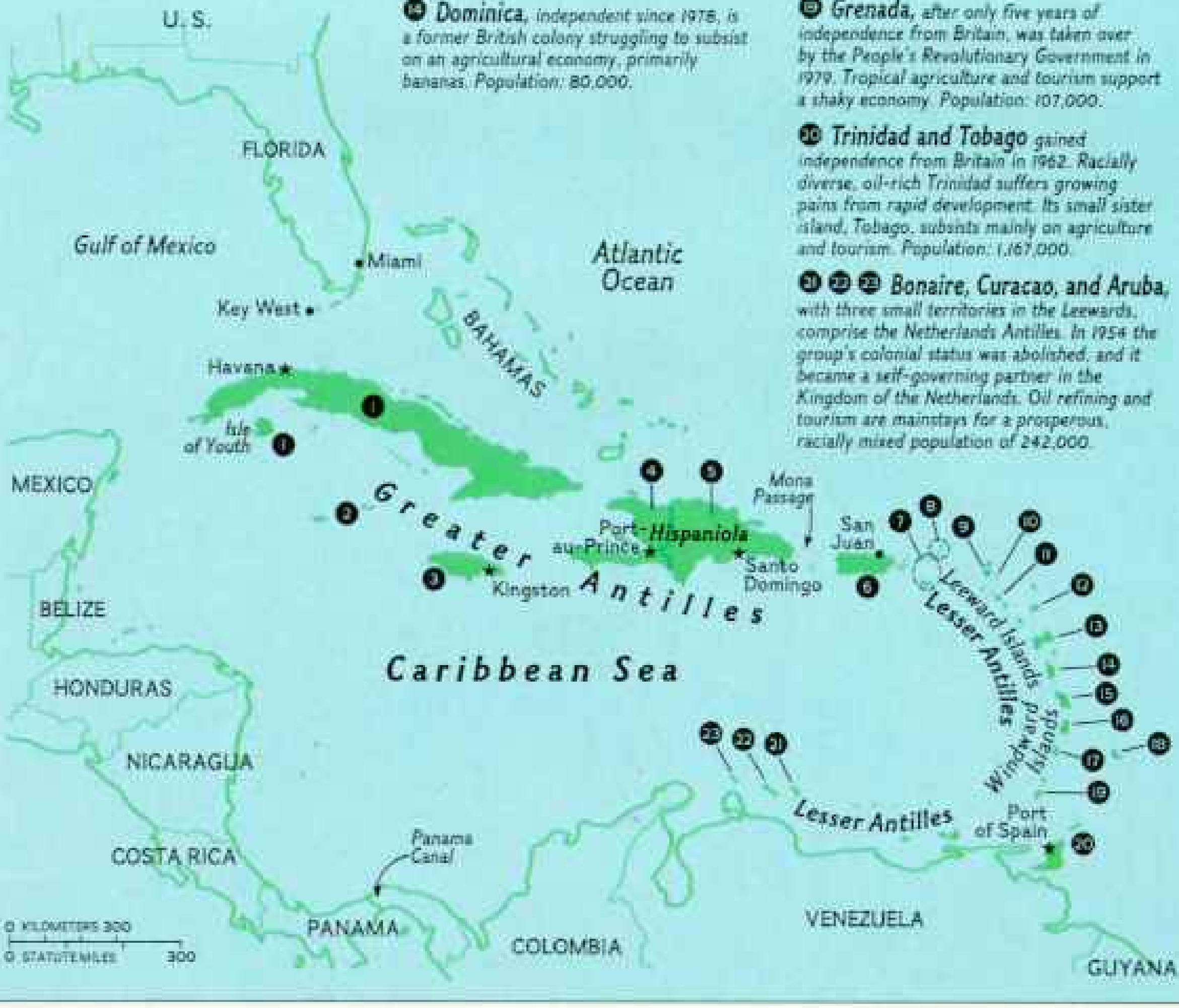
17 St. Vincent, including the northern Grenadines, is among the poorest Caribbean nations. Its troubles multiplied with the ruinous eruption of Mount Soufrière in 1979, the year it won independence from Britain. Population: 114,000.

18 Barbados, independent from Britain since 1966, enjoys stability and relative prosperity. Tourism, sugar, and light industry support its economy. Population: 279,000.

19 Grenada, after only five years of independence from Britain, was taken over by the People's Revolutionary Government in 1979. Tropical agriculture and tourism support a shaky economy. Population: 107,000.

20 Trinidad and Tobago gained independence from Britain in 1962. Racially diverse, oil-rich Trinidad suffers growing pains from rapid development. Its small sister island, Tobago, subsists mainly on agriculture and tourism. Population: 1,167,000.

21 22 23 Bonaire, Curacao, and Aruba, with three small territories in the Leewards, comprise the Netherlands Antilles. In 1954 the group's colonial status was abolished, and it became a self-governing partner in the Kingdom of the Netherlands. Oil refining and tourism are mainstays for a prosperous, racially mixed population of 242,000.



by some 30 million people. Their storied ambience, created by sun, white sand, palm trees, and a gentle sea, has become a modern stereotyped image of earthly paradise, drawing millions of visitors from earth's temperate zones.

But behind the sand and palm trees stirs a restlessness marked by shortages, unemployment, poverty, inflation, and a growing anger among people who must nevertheless be among the friendliest in the world.

"We have been your playground," a Caribbean journalist told me. "Now we would like to be regarded more seriously."

They are. The Caribbean's restlessness has brought changes to governments and economic systems that hint at new alliances, capturing the attention of the world's superpowers and thrusting these once quiet islands onto the world political stage.

Close to half of the United States' imported oil passes through the Caribbean. "Perhaps we overreact to changes in governments sometimes," I was told by a State Department official in the Office for Caribbean Affairs. "But we *do* have legitimate security concerns in that area."

GRENADA is an island smaller than the average midwestern American county, with a population a little over 100,000. Located near the bottom of the necklace close to South America, it ranks at the top of the list in terms of beauty. Vines and creepers cascade down the volcanic hillsides along the curving, potholed road from the airstrip to the capital, St. George's. Banana trees cover the valleys, and nestled among them are the crops for which the "isle of spice" is best known—nutmeg and cocoa.

The other unmistakable feature along the road is the profusion of signs bearing revolutionary slogans.

"Forward ever, backward never."

"Every single day is a struggle."

And my favorite: "Stay up!"

Souring the flavor of the spice island for more than a decade had been the corrupt and repressive government of Sir Eric Gairy. On the morning of March 13, 1979, while Gairy was visiting New York City, a truckload of armed men captured the army barracks in St. George's and installed an articulate London-trained lawyer named Maurice Bishop as prime minister.

Within weeks the new government was armed with weapons from Cuba and firing salvos of criticism against American "interference." By the time I arrived in Grenada in mid-1980, posters of Fidel Castro and Bishop smiled down on me, and some 200 Cuban technicians were helping build a new airport capable of landing the largest jets.

The airport construction and the friendship with Cuba made foreign policymakers in Washington nervous. Their protests to Grenada made Bishop angry.

"Just after the revolution we requested aid and arms from the U. S.," he told me one evening at his hilltop offices, which overlook the bay-hugging capital of St. George's.

"We were offered $5,000—barely enough to build a toilet! Cuba sent arms, technicians, and doctors. Which one would you call a friend?"

State Department officials say that, as a matter of policy, the United States channels funds to small islands of the eastern Caribbean through regional institutions such as the Caribbean Development Bank.

For travelers or troops? *On tiny Grenada Cuban workers are helping build a new airport* ***(left)****, financed by half a dozen nations. It will be large enough to accommodate tourist-laden 747s, say officials of the People's Revolutionary Government, which gained control here in 1979. Skeptics claim the island's modest vacation industry doesn't warrant such a facility. In St. George's, the capital, young soldiers* ***(above)*** *carry Soviet-made rifles. The strategic island lies along an important oil supply route to the U. S.*

Grenada draws heavily on these funds.

Those whom politicians would call friends or enemies, their constituents may call acquaintances. On my way to view the controversial new airport, I picked up a hitchhiker on his way to work as a security guard. He smiled agreeably when I identified myself as a visitor from the U. S.

"Is this the airport that the Cubans are building?" I asked him as we topped a rise to see a massive carving of hills and filling of gullies for a runway.

"Yes, there are many Cubans working on it," he said, still smiling agreeably.

I dropped him at his post, a man happy for a ride from an American and a job working among Cubans.

Complaints about the revolutionary government are not difficult to find: a drift toward socialism, the lack of elections and of a free press, the proliferation of guns.

Even Bishop's critics concede, however, that he would probably win an election if one were held. He has, through land reforms, revolutionary zeal, and the placing of Grenada in the international spotlight, given his people a new pride.

PRIDE and a national awareness were a long time coming to the islands of the Caribbean. In 1961 only three were independent—Cuba, Haiti, and the Dominican Republic, which together contained three-quarters of the Caribbean population. In 1980, ten were independent, and by mid-decade several more will probably follow. Half a dozen of the smallest would fit into the King Ranch of Texas.

As nations, the islands are creations of European colonialists of the 16th and 17th centuries. For more than 300 years they were commercial factories, first turning out gold from mines and, after that quickly ran out, producing tobacco and sugarcane for a continent 4,000 miles away.

Their entire populations are transplants. Three-fourths of the Caribbean people are at least partially descended from African slaves. The remainder includes direct descendants of European colonists, along with East Indians and Chinese who were shipped to the New World as indentured laborers when slavery was abolished in the 19th century. The original inhabitants, Arawak Indians and the Caribs who gave the region its name, have all but disappeared as distinct groups through war, disease, and interbreeding.

Economic dependence continued even after political independence. Industries are usually established in the Caribbean with foreign capital and know-how. The host country is happy for the employment, the investor for low wages and high profits.

Still, there are more people than jobs. In the past the young left the islands to work in the United States, the United Kingdom, and France, among other developed nations, and sent back money to their families. Now employment problems and restrictive immigration policies in those countries make departures less feasible.

The young have begun staying home. Caribbean streets today resemble summer camps, so youthful are most of the occupants. Knots of them can be seen on the streets of Kingston, Bridgetown, Fort-de-France—young women with sparkling eyes jiving to transistorized music; young men play-sparring with each other, their pent-up energies an acid on their idleness.

Idle lands can be found on many of the islands too. Farming is unpopular for historical as well as economic reasons.

"Slavery left a stigma on working the land," said Cyril Matthew, permanent secretary in the Ministry of Agriculture in Castries on St. Lucia. "But low income is more significant. Sixty-five percent of the people live in the country, but it is the dream of many rural parents to see their children get a job in town. And that won't change until a farmer can make a good living."

Sugarcane continues to sweeten Caribbean economies, and the best land usually holds cane, not other food crops.

A drive around Barbados is a voyage through green oceans of the lush plants. Cane, cane everywhere, but I saw hardly a carrot to eat. Like many of its more mountainous neighbors, this rolling coral island must still import produce from Puerto Rico, often to feed tourists from New York.

"The region needs new systems, new technology to make food production pay," said Dr. Lewis Campbell, project director with the Caribbean Development Bank in Bridgetown, Barbados.

I visited one farm using new technology that will virtually eliminate tomatoes from Barbados's import bill. Just east of Bridgetown, Gus Joseph grows tomato plants in pots of sand that are watered automatically by machines.

"Thirteen different nutrients are blended into the water piped to each pot," he told me as we strolled among 7,500 vines, each climbing its own string toward a ceiling of fine netting designed to keep out insects. In this hydroponic garden covering little more than half the area of a football field, he has produced 60 tons of tomatoes a year. A second garden, for growing a variety of vegetables, is now under construction. I saw nothing to prevent such systems from being set up in any Caribbean country—except, perhaps, the lack of capital.

Those familiar with the islands would not be surprised to find innovative agricultural operations on Barbados. This most windward of Caribbean nations has a reputation unmatched for stability and success.

Bridgetown is the kind of quiet, polite place one expects of a semiprosperous Caribbean capital, with colorful waterfronts, a thriving business district, and streets adequate to keep traffic moving. Outside Bridgetown, country roads crisscross the rolling terrain like a baffling maze.

Why does Barbados work so well? The most repeated answer seemed too simple: "It's because Barbados has always been British." Continuity was not a hallmark of the Caribbean colonies. Nearby St. Lucia changed hands between the French and the British 14 times.

"Young governments are like young people," one Caribbean observer suggested to me. "They need role models to follow. What kind of institutions can you set up when you are first Dutch, then French and British?"

TOO MUCH WEALTH may be a problem for Barbados's neighbor to the south, the dual-island nation of Trinidad and Tobago. The only Caribbean country with substantial petroleum, Trinidad and Tobago holds foreign-exchange reserves totaling billions of dollars.

With talk of oil wealth in my head, I entered Port of Spain expecting a modern, plasticized city interspersed with refinery towers and tank farms. Instead I found a capital of low-rise colonial architecture and an unbelievable open space near the city's center—the Queen's Park Savannah. The grassy 200-acre park includes cricket fields, soccer fields, and a racetrack. The track was designed for Thoroughbreds and, judging from the frequent traffic jams, the streets elsewhere in the capital were designed for horse-drawn carriages.

"Wha' happnin' is eviboddy gotta big cah and petro' to run it, but nobody kin move," said a disgusted cab driver one afternoon as we sat immobile on a downtown street.

True frustration in a nation shows its head very quickly. In addition to the cab driver's lament, I heard numerous unsolicited complaints about the water supply, high prices, and health care. This petroleum-rich country was the only one from which I could not place an overseas call. Attempts at dialing locally produced, perhaps half the time, electronic groans and beeps.

In none of the complaints was any blame laid on Prime Minister Eric Williams. The brilliant scholar, author of several historical books about the Caribbean, head of state in Trinidad and Tobago for 24 years, operates the government almost as a recluse.

"You hear complaints about the system, but rarely about the man," said a foreign diplomat in Port of Spain. "There's the aura about Williams, and they can't imagine replacing him. There's a saying in the local dialect, 'Who we go put?'"

Minister of Health Kamaluddin Mohammed, an articulate member of Trinidad's large East Indian population, spoke for the prime minister, who suffers from acute hearing loss.

"Development takes time," he told me at a meeting in his office. "We only began to realize our oil wealth in 1974 and 1975, but improvements will be coming soon."

As I left the minister's office, a woman moved beside me mumbling about jobs. "When they want your vote, they promise you everything. I have no job and four children and my man has left me."

I was about to ask her what had been promised when she spied a man selling lottery tickets on the sidewalk.

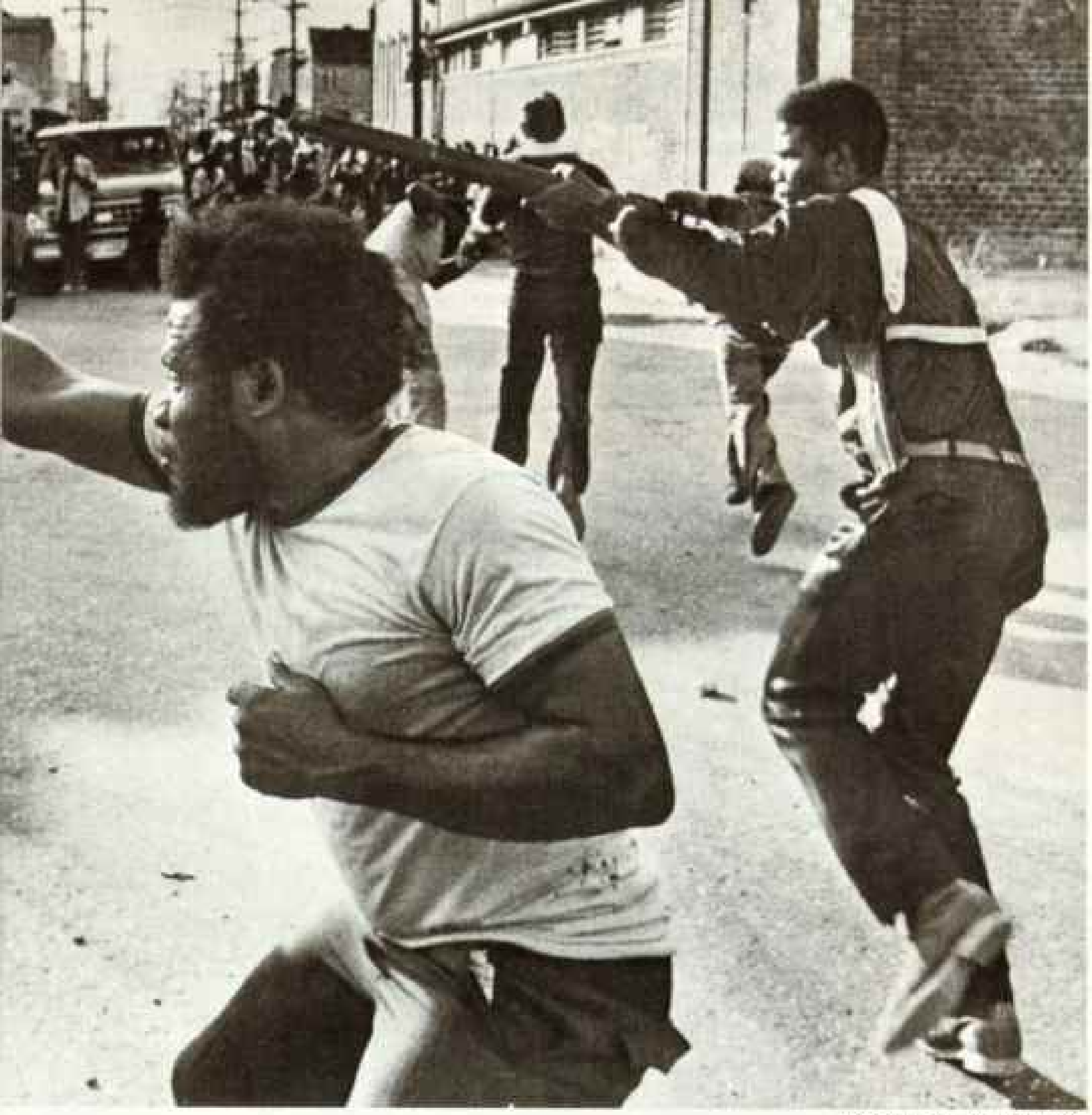
"Oh well, maybe I try my luck," she said, fishing out a bill and hailing the vendor.

OWEN FRANKEN, STERN

High noon *in the battle for Jamaica: Under covering fire from his bodyguards (**right**), Edward P. G. Seaga, in background, is hustled away from snipers' bullets on a Kingston street, while voters are handing him a landslide victory in the island's October 1980 election. Hundreds of people were killed during Jamaica's bloody political campaign. Advocating close ties to the United States, the Harvard-educated Seaga—here addressing an 11th-hour rally (**bottom left**)—promises to end eight years of unproductive socialism under Prime Minister Michael N. Manley.*

With two million people Jamaica is the largest of the Caribbean's former British colonies, most of which are casting about for identity as they try to go it alone. Among the smallest and poorest are the most recent newcomers to nationhood: Grenada, Dominica, St. Lucia, and St. Vincent.

*While Jamaica was ending its experiment with socialism, Grenada's was going full steam. But the island's young prime minister, Maurice Bishop—here inspecting a military detachment (**bottom right**)—has so far left the island's free-market economy relatively unchanged.*



DOUG JENNINGS, WIDE WORLD PHOTOS

When social unrest of any kind is felt in these supposed paradises, it is greeted with surprise by those searching for languor.

Puzzlement showed on the faces of a retired couple from Virginia when they related a story to me about their last stay on St. Croix in the U. S. Virgin Islands.

"We were sitting on the veranda of our condominium one evening, having a rum punch and listening to a band play calypso music," said the husband. "My wife said, 'Fred, listen to the words of that song.' It was all about rich folks riding in Cadillacs and how the poor were going to get their share one of these days."

The song was probably not calypso but reggae, the throbbing Jamaican music:

Give them an inch they take a yard
Give them a yard they take a mile
Once a man and twice a child
And everything is just for a while. . . .

Pleasure *makes no apology when it's the fulfillment of a dream, such as this 71-foot ketch, "Sealestial," navigated off Antigua by her American owner, Dr. Michael Papo. With unfaltering northeast trade winds, gentle tides, and fog-free airs, the Caribbean is arguably the world's best sailing grounds.*

Few in the Caribbean deny that the islands' unexcelled beauty and climate are their most important natural resources. And with hopes for industrial diversification fading before rising energy prices, many islands encourage the growth of even more tourism.

"Just for a while" in Jamaica can be a delight. The mist among the Blue Mountains suggests their romantic name, and the coffee grown there tastes like black liqueur. The interior of the island is lush and green with occasional rolling pasturelands and stone walls; the colonials who settled the land had much to remind them of quiet English countrysides. The sons of Africa who live now in west Kingston have much to remind them of hell.

In the first five days I spent in the capital, 54 people were killed. The total for 1980 was expected to reach as high as 500. The victims were mainly hot young fanatics in the two major parties—the People's National Party and the Jamaica Labour Party.

Jamaica was embroiled in a political campaign that pitted socialism against free enterprise—and each promised to solve the rending problems of the poor.

In the mid-1960s the country had one of

Europe's sweet tooth *helps keep the Caribbean sugarcane industry alive. In Barbados 50,000 tons of raw sugar* ***(above)*** *await shipment to assured markets in the European Economic Community. Elsewhere, in Guadeloupe and Martinique growers receive subsidies from the home government in France, while Cubans have reportedly enjoyed guaranteed prices from the Soviet Union for years. Left strictly to the mercy of world-market prices, many producers of the region's single most important crop might fail, since they still rely heavily on labor-intensive, back-breaking methods for cutting and hauling cane* ***(above right)****.*

the most promising economies in the Caribbean. By 1980 it had a national debt of 1.4 billion dollars that it could barely service, let alone pay back. Inflation had tripled in a decade, and 30 percent of the work force was unemployed.

Oil costs bit into Jamaica's foreign exchange just as they did elsewhere, but the nation counted on bauxite, the reddish earth that is the principal source of aluminum, to rescue the economy. In 1974 the island government increased taxes on foreign-owned aluminum companies that process it. The companies responded by trimming production, while the income from the tax was quickly spent on programs for the poor.

The man responsible for both levy and

programs was Prime Minister Michael Manley. By 1980 many Jamaicans were holding him responsible for economic problems.

The steely-haired, charismatic Manley was elected in 1972 and again in 1976 on programs advocating "democratic socialism." Foreign investment dried up and many local entrepreneurs fled as Manley professed an open admiration of Fidel Castro.

Castro warned Manley, I was told, not to alienate or drive away his middle class, whose skills are needed. "It's a mistake I made," Castro is said to have added.

Apparently, the warning was not heeded: Factories, unable to buy spare parts or raw materials, closed; store shelves became bare. In one supermarket I saw housewives rush a stock boy when he produced a few bags of sugar from a back room. "Those women have been waiting all day for that," an onlooker said.

The sagging economy and the pressure of criticism led Manley to call for elections.

Manley's opponent was Edward Seaga, Harvard-educated, who opposed Cuba as much as Manley admired it. "Cuban expansionism is a very definite strategy," Seaga told me in his Kingston office shortly before the election. "It has not yet enveloped any major area of the Caribbean, but it has made advances in Jamaica and Grenada.

"It was the fear of that drift toward Cuba and Communism that drove capital away from Jamaica. Our party has a much better

CARY WOLINSKY, STOCK, BOSTON (ABOVE); STEPHANIE MAZE

A few jobs, *but fewer applicants: In the U. S. Virgins, many natives shun service work because it harks back to slave days. Thus down-islanders from elsewhere in the Caribbean pour in, drawn by the region's highest incomes. For Gloria Mathew, a worker from St. Kitts* ***(above)****, U. S. citizenship for her Virgin Island-born children is an added benefit.*

In Puerto Rico, whose capital, San Juan ***(facing page)****, reflects relative prosperity, long years of population loss to the U. S. mainland have ended.*

relationship with international financial institutions, and is therefore in a better position to get the economy moving again."

Weeks later voters gave him a chance to prove it, ousting the eight-year government of Michael Manley.

In the continuing economic shambles after the election, it was reported that only a vast illegal marijuana trade was keeping the country afloat. Smuggled into the U. S., the crop sells for an estimated $1.1 billion a year, more than all other exports combined.

THE DOMINICAN REPUBLIC, which shares the island of Hispaniola with Haiti, illustrates how political stability can affect an economy: Foreign capital pours into the country for housing, tourism, agriculture, and industry, but often fails to reach the extremely poor.

Puerto Rico, across the Mona Passage from the Dominican Republic, enjoys a unique commonwealth status with the U. S. and has been transformed by U. S. capital into a huge industrial park. But industry alone cannot solve all problems. In Puerto Rico, islanders complain of a "welfare psychology," with 17 percent unemployed and 53 percent receiving food stamps.

And so the people of the Caribbean grope, each in their own way, to find answers to their problems. Many disagree with the idea of Jamaica's Seaga that Cuba has a very definite strategy of expansion. Others say that even if it is true, it misses the point.

"The big powers may be eyeing the Caribbean, but the island countries are mostly looking inward," a Trinidadian told me. "I wouldn't call them pawns in a chess game. I see them as experiments in a social laboratory. They'll try anything to see if it works."

Pick almost any country in the Caribbean and you can view a different brand of government, endless combinations in the economic test tube—totalitarianism, democracy, private and state ownership, European colony, Marxist socialism.

I had sampled them all but the last.

One's senses become keenly alert entering a country considered unfriendly to one's own. The eyes watch for flickers of resentment at mention of United States nationality. The ears listen for whispered asides, tones of sarcasm, and subtle hostility. I saw

***Mean streets** of west Kingston (**below right**), a far cry from Jamaica's plush north-coast resorts, have become the focus of a government drive to disarm violence-prone political factions. A special compound (**below**) serves as both trial site and detention center for bearers of unlicensed guns. There is concern in the new government of Edward Seaga that arms have been cached in Jamaica's slums.*

Besides restoring peace, the new prime minister faces the awesome task of revitalizing his nation's near-bankrupt economy. Compounding his problems, a huge underground marijuana trade with the United States has become one of the nation's primary sources of revenue.

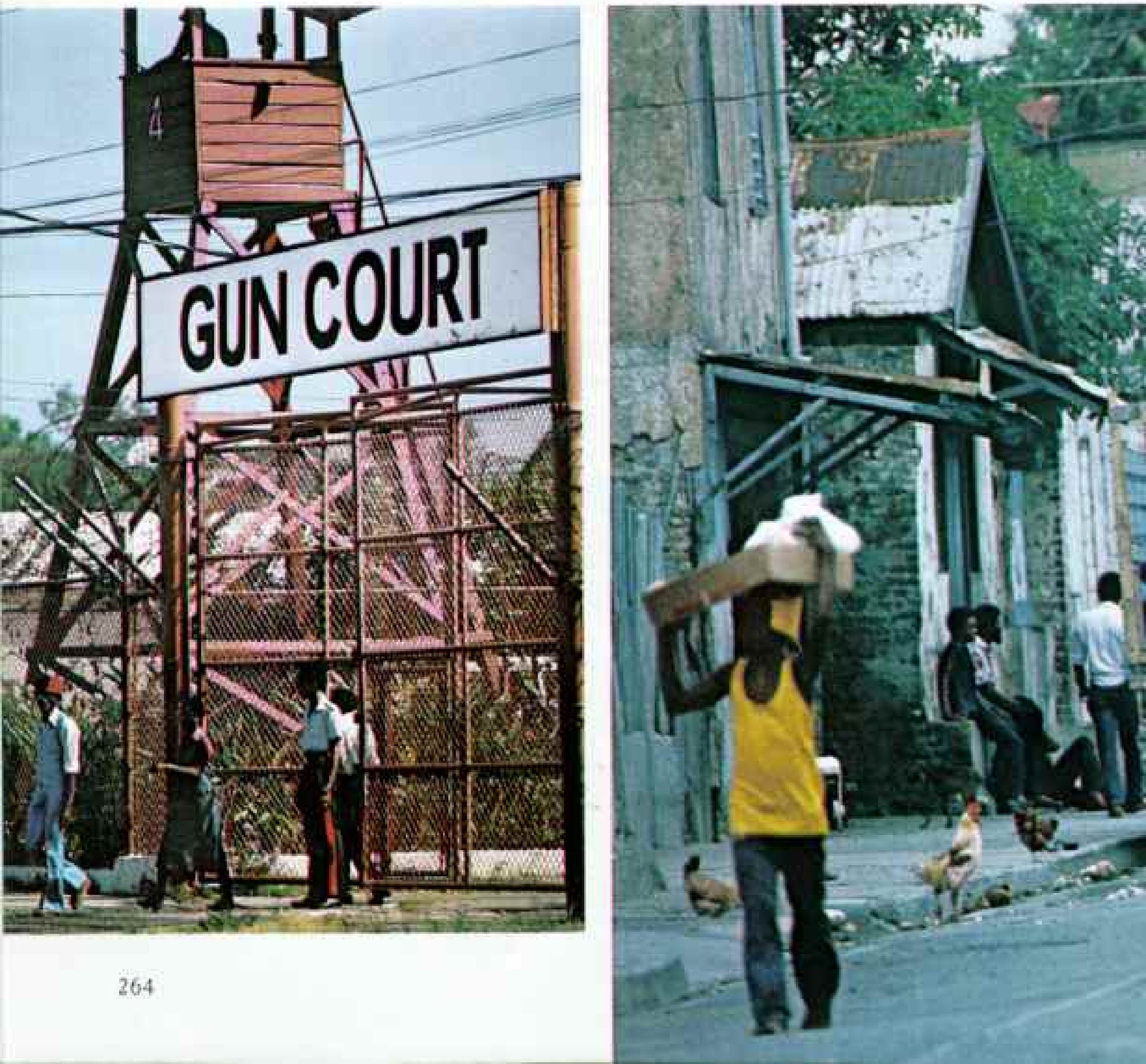
and heard nothing to make a U. S. visitor feel unwelcome in Cuba.

Havana, for all its size (nearly two million people), has the pace of a medium-size midwestern U. S. city. One reason may be the lack of traffic. Only those who owned automobiles before the revolution or who can show need for one now are allowed to have cars. Besides quiet streets, the policy has resulted in a moving museum of early products of Detroit, lovingly tended to extend their life. I often engaged in a guessing game with a driver named Julio, who knew each by make and year.

"Studebaker, Julio, cincuenta y uno!"

"No, Noel, cincuenta y dos."

Downtown Havana was a pleasant surprise, with its wide thoroughfares and old European flavor, high-arched porticoes and wrought-iron balconies. I saw living



quarters on side streets that were less impressive—dingy, crowded flats with no running water. A Cuban guide admitted that housing was a major problem. He also agreed that lack of privacy accounted for the lovers who line the seawall of the two-mile-long oceanfront boulevard each evening, oblivious to all but each other and the sea.

I found plenty of supporters of Castro's socialist Cuba. Some referred to the thousands of refugees who fled in boats to the United States last year as "scum"; others conceded that most of the refugees were decent people who did not want to put up with the difficulties there.

The difficulties, and the desire of some to leave, remain. "I am tired of shortages and rationing," hissed a woman in an austere supermarket. "I am leaving as soon as I can."

The shelves were empty compared to an American supermarket, but variety existed. There were canned pears and cherries from Eastern European countries and nearly as many canned goods labeled *Hecho en Cuba*. Staples such as meat and milk products were rationed but available. Cubans are quick to point out that while their nation is not a land of plenty, neither is it a land of serious want.

An economist blamed the continued U. S. embargo against Cuba for economic hardships over the past 20 years and admitted that aid from the Soviet Union was essential for the nation's economic health. But he flatly denied reports that Cuba receives as much as ten million dollars a day in subsidies from the U.S.S.R.

"They help by selling us oil at a low price, and they buy our sugar on a sliding price scale—sometimes above, sometimes below

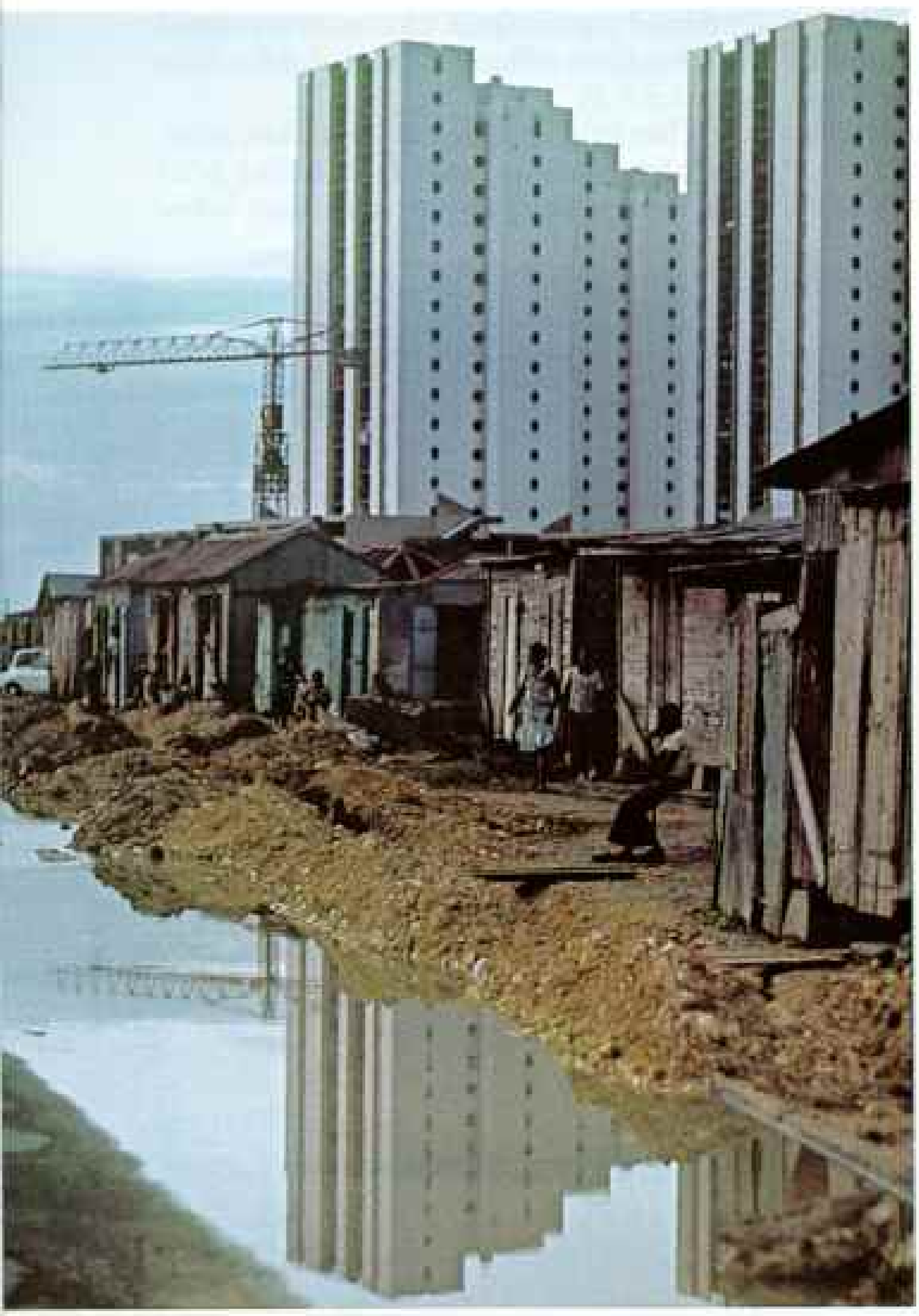
world price," he said. "Other aid comes to us in the form of low-interest loans, much of which has been repaid."

Military equipment, he added, is free. That equipment and sometimes Cuban technicians or soldiers have appeared in other countries in the Caribbean, Central America, and Africa. But Cuba's influence is also extended by foreign students who come to the socialist nation for education.

The Isle of Youth, an island less than an hour's flight south of Havana, holds 54 boarding schools for youngsters of high-school age. Seventeen are for non-Cubans.

Dawn was barely tinting the horizon when I arrived at a school for Namibian youngsters at 6:30 a. m., just as they were lining up on the parade ground for flag raising and a reading of the day's events and instructions. While half the student body attends classes the other half tends citrus groves "to learn the dignity of work," as a Namibian instructor told me.

After the raising of Namibian and Cuban



Homes for tomorrow *rise high in Pointe-à-Pitre, Guadeloupe, in view of shanties they will replace. The 625,000 racially diverse inhabitants of the French Antilles enjoy the citizenship and social benefits of their mother country, which also heavily subsidizes their products. Even so, many islanders resent what they*

flags, the students sang patriotic songs about "fighting on land and sea" and yearning "to see my people free." Their homeland was declared independent by the United Nations, a mandate not recognized by South Africa, which controls it.

I asked a young Namibian girl if she received any military training. She looked puzzled and said no. I asked if she was a member of the Young Pioneers, the Communist youth group, and she said no.

"We have a class in politics, but I would not say that heavy politicizing is done by the Cubans," said a Namibian instructor.

An experience at the school for Nicaraguans left little doubt that heavy politicizing of these young people was not necessary, and that they would leave the island as future friends of Cuba.

In an English class I asked the 13- and 14-year-old students: Who are your heroes? Whom do you admire?

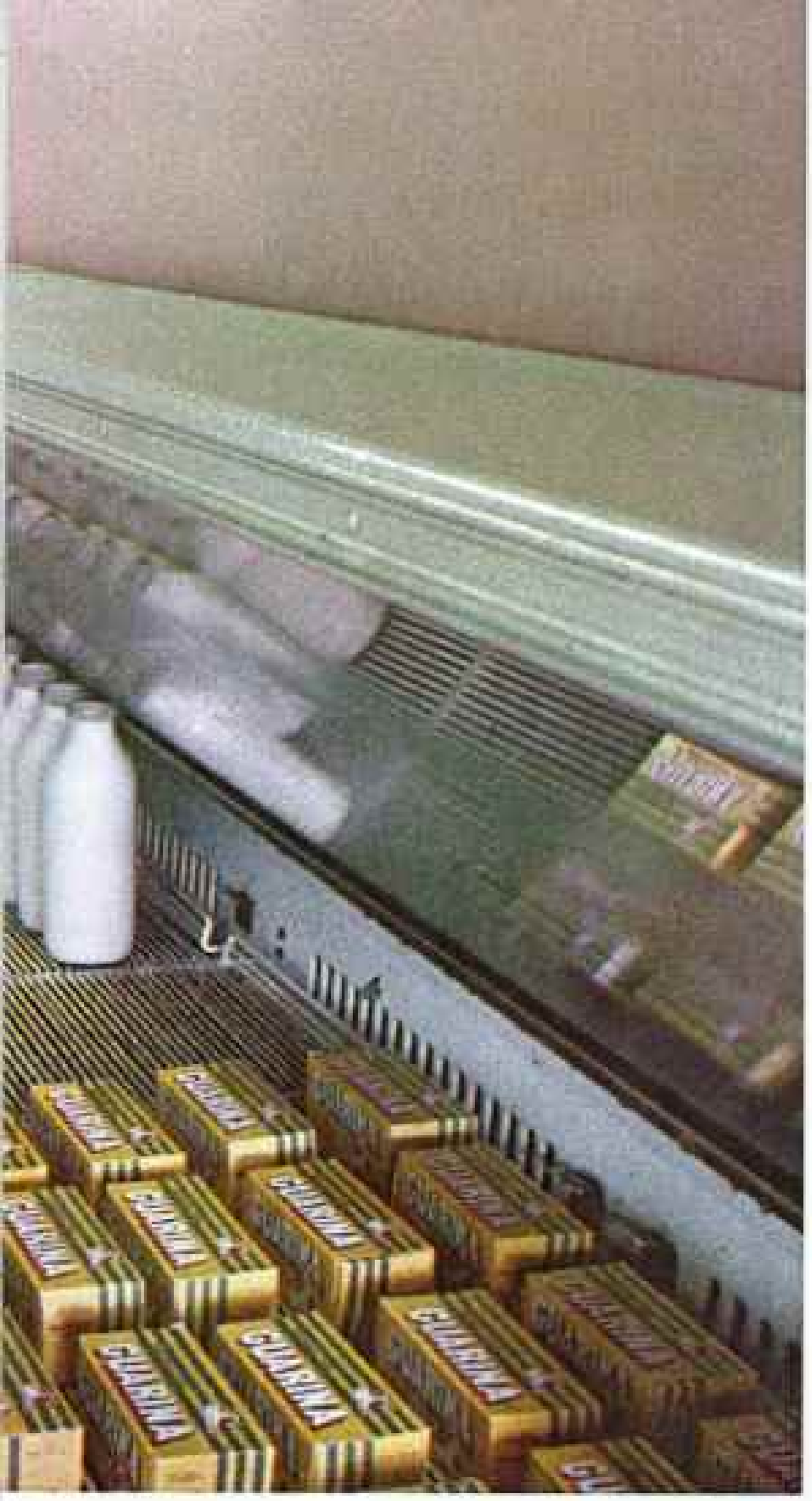
The hands shot up. The most common answer was Augusto César Sandino, the

JODI COBB (LEFT); NATIONAL GEOGRAPHIC PHOTOGRAPHER MICHAEL YADA

consider a colonial system in disguise—and they talk of independence. But the predominant tone of the islands is one of joie de vivre, as reflected in Fort-de-France, Martinique, where European hotel guests mingle with members of the folkloric Ballet Martiniquais after a performance.

***As day breaks on Cuba's Isle of Youth**—formerly the Isle of Pines—disciplined young Namibians salute their flag and sing patriotic anthems. Most are said to be war orphans, sent to Cuba by the Southwest Africa People's Organization, which is waging an undeclared guerrilla war against South Africa. Some 10,000*

African students from seven countries are here for an education they otherwise might not receive; skeptics view the island as an ideological training center. As with the 25,000 Cuban students here, the Namibians' time is divided between classrooms and citrus fields, where they learn the "dignity of work."



Cuba's cupboard, *not always well stocked, is never bare. In a Havana store, customers (**above**) find little meat, but milk and butter are available, rationed as always. Chronic shortages of consumer goods keep life austere. Though author Grove encountered discontent, he found widespread support among Cubans for their government. Most blame the 20-year trade embargo by the United States for their condition. In a bittersweet trade, the U. S. acquired 125,000 Cuban refugees in last year's "freedom flotilla," including hundreds of the Communist state's unwanted who were forced to board the boats; at Key West the disabled were the first ashore (**left**). Since 1950, a tenth of the Caribbean's population has migrated. Will the day come when these islands in the sun are as nice to live in as to visit?*

Nicaraguan martyr whose name was adopted by the Sandinista guerrillas who overthrew Nicaragua's former head of state, Gen. Anastasio Somoza. Others?

"Fidel Castro! . . . Che Guevara!"

What Americans do you admire?

Silence. A hand went up tentatively.

"John Kennedy."

"George Washington."

A boy near the front snapped his fingers, his brow furrowed, a name somewhere on the fringes of his mind. Finally a flash of recognition, and the hand. "Tom Sawyer."

ON THE BATTLEGROUND of need, help is the greatest weapon of all. I left the Caribbean with the impression that the mini-nations scattered there care less about who fires that missile of hope than they do about feeling the effect.

An outright gift from Venezuela of a tanker of petroleum won praise from Grenada's official newspaper, which in another column grumbled about Venezuela's friend, the United States.

"We have not even begun to exploit the resources of the sea," said a Jamaican. "You have data and research capabilities that could help us do so."

I asked a Cuban Foreign Ministry official what improved relations with the U. S. would mean. His answer was immediate: "You have technology in medicine and industry that is the best in the world. You have computers that would speed our development several times over."

I asked another Cuban if the Soviet aid did not mire them in a kind of dependency on a major power.

"When you are drowning, you do not ask who is throwing the life preserver," he answered.

The analogy came back to me as I rose above Barbados on a final flight to Miami. At about 5,000 feet I glanced out the window and found I was looking at the entire island from coast to white-foamed coast.

It was hard to imagine that this was an entire nation, and one of the more successful ones in the Caribbean at that. From the heights, we've looked on them as lovely pleasure boats for us to step aboard and take our leisure. And failed to see them reaching for the lifeline. □

LIECHTENSTEIN

A Modern Fairy Tale

By ROBERT BOOTH
NATIONAL GEOGRAPHIC SENIOR STAFF

Photographs by JOHN LAUNOIS
BLACK STAR

ONCE UPON A TIME in a tranquil valley in the heart of the Alps there lived a happy, hardworking people. For nearly 200 years they had not seen a single hostile soldier on their land and had abolished their own army long ago, when blue and gray were still licking their wounds across the sea. More recently, as the world twice warred around them, the people remained unscathed.

Today their income is among the highest anywhere, their taxes among the lowest. They know little if anything of unemployment or inflation, crime or pollution, but rest secure in the knowledge that their beloved prince, Franz Josef II, will continue to hold his hand over this modern fairy tale—this land of Liechtenstein.

It is a minuscule country (Rhode Island is twenty times as large) sandwiched between the Rhine River and Switzerland on the west, Austria on the east. Most of the 26,000 German-speaking inhabitants live on just 40 percent of the land, the rest being mountains. There is no airport. No trains stop at the capital, Vaduz, a village of 5,000. There are no natural resources; everything must be imported. And yet . . .

Liechtenstein is the most intensively industrialized nation on earth. Some 50 light-to-medium industries run the gamut from central-heating systems to sausage skins. One company produced a component for a solar-wind experiment that went to the moon with the Apollo astronauts. In 1979 total exports amounted to an incredible $18,000 per capita—highest in the world and 20 times more than the same figure for the United States. And yet . . .

Thirty-five years ago nearly half of all Liechtensteiners were farmers. Today only 4 percent still work the land, though lush fields along the Rhine and a symphony of cowbells drifting down from high meadows seem to say otherwise.

Not until the end of World War II did the industrial mite begin to flourish, as firms were lured by what one Liechtensteiner called "our sensible tax laws." And you needn't actually open a business or even live there to benefit from this sensibleness.

As some 40,000 individuals and corporations have discovered, all you have to do is set up a so-called holding company. For this

Glittering harvest *confronts farmer Andreas Beck. The nearly 30,000 Swiss francs (provided by a bank for the occasion) equal the tiny principality's average per capita income—$17,000, one of the world's highest. Thirty-five years ago Liechtenstein was poor and agrarian. Today industry thrives on favorable tax laws, and trust firms such as Praesidial-Anstalt (***above***) represent thousands of tax-shelter holding companies.*

you pay a fee to a lawyer to act as trustee, and you pay an annual tax of *one-tenth of one percent* on capital (nothing on income) held in Liechtenstein banks. Granted, firms operating inside the country are taxed at a stiffer rate—averaging a whopping 12 percent! As one leading industrialist explained to me: "We are the freest people in the world; we are allowed to retain our capital." Free? In many ways, yes. And yet . . .

"**Shining stone,**" Liechtenstein bears the name of the family that bought the land about 1700. The country is the sole intact sovereign state of the Holy Roman Empire.

GOVERNMENT: Constitutional monarchy. **POPULATION:** 26,000. **ECONOMY:** Industry, finance. **RELIGION:** 92% Roman Catholic. **CLIMATE:** Alpine.

Except in two villages, Liechtenstein women may not vote or hold office. Though the prince may rule by decree in an emergency, everyday workings of the government are carried out by the prime minister, his four-member cabinet, and a 15-member elected parliament—elected by half the people. Twice in recent years a referendum on women's suffrage has been submitted to Liechtenstein men and been voted down, the last time by a wider margin than the first.

"It's unhealthy, unjust, and illogical that half the population has no vote," said the country's most prominent suffragette. Princess Gina, wife of the ruling prince, lit another cigarette. A slender, vibrant woman, she wore little makeup or jewelry.

"Why does it persist?" she mused. "Partly because of our traditions here; the women have never had a say. Also, many Liechtenstein men marry foreigners. People who grew up here complain, 'Why should a foreign woman have a say in our politics?' "

We were sitting in one of the hundred rooms of a 14th-century castle the princely family calls home. It squats on an outcropping 300 feet above the main street of Vaduz. In another wing, behind 12-foot-thick stone walls, lay the family's art collection, said to be worth 500 million dollars.

The princess went on: "It's an emotional thing for the men. They fear their influence will diminish. You must remember that until 35 years ago the country was agricultural, closed in. Then came this industrial revolution—very fast and very complete. The old attitudes haven't changed as fast. But the vote will come. It must. My husband, of course, is all for it."

Prince Franz Josef II Maria Aloys Alfred Karl Johannes Heinrich Michael Georg Ignatius Benediktus Gerhardus Majella von und zu Liechtenstein, Duke of Troppau and Jaegerndorf, Count of Rietberg, is a quiet and unassuming man. At 74, he has ruled for 42 years, longer than any living monarch save the Emperor of Japan.

The Liechtensteins are old Austrian nobility, made princes of the empire in 1608. They acquired the property that took the family name for its own around 1700, when Prince Hans Adam purchased the adjoining territories of Vaduz and Schellenberg from a bankrupt count.

Now, the twelfth Liechtenstein to rule since that time sat in a comfortable receiving room on the second floor of the castle. He is a tall man, slightly stooped, with a prominent mouth set under a wispy gray mustache. He spoke first of the past:

"We are not on the major routes where armies have passed down the centuries. It is not such a good thing to pass through mountains. It is better to cross the Rhine more to the north. We have not always escaped foreign invasions, however. During the war of Napoleon, the French and the Austrians passed through the country, but this was the last time.

"In World War II we were under the influence and protection of Switzerland, and like Switzerland we escaped Hitler. I met him once, in the beginning of '39. I think he was pleased that I spoke with him, so it was useful for the country."

A Friend in Need . . .

The close relationship with Switzerland has been central to Liechtenstein's success. From the middle of the last century until the end of the first World War the principality, while staying neutral, was tied to Austria. After the war, with Austria in shambles, Liechtenstein looked hopefully to its western neighbor. A postal treaty in 1920 and a customs treaty in 1923 cemented the relationship. There has been an open border between the nations ever since, and Switzerland has represented Liechtenstein in foreign capitals. The strong Swiss franc is the official currency.

"The people are quite satisfied with this union," said the prince. "It does well for our economic life. Our position without the union would be very weak."

Recently there has been criticism from Switzerland and abroad concerning Liechtenstein's holding companies, and several scandals have come to light. "It is not our duty to ask people if they have paid their taxes in other countries," said Franz Josef. "Our moral duty is only to see that fraudulent transactions do not take place. Unfortunately, these have occurred. We will now change some points of our laws governing the companies so that supervision will be much more strict."

One man who would welcome such reform is Martin Hilti, founder and president of Hilti AG, the General Motors of Liechtenstein. Out of the total industrial labor force of 6,000, Hilti employs 1,500, producing and selling direct-fastening tools and rotary hammer drills used in construction. Sales in 1979 totaled 871 million francs, four times the national budget.

Herr Hilti is concerned for the principality's international reputation. "If there

High-fashion guests *leave a wedding in the Alpine hamlet of Masescha. Until 1977 women who married non-Liechtensteiners lost their citizenship, while men did not. Though reform has lifted women over that hurdle, they are still denied the right to vote in national elections.*

*THIS IS LIECHTENSTEIN, at least a big chunk of it (**above**). Nearly half the population lives in the area shown, dominated by the capital, Vaduz. Barren patches, left center, mark the paths of "Rüfen"—rock slides—old enemies that once tumbled uncontained down the slopes of the Alpspitz and adjacent peaks. Also tamed is the Rhine River, which often flooded the valley in years past. Enjoying an evening ride by the river that borders close ally Switzerland are executives of one of the country's three banks (**left**). The banks' success (balance sheets totaling more than three billion francs) stems largely from holding-company deposits. "Without the holding system we would be merely a local business," says Emil Heinz Batliner, flanked by Wilfried Kaufmann, left, and Viktor Büchel. "But unlike Switzerland we are not a financial center."*

*Liechtenstein is, however, a philatelic center. The country's most famous export provides 10 percent of government revenue. The stamp at left recalls Liechtenstein's Olympic skiers. At Lake Placid last winter, 24-year-old Hanni Wenzel won a silver and two gold medals. Downhill racing of another sort keeps her busy in the off-season (**above**), as she leans into a corner on her 850-cc motorcycle.*

Valley mist rises toward the mountain village of Triesenberg,

gateway to Liechtenstein's ski slopes.

continue to be holding companies that are, shall I say, out of order, there can be no future for the country. They must be kept in bounds." But industry, he conceded, profits from the holding system to some extent.

"Of course industry profits from our business," declared Herbert Batliner, head of one of the largest law and trust firms representing holding companies. He happens to be among the country's wealthiest citizens.

"A large part of the state's income results from taxes paid by the holding companies," said the lawyer. "If one of Mr. Hilti's products out of thousands is bad, does that mean the whole industry is bad? Without the holding system, industries would not have grown so fast, because they and everyone else would be paying much higher taxes. The banks are profiting, lots of people are employed, stamps are needed."

Little Holes Mean Big Business

Stamps. When most people think of Liechtenstein (those who think of it at all), they usually think of postage stamps. "It's a great business," one resident confided to me. "The government commissions an artist or two, buys some paper with little holes in it, and makes a lot of money."

That description may be somewhat oversimplified, but the government does make money from stamps—some 20 million francs (12 million dollars) last year, or 10 percent of all revenue.

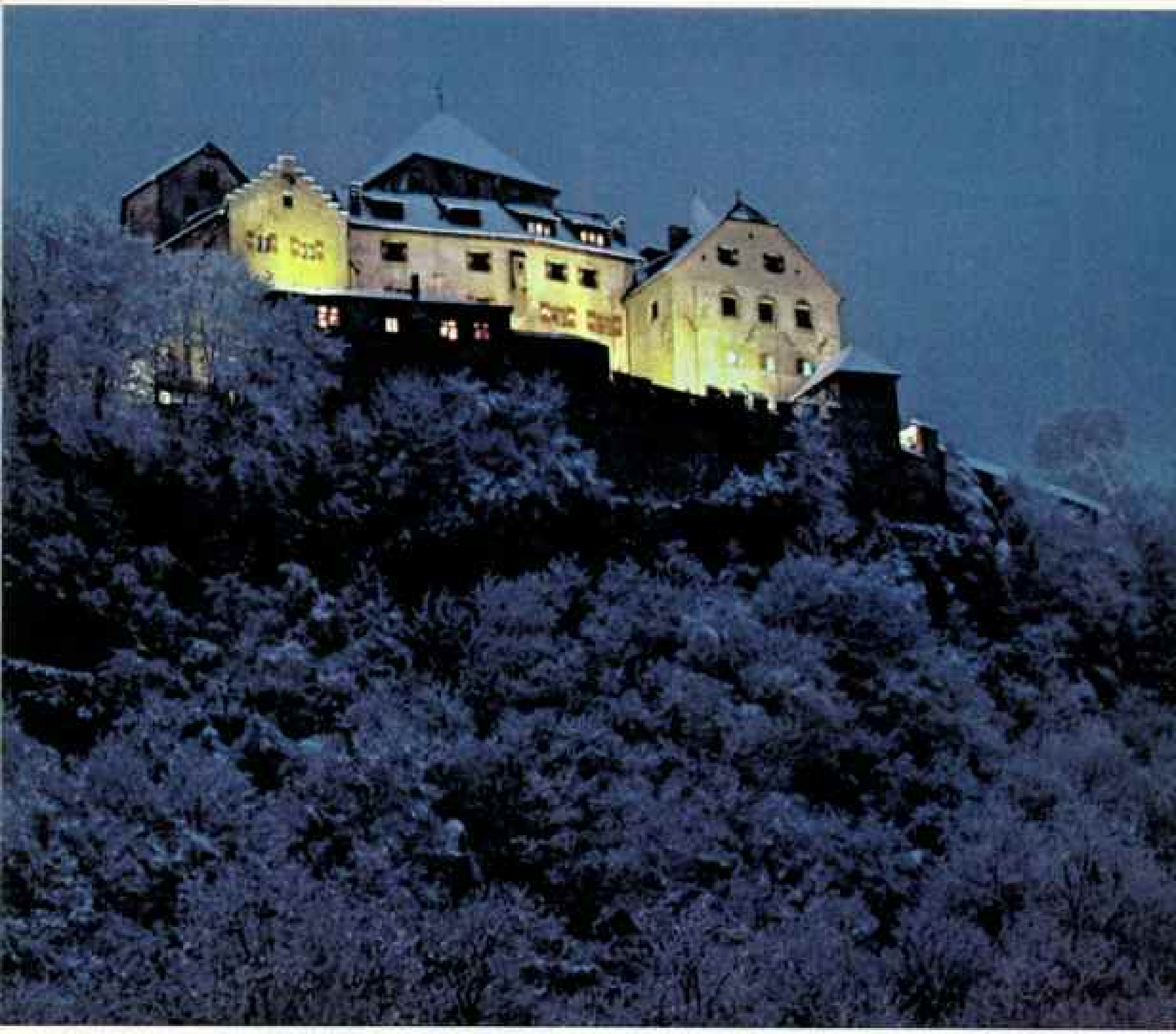
Collectors the world over prize Liechtenstein's stamps for their unsurpassed seven-color line engraving, and their scarcity. In 1973 (the government won't talk about more recent years) some seven million stamps were printed. That sounds like a lot until you know the same figure for the United States was 25 *billion*.

In his skylighted second-floor studio I spoke with 50-year-old designer Louis Jäger. "When one is an artist in this country, he necessarily ends up making stamps. The first one I designed was an abstract of the European Community, and the government thought it was too modern. After one day it was clear that the stamp would become valuable, and nobody was bothered about the design any more. Now that half-franc stamp is worth about 450 francs."

The man in charge of the stamp office is

Crowned by the state flag, *Prince Franz Josef II and his wife, Gina* **(right)**, *stand in the courtyard of their castle home. The hundred-room 14th-century fortress* **(above right)**, *overlooking Vaduz, is closed to the public. In one wing are stored the family's art treasures—one of the finest private collections in the world and reputedly worth some 500 million dollars.*

In another wing live Crown Prince Hans Adam, his wife, Marie, and their four children **(above)**. *The crown prince is bullish on his country. "The ills we have are minor ills," he says. "We are free and prosperous and enjoy political stability. The future to me looks rather bright."*



Hugo Meier. He is a happy man. "This business is good advertising for us," he said. "It's impossible to speak about our country without mentioning stamps. Last year we made nearly a million shipments to 83,000 subscribers. The stamp packaging alone, which we also produce, weighed 120 tons. The stamps themselves don't weigh so much, but," he added, smiling, "in Swiss francs they weigh quite a lot."

Weighing slightly more but getting less publicity are the 50 million artificial teeth that the Ivoclar company turns out each year, making Liechtenstein a mountain among molar producers. With administrator Karl Herfert I toured the hospital-clean plant, where workers in white lab coats were molding, tinting, baking, and inspecting teeth—not all pearly whites, however.

"We must not make them look too nice," said Herfert, "because nature is not so perfect. In this line, for instance, we have 35 molds and 19 shades, ranging from relatively white to yellow to very dark. For the cigarette smokers. People who care for their teeth don't lose them."

Unless, I thought, they overdose on sweets. Had he considered a merger with a Swiss chocolate factory?

A short laugh. Business was good enough, said Herfert. "There are people waiting to put these teeth in their mouths right now. We have sister factories all over Europe and new ones in Canada and Australia."

Several years ago the government decided that firms wishing to expand must do so abroad. The reason? A self-imposed labor shortage. Today 35 percent of the population is foreign born, and to preserve the national identity, the government refuses to let that percentage increase. Most of the foreigners are either Swiss or Austrian, but also represented are Germans, Italians, Greeks, Yugoslavs. And at least one American.

Percy Whitstone is 81 years old, though I would have guessed 65. After a career as a plant manager for Republic Steel in Cleveland, Ohio, he and his Liechtenstein-born wife, Lydia, retired to Vaduz and a deluxe apartment 17 years ago.

"If I'd stayed in America, I don't think I'd have lived," said Percy. "I was smoking, and the doctor told me I had an ulcer. I knew that already; at night it lit up and said, 'Eat at Joe's.' Well, as you see, I'm pretty fit now. I walk every day, and swim.

"I like it here. The country's nice and the people are nice. The only thing I miss is football. Those Cleveland Browns! I used to play the horses too. It's just as well they don't have 'em here, with the dollar so low. Let me tell you something: When I first came here, I changed a lot of dollars into francs, and I'm damn lucky I did.

"Have a glass of wine before you go. It's good French wine. I don't drink the local stuff. Can't stand it." Granted that taste is in the buds of the imbiber, few people would agree with Percy's opinion of the local wine.

Into the Princely Cellars

Introduced by the Duke of Rohan during the Thirty Years' War, the Blue Burgundy vines yield a dry, very pleasant wine. Thirteen hectares (32.5 acres) are devoted to viticulture, and of those the prince owns four. His vineyard, something of a national landmark, spreads up a sunny slope just outside

All the better *to eat the competition with, the Ivoclar company each year produces some 50 million artificial teeth (**above**). Though Liechtenstein must import raw materials, it leads the world in per capita exports. Of the country's 50 light-to-medium industries, the heaviest is Hoval, whose innovative home furnaces (**left**) can burn oil, gas, coal, and even wood. The nation's biggest firm, Hilti AG, headed by Martin Hilti (**right**), makes fastening tools used in construction. As the largest employer in a land where unemployment is unknown, Mr. Hilti notes: "We have never had a strike or even the threat of one. We don't know what they are."*

downtown Vaduz. In the low building adjacent I found Leo Oehri, Master of the Princely Cellars.

Fiftyish and stocky, he wore a knee-length bib-type apron, with shirt sleeves rolled above his elbows. He gladly showed me the modern pneumatic press from which the wine is pumped into tanks, filtered twice, then bottled, corked, and labeled.

"Let us drink a glass together," said Leo, "because we will never meet so young again." Hard to argue with.

Did he run into special problems in his work, I asked?

"Like any farming, you are depending on the weather, but especially with wine growing," he said. "And especially in this valley we depend on the *Föhn*." That warm wind from the south not only ripens grapes but also is commonly thought to alter behavior, resulting in increased nervousness, arguments, and even suicides. On the other hand, said Leo, "Farmers are getting nervous when the Föhn *isn't* coming."

Liechtenstein's farmers have something else to be getting nervous about: shrinking croplands. Adolf Real, a young agricultural specialist, told me:

"Thirty years ago we had 5,000 hectares under cultivation; now we have 3,200, and that is decreasing. We still produce about 70 percent of the milk we consume, but we must import 70 percent of all other food.

"Each village tries to increase the area where the population can live. But the good places to build houses are also the good places to grow crops. So for the future we must either protect the agricultural land, or lose it."

A Real Family Affair

Adolf's family owns a 2.5-hectare farm behind the junior high school in Vaduz. Most of its vegetables, I learned, end up on the tables of the Restaurant Real, owned by Adolf's Uncle Felix.

Felix Real has won virtually every culinary award. His early training included a stint at Maxim's in Paris. "My kitchen is my life," he said. "It is also my hobby."

We were talking in a small lounge just off the main dining room, which is tastefully furnished in green leather, with picture windows that look out on the capital.

"I started alone in my kitchen; now I have twelve cooks and six apprentices," continued Felix, "but I still personally supervise the quality. Any new recipe, I first cook myself. We have the very best food, and also the highest prices." It's true. Dinner for two, with wine, can run $150 or more. The place is full every night.

So are the dozen guest rooms above the restaurant. Since vacancies are rare, patrons inquiring about lodging are cordially directed to yet another Real enterprise, the Sonnenhof hotel, run by brother Emil and his wife, Jutta.

Easily the country's finest hotel, the Sonnenhof sits on a hillside above Vaduz, half a mile from the castle. Some rooms have terraces, and nearly all have views of the Rhine and Swiss Alps beyond.

An expert chef in his own right, Emil cooks only for guests of the hotel. Others are cordially directed to the Restaurant

Real. It's a cozy arrangement, but even the Real brothers couldn't feed and house all 73,657 of the overnight visitors to Liechtenstein in 1979.

"We have around a hundred hotels and restaurants," said the country's director of tourism, Berthold Konrad. "But the vast majority of our visitors come through on bus tours, spend only a few hours and a few francs, and leave."

Some of the newest hotels entice tourists to stay, not in Vaduz but several thousand feet higher in the alpine hamlet of Malbun. An up-and-coming ski resort, Malbun lures such celebrities as Britain's Prince Charles and Liechtenstein's own champion skiers.

At 24, Hanni Wenzel is a national heroine. In the Lake Placid Olympics last winter she dominated the women's alpine events, capturing one silver and two gold medals.

Tourism director Konrad is a fan. "There is no doubt," he told me, "that winter business has been influenced by our skiers."

And what, I asked, does Liechtenstein offer tourists the rest of the year?

Warming to his subject, Berthold replied: "We have here in the heart of Europe an island where people can relax and enjoy nature. Of course we have the castle and the art museum, and stamps, and good food, but we also have clean air and mountains, with limitless walking possibilities."

The most famous "walking possibility" is the Fürstensteig, or "prince's path," built in 1898 to connect with Austria. The dizzying trail is hewn out of the soft rock face of the Drei Schwestern, "three sisters," the ridge that towers above the capital.

In early June, with the path not yet officially open, I joined Xaver Frick for an inspection. He is president of the Alpenverein —Alpine Club—whose members voluntarily maintain the mountain walks. A wiry 68, Xaver has startling blue eyes set deep amid the creases of his leathered face. He wore the traditional knickers, and his tanned calves rippled.

He talked as we wound single file along the rubble-strewn trail. "Once," he said, "I was leading a walk here and stopped for a moment to wait for a girl who was lagging behind. I heard something and looked up. A huge rock was falling straight toward me.

"It missed me though," he added unnecessarily, "and went crashing on down the mountain." Despite that reassurance, I kept an eye out for surprises from above.

We had gone perhaps three miles when the path took a sharp right turn along a north face. We could go no farther. A solid wall of snow blocked the way. On the trek back we stopped to rest at a spot where the trail widened onto a promontory. Far below us the Rhine cut through the green-carpeted valley like a bright silver blade.

"I find peace here," Xaver said. "For 48 years I sat in an office. Now for my health, my pleasure, and my peace of mind, I come to the mountains."

Where Less Is More

One evening shortly before I left the principality, I was sitting at a sidewalk café on the main street of Vaduz talking with Florin Hoch, a young engineer. He had just returned from two years in the Costa Rican jungle. Sent there by the Liechtenstein Development Service, the nation's miniature Peace Corps, he had helped build a radio station for the Indians. Three hundred feet above us, the floodlit castle hovered like an apparition.

"I signed up because I wanted to go abroad," Florin said. "This country is very small, and I needed to find my own person. I got 800 francs a month. It wasn't really a living, but there are different kinds of livings, I think. This work," he said, touching his chest, "was a living in here."

Did he think it interesting that his tiny country had such a program?

"Liechtenstein is independent," he replied. "Larger nations have programs to help other countries, so why shouldn't we?"

And then he said: "Yes, we are a small country . . . small and big at the same time. Do you know what I am trying to say?"

I did. He had said it well. □

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The Honda Civic 4-Door Sedan.

With seats so comfortable they would be more at home in your living room, our newest Civic is a true sedan in every sense.

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Naturally, being a Honda, the new Civic Sedan has front-wheel drive and a transverse-mounted 1500 CVCC® engine. So your passengers have more foot and legroom.

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With 5-speed, a gallon of gas takes you an EPA estimated 34 miles and 44 highway miles.

Use 34 mpg for comparison. Your mileage may differ depending on weather, speed and trip length. Actual highway mileage will probably be less. And figures for California will be lower.

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*1979 independent mail survey of 37,495 APA members with 11,931 responding.

DOYLE DAMMON

Tracking the trade in illegal wildlife

DAVID FALCONER

ON THE TRAIL of wildlife smugglers, a NATIONAL GEOGRAPHIC team made some unusual acquaintances. At an animal dealer's compound in Bangkok, a python wraps author Noel Grove in a sociable embrace. At the San Diego Wild Animal Park, a haven for animals impounded by customs agents, photographer Steve Raymer makes friends with a serval cat. In jungles and ports on six continents, the team spent months studying the multimillion-dollar illicit trade in wild animals and their products. Share the findings in next month's issue; nominate friends for membership in the National Geographic Society.

NEW DATSUN 280-ZX.
LUXURY IN THE FAST LANE.

Remember yesterday's image of a sports car? It had to be as noisy as a foundry. Ride like a rock. And be as spartan as a monk's cell.

Well, the Datsun 280-ZX has turned it all around. Up above you see its lavishly appointed interior. Every luxury has been well attended: from power windows to climate-control air conditioning. And for the first time, an optional T-bar roof is available on the roomy 2+2.

Even long-time owners of Cadillacs and Mercedes have seen the wisdom of opting for a sleek new Z-Car. It gives them all the luxury they're accustomed to, plus the mileage and range they need today.

This year's 280-ZX boasts a 10% increase in horsepower, just for the thrill of it. Yet this fuel-injected, 6 cylinder OHC powerhouse delivers [21] EPA estimated mpg, 32 estimated highway mileage with 5-speed transmission. Based on these figures, an estimated MPG range of [443] miles and a highway range of 675 miles await you. Use estimated MPG for comparison only. Your mileage and range may differ depending on speed, trip length and weather. Highway mileage will probably be lower. California highway estimates are slightly less.

Buy or lease one today. And get to know what AWESOME is. The Datsun 280-ZX is another example of superior workmanship from Nissan Motor Co., Ltd., a worldwide company whose name stands for quality.

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wider applications.

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Depending on your subject, you can choose from six independent exposure modes to achieve the results you want.

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2 Aperture-Priority: Control the area in focus by selecting the lens opening for the effect you want. The A-1 matches with the right speed.

3 Programmed: When you need to shoot fast, just focus. The A-1 will select *both speed and aperture* for great results.

4 Stopped-Down: For extreme close-up or specialized photography, a bellows, a microscope or almost anything can be attached to the A-1. It's still automatic.

5 Flash: Totally automatic flash photography, of course, with a wide variety of Canon Speedlites to choose from.

6 Manual: Yes. For those times when you absolutely want to do it all yourself. To experiment. To explore the possibilities.

Shutter-Priority 1000 5.6

There are over forty fine Canon lenses ranging from Fish Eye to Super Telephoto, plus accessories to meet every need. If you can't photograph your subject with a Canon A-1, it probably can't be photographed.

From the sophistication of its LED viewfinder display, to a ruggedness that allows up to five-frame-per-second motor drive, the Canon A-1 represents an incredible technology. At a price that makes owning one a definite possibility.

Canon A-1

THE NIKON FE
A CAMERA TO STIR YOUR EMOTIONS

The automatic Nikon FE is the creative camera par excellence – the embodiment of Nikon sophistication.

Its precise meter system sets correct exposures with uncanny accuracy, automatically. Or, just turn a dial for complete manual control. Either way, the pictures are razor sharp...pure Nikon.

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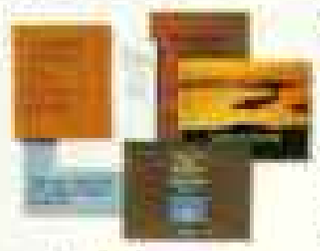

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OH WHAT A FEELING

Corolla Tercel 2-Door Sedan shown. Manufacturer's suggested retail price. Actual retail price may vary. Price does not include tax, license, transportation, California emissions, optional or regionally required equipment.

TOYOTA

The 1981 Toyota Corolla Tercel. It's a blessing. Not a burden.

When the going gets tough, the front-wheel-drive Corolla Tercel gets going. And pulls you through mud. Ice. Snow. But unlike some front-drives, you'll be glad you own a Corolla Tercel even when the road is clear.

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The 1981 Corolla Tercel. Drive one and you'll want to have this front-wheel-drive Toyota pulling for you!

A CAR THAT PULLS ITS OWN WEIGHT. THE FRONT-WHEEL-DRIVE COROLLA TERCEL.