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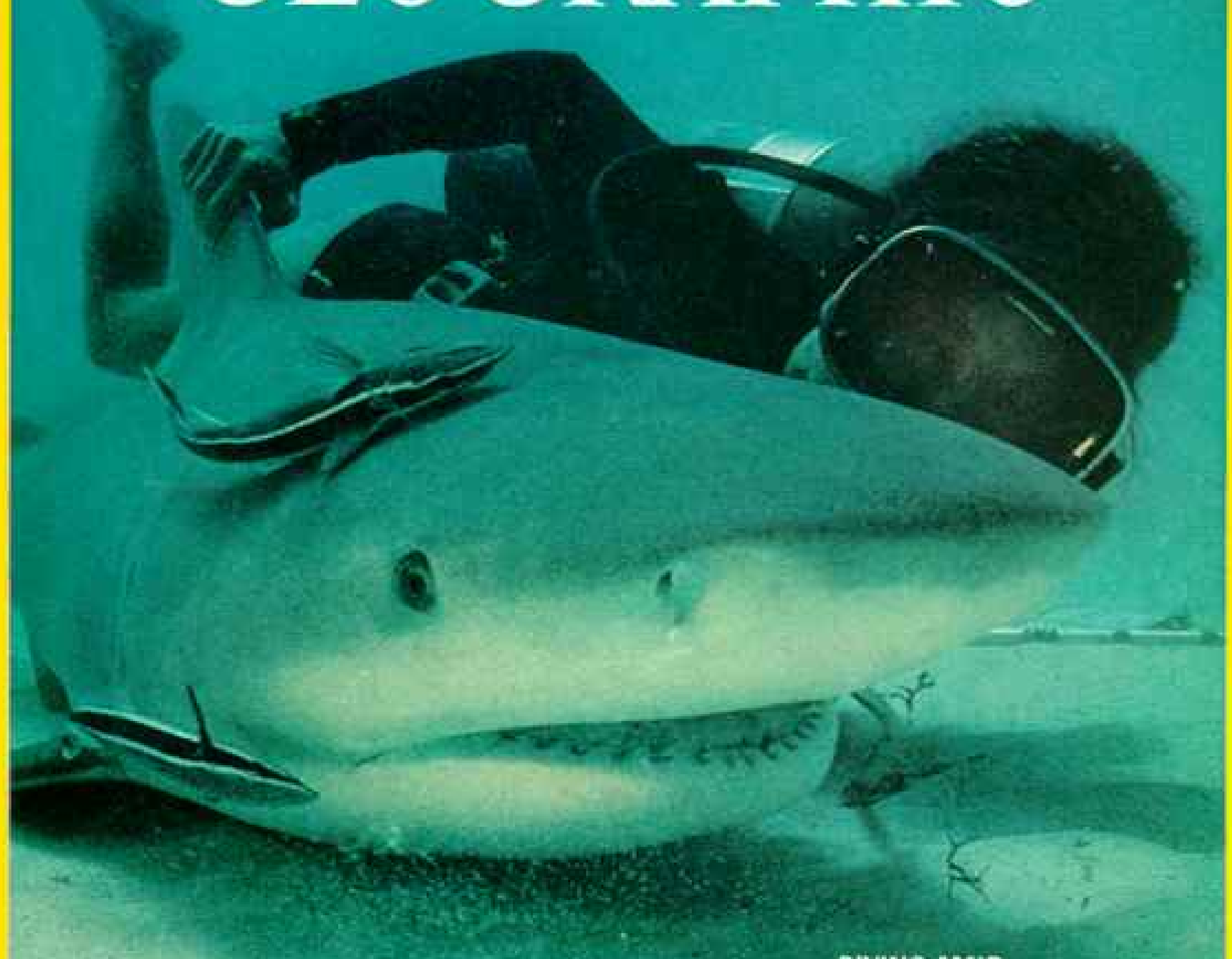
NATIONAL GEOGRAPHIC



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

THOSE OF US who live with deadlines seldom have time to consider the stories behind the stories in any given issue until an incident, sometimes tragic, compels us to. In this case the incident lies behind the quiet aerial photograph of the Great Salt Lake that appears on page 452. Photographer Jim Amos had already made a picture of the area, but he was dissatisfied with the color tones. He and helicopter pilot Dale Hefter went up to try it again. At 2,000 feet a control to the main rotor blade failed; pilot Hefter fought to bring the stricken ship down safely, but it crashed in the lake. Jim was miraculously thrown from the door with a badly shattered leg. Mr. Hefter lost his life.

Jim spent six weeks of initial recuperation in an Ogden, Utah, hospital. When he was discharged, on crutches, his first act was to reshoot the photograph from a fixed-wing aircraft. "It was go then, or never again," he said.

The point is not to underline a brave performance, but to indicate the sometimes hazardous effort required to produce this monthly journal.

• Personally I cannot imagine a more perilous situation for a diver than to be lodged in a narrow passage with a requiem shark (of the family that includes the man-eaters), but that is the situation shown in the dramatic sequence on pages 576 and 577. Anita George, a student, was assisting Dr. Eugenie Clark in studying the "sleeping" sharks found in underwater caves off the Yucatán coast, when the great fish lunged at her. Anita fended off the attack with her clipboard. Photographer David Doubilet and film photographer Ramon Bravo captured a memorable moment, and Dr. Clark's team with their trusty clipboards brought back a remarkable story.

• Because the GEOGRAPHIC has always insisted that its writers and photographers report by doing, Fred Ward went hunting in the north woods with Canada's Cree Indians. He shortly became lost in that trackless wilderness and wondered if he would ever see his family again. Needless to say, he was found, and the experience helped him document at firsthand a way of life that appeared doomed by plans for one of the world's most ambitious power-development schemes.

As Fred was completing his coverage, the Crees and the Province of Quebec reached an agreement that promises to protect the Indians' hunting culture while permitting the badly needed power program to proceed.

• Peter White, whose vivid report on Tanzania begins on page 474, was discomfited when, as an American journalist, he attended an anti-American rally in Zanzibar, but his greatest consternation came after the trip. Finding that he had to cross the border into Kenya to charter an airplane, Peter did not hesitate to do so. Upon his reentry, however, he realized that he had carried out, and back, 600 Tanzanian shillings; regulations allow only 100. A customs officer seized from him not only the shillings but also a sizable amount in U. S. dollars.

"How will I explain this to the audit department?" Peter worried—with good cause! But weeks later those dollars were returned. In any event, it's a good story—and so is the one he wrote.

Gilbert M. Grosvenor

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THE NATIONAL GEOGRAPHIC MAGAZINE VOL. 147, NO. 4

April 1975

COVER: *Courting danger for science, Dr. Clark examines a shark hooked by commercial fishermen off Mexico's Yucatán Peninsula. In three expeditions, she tries to learn why some otherwise dangerous sharks enter caves and become uncommonly peaceable.*

By CHARLES McCARRY *Photographs by JAMES L. AMOS*

Utah's

THE WASATCH RANGE, a mighty western wall of the Rocky Mountains, rises like a battlement out of the backyards of Salt Lake City. Capped with snow, ribbed with granite, drained by icy torrents that smell as clean as dew on the morning of creation, the Wasatch is an awesome sight.

On certain days storms move over the mountains like anger on the brow of a prophet. On others a special sunlight separates and intensifies the alpine colors until they seem to explode in the eye.

West of the mountains lies Great Salt Lake, and not many miles south of it, freshwater Utah Lake. Between the water and the Wasatch, in a chain of verdant valleys nearly 150 miles long and 15 wide, lies an oasis in what once was forbidding desert. Those who live there call it the "Wasatch Front."

Mormon pioneers, who created this oasis after fleeing religious persecution in the Midwest in 1846–47, called it Zion. They and their descendants have labored mightily, under Brigham Young and his successors at the head of the Church of Jesus Christ of Latter-day Saints, to establish the kingdom of God in the shadow of the mighty mountains.

This objective has not yet been achieved. But a remarkable civilization, giving a particularly American bloom to music and dance, scholarship and science, industry and agriculture, faith and good works, has taken root in soil that a less believing people than the Mormons, or a less energetic one, might have thought too sour for life. At its center, geographically and in every other way, is Salt Lake City, a spanking clean metropolis of more than half a million.

At the southern limit of the Wasatch Front

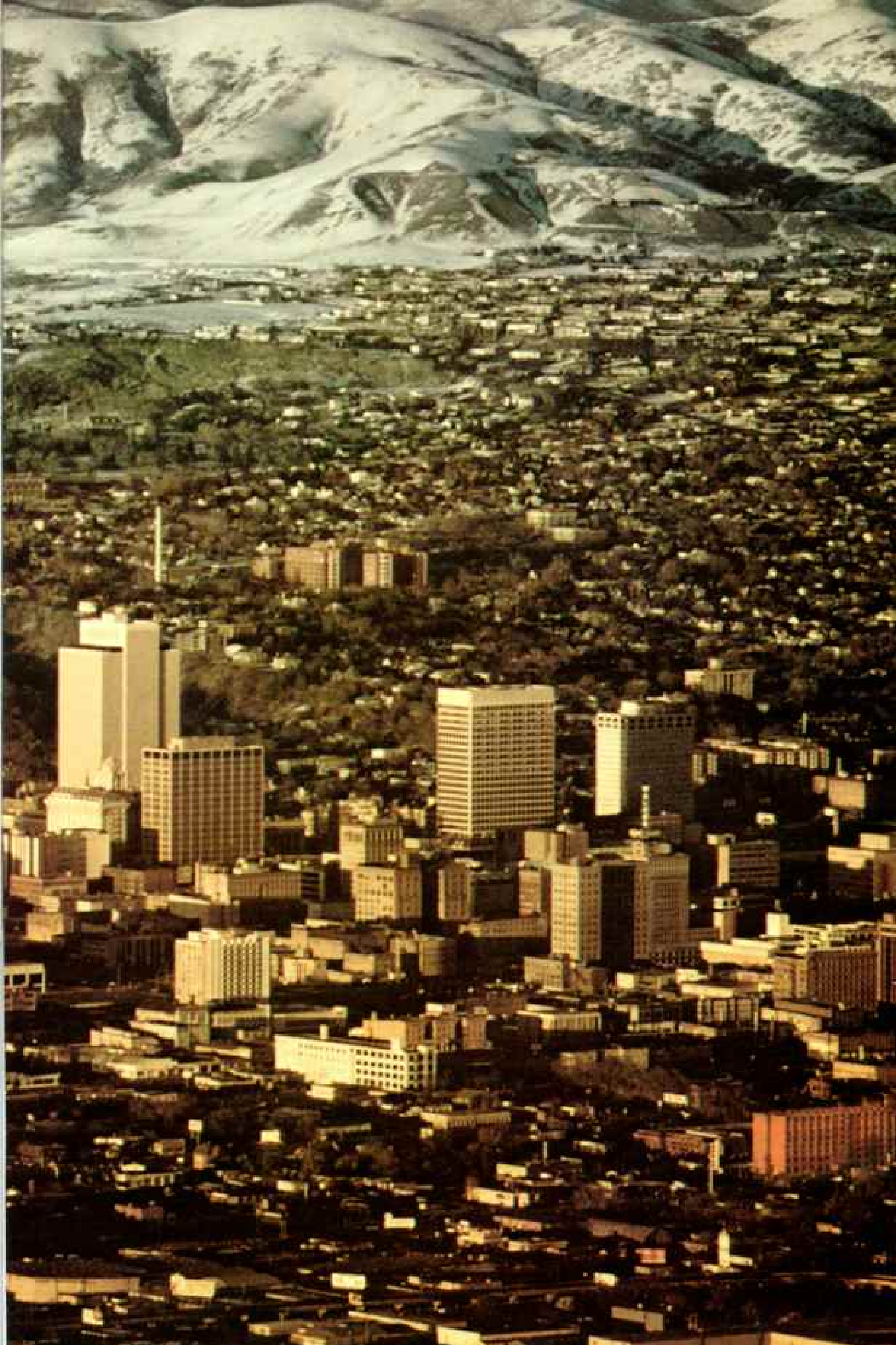
Geared up for Old Glory, fifers and drummers play a mobile concert on Independence Day. Beyond lies Heber Valley, part of a mountain and desert Eden nurtured by Utah's Mormon pioneers. Their descendants still cherish the values of their forebears: God, family, nation.

NATIONAL GEOGRAPHIC PHOTOGRAPHER

Shining Oasis

Gleaming hub of the Mormon world, Salt Lake City nestles beneath snow-robed Wasatch peaks on a winter day. Sun-gilded tower of the new church office building, nerve center of global operations, rises above the many-spired Temple, spiritual center of the faith, and the loaf-shaped Mormon Tabernacle. The drumlike Salt Palace hosts shows, sports events, and conventions. Utah's domed Capitol overlooks the downtown area. Born of Joseph Smith's

revelations in New York State during the 1820's, Mormonism gained followers but encountered persecution. After a mob slew Smith in Illinois, Brigham Young became leader and sought a new domain in the West. A monument at the foot of the Wasatch records his approval of the Utah site (**above**). Today Mormons comprise two-thirds of the state's population and hold most public offices.



Greening a desert, the Mormons diverted mountain streams to water dry but mineral-rich soil. Large families and steady immigration fed spreading settlements, and in 1896 the Territory became the State of Utah.

STATE AREA: 84,916 sq. mi. **POPULATION:** 1,173,000. **ECONOMY:** Aerospace industries, steel, food processing, copper and oil, livestock. **MAJOR CITIES:** Salt Lake City (pop. 186,000), capital; Ogden; Provo. **CLIMATE:** Dry, hot in basin, cool in mountains.

lies Nephi, one of several hundred communities founded under Brigham Young, whose genius for things of the spirit and things political is still so keenly felt in Utah that no one I met, from his successor at the head of the church to the man in the street, ever called him anything but, simply, "Brigham."

At the northern end of the front are Brigham City, and, a little beyond, the community of Tremonton. Between the northern and southern limits lie Ogden, the second largest city in Utah, and Provo, on the shores of Utah Lake, where Brigham Young University, a cluster of clean-lined buildings and 25,000 clean-cut young men and women, comprises the largest church-operated university in the world.

The university was founded as Brigham Young Academy in 1875, two years before Brigham's death. When Brigham called Dr. Karl G. Maeser to serve as principal, his charge to him was: "I want you to remember that you ought not to teach even the alphabet or the multiplication tables without the spirit of God. That is all. God bless you. Good-bye."

More than in most places, the civilization of the oasis grasps the past: "When I was a child, every neighbor was a pioneer who had walked across the plains to this place," Kate B. Carter, president of the Daughters of the Utah Pioneers, told me. More than most people, Utahns believe that what they have done has been good, and that the future holds more goodness.

Spencer W. Kimball, twelfth president of the Church of Jesus Christ of Latter-day Saints, gave me his thoughts on this subject when we were talking about the way in which the Mormon pioneers, and the outsiders they welcomed into their midst, had made the land bloom.

"There's a story that when Brigham and his vanguard arrived here in 1847, only one tree was growing in our valley," President Kimball said. "All the thousands of trees that grow here now were planted by the Mormon settlers. It's good soil. It seems that it was prepared for us."

The Mormon scholar Dr. Melvin Smith, head of the Utah State Historical Society and a great-grandnephew of Joseph Smith, added a footnote to this. "The early Mormons,

heading into the wilderness in their thousands, believed they were fulfilling the purposes of the Lord," Dr. Smith said. "For that kind of people, there is no defeat."

Joseph Smith, after experiencing visions, produced the Book of Mormon, translated from golden plates he revealed he had found in 1823 near his father's farm at Palmyra, New York. This new scripture told of Christ's second coming in the New World, rejected the doctrine of original sin, and differed in other important respects from the dicta of other churches. By the time he was 24, Joseph Smith was attracting a growing following.

"Saints" Seek Peace in a Wilderness

Smith led his followers out of New York to Kirtland, Ohio, and in 1833 began to build the first temple of the church there. Soon he and the early Mormons moved on to Missouri, and later to Illinois where, in 1839, they established the community of Nauvoo. Entirely under the jurisdiction of the new church, this town grew to be the state's largest, with a population of some 12,000. Here, as always, the Mormons made the land more fertile and life more full.

But the new beliefs of the Mormons, including the practice of polygamy, and perhaps their enviable success in agriculture and commerce, created hostility in some of their neighbors. And Mormons do set themselves apart, calling themselves "saints" and all others "gentiles." As one official of the church told me with a smile, "The first gentile governor of our state [Simon Bamberger] was a Jew!"

On June 27, 1844, Joseph Smith and his brother, Hyrum, who had been jailed at Carthage, Illinois, were killed by a mob. Brigham Young succeeded Smith as the head of the church. In February of 1846, exhausted by the antagonism of their neighbors, the Mormons followed Brigham across the frozen Mississippi and began their 1,350-mile trek across the empty spaces of America. On July 21, 1847, the vanguard of the first party of 148 pioneers arrived on the mountain above the valley of the Great Salt Lake. Three days later, Brigham Young, traveling on a pallet in a wagon because of "mountain fever," raised himself up to gaze over the new land at the mouth of what is now Emigration Canyon.

Later, Brigham was to write, "The spirit of light rested upon me and hovered over the valley, and I felt that there the saints would find protection and safety." Much later, his companions were to remember that he said, "This is the right place." The words "this is the place" have woven themselves into the fabric of Mormon lore. Today a colossal monument (page 442), sculpted by Brigham's grandson Mahonri Young, commemorates the place and the day on which Brigham Young looked out over the desert and envisioned the future of his people.

Potatoes and corn had been planted even before Brigham arrived. Within a few days he had laid out a city two miles square, with the main street on a precise north-south axis, as in all Mormon towns. He called it "City of the Great Salt Lake." Streets were drawn on a grid, in blocks of ten acres with the street width to be eight rods and the sidewalks to be twenty feet.

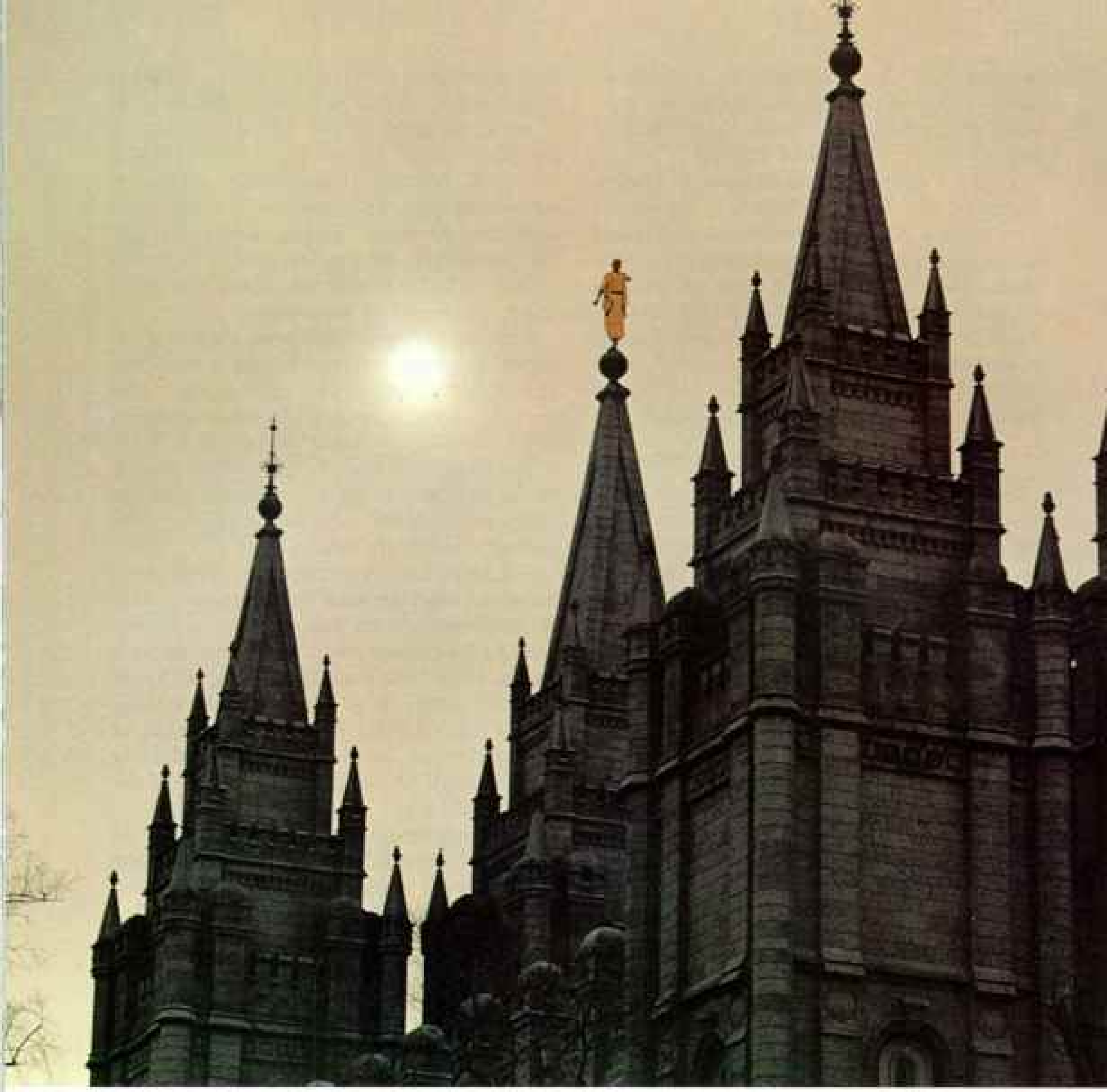
Salt Lake City preserves most of these dimensions, together with the ingenious system of numbered streets that permits a visitor, once he has penetrated the mystery of such addresses as "300 East 25th South," to know precisely where he is. In this case he is three blocks east of Main and 25 blocks south of Temple Square, geographical hub of the city and the heart of the spiritual kingdom of the Mormon Church.

The great Temple, the highest of its soaring spires surmounted by the golden figure of the angel Moroni, Joseph Smith's heavenly messenger (following page), was built from granite quarried in Little Cottonwood Canyon, on the city's southeastern outskirts.

"Brigham ordained its construction on July 28, 1847, four days after his arrival," President Kimball told me. "He struck the ground with his cane and said, 'Here will be the temple of our God.' The indentation was recorded, and upon it the cornerstone of the Temple was laid. The structure was completed in 1893." No non-Mormon, and in fact only "worthy Mormons" who adhere strictly to the laws of their religion, may enter.

New Life for a People and a Land

In the next days the saints were rebaptized in the waters of a creek that flowed through their new city. And then the waters were diverted to irrigate the desert and to prepare the land for the thousands who came afterward. Today about four-fifths of Utah's total population, or 900,000 people, live in the Wasatch Oasis, nearly 70 percent of them members of the Church of Jesus Christ of



Latter-day Saints, which now has 3,321,000 adherents over the world. In Mormon tradition, the towns of the oasis lie half a day's wagon journey apart, all with their heads to the north, their feet to the south. "And their eyes to heaven," as I was often reminded.

Though the Mormons brought the seeds of organized society to the oasis, they were not the first to arrive. An Indian culture was established there at least 11,000 years ago, and some 15,000 Indians, mostly Navajos and Utes, remain in Utah. About the time of the American Revolution, the first recorded incursions by Europeans began to take place. An expedition from the Spanish settlement in Santa Fe, led by Friars Francisco Atanasio Dominguez and Silvestre Vélez de Escalante, discovered Utah Lake. Jim Bridger, the legendary mountain man, may have been the first outsider to see the Great Salt Lake, in 1824 or 1825. It's said he scooped a handful of its briny water into his mouth, spat it out, and cried, "Hell, we are on the shores of the Pacific!" Many famous trappers, including Kit Carson, saw the lake in early days. Jim Clyman circumnavigated it in 1826 and established that it had no outlet. John C. Frémont explored it in 1843, and nearly took an unexpected swim in it when his India-rubber boat sprang a leak in midlake.

Then as now, the Great Salt Lake was a curiosity. Today it is some 70 miles long, 20 miles wide, and about 32 feet deep at its deepest point. Its waters average five times as salty as ocean brine. But the Great Salt Lake is just a remnant—a tag end of prehistoric Lake Bonneville, which covered an area twice the size of present-day Lake Erie and reached depths of more than 1,000 feet.

The shorelines of this ancient freshwater sea can be seen on the face of the Wasatch Front, in a series of "benches" that climb up from the 4,000-foot-high valley floor. Where vanished life forms drank at water's edge 100,000 years *(Continued on page 452)*

Reaching heavenward, spires of the Salt Lake Temple point the way for Mormons seeking eternal family togetherness. One pinnacle bears the statue of the angel Moroni, who according to Mormon writ led founder Joseph Smith to the Book of Mormon in 1823. Divine guidance, members believe, now is transmitted through Spencer W. Kimball (**top**), their 12th president.

In the world's largest genealogical storage facility, beneath a mountain in the Wasatch, Mormons consult microfilmed records of family trees. The faithful may bring deceased ancestors into the fold by proxy baptisms.

"**There is no music in hell,** for all good music belongs to heaven." So declared dynamic Brigham Young, who recognized "...the desire for and necessity for recreation..." among his followers. Thrice-blessed are today's Utahns, with ready access to excellence in choral and symphonic music, and the dance.

Gripped by musical passion, Richard Condie, director of the famed Mormon Tabernacle Choir for 17 years until his retirement last July, attempts to draw similar emotion from his charges during rehearsal (**facing page**). The 375-voice choir serenades millions on weekly radio broadcasts. Its members serve without pay. Mr. Condie attributes Mormon success in the arts in part to early settlement in the basin: "Our people had to make their own entertainment."

A majority of the professional performers are native Utahns. Wielding a pencil as well as a bow, a rehearsing bassist (**right**) notes a musical suggestion from Maurice Abravanel, conductor of the Utah Symphony for 28 years. Enthusiasm by audiences often makes up for their lack of musical background, says William Christensen, a founder of the renowned Ballet West (**below**). Acquaintance with the arts starts with the young. State allocations allow the symphony and ballet to give regional performances for high-school classes throughout Utah.

Celebrated choir and organ draw throngs to the Mormon Tabernacle. All visitors

find welcome here, in contrast to the Temple, which is open only to dutiful followers.

ago, young families now barbecue steaks and watch the sunset from the terraces of development homes built on the benches.

The encroachment of the cities, and of industry and sport, on the mountainsides and canyons is a matter of concern to many. Chandler St. John, U. S. Forest Service supervisor for the Wasatch National Forest—which covers a million acres of the Wasatch Range—is among the worriers.

"This is fragile land," he told me, as we stood on a summit above Little Cottonwood Canyon, gazing down on a handsome new ski resort called Snowbird. "When you scar its surface, it doesn't heal in a season, the way it might in my native Vermont. It may take years, even decades, for this country to recover from ill use. Still you can't have a policy that says there should be no human footprint beyond a certain place. We have some of the loveliest scenery, some of the best skiing and hunting and fishing in the world—and all that should be accessible to the people."

To Skiers, Wasatch Means Paradise

Nowhere in North America is spectacular skiing more accessible than in the canyons of the Wasatch Front. As St. John and I chatted, we were within a 15-minute drive of the Salt Lake City outskirts, and yet we were enfolded in a mountainscape that had changed little since the first mountain man clambered over the Rockies' spine.

There are a dozen well-developed ski resorts within an hour's drive of Salt Lake City International Airport; most lie much closer. Their base elevation, with a few exceptions, is above 8,000 feet, and the ski season lasts from November through April. "When there's been little snow elsewhere in the West, we've often had waist-deep powder on the Wasatch Front," St. John told me.

Great Salt Lake's dual complexion paints a controversy (**left**). An earthen railroad causeway restricts the circulation of freshwater inflow, diluting the salinity of the south side while the lighter-colored north side approaches saturation. Thus evaporation ponds along the north shore yield rich harvests of potassium, sodium sulphate, table salt, and magnesium chloride (**right**), while the recovery of minerals in the southern portion is less rewarding. The salty waters of both sides harbor brine shrimp and brine flies in vast numbers.

"**Greatest snow on earth,**" boast Utahns of their ski slopes. Located far from coastal moisture, the state's resorts receive generous quantities of the dry powder that skiers love. Less than an hour's drive from the Salt Lake City International Airport lie resorts like Snowbird, where skiers weary of the slopes can find refreshment in a heated pool (**right**).

After a helicopter lift from Snowbird to a little-traveled summit, two skiers braid a deep trail through powder near Alta (**facing page**), miles from schussing traffic. Park City Resort, on the eastern slope of the Wasatch, can handle 10,000 skiers an hour in peak season, using nine lifts and some fifty miles of ski trails, including one slope floodlit for night use (**below**). Clusters of new condominiums house the downhillers, adding a modern look to what began as a mining community. When the price paid for silver fell, the United Park City Mines Company founded the ski resort in 1963—and hit pay dirt. Ironically, mining interest has revived recently. Construction of a mill for processing silver, lead, and zinc may open the way for a two-tiered rush on the 107-year-old town.

Much of the ski country in the high Wasatch is not for tyros. At Alta, the runs start as high as 11,000 feet. St. John pointed out a vertiginous run called the High Rustler. "My kids ski that," he said drily. "I think too much of my own bones to try it."

A good skier can cross the ridge from Little Cottonwood Canyon, enter the Brighton ski area in neighboring Big Cottonwood, scale the Wasatch crest, and then schuss down to Park City, a reconstructed mining town on the eastern slope. Until he sits down in one of Park City's make-believe hell-hole saloons with a hot buttered rum, he will never be below 8,000 feet. It's an exhilarating sweep of country.

As enthusiastic as he is about ski resorts, Chandler St. John fears that unthinking development of any kind will damage the capacity of the soil to hold water, or pose threats of forest fire. "I'm afraid people have forgotten what flood and fire can do," he said. "I hope it won't take a catastrophe to remind them."

The possibility of another kind of catastrophe—earthquake—is ever present along the Wasatch Front. A major fault zone runs along the whole range, and passes right through Salt Lake City.

Brine Lake Yields a Valuable Harvest

The Great Salt Lake became a dead sea when Lake Bonneville fell below the level of its outlet. Salts brought in by feeder streams such as the Jordan River, which connects the Salt Lake to Utah Lake, could not escape, and the salinity gradually rose to about 20 percent—some six billion tons of the stuff. At many places on the bottom there is little free oxygen; yet the lake sustains brine shrimp, brine flies, and various algae. A railway causeway constructed across the northern part of the lake in 1959 has made the north end saltier and the south end fresher (page 452).

Frank G. Colladay, manager of the Morton Salt Company's plant on the south shore of the lake, told me that his installation takes about 150,000 tons of salt out of the lake in a typical year; the total harvest by Morton and four other firms is half a million tons annually. Other companies extract potash and magnesium, and plans have been approved for offshore oil drilling.

Because the lake is shallow, even a small change in depth can cover or uncover miles of flat shoreline. In recent years the lake has been on the rise. Bob Silver, manager of a beach and marina on the south shore, has watched 500 of the 750 acres of shoreline he leases disappear beneath the waves since 1963. If past lake patterns hold true, the waters should begin to recede within five years.

Apart from giving Salt Lake City its name, the great inland sea has played little constructive role in the life of the community. Its brine corrodes boat metal and stings the eyes. In summer its biteless brine flies emerge in annoying hordes. I met many people who assured me that even a nonswimmer would float on the surface of the lake, but I shunned diving into that bitter brine.

Into the Miner's Labyrinthine World

I did plunge deep into the earth to explore the geological and human past of the Wasatch Front. Friends in Salt Lake City arranged for me to visit a complex of mines, once famous for the silver they produced but now valuable for lead and zinc as well. The mines are being reopened by Park City Ventures, on the eastern slope of the Wasatch Range.

Manager Niles Andrus met me at 7 a.m. outside his office. Miners in yellow slickers and hard hats waited to enter the mouth of the tunnel, as a weak springtime sun nibbled a thick scarf of mist wrapped round the throat of Treasure Hill.

"The first discoveries at the Ontario Mine were made in 1872—silver, of course, and lead and zinc," Andrus told me. "George Hearst, father of William Randolph Hearst, was the first to develop that mine. We've consolidated the Ontario Mine with several others, including the Silver King. We hope to start mining in April 1975, and we have 110 men getting the mine ready. There's a lot of high-grade ore still."

Andrus turned me over to his mine foreman, an agile 60-year-old welterweight named Mark Jolley. Mark, helping me into a yellow slicker suit, rubber boots, and hard hat with miner's lamp attached, told me he had been in the mines since 1931. "There's nowhere else I ever wanted to work, nor my father, either. He had a farm when I was a kid, came to the old Silver King to sell fruit. He rustled him a job and never farmed again—he couldn't stand it! Miners are closer to each other than any other kind of working men. Have to be."

We got into a little train and hurtled into the bowels of the mountain—three miles through a black tunnel with sparks flying

from the trolley. From the pores of the walls cold water escaped from the ancient rock. The only lights apart from the locomotive's beam were the shuddering yellow shafts of the lamps on our helmets. At the end of the line, in a lofty chamber filled with air pumped down from the surface, Mark gave me a look. "Your legs in good shape?" he asked.

"OK," I replied.

"Good, we'll have a look at the mine," said Mark, and set off, whistling, in the direction of the center of the earth.

Soon we had left behind the unnatural, unflickering arc lights and entered a labyrinth of twisting tunnels. Mark put a hand on the bitten rock wall. "There are 900 miles of tunnel under these mountains. In the old days, an average crew would make 18 inches of tunnel a day, and a good crew maybe 24 inches," he said. "Today we can do about six feet a shift."

I began to see the advantages of Mark's medium height, for we had entered an older part of the mine where he could stand upright while I was obliged to scuttle along on bended knee. But I hadn't seen anything yet.

"We're going down a ways now," said Mark's voice from the blackness beneath his miner's helmet. His lamp floated into a vertical shaft and descended rapidly, like a will-o'-the-wisp. I followed, down an interminable ladder. At the bottom Mark showed me a fault in the rock and the tortured timbers that held the tunnel ceiling in place. We were more than 1,750 feet below the surface. "You can't imagine the weight," said Mark. "We dig it out and old mother nature tries to put it back where it was. But we keep on frustrating her —most of the time."

Treasure Still Lies in the "Devil's Pass"

For hours I followed Mark down many steep ladders, until we were 1,990 feet below fresh air and sunshine. Crawling through the soupy muck of old workings, we finally came to a deep vertical shaft called the "Devil's Pass." Mark scooped up a handful of rock particles and shone his light upon it. "The old-timers dug this out, and this is what they were looking for," he said. In the beam of his lamp, the ore on his palm glittered with zinc and lead and silver.

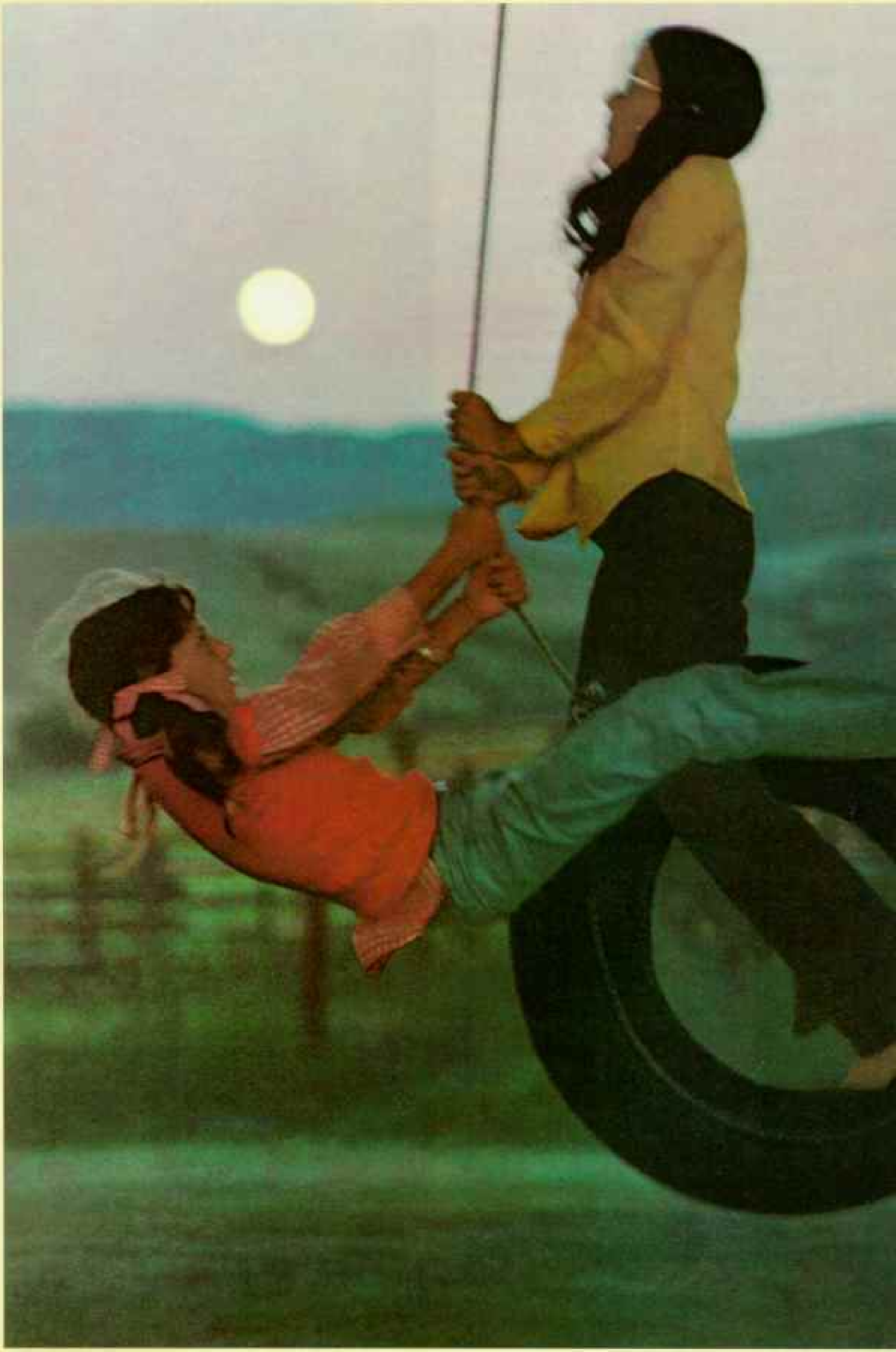
Eventually we found our way back to our starting point, I smeared with brown mud from head to foot. But, after sharing his lunch with me, Mark still had one more surprise for me, the tenderfoot. "Here's your ride out," he said, pointing to a long train of ore cars. "You can lie down here, on the locomotive, and find something to hold onto—keep your head down and good luck!"

With hands full, a Mormon missionary-to-be holds his jet ticket to London in his teeth. Young men count it a privilege to give two years of their lives to proselyting. Married couples and young women also serve.

I did as commanded. Sweeping past my face was the tunnel's jagged ceiling, with the cat's-eye of my lamp rushing over its surface. Below the tracks was a tumbling stream of water, and at my elbows, more rock. Sparks sputtered from the trolley, inches from my nose. I could see nothing to hang onto. It was a memorable ride, through 16,850 feet of tunnel, and I found myself dwelling on a thundering phrase of Brigham Young's (he was opposed to the pursuit of gold by Mormons): "If you elders of Israel want to go to the gold mines, go and be damned!"

But I discovered that the saints had found a good use for the inside of the mountains, one that did not involve mining. A young official of the church, Ted Powell, showed me through the vast storage vault Mormons have constructed in Little Cottonwood Canyon, near the place where granite was quarried for the Temple. Bored 650 feet into the mountainside, the vault contains data on family trees from around the world.

Mormons believe *(Continued on page 465)*



The family: a Mormon shrine

"HOME IS LIKE HEAVEN," says 11-year-old Lynda Clyde, topside on a moonlit tire swing with her younger sister, Julie, at their family's Heber Valley ranch. What may be the youngster's idyllic view of her own life is also a basic tenet of the Mormon faith—that those who prove worthy here on earth will be rewarded with blissful togetherness in the hereafter.

Few work harder at household unity than the family of Robert Clyde. Whether they are operating their sheep ranch or holding twice-a-day family prayers (**below**), the emphasis is on cooperation. Five years ago all nine members helped build their five-bedroom log house, with the oldest hefting the heavy timbers and the youngest applying varnish. A "family mood meter," now displayed prominently on the kitchen wall, regularly gauges the home atmosphere, with readings ranging from "love abounds" to "naggy and grouchy."

For Robert Clyde, a state senator and local church leader, domestic success means juggling appointments around his home life. "My family comes first," he says. "Those I'm involved with in outside activities soon learn that."

A QUORUM of Clydes gathers every Monday for "family home evening" (**above**), one Mormon answer to the generation gap. Television silenced, work laid aside, family members listen as Julie, 9, opens a session with Scripture. Discussion of spiritual matters may follow, or the airing of sibling spats. "It gives us a chance to talk about things that might be bothering us," says 18-year-old Kathy, seated between her mother and brother Doug, 17.

For Mrs. Clyde, the evening may end with preparation for her "second career," teaching a weekly Bible class of 80 adults (**right**).

OLD GAMES, old maxims, songs, and refreshments leaven a family home evening. Mrs. Clyde and Julie prepare Kathy for blindman's buff near a sign headlining the night's discussion (**below**). Although obedience to the law is one of the church's 13 articles of faith, detractors accused early Mormons of open rebellion. Historians trace the tension to the church's sanction of polygamy, practiced by a few members and since abolished. Adhering to strictures of constant preparedness for emergencies, church members store a year's food supply. Mrs. Clyde and Lynda replenish their family stock in a basement cache (**bottom**).

BLOOD-SPATTERED field nurse, Stephen Clyde, 13, holds a lamb for docking—tail clipping—during a roundup that also includes castration and branding. Youngest hand Julie draws the responsibility of branding with a paint marker (**below**).

"We try to make our work a pleasure," says Mrs. Clyde. Checking on their flock sometimes moves the family out of the spacious, comfortable home ranch into a two-room shack in the western Utah desert—winter home for the 4,000 ewes. There for days at a time, the Clydes happily retire from modern comforts, hauling water from a spring, huddling around a pot-bellied stove in the evening. "It's nice there," Lynda says. "No television, no interruptions."

Ruggedness extends into leisure time as well. The boys excel in basketball and football. But the family's prime sport is rodeoing, in which all members take part. In 1973, son David, 20, competed in the national finals in intercollegiate bulldogging. In 1974, 19-year-old Tom placed first in the nation in that event. In the same year Doug won first among Utah high schoolers in calf-roping, and Kathy rode her way to first in the state in schoolgirl's cow-cutting—separating individual animals from a herd. Lynda was named queen of a local rodeo.

Nationwide participation in the sport brings the Clyde children into contact with many non-Mormons of their age, a test of their strict faith. "Sometimes it gets pretty hard," says Kathy. "I don't always agree with everything my parents teach us, but I respect them for it."

"The oldest boys, David and Tom, went through a rebellious time," says Mr. Clyde. "But we believe it's against human nature to be forced into believing anything. We just try to set the example and hope they choose to follow it."

The formula seems to work for the Clydes. The parents cherish the memory of a public speech once-rebellious Tom made before leaving on a two-year stint as a church missionary. "I love my Dad," he said unabashedly. "He's always been my idol."

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(Continued from page 457) that ancestors born too early to have heard the message of the church can be saved through proxy baptism, or even be sealed in marriage after death. It is therefore their duty to identify as many ancestors as possible, and to be baptized in their behalf. The church's genealogical service sends technicians all over the world to make microfilm copies of birth, marriage, and death records. Nearly a million rolls of microfilm, each roll containing 1,500 pages of records, now fill the vault (page 447).

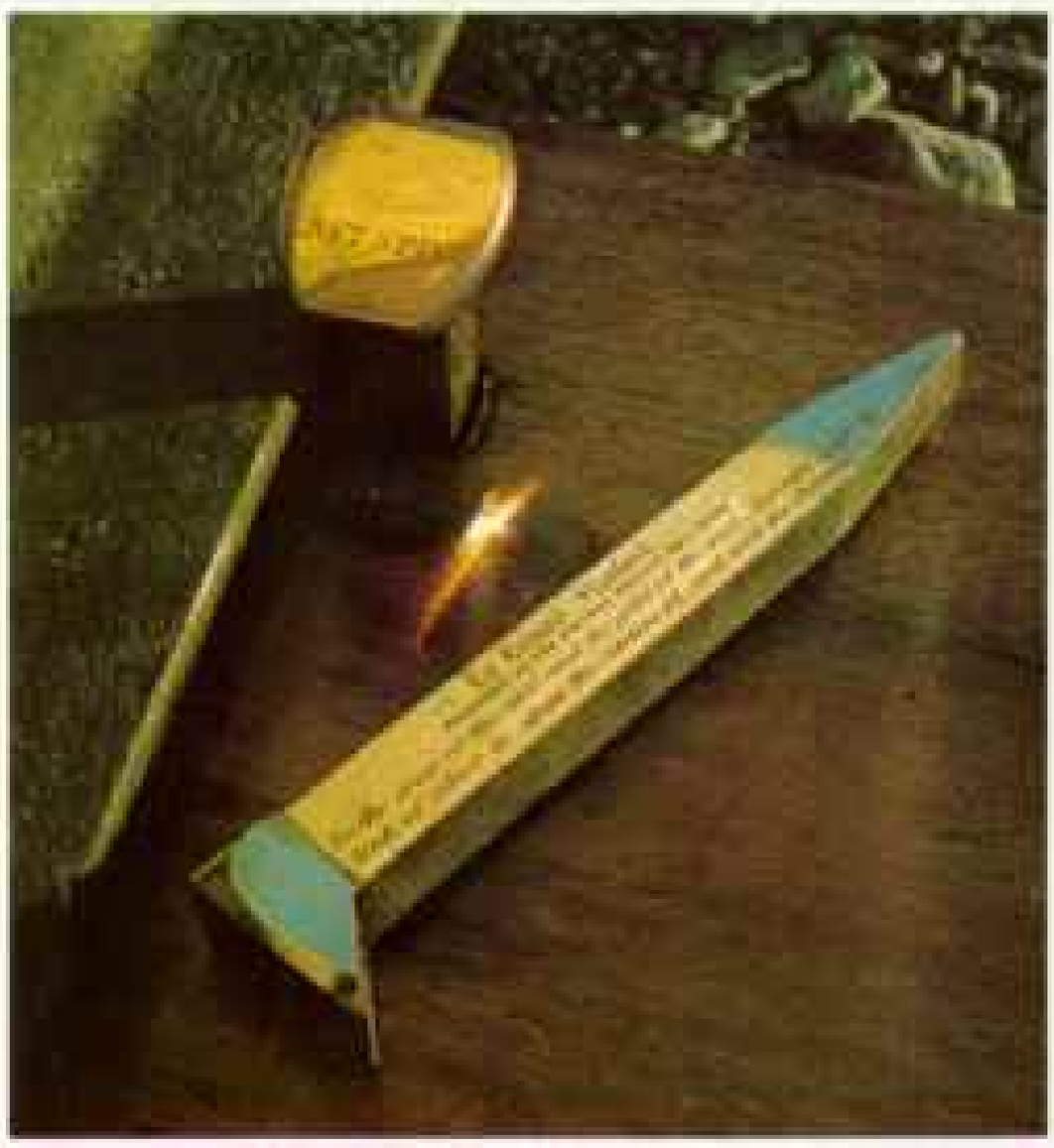
Dancers' Sunlit Grace Cancels Gravity

Though I delved into the sunless interiors of mountains, my lasting recollections of the Wasatch Oasis are splashed with sunshine. No memory is lovelier than that of a spring morning in Salt Lake City when I watched the young dancers of Ballet West leap and turn—or merely walk, with the vivid grace a trained body can lend to that simple act—among shafts of sunshine falling through the windows of their practice room. Leading the classic exercises that tone the body and tune the mind was Willam Christensen, the ballet's 72-year-old artistic director.

"Mr. C," as his dancers call him with a fine mixture of respect for his age and affection for his youthfulness, lithely demonstrated steps and positions, then led the company through the routine, counting time with a thumping walking stick. Tomm Ruud, leading male dancer, practiced lifts with a splendidly athletic girl named Vivien Cockburn; they swept across the floor, music and muscle nullifying gravity, watching themselves fly through the looking glasses on the walls.

Later Bill Christensen told me that Ballet West, after triumphal tours in Europe and the United States, was in the midst of a fund-raising drive, and the company's life depended on its success. Mr. Christensen, a native of Brigham City, had confidence that the people of the Wasatch Oasis, with their love of music and dance, would come through with the

Diggers in Utah's silver cellars lunch below Park City, a mining town in the Wasatch Range. Brigham Young discouraged prospecting by his followers, fearing a rush of "gentiles," or non-Mormons. He saw his fears confirmed when gold and silver strikes spawned mining towns that became "godless" enclaves. Mormons constitute a majority, however, for Utah's largest private employer, Kennecott Copper. The company's mineral bull's-eye in the Oquirrh Mountains (**left**) stretches two and a half miles wide and more than half a mile deep—the nation's largest open-pit copper mine, and its most productive.



Spike that joined a nation is driven again at Promontory Summit, Utah, in the annual reenactment of the Last Spike Ceremony of 1869 (**top**). Now, as then, an iron pin takes the blows; a predrilled hole receives the golden peg (**above**), flanked by a silver spike. A construction race by two railroads culminated in their meeting in Utah, ending Mormon isolation.

required $200,000 to qualify for a grant from the Ford Foundation. "I just want the theater full—that's all the reward and all the hope a performer needs," he said.

Ballet West, since its foundation in 1963 as the Utah Civic Ballet, has played to full houses throughout the West—in great auditoriums and the school gymnasiums of remote hamlets. Mr. C believes in taking dance to the people. "I've never met a person who couldn't see the beauty and the bravura of the dance," he told me. "I have no doubts there'll be a Ballet West when those young people you just watched are my age. In other words, forever!" I hope he's right.

If Bill Christensen is vital to the classical music scene in Salt Lake, its doyen is Maurice Abravanel, musical director and conductor of the Utah Symphony Orchestra, which gives its concerts in the Mormon Tabernacle. Maestro Abravanel allowed me to attend a rehearsal in an old church on East South Temple Street that has been converted to a practice hall. It was a rare opportunity to observe a symphony orchestra from *behind*.

I tiptoed in to the soaring strains of Handel and took a seat just back of a young blond cellist in blue jeans who laid her cheek upon her instrument and, as it were, danced with the composer. Better than I'd ever done before, I was able to separate the instruments, and—bonus of bonuses—I could watch the conductor's face as he coaxed the orchestra with a smile, disciplined it with the movement of an eyebrow.

Bach and Brahms Thrive in Utah

The Utah Symphony Orchestra is young, and all but a few of its musicians are native Utahns. Even Abravanel believes that he's been joined to the desert soil. "I came to Utah in a covered wagon!" the maestro told me. In fact, he came in 1947, from the New York Metropolitan Opera, after having conducted in Berlin, Paris, Australia, and elsewhere. Abravanel was born in Greece of adventurous Spanish-Portuguese ancestry: One of his forebears helped finance Christopher Columbus's voyages to the New World.

"I wanted to find out if it was possible to do something good in a small place," he said, "if it was possible to do one's complete artistic duty by developing an orchestra and an audience, and training musicians from the native soil."

The answer, after 28 years, seems to be a

resounding yes. In a typical year the Utah Symphony plays some 200 engagements, including 80 school concerts, throughout Utah and neighboring states. It has toured Europe and Latin America, and its recordings are gaining an international reputation. The great musicians of the world are its guest performers. "When we began, Brahms' Second Symphony had never been played here by a professional orchestra," Abravanel told me. "Now he and Bach and Mozart *live* in Utah!"

Spare-parts Shop for the Human Body

And what music those three might have written had they lived in such a place, where there is space to match their genius. The sweep of the land can truly be called symphonic, and it does seem to stimulate adventures of the mind. At the University of Utah, nestled against the mountains in east Salt Lake City, I encountered a series of scientific wonders. My guide for part of this tour of the technological future was Dr. Willem J. Kolff, inventor—during World War II in his native Holland—of the artificial kidney, and now head of the division of artificial organs in the university's school of medicine.

Dr. Kolff has assembled an interdisciplinary team of physicians, chemists, physicists, engineers, machinists, social workers, and others, and told them, in effect, that the sky is the limit insofar as the use of their scientific ingenuity is concerned. They continue to work on the artificial kidney, and a steady progression of innovations has resulted, Dr. Kolff assured me. The team has built a wearable artificial kidney, no larger than a woman's shoulder purse, that will function without the inconvenience of being attached for long periods of time to a bulky, immobile machine.

A Kolff protégé, medical student Robert Jarvik, has developed an artificial heart that has operated for 94 days when implanted in a calf. A nuclear power source that will last 20 years is being developed for another artificial heart. Problems remain before the heart will be safe and practical for use in humans, but Dr. Kolff, holding an artificial heart in his hand, admitted to no doubt that the system will one day be perfected.

"Technology is the healer," he assured me quietly. "Science progresses at such a pace that the theoretical considerations are quickly overtaken by the practical possibilities. Soon we won't have to build an institute around a disease. We can build an institute for biomedical engineering, and the diseases will be brought in for solutions."

For a more technical glimpse of the wonders his team is attempting to perform, Dr. Kolff sent me to see Dr. Robert J. Huber, who is working on an artificial eye. There was in the laboratory an air of quiet jubilation, for a few weeks earlier the artificial eye, in experimental form, had been tested in a human volunteer—and it had worked. Since then, two more have volunteered for experiments.

"One man in whom the 'eye' was tested had been blind for 26 years," Dr. Huber told me, "and of course he didn't *see* in the way a sighted person would—no one using this system ever will. But he did perceive artificial spots of light in his brain that had been transmitted from outside. It must have been like looking at the Astrodome scoreboard."

Dr. Huber explained that surgeons had implanted 64 electrodes in the patient's cerebral cortex. These had been connected to a computer, and electrical stimulation of the electrodes permitted the patient to "see" recognizable patterns, using the central nervous system, so to speak, as a television receiver. The experimenters hope that, after much more work, a miniature system—perhaps as small as a pair of eyeglasses—can be developed that will permit the blind, if not to see, then at least to perceive the world around them through electronic images.

Other colleagues are working on artificial limbs that will pick up electrical signals from the stump of an amputated arm or leg, process the signals through miniature computers, and use them to control movement. An artificial ear, similar in concept to the artificial eye, is another goal.

Computer Learns to Draw Pictures

"Many questions remain," Dr. Huber said. "Can you stimulate the brain tissue artificially over a long period and not do damage? Can you make these instruments small enough to be esthetically acceptable? There's much work ahead—but we think it's worth it."

Utah's scientists and inventors, in general, have a foot firmly planted in the future. At the University of Utah, Professors David Evans and Ivan Sutherland, with their talented team of graduate students, have found a way to feed mathematical data into a computer and have it reproduce on a television screen any object described to it. The image, in full color, can be shown from any

perspective. Feed in the precise dimensions of a 1932 Chevy or a 1984 spacecraft, and the computer will "paint" it on the cathode-ray tube.

In the laboratory of the Evans & Sutherland Computer Corporation, near the university, I "landed" a jumbo jet at Amsterdam's Schiphol Airport, watching the city's skyline change perspective and the runway lights zoom toward me. By feeding the computer the precise measurements of the plane's windshield, and the precise way in which the craft flies, you can create the illusion of actually piloting the plane.

This was a mild experience compared to other computer displays. "One can observe the strange behavior of a nuclear particle in motion, or fly in a rocket at nearly the speed of light," Dr. Sutherland told me.

Inventor's Car Needs No Gasoline

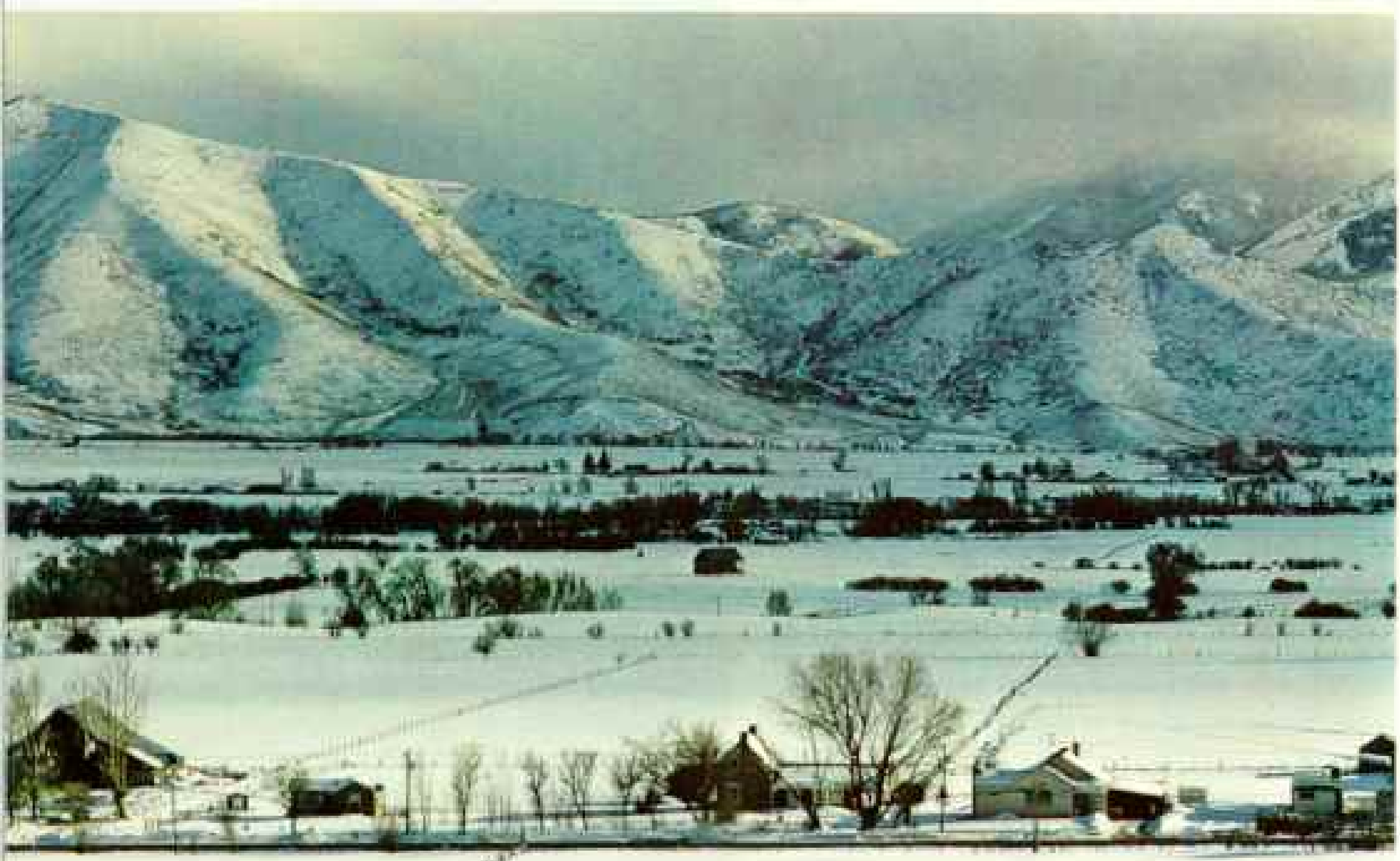
Evans and Sutherland think their invention can be applied to practically any technical area. An architect or a highway designer could, as it were, feed a blueprint into the computer and see what his building or his road would look like when completed.

On such a computerized highway, a vehicle of the future that I rode at Provo would seem at home. It was a late-model automobile powered by a fuel that is literally inexhaustible, for it is the fundamental stuff of the universe—hydrogen. At the wheel was Roger E. Billings. When he was 18, working in his high-school lab, Billings developed what was probably the nation's first hydrogen-powered car, a modified Model-A Ford. Today, at 27, he is president of the Billings Energy Research Corporation, and ready to change the energy systems of the world if called upon.

"Hydrogen will drive any vehicle of any size just as far, just as fast, and 86 percent more efficiently than gasoline," Billings claimed. "It will perform ten times as cleanly —no carbon monoxide, no hydrocarbons, only minute amounts of oxides of nitrogen."

I glimpsed the future of the nation's space program when I visited the Thiokol Corporation's Wasatch Division, in the desert between Brigham City and the Promontory Mountains. Here the first and third stages of the Minuteman missile, designed to carry nuclear warheads, are produced, together with other rocket motors. Thiokol official James Brown showed me missiles in the making. We watched technicians fill the great cylinder of a rocket's first stage with solid

Tamed by their hunger, wild elk receive winter rations at the Hardware Ranch in the Wasatch. Visitors may ride the sleigh for a close look that few hunters will get when elk season opens. Fences enclose animals for breeding research, but the upland feeding program's main purpose is to discourage elk from invading livestock pastures. Agricultural pockets like Heber Valley (**right**) provide a fertile contrast to Utah's rugged mountains and arid Great Basin.



propellant, a synthetic-rubber compound laced with metallic particles and chemical oxidizers. Brown showed me an inert sample of the fuel. "Before it cures to a hard, rubber-like form, it has the consistency of wet cement," he said. "We mix it with a mixer similar to those used by bakeries for bread dough. I think that's a homely fact."

Giving the Space Shuttle a Lift

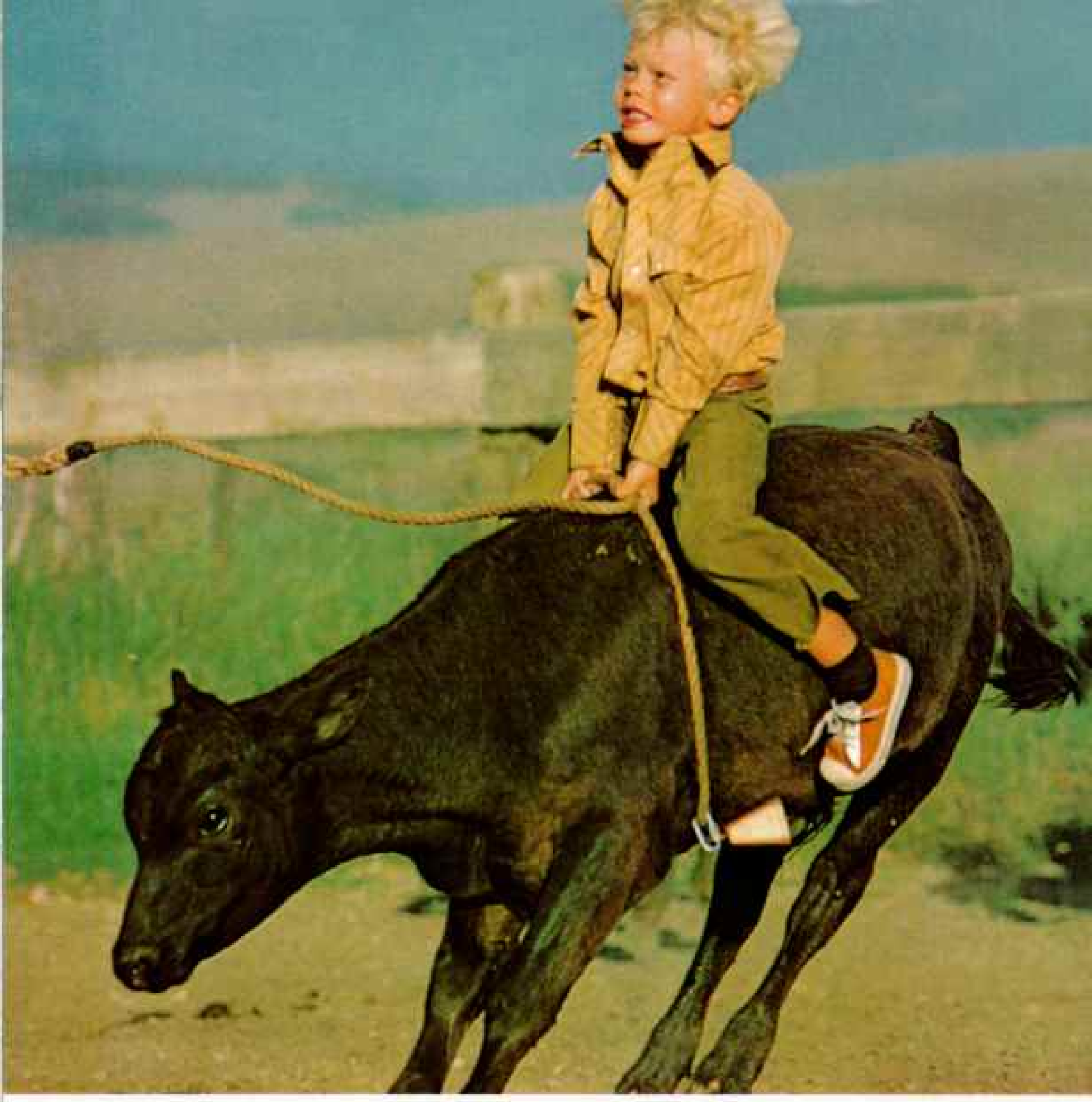
Thiokol's engineers work on other things besides rocket motors. They have developed a waste-treatment system in which the waste water is recycled and used to flush toilets, halting the discharge of pollutants entirely. They have also perfected a generator that in a few milliseconds produces a gas that inflates a crash-bag restraint system developed as an alternative to automobile seat belts. Soon they'll be building the booster rocket motors for the NASA Space Shuttle.

"These will be the largest solid-fuel rocket motors ever flown," Ivan Adams, the project manager, told me. "Each of the two will develop up to 3 million pounds of thrust from more than 1.1 million pounds of fuel. Along with the Space Shuttle's liquid-fueled main engines, the booster motors will lift a 4.4-million-pound launch vehicle, which includes the orbiter spacecraft. After the burn, the boosters will be jettisoned into the sea for recovery. Because of the impact load, we're designing the motor case to withstand almost the same external pressures as a submarine. It's a nice technical problem, but it's no problem. Theoretically, using our fuels and techniques, you can make a rocket motor as large as you want."

Large enough to move the earth? "Sure," said Adams with a grin, "just give me a place to stand so I can wave good-bye."

Utah, like the rest of the American West, has given many a man a place to stand and wave good-bye to the past. One such is Nick Chournos of Tremonton. He is a sheep breeder, and one of the most famous and admired in his part of the world.

Man and pelican seem to mingle in flight over Gunnison Island in Great Salt Lake, a seasonal rookery for thousands of these big white birds. Freshwater marshes fringing the lake comprise one of the nation's largest breeding grounds for waterfowl—ironically, in one of the Union's driest states.



Junior bucker, junior buckaroo match agility in a neighborhood rodeo on the Clyde ranch. The calf wins this round, dumping Rhet Ingram, 6, into the softened dirt (**left**). Former Secretary of Agriculture Ezra Taft Benson enjoys the fund-raising event as Mrs. Benson shows concern for a thrown rider (**right**).

Mr. Benson, next in line for the Mormon presidency, admits that his religion influenced him as secretary to advocate fewer federal farm programs. "Mormon philosophy emphasizes helping people to help themselves," he said.

I talked to Nick Chournos on a shimmering day in May, just a few weeks before his 78th birthday. He and his son Sam, and several of Sam's sons, worked cheerfully together, raising their voices to be heard over the bawling of several hundred lambs that had been separated from their dams. The lambs' lament would have melted the heart of a timber wolf.

With assembly-line efficiency, tails were docked, ears were notched, woolly backs were stamped in red paint with the Chournos brand. With a sharp knife and his perfect white teeth, Nick Chournos turned young rams into wethers. "They've got a machine to do this," he said, "but it's too slow for me."

We stood on a slope of the Promontory Mountains, not far from the place where the golden spike had been driven when the Union Pacific and the Central Pacific Railroads met in 1869. The northernmost tip of the Great Salt Lake, sparkling in the sunshine, lay below us. To the west and north stretched the quarter of a million acres of desert on which the Chournos flocks are pastured.

Untamed Desert Sustains Sheep

I had spent so much time among the farms and orchards, the cities and churches, the suburbs and ski resorts along the Wasatch Front that I'd forgotten that some Utahns had not *wanted* to make the desert bloom. Some, like Nick Chournos, had taken it as they found it, stark and stern, and made it yield work and life, and even riches.

As he worked, Nick Chournos told me about his life. He came from Greece in 1912, as a penniless boy of 16. He found work as a shepherd, alone on the range. He saved his money and bought his first small flock when he was 21. Now he had 10,000 Columbia ewes and their crossbred lambs, ranging over the dry uplands of Utah and Wyoming.

All the Chournos family spends summer on the range, tending and moving the flocks over vast distances. It does not seem to them a hostile environment. For creatures and humans who know and accept its ways, the high rangeland is a good, even a bountiful place.

"When I was a kid, I noticed that the deer and the antelope lived pretty well off this country," Nick Chournos told me. "I thought: The sheep is their cousin. There must be good nourishment for them in trees and bushes and things that a horse or a cow wouldn't even look at. I found out I was right, and that was the way I started and the way I'll end."

At noon, the women of the family brought dinner to the remote sheep camp—pot roast and vegetables, cold cuts and salad, home-baked bread, strawberry shortcake. The menfolk, who had been working hard in the open air since before dawn, did full justice to the cooking. Nick Chournos invited me to join him in his sheep camp, a light trailer, as neat and as ingeniously designed as a sailboat.

As we ate and chatted, four generations of the Chournoses filled the air with that particular mixture of easy talk and gentle banter that is the sound of a family that has found its place to stand in America. Food on the table, sons on the land. For those simple things the saints had braved the mountains and the plains, and gentiles like Nick Chournos had hazarded wild oceans and strange tongues.

"Do you think you could have found a better place than this?" I asked Nick Chournos.

"A better place than this?" he replied. "Are you crazy?"

For those who love it, saint or gentile, This *Is* the Place. □

By PETER T. WHITE

Photographs by
EMORY KRISTOF

BOTH NATIONAL GEOGRAPHIC STAFF

UNDER THE EQUATORIAL SUN in East Africa, in the Dodoma Region of the United Republic of Tanzania, a little girl with a big gourd on her head walks into a dry riverbed.

With her hands she digs a hole in the soft sand, arm-deep. She waits, until enough muddy water has seeped into the hole to fill her gourd; then she walks back a quarter of a mile to a row of grape seedlings, to pour a bit of water on each.

She has done this all morning, and will do it again in late afternoon. I am impressed—such hard work, to nurse along a few seedlings after the expected rains did not come.

Most Dodoma grapes go to a state-controlled winery, a so-called "parastatal" enterprise, managed by an expert from Italy. I sample the ruby-red wine. Astonishing! I try it again another day, in another restaurant. Again my taste buds shrivel. Who'd want such acrid stuff? Parastatal planners expected to export lots of wine for precious foreign currencies. Now they admit something went wrong somewhere—unsold bottles are piling up. They're looking for another expert.

And I ponder what will happen here in Tanzania, where so much enthusiastic planning is done these days, and so much hard work, but somehow quite a few things seem to turn sour. The upshot may be of considerable importance, not only to Tanzanians and their descendants but also to millions around the globe.

Consider first a few notable aspects of Tanzania (Tan-za-NEE-a), whose 14 million inhabitants and 363,000 square miles roughly approximate the population and size of Texas plus New Mexico.

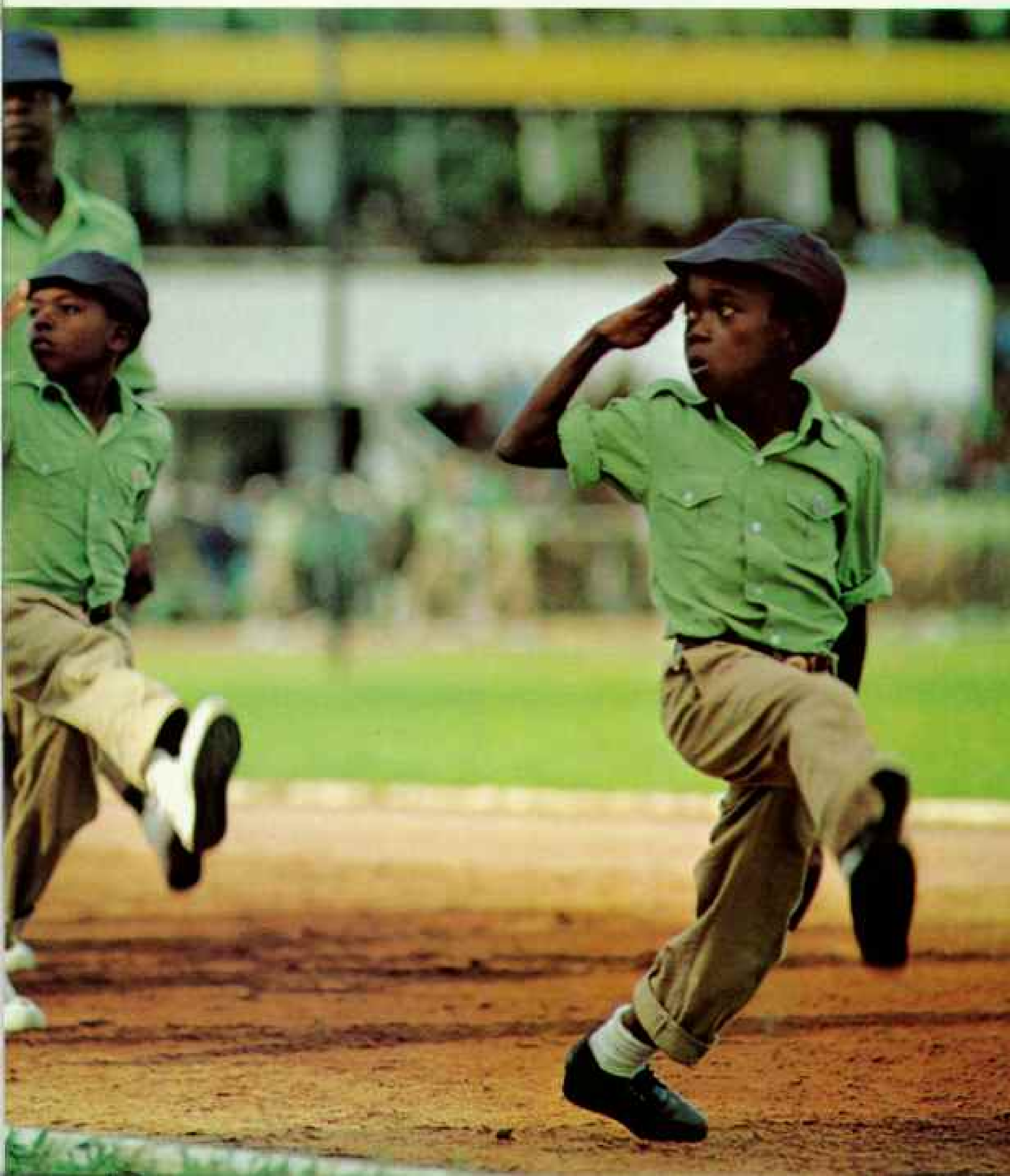
It has the highest mountain in Africa—19,340-foot Kilimanjaro—and Africa's biggest lakes touch its borders in the north, west, and south; to the east is the Indian Ocean.

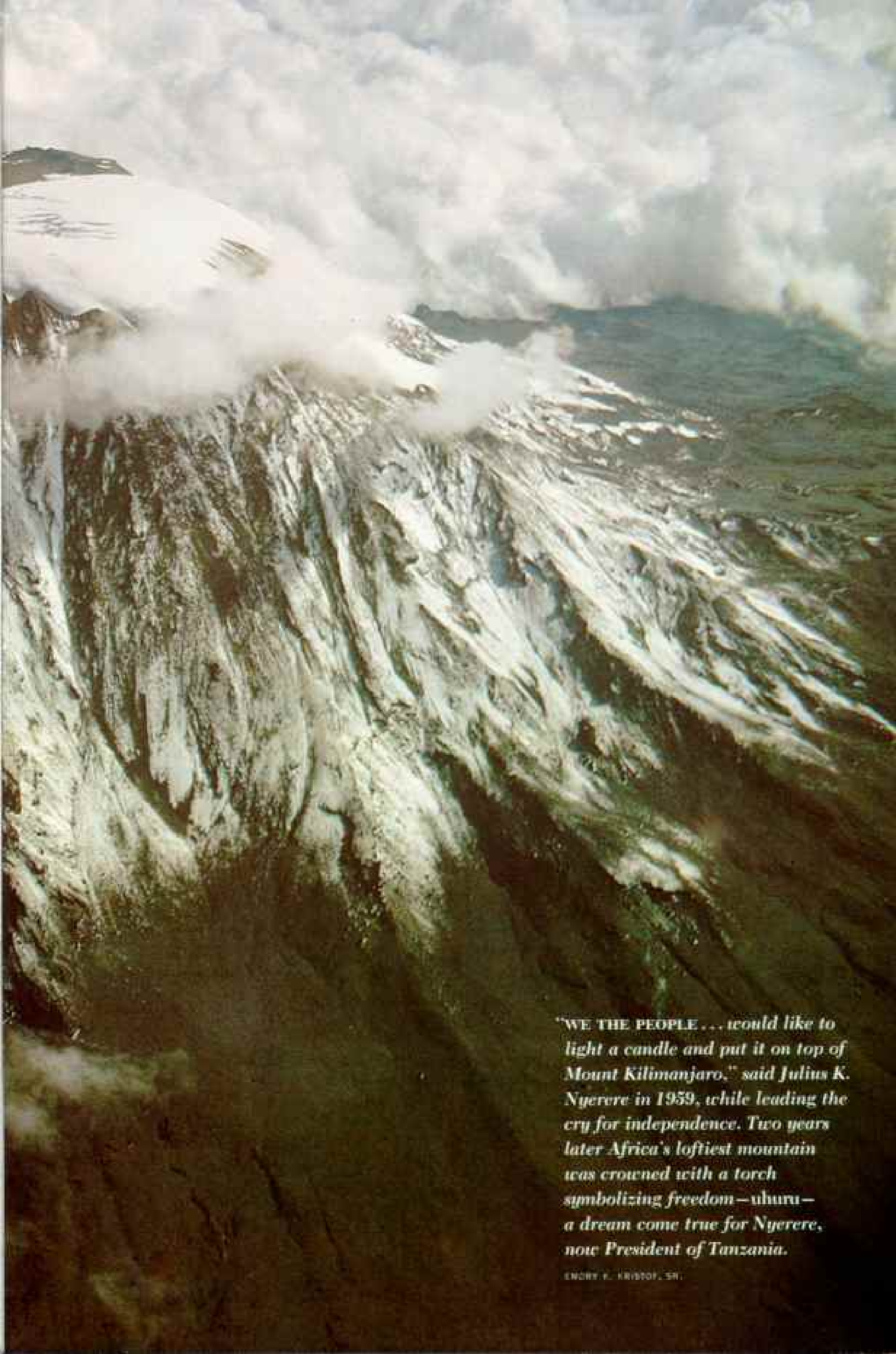
It harbors remarkable masses of wildlife, from tsetse flies to elephants; some experts say one elephant to every 70 people or so.

Goose-stepping Young Pioneers salute African leaders during last April's Union Day, tenth anniversary of the merging of Tanganyika and the islands of Zanzibar. Today, the nation—now called the United Republic of Tanzania—labors to draw its rural millions into a self-reliant family.

TANZANIA

MARCHES TO ITS OWN DRUM





"WE THE PEOPLE . . . *would like to light a candle and put it on top of Mount Kilimanjaro,*" *said Julius K. Nyerere in 1959, while leading the cry for independence. Two years later Africa's loftiest mountain was crowned with a torch symbolizing freedom—uhuru—a dream come true for Nyerere, now President of Tanzania.*

ENORY E. KRISTOF, SR.

Mwalimu, "The Teacher," Tanzanians call President Nyerere, seated at center during Union Day ceremonies in Zanzibar. Flanking him are Daniel Arap Moi, right, Vice-President of Kenya, and Tanzania's First Vice-President Aboud Jumbe, left, who welcomes Prime Minister Mainza Chona of Zambia. In 1962 Nyerere fathered *Ujamaa* (familyhood), a socialist design for development based on the traditional extended African family. Many rural Tanzanians, formerly scattered, now live and work together in Ujamaa villages.

More than five million magnificent beasts abound in its national parks and game reserves, on which it spends a considerably higher proportion of its national budget than the United States spends on national parks. Western conservationists love it.

Tanzania spearheads what it calls "the liberation of southern Africa"; it supported the rebellion in Mozambique against Portugal, the European power most extensively represented in today's Africa. Revolutionaries everywhere love that.

But no doubt the biggest thing in Tanzania, pervading every activity here, is the social experiment. What to do when the vast majority lives scattered in the countryside and grows barely enough food to survive, often with no more of a tool than a hoe?

Pattern for the Future: Familyhood

The unorthodox Tanzanian answer fascinates the world's experts on underdevelopment—and may have much to say to other lands where a quarter of the children die before reaching five, where nearly half of those who survive will never go to school.

"An increasing number of Africans having large cars and luxurious houses has been cited as a sign of progress," notes Tanzania's President Julius K. Nyerere, but he disagrees.

Rather than enriching a few in the cities, advancement must come to the many in the countryside. Emphasis must not be on investment from abroad but on self-reliance; not so much on industrialization as on advancing from subsistence agriculture to cash crops, to earn money for dispensaries, for schools.

But how? Through cooperative effort in the spirit of *Ujamaa*, signifying "familyhood" —the traditional African extended family that takes care of all its members, but extended all the way to the nation. "Opposed to capitalism that builds on exploitation of man by man," says the President. "Equally opposed to doctrinaire socialism that builds on class war between man and man." It's a unique African socialism, to be achieved through persuasion, not force.

Chinese Ships Get Special Treatment

And how is all this coming along? It will take a lot of travel to find out, and a lot of talking to all kinds of people, as much as poor roads and expensive airplane charters will permit. I begin with the ever-humid capital, Dar es Salaam (following pages).

The words are said to mean "Haven of Peace" and may have come from slave-trading Arabs who built a waterfront palace here in the 1860's. It's gone. The big Lutheran church comes from colony-collecting Germans who took charge in 1891 and called this land German East Africa.

The British replaced the Germans after World War I and held on to Tanganyika Territory until independence came, peacefully, in 1961—so there's English spoken here. But more widespread is Swahili, a Bantu language with infusions from Asia and Europe. The local English has undergone some alterations, too. "Will you play?" can mean "Will you dance?" When a man says he's going to help himself, he's going to the toilet.

I walk through exuberant traffic past the bus station to the head of the magnificent harbor. The deputy manager says he could work only five ships at a time in 1969 and now, thanks to new deepwater berths and buoys, it should be 15. But the paper work is entangled, and the port is congested at the moment. A dozen ships are waiting to get in —Norwegian, U. S., Japanese. There's no waiting, though, for ships of the People's Republic of China. They turn around fast.

Behind the *Datong* from Tientsin, unloading at berth No. 8, I see huge new storage sheds and a new railroad spur. This is the tail end of a gigantic engineering project, the 1,162-mile Tanzania-Zambia Railway (map, page 487). Another name for it is the Great Uhuru (Freedom) Railway.

Tens of thousands of Tanzanians and Zambians are finishing its construction, aided and directed by some 15,000 Chinese. They have built 21 tunnels and 265 bridges in Tanzania alone—so the Tanzania-Zambia Railway Authority informs me—plus power plants, repair shops, and scores of stations.

Landlocked Zambia is the world's biggest exporter of copper, and the railway is to help get the copper out. It will also spur economic development along its course. Moreover, Zambia joins Tanzania in seeking to eradicate "racist oppression" in southern Africa; thus the railroad has political as well as economic significance. It's been a shot in the arm for patriotic liberation movements—or for insurgency, depending on which side you're on.

The World Bank and the Western powers refused to underwrite the railway. The Chinese, eager for friends in Africa, offered not only engineers and materials but all those thousands of workers and an interest-free loan. Repayment is not to start until 1983.

Meanwhile Chinese ships bring mountains of consumer goods—pencils, canned food, flashlights, bicycles, sewing machines. These Chinese goods are sold in Tanzanian shops; the proceeds go to pay the railroad workers. So every time I drink Greatwall grape squash or use Bee and Flower soap, I too help build the Great Uhuru Railway.

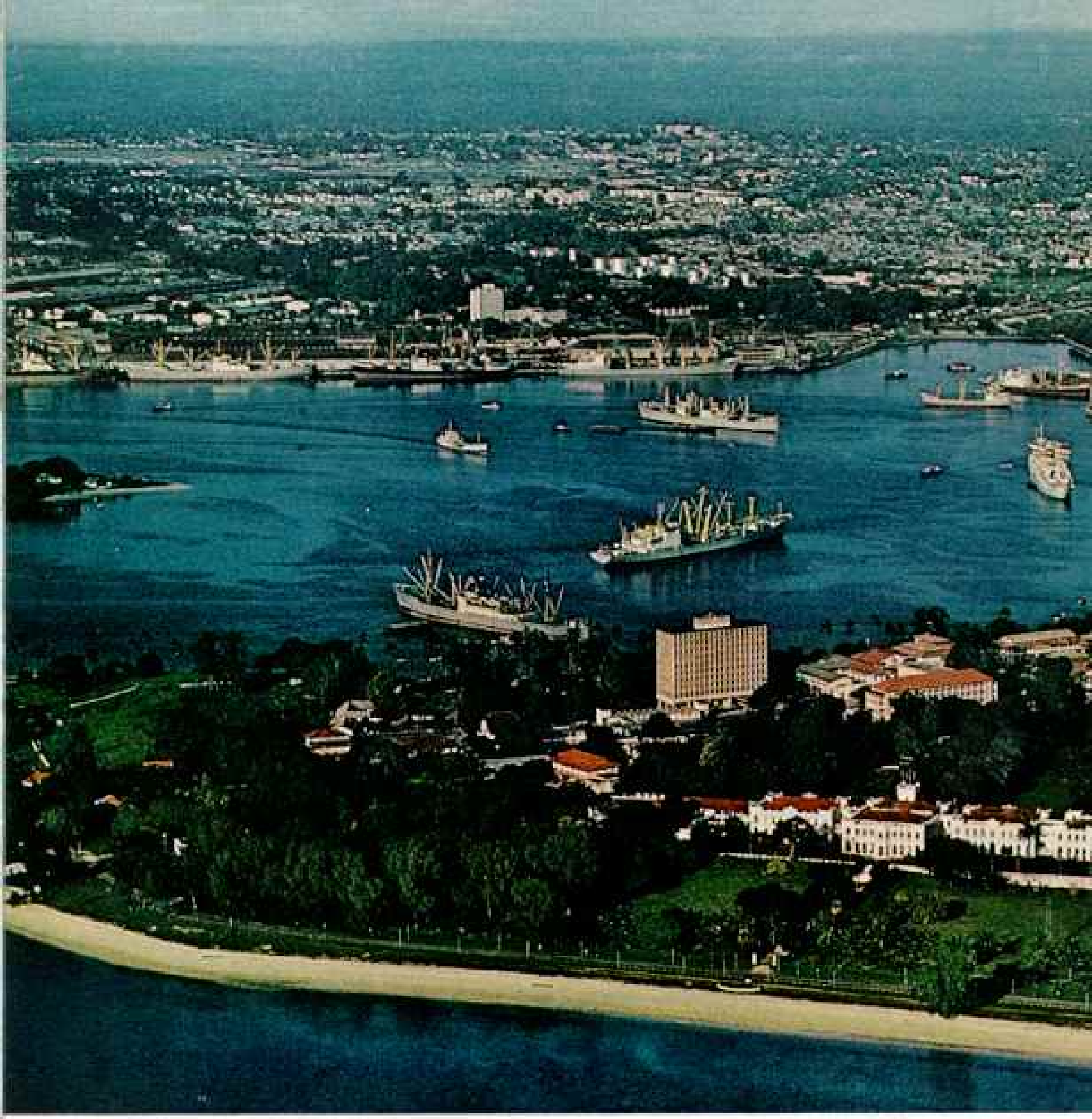
Socialism Fostered in Ujamaa Villages

But what about this Tanzanian socialism, this familyhood—Ujamaa? How does it work?

"First you get people to move together, into a village, so they'll see their needs. Good water, health services—people will demand these, and want to do something about it." That's N. J. Millinga speaking, a senior official concerned with political education for Ujamaa.

"People will meet and plan and set targets, they'll organize and work together, with everybody involved. Once this starts, there's more need, more development. People realize they're poor, they want shoes, good houses, good food. They'll ask, 'Why can't we have irrigation here?' "

Where does the capital come from? The work is done by people; they contribute from



Pumping lifeblood into Tanzania, ships anchor at the young nation's door to the Indian Ocean, Dar es Salaam—"Haven of Peace" (**above**). In the left foreground sprawls the old colonial State House, whose days as the President's office are numbered: Centrally located Dodoma, 250 miles west, is slated to become the new seat of government.

Vessels in the harbor waiting to unload cargo include some from the People's Republic of China. In 1974 Tanzania imported more than 100 million dollars' worth of goods and

materials from China—on credit. Self-sufficiency remains Tanzania's chief dictum, but reality often intervenes. A searing drought crippled the 1974 harvest, and the government imported 170 million dollars' worth of staple foodstuffs to stave off famine. A young dockworker levels a truckload of maize (corn) pumped from a ship's hold (**left**). The port also provides a trade gate for eastern Zaire and landlocked Zambia, especially for copper exports. Bars of the refined metal await loading (**right**).

Wooing the Third World, advisers from the Soviet bloc and China celebrate May Day, a traditional socialist festival, with their Tanzanian hosts. Emblems on their shirts honor the National Union of Tanganyika Workers. President Nyerere, however, has warned the major powers, "We shall not allow our friends to decide who our enemies shall be."

their earnings, they get government help through the Regional Development Funds.

Mr. Millinga's 1973 list shows more than two million people in 5,628 Ujamaa villages, many of them started from scratch. He says the land chosen must be well suited for crops; and there must be room for small industries, so that later—as farming becomes more efficient—people will stay on and produce other things.

At the Ministry of Defense and National Service, a senior man tells of preparing the nation's youth for Ujamaa. "Youth" means people under 35, he says, and since that includes four of every five Tanzanians, it means nearly everybody. The idea is to give them skills for a meaningful rural existence.

"Advancement used to be equated with getting away from the sweaty life in the country. The young yearned for the glamor of the towns, but when they got there they'd find unemployment, and live off relatives. We take them to National Service camps, and aside from agricultural things we teach them construction work, plumbing, welding, bookkeeping, how to fix a generator. Above all, the national ethic!"

That means self-reliance and selflessness, the guidelines issued by TANU—the Tanganyika African National Union, the party that fostered independence and Ujamaa.

I also learn that a major National Service objective is simply to bring together young Tanzanians from more than a hundred tribes. I can see why Swahili—now the national language, increasingly spoken among all

A new iron horse, made in China, rolls through Tanzania (**below**) on the nearly completed Great Uhuru Railway from Dar es Salaam to central Zambia. Designed and funded by China at a cost of 400 million dollars, and built with the aid of some 15,000 Chinese workers and engineers, the railroad will help open up Tanzania's mineral-rich southwest.

the tribes—is a big help in all development.

As I leave, the official adds: "Of course there's also a military aspect." In the south the Portuguese have been crossing over from Mozambique, laying mines and frightening farmers, he claims. "So there must be military training."

I visit the camp in Mafinga in south-central Tanzania for graduation day. Youths in khaki show off their agricultural achievements: properly fertilized hybrid maize, Brunswick cabbage, beautiful pigs. The Director of National Service, uniformed like a general, looks pleased. The camp is self-reliant in vegetables.

The passing-out parade rings with sedate military music and a slow march-past, officers' swords carried forearm parallel to the ground and elbow rigidly tucked in, in the manner of Buckingham Palace. Quite a few in the ranks are girls. The parade comes by a second time, the swords dart high into the air and flash forward, bayonets on Chinese automatic rifles tilt forward and upward—"*Kulia Heshima TOA!*" Eyes Right! The boots come up high and crash down, a thundering goose step in the style of East Berlin.

There's also a little field exercise in the rain, with blank ammunition; I think of my basic training in World War II and hope these kids won't ever see real combat. When you're that green the casualties are fearful.

Nearby in Kalenga, in the land of the Hehe, I visit the mausoleum of Chief Mkwawa, who fiercely resisted the Germans; cornered and fearing betrayal, he shot himself in 1898.

Old men still come to talk to his skull, but the local administrator says he discourages this. The party de-emphasizes tribalism.

En route to the regional capital of Iringa, I see abandoned houses here and there, crumbling, and new mud-brick houses bunched the Ujamaa way, with corrugated iron roofs. Those are hot, a villager says, but they're an advancement—they don't burn like thatch.

In Iringa we stop in a backyard, my interpreter and I, for *pombe*, the local maize beer; five minutes later here's the dutiful TANU ten-cell leader—every ten Tanzanian families are supposed to have one. He wants to know what these strangers are up to.

Railway Threads Tomorrow's Rice Basket

After we have properly identified ourselves to him, and he has helped us finish our pombe, we head back to Dar es Salaam. Our flight offers a verdant prospect indeed: first a green plateau, green mountains splashed on it, magnificent emptiness. Then more mountains, higher and more jagged, a lone, round hut of the Vidunda tribe. Where the mountains fall off brusquely, and the Great Ruaha River breaks through, nestles the nearly finished Kidatu Dam. Then a green plain, hundreds of acres of sugarcane.

Dense forest now, a seemingly endless expanse—good soil, it's said, to grow rice enough for millions, but nothing man-made can be seen except, eventually, a thin straight line. It's the Great Uhuru Railway, a minuscule string of concrete ties and steel. It was strung here to help open this land for Ujamaa.

The pilot detours southward—the Tanzania People's Defense Forces are exercising their Chinese-built MIG-19's. The rectangular huts of the Zaramo appear in reddish forest clearings; fires smolder in fields soon to be planted; and behold—the palms and streets of Dar es Salaam. There's Tanzania's tallest building, the brand-new 15-story headquarters of the parastatal National Insurance Corporation.

After a restful weekend in Oyster Bay—

Thicket of steel rises above an army unit in Zanzibar, parading with swords and fixed bayonets. Several civilian paramilitary groups also bolster Tanzania's defenses against possible aggression by both white-ruled and black-ruled nations.

Political pivot in East Africa

TANZANIA'S UNIQUE BRAND of socialism is watched with great interest by political scientists, and its strategic position gives the nation additional importance to world leaders. To the east, a growing Soviet naval presence in the Indian Ocean has led to proposals for expanding a United States base there. Tankers bound for the West from the Persian Gulf steam past Tanzania's shores, crossing sea-lanes busy with shipping from the People's Republic of China, which has found in Tanzania a firm African friend.

To the south lie bastions of white-minority rule, excluded from the Organization of African Unity (map, **above**). Tanzania has been harboring nearly every liberation movement pitted against them. Its Great Uhuru Railway will now provide an independent trade line for Zambia, which once had to depend on rail routes through white-governed territory.

Portugal has promised independence to Mozambique in June and to Angola in November. Increasingly isolated, Rhodesia and South Africa opened negotiations late last year with Rhodesian rebel groups. The talks, in which President Nyerere played a key role, yielded a cease-fire with Rhodesian guerrillas and hope for detente between blacks and whites in southern Africa.

Back home, Nyerere must also keep an eye on periodic disputes with neighboring Uganda, Burundi, and Malawi, as well as with Kenya.

many top officials of parastatal organizations live there, and many ambassadors—I'm ready to tour other landmarks on the outskirts of "Dar."

The din is deafening at the Friendship Textile Mill, and no wonder. Nearly a thousand looms are banging away in a hall the size of two football fields. It's Tanzania's biggest factory—4,700 employees. It could manage with half that many by using more modern machinery, but it doesn't want to. People need jobs and labor isn't expensive, machinery is. The Chinese set it all up.

The main products are *khanga*, those wildly colorful sheets of cotton women wrap around themselves. They buy them in pairs, using the second sheet for head cover, or as a sling for hauling the baby around. You see them everywhere, in the markets, in the fields, those little heads peering out so sweetly.

What does it say on this green-and-yellow khanga? *Furaha ya Pasaka*. It means Happy Easter. There are new designs all the time, for Christmas, for big football matches, for TANU anniversaries. The Friendship mill runs around the clock but probably won't reach its goal this year, says the production chief. Too many power failures.

Hoes, Paperbacks, and Pentagon Papers

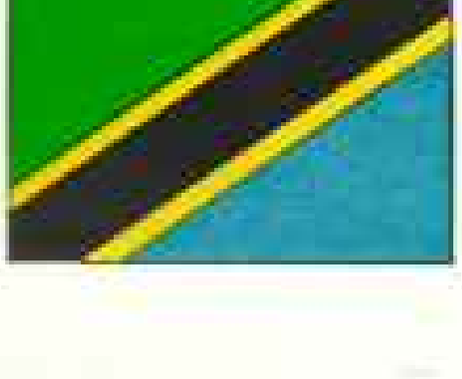
At the Ubungo Farm Implements factory I'm surprised to hear that there's demand for no fewer than two million hoes a year. The general manager says the hard ground wears down a good hoe in three years, and six million people are using hoes. With luck, his capacity will soon top a million.

On Observation Hill rise clusters of modern buildings of the University of Dar es Salaam—a nine-story arts tower, 12-story dormitories. Some 2,000 students ponder impending exams. I stumble into a symposium on Ujamaa as seen through the eyes of Lenin: Will Ujamaa villages breed capitalists? A gigantic bookstore displays paperbacks, a bulletin board announces Daniel Ellsberg coming to talk about the Pentagon papers.

Most visitors to Tanzania come to see the great animals up north, and I can hardly wait to get there, to Lake Manyara and Ngorongoro Crater. Sure enough, the lions, elephants, hippos, giraffes, and lesser quadrupeds are visible as advertised; the tourists in their minibuses and Land-Rovers are delighted. To come so close to an uncaged elephant and not need to worry! If his ears stiffen threateningly,

TANZANIA

GREEN OF THE LAND and blue of the sea fuse in a bond of African brotherhood on Tanzania's flag. United beneath it live more than 100 tribes, in a country that ranges from the tropical eastern coast to the shores of the continent's three largest lakes—Victoria, Tanganyika, and Nyasa. The mainland was part of German East Africa until Britain gained control after World War I. Off the coast, Arabs who enslaved the islanders used to boast, "When the pipes are played on Zanzibar, all Africa east of the lakes must dance." The pipers had changed their tune by the time Zanzibar became a British protectorate in 1890; it gained independence in December 1963. Just 34 days later, a bloody coup installed the black nationalist Afro-Shirazi Party that governs today. In 1964, Zanzibar joined Tanganyika to form the United Republic of Tanzania.



AREA: 363,000 square miles. **POPULATION:** 14,000,000. **LANGUAGE:** Swahili ("Mother's breast is sweetest, no other satisfies," wrote an African poet about the Bantu tongue), English, tribal languages. **RELIGION:** Christianity, Islam, traditional tribal beliefs. **ECONOMY:** Coffee, cotton, sisal, cashew nuts, cloves. **MAJOR CITY:** Dar es Salaam, capital, pop. 500,000. **CLIMATE:** Hot, muggy coast to freezing mountain peaks.

the driver will step on the gas and pull out.

In comfortable lodges there's animated conversation. "How's your curried antelope?" "Great, like veal." I hear talk of impalas, zebras, buffaloes, of wildebeest (or gnu); about the big cats, and how marvelous it is to see so many wild creatures live so calmly together. "Such innocence," says a lady from Connecticut, "a Garden of Eden, a paradise."

Morning on Lake Manyara is memorable indeed. How fresh and moist the foliage, how pervasive the smell of fresh dung. Who wouldn't be enchanted by this elephant propping her newborn with her trunk? Or by that rhino mother and child? By 10:30 the smell is gone with the heat, the tourists are again out in force.

And Ngorongoro Crater! This 11-by-13-mile saucer with a 2,000-foot-high rim and all the wildlife in it has been called the eighth wonder of the world. But look, encircling four dozing lionesses stand six vehicles—27 cameras are clicking away. A lioness yawns. And suddenly it's not so much like a paradise but more like a zoo.

Massive Herds Roam the Serengeti

Driving northwest I pass Olduvai Gorge (right), where Dr. Mary Leakey studies some of the most intriguing fossils ever found, and enter Serengeti National Park. It's bigger than Yellowstone plus Yosemite.

The Director of the Serengeti Research Institute, Dr. T. Mcharo, takes me up in a high-winged Cessna to fly over columns of migrating wildebeest (pages 493-97). To count them, we look down and estimate the number within an imaginary box, lined off by streamers that flutter from the struts of the plane.

And it's 4,000 on the left, walking . . . and 5,000 on the right, standing . . . and 2,000 standing and drinking in the Grumeti River.

"Huge crocodiles, up to 19 feet . . . Hold on!" We swerve, to avoid a flock of European storks—if one hits the prop we could crash. In an hour we add up 350,000 wildebeest; the total estimate for the Serengeti is 1,200,000. Many are babies and a lot of those will die soon, but the remainder will still add up to around a million.

Elephants are counted individually for the computerized Serengeti Ecological Monitoring Program. There's been controversy about these elephants. They strip the bark off the acacia trees, so game wardens have wanted to shoot some. The scientists say wait, acacia

BEN BARTLETT, ARNARD DEMIS PRODUCTIONS (PHOTO) AND BOB CAMPBELL (RIGHT)

Sun-bronzed graveyard, Olduvai Gorge entombs the skeletal remains of early hominids—relatives of man. The bones have been painstakingly excavated here in Tanzania's Serengeti Plain by the Louis Leakey family, aided for 15 years by National Geographic Society grants. Dr. Mary Leakey (**right**), here helped by a student, carries on the work of her late husband. On July 17, 1959, she discovered part of a skull and two teeth—and pushed human prehistory back a million years. It was *Zinjanthropus* (**left**), a 1.75-million-year-old near-man, later renamed *Australopithecus boisei.*

seeds are attacked by weevils; but when an elephant gobbles them, the seeds will emerge softened for germination, and protected in dung. The result should be more trees.

Alas, the Serengeti ecosystem isn't easy to fathom, any more than the socio-economic dynamics of Tanzania. I must move on.

In the northern tourist center of Arusha I see tobacco pipes made for export from locally mined meerschaum. Driving to another tourist town, Moshi, near the Kenya border, I take a dusty detour to see the mining of glorious gems of transparent purplish blue. Tiffany's has named them tanzanites.

It's bracing to stroll through Moshi, past a mosque and a pyramid-shaped Hindu temple; most of the shopkeepers, accountants, and entrepreneurs are of Indo-Pakistani extraction; Tanzanians refer to them as Asians. Behind the YMCA floats Kibo Peak—that's the top of Kilimanjaro, all covered with snow. In a minute it's gone, into the clouds.

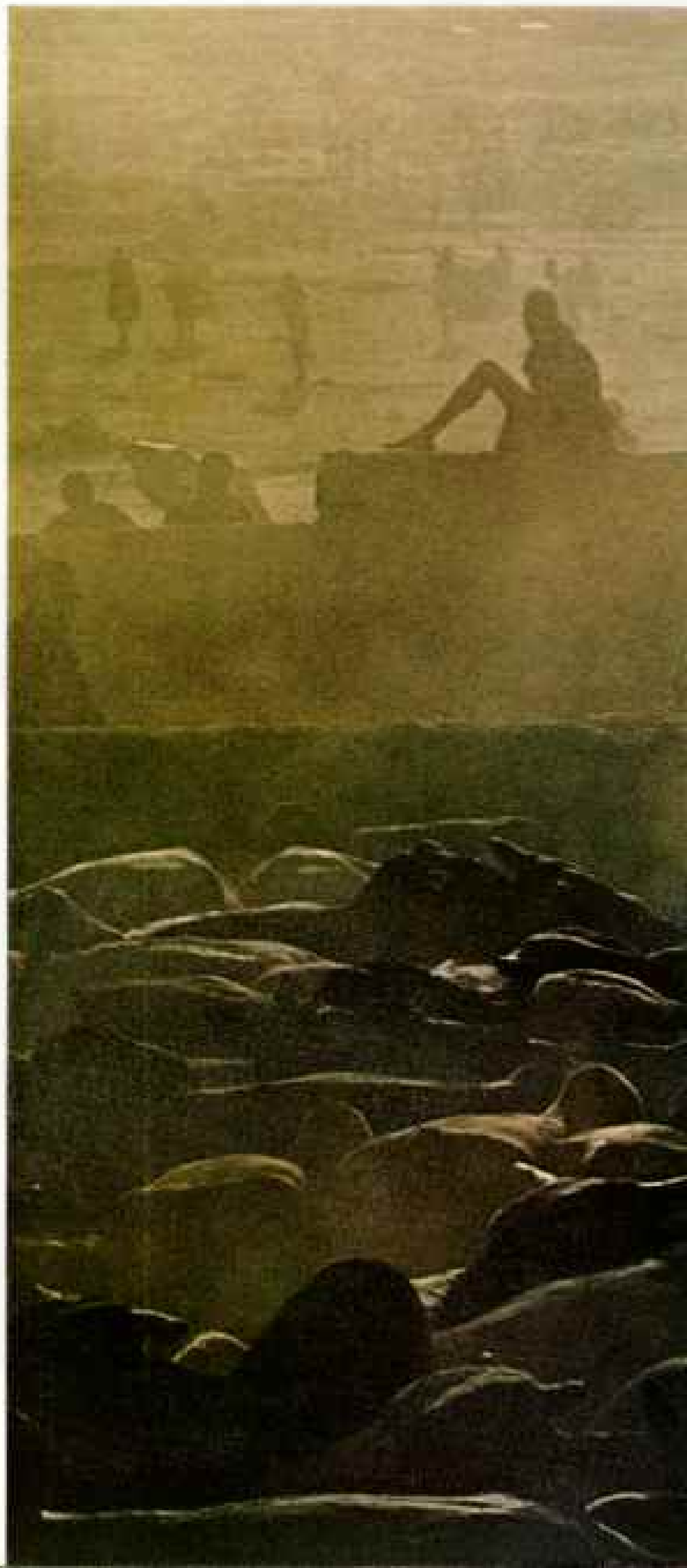
At an outdoor meeting a man says the militia training isn't good enough, people should do it over. The regional commissioner tells me this is not for foreign consumption; I'd better stick to writing about coffee. Beans of excellent quality grow on the slopes of the big mountain.

Most of the larger coffee farms have been nationalized, and one of the last expatriate coffee farmers is packing to go back to England. I admire the pretty cottage, the clipped lawn. He says I should have seen how beautiful it was before—he doesn't care about it now. His wife shows me her photo album, how it was when they came 26 years ago, all wild. My interpreter is here too. He asks if they're sorry they exploited Africans; he means they built up their property with African labor for very little pay.

The lady explodes: "The Africans are exploiting us!" The compensation offered, she says, would barely cover the dairy herd and vehicles; what about her 65,000 coffee trees? As I leave, I see an African with his little son riding on a tractor. He says he's happy; now no overseer pushes him around.

I fly back to Dar, over parastatal plantations of sisal, stopping briefly at the old sisal-shipping port of Tanga. It's Saturday evening and cheerful noise wafts from a dance at the Tanga police club. Asian couples throng the oceanfront. They don't go to dances, they sit and look out to sea.

On Sunday in Dar, President Nyerere is at Mass in St. Joseph's Cathedral. He's a son of the fifth wife of a Zanaki chief, an M.A. of Edinburgh University and a former teacher of history and biology, a founder of TANU. He showed the way to independence. He has worked in Ujamaa villages, making mud



Dust of drought hangs over gaunt cattle at an emergency auction ordered by the government near Arusha. When grazing lands were stripped bare and weeks went by without rain, cattlemen were urged to sell before their animals starved.

bricks and digging water trenches, to set an example. He is Mwalimu, "The Teacher."

He just broadcast to the country in his usual good humor, but the subject is somber —drought in the north and the center, food shortages in Dar. Tanzania has rice enough for two months, maize for six weeks, wheat for just a week; much will have to be imported, at ruinous prices. But people can eat other things. His tribe used to eat millet and maize and now they eat millet and cassava. It's possible to change. . . .

In the port a Chinese liner lands railroad workers. I drift to the dhow harbor. Where's all that Coca-Cola going? Forty-five miles away, to Zanzibar. Thirty-two thousand cases a year, says a shipping official. The empty bottles come sailing back.

It's time I visited this offshore portion of Tanzania, and 17 minutes after takeoff from Dar airport I am over a green island stretching 50 miles. Amid dense palm forests on the western coast lies Zanzibar town. It was a slave-trading headquarters into the mid-19th century, and a font of Swahili poetry into the 20th. From the air I see a crenellated fortress of brownish coral stone, and *(Continued on page 498)*

Wildebeest blur in flight, suggesting a cave painting come to life (**above**), in an image captured by a unique shutterless camera. Its designer, staff photographer Emory Kristof, also used it to portray the fluid grace of a bounding zebra (**right**).

Forty years ago Ernest Hemingway saw game-rich stretches of what is now Tanzania as "virgin country, an unhunted pocket in the million miles of bloody Africa." Where he stalked rhino and kudu, his son, Patrick, teaches conservation to aspiring game wardens at the College of African Wildlife Management near Moshi. The nation has set aside nearly 40,000 square miles of land to protect millions of animals, including this elephant and her wobbly-legged calf, just hours old, in Lake Manyara National Park (**left**).

Yet the wild environment endures precariously. In a country where many people earn less than $100 a year, a good zebra hide can be worth $50. Each year poachers kill thousands of animals.

Like iron filings drawn to a magnet, hordes of wildebeest (**overleaf**) mass near a river in the grasslands of Serengeti National Park. The animals' numbers are so vast that some believe herds could be carefully cropped to provide 24 million pounds of meat each year for hungry Tanzanians.

FACING PAGE FOLDS OUT

rows of cement-colored apartment blocks.

From here Zanzibar's African population, by far the majority, was ruled by Arabs whose ancestors came from Oman in the 1690's but themselves slipped under British overlordship from 1890 to 1963. Europeans and Arabs lived in "Stone Town." Africans lived apart in warrens of mud and wattle.

Things changed one night in 1964. Hundreds of Arabs died in an African uprising. The last Sultan of Zanzibar fled to England. And the new rulers—the Afro-Shirazi Party, or ASP—agreed to merge Zanzibar with newly independent Tanganyika to form the United Republic of Tanzania. Those big apartment blocks are the work of the ASP.

More Work, More Privileges

Work bustles this afternoon around a couple of unfinished six-story buildings, women and men carrying steel scaffolding, hoisting 30-pound concrete blocks. They aren't construction workers, just party members out for a stint of nation building. Many women wear the *buibui*, a loose black robe put over the khanga to conceal the contours of the body (page 508). It may be hot but it's proper.

Every Zanzibari community is an ASP branch—so I hear from a fatherly branch chairman amid the hubbub. His village of 6,000 souls has 2,000 adults, and some 1,700 are in the party. About 150 are here today and each will get an entry in his Nation-Building Book. I see one man's book: 26 entries for last year.

The chairman says, "He who works more for the nation gets more privileges." Such as what? "Say a man wants to build his own house. The land is free but he needs my permission. I look at his book. . . ."

All this is symbolic of the revolution's greatest achievement—so I am told by Aboud Jumbe, President of Zanzibar and First Vice-President of Tanzania. He means a new attitude.

"Before, people were led to believe they could do nothing for themselves—'It's the will of Allah!' That has changed. In 1965 our friends from the German Democratic Republic decided to help us build housing, but after the first block we said, 'Why can't we do this ourselves?' Now we do practically everything with self-help schemes."

He talks about still another big change. "People wore clothes full of patches. They were told they shouldn't be ashamed, the

Harlequin fields—some of the last

farmland tilled by Europeans—quilt the foot of a cinder cone near Mount Kilimanjaro.

Tick-tack-toe of a new apartment complex rises amid mud-and-wattle houses in Zanzibar town (**right**). The state-built dwellings will provide free housing for some 7,000 citizens. Zanzibar and Pemba, the "Isles of Cloves," jealously guard the riches they reap from supplying much of the world demand for that tropical spice. Reflecting progress in a shop window, a TV set brings news and educational programs to Zanzibaris from the first regular color station in all Africa (**below**).

Prophet also wore patched clothes. The stores were full but people had no money. After the revolution the land was redistributed. Every family was allotted at least three acres, so if you have a good crop you'll have money. Now the problem is to get enough goods to satisfy the demand."

I ask why Zanzibar joined Tanganyika.

"It's a natural development of geography and history. Most of the people originally came from the mainland. I was born in Zanzibar, but one of my grandfathers was from the mainland. So was my mother's mother. Excuse me, I must say my prayers." An aide brings a little carpet, and the First Vice-President of Tanzania goes out on a balcony to reaffirm his submission to the will of Allah.

Walking in Zanzibar town, I see a few Arab faces in the market. In the museum I view porcelain sent to the sultans by emperors of China, and sedan chairs that carried the British resident and his wife on rural visits. At ASP headquarters a statue commemorates Mr. Jumbe's predecessor, assassinated in 1972; in the aftermath, 43 men were sentenced to death for treason. At dusk a crowd gathers before a shop window to watch television. A children's program explains electricity.

Driving north from Zanzibar town, I am impressed by this island's bounty. Within a 30-foot circle of tan-colored soil I see oranges, pineapples, bananas, cassava, and

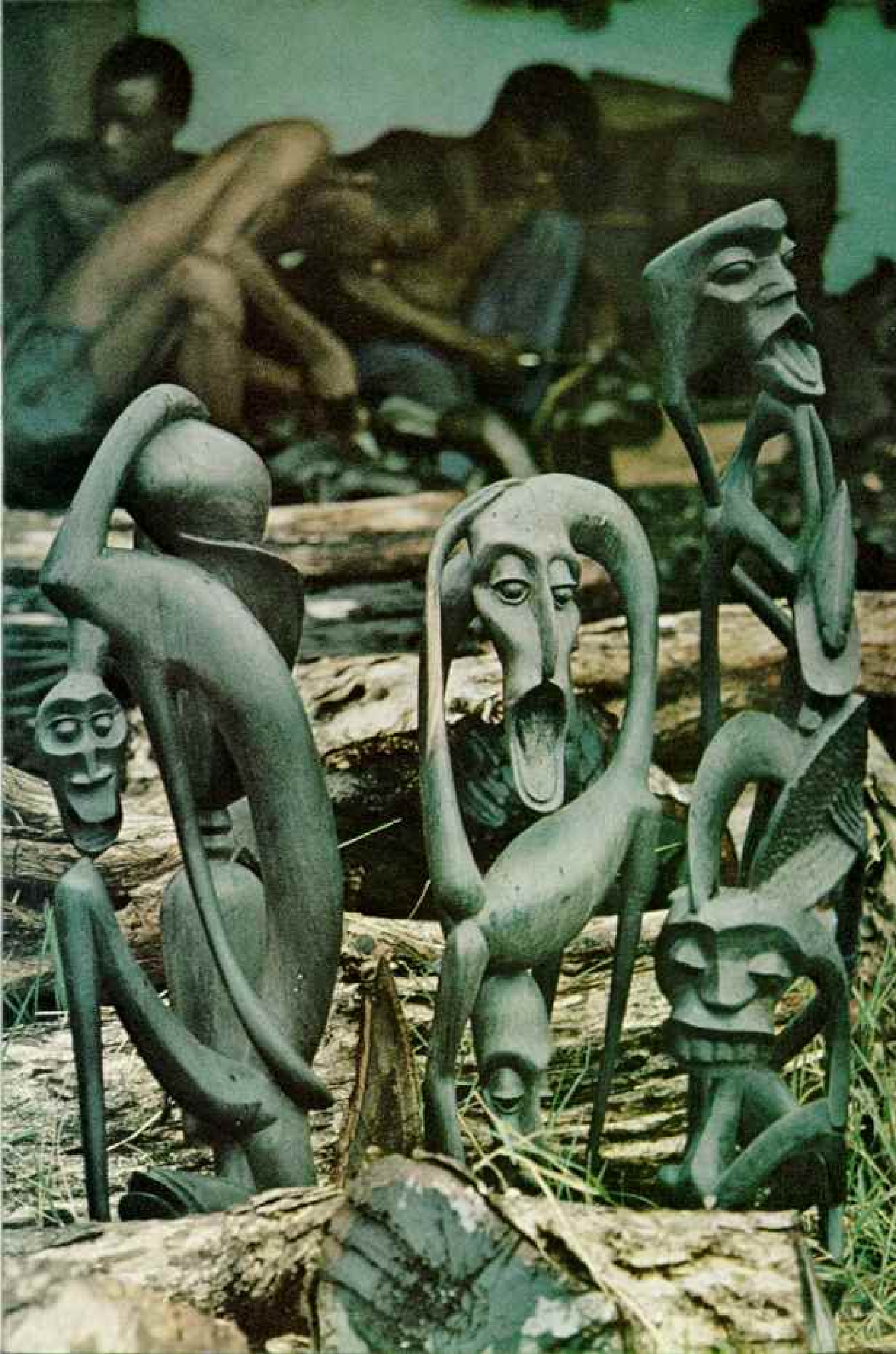
chilies—and an ilang-ilang tree, whose yellow blossoms mix with coconut oil to make perfume. Also a yam plant, a cinnamon tree, and towering above all a tree bearing tiny reddish buds—the famous cloves, basis of the Zanzibari economy.

Separate Accounts Favor Island Dwellers

A family with clove trees on its three acres can count on cash sufficient for its needs. Zanzibar, whose territory includes the island of Pemba 30 miles to the northeast, produces more than two-thirds of the world's cloves. That means some 35 million dollars annually in hard currencies. Zanzibar keeps its foreign exchange accounts separate from those of mainland Tanzania, so the entire amount can be spent for imports on behalf of a population of no more than 425,000. If the U. S. sold a crop on a similar scale, it would bring 17 billion dollars.

I continue north past a cigarette factory and a plant to process sugarcane—both new, built with aid from Chinese experts—to the old fishing village of Mkokotoni. Every minute a new catch comes ashore: bundles of arm-long fish, an octopus. Three men drag a spotted ray across the beach to a scale: 85 pounds. Next, a four-foot turtle.

Offshore bobs a gray gunboat, a gift from Peking, with twin cannon fore and aft. It guards against smugglers taking cloves north



to Kenya. The penalty can be death. May I visit the Arab ruins on little Tumbatu Island two miles away? Sorry, off limits, maneuvers going on.

Heading southeast, I visit a state farm: Rice farmers tend individual plots, and the state does the plowing for a share of the yield. I see a hardwood forest planted with *mzambarau* trees for furniture, *mvinje* trees for construction, eucalyptus for telephone poles. Whoosh! A two-foot monkey with a baby on her back lands overhead in a *mfuu* tree. She's after its cherry-size fruit.

Another 15 miles, past another newly plastered dispensary, another new elementary school—and there's the new town of Makunduchi with four-story apartment blocks amid palms. Beyond, an outrigger rests on golden sand. Idyllic. Too bad the tide is out, a quarter of a mile out. Walking on and on toward the blue of the Indian Ocean, on coral, is a pain in the feet.

Along the road back to Zanzibar town dozens of women dance under a spreading mango tree. It's a wedding. Groom and bride have gone, but the dancing will go into the night. I see a man driving home a flock of goats, but what's this? Each wears a muzzle woven of palm fronds. "So they won't eat other people's cassava on the way," says the man. Is it hard to muzzle goats? "No, when they've grazed enough they come and want me to put them on, so I'll take them home."

Alcohol, Malaria, and U. S. Imperialism

In the city, the crowd at the TV shop window thickens. A film shows Pemba Island—same greenery, same new apartment blocks but more of them. Pemba grows 80 percent of Zanzibar's cloves; it gets more rain, and that's good for cloves. The telecast ends with an English lesson incorporating warnings against alcohol and malaria. "And don't miss the big demonstration tomorrow against American imperialism."

Next morning, here they come, the green shirts of the Youth League, or Green Guard, and hundreds of blue-and-orange shirts imprinted with party slogans. They come at a slow run, 40 abreast, clapping, shouting, with big banners: INDIAN OCEAN IS NOT FOR U. S. MILITARY BASES! U. S. IMPERIALISTS GET OUT OF AFRICA, ASIA, AND LATIN AMERICA!

They squeeze into narrowing streets and spill out into the square before the American Consulate. Next to me a little middle-aged lady leads the shouting. Should the Americans be removed from the Indian Ocean? *Ndiyo, Ndiyo!* Yes, Yes! *Kwao, Kwao!* Go Home! Go Home! A forest of fists flails the air.

I am pushed against the consulate building, and a police commander points his swagger stick at me: "Don't lean against their wall, you'll make it dirty! We haven't come to quarrel, only to express our feelings." At last a green shirt with an electric bullhorn tells everybody to go back to work. It's over.

On the Trail of Burton and Speke

I fly back to the mainland, then follow the old westward route of the mid-19th-century explorers—Burton and Speke. I'm on the old railroad, built under the Germans some 70 years ago. The tracks are frail; our speed is 35 miles an hour.

A stopover in Morogoro, where the College of National Education graduates another 200 teachers. On the wall, a thought from President Nyerere: "For educated young people there is a special temptation. . . ." They mustn't seek privileges at the expense of others.

Next, Dodoma. The new national capital is to rise here—centrally located, good dry climate, lots of clay and firewood to make burnt bricks; the plan calls for 120,000 a day.

Overnight in Tabora, a center of schools, also of honey collecting. The train chugs north now, the way Speke walked to find the waters he named Lake Victoria. I take ship to cross this calm inland sea, the third largest lake on earth. Only the Caspian Sea and Lake Superior are bigger.

I disembark in Bukoba, in the land of the Haya, and am struck by visions of ecclesiastical modernity: a Lutheran church in concrete and copper; a Roman Catholic cathedral in rough stone, concrete, and multicolored glass, recently consecrated by His Eminence, Laurean Cardinal Rugambwa, who in 1960 became the first black cardinal.

Incarnate spirits spring from the minds of Makonde tribesmen, whose modern sculptures in African ebony are widely prized. Most of the carvers emigrated from northern Mozambique and, with government encouragement, sell their works in Dar es Salaam. These pieces embody the widespread belief of Tanzanians in magic and spirits.

And, lo, the bishops of Bukoba are promoting a dam! I've seen churches and missionaries all over Tanzania provide schooling and medicine, but nothing like this. It's the Ngono River multipurpose project, promising swamp drainage and electricity. To help pay for equipment and materials, the bishops collect funds in Europe. Local Moslem leaders promise road improvements and transport. And labor? Self-help, through TANU.

I fly to Lake Tanganyika, and at the little town of Ujiji I see a monument where 104 years ago Stanley found Livingstone. In the Western imagination this was then the heart of darkest Africa.

The monument has a new fence. Nearby, men in Arab-style white robes discuss the price of *dagaa*, the local freshwater sardines. The government has fixed it low. The price is high across the lake, in Zaire. A policeman tells me the smuggling is brisk; back come secondhand American clothes. In the market I see shirts neatly laid out on the ground. Sears. Brooks Brothers. Nothing in my size.

A Lake Full of Protein

Off Kigoma, after dark, a string of lights stretches for miles—fishermen seeking to attract dagaa to their nets (page 507).

"Lake Tanganyika has a tremendous underexploited stock of sardines," a man from Idaho tells me. He should know—he's an aquatic biologist working for the U.N., and he just surveyed the lake with an echo sounder. "The biomass is incredible!" An average of 800 pounds an acre, mostly ever-shifting schools of dagaa. Dry them in the sun, and you might have 65 percent protein.

Masses of protein! This may someday be an answer to Tanzanian toddlers' malnutrition, and to their resultant susceptibility to disease. All a lot of them get is starch. Babies are breast-fed, but when the second child comes along the first goes to grandmother, and she'll give the kid only bananas, or "stiff porridge" of maize meal, or whatever she got when she was a kid. . . .

"I go around telling women about the children's need for balanced nutrition," says a pretty rural-development worker. "It's not just a matter of money, it's a matter of education. The government is doing its level best."

My last flying stopover is the Mbeya Region in the far southwest. At a Ujamaa tobacco-growing complex I see a brick schoolhouse, a dispensary, a cistern with water piped from a stream 27 miles away. Also hundreds of acres of maize and tobacco, and big barns for flue-curing the golden Virginia leaf. Out in the fields are little sheds, for men assigned to chase off vermin—baboons by day, bush pigs by night. Elephants come once in a while; they love to chew tobacco.

Hailstorms destroyed much of the tobacco crop, says the young commissioner in charge of the Chunya District. "But the number of kilos of tobacco and maize we get is not the measure of our progress, not at all," he adds. "We could get machines and have a huge crop, but that's not the idea. Most of these people used to be honey gatherers and hunters in the forest. They had to be persuaded to come together. They had to clear the bush and build the barns. The policy of Ujamaa has man as its goal, and we are creating a new man, a man involved in creating his own future. We are very happy."

Around the regional capital I see plantations of daisylike flowers—pyrethrum, a source of insecticides—and extensive switching yards. Mbeya is an important station on the Great Uhuru Railway, close to Zambia. The Chinese have granted a new loan for a branch of the railway to exploit coal and iron deposits in this region. Mbeya may be a steel-making center some day.

To the big market in Mbeya come blue-clad Chinese railway men in big green trucks, for oranges and bananas. "They drive a hard bargain," says a seller. Another says their trucks are strong but his Chinese bicycle isn't holding up very well. A third man defends the Chinese with an old Swahili proverb: The gratitude of a donkey is a large belch.

Tanzanians Help Fight Colonialism

Back in Dar once more, I visit the offices of Frelimo, the Front for the Liberation of Mozambique. "This has been the best country for our communications and supply," says Joaquim Chissano, the representative of Frelimo in Tanzania. That day there's another Frelimo communique—another 21 Portuguese planes destroyed. Since then, Mr. Chissano has been named Prime Minister in the new interim government in Mozambique.

I look up the Tanzanian Foreign Minister, John Malecela. He makes no bones about it: To eradicate racialism and colonialism from southern Africa, and establish majority rule there, bloodshed has been necessary, peaceful efforts having failed. "It's our duty to help."

Weapons, the foreign minister says, have been coming from the Soviet bloc and China. But Tanzania, he insists, is not committed to any superpower, East or West. "We have not been swallowed up by the Chinese. We are nonaligned."

I sit under mango trees in the modest suburbs of Buguruni and Kariakoo with men stopping on their way home from offices, sharing the habitual stringy beef broiled over charcoal. We discuss the merits of different beers and football clubs—"happiness things," one man calls them. At night along Morogoro Road I join thousands happily watching a movie on an outdoor screen. It's an ancient American Western, interrupted by commercials for hair tonic made in Kenya. You might call it a flickering of free enterprise.

Workers Exploit the System

But more and more I get wind of less happy matters I cannot possibly ignore, especially since official voices and publications deal so bluntly with these issues bedeviling Tanzania today. For example, President Nyerere urged that cattle starving in the drought be sold quickly to meat-packers, but what did those parastatal meat heads want to buy? Healthy cattle, not the half-starved animals. The President himself, on the radio, calls this silly.

Or consider the unhappiness of many a Ujamaa settler. After his village's cash crop is sold, the proceeds are divided according to the number of days worked by each village member, and that's fair—but what if you've worked very hard while another man has been lazy? He has worked as many days but not nearly as hard, and now he gets exactly as much money as you do!

Or listen to a factory manager who just met with his workers' council: "They said, 'You have a car and a driver, why can't you take a bus or walk?' I said, 'I'm on call 24 hours a day; if a minister wants to see me I must be in town in 15 minutes.'" The manager must explain, and the workers must agree. "If they don't it's best not to push it." That's the backwash of the TANU Guidelines, Point 15—saying in effect that party leaders and managers shall not be uppity, everybody is as good as everybody else.

A bank executive says he now has twice as much help as before, turning out half as much work; but if he complains the help will lock him out. They could get him fired.

President Nyerere goes on the air again. He says that those who do not do a fair day's work for a fair wage are in fact exploiting the others who do. That socialism doesn't bring wealth or poverty, it's work that determines how much wealth or poverty there is. "Before independence we used to promise each other 'Freedom and Work.' Now we should say 'Freedom *Is* Work.'"

Is there something stirring beneath the surface that has escaped me? A frequent visitor to Tanzania, a seasoned African politician, tells me that promising Ujamaa villages he saw years ago have simply faded away. That some parastatal bureaucrats and certain elements *want* things to break down. Is the great social experiment coming apart?

To get away from worrisome politics, I make for the fishing and snorkeling paradise of Mafia Island. And I visit Kilwa Kisiwani, with its romantic ruins by the sea—a broken pool of a vanished Arab palace; a fort dating back to the days when Vasco da Gama came by collecting tribute. On the beach I pick up a fragment of blue-and-white china. Chinese? A museum curator confirms it later: cheap Chinese export ware, probably late 16th-century.

Elephants Survive—But Will Ujamaa?

I wind up in the Selous, pronounced Seloo (map, page 487). It's one of Africa's biggest game reserves, more than three times the size of Serengeti. It's a great place to think.

Stay away from the elephants here, says the local biologist, or they'll go after you. He has a map of mainland Tanzania, overlaid with a grid of 1,232 squares, each 17 by 17 miles. "Imagine you could look down at the actual countryside, with all the foliage stripped away. You'd see elephants in 1,132 of those squares! At least that's what our surveys showed in 1960, and since then things haven't changed significantly." The elephants are surviving, poachers or no poachers.

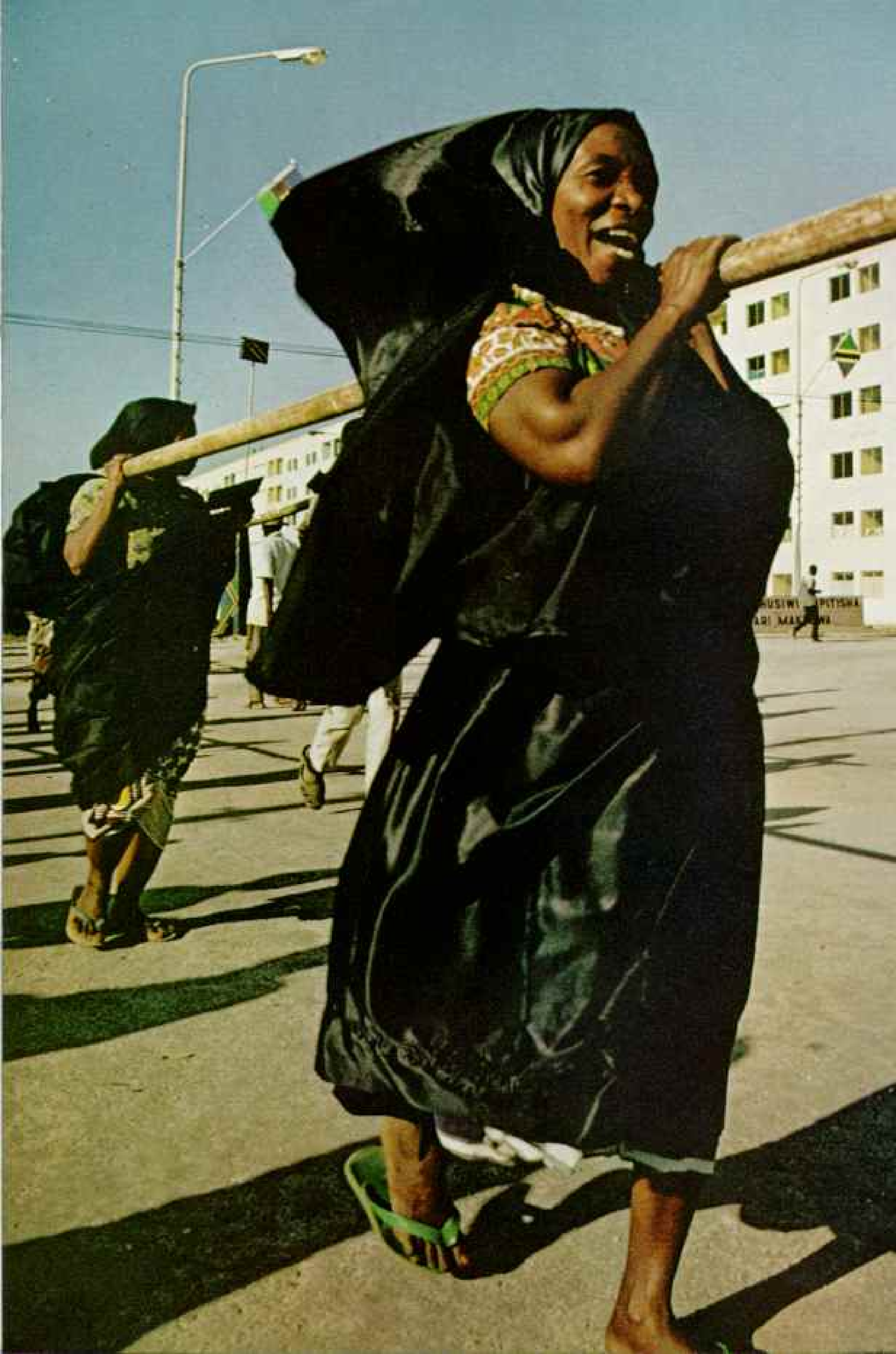
But I can't keep my mind on animal problems. Will Ujamaa survive? I am haunted by a conversation with a distinguished Tanzanian: He thinks a crunch is coming—a crisis in the leadership circles.

"On the one side there are young party members strongly indoctrinated by TANU," he said. "They are committed to building and strengthening Ujamaa."

In my travels I had met scores of them, many fresh from the university, in low-paid but highly important jobs. They serve as

"**No matter how full** the river, it still wants to grow," warns an African proverb, most aptly for the swollen Rufiji (**above**). Its floods give life to the surrounding fields, but often drive villagers from their houses (**left**).

Plying friendlier waters, fishermen on Lake Tanganyika ready their nets for *dagaa* (**right**). The freshwater sardine, nearly 65 percent protein when dried, could add a much-needed nutrient to Tanzania's starch-laden diet. They are best caught during the dark of the moon, when kerosene lamps draw the fish to the surface.



administrators. They instruct villagers in scientific agriculture and the economics of cooperatives. They teach in Tanzania's vast adult literacy program. The very existence of this highly educated group attests to Tanzanian progress, as much as do the modern factories turning out tires and transistor radios.

But what about the opposing side in that leadership crisis my Tanzanian acquaintance foresees? I asked him who those people are.

"They are older bureaucrats," he replied, "and business-minded men, educated in the English way to seek personal success.

All Classes Must Share the Burden

"When Ujamaa was introduced, everyone loved it," he went on. "This privileged class did not feel the practical implications at first. They thought Ujamaa was intended for the poor people living in the bush; they thought they would *lead* the poor, not share their lives. But now Ujamaa has crept up to the leaders' doorsteps. They are heavily taxed. They, too, have to move to planned villages, and live without luxuries and private automobiles."

The conflict, he concluded, is between young revolutionaries willing to use force to further African socialism, and older bureaucrats opposed to Ujamaa. Some might even welcome an army revolt to sabotage the programs in the name of national salvation.

Where it will end, no one knows. But the outcome will be of great moment to Tanzania, to Africa, to the world.

It's late, rain is drumming down on my tent in the Selous. My transistor radio plays the national anthem. "Bless the children of Africa . . . Bless the children of Tanzania."

And I remember a children's program on color TV in Zanzibar. A boy and a girl do homework but mother keeps tearing pages from the girl's notebook, for wrapping fish. Father sends the boy on an errand and takes the lamp away. The boy comes back. He lights a candle. The kids study on.

The message is, Don't give up. □

Zeal buoys the building of a nation as Moslem women, clad in the traditional *buibui*, volunteer to move scaffolding at a Zanzibar construction site; more days worked for the state earn them more privileges. Tanzania now faces the test posed in one of its tribal songs: "You have finished the night —now put on the fire and cook!"

By KENT BRITT NATIONAL GEOGRAPHIC STAFF
Photographs by TED SPIEGEL BLACK STAR

. . . so far from having given the least countenance or encouragement, to the most unnatural, unprovoked Rebellion that ever disgraced the annals of Time; we have on the contrary, steadily and uniformly opposed it, in every stage of its rise and progress at the risque of our Lives and Fortunes.

The Loyalists

OUTCASTS. EXILES. LOSERS. Pariahs. These were the founders of Shelburne, I thought to myself as my car crept along the sleepy main street of this town of 2,700 on Nova Scotia's southern coast. Their enemies, of course, had called them by other names. "Tories" was the kindlier term, "traitors" the more common.

The Shelburne settlers and thousands more like them who fled to Canada from the infant United States had given themselves a different label—Loyalists. They were the Americans who during the Revolutionary War remained faithful to the British Crown. I was reminded of the name—and its lasting place in history—as I pulled up and stopped for the night at The Loyalist Inn.

"The hotel was named to recall the early days," Mrs. Irving Quinlan told me. "My father bought the building in 1938—it was old even then—and he picked the name because it *was* the Loyalists, you know, who landed here and founded Shelburne. Why, I'd guess that half the people in town are descended from Loyalists. And proud of it!"

Proud?

Pride of accomplishment I could fathom, for Shelburne's settlers in a few years transformed shaggy forest and rocky shore into a vibrant city of nearly 10,000; a city of stately edifices and vigorous trade, of burgeoning shipyards and sawmills; a city with three newspapers and a dozen schools; the largest community in British North America, outstripping Montreal, Quebec, and Halifax.

But pride in being Loyalists?

To understand such a thing, I had to delve into American history's shadowy side, beyond the sunshine realm of popular myth that still cavalierly equates Toryism with treason. The myth sprang from hate—hate that began simmering several years before the outbreak of the American Revolution. As it came to full and furious boil, it burbled over with rancor and acrimony too searing for even the eventual peace to cool.

THE LOYALIST FAMILIES that disembarked in 1783-84 at Shelburne, originally called Port Roseway, could only regard "the late troubles" as a time of persecution, deprivation, and dashed dreams.

For their loyalty to the Crown, they had lost sons and brothers, family fortunes, and

With fervent word and violent deed, half a million colonists kept their allegiance to the British Crown during the American Revolution. New York City Loyalists in 1776 even penned a Declaration of Dependence (**above**). Florida's role as a royal stronghold is commemorated at St. Augustine's Castillo de San Marcos, where a British flag flies above a National Park ranger in the uniform of the 60th Regiment, Royal Americans. NEW-YORK HISTORICAL SOCIETY (ABOVE)

"**You are hereby notified to Depart** . . . as you are considered an Enemy to your Country—therefore take your all, and your Family, and follow your Friends to that Country that the King, your Master, has provided for those of your Character. . . ."

Thus Patriots drummed Loyalists from their communities. Almost 100,000 men, women, and children fled in the largest exodus in American history. It began in 1776 when, besieged by the fledgling Patriot army, Gen. William Howe evacuated Boston and escorted 1,100 Massachusetts Loyalists to Halifax, Nova Scotia (**right**). At war's end 35,000 more sailed to Nova Scotia to establish villages in the wilderness.

At one such town, Shelburne, ten families (**above**) gather for a portrait in the harbor where their ancestors landed two centuries ago. United only in adversity, they were as diverse as the ten colonies they represented. Farmers, tradesmen, and officials, they included Hessians, Huguenots, Dutch, and Negroes. Their allegiance sprang from devotion to Britain, fear of "democratic" mobs, and, in some cases, opportunism.

COURTESY PUBLIC ARCHIVES OF NOVA SCOTIA

friendships decades old. Neighbors had changed into spiteful enemies who physically maltreated some Loyalists, and publicly taunted many more with such scornful saws as "A Tory is a thing whose head is in England, and its body in America, and its neck ought to be stretched."

In truth, not much neck stretching occurred before or after the 1783 peace treaty. Instead, the Patriots, as the rebels tagged themselves, confiscated Loyalist-owned property worth millions of dollars and vengefully hounded thousands of Americans out of their homeland.

Modern experts estimate that after the Declaration of Independence about 500,000 Americans—one in every five—could be classified as Loyalists: those who remained loyal to the King and who opposed separation of the Colonies from England. For nearly 100,000 Loyalists, the price of allegiance was exile. They were the uprooted, the banished, many of them forbidden to return upon penalty of imprisonment or death.

One hundred thousand out of a total Colonial population of 2½ million: Today, a proportionate exodus would depopulate almost the whole of North and South Dakota, Nebraska, Kansas, and Minnesota.

Though humbled in war by inglorious defeat and shamed at war's end by a truckling peace, Britain resolutely set about making amends to her loyal Americans for the fruitless suffering they had endured. Three flotillas in 1783—the "spring fleet," the "June fleet," and the "fall fleet"—carried thousands of Loyalists from New York City to Nova Scotia, to settle on land granted them by the Crown. Thousands more, whose initial provisions were also paid for by the British Government, made their way northward however they could throughout that year and into the next. Still others sailed to more-distant ports: England, Jamaica, Bermuda, and the Bahamas.

The British Government eventually recognized some 4,000 Loyalist claims for property losses at the hands of the victorious Patriots, and approved payment of more than three million pounds. By today's standards, that's about eighty million dollars.

MAGNIFICENT OAKS, planted by Shelburne's early settlers, kept the blistering sun at bay as I strolled with John O. Bower across the shady lawn of his stately Loyalist-built home.

"My great-great-great-grandfather Adam Bower came here with the second fleet of '83," recalled Bower, a lean, alert man with the wind-leathered face and impeccable moustache of some Kiplingesque British colonel. A retired oil-company executive and onetime member of Canada's Parliament, he told me his Loyalist ancestor had submitted two claims to the commission in London because "he forgot to mention his eye in the first one."

Bower twinkled at my puzzlement. "You see," he continued, "when the so-called Patriots went to Adam Bower's South Carolina plantation, they didn't just confiscate all his slaves and horses and cattle: they also poked out one of his eyes. He figured he ought to get a little something extra for that."

Adam Bower was recompensed, and apparently he invested his money wisely. His family was one of the few to survive Shelburne's boom-to-bust cycle.

THOSE FIRST Shelburnians were ill-suited to life on Nova Scotia's coast, John Bower said; many of them had been large planters. "And a less likely place for the plantation business than this you couldn't find," he observed. "Little bits and patches of land could be farmed, but the rest was glacial debris—rock after rock the size of a house.

"The only ones who hung on," he added, "were those who adapted themselves to the economy of the place—lumbering, shipbuilding, fisheries. The others were living off whatever capital they had. They built fine homes with formal gardens; they even held cotillions. They maintained all the trappings of elegance, but they were steadily going broke. The rest of the province called them the 'dancing beggars of Shelburne.'"

By 1788 the Shelburne Loyalists had begun trickling away to other settlements. And a few, said Bower in mock wonder, "suddenly lost their enthusiasm for the Crown and evolved an enthusiasm for the new republic to the south. They went back to the States, where they kept their mouths shut."

By 1815 only four hundred people remained in the town, monuments of determination among the spectral hulks of dead and dying buildings.

Like most of the refugees who abandoned Shelburne, I made my way northward when I left, across the Bay of Fundy to the heart of Loyalist country—New Brunswick.

Now referred to as the "Loyalist Province,"

it was the emptiest, most forbidding part of Nova Scotia when the spring fleet sailed into Saint John Harbour in mid-May 1783. Those who disembarked found only a few huts in scattered clearings and Fort Howe's sprinkling of buildings atop a massive rock.

One Loyalist mother clambered to the top of a hill with her child as the empty ships headed back toward New York: "I . . . watched the sails disappear in the distance, and such a feeling of loneliness came over me that though I had not shed a tear through all the war I sat down on the damp moss with my baby on my lap and cried bitterly."

Most shelters during the first winter were crude: small thrown-together cabins, shacks, and spruce-thatched tents. Food and tools were lacking, blankets and lumber too.

Many refugees were weakened by their first northern winter. Some died before they had even reached Saint John. The transport ship *Martha*, carrying men of two Loyalist regiments and their families, foundered off southern Nova Scotia. Among 115 Loyalists who drowned, 40 were women and children.

Still the immigration continued, until about 14,000 Loyalists had relocated in the future New Brunswick. (See the map supplement, "Close-Up U.S.A."—Maine, with Canada's Maritime Provinces, distributed with the March 1975 NATIONAL GEOGRAPHIC.)

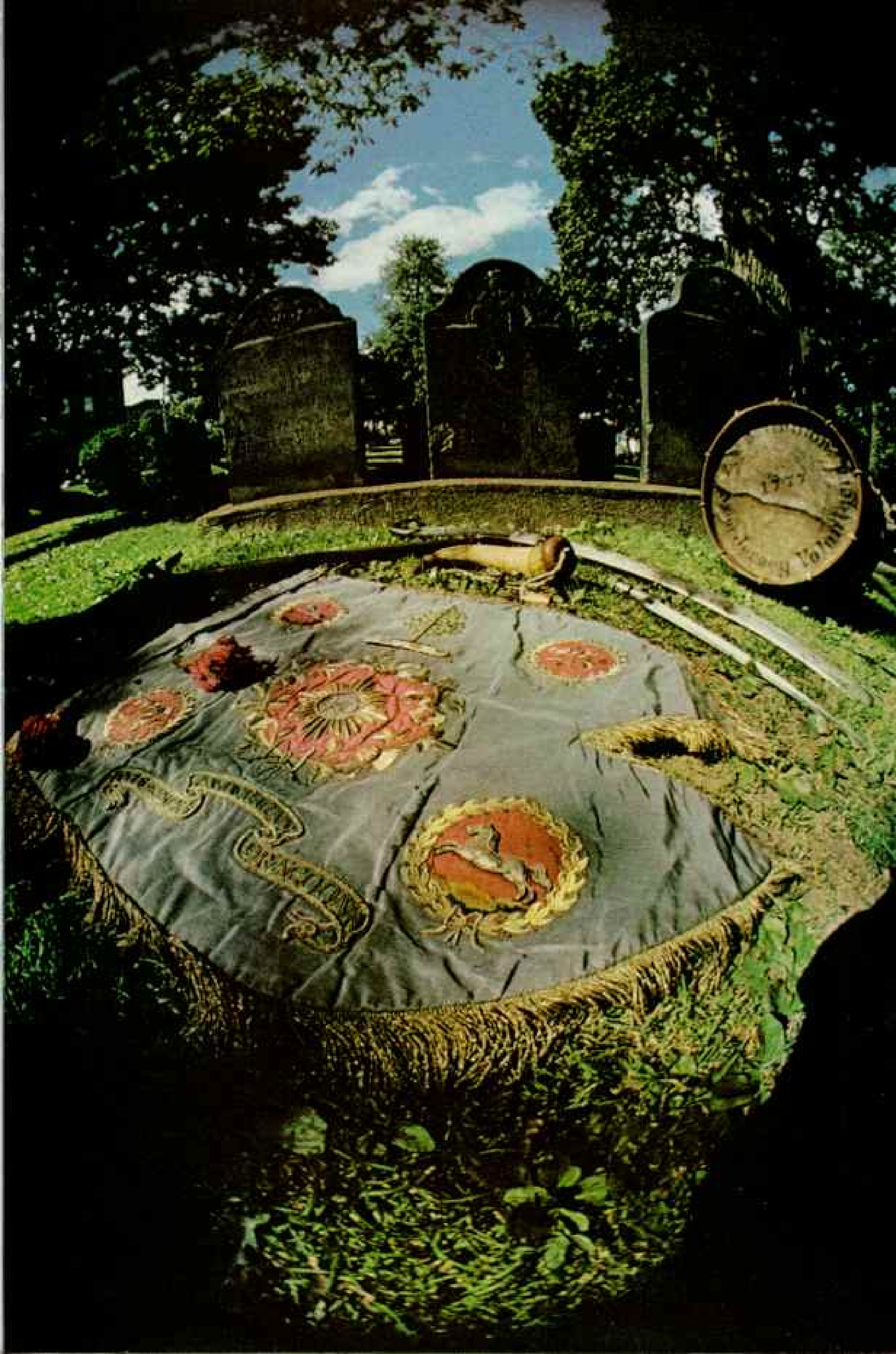
Saint John—the "Loyalist City"—remembers its origins. From the outset it has commemorated Founders Day on May 18, and for the past four years has set aside a whole week in July to celebrate the Tories' immigration.

I DROVE NORTHWARD through the St. John Valley, its hamlets beading the river in a Loyalist litany: Hampstead . . . Queenstown . . . Gagetown . . . Fredericton. . . .

The provincial capital that the Tories named Fredericton (for King George III's second son) is home to the University of New Brunswick, one of the four richest repositories of Loyalist information in the world. Seven

Mr. Puff, a Patriot, at left: *"Injury followed injury . . . until we have no alternative but abject slavery or complete independence."* Mr. Sharp, a Loyalist: *"If I must be enslaved, let it be by a King at least and not by a parcel of upstart lawless committeemen."*

With heated argument, actors sponsored by the National Park Service present "The Raree Show," a traveling drama based on diaries and letters of the Revolution.



years ago UNB joined with the three others, the American Antiquarian Society, the City University of New York, and the University of London, in the Program for Loyalist Studies and Publications. It is a sign of waning anti-Loyalist prejudice that the project was conceived by an American—Professor Robert East of City University—and initially funded by the U. S. Government's National Endowment for the Humanities.

"Recent studies have drastically changed our impression of the Loyalists," Jo-Ann Fellows told me in her office on the UNB campus. As research associate for the Canadians' study, she channels all incoming and outgoing Tory documents and information.

"Everyone used to believe that Loyalists were all wealthy, educated, British-connected snobs," Ms. Fellows explained. "Now, from modern research, we find that isn't true.

"Most Loyalists who came here were simple, humble, ordinary people—tradesmen, farmers. They were good, honest, hardworking people, though many couldn't sign their own names. In that respect they were representative of the society they sprang from.

"They were Americans," she emphasized, "but they were Americans with a difference.

"They were more conservative, more cautious of change, and they harbored an affection for social hierarchy. They ended up in Canada, and I think we Canadians even today remain Americans with a difference."

SO, IN FACT, do some Americans. I'm thinking specifically of Andrew Oliver: retired lawyer, historical writer, great-great-great-great-grandson of one of the most reviled and persecuted royal officials in Massachusetts during the Revolution.

A glance at Mr. Oliver's apartment in Boston's fashionable Beacon Hill district, and I could see that he was still close to his Loyalist forebears. They were there too, prominent on the walls in some forty works by famed portrait artists of their times.

Oliver's good friend, Thomas B. Adams—a forthright liberal and a direct descendant of America's second President—has described Oliver as "the only dyed-in-the-wool, absolute Tory that I know."

"He meant the *worst* Tory he knows," Oliver shot back when I mentioned the remark. "He's met a great many more than he admits."

Just how, might one suppose, would his friend define a Tory?

A presence still, King George III watches over the Legislative Assembly at Fredericton, New Brunswick, and over Premier Richard Hatfield, whose Loyalist ancestors helped create the province in 1784. "They loved America," the premier explains, "but feared independence would bring disaster."

Many Loyalists formed regiments such as the King's American Dragoons. Now the Dragoons' standard (**facing page**) has fallen, Tory drums are silent, and only ghosts haunt the Old Loyalist Burial Ground in Saint John, New Brunswick.

ARTIFACTS COURTESY NEW BRUNSWICK MUSEUM (FACING PAGE)

Whereas many of our Loyal Subjects,
of the Colonies and Provinces, now the United Sta
are desirous of retaining their Allegiance to us, a
in our Dominions, and for this purpose are disp
up and improve Lands in our Province of Quebec
being desirous to encourage our said Loyal Subjects

Recognizing a debt of honor, Britain granted Canadian land to some 50,000 Loyalist refugees. King George's instructions, lower left, authorized land grants in Quebec, which then included Ontario, map. John Imen, a soldier who fought with

MAP, PUBLIC ARCHIVES OF ONTARIO; CLAIMS STATEMENT, LIBRARY OF CONGRESS; OTHER DOCUMENTS, PUBLIC ARCHIVES OF CANADA

a New York Loyalist regiment, submitted his discharge certificate to claim a private's reward, 100 to 200 acres. Officers received 2,000 to 5,000 acres each. Nearly 5,000 Loyalists also filed claims for wartime property losses in the Colonies.

COURTESY NEW BRUNSWICK MUSEUM

Wanted for treason: Cleric, surgeon, and satirist, Jonathan Odell (**above, right**) fled to a neighbor's hideaway when Patriots searched Burlington, New Jersey. Patriots were especially galled by a glowing ode he had written for the King's birthday. Odell and his wife later settled in New Brunswick, where he held high office.

Medals worn by Ontario resident Howard W. Warner proclaim his descent from both a Mayflower immigrant and a Loyalist settler.

"Somebody who disagrees with the Adamses!" His eyes gleamed mischievously. "Happily, that includes a great many people."

Andrew Oliver's famous ancestor of the same name had his own disagreements with great numbers of people; he called them "the rabble." So does his namesake.

The original Andrew Oliver had for years been one of the most important men in Massachusetts government affairs—largely because of an alliance with his even more influential brother-in-law, Thomas Hutchinson.

Hutchinson was lieutenant governor and chief justice, and the 59-year-old Oliver was secretary of the colony when Parliament in 1765 enacted an ill-conceived revenue plan that would tax not only publications and legal documents in the Colonies, but also every deck of cards and pair of dice—the fateful Stamp Act. Although both men privately opposed the measure, the law was the law. Hutchinson appointed Oliver to be the stamp distributor and stamp-tax collector.

The Sons of Liberty, spawn of the Stamp Act, spurred by master propagandist Samuel Adams, worked themselves into a white rage.*

On August 26, 1765, the rabble marched with a "hellish fury," in Hutchinson's words, to perform "the most barbarous outrage which ever was committed in America."

Hutchinson and his family leaped from the supper table and escaped from their house only moments before axes splintered their door. Rioters surged in, a tide of cursing madness as they shredded hangings and wainscotings, shattered windows and furniture, and made off with plateware, clothing, jewelry, and 900 pounds sterling.

Nor had the mobs overlooked Oliver. They hanged him in effigy. They vandalized his house. They bullied him, as they did virtually every other stamp distributor in the Colonies, into abandoning his task. Four months after his first resignation, Oliver was dragged to Boston's Liberty Tree and forced to re-resign.

I asked today's Andrew Oliver if he thought the colonial Oliver's submission to mobs suggested a character defect.

"I'm an absolute coward myself," he replied, unconvincingly. "I'm sure I would have done the same thing. He was persecuted mercilessly, even after he became lieutenant governor. Even after his death in 1774. When he was

*Dr. Eric Goldman explored the influence of Adams and other "Firebrands of the Revolution" in the July 1974 NATIONAL GEOGRAPHIC.

buried in Old Granary Burying Ground here, there were riots, and cheers and hurrahs by the rabble. The risk of mob violence kept his brother from attending Andrew's funeral.

"All the Oliver lands were eventually confiscated," he continued, "including, after Andrew died, a large property in Rhode Island. That was done on the grounds that his children were dangerous, seditious. Simply because they were Olivers, their countrymen considered them threatening."

However fancied or real the threats that faced them, Americans were forced to take sides when independence was declared.

Why did the Loyalists pick the side they did? The modern Andrew Oliver believes it was "pure loyalty, their bounden obligation to the Crown." Perhaps. But economic factors certainly played a role for some—especially for Crown officials and merchants dealing with England.

Some Americans may merely have followed the leaders: Where Tories held sway—in New York City, for example—the Loyalists were most numerous. Others may have been influenced by the odds: Could the ragtag colonial militias have a chance against the mightiest military machine in the world? And the excesses of Patriot zealots drove many waverers into the Loyalist camp.

As one outspoken Boston Loyalist, Congregationalist minister Mather Byles, wryly remarked: "They call me a brainless Tory, but tell me . . . which is better—to be ruled by one tyrant three thousand miles away, or by three thousand tyrants not a mile away?"

THE FATE of John Malcolm typified what might happen when a Patriot mob got out of hand. First Malcolm was publicly stripped, on January 25, 1774, "one of the severest cold nights this winter . . . his arm dislocated in tearing off his clothes." Then the Boston Loyalist was tarred and feathered.

Through some perverse wrinkling of historic fact, we have come to think of this popular punishment as perhaps more humiliating than harmful. Far from it: It was an awful, agonizing experience.

Heated pine tar was applied from scalp to sole, shriveling and blistering the skin. While the tar was still soft, goose feathers were sprinkled all over the body and occasionally lighted. Sometimes the burning feathers ignited the tar. Often the victim was hauled around in a cart, and beaten with clubs at street corners. And, as in Malcolm's case, the strange-looking creature could be taken to the gallows and fitted with a noose to terrify him.

Cleaning up was even worse; as clinging tar was peeled from the body, so was skin and flesh. Infection was a near certainty.

Another amusement during the Revolution was to ride a Tory out of town on a rail: a triangular split rail, sharp side up. The victim was forced astride it and was held in place by men on both sides. Then he was jogged to the town limits by sturdy musclemen shouldering the rail at either end. The effect was something like sliding down a razor blade.

BOTH SIDES tossed the term "treason" around freely during that uncivil civil war, but treason trials and convictions by either faction were rare. Delaware's Seagoe Potter was an exception.

In 1780 he was found guilty of treason and stealing arms from Patriots for the Loyalist cause. He received the ultimate sentence:

"...it is considered by the Court that you, Seagoe Potter, return to the prison from whence you came, from thence you must be drawn to the place of execution. When you come there you must be hanged by the neck but not till you be dead, for you must be cut down alive, then your bowels must be taken out, and burnt before your face, then your head must be severed from your body, and your body divided into four quarters, and these must be at the disposal of the Supreme Authority of the State."

State assemblies found milder but more sweeping ways to persecute Loyalists. They denied them voting privileges, the right to hold offices of trust or profit, the right to take any legal action in the courts, to buy or transfer land, even to bequeath their own property as they wished. Different states prohibited Tories from practicing law and medicine, from teaching, and from preparing drugs.

Confiscation of Loyalist property began before independence was declared, spread throughout the Colonies during the war, and continued even after the signing of the peace that strictly forbade it.

All, of course, in the name of Liberty.

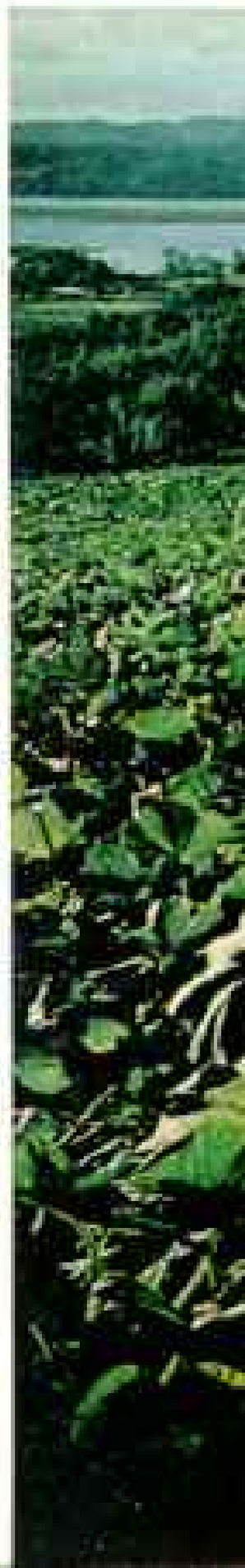
Such injustices are still felt keenly by some United Empire Loyalists—those who, according to a 1789 proclamation, "...adhered to the Unity of the Empire, and joined the Royal Standard in America before the Treaty of Separation *(Continued on page 530)*

Seeking a new Canaan, refugees in Canada found a wilderness "to be subdued by the ax and toil," wrote a Loyalist. "For a time we led a regular Robinson Cruso life. . . ."

Times are easier for descendants such as the George Johnson family of Grand Manan (**above**), here scouring the shore for periwinkles. The presence of Loyalists helped keep the island in Canadian hands during border disputes with the United States in the early 1800's.

A living reminder of flight—"we call it the Loyalist rose"—grows in the garden of Mrs. Ethel MacLeod of Willowdale, Ontario. Her forebear John Cameron first brought the Maiden's Blush rose from Scotland to New York's Mohawk Valley in 1773. Three years later he trekked, with cuttings in his baggage, 230 miles to the safety of Canada.

Sixth generation on this land overlooking New Brunswick's St. John River (**right**), sons help George Bostwick harvest squash on a farm granted to Loyalist ancestors.

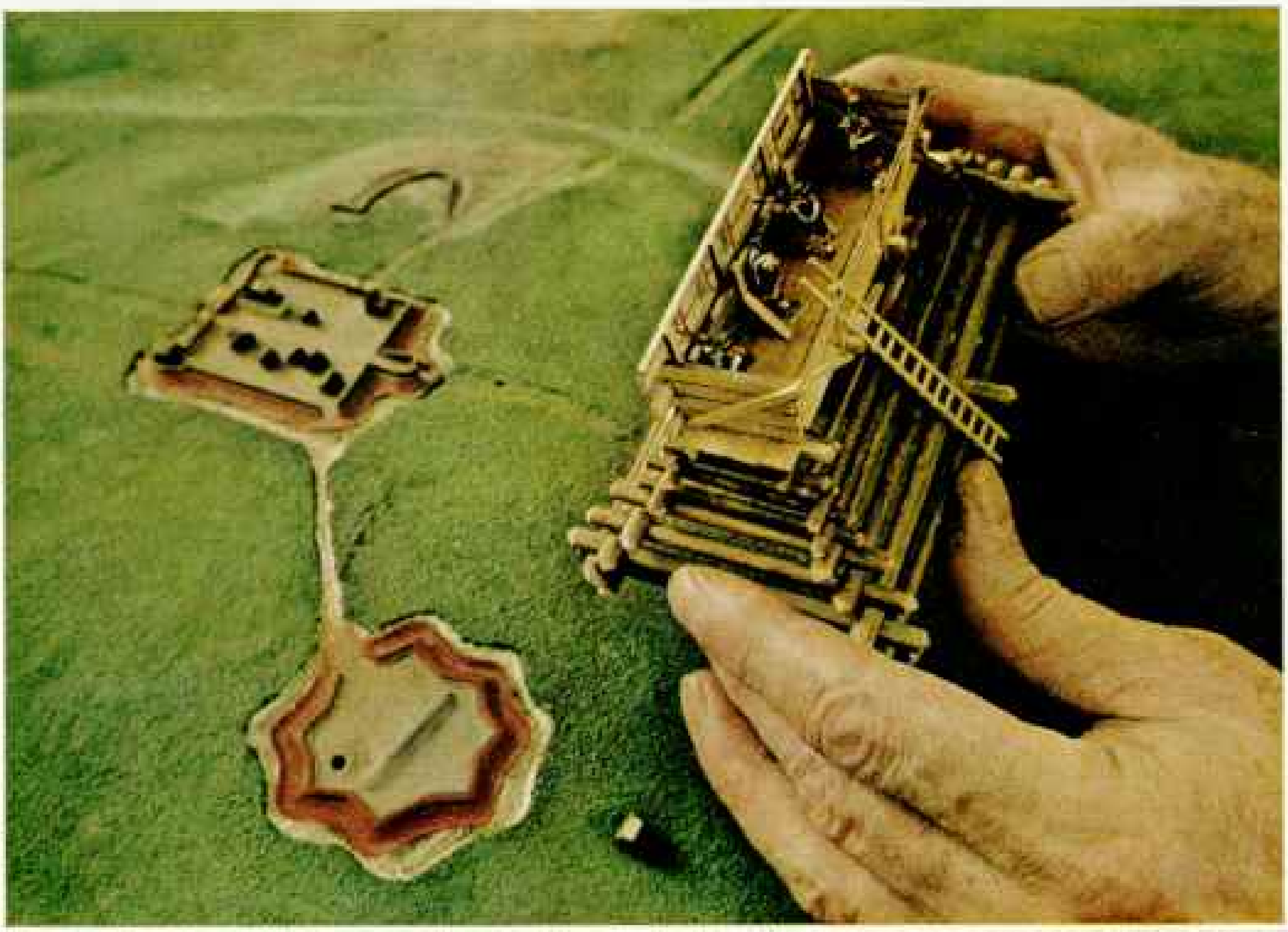


First civil war bloodies the Carolinas

NEIGHBOR DISPUTED NEIGHBOR; some families changed sides; raids, reprisals, and abductions marked the Revolution in the South, one of the most vicious partisan wars ever waged.

Loyalists cheered when Britain's Sir Henry Clinton, lured by promises of southern support, stormed Charleston, South Carolina, and General Lord Cornwallis captured inland fortifications. Patriots rallied as their leader, Gen. Horatio Gates, pushed south. But at Camden, South Carolina, Gates lost his army and his reputation in a battle that pitted Carolinians against each other (**map, right**).

After cannonading Gates's weak left front, Cornwallis sent British and Loyalist troops forward, "firing and huzzaing," so panicking the Patriots that "they generally threw down their loaded arms and fled . . . without firing



DIORAMA BY CAMERON POAKE FOR THE KING'S MOUNTAIN NATIONAL MILITARY PARK

COURTESY PUBLIC ARCHIVES OF NOVA SCOTIA

a shot." Uniform button of a North Carolina victor (**left**) bears the Loyalist designation for Royal Provincial.

The tide turned again when Patriot Gen. Nathanael Greene recaptured outposts until only a fortified South Carolina town called Ninety Six remained. Greene and 1,000 men in May 1781 laid siege to the star fort that guarded the town. From a log tower (**diorama above**) his riflemen covered comrades digging approaches designed by engineer Thaddeus Kosciusko, a Polish volunteer. The Loyalists held out for 28 days until reinforcements arrived. Then the British, realizing they could not hold the backcountry, burned the town and withdrew to Charleston. Today archeologists excavate the remains of Ninety Six, preserved undisturbed under six inches of soil.

COLLECTION OF THE DUKE OF NORTHUMBERLAND (RIGHT)

OPPOSITE PAGE FOLDS OUT

Sketch

Of the disposition and commencement of the Action near Camden in South-Carolina 16th August 1780.. as discribed in the Letter of the Right Hon.ble Lord Cornwallis to the Secretary of State:- and the Rebel General Gates to Congress.—

Most respectfully inscribed to
The Right Hon.ble Lord Percy.
by His Lordships most Humble Servant
Ld Rawdon

First Maryland Brigade

Corps de Reserve

Ld Armands Legion
Continentals

Gen.l Gists Brigade

North Carolina Militia

Virginia Militia

Pattersons Corps

Rifle & Light Infy

Volun.rs of Ireland

N.o Carolina Mi.

Legion Inf.y

Left Wing commanded by Ld L.t Rawdon

33d Regt

23d Regiment

Light Infy

Right Wing commanded by L.t Col. Webster

2d Batt.n 71st Regt

1st Batt.n 71st Regt

Legion Cavalry
Col. Tarleton

PLAN of the City of NEW-YORK as it was when his Majesty's Forces took Possession of it in 1776. Showing all the works the Rebels dit in the course of the preceding winter mark'd yellow, and the part of the City which was burnt the same year by a pale red colour & dott'd lines.

Survey'd in october 1776 by C.J. Southack

REFERENCE.

1. First gorge or Citadel 2. Trinity Church 3. St Paul's Church 4. St George's Chapel
5. The Dutch Church 6. The Dutch Church
7. The Gaol & new Gaol 8. Presbyterian Meeting
9. The Gaol 10. French Church
11. Garden Calvinist Church 12. New Calvinist Church
13. Garden Calvinist Church 14. Moravian Meeting
15. Anabaptist Meeting 16. Quaker Meeting
17. Baptist Meeting 18. The Baptist Gaol
19. Jews Synagogue
20. College
21. Academy & Gaol
22. City Hall
23. The Bridewell
24. The Poor House
25. Workhouse
26. Hospital
27. Barracks
28. Barracks
29. Fort or Battery
30. The Ship
31. Ship
32. Store
33. Magazine
34. Store
35. Battery wood
36. Long Bridge
37. Mr Pell
38. Governor Tryon's
39. Ship House
40. Ships Carpenters yard
41. Grass Lot

HUDSON'S or NORTH RIVER

EAST RIVER

Crown Point

Part of Long Island

COURTESY PUBLIC ARCHIVES OF NOVA SCOTIA (ABOVE); MAP, COLLECTION OF THE DUKE OF NORTHUMBERLAND

New York City: British Bastion

EXUBERANT PATRIOTS WATCHED from across the Hudson as fire raged through New York City on September 21, 1776, just five days after British occupation began. They "gave three cheers when the steeple of the old English church fell down," a Loyalist reported. Trinity Church had dominated the skyline of the Loyalist center (**above**), then nestled south of the area now flanked by the World Trade Center and Brooklyn Bridge (**below**). The blaze destroyed hundreds of buildings (light gray area along North River, map, **left**), impeding but not stopping the occupation.

For seven years New York Loyalists were safe. They showed their thanks by supplying Royal and Loyalist troops and sympathizers with food, shelter, fuel, money, and information. Wealthy women donated a privateer, the *Fair American*.

When peace came, many Loyalists signed an oath of allegiance to the new nation, but thousands left with the British.

in the year 1783 . . ." and their descendants.

Sons and daughters of the first Loyalists were granted 200 acres of land each upon reaching age 21. All descendants were authorized to append the initials "U.E." after their names. It is a unique distinction, the only hereditary title of honor ever legislated in Canada.

"YOU STOLE OUR LAND," the old man huffed, shaking his finger. "You threw us in jail. You drove us from our homes because we didn't share your opinions!"

We were at a Toronto meeting of the United Empire Loyalists' Association's governing body. The crusty fellow confronting me was speaking with touching immediacy about events of two centuries before—a characteristic I had noticed in previous conversations with Loyalist descendants. He made it clear, though, that his opinions were his own, and his indignation greater than that of other UEL's (as they call themselves). He asked that his name not be used for fear the rest of the membership might infer—mistakenly—that he was anti-American. I knew he wasn't, and I enjoyed his bluntness. We made plans to meet again the following weekend when he and other UEL's would be bus-touring upstate New York and Vermont, whence many of their ancestors came.

Our rendezvous was Oriskany Battlefield

Enemies confer before mock battles begin wherever the Brigade of the American Revolution performs. At a weekend encampment at Richmondtown on Staten Island, Billops Corps Loyalists, left, check a 1776-map position with a Patriot commander. A musketman (**right**) helps a fallen comrade as Billops Corps advances toward the Patriots.

in New York's Mohawk Valley. For its size—800 Whig militiamen against perhaps 650 Loyalists and Indians—the battle at this verdant site in 1777 is considered the bloodiest encounter of the Revolutionary War.

The Mohawk leader Thayendanegea, better known as Joseph Brant, led the ambush against Brig. Gen. Nicholas Herkimer's militia. Herkimer died, and so did more Patriots than Loyalists. But the carnage left the Loyalist attackers almost useless for the imminent British push to overwhelm the state. Consequently, New York remained predominantly pro-independence, and historians still waffle over who won and who lost the battle.

As we strolled the serene battleground, my UEL friend spoke of his ancestors. "My great-great-grandfather was only a boy when his family was forced to leave the States," he said, face clouding. "He spent his first night in Canada sleeping under a log. I've seen the spot. Just a boy!"

There was the other side of the family, too, the UEL related. His great-great-great-great-grandfather on that side had also felt compelled to flee the Colonies after falling afoul of bullying Whigs.

Then the old man paused in his storytelling. "I hold no grudges," he finally said, "and I don't want to be harsh or offend anyone. But I must admit, it does make me a little bitterish sometimes."

Symbol of fidelity: A silver Communion service, given by Queen Anne in 1712 to Britain's Mohawk allies, still graces Anglican services at Ontario's Tyendinaga Reserve. Loyalist Mohawks escaped to Canada with their patron, Sir John Johnson, second Baronet of New York. In Dartford, England, today's Sir John (**below**), sixth Baronet of New York, treasures a portrait of Sir William Johnson, first of the titled line.

The 37 touring United Empire Loyalists headed back toward their bus. Just before boarding, in one of the most spontaneous group gestures I've ever witnessed, they burst into heartfelt song: "O! Canada," their national anthem.

I headed for Tyendinaga, Canada's 17,200-acre Indian reserve on the Bay of Quinte, Lake Ontario. Here the British Crown gave refuge to loyal Mohawk Indians 190 years ago, after the treaty of peace was signed.

I watched canoes whisper to shore and the Indians walk somberly up the riverbank in their annual reenactment of the original landing; one of them carried a British flag. Just as their forefathers had done on May 22, 1784, they spread a white linen cloth on an overturned birchbark canoe and set out a Communion service of finest silver (left). Prayers of thanksgiving and lilting, haunting Mohawk hymns capped the ceremony.

Melville Hill, robust tribal historian and former elected chief, feels that the Mohawks fought the same war and paid the same price for loyalty as their white counterparts.

"The English earned our trust; they became our friends. We were always loyal to the Crown," the 56-year-old Hill pointed out. "That silver Communion service? That was given to us by Queen Anne back in 1712.

"You'll notice," he went on, "that we still fly the Union Jack. On special occasions we display the Canadian flag too—but if you look very carefully, you'll see that the Union Jack somehow always manages to fly just a little bit higher."

THE BRITISH FLAG was furled for the night when I walked into the encampment at Camden, South Carolina. Among the tents and stacked brown Bess muskets, a huge kettle steamed over a blazing campfire. Only the anachronistic marshmallows betrayed the century, for all the assorted soldiery and their "camp followers" were dressed in colonial garb.

Redcoats of the 23d and 63d British Regiments lounged around the fire, conversing with Loyalist provincials attired in the uniform of the South Carolina Royalist Regiment and the mixed tartans of the North Carolina Highlanders.

The next afternoon they would be pitted, in a mock but realistic skirmish, against the Patriots' Second and Fourth Continental Dragoons and a smattering of Rebel militia.

Members of the National Re-enactment Society, they all knew the statistics and lore of the units they had adopted.

Roy Vandegrift, a Camdenite and the commander of the South Carolina Royalists, said those original Tories engaged in some 25 combat actions.

"We clearly won 15. We probably lost seven, and the others were ties. The 'Swamp Fox,' Francis Marion, gave us no trouble at all; neither did Thomas Sumter, the 'Carolina Gamecock.'"

Some 2,200 Loyalists and British regulars handed the Patriots a disastrous defeat at the Battle of Camden, in August 1780. The Patriots' "grand army" of the Southern Theater, 4,100 soldiers led by Gen. Horatio Gates, was annihilated. Routed absolutely. Two thousand Patriots fled without firing a shot, only to be hunted down by Loyalist bands and "No Quarter" Tarleton's British Legion.

Nine hundred Patriots had their revenge at Kings Mountain, South Carolina, two months later, when they killed, wounded, or captured more than a thousand of an all-Loyalist force of 1,100.

At Ninety Six, in South Carolina, 550 Loyalists proved their mettle again by withstanding a 28-day siege by a larger Patriot force under Gen. Nathanael Greene.

BUT THE LOYALISTS had few such opportunities to distinguish themselves; the cynical British regulars trusted neither their judgment nor their discipline. Normally, the loyal Americans were used only to back up the veteran Redcoats. Loyalists contributed to some of the mistrust by frequently overestimating their public support and underplaying the extent of Patriot sentiment.

Between 30,000 and 50,000 Americans enlisted in the British Army and the 70-odd Loyalist regiments during the course of the war; the Patriots fielded some 250,000 during the seven-year period. By 1780, though, General Washington had only about 9,000 soldiers under arms, while the Loyalists had 8,000 serving in the British Army alone.

Peace didn't necessarily bring reconciliation. Men had learned to hate their brothers, and fathers their sons.

Families divided against themselves—the wrenching legacy of civil war. The rift in the Franklin family, but for the prominence of the players, was a commonplace story.

That "old conjurer" Benjamin Franklin was the senior adviser to America's Patriots. His illegitimate but acknowledged son, William, was the Loyalist governor of New Jersey from 1762 until his arrest by Patriots in 1776. Benjamin never forgave his son's choice of loyalty, and even denounced him in his will.

The life of William Franklin holds particular fascination for my friend Willard Randall of Ocean City, New Jersey. He's writing a biography of the Loyalist governor, and for several years has been bloodhounding after every scrap of Franklin material he can find. He understands the disunity in that famous family. He went through something like that himself when he discovered that his own family tree, dating—in this country—from 1629, had been most judiciously pruned.

In Canada in 1965 Bill accidentally learned of a Loyalist ancestor, Edmund Fanning. The Tory had been a judge in North Carolina, surveyor general of New York, colonel of the King's American Regiment, and lieutenant governor of both Nova Scotia and Prince Edward Island.

"My father finally admitted that he had known about Fanning all along," Bill recalled. "But he made it clear that he despised the Tories—he never once called them Loyalists. And when I began to compile the Franklin biography, he was honestly concerned for my reputation. 'Be careful, son, that you don't say anything overly favorable about Tories; you'll only hurt yourself. They *were* traitors, you know, all of them.'"

ON THE TRAIL of Loyalist William Franklin, Bill and I went to Old New-Gate Prison at East Granby, Connecticut. Formerly a private copper mine, this "woeful mansion" became the most dreaded of all places for Loyalists sentenced to confinement.

I wanted to see if New-Gate was as horrible as reported; Bill was trying to determine whether William Franklin had been held there during the war. I got my answer. Bill is still sniffing after his.

We took the new stairway entrance into the mine, now a state historic site. Loyalists and other prisoners had to use a ladder to descend the first 25 feet.

It is a dismal place. It's wet; constant seepage slicks the walls. It's cold; at 52° F. inside I could see my breath. It's low, and it's dark. Denied candles, the inmates at night could only sit and listen as rats and bats and

leeching bugs skittered about in the black.

"I can feel every old fracture in my body," Bill said grimly as we angled down to the mine's 70-foot depth. "It's so dank in here."

As we headed back for the real world, and sunshine, I thought of the comment of an 1807 visitor: "... I cannot get rid of the impression, that without any extraordinary cruelty in its actual operation, there is something very like cruelty in the device and design."

AFTER HIS RELEASE in an October 1778 prisoner exchange, William Franklin went to New York City, Britain's last bastion in the Colonies, and from there to England as one of more than 7,000 Loyalists who emigrated to the British Isles.

Dame Britannia tended to look down her regal nose at the colonial expatriates, making them feel like the provincial bumpkins she presumed them to be. But then—after they had demonstrated their Yankee worthiness in business, society, and the arts—she quietly absorbed them.

On another island I saw the opposite.

My plane touched down at Marsh Harbour International Airport (the name is bigger than the facility), and within a few minutes I knew that Abaco, second largest of the Bahamas, was Tory country. I took a taxi to the ten-unit Union Jack Club and Motel; on the way I passed the Loyalist Shoppe, one of fewer than two dozen business establishments at Marsh Harbour.

Elbow-shaped and 110 miles long, Abaco received the major share of the 2,500 Loyalists and their 4,500 slaves who fled to the Bahamas after the war. The refugees more than doubled the islands' number of white inhabitants, and trebled the number of blacks.

Most of the Bahamas settlers were familiar with forced exile. They came from East Florida and New York, which had been their first refuges from persecution in their native colonies—primarily Georgia and the Carolinas. From West Florida came Loyalists whose original homes had been farther north.

The great Bahamian cotton plantations that gilded the dreams of many southern Loyalists became a fleeting reality. Then insects, overuse of the soil, and British abolition of the slave trade in 1807 doomed any hope of a plantation economy.

SOMETHING ELSE, something almost indefinable, died in Abaco on July 10, 1973. That's when the Union Jack came down.

By some quirk of fate, the independence that was so abhorrent to Loyalists two centuries ago came at last to their descendants. And it was engineered by black men, the Bahamas' most enduring Loyalist legacy.

"My Britain, my Britain, why hast thou forsaken us?" Norman Albury intoned.

It was a few days before "Independence." The 75-year-old sailmaker sat at his kitchen table and spoke to me with despair about Abaco's attempts to become a Crown Colony.

Abaco had appealed to Parliament to be exempted from Bahamian independence, to no avail. Then the island's representative sought an audience with Queen Elizabeth II.

"She wouldn't even give 'im a hearing," Albury anguished. "When he got back from England he says, 'When they come to take that flag down, don't say nothin', because whatever they put up in its place can't be any worse than the Union Jack. Not now. England doesn't want us at all.'

"I say it's only one that hasn't let us down.

Blue-water bastions of royalism, islands of the Bahamas offered haven to exiled Southerners in 1783. About 2,500 whites arrived, bringing 4,500 slaves and the hope of re-creating plantation society, but hurricanes, plant blight, thin soil, and abolition of the slave trade doomed the scheme to failure. Most of the settlers who stayed switched to fishing and boatbuilding. Here Maurice Albury works on a dinghy, handcrafted from pine, on Abaco's Man of War Cay (**left**). Many white descendants, still Loyalist in sentiment, advocated becoming a separate Crown Colony when the rest of the Bahamas became independent from Britain on July 10, 1973.

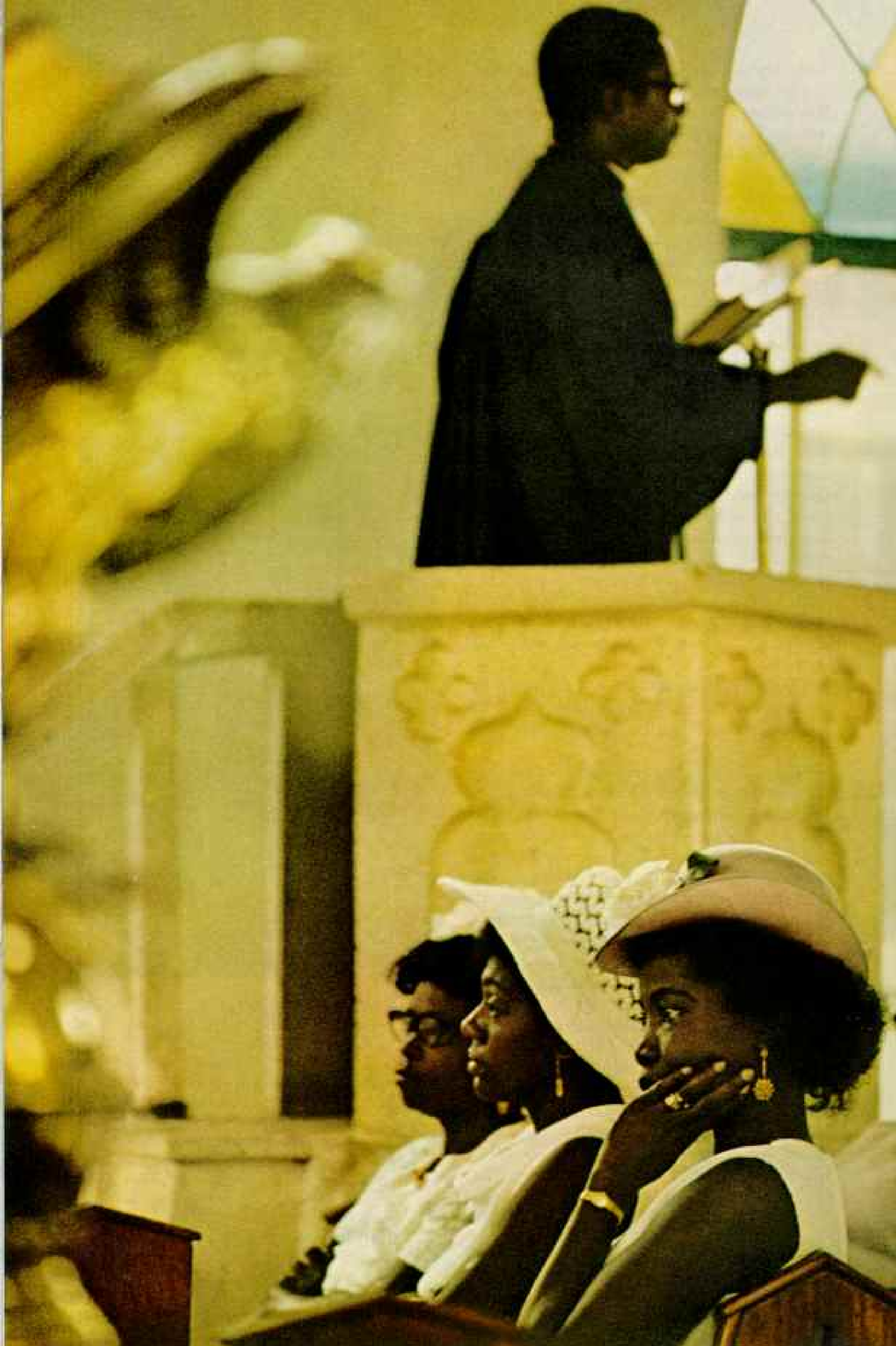
Africans of American descent, historian Arthur T. Porter (**below, right**) and engineering professor John Elliott relish the ironic tale of their ancestors. As American slaves, they had to fight against the Patriots to win their freedom, and then went on to found a new society at Freetown, Sierra Leone.

Desperate for manpower, the British promised emancipation to Patriots' slaves if they would desert their masters. Thousands responded and, with defeat, moved to Nova Scotia, only to find land promises not fulfilled. In 1792 London philanthropists arranged African passage for nearly 1,200.

"Nova Scotian blacks introduced Western culture here," says Dr. Porter. "They spoke English, favored Western dress and food, and promoted individualism. They were an elite arm of British colonialism. Now they are integrated with indigenous Africans, and our country is independent."

Dr. Elliott adds, "Those black settlers were devout Christians who spearheaded the missionary movement in West Africa."

Today, Methodists worship at Zion Wilberforce Church in Freetown (**right**), where a plaque (**below**) honors a black Loyalist pastor, Baltimore-born John Ellis.



Only one—and that's the great One above."

For some blacks in America during the Revolution, the Union Jack offered independence. The British promised liberation to slaves who would desert their Rebel masters. Politics, not idealism, prompted the offer, for slaves owned by Loyalists were ineligible. Tens of thousands of slaves escaped; Virginia alone lost 30,000 in a single year. Many others, ironically, were "confiscated" by the British and sold to West Indian planters.

A few thousand blacks joined the British and Loyalist military. Some served with the only regular Negro fighting corps, the Black Pioneers; most of the others constructed and maintained fortifications.

Many black Loyalists, like their white counterparts, sailed for Nova Scotia after the war. But emancipation there did not confer equality: Their land grants were smaller, usually hard to get to, and always removed from the central communities where other Loyalists lived.

In 1792, one Thomas Peters, a former sergeant in the Black Pioneers, decided he'd rather leave than fight. Financed by London abolitionists, he led 1,196 black Loyalists in 15 vessels to Sierra Leone on the west coast of Africa.

Those Loyalists, still known as "the Nova Scotians" to the Sierra Leoneans, gave the name "Freetown" to the port city they built.

THE NATION they molded became independent in 1961, but its 2,500,000 people have not forsaken the country that cleared their path to freedom. They still speak English, the official language; their country remains a member of the Commonwealth; and their founders fit, as neatly as any, the definition of Tory advanced by Professor Esmond Wright, British director of the Institute of United States Studies in London:

"The Loyalists were honest and decent men. . . . They have been called men without a country. Theirs was the greater tragedy that they were too often men with two countries, with a genuine but double allegiance, uncertain which to call home. When American Loyalist ex-Governor Hutchinson died, in lonely, cold, and alien London, his heart ached for Boston. The Loyalists, we should remind ourselves, were Americans too. They just guessed wrong. And in history, as in politics, as in life, you have to be on the winning side." □

The prison commonly called "Hell," New-Gate confined the most "obnoxious" Loyalists in a copper mine at today's East Granby, Connecticut, now a state historic site (**right**). A guardhouse, shown in this 1781 diagram, concealed the entranceway—a 25-foot vertical shaft, fitted with an iron grate, which inmates descended by ladder into the dank cold maw.

PRINT (RIGHT) COURTESY CONNECTICUT HISTORICAL SOCIETY; KEY AND LAMP COURTESY CONNECTICUT HISTORICAL COMMISSION

Alas, poor Redding! Vermont Patriots knew him as the Loyalist convicted of "enemical conduct" and sent to the gallows in Bennington on June 11, 1778. David Redding may have followed British orders to "observe" Patriots and to harass them by seizing their livestock. For years his skeleton served anatomy students at Williams College, Massachusetts; then it was moved to storage in the Bennington Museum. Chief curator Peter Cook (**above**) plans a Bicentennial interment to symbolize burial of Patriot-Loyalist hatreds.

The Changing World of Canada's Crees

ARTICLE AND
PHOTOGRAPHS BY
FRED WARD
BLACK STAR

Harvest of whitefish smokes in the rafters of the *meechwap*, or cooking tepee, of Grace Whiskeychan. A resident of the Cree Indian village of Rupert House on the Quebec coast of James Bay, she lives today much as her hunting and fishing forebears did before Europeans set foot in the New World. Now an immense hydroelectric project is bringing dams and highways into the Indians' wilderness homeland, promising many benefits but challenging their age-old culture.

Man-made forest of beaver pelts dries in icy breezes (**following pages**), beyond reach of village dogs. Proceeds from sale of the furs—the Indians' only cash crop—augment government welfare payments.

MY CREE INDIAN FRIENDS slipped out of camp one way, scouting for beaver lodges. I headed the opposite way, to shoot partridges for lunch. Suddenly the weather changed. A dense cloud cover swept in and disoriented me. I wandered on, lost in the north woods of Quebec.

All that night I wondered if I would ever see my wife and children again. I made an Indian-style bed of spruce boughs to keep me above the freezing muskeg, but a periodic drizzle reduced my fire to embers and obscured the stars I so desperately needed for directions. Alone, cold, and hungry, I realized why no plans are ever firm for the Crees and why danger is a constant companion.

Morning brought an instant of sun, and I pointed my steps northeast, tree by tree. About noon I heard the most welcome of sounds: a far-off Cree shouting and firing his rifle. Help had come quickly, as it must in this hostile terrain.

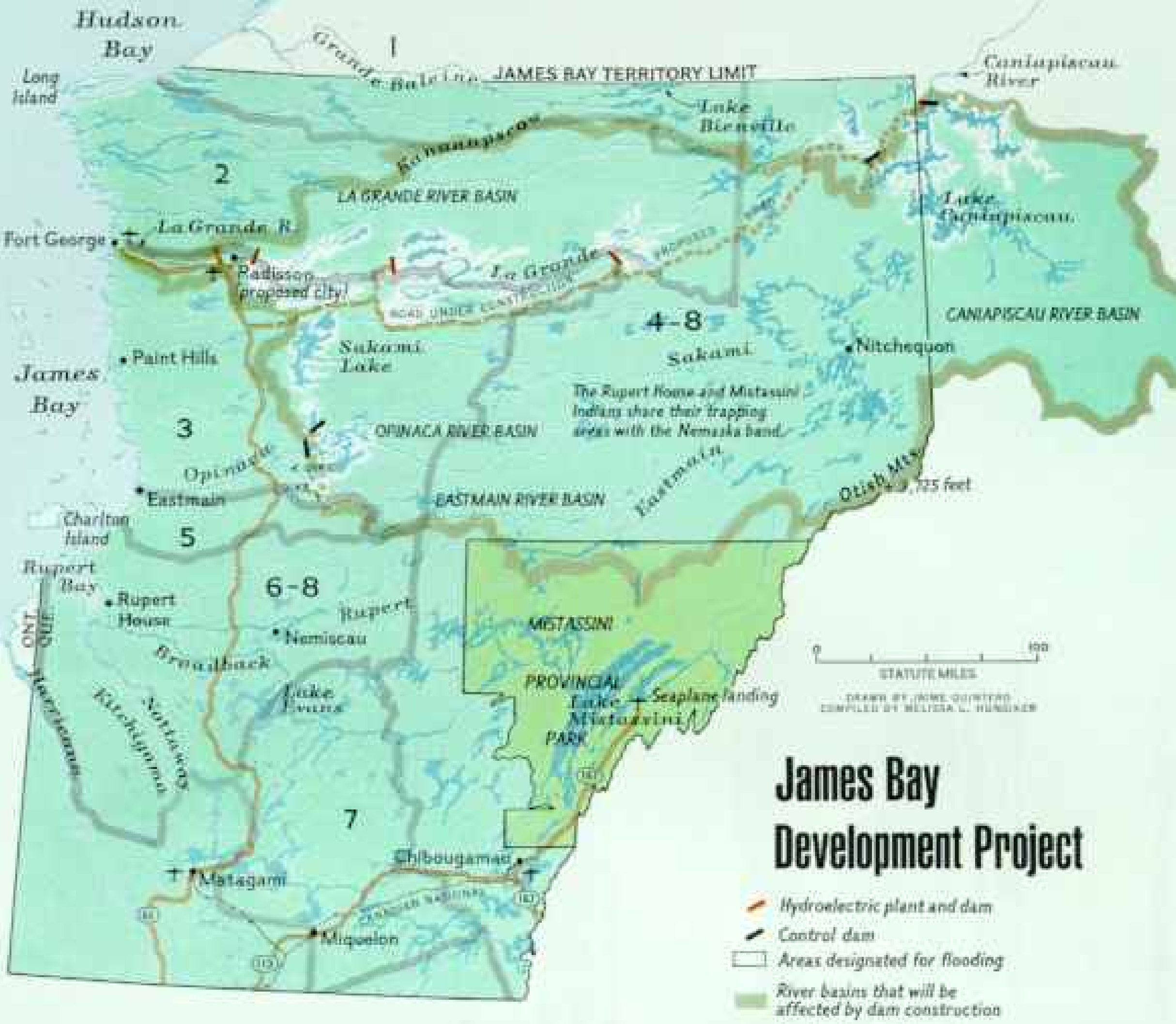
The search party—men of the three Indian families I had accompanied into the bush—greeted me only with a quiet, "Are you OK?" They understood. Presently, each man told me his own "lost" story.

Trying to Save a Way of Life

Sadly, Quebec's 6,000 Crees may be lost in another way, their life-style unalterably changed by the white man's schools, welfare payments, and aggressively expanding civilization. Known as the Eastern Crees, most of these people base themselves in a handful of scattered settlements, four of them along the eastern shore of James Bay, the arm of salt water that forms the southern end of Hudson Bay. The region is divided among eight organized bands of Crees (map, page 544).

Last November, after two years of court fights with the province over the future of northern Quebec, the Crees signed a tentative agreement that will allow massive development of their wilderness home. Relinquishing claims to vast acreages, the Indians agreed to retain only a small portion of the land in return for money and the assurance that their way of life as trappers would be protected.

To the Crees, land is everything. For unknown centuries they have hunted, trapped, and fished throughout the boreal forest that is northern Quebec. They belong to the largest tribe of Indians in North America that still depends directly on wild animals. Until last November they claimed some 135,000 square



James Bay Development Project

- Hydroelectric plant and dam
- Control dam
- Areas designated for flooding
- River basins that will be affected by dam construction
- Railroad
- Airport
- Ancestral trapping areas of eight Cree bands

1 Great Whale River
2 Fort George
3 Paint Hills
4 Mistassini
5 Eastmain
6 Rupert House
7 Waswanipi
8 Nemaska

"Garden of the Indians," as the 6,000 James Bay Crees call their Montana-size ancestral forest, borders Hudson Bay's southern arm. Four years ago the Province of Quebec initiated plans for a 12-billion-dollar hydroelectric project; its many dams will flood vast areas of Indian land. Opposed to the development, the Indians took their case to court, then to the negotiating table, and recently won concessions from the government: payments of as much as 150 million dollars over a period of decades; ownership of 2,000 square miles; exclusive hunting and fishing rights on 25,000 more; trapping rights over all their former land; royalties on the region's minerals and timber; and first crack at jobs on dam, road, and bridge construction. Cree spokesman Billy Diamond believes the settlement "guarantees the future of our children." Others feel it may irrevocably alter their traditional ways.

miles of subarctic woodland as their own.

In 1912 the Canadian Government ceded the Cree region to the Province of Quebec, on the condition that Indian land claims be settled. That condition was never met, and in 1971 Quebec passed a bill creating the development corporations that have since budgeted 12 billion dollars to conquer the wilderness.

Most of Quebec's people traditionally have lived on thin strips of land along the St. Lawrence River, while the rest of the province—twice the size of Texas—has remained pristine. Today the province envisions new industry and tourist dollars. As its progressive and controversial Prime Minister Robert Bourassa has written, "Quebec must occupy its territory; it must conquer James Bay. We have decided the time has come."

The James Bay power development (map, opposite) is one of the most expensive public-works projects in human history, and opponents have questioned whether the province can afford it. Expensive highways will provide access to the north woods; already the new road network extends for some 450 of its ultimate 1,000-mile length.

The roads will provide access to four huge hydroelectric plants that are to be built along the mighty river of the north—La Grande. They will also bring the beginnings of industry to the region, inevitably shrinking the Cree woodlands and the numbers of animals on which the Indians depend.

Human Tide Will Invade the Land

As Josie Sam Atkinson, former administrator of a band of Crees, told me: "The government says it'll generate 10,040,000 kilowatts of electricity, but Indians don't use electricity. What Indians do use are the land and water that will be destroyed by those dams. This development means thousands of people swarming over our area—building dams, exploring for minerals, cutting trees, hunting and fishing. We've maintained our way of life mainly by being left alone."

After failing to block the development in court, the Crees concluded that negotiating with the province was the only way to a permanent solution. To negotiate for Quebec, Prime Minister Bourassa named John Ciaccia, a provincial legislator with extensive experience in Indian affairs. I talked with Mr. Ciaccia in his Montreal office.

"The real issue here," he said, "was saving a way of life and not getting hung up on land or money. Therefore, we offered to let the James Bay Crees continue to own 2,000 square miles of the total 135,000 square miles, and agreed that they will have exclusive hunting and fishing rights on another 25,000 square miles. They can still trap throughout the entire project."

Despite the agreement's guarantees, there are critics who say it dooms the Crees' traditional culture. But advocates say it's a good compromise, allowing the Crees to stand with one foot in the old life, one in a new.

Where the Hudson's Bay Company Began

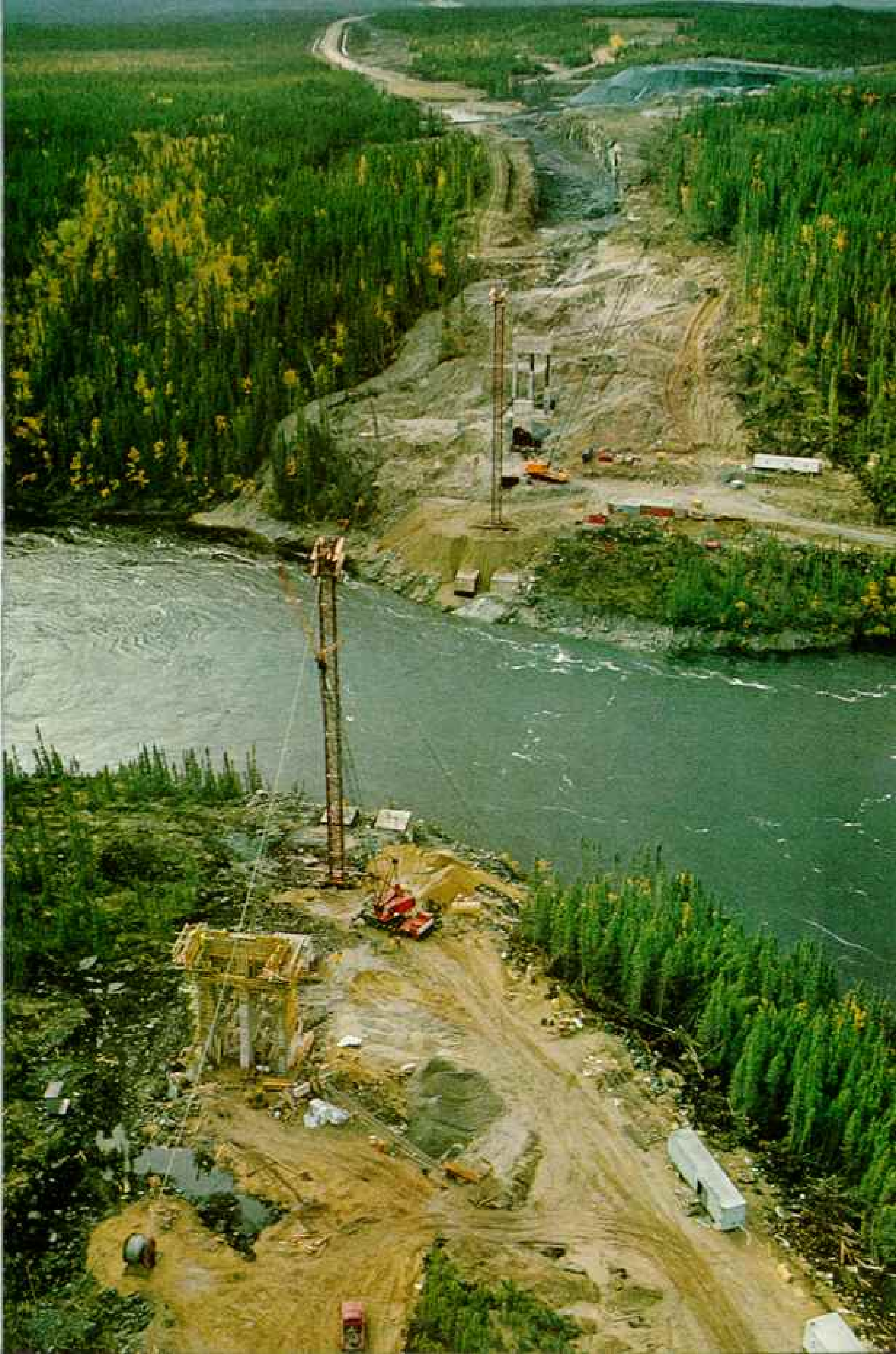
To meet the Crees and gain understanding of their threatened way of life, my wife, Charlotte, and our three children and I landed in a floatplane last summer and tied up at the floating wooden dock of the village of Rupert House. On the hillside above the river we paused before a bronze plaque in front of the Hudson's Bay Company compound: "Rupert House Post established on this site 1668." This was the first trading settlement by Europeans in the Canadian North.

An unplanned array of frame houses, tents, and tent houses with low plywood walls and canvas tops lined the two dirt streets of the village (pages 548-9). First to welcome us was Billy Diamond, the rotund 25-year-old chief of the Rupert House band who had been elected spokesman for all the James Bay Crees. He had headed the negotiating team for the natives.

"We have made a unique agreement for Indians in North America," said the youthful chief. "My people told me it was time to negotiate; there was no way we were going to stop the project. We agreed on compensation of 150 million dollars to be paid by the province, the James Bay corporations, and the federal government over a 10- to 20-year period. That money will be held by the bands and invested in our future. We also will receive 25 percent of the province's royalties on minerals and timber in our traditional territory. We have until November 1975 to hammer out all the details of a final settlement."

As we walked through town, Billy commented on the housing.

"The Canadian Government built these homes," he said. "The newest is more than ten years old. None has electricity, central heat, or running water. They're better than the tents everyone used before. But we need more homes now. At last we have a housing



plan, and construction of the first twenty units is supposed to begin this summer."

We entered a rambling old white frame building—the Rupert House theater, dance hall, bingo parlor, town hall, and Indian office. Seated at a battered desk, Billy told me that each band of the Crees has a chief, an administrator, and a governing council. Mindful of the pressures of negotiating, the eight Indian bands organized into a Grand Council of the Crees and elected Billy chief of that also.

"Indians operate a democracy," he continued. "Any ten men in the band can call for a new election. I was chosen chief in 1970. We are related to the Plains Crees of the U. S. and Canadian West. But their chiefs are honored elders. Here, the trend is toward youth, education, and English-speaking ability—necessities in dealing with government bureaucracy and the hydroelectric threat.

"My father," Billy added, "believed when he was chief that education was the answer to our problems. But education has also caused my people a great deal of trouble. Maybe you should talk to our school principal."

School's Out in Hunting Season

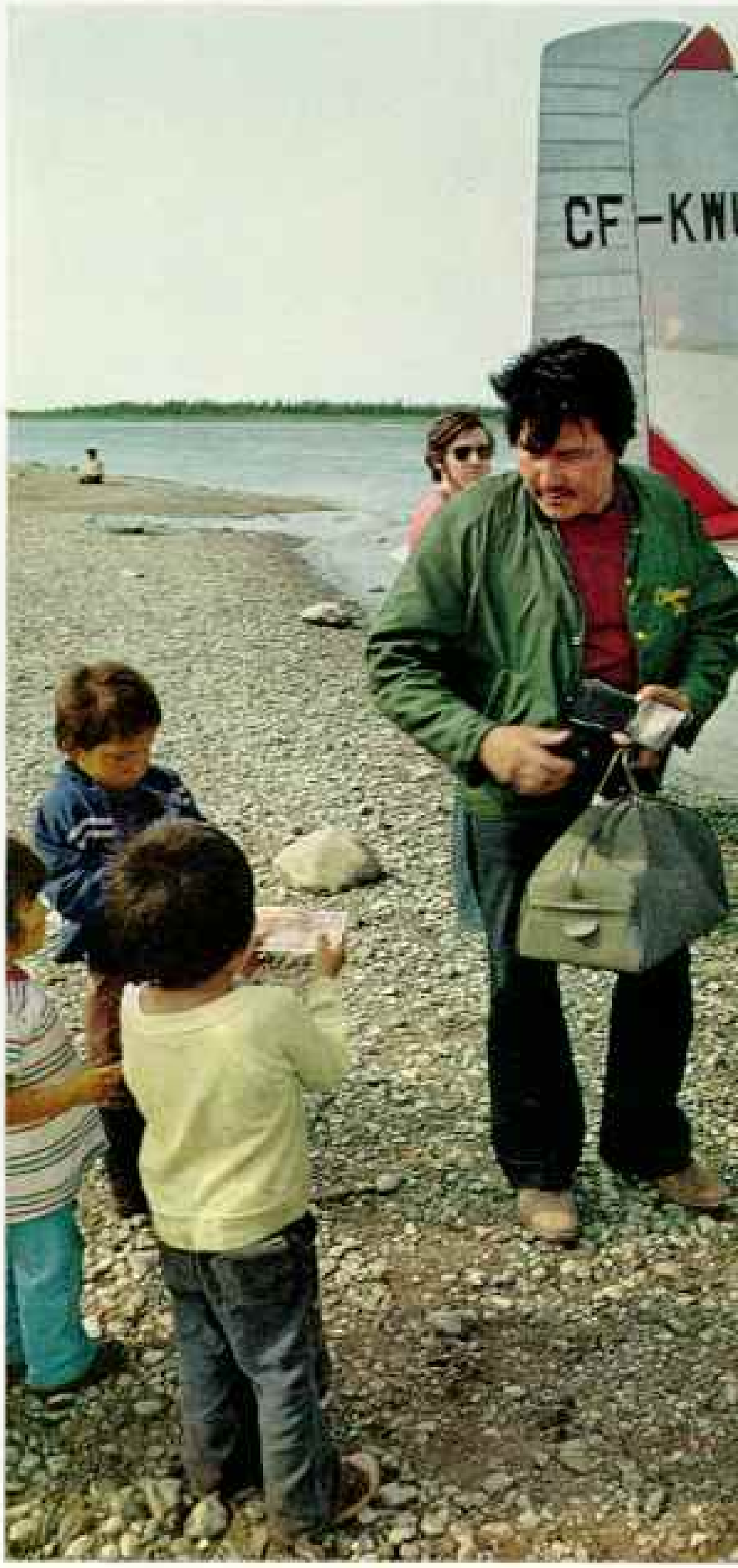
I visited John Murdoch in his modern four-classroom building. Over coffee in his cramped office, John discussed the fluctuating state of education.

"Canada's Department of Indian Affairs controls the schools and sets policy," he said. "Today there are plans for disbursing funds directly to the individual Indian bands, which would operate their own schools."

The government initially set up an educational system to serve a European-based culture. Attendance was compulsory, and children above the elementary level were sent away to school. There are still youngsters who say good-bye to their parents in September and don't see them again until June.

"Now we're testing a new kind of education at Rupert House," John Murdoch said. "We teach the basics in the Cree language; then we transfer over to English and a bicultural emphasis for the higher grades. The traditional life is part of the program. Vacations coincide with the spring goose hunt and other hunting seasons, so that children may accompany their families into the bush. We think the new program is working."

To visitors, Rupert House displays a deceptive calm. Separate groups of boys and girls splash in the river, and the men play



Bound for the bush, James Whiskeychan leaves his young sons some money for candy (**above**), before boarding a floatplane that will land him near a bridge construction site (**facing page**). The span over the Eastmain River will link segments of a 1,000-mile highway system—supply route for the power project. The changed face of the land evokes bitterness. Laments Job Bearskin, "They have destroyed much already, they have brought up the earth from underneath. Those places you have always loved to look at, they are no longer so beautiful."

Every day is washday at Rupert House, where a gasoline-powered machine replaces elbow grease (**above**). Even so, the Moar sisters must haul their water by the bucketful from the nearby Rupert River. During summer months, most of the 850 inhabitants stay in the village (**right**), preparing for a long winter of trapping in the bush. From October to May the intown population may shrink to 200.

checkers interminably in the shade by the dock. But closer inspection reveals a flurry of events in every household. Because cooking is done on wood-burning stoves, each family has to bring wood from the forest across the river. Hours are spent felling trees and towing them behind canoes. After the men shoulder the logs to their dwellings, the whole family helps daily to saw, split, and carefully stack the firewood.

In August the Crees prepare for the bush. Strolling about Rupert House, Charlotte and I watched broken snowshoes being mended,

new ones made, and other equipment and clothing readied.

Beside Minnie Moar's house, the gasoline-powered washing machine was chugging away full tilt. Inside the house, we found plump and congenial Minnie laughing and singing hymns in Cree as she handstitched moose-skin mittens and moccasins. I admired the colorfully beaded floral designs stitched on each moccasin top.

"The Indians used to decorate with shells and stones, and even berries," she said. "Now we order these glass beads from Montreal. The white hunters really like moose mittens and moccasins, so I make all I can. It's the only way I know to earn a little money around here."

Village Too Noisy for Some Crees

One Sunday afternoon our family canoed from somnolent Rupert House across the river and up Rupert Bay a short distance to a fishing camp of five tepees. After meeting the camp's three families, I asked wrinkled old Minnie Hester (I met a lot of Minnies among the Crees) why she had taken so much

Crutch at her side, 54-year-old Louisa Jimmiken (**left**) dresses out the carcass of a moose at her family's autumn hunting camp. Though crippled in a fall as a young girl, Louisa is a "phenomenon," according to the author. "Whatever needs to be done in the bush, she does it, and does it better than most men."

Wringing out a moose hide, Louisa (**above**) has scraped off its hair and softened it in warm soapy water and raw moose brains, preparatory to stretching (**right**). The pliable leather then smokes over a smoldering fire of rotted bark (**above right**), preserving it and coloring it a rich brown.

For as long as they can remember, Crees have hunted moose. They believe that all animals allow themselves to be killed out of respect for the Indian. Indians in turn must show respect by not letting the creatures suffer, by making full use of each one slain, and by following ancient rituals in disposing of remains. Above all, they must not kill too many. In a combination of religion and common sense, these members of the largest hunting tribe left in North America practice sound wildlife management.

Fingers fly with a speed born of experience as Clymie Weistche (**left**) uses nylon thread to complete a snowshoe. The birchwood frame is also handcrafted.

Intricate beadwork and beaver fur decorate mittens (**below**) stitched from moose and caribou hides. Though such prizes of Cree handiwork generally are sold to hunters coming north for the fall goose season, Indians wear them as well.

Handsewn felt "duffels," winter liners for moccasins, get an airing from Margaret Blackned (**bottom**). As many as three pairs may be worn to guard against winter temperatures that can dip below minus 40° F.

trouble moving a short distance from the village. "We come here to get away from all the noise and activity," she explained.

Unlike outsiders, the Indians may fish with nets. During the warm months women make the nets, with two-inch openings, by knotting sturdy nylon thread. Supported by three-foot floating sticks and weighted with stones, they are set out close to shore. A twice-daily haul yields a dozen or so whitefish and walleye and an occasional northern pike.

After tossing fish heads to the dogs, Minnie showed us into her cooking tepee, or *meechwap*. Fish must be preserved by smoking during warm weather because of the lack of refrigeration. In the center of the tepee a blazing fire was confined by a ring of rocks. Smoke filled the tent and slowly wafted through a hole in the top. Spanning the tepee at eye level were poles hung with splayed fish, drying for a few days. These fish are a mainstay of the Cree diet between the winter moose hunting and beaver trapping and the spring and fall goose seasons.

In autumn James Bay is a gathering point for hundreds of thousands of geese, mostly blues and lesser snows, on their annual migration down the Mississippi flyway to the southern United States. In spring the James Bay area is the last feeding ground for geese, predominantly Canadas, on their way to the Arctic. These twice-yearly migrations provide the Crees with thousands of pounds of meat and large quantities of prized goose down for making pillows, blankets, and mattresses.

Foul Weather's Fine for Goose Hunters

But goose hunting is not for everyone. I reached that conclusion ruefully on a fall morning as Billy Diamond and I lay silently on the bottom of a canoe in the dark and cold minutes before dawn. Jimmy Whiskeychan, manning the outboard motor, headed down the Rupert River and directly into a storm. Waves swept alongside, and our bow cut through three-foot rollers. A heavy wind whipped the whitecaps into the canoe, drenching us. Now and then Billy would mutter, "This is a great goose day."

After an uncomfortable hour, we arrived at our blind—some bushy willows. Sitting in the freezing mud, we waited for the first flight of geese. Jimmy said that the offshore wind would bring the geese low toward us. Minutes later he spotted some blues, or "wavies," and began calling them by mouth: "*hoooonk, hoooonk.*" He alternated this with the goose feeding sound, "*un, ga, ga, ga, ga.*"

And here they came, flying directly at us—huge birds, no more than 40 feet overhead. Their wings moved so much air I could hear the swishing. Then Billy and Jimmy were shooting. Four birds fell around us with such an impact that I felt the ground vibrate.

Billy and Jimmy collected the dead geese for use as decoys, carrying them onto the flats toward the bay. Bunching up straw nests, they propped a bird on top of each, using a short stick to support its head. Soon the point looked like a feeding ground (pages 558-9). By the time the afternoon sun glowed red and low over the water, each man had shot about 25 geese. All the birds would be carefully plucked, and those not eaten would be stored in the band's freezer for the winter.

First Decoys Fooled Uncle Philip

Billy recalled the first manufactured decoys to arrive in Rupert House. "They were duck decoys, and I bought them in a store down south," he said. "They were made of plastic and looked very real. My father carefully set them up in front of a blind and waited. Pretty soon along came my Uncle Philip. He eyed the decoys and let them have it with his shotgun. Shot them to pieces before he realized they weren't real."

The weather was fine when some Cree friends and I set up our tents beside a small lake in the southwest corner of Charlie Diamond's "trapline," a formalized hunting ground about 110 miles long and 20 wide. These landholdings are usually passed down to eldest sons. The Indians, who often have large families, long ago divided the entire region into huge holdings to provide enough food. The new Quebec agreement will alter these areas, and the Crees are meeting now to discuss dividing the land again.

Charlie, a stout man of medium height in his early 30's, is the father of nine. He is respected as a good trapper. But he may be an even better fisherman. He always seemed amused as I cast fruitlessly time and again with every lure guaranteed to catch fish in the north. At last he showed me how.

He attached a strip of moose skin and a hook to a short stick. Over the stick he bound a piece of fresh meat. He then tied one end of a line to this homemade bait, and the other end to a 20-foot spruce sapling. Wading into the lake, he jabbed his gigantic fishing pole

firmly into the bottom and tossed the baited hook into the water.

"Now we wait," he announced. Wait we did, all day. In the evening, Charlie walked out to the line and casually pulled in a 12-pound northern pike. The bait, still in its original condition, was thrown back in.

The following morning, Charlie hauled in another, even larger, pike. Back into the water went the same bait. For the week I was there, he harvested two fish daily from that line and never changed the bait.

Trading Posts Alter Cree Life-style

I came to have a special regard for Lawrence Jimmiken, 24, a tall, angular Indian who is one of the few Cree high-school graduates to return to the woods as trappers. His fluent English proved invaluable to me. One cold night, sitting cross-legged in his tent on a blanket woven of rabbit-skin strips, and occasionally stoking the wood-burning stove, he spoke of his people.

"Once the Crees lived in the bush all year, just a family or two together. Things changed when the Hudson's Bay Company came along the coast 300 years ago. The Indians started migrating to the company's outposts on James Bay, trading beaver pelts for flour, sugar, lard, tea, and firearms."

A bitter note edged his voice. "When you traded for a gun in those days, your stack of pelts had to stand as high as the gun. The company put the heaviest man in town on top of your pelts to pack them down, and made special muskets with extra-long barrels.

"Gradually, the Crees spent more and more time around the trading settlements. The

High and dry, 4-month-old Raymond Jimmiken seems content lying trussed in his hammock (**right**) while mom and dad are busy. Later a caribou-skin rattle with birch handle will offer solitary entertainment (**above**).

Cree mothers still use nature's own diaper—absorbent sphagnum moss sandwiched between layers of cloth (**left**)—but newfangled disposables are making inroads.

At full draw, a youngster takes mock aim at the camera. Every boy in Rupert House owns a slingshot, marking the beginning of his hunting life. As author Ward reports: "Seeing kids skulking around after school with their slingshots, I asked one boy if he ever hit anything. He didn't say a word, but from his pocket pulled out two small birds."

government built some houses and schools, education became compulsory, welfare payments brought in money without working, and floatplanes carried us into the bush in an hour where it used to take a week by canoe. Today we live in the villages and go to the bush for shorter times each winter to get our quotas of beaver."

Lawrence dropped four tea bags into a pot of boiling water on the stove, while his mother, Louisa, sliced a haunch of moose for frying. His wife, Frances, propped a bottle of diluted evaporated milk and sugar in front of their infant son, Raymond.

"We Never Kill for Fun"

We ate dinner seated on the spruce-bough floor around the fire. The meal was topped off with skillet-baked bread, called bannock, made of white flour, water, baking powder, salt, and lard.

"The Crees believe that animals and Indians are all on the earth to work together," Lawrence said. "There is a special feeling between us. It is a cooperative relationship filled with love and respect.

"If we are greedy and take too many animals, they will run out. The animals, on the other hand, know that we need them to exist, and so make themselves available to us to kill. In a bad hunting time, we try to figure out what we have done to upset them.

"We never kill for fun, don't hunt on Sunday, and make sure the animals don't suffer. There are rituals for capture and slaughter. After a beaver has been eaten, the bones are given back to the water. Can you imagine how the Crees feel about outside hunters coming up here and killing our food for sport?"

The sport-hunting season does provide a source of income for the Crees, though, for some of the men hire out as guides.

Lack of jobs has placed more than two-thirds of the Crees on welfare, which has become one of the most controversial aspects of Indian life. Back in Rupert House, I sought out 23-year-old Albert Diamond, the band administrator. A stylish Indian with long hair, mod clothes, and a year of university study, Albert used to be charged with signing up Indians for federal welfare programs.

Explaining recent changes in the system, he told me, "As we understand the new agreement, Quebec now wants to take over administration of welfare and operation of the schools. So we have asked the Indians to sign

up for welfare checks from the province."

We sat at a long table stacked with government forms such as "Application for Social Aid." A record of country music played in the background.

"Technically, almost everyone here is unemployed," Albert said, "because there are no jobs. Actually, Crees are self-employed trappers. But until the men sell some beavers in winter, they have no money coming in. When families get ready to go to the bush, they can get three months' credit at the store against their welfare checks."

The Crees' new agreement with the province provides an added incentive for preserving some of their old ways. Those who continue to trap, hunt, and fish are guaranteed an income greater than they would receive on welfare.

The Rupert House band lists 1,100 Indians on its welfare rolls. Around 70 percent of them receive checks at some time in the course of the year—unemployment payments and old-age pensions. Some 72 percent of the Crees are under 30 years of age.

Doles Destroy the Need to Trap

As we walked to the door, I asked Albert if welfare payments were breaking up the Cree culture, since they allow people to remain out of the bush environment. He thought for a moment. "That's what everyone is worried about," he said. "The problem in the future is there won't be anything for some people to do. Indians get older and now have so much money they don't need to trap. My father got four months' back payments and didn't know what to do with it. I suggested he stay around the house and gather firewood. But he said no, and took my mother to the Broadback River to trap a little. I think things are generally getting worse for the old folks, and some better for the younger ones. Old folks would rather go back to the life they had before. Younger people want to take something from both worlds."

Later, Father Maurice Provencher, the local Roman Catholic priest and administrator of the Quebec provincial welfare system, expressed his fears. "After this generation is gone," he predicted, "unless the province pays them very well to hunt and trap, they will not work in the bush when they can stay here and collect money by not working."

Some weeks later I discussed this prospect with Albert Turcotte, the portly, bespectacled

Bounty of blueberries rewards a Sunday afternoon search by Sharon Gilpin; on another day she might gather cranberries or gooseberries. The region's short growing season prohibits most agriculture. The Indians lace their diet of fish and game with vegetables, usually canned, bought from the "Bay," as the Hudson's Bay Company stores are called.

Weighted down by a hundred pounds of blue geese, Chief Billy Diamond strides home (**below**). James Bay marks a twice-yearly stopover for migrating geese—blues, lesser snows, and Canadas. The Cree band at Rupert House has a freezer, enabling the Indians to keep meat that might otherwise spoil. For warm bedding, Indians prefer the down of Canada geese. Traditionally a Cree boy's first goose should be one of the more-prized Canadas, whose decorated head (**right**) reminds him to be a good hunter.

Perfect decoys, dead geese propped up with sticks by Johnny Weistche (**below**) attract flights of blues to this "feeding ground." Handmade decoys of bound twigs (**left**) also entice the big birds to within easy shotgun range. Long before firearms reached James Bay, Cree marksmen shot geese out of the air with bows and arrows.

Cycles of change: a minibike and selection of a new chief. Barefoot in the saddle, Gilbert Diamond puts his trust in Uncle Stanley (**above**) and hangs on for dear life. The versatile machines are useful but rare. In contrast, every family seems to own a snowmobile for wintertime travel.

In the Paint Hills settlement voters literally stand behind their man (**above right**). Any ten men may ask for an election, and all adults are eligible to make nominations and vote. This election was called when the chief resigned to work for the Department of Indian Affairs, the federal agency responsible for the welfare of all Canadian Indians.

The Crees' dependence on elders for direction has faded as the bands recognize the value of having educated leaders, especially those fluent in English, to deal with the government. As the Indians gain closer ties with Quebec's officialdom, they find also a need for fluency in French, official language of that province.

director of the Quebec Social Affairs Office for the northern natives. He was frank.

"No one really knows what to do about welfare," he said. "We spend huge sums of money here, but the problem just grows with the population."

The trouble is that the number of jobs has remained near zero. So the people go on welfare. But the vast new construction projects will offer them an alternative.

Welfare payments stay only briefly in Indian hands on their way to the ubiquitous Hudson's Bay Company. The Crees are dependent on it; one community was actually abandoned when the "Bay," as it is called, closed an unprofitable branch. Performing an invaluable service to northern residents, this huge organization sells thousands of items at modern stores in each village—everything from snowmobiles, hardware, and parkas to spare parts and needles.

The Indians, however, do not always get the best of civilization's products. Few fresh

foods find their way this far north. Shelves are stocked with bland tinned foods, numerous varieties of packaged items, and huge quantities of candy. Fresh milk is available only on special order. There are shortages, and staples cost almost double what they do farther south.

Into the Winter Wilds for Pelts

Beaver season begins in mid-November. Before then, the pelts are not yet full and the yearlings are still too small. To prevent overtrapping, local conservation officers set quotas based on the Indians' trapping areas and previous beaver-house counts. Charlie Diamond, for instance, had a quota of 100 last year.

As winter arrived, I looked forward to joining the Crees for beaver trapping in the bush. Five feet of ice and snow covered the Rupert River, and bush planes sat down on it with skis. The river was crisscrossed with the tracks of more than 300 snowmobiles that hauled water, logs, and animals on a multitude of daily errands. The community, a white jumble of small buildings, resounded day and night with the vehicles' steady roar. Frigid temperatures were common and a reading of minus 45° F. occasioned little comment.

On a mid-February morning, Charlie Diamond, Jimmy Whiskeychan, Lawrence Jimmiken, and I climbed aboard a bush plane. In minutes it would deposit us on the frozen Nottaway River 60 miles away, with no chance for resupply or help, should we need it, until the plane returned a week later.

Charlie took one look at the worn flight map, pointed to a small spot in the wilderness, and said, "There is the place." From my viewpoint, the whole landscape blended into three simple elements—snow, trees, and sky. But the Indians were riveted to the windows, absorbing all the information their bird's-eye view could provide. And no sooner had we touched snow beside an island in the river than the Crees threw open the door and

hastily tossed out equipment and baggage without explanation.

As he loaded his rifle, Lawrence yelled to me, "There's a moose on the island. We saw tracks from the plane. Get your gun and guard this corner."

Soon I heard several shots. The sighting had proved a bonanza—not one moose but three. Charlie had shot them all, and in Cree fashion gave one to each of the other men. Indians have no bag limits for moose shot for food. The meat from the cow and her yearlings would last their families for weeks.

The Crees gutted the animals immediately to prevent the meat from acquiring an unsavory taste. Too, the valuable hides could be removed undamaged and in one piece only if the animals were skinned before they stiffened in the extreme cold. The livers, lungs, stomachs, and small intestines were set aside as a gift for any passing lynx or fox.

Home in the Snow Rises Quickly

Since daylight was failing and we still had no shelter, time had run out for butchering. It must wait for tomorrow. To impede the freezing process, each carcass was covered with snow. Then the men carried the hearts and

Grain of good fellowship engulfs newlyweds Samuel and Betty Whiskeychan as they

large intestines to our campsite, where they were later boiled into a tasty dinner.

I watched, fascinated, as the Crees set up our shelter. After clearing a flat spot near shore, they quickly marked out a circle about 15 feet in diameter and, with hand-carved birch shovels, dug a hole almost four feet through the packed snow down to the ground. Then they cut a number of spruce saplings. As each man stripped off the boughs, he let them fall into the pit. The poles—31 of them—were interlaced without connecting material into the classic tepee shape, and the bottom ends were secured by plunging them into the deep snow around the perimeter of the hole.

Then the men wrapped canvas over the framework, leaving only one opening in the side. A flap was pinned on to cover the doorway. Inside, Jimmy wove the stripped-off boughs together, forming a "carpet," and he lined the snow walls with branches of balsam.

All that remained to do was to place our two metal stoves atop stakes and poke pipes through the peak (pages 566-7). Setting wood ablaze, Lawrence asked me, "How do you like your new home?" Sparks flickered out the top, highlighting the old canvas, now dappled with the blue hues of evening. The

leave the Anglican church. Two days of dancing and feasting followed the ceremony. 563

warm glow from our two fires bade us a cozy welcome. "It's just plain beautiful," I said.

Early next day we set out across the frozen Nottaway, walking about a mile before touching land on the far shore. There a stream joined the river, and at that junction was a beaver dam, now hidden beneath the snow. We moved upstream looking for the closest beaver lodge.

Plopping along on my showshoes, I was huffing in the minus 30° F. cold. Lawrence strolled briskly past me saying, "It's really easy in the winter. If we did our trapping in the fall, we would have to paddle and wade everywhere and portage the canoe over the rough spots."

Learning How to Think Like a Beaver

Charlie spotted a telltale white dome at the edge of a small spit of willows. Out came the ice chisels—long, carved birch poles with iron points lashed to the ends. The three men began walking around the dome, tapping with the metal tips.

"To trap beaver, it is necessary to understand their habits," Lawrence said. "The beaver makes his house with underwater openings for protection from other animals. Usually there are two to four tunnels. By listening for hollow sounds, we mark the openings. Then we block them or set a trap in each one."

The sounding located three tunnels. After shoveling away the snow, the men chiseled through two feet of ice below. Charlie narrowed the tunnel entrance by driving spruce saplings a few inches apart into the stream bottom. Exactly in the middle, he left a gap for the trap, suspended between two long saplings so that it hung about three inches off the stream bottom.

Throughout the day we walked up the stream and its tributary, setting six traps at two more beaver houses. The sun shone low over the river as we headed back to the tepee for a welcome dinner of hot moose meat. Having trudged about six miles on snowshoes, I was ready for my sleeping bag.

Two mornings later a fierce west wind sent snow flying and cut visibility to a quarter of a mile. In such winds, the chill factor can equal minus 100° F., greatly increasing the hazards of frostbite. Nevertheless, the Indians decided to check the traps.

Trees provided us some protection from the wind, and the men immediately began

Fresh-frozen dinner of northern pike draws a smile from Jimmy Whiskeychan (**facing page**). A hook baited with moose meat lured fish consistently to this spot on the Nottaway River near his winter beaver camp. Though viewed as a summer food inferior to the meat available the rest of the year, fish serve the Indians whenever game becomes scarce.

How to trap beavers: Charlie Diamond leaves no way out for the occupants of a lodge beneath the snow-covered ice of a stream (**above**). Locating the lodge by probing, he blocks all exits with poles except for the ones in which he sets traps. When a beaver swims through a portal, the trap springs shut, drowning the animal but not damaging the pelt. Government quotas allow each Cree as many as 100 beavers a year; skins bring an average of $50 apiece.

Winter home in a hurry: Wielding snow shovels carved from birch, beaver trappers Lawrence Jimmiken and Jimmy Whiskeychan (**above**) mark out a circle 15 feet across; next they will clear off the four-foot-deep snow cover. Spruce saplings with their thick ends thrust into packed snow and narrow ends interlaced in a peak (**above right**) will support canvas walls. A floor of spruce boughs, woven together, provides soft, aromatic insulation. The operation from beginning to end takes as little as an hour.

Each day the Indians patrol their trapline on snowshoes, setting new traps and resetting those already sprung. Occasional hunting expeditions produce food and a change of pace. At night goose-down blankets and two small wood stoves keep out subzero temperatures (**right**). Total time spent in the bush depends on the luck and skill of the Indians. Getting in and out of the backcountry—once a major undertaking—now means simply chartering a plane.

clearing the traps. What a disappointment! Two had been sprung but were empty. We reset them and moved on to the next lodge another mile upstream.

There Charlie pulled aside the snow-covered boughs and chipped away at the new ice. As he carefully felt with his chisel under the water, he beamed. "There's a beaver."

He pulled up the poles and trap. Inside was a dead yearling, glistening and still pliable because of the above-freezing water temperature. Lawrence rubbed it with loose snow until it was completely dry. As he examined the luxurious brown fur, he explained: "If we don't get that warm water off fast, the pelt freezes. Then it's hard to carry home, and easily damaged." Charlie attached a long string to the beaver and pulled it on its back through the snow.

On a Collision Course With Civilization

A week passed swiftly as the Indians continued setting and checking traps daily. They would not leave until they had filled their quotas. But soon the time came for me to leave. We sat around a fire at the island's tip. In typical Cree fashion, no one had anything to say about my departure or our experiences together. Then a small ski-plane circled the island and landed by my baggage. I exchanged a single handshake with each man. They said good-bye. It was over.

I asked the pilot to take one turn around for a final look. Had that snowy woodland really been my home? Will it be the Crees' home much longer? Then, in six short hours, I was sitting in a Montreal hotel room. A color TV blared in the corner. Outside, cars created a colorful mosaic on the damp street. Skyscrapers surrounded my window view.

The change, I thought, was too abrupt. Yet that is precisely the problem of the Crees. They live just beyond the onrushing borders of civilization. Changes to their way of life are coming fast. How can they and their fragile environment and culture survive?

My head tells me they can't. But my heart reaches out and hopes they can. □

At day's end the weary trappers trudge homeward across the frozen Nottaway River, towing their catch. With continuing respect for their culture and timely interest by their government, they can hope to return to the bush year after year.

Into the Lairs of "Sleeping" Sharks

By EUGENIE CLARK, Ph.D.

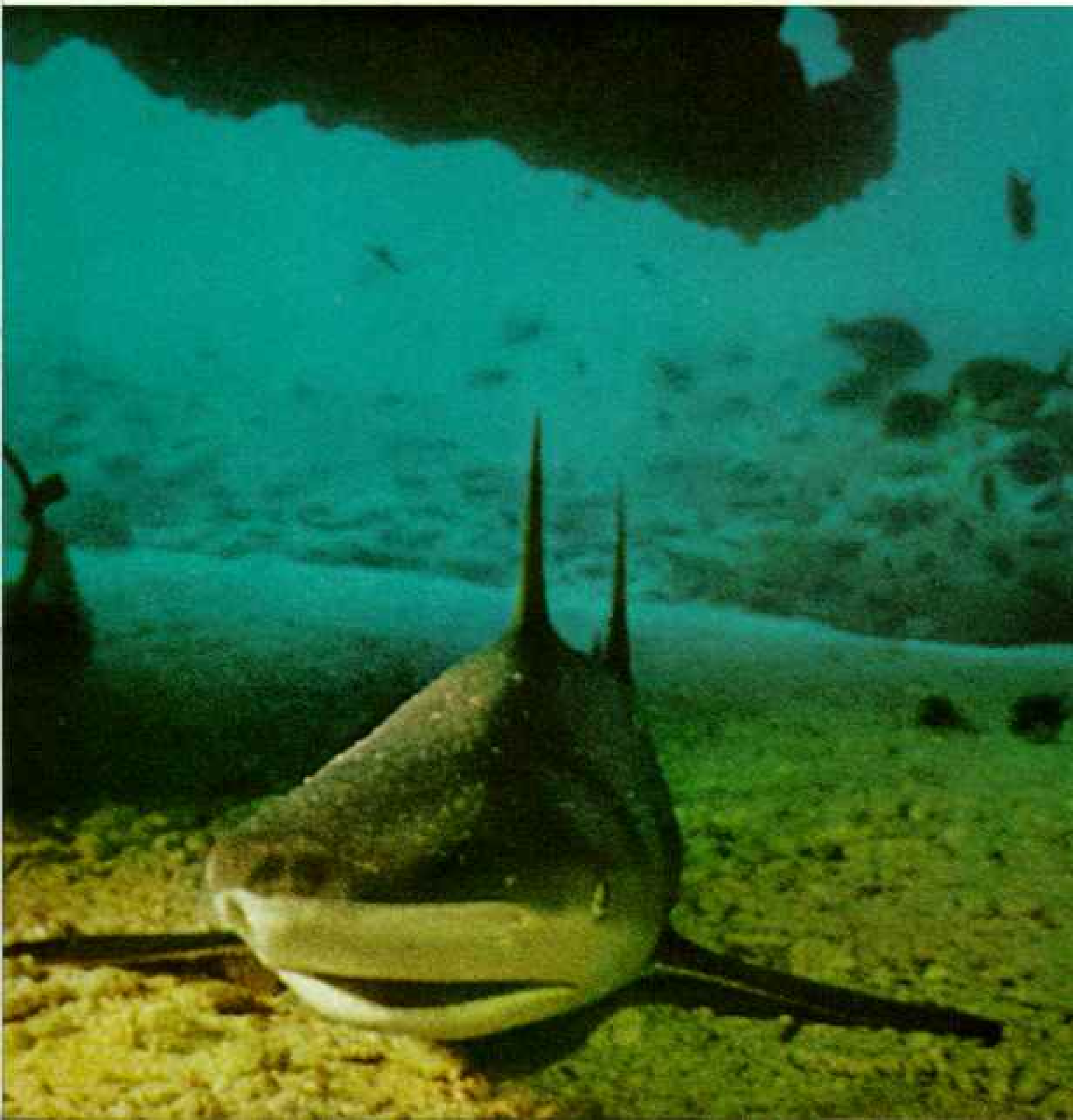
Photographs by DAVID DOUBILET

THE BIG REQUIEM SHARK we had been following into an underwater cavern off the coast of Mexico's Yucatán Peninsula suddenly turned and swept toward us. My companion and student, Anita George, and I froze. Entering the glare of our powerful underwater movie light, the predator stopped two feet short of bumping my face mask.

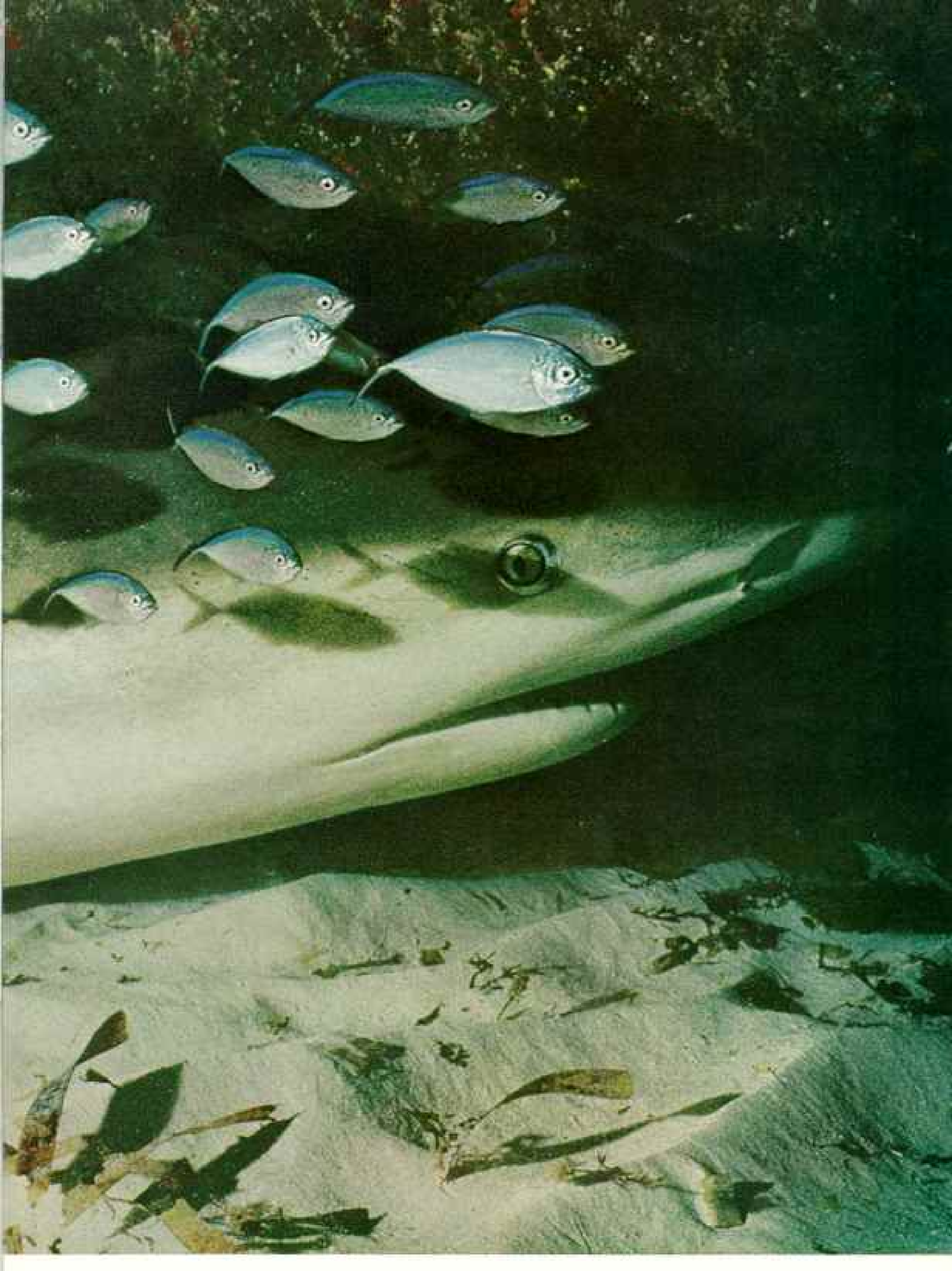
Spellbound by the light, and by whatever other influences tranquilized it, the shark stood still as if for inspection. Silvery young barjacks with neon-blue streaks along their backs formed a shimmering halo around the shark's head (following two pages). I could see every detail—even, on the snout, the pattern of the ampullae of Lorenzini, tiny pores that enable sharks to detect the slightest variations in natural electric currents generated by the water, plants, and other animals.

The shark was a female, and the rounded belly suggested pregnancy. Her eyes were open; the nictitating membranes (page 578) didn't even blink in the strong light. Her

Death seems to doze as a savage reef shark tolerates two of the author's assistants. Natural conditions in a grotto 55 feet down off Mexico's coast appear to tranquilize the fish. It lies docile as a sleeping dog, despite a blazing camera light and gentle prodding.



After a day on the prowl, a reef shark with an entourage of barjacks reposes as if asleep. But its restless eye confirms that the shark, however immobile, never truly sleeps.



Its stationary state contradicts the usual behavior of streamlined sharks, which are generally thought to swim unceasingly to keep oxygen-rich water flowing over their gills.

mouth opened and closed rhythmically.

Behind each of the some two dozen teeth we could see at the forefront of her lower jaw lay the tips of four more, destined to move forward in turn to replace those in the active row. By thrusting its jaws, a shark can change the angle of its active biting teeth. I was relieved to find this shark's teeth folded back in the nonbiting position.

Why was this requiem shark—a member of the family that includes many of the principal man-eaters—on such good behavior? Why was it so unaggressive, so lethargic?

Three years had gone by since I first heard of fabulous sea caves off the Yucatán coast regularly visited by sharks that appeared strangely narcotized. The word had come from my old friend Ramon Bravo, noted photographer and one of Mexico's leading underwater naturalists. He had made it clear that these predators, which he had never before seen immobile, remained stationary and apparently unfrightened when divers approached them. Nor were they to be confused with the sluggish nurse sharks, which loiter in caves in many parts of the world.

Three Expeditions to Solve One Puzzle

In November 1972 I made a six-day trip to Mexico and saw sharks, but none "sleeping" in the caves. The beauty of the setting, however, was dazzling. In the deep tunnel cave called El Puente—The Bridge—the entrance led into a chamber occupied by a school of yellow porkfish and a huge jewfish that looked like a dirigible parked in a hangar. Hundreds of reef fish decorated the sides and ceiling of the cave. Dozens of red squirrelfish peeked at us from crannies and crevices.

When Ramon turned on his movie lights,

the dark cavern walls lit up like the stained-glass windows of a tiny cathedral, the kaleidoscope of colors provided by gaudy yellow, purple, orange, and vermilion sponges clinging to the walls.

Coral rubble and coarse ripple-marked sand floored the cave. Clumps of algae and brown blades of turtle grass, from green fields outside the caves, floated by when a current moved through the tunnel.

"Eugenie, I don't know how I can prove to you that sharks sleep in these caves," Ramon said. "Maybe I have to put them in pajamas and give them an alarm clock." He urged me to come back.

So in April 1973, I returned to the shark caves, which lie offshore from Isla Mujeres (map, facing page). At last, guided to the site by Carlos Garcia, the young Mexican lobster fisherman who had discovered the beautiful caverns and their oddly immobile inhabitants, I was able to observe and study my first "sleeping" sharks.

They were of the family Carcharhinidae, or requiems, which also includes the tiger sharks. When Carlos—called "Valvula," or Valves, for his protruding lips—had first found the inactive sharks, he thought they were dead and that he had stumbled into the equivalent of an "elephants' graveyard."

The expeditions I led in 1973 and 1974 were supported by the National Geographic Society and the Mexican Government, and the most recent one also by the Explorers

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The author, a famed marine biologist and professor of zoology at the University of Maryland, also wrote "The Red Sea's Sharkproof Fish," NATIONAL GEOGRAPHIC, November 1974, and "The Red Sea's Garden of Eels," November 1972.

In a peaceable kingdom where the human lies down with the shark, author Eugenie Clark searched for clues to how underwater caves near Isla Mujeres (**map, lower left**) act as tranquilizing chambers. One test she conducted measured the speed of currents, made visible by green dye (**left**). Most revealing was evidence of freshwater seepage that diluted the seawater in the caves, causing a lowered salinity that seemed to benefit the sharks. Parasites that plague sharks probably relax their grip under such conditions, allowing remoras—the sharks' faithful housekeepers—to feed on the pests more efficiently (**right**).

Dr. Clark, her daughter Aya (center), and graduate student Anita George examine a parasite-free reef shark. In contrast, a tiger shark—a variety not known to use the caves—suffers an infestation of leeches in its throat (**right, lower**).

RAMON ROSELL

"**Do not disturb!**" Ignoring a shark's unwritten warning, Anita George calmly takes notes on the respiration rate of the mysteriously tranquil creature (**left**). High oxygen content of the cave water may help explain why the shark comes here for periodic breaks from its predatory rounds.

Vexed, perhaps by the strobe lights, the shark suddenly lunges. With only a clipboard for a shield, Anita fends it off, as the film footage shows (**above**). In spite of nearly tearing off Anita's face mask with a thrash of its tail, the shark failed to follow through with an attack and settled again into lethargy.

Dr. Clark identifies the cave sharks she observed off Yucatán as *Carcharhinus springeri* of the man-eating requiem family, the group most responsible for attacks on humans.

Club. Our research teams sought to determine what conditions induced the sharks' trance-like state. Anita George, one of my students at the University of Maryland, was principal assistant in the work. A number of my other students, several visiting scientists, and half a dozen Mexican divers joined us at intervals.

It was on our last field trip that Anita and I encountered at such close quarters the splendid female requiem shark. We had swum away from our support boat and were heading for the labyrinth of limestone caverns near the south end of a long reef called La Cadena—The Chain. Valvula, a supremely skilled diver, spotted the requiem first.

While Valvula and photographers David Doubilet and Ramon approached the cave by a rear entrance, hoping to hold the shark in the cave, Anita and I encountered the haloed beauty at the opposite doorway of the tunnel.

It's really unbelievable, I thought to myself, and knew by Anita's rapt expression that the same feeling possessed her. There we were, face-to-face with one of the sea's most deadly denizens, in the most dangerous situation possible for confronting a shark—the fish crowded, backed into a corner—and I'd never been more thrilled. It was an unforgettable moment in my life.

For protection, not sleep: A shark uses an opaque membrane (**above**) to shield its eye from physical or chemical irritants.

Lethal end of a freshly killed shark (**right**) reveals fearsome weaponry of multiple rows of teeth. Freckling its snout, pores called the ampullae of Lorenzini enable the shark to navigate and home in on prey by sensing electrical currents in the water.

What Puts These Sharks to "Sleep"?

Ramon and Valvula had told us earlier they had found other sharks that on occasion they could touch, even lift gently, without arousing aggressive response. When the fish were approached and nudged, they could become active and swim away, or quickly settle back to "sleep."

This was behavior most strange: Why would a large streamlined predator with practically no natural enemies be "hiding" in a cave? Why would it lie there pumping water over its gills, when its normal method of breathing is by the simple expedient of swimming ceaselessly with its mouth open—which, it seems to me, would require less energy.

To try to find the answers, we took instruments to measure depth, water temperature, oxygen content, salinity, and speed and direction of currents. We had dyes to follow current flow, plastic bottles to take water samples for chemical analyses, bags for sand and rock samples, and an underwater gun—a Rhett McNair Fast-load Powerhead—to protect us from angry sharks.

In the confines of the caves, we were more afraid of what the powerhead would do to our eardrums than what the sharks might do to us. So we marked off the weapon and used it to measure the caves and for such tasks as timing an alga floating along the gun's length, indicating speed of the current.

Despite all our careful preparation, though, we were frustrated in 1973 by rough weather, seasickness, broken equipment, and seeing too few sharks. Those we did see we never got close enough to touch, and we "woke" them unintentionally a few minutes after discovering them. Nevertheless, my daughter Aya did record the respiration rate of a large shark in the 55-foot-deep El Puente tunnel, and David photographed a "sleeping" immature male.

Our instruments also gave us some significant information. The oxygen meter showed high (saturated) readings even in the deepest dead-end parts of the caves. The above-normal amount of oxygen in the water probably allows the sharks to remain quiescent here for hours on end.

At certain times, on the floor of the 65-foot-deep cave at La Punta, The Point, we found a spot with a temperature slightly lower than the surrounding water. Could some kind of

different water occasionally be seeping into the caves, attracting the sharks and then affecting them? Had we found a kind of carcharhinid opium den?

When we returned in the summer of 1974, we recorded several areas of subnormal salinity. Pat McInturff, another of my students, boldly took a water sample under the very nose of a "sleeping" shark. It confirmed my suspicion that fresh water from the mainland water table, rising artesian fashion under the sea floor, was trickling into the caves. Pat's sample showed lower salinity and higher acidity and carbon dioxide content than water outside the cave.

New Site Provides Longer Look

Valvula led us to the newly discovered cave labyrinth at La Cadena, lying in only 33 feet of water. Diving was easier there; we could make several cave trips a day.

We learned a stealthy, tiptoe approach to a "sleeping" shark, and kept a steady bright light in its eye. This seemed to mesmerize the fish, holding it in place. If David took a flash photograph, with the floodlight switched off, the shark usually "woke up" and dashed from the cave forthwith.

On one dive the resident shark was so imperturbable that we ran out of film and air before our subject moved. Thus La Cadena gave us our first long, close, satisfying look at a big "sleeping" shark.

This shark, like others we saw later, had a small slave: A remora, a type of shark sucker, kept cleaning its host while it lay at rest. The remora went in and out of each gill opening, presumably removing parasites (page 575). Sometimes all but the tip of its tail disappeared inside the shark's gill opening.

The remora then worked over the shark's head, nibbling around the eyes and nostrils, and at the corners of the big fish's mouth. It worked its way down the side of the shark, vacuuming the sleek skin.

As the remora moved over the shark, it didn't hold on with its treadlike sucker, as it would if the shark were swimming. It is known that the little fish eats parasites off the shark's skin by turning over and brushing loose these tiny clinging relatives of the crab with bristlelike teeth carried on its projecting lower jaw.

"Could these caves be cleaning stations for the sharks?" David Doubilet asked me that night, after our dives were over.

Flirting with catastrophe, Dr. Clark examines a still-lively bull shark *(Carcharhinus leucas),* snagged on the baited hook and chain of a commercial fisherman. Hooked and "sleeping" sharks share the need to alter their normal breathing method in order to remain alive: When stationary, they must actively pump water over their gills. Mexican divers, who have observed blue and lemon sharks as well as reef sharks at rest in the caves, report that the "sleeping" animals may voluntarily remain comatose for four hours without ill effects. This creature, though, had the added task of trying to shake off the hook—a labor so exhausting it usually kills the hapless victim.

"We were apprehensive about swimming near the hooked sharks," Dr. Clark notes, "while we thought the 'sleeping' sharks to be less dangerous." Her concern was justified, as shown in the photographs on the next two pages.

The last strike: Jaws gaping, a hooked tiger shark sweeps toward photographer David Doubilet with torpedo speed (**left**). Only at the final second does the shark come to the end of its tether (**below**), its bared teeth only inches from Doubilet's flippers, visible at the extreme lower right-hand corner.

Attacks on swimmers may eventually be reduced if science can determine what has served to pacify Mexico's "sleeping" sharks.

The question immediately suggested a possible correlation with the lower salinity of the water. As a pre-teenager, I learned that putting my aquarium fish briefly in water with a slightly different salinity usually made their parasites fall off. I knew also that biologists think certain marine fishes go into the less salty waters of estuaries to rid themselves of parasites.

Sharks can be trained to push targets and ring bells for a meal, and they can learn to distinguish right from wrong targets—as I taught requiem sharks to do in Florida. Surely they are capable of learning that in water of below-normal salinity, a condition they apparently must sense, annoying parasites tend to loosen their grip.

A shark's ampullae of Lorenzini, those amazingly sensitive pores found mainly on its snout, might easily detect the difference in electrical gradients—possibly several millivolts—caused by fresh water welling up in the floor of a cave.

Pleasure as Well as Practicality?

So a credible explanation popped into our minds for this requiem shark's "sleeping" habit. Naturally the remora can get around to clean a shark better if the "mother ship" isn't whizzing through the water, and if the grip of the parasites is already weakened. Maybe the relief a shark feels upon getting rid of a strongly clinging leech, isopod, or copepod accounts for the animal's little-known and seemingly aberrant behavior.

One of my students, Michael Resio, theorizes that "sleeping" sharks might also be experiencing some kind of pleasure stimulation from the effects of physical and chemical conditions in the cave.

The coming together of fresh water and salt water in the caves creates electromagnetic fields, and sharks exposed to this phenomenon may get "high," much as humans are affected by alcohol or marijuana. Perhaps further analyses of the cave waters will reveal the presence of significant amounts of chemicals that could be tranquilizing to sharks. The higher-than-normal carbon dioxide associated with increased acidity noted in Pat McInturff's sample has been known to have an anesthetic effect on some sharks; this chemical condition may prove more widespread in the caves.

It seems quite likely to me that our "sleeping" sharks are drawn into the caves first to

get cleaned and second to enjoy a "high" of pleasant sensations. Between the remoras and possible chemical cleansing, the big fish are kept sleek and spotless.

"These sharks are so beautiful and clean-looking," Pat exclaimed after a dive with the biggest shark we'd seen at La Cadena.

"Yes, I like that pearly look they have, especially after sunset when the light is bluish in the cave," said David.

While we continued to call our subjects "sleeping" sharks, the more we studied them the more we were agreed that these fish, whatever their peculiar state, were not asleep. The way the "sleepers'" eyes, so alert and sharp, took in the scene and followed our movements convinced us that the sharks were conscious and aware of our activity.

Each day we saw a "sleeping" shark, we talked late into the evening. The night after a large shark suddenly roused and charged Anita, it was a wonder we got any sleep at all.

"The shark's tail kicked up so much sand I couldn't see a thing. I thought it really got her," David told me. But Anita was safe, and Ramon had the whole harrowing episode on film (page 577).

Anita and student helper Nick Caloyianis reported that they had each taken a tremendous clout on the face as the shark turned and smashed his tail into them, almost knocking off their face masks.

Ramon, who had had the best view, was loud in his praise of Anita. "What a girl! She hit the shark on his head with her clipboard!"

"I didn't really *hit* him," Anita explained. "I used the clipboard to push him aside when he came toward me. What else could I do? My back was to the cave wall and you guys were blocking both exits."

Lone Diver Finishes the Job

As the days passed, those of us with long scuba experience became, perhaps, too casual. My daughter Aya was no exception. Once a large "sleeper" stayed still so long that we emptied our scuba tanks watching it and left the cave one by one. There we were, back at the boat, taking off our scuba gear, chatting about the beautiful shark and its attendant remora, when I suddenly noticed that Aya was missing.

Deeply concerned, I called to Valvula and asked him to go quickly and find her. He took a deep breath and plunged in, coming up with Aya beside him.

"What happened to all you guys?" Aya asked. "First I couldn't get into the cave because you were all crowded in there. Finally, when there was room for me to get in and do my 'station,' there was no one left but me and the shark. I felt a little uneasy, Mom, but I got all the records." She held up the filled-out data sheet.

After that incident, I always assigned two buddies to do a station together.

By the end of our field program, we had logged 99 dives, on 28 of which we had seen sharks; in seven cases they were "sleeping."

We had reconnoitered all the likely-looking caves along the reef, inspecting dozens. But the only sharks we saw were near or in the three caves Valvula originally took us to.

Mystery of the Caves Persists

Requiem sharks are highly streamlined; the family ranges in adult size from two to 18 feet in length. With the exception of the tiger sharks, their torpedo-shaped bodies bear no conspicuous markings. Extremely difficult to differentiate as to species, they are the most common sharks in coastal waters, accounting for a high percentage of shark attacks on man.

The Yucatán cave species has one feature, a mid-dorsal ridge along the back, that makes identification easier. Dissecting three specimens caught by local shark fisherman Daniel Avila, and after counting each of their four dozen rows of teeth and more than 200 vertebrae and taking many measurements, I identified our relaxed friends as reef sharks, *Carcharhinus springeri*.

We found no parasites on the three reef sharks we got from Daniel. This was in sharp contrast to other commercially caught sharks we examined, which were heavily parasitized.

The Mexican divers say that on rare occasions they have seen other kinds of sharks resting in the caves we explored—the lemon shark for one, and a shark with a longer snout that Ramon thinks was a blue shark.

Perhaps in deeper waters or subsea caves in other parts of the world, requiem sharks also "sleep." Very possibly the more we study the oceans the more shark dormitories we will find. But for the present we know only three places in the entire world where reef sharks can regularly be found in a sleeplike state—the caves at La Punta, El Puente, and La Cadena, names which will always hold a very special meaning for those of us who have dived there. □

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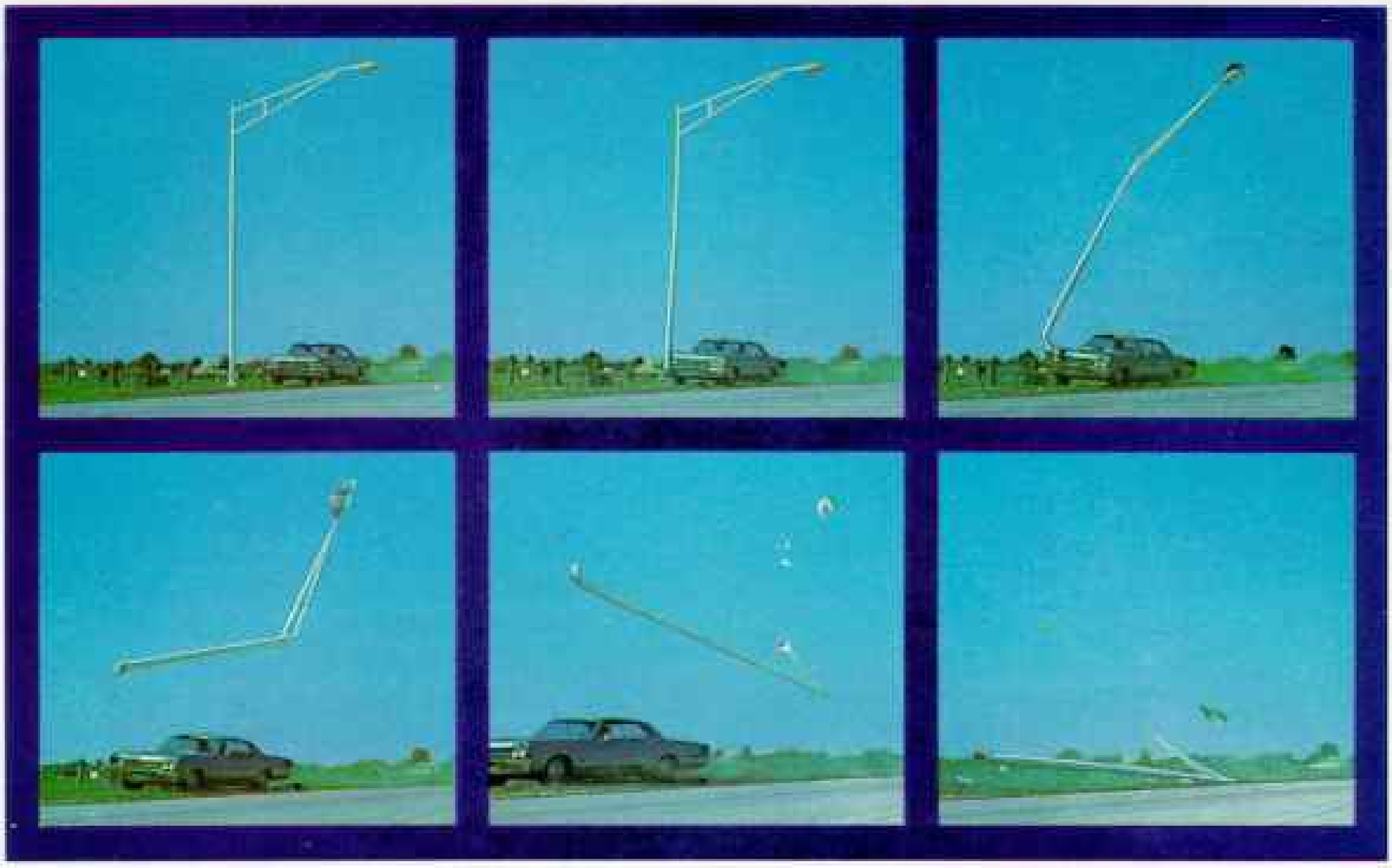

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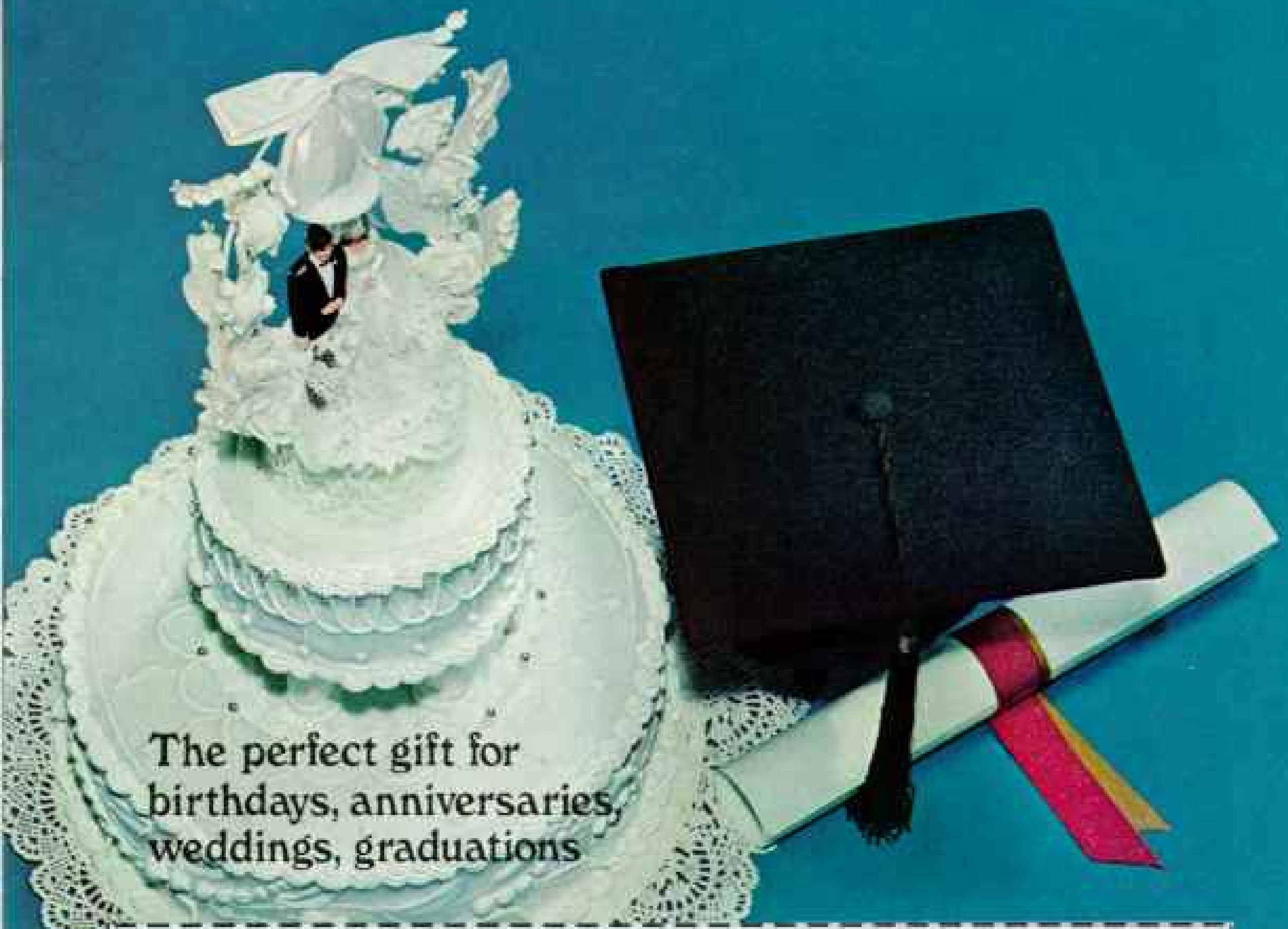

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Super Shooter

POLAROID LAND CAMERA

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The Trans-Alaska

A report on the most remarkable private construction project in American history.

Oil was discovered under Alaska's North Slope more than 100 years ago—not by oilmen, but by Eskimos. They noticed a black liquid substance underneath the tundra.

What wasn't known until many years later was approximately how much oil there was.

In 1967, as our country faced declining oil reserves at home, extensive exploratory drilling began at Prudhoe Bay. Several oil companies hit oil and gas. And hit it big. It is estimated that there is about 10 billion barrels (one barrel equals 42 gallons) of crude oil under the tundra—more oil than exists in Louisiana, Oklahoma, Kansas and half of Texas *combined*.

The highest hurdle for the Pipeline will be the 4,500-foot-high Dietrich Pass in the Brooks Mountain Range.

The most practical answer

After considering many forms of transportation, engineers agreed that a pipeline would be the most economical way to get the oil out of the Arctic wilderness.

While several pipeline routes were studied, a 798-mile route across Alaska was ultimately selected. It is shorter, less expensive, and could be completed in less time.

The oil will enter the pipe at Prudhoe Bay, then move south to Valdez, an ice-free harbor on the Pacific. From Valdez, U.S.-flag tankers will carry the oil to West Coast ports.

27 Empire State Buildings

It will take over three years and nearly $6 *billion* to build the Pipeline. This is the equivalent of what it would cost today to build 27 Empire State Buildings, or 3 Panama Canals.

Ownership of the Pipeline is held by eight companies, with Exxon Pipeline Co. having a 20 percent interest. These companies formed *Alyeska Pipeline Service Co.*

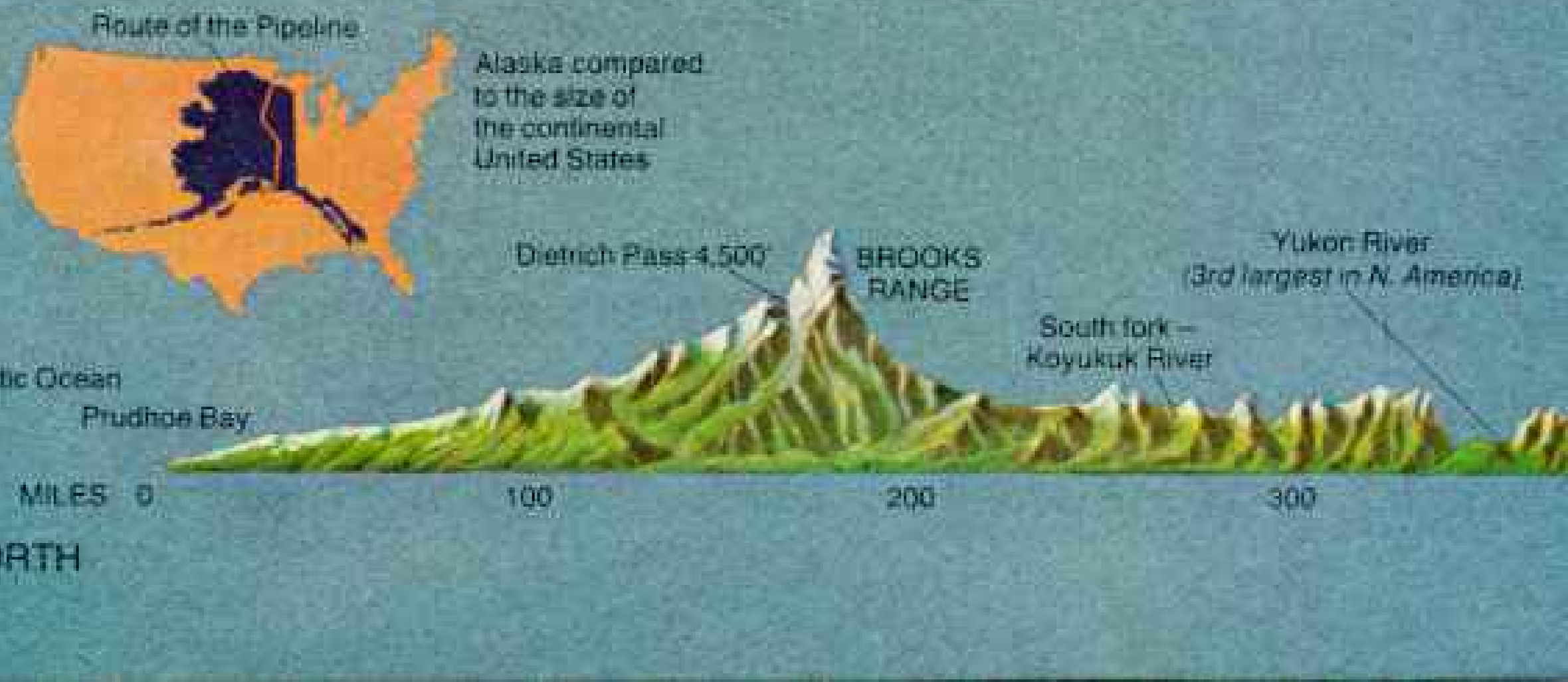
Alyeska is responsible for research, construction, maintenance and environmental work.

Temperatures down to 80° below zero and fierce Arctic winds can cripple machinery and reduce human work efficiency by 90 percent.

What's happening today

Right now, thousands of men and women are working on the Pipeline at many different camps spaced along the route. Employment will reach a peak of 15,000 workers at 29 camps.

Last October, the first all-



Pipeline.

weather road was opened between the Yukon River and Prudhoe Bay.

This spring, the first pipelaying will begin.

Soon, a $24 million bridge will be completed across the Yukon, third largest river in North America. And the first of 12 powerful pumping stations will be constructed.

The remaining miles of pipelaying and the deep-water port facilities at Valdez will be completed in 1977.

The present schedule calls for Pipeline operation to begin in the summer of 1977 at 600,000 barrels a day, with capacity of 1.2 million barrels a day shortly thereafter. Ultimately, the pipe may carry 2 million barrels a day.

Midnight sun or eternal midnight

Working conditions along the route are almost without parallel in the history of the industry.

For two months of the year the sun never rises. For two months, it never sets. Winter temperatures can plunge to 80° below zero. Bitter 40-mile-an-hour winds off the Arctic ice cap can reduce normal working efficiency by 90 percent.

The summer brings warmth, but also clouds of mosquitos that descend on the workers.

On the other hand, indoor living in this wilderness is surprisingly comfortable—thanks to modern prefab housing, the latest movies and some of America's best cooks.

A commitment to the fragile environment

When the Trans-Alaska Pipeline System was proposed, there was a great deal of concern over its impact on the environment.

Since 1969 more than $12 million has been spent studying the total Alaskan environment. This work has helped shape the Pipeline's design, construction and route.

About 50 percent of the pipe will be elevated in order not to thaw and erode the vulnerable tundra and permafrost. An extensive revegetation program is under way to reseed those areas which must be disturbed.

It took over one-half million tons of steel to make the 798 miles of pipe for the project. The sections are 40' and 60' long, 48" in diameter.

This is the entrance to Valdez harbor. From this ice-free port U.S.-flag tankers will carry the oil to the West Coast.

Northern Alaska's 500,000 caribou will be accommodated by burying refrigerated sections of pipe at intervals along migratory routes.

The Pipeline, as it is now being built, promises a high degree of environmental protection.

In conclusion

The Trans-Alaska Pipeline System will help America become more self-sufficient and less dependent on foreign oil.

For additional information on the Trans-Alaska Pipeline System, write to Exxon Corporation, Dept. V, Box 1147, Ansonia Station, New York, N.Y. 10023.

EXXON

Profile of the 798-Mile Pipeline Route

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Yet the '75 Nova is new and different in several important ways.

It's beautifully restyled, for one thing, and offers a series of engineering improvements over the '74 model. As a result, it runs cleaner. And in 50,000 miles of driving, a '75 Nova using unleaded gasoline should cost about $300 less in scheduled maintenance than a '74 Nova using leaded fuel.

There's also a brand-new Nova model for '75: Nova LN, Chevy's most luxurious compact ever. Standard features include reclining front seats, lounge-chair comfort and very close attention to color coordination.

Why now?

Why not? Besides all the excellent reasons already cited, there's the economic climate itself. It strongly suggests there are some real Nova deals available. And you'd be helping the national economy by buying a a new Nova now.

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Canada This summer.

(Tear-out vacation supplement)

Atlantic Canada. It lives to the rhythm of the ocean tides.

The provinces of New Brunswick, Nova Scotia, Prince Edward Island and Newfoundland have a lot to share with you.

An ocean that was made for all kinds of fishing. Long, sandy beaches that were made for swimming and basking in the sun. Thousands of miles of beautiful coastline and unspoiled countryside. A summerful of Highland gatherings, Acadian French soirées, lobster get-togethers and old-fashioned fun.

Canada's four Atlantic Provinces

See Map on back cover.

All over Atlantic Canada, you'll meet people whose lifestyle has stayed close to their maritime heritage and hasn't changed much in generations. Atlantic friendliness will welcome you wherever you go.

So come on, America. Come see life the way it is in Atlantic Canada.

New Brunswick.

A picture postcard province.

New Brunswick borders on the State of Maine, so it's the province that most Atlantic Canada visitors see first. Nor could there be a better place to start. With the ocean for a neighbour on three sides, New Brunswick has sweeping, sunny beaches to show you, bustling fleets of fishing boats and an Acadian French culture that's as old and as colourful as the history of this continent.

So don't drive too fast.

Spend some time exploring the Bay of Fundy shore, where the high tides have carved incredible shapes into the sandstone cliffs. Visit the Fundy Isles of Grand Manan, Deer and Campobello, where Franklin D. Roosevelt's old summer home sits in the middle of a beautiful International Park. See the 1812 timbered blockhouse and shop for homespun tweeds at historic St. Andrews-by-the-Sea.

Further along the Bay of Fundy coast is the city of Saint John, which was founded in 1631 but didn't really develop its own special character until after 1783, when 4,200 United Empire Loyalists arrived from New York and Boston, refugees from the turmoil that followed the War of Independence. Walk the 'Loyalist Trail' through Saint John and you'll see something of the city they built, or plan your visit for the last week in July and help Saint John celebrate the event with Loyalist Days parades, concerts, sailing races and feasting. As an American, you'll be more than ordinarily welcome, because this is one of many Canadian celebrations that link your history with ours.

If you follow the Saint John River upstream for a hundred miles, you'll come to Fredericton, the provincial capital, a gracious city of tall elms and church spires, statues and elegant Victorian homes. Fredericton has professional theatre at the Playhouse, an art gallery (the Beaverbrook) where you'll find major works by Gainsborough, Reynolds, Krieghoff and Dali, and the loveliest university campus in Canada. Shop for pottery and woven fabrics in the many quality craft studios, and visit nearby King's Landing Historical Settlement, where you can see village life the way it used to be in this part of the world between 1790 and 1870.

If you're a sportfisherman, you'll already know that New Brunswick offers some of the best fishing on the continent. If you're a salt-water enthusiast, you'll probably make a bee-line for the coast where you'll find deep-sea fishing boats, tackle and expert advice readily available in many of the fishing villages. Care to take on a tuna?

You'll also find the delightfully friendly descendants of New Brunswick's earliest settlers. The Acadian French they speak is older and markedly different from the French spoken in Paris or Montréal, but there's no mistaking the genuine warmth of their hospitality. They'll gladly tell you the secrets of their gourmet seafood recipes, and you'll be a very welcome guest at festivals and celebrations all around the coast.

There's the Scallop Festival at Richibuctou in early July; four days of feasting and partying at the Shediac Lobster Festival in the middle of the month; and an Acadian Festival of folk songs, dances and seafood at Caraquet, scheduled for August 9-17.

They're all much too good to miss.

Dig for clams at Buctouche, N.B.

King's Landing Historical Settlement.

While you're inland, enjoy the peaceful scenery of famous rivers like the Miramichi. On the coast, enjoy great ocean fishing for cod, mackerel, pollock, stripers and tuna.

What to do in New Brunswick's cities.

In Saint John: Follow the 'Loyalist Trail' past the city's oldest buildings. Stroll through the Old City Market. Swim, fish, boat, hike in Rockwood Park. See the Reversing Falls. (The Fundy tides are so high that the St. John River actually changes direction.) *In Fredericton:* Visit the Beaverbrook Art Gallery. Check the summer program at the Playhouse. Walk through the university campus to Poet's Corner. Visit the Legislative Library to see the rare and priceless Audubon bird paintings and a 1783 copy of the original Domesday Book. *In Edmunston:* Tour the Cathedral of the Immaculate Conception and see the LaPorte Museum of St. Louis College. *In Moncton:* Coast your car up Magnetic Hill. Visit the Acadian Museum at the French Universite de Moncton. Join in a community service at the Free Meeting House. *In Campbellton:* Climb Sugarloaf Mountain. See artifacts recovered from the French fleet sunk during the Battle of Restigouche. *In Bathurst:* Charter boats for deep-sea fishing and sightseeing. Ride or hike along the Nepisiguit River to the Pabineau Falls which thunder down a giant granite staircase.

National parks.

Fundy National Park. On the Bay of Fundy, east of Saint John. Nature trails, golf, tennis, open-air theatre. Accommodations range from motels, lodges and chalets to serviced campgrounds.

Kouchibouguac National Park. On Northumberland Strait. Quiet lagoons and bays. 15 miles of offshore sandbars. Camping only.

Camping and public beaches also available in most provincial parks. Write the Department of Tourism (address below) for location and details.

Major Festivals.

Bon Ami Get-Together (includes Indian and French events), Dalhousie, mid-June. Salmon Festival, Campbelltown, July 1-6. Scallop Festival, Richibuctou, early July. Lobster Festival, Shediac, mid-July. Loyalist Days, Saint John, late July. Woodstock Old Home Week, late July. Acadian Festival, Caraquet, August 9-17. Frontier Days, Fredericton, late August.

Where to stay and what to pay.

Hotels and motels in the larger centres from $15 to $35. Out-of-town motels less. Guest homes in many small towns and villages from $7 per night per person. Some farm vacations available from about $70 per week per person including food. Camping in most parks from $3 to $4.50 per night. Full information from New Brunswick Department of Tourism, Dept. CG2, Box 1030, Fredericton, New Brunswick, Canada.

Prince Edward Island.

A million-acre farm with beaches.

You can travel to Prince Edward Island by ferry from Cape Tormentine, New Brunswick or Caribou, Nova Scotia. Or you can jet directly to Charlottetown, the capital.

P.E.I. is 140 miles long and averages 25 miles in width. From the air, it's a green-and-brown patchwork of farms, bordered by miles of sand beaches. On the ground, everything (with the possible exception of the horses at Charlottetown and Summerside race tracks) seems to move at half-speed. There's no rush or hustle.

Charlottetown is a city of art and culture, steeped in Canadian and American history. It was officially founded in 1763 and unofficially invaded by two American privateers in 1775. They captured the Attorney General, who was later returned, and the Great Seal of the Colony, which was not. (If it should happen to turn up in your attic, the P.E.I. Government would be happy to hear from you).

If you plan your visit for August, you'll find a special program of theatre presentations (part of the Charlottetown Festival) at the Confederation Centre of the Arts. But whatever time you come, you'll find a crowded schedule of summer celebrations on the Island — popular ones like the Lobster Festival at Summerside and the Fisheries Exhibition and Regatta at Souris, as well as dozens of friendly country socials where you can sample the Islanders' home-baked pies and old-world hospitality.

You will also find miles of

Reel in the big ones off North Lake Harbour, Prince Edward Island.

magnificent beaches, washed by the warmest salt water north of Florida; seaside towns where you can shop for local crafts and charter boats for deep-sea fishing; and some of the most challenging golf courses in North America.

Many of the Island's tuna boats are berthed at North Lake Harbour and other Island harbours. You don't have to be an expert or wealthy fisherman to enjoy the sport. The $100-a-day charter fee for a party of six includes bait, tackle and all the expert advice you can handle.

If you'd really like to get to know the Islanders and to find out something about their way of life, plan to stay on a P.E.I. farm for a day or a week. You'll sleep in the farmer's comfortable guest room, eat hearty meals at his table and (if and when you feel like it) lend a hand with the chores. Many farms offer extras like baby-sitting service, riding horses and packed picnic lunches and all of them have special rates for children. But the "extra" that really counts is conversation with the farmer and his family—the still summer evenings spent rocking on his porch, seeing the world through his calm, shrewd eyes.

What to do in Prince Edward Island.

In Charlottetown visit beautiful St. Dunstan's Basilica, and historic Province House (where Canada's founding fathers met). Tour the city on a London bus, in a horsedrawn carriage or on foot. Go to the races. Drive to the Acadian Pioneer Village at Mount Carmel, visit Anne of Green Gables House in Cavendish or drive to Green Historic Park and learn how wooden ships were built 100 years ago.

National parks.

Prince Edward Island National Park, 25 miles of sandy beaches along the Gulf of St. Lawrence. Golf course, nature trails, fresh and salt-water fishing. Lodges, motels, cabins and tourist homes nearby. Trailer parks and campgrounds in the park.

Camping and trailer facilities at privately-operated locations and in many provincial parks. Write the Tourist Information Division (address below) for locations and details.

It's both a unique vacation experience and a beautiful way to take a break from big-city life.

Major Festivals.

Charlottetown Summer Theatre, featuring "Ann of Green Gables", throughout July and August.

Lobster Carnival, Summerside, July 18-26.

Potato Blossom Festival, O'Leary, July 31-August 3.

Old Home Week, Charlottetown, August 6-16.

Prince County Livestock Show, Alberton, August 22-23.

Acadian Festival, Abrams Village, August 29-31.

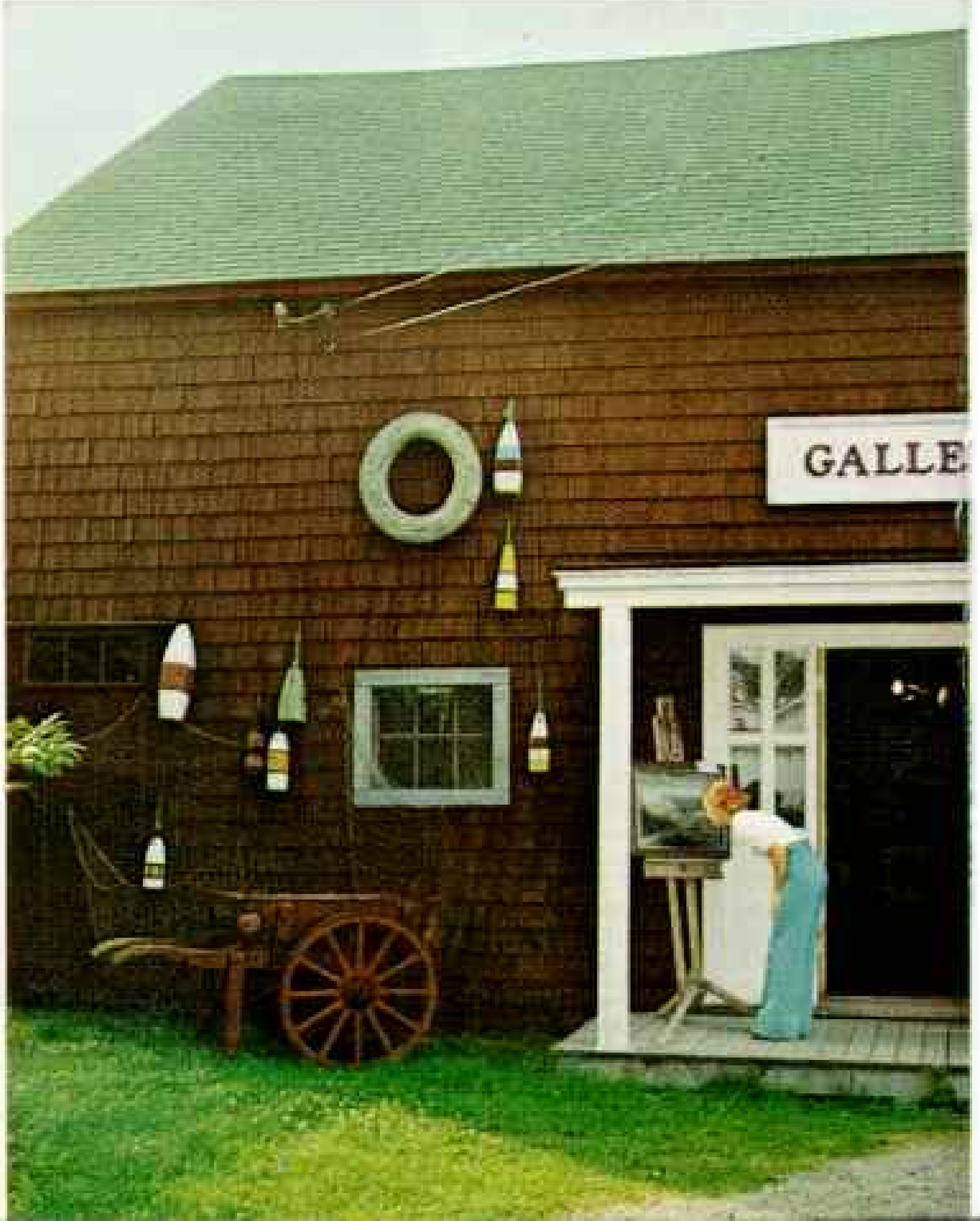
Highland Games, Eldon, August 2.

Where to stay and what to pay.

Hotel and motel prices in Charlottetown, Summerside range from $20 to $30. Cottages available in most resort areas from $100 to $200 per week, depending on size and location. Farm vacations from $50 to $75 per week per person. Camping in the National Park, most provincial parks and at privately-operated locations from $3 to $5 per night. Complete information from: Tourist Information Division, Dept. CG2, P.O. Box 940, Charlottetown, P.E.I., Canada E3B 5C3.

Fine dining is the rule and at least one hearty lobster meal, with all the trimmings Atlantic Canada style, is a must.

Native artifacts and local arts and crafts make great take-home gifts. Find them at galleries, and handcraft shops like this one at Mahone Bay, Nova Scotia.



Nova Scotia.

Parts are more Scottish than Scotland.

You'll feel the strength of the Scottish heritage over most of Cape Breton, where Gaelic is still a living language, and in Pictou and Antigonish counties, where the clans gather every summer for traditional Highland Games and Festival. And you'll understand why the Scots fell in love with Nova Scotia, when you drive around Cape Breton and the magnificent Cabot Trail. The spectacular seascapes and the timbered mountains of Cape Breton Highlands National Park are uncannily like the home they left.

Stop at Ingonish to play the superb Cape Breton Highlands Golf Links and to sample the fishing; at Iona to visit the Highland Village Museum; and in the beautiful Bras d'Or Lake area for sailing, beaches, and a visit to the Alexander Graham Bell Museum, packed with models and drawings of his many inventions.

Stop, too, to see the great Fortress of Louisbourg. The French began building it in 1720 (long before the Scots arrived) and by the time they were finished it was a 100-acre walled city. Louisbourg was twice captured and finally demolished. Now, with the original plans as a guide, it's being carefully rebuilt. You can tour the sumptuously-furnished Chateau, visit the museum and watch archeologists digging in the ruins of buildings not yet restored.

The British built the Citadel at Halifax to offset the French power at Louisbourg. It sits 270 feet above one of the world's great harbours (which you can cruise on the schooner Bluenose II) overlooking a city that's as famous for its gourmet seafood as it is for its delightful parks, its fine museums and art galleries. Halifax is the capital of Nova Scotia, and together with its sister city of Dartmouth is the largest metropolitan area in Atlantic Canada. But in spite of its commercial importance, its bright lights and busy nightlife, it's managed to retain a good deal of small-town charm. You can hear band concerts in the tree-shaded Public Gardens and a booming cannon that's marked the noon-hour every day since 1749. And you can picnic, swim and hike miles of nature trails in a downtown paradise called Point Pleasant Park.

Close to Halifax is Peggy's Cove which may qualify as the most photographed and painted village on the continent. A little further along the coast is Oak Island (near Mahone Bay) where people have been searching for Captain Kidd's legendary treasure since 1796. (You can tour the Island and see the old and new diggings.) Further still is Lunenburg, which was settled by Swiss and German immigrants and became the most famous shipbuilding centre in the New World, and Shelburne, founded in 1783 by a group of United Empire Loyalists.

The whole coastline of Nova Scotia is a fabulous holiday playground, with fine sand beaches, with delightful towns and villages where you can charter boats for sailing and salt-water fishing, with golf courses and handcraft centres, and with plenty of opportunities for exciting scuba diving in the clean, clear waters.

Inland, the rich orchards of the Annapolis Valley stretch for miles across the centre of the province. There you'll find quiet villages and historic sites, including the cannon-ringed Habitation at Port Royal National Park, a re-creation of the settlement built by the French explorer Champlain in 1605, fifteen years before the Mayflower landed at Plymouth Rock.

Pipes skirl and highlanders dance at the Antigonish Highland Games, Nova Scotia.

Feel the past at Fortress Louisbourg, where the British and French battled for control of the Atlantic coast.

Newfoundland.

What to see and do in Halifax.

Take a harbour cruise on the schooner Bluenose II. It leaves from Privateer's Wharf in the old waterfront area, now restored to house boutiques, craft shops and restaurants. See the Maritime Museum and the Art Gallery, located in an old powder magazine at the Citadel. Take in a Sunday afternoon band concert at the Public Gardens. Check the summer programs at the city's three repertory theatres. Visit the Nova Scotia Museum, Province House, St. Paul's Church (the oldest Protestant church in Canada) and the little Dutch Church.

National parks.

Cape Breton Highlands. Stretching from the Atlantic to the Gulf of St. Lawrence and circled by the Cabot Trail. Fine hiking trails, interpretive program. 12 campgrounds. Resort hotel and cottage accommodation at Ingonish.

Kejimkujic. Southwestern Nova Scotia. Good fishing, boating, canoeing. Indian pictographs. Fish hatchery. Nature talks. Accommodation for tents and trailers.

Tent and trailer accommodation also available in most provincial parks. Write the Department of Tourism (address below) for locations and details.

Major Festivals.

Annapolis Valley Blossom Festival, Kentville, May 30 - June 2.

Maritime Old-Time Fiddling Contest, Dartmouth, July 4-5.

Pictou Lobster Carnival, Pictou, July 5-7 (T).

Highland Games, Antigonish, July 11-13.

Acadian Festival of Clare, Meteghan, July 12-20.

Theatre Arts Festival International, Wolfville, July 16-20.

Nova Scotia Gaelic Mod, St. Ann's, August 4-9.

Nova Scotia Festival of the Arts, Halifax, August 18-24.

Tuna Festival Week, Yarmouth, August 24 - September 1.

Nova Scotia Fisheries Exhibition, Lunenburg, September 16-20 (T).

Joseph Howe Festival, Halifax, October 2-11 (T: Tentative dates).

Where to stay and what to pay.

Halifax hotels and motels from $20 to $40. Out of town motels less. Farm vacations about $70 per week per person, $45 for children. Camping from $2 to $5 per night. For complete information, write: Nova Scotia Department of Tourism, Dept. CG2, P.O. Box 130, Halifax, Nova Scotia, Canada B3J 2M7.

The oldest part of the new world.

John Cabot landed at Bonavista in 1497, five years after Columbus found the West Indies. By the time Sir Humphrey Gilbert arrived to claim the land officially for Queen Elizabeth I, the capital city of St. John's was already a busy port, a rendezvous for the fishermen of half-a-dozen European nations. If you want to feel the strength of St. John's links with the past, go there in the spring, when the Portuguese fishing fleet sails in — just as it has every spring for more than four centuries.

Modern St. John's is well accustomed to entertaining visitors. Its stores are stocked with Newfoundland handicrafts, its restaurants with fine seafood, its museums with an abundance of treasures. The Island offers superb scenery and old-world villages, some of the finest fishing on the continent — even an opportunity to tour the remains of a settlement founded by Viking adventurers a thousand years ago.

When you go to Newfoundland, take your ears as well as your eyes. Strike up a conversation in St. John's, Ferryland, Trepassy or anywhere else on the Avalon Peninsula and you'll hear a definite Irish lilt. Do the same thing further north, in the tiny fishing villages that cling precariously to the rugged coast, and you'll hear the soft accents of Devon and Dorset, and an idiom that disappeared long ago in Britain. Bring your voice, too, because long before you leave, you'll be joining in the choruses of folk songs and sea shanties that recount hundreds of years of Newfoundland legend and history.

Explore the outport fishing villages around the island, with their brightly-painted wooden

Wade along the sandy beaches that interrupt the rugged coastline, as you drive the Cabot Trail, Cape Breton Island.

houses, neatly quilted patterns of gardens and fences and a way of life that's hardly changed in generations. Try your hand at jigging for cod. Even if you don't catch a thing, it's worth it just to listen to local yarns while the boat rides the gentle swell.

And don't overlook the interior of Newfoundland. One third of it is lakes, rivers and streams that teem with Atlantic salmon and all kinds of trout.

When you leave (by ferry from Argentia or Port aux Basques) your parting should properly be commemorated with one last chorus of "The Squid Jiggin' Ground" and one final glass of Newfie Screech, a rum with the kick of a mule. You raise your glass and say: "I looks towards ye!" and receive the response: "And I bows accordin!" In Newfoundland, there's no such thing as a stranger.

Skilled craftsmen will explain their work. The Studio, St. Mary's Bay, Newfoundland.

A brave past re-lived in a Military Tattoo on Signal Hill, overlooking St. John's, Newfoundland.

What to do and see in St. John's.

Walk down Water Street. It's the oldest street in North America. Climb Signal Hill to see Gibbett Hill (where malefactors once were dealt with), the Queen's Battery, Cabot Tower and the Marconi Monument, where the first trans-Atlantic wireless message was received. Visit the Newfoundland Museum and the Arts and Culture Centre, where there's a fine theatre and an excellent art gallery. See the Anglican Cathedral (1816), the Old Garrison Church (1836) and the Basilica of St. John the Baptist. Take a trip to Quidi Vidi Battery. Go to the races at nearby Goulds. Charter a boat at Witless Bay to see the bird sanctuaries or at Long Pond Manuels for tuna fishing.

National parks.

Gros Morne, 50 miles north of Corner Brook. Spectacular mountains, marvelous seascapes, fjord-like lakes and dense forests. Tents, tent-trailers and trailers.

Terra Nova, 145 miles northwest of St. John's. Magnificent fjords, long beaches, spruce forests, unspoiled lakes. Watch for bear, moose and beaver. Fine fishing for brook trout and landlocked salmon. Interpretive program. Outdoor theatre. Cottages and campgrounds, some accessible only by boat.

Camping facilities available in most provincial parks. Write the Department of Tourism (address below) for locations and details.

Major events.

Harness racing, St. John's, June through October.

Sailing races, Conception Bay, May through October.

Summer Festival of the Arts, St. John's, July.

Signal Hill Military Tattoo, St. John's, July-August.

Regattas at St. John's, Placentia and Harbour Grace, July-August.

St. John's Folkfest, August.

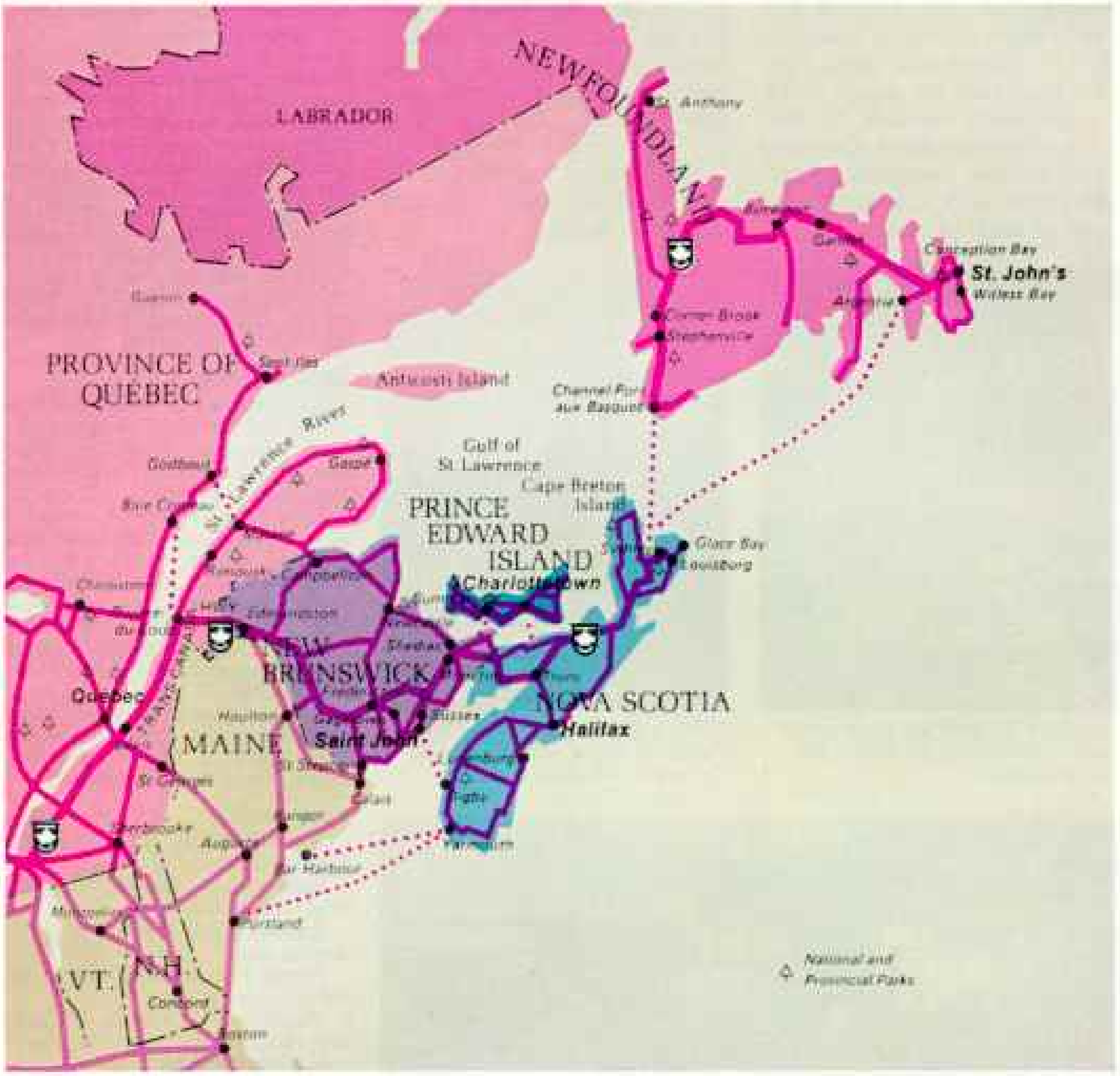
For precise dates and details, write the Department of Tourism.

Where to stay and what to pay.

Some luxury hotels, many good basic hotels and motels ($18-$30) tourist homes (about $8 to $10 per day per person) and housekeeping cottages ($18-$22 per day) are available. Fishing village holidays are also available — they're the Newfoundland version of farm vacations. Prices about $50 per week, all inclusive. Full information from: Newfoundland and Labrador Department of Tourism, Tourist Services Division, Dept. CG2, Confederation Building, St. John's, Newfoundland, Canada.

Photograph outport fishing villages like Hibbs Cove, Newfoundland, snuggled against the rocky shore.

The sign at the border says Welcome!



If you're a U.S. citizen or permanent resident, you don't need a passport or visa to come to Canada. But to avoid possible delays, bring something (perhaps a birth, baptismal or voter's certificate) to establish your identity.

Anything to declare?

Generally speaking, you can bring anything you need for personal use. But you can't bring things to sell. You can bring 50 cigars, 200 cigarettes and either 40 oz. of alcohol or 24 pints of beer.

Coming by car?

Bring your Motor Vehicle Registration Form or (in the case of a rented car) a copy of the rental agreement. And ask your insurance agent for a Canadian Non-Resident Inter-Provincial Liability Insurance card. You'll find unleaded gasoline available pretty well everywhere you're likely to go.

Our money versus yours.

The rate of exchange fluctuates a bit from day to day, so change your dollars at a bank rather than a store. Most of your credit cards, of course, are good in Canada.

Hunting and fishing regulations.

They vary from province to province. But you can buy licences and get all the information you need at most sporting goods stores and at all national and provincial parks.

Bringing pets?

No problem with cats, and all your dog needs is a valid rabies vaccination certificate less than 12 months old, signed by a licenced veterinarian.

Travel agents and carriers offer many ways to visit Canada, including package and group tours.

Canada

CANADIAN GOVERNMENT OFFICE OF TOURISM, OTTAWA, CANADA.

The International Geographical Union
extends a special invitation to
members of
The National Geographic Society
to acquire

THE GREAT EXPLORERS MEDALS

IN SOLID STERLING SILVER

An official issue of The International Geographical Union

THE GREAT EXPLORERS MEDALS

IN SOLID STERLING SILVER

THE GREAT EXPLORERS MEDALS

OFFICIAL ISSUE OF THE INTERNATIONAL GEOGRAPHICAL UNION

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Illustrated smaller than actual size is the medallic cachet honoring Vasco da Gama. Postmarked in Calicut, India, where the great explorer landed after his eleven-month voyage from Portugal around the Cape of Good Hope in 1498.

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AVAILABLE IN A STRICTLY LIMITED EDITION
SUBSCRIPTION DEADLINE: APRIL 30, 1975

For centuries man has reached out to explore the unknown and uncover the mysteries that lay beyond his realm. The Egyptians, Greeks, Romans and Chinese were the first to explore the earth. But the greatest era of exploration began a thousand years ago with the voyages of the Vikings—brave Norsemen who challenged the unknown and opened the way to discoveries that changed the course of civilization.

Now, to honor these one thousand momentous years of exploration, The International Geographical Union has resolved to issue a collection of solid sterling silver commemorative medals.

This historic collection, *The Great Explorers Medals*, will be the first commemorative series ever issued by The International Geographical Union in its long and distinguished history.

A lasting tribute to men of courage and determination

The historic and valuable medals in this collection will honor the greatest explorers of all time. From *Leif Erikson*, the first European to explore North America, to *Neil Armstrong*, the first man to set foot on the moon. *Christopher Columbus*, who searched for a passage to India and found the New World. *Vasco Nuñez de Balboa*, who opened the door to Spanish conquest in the Americas. *Robert E. Peary*, who discovered the North Pole. *Admiral Richard E. Byrd*, who founded Little America on the frozen plains of Antarctica. And *Sir Edmund Hillary*, first man to reach the summit of Mount Everest.

Each of the 50 solid sterling silver medals in the collection will measure 39mm in diameter and will be a flawless Proof, minted from hand-finished dies to bring out the full beauty of the precious sterling silver. The sculptured design of each medal will stand out boldly, in frosted relief, against the glowing silver background. And each medal will be individually *hallmarked* to certify its Proof status. The International Geographical Union has appointed The Franklin Mint and its international affiliates to strike the medals for this collection.

Personalized cachets—postmarked at sites of exploration

To add to the excitement and educational value of this collection, each of the 50 medals will be issued in an engraved cachet, personalized with the subscriber's name, and postmarked at a site closely identified in history with the man whose achievements it commemorates. Thus, the medal honoring Ferdinand Magellan will be issued in a cachet postmarked at *Mactan in the Philippines*, where this great explorer landed during his circumnavigation of the earth in the early 16th century. The Stanley and Livingstone cachet will be postmarked at *Ujiji, Tanzania*, site of the climactic meeting between these two famous British explorers.

A convenient acquisition plan

These 50 solid sterling silver medals, in their postmarked cachets, will be issued at the rate of one per month, beginning in June 1975. The issue price for each sterling silver Proof medal, including the cachet, will be $19.50. And this price is *guaranteed* for the entire series, regardless of any increases in the cost of silver or minting during the next 50 months.

To make such a guarantee possible in this time of rising prices, The Franklin Mint has agreed to purchase a sufficient amount of silver at current prices to produce the complete series of 50 medals *for each subscription accepted*.

A valuable and impressive heirloom collection

To house and display these medals in their individual cachets, two custom-made albums will be included with each subscription. These handsome collector's albums will permit the subscriber to display both sides of each medal and cachet, including historical information on each event commemorated. Subscribers will thus be able to study and enjoy the collection as they acquire it.

The International Geographical Union is proud to issue this historic series—the *first* to bear its name—as a lasting commemoration of the world's foremost explorers. Such a collection, because of its great historical significance and intrinsic value, is certain to become a prized family heirloom.

Subscription rolls close on April 30, 1975

The Great Explorers Medals will be struck for collectors in North America by The Franklin Mint—in a strictly limited Proof edition. Because of international interest in this series, the collection is being offered simultaneously to collectors in other countries by international affiliates of The Franklin Mint, which will strike the medals for subscribers in those countries. *But the world-wide subscription deadline is April 30, 1975.* The total mintage will be limited to the exact number of orders postmarked by that date. After the minting has been completed, the original sculptors' models and the dies will be destroyed so that this series can never be issued again.

This is, therefore, *the only time* subscriptions to this important collection can be accepted. Those who wish to take advantage of this opportunity should use the application form at right and mail it no later than April 30, 1975.

SUBSCRIPTION APPLICATION
FOR NATIONAL GEOGRAPHIC SOCIETY MEMBERS

The Great Explorers Medals

AN OFFICIAL ISSUE OF THE INTERNATIONAL GEOGRAPHICAL UNION

Subscription Rolls Close on April 30, 1975
Limit: One Subscription per person

Mail to: The Franklin Mint
Franklin Center, Pennsylvania 19091

Please enter my subscription for *The Great Explorers Medals*, consisting of 50 solid sterling silver Proof medals in specially-postmarked cachets, to be issued at the rate of one per month beginning in June, 1975.

☐ I enclose $19.50 plus my state sales tax, as payment for the first issue and I agree to pay the same amount for each subsequent issue promptly upon being billed with its shipment.

Price for Canadian residents: $21. per issue plus provincial sales tax (Ontario 7%; Quebec 8%)

Mr.
Mrs.
Miss_____
PLEASE PRINT CLEARLY

Address_____

City_____

State, Zip_____

Signature_____
ALL ORDERS ARE SUBJECT TO ACCEPTANCE

If you wish your cachets personalized *differently* from above, print or type the personalization you wish on a separate sheet and attach it to this application.

THE FRANKLIN MINT IS THE WORLD'S LARGEST PRIVATE MINT. IT IS NOT AFFILIATED WITH THE U.S. MINT OR ANY OTHER GOVERNMENT AGENCY.

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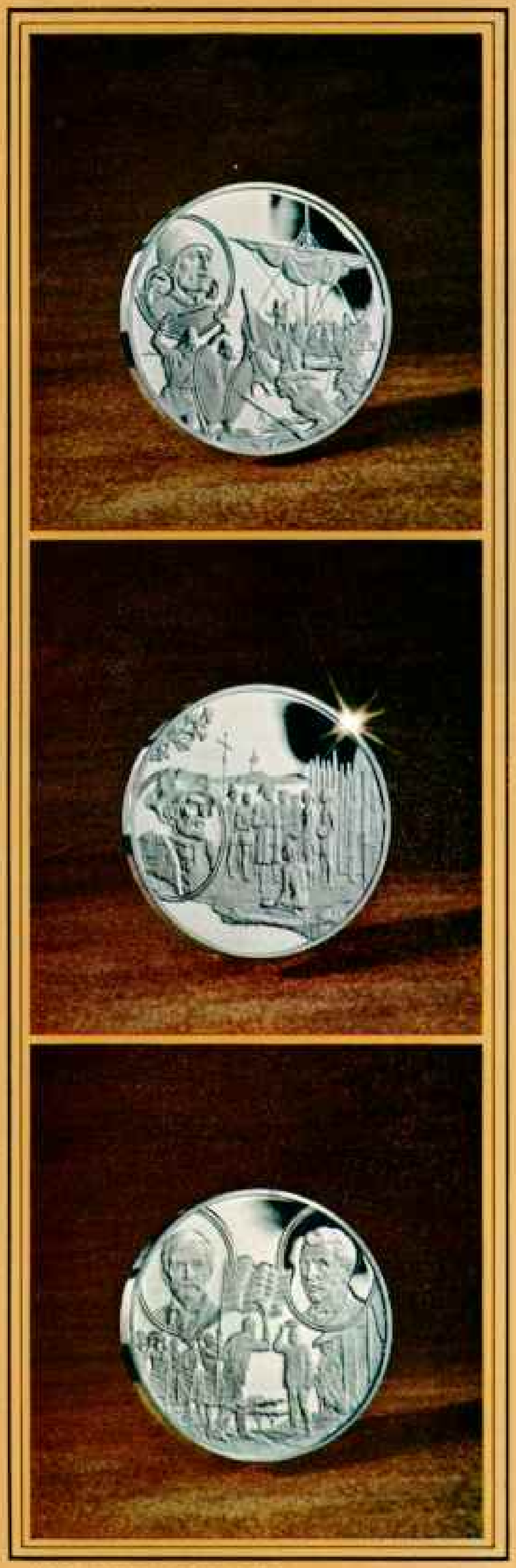

MEDALS SHOWN ACTUAL SIZE
TOP: *Leif Eriksson reaches North America*
MIDDLE: *Jacques Cartier arrives in Montreal*
BOTTOM: *Livingstone and Stanley meet in Africa*

THE INTERNATIONAL GEOGRAPHICAL UNION

The International Geographical Union is a non-profit scientific organization dedicated to promoting and facilitating international cooperation in geographical research and exploration. The organization is an outgrowth of a series of International Geographical Congresses which have been held throughout the world since 1871. Its current membership includes representatives of 78 different countries.

The International Geographical Union operates through some 20 separate commissions concerned with specific fields of scientific investigation. It organizes international congresses and meetings throughout the world to discuss and disseminate important new discoveries in these areas.

The Great Explorers Medals are the first medals The International Geographical Union has ever issued. The subjects for commemoration in the series have been selected with the assistance of experts associated with The International Geographical Union. The medals are official issues of this distinguished organization and are being minted by The Franklin Mint for collectors in North America.

Subscriptions to *The Great Explorers Medals* should be sent directly to The Franklin Mint, Franklin Center, Pennsylvania 19091. Applications will be accepted only if postmarked by April 30, 1975.

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Mazola. Good for your food because it's Corn Oil.®

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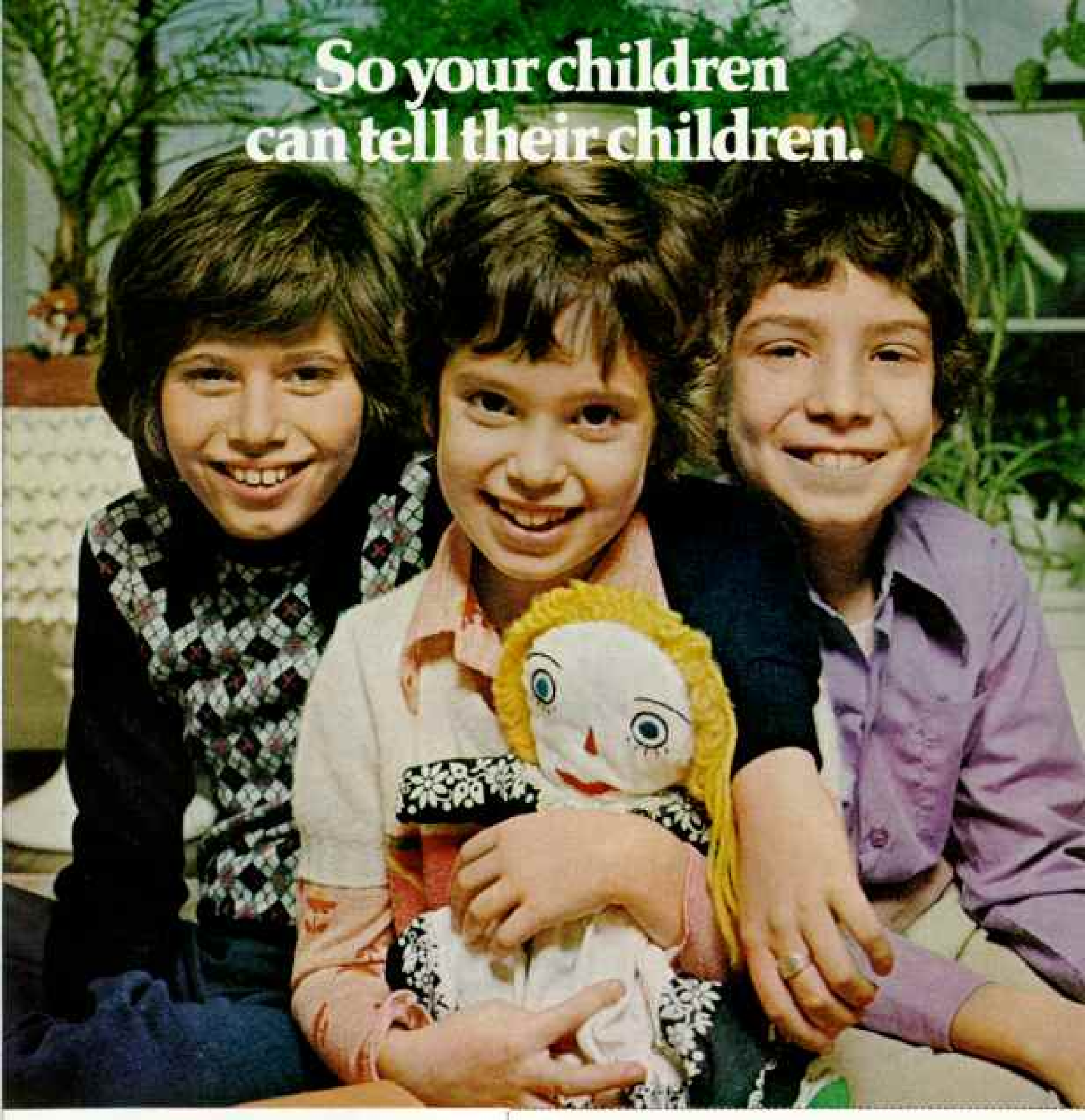

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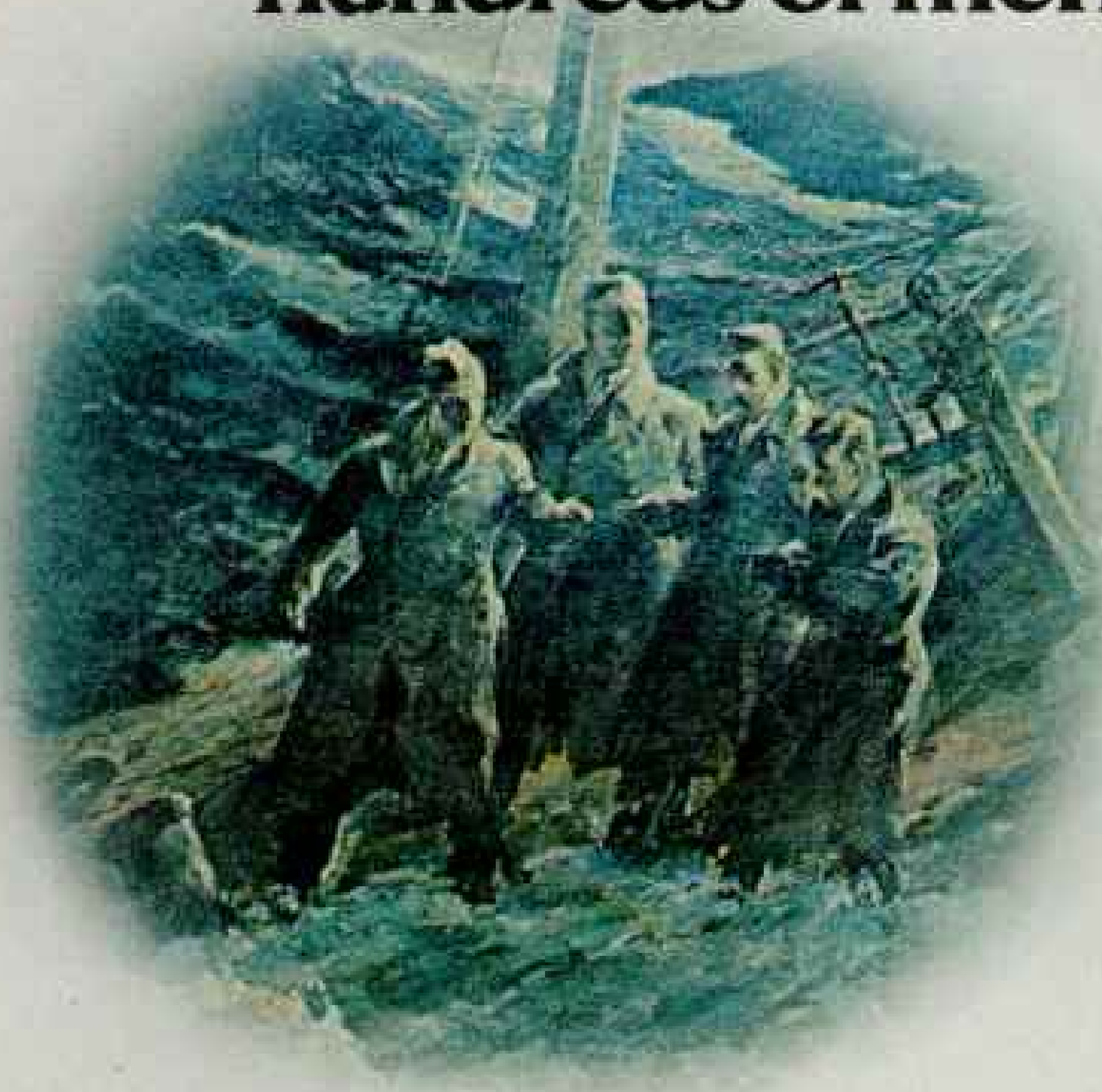
Milton J. Shapp, Governor

How 4 men of peace helped save hundreds of men at war.



The date was February 3, 1943.

The S.S. Dorchester, an old troopship, plowed through the frozen waters of the North Atlantic.

Suddenly, there was a thunderous roar. An enemy torpedo had hit its mark. Waves of water poured into the shattered hull.

As the ship began to sink, frightened men raced to the deck in wild confusion.

In a heroic attempt to save lives, four Army chaplains—two ministers, a priest and a rabbi, passed out life jackets and helped men into lifeboats.

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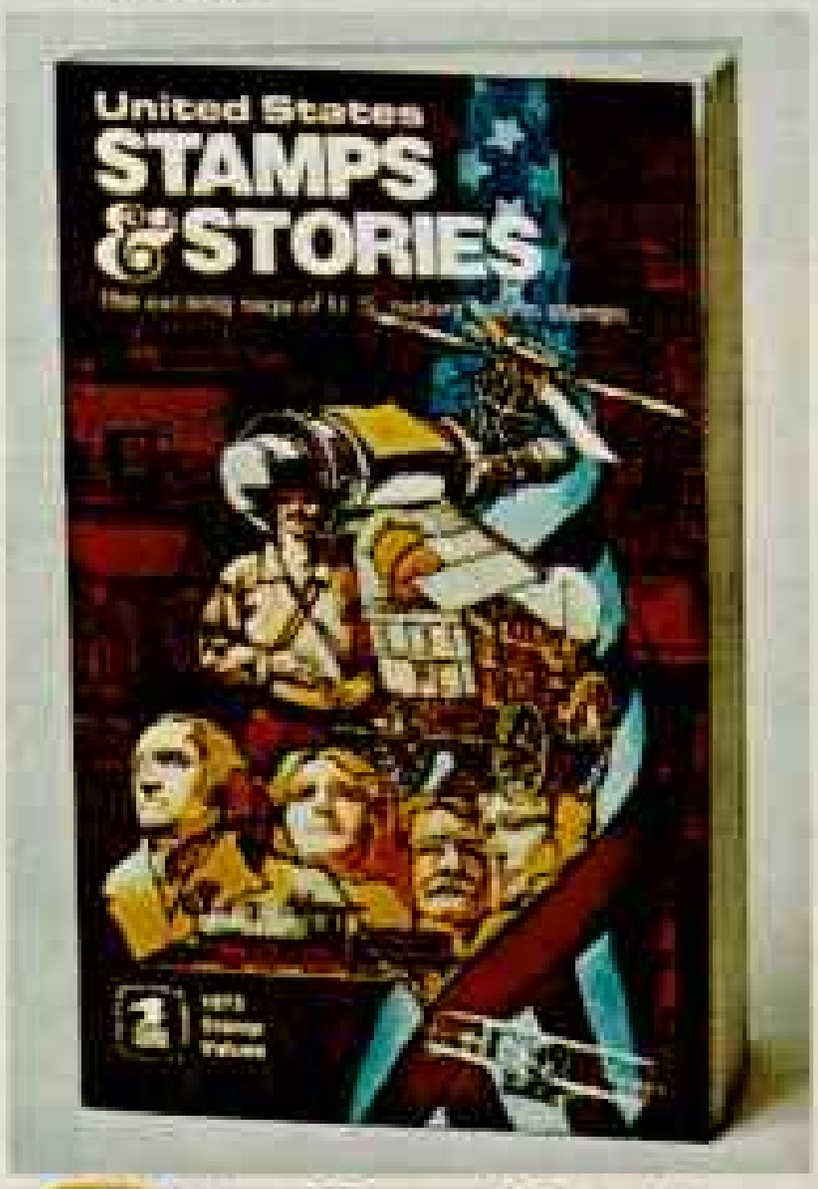
Stamp Collecting. For the fun of it.



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For more details, see your local Andersen Dealer. He's in the Yellow Pages under "Windows, Wood."

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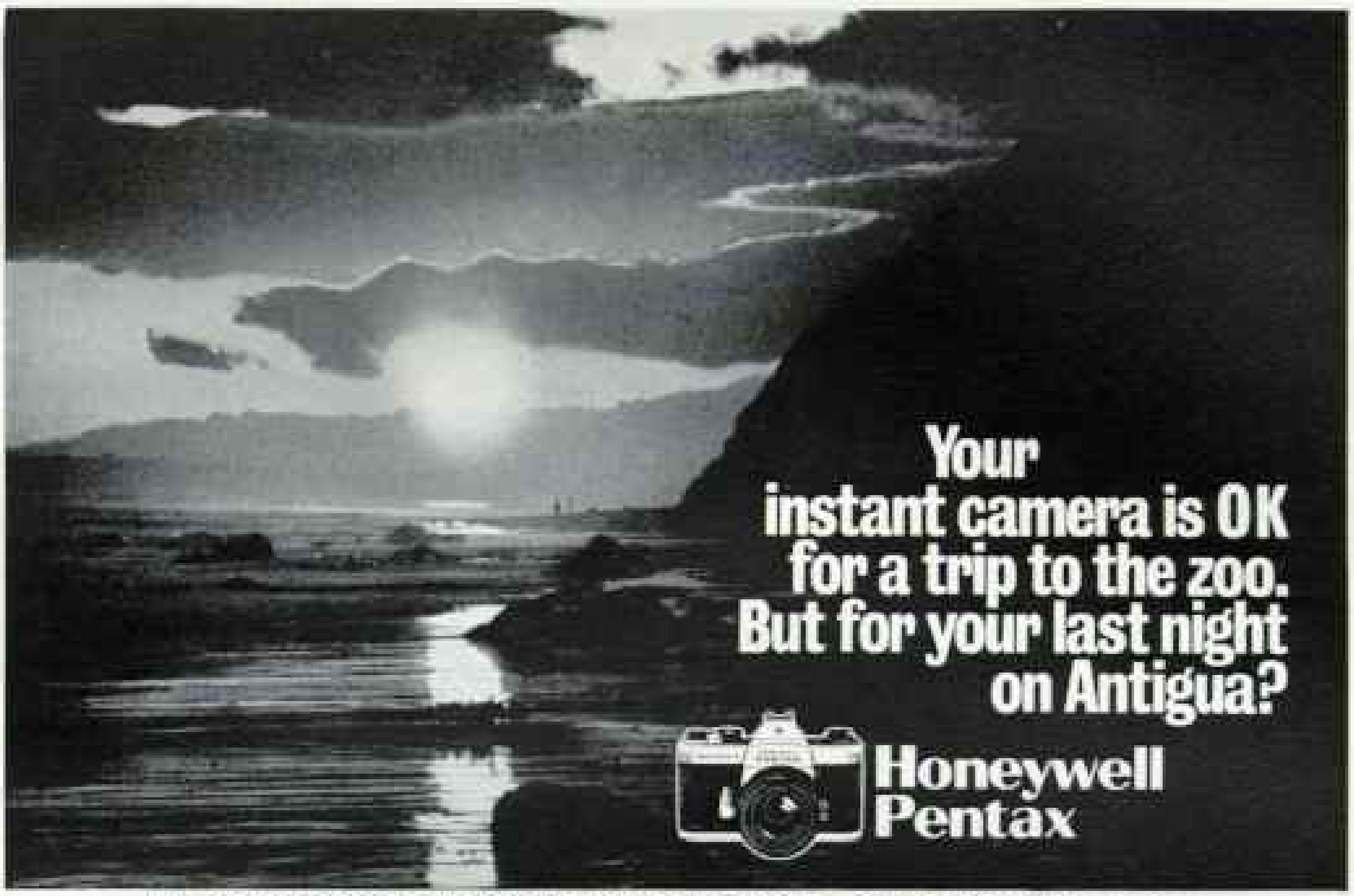

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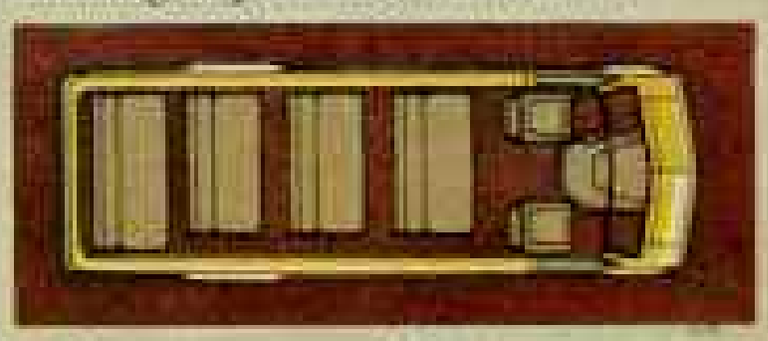

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